CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

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ORDER R5-2015-XXXX

NPDES NO. CA0084905

WASTE DISCHARGE REQUIREMENTS FOR THE U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION SLIGER MINE EL DORADO COUNTY

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

Table 1. Discharger Information

Discharger	U.S. Department of the Interior, Bureau of Reclamation
Name of Facility	Sliger Mine
Facility Address	Approximately 1,500 feet south of the junction of Sliger Mine Road and Fox Grove Lane
	El Dorado County, California
	El Dorado County

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude (North)	Discharge Point Longitude (West)	Receiving Water
001	Mine Drainage	38° 56' 22" N	120° 56' 13" W	Middle Fork, American River

Table 3. Administrative Information

This Order was adopted on:	**1/2 October 2015**
This Order shall become effective on:	**1 December 2015**
This Order shall expire on:	**30 November 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:	**31 May 2020**
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 **1/2 October 2015**.

_____
PAMELA C. CREEDON, Executive Officer

CONTENTS

I. Facility Information 3
II. Findings 3
III. Discharge Prohibitions 4
IV. Effluent Limitations and Discharge Specifications 4
A. Effluent Limitations – Discharge Point 001 4
1. Final Effluent Limitations from 1 June to 30 November – Discharge Point 001 4
2. Final Effluent Limitations from 1 December to 31 May - Discharge Point 001 4
3.Interim Effluent Limitations – Not Applicable 5
B. Land Discharge Specifications – Not Applicable 5
C. Recycling Specifications – Not Applicable 5
V. Receiving Water Limitations 5
A. Surface Water Limitations 5
B. Groundwater Limitations – Not Applicable 6
VI. Provisions 6
A. Standard Provisions 6
B. Monitoring and Reporting Program (MRP) Requirements 9
C. Special Provisions 9
1. Reopener Provisions 9
2. Special Studies, Technical Reports and Additional Monitoring Requirements 10
3. Best Management Practices and Pollution Prevention 14
4. Construction, Operation and Maintenance Specifications 14
5. Special Provisions for Municipal Facilities (POTW's Only) – Not Applicable 16
6. Other Special Provisions – Not Applicable 16
7. Compliance Schedules – Not Applicable 16
VII. Compliance Determination 16

TABLES

Table 1. Discharger Information 1
Table 2. Discharge Location 1
Table 3. Administrative Information 1
Table 4. Effluent Limitations 4

ATTACHMENTS

Attachment A – Definitions A-1
Attachment B – Map B-1
Attachment C – Flow Schematic C-1
Attachment D – Standard Provisions D-1
Attachment E – Monitoring and Reporting Program E-1
Attachment F – Fact Sheet F-1
Attachment G – Summary Of Reasonable Potential Analysis G-1
Attachment H – Calculation of WQBEL'S H-1

I. FACILITY INFORMATION

Information describing Sliger Mine (Facility) 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 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 an NPDES permit for point source discharges from the 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 subsections IV.C, IV.D, and V.B 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 previous Order R5-2008-0168 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 from the Facility, as the Facility is specifically described in the Fact Sheet in section II.B, in a manner different from that described in 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 year round with the following effluent limitations at Discharge Point 001, with compliance measured at Monitoring Location EFF-001 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				
		Annual Average	Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Arsenic, Total Recoverable	µg/L	--	130	220	--	--
Copper, Total Recoverable	µg/L	--	13	26	--	--
Lead, Total Recoverable	µg/L	--	6.0	12	--	--
Iron, Total Recoverable	µg/L	480	--	--	--	--
Electrical Conductivity	µmhos/cm	1200	--	--	--	--
pH	pH units	--	--	--	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.

c. **Average Dry Weather Flow.** The average dry weather discharge flow shall not exceed 0.194 mgd.

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 discharge shall not cause the following in the Middle Fork of the American River:

1. **Biostimulatory Substances.** Water to contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.
2. **Chemical Constituents.** Chemical constituents to be present in concentrations that adversely affect beneficial uses.
3. **Color.** Discoloration that causes nuisance or adversely affects beneficial uses.
4. **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.
5. **Floating Material.** Floating material to be present in amounts that cause nuisance or adversely affect beneficial uses.
6. **pH.** The pH to be depressed below 6.5 nor raised above 8.5.
7. **Salinity.** The Total Dissolved Solids in the Middle Fork of the American River shall not exceed 125 mg/L as a 90th percentile. (See page III-6.01 and page III-7.0 of the Basin Plan).
8. **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.
9. **Settleable Substances.** Substances to be present in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.
10. **Suspended Material.** Suspended material to be present in concentrations that cause nuisance or adversely affect beneficial uses.
11. **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.

12. **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.
13. **Toxicity.** Toxic substances to be present, individually or in combination, in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.
14. **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. 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.

h. 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.

i. 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.

j. 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)].

k. 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.

l. 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, and future revisions thereto, in Attachment E.

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. **Mercury.** If mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted, this Order shall be reopened and the interim mass effluent limitation modified (higher or lower) or 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 the need for a mercury offset program for the Discharger.

c. **Whole Effluent Toxicity.** As a result of a Toxicity Reduction Evaluation (TRE), this Order may be reopened to include a numeric or narrative 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.

d. **Drinking Water Policy.** On 26 July 2013 the Central Valley Water Board adopted Resolution 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 Workplan and includes procedures for accelerated chronic toxicity monitoring and TRE initiation.

i. **Initial Investigative TRE Workplan.** Within 90 days of the effective date of this Order, the Discharger shall submit to the Central Valley Water Board an Initial Investigative TRE Workplan for approval by the Executive Officer. This should be a one to two page document including, at a minimum:

(a) A description of the investigation and evaluation techniques that will be used to identify potential causes and sources of effluent toxicity, effluent variability, and treatment system efficiency;

(b) A description of the facility's methods of maximizing in-house treatment efficiency and good housekeeping practices, and a list of all chemicals used in operation of the facility; and

(c) A discussion of who will conduct the Toxicity Identification Evaluation (TIE), if necessary (e.g., an in-house expert or outside contractor).

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. **Liquid Mining Waste Discharge Characterization.** Monitoring locations VAD-001 and INF-001 are described in the Monitoring and Reporting Program, Attachment E, Table E-1. The character of the liquid mining waste will be different at VAD-001 (Ventilation Adit also known as the V-Adit) than at INF-001 because, the discharge from the V-Adit travels overland for approximately 1/3 mile to the treatment system/infiltration gallery. During the overland travel, the factors affecting the discharge are not known but could include infiltration, exfiltration, storm flows, and pH changes. The Discharger shall characterize the liquid mining waste discharge quarterly for two years at VAD-001 and at INF-001, beginning with the 1st quarter of 2016, as described in Table E-7 and E-9 of Attachment E, the MRP. Results of the quarterly monitoring shall be submitted with the quarterly SMRs.

The liquid mining waste characterization study shall be conducted according to the following schedule:

Task	Compliance Date
i. Begin liquid mining waste characterization study	**1 April 2016**
ii. End liquid mining waste characterization study	**1 April 2018**
ii Submit final report on the liquid mining waste characterization study	**1 August 2018**

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. An annual review and semi-annual monitoring of potential sources of the reportable priority pollutant(s), which may include fish tissue monitoring and other bio-uptake sampling;

ii. Quarterly monitoring for the reportable priority pollutant(s) in the influent to the wastewater treatment system;

iii. Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutant(s) in the effluent at or below the effluent limitation;

iv. Implementation of appropriate cost-effective control measures for the reportable priority pollutant(s), consistent with the control strategy; and

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

(a) All PMP monitoring results for the previous year;

(b) A list of potential sources of the reportable priority pollutant(s);

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

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

4. Construction, Operation and Maintenance Specifications.

a. Treatment System/Infiltration Gallery Operation and Maintenance Specifications. The treatment system/infiltration gallery must be operated in accordance with an operations and maintenance plan that assures continued optimal operation of the treatment system/infiltration gallery. The Discharger shall submit an operations and maintenance plan for the existing treatment system/infiltration gallery as follows:

Task	Compliance Date
i. Submit operations and maintenance plan for approval by the Executive Officer.	**1 April 2016**

b. Treatment System Rehabilitation and/or New Construction Specifications. The existing bioreactor/infiltration gallery was in disrepair during the inspections in 2013 and 2014. Due to the disrepair, the bioreactor/infiltration gallery is unlikely to be operating as designed and representative samples could not be collected at INF-001 or EFF-001. Representative samples must be collected by the Discharger at INF-001 and EFF-001 as specified in Attachment E, the Monitoring and Reporting Program. The only existing bioreactor/infiltration gallery effluent sample collected, in April 2013 by the Discharger, indicates that the bioreactor is not effectively removing arsenic; the mine's V-Adit arsenic discharge concentration was 37 µg/L and the bioreactor treated effluent discharge was 28 µg/L. The existing permit's arsenic monthly average effluent limit is 10 µg/L from 1 June to 30 November, and 115 µg/L from 1 December to 31 May. Any discharges to the Middle Fork American River between 1 June and 30 November will likely exceed the arsenic effluent limitations. In 2012, the influent to the treatment system contained concentrations of copper and lead above the calculated criteria. No data exists regarding copper and lead concentrations in the treated effluent, and the bioreactor/infiltration gallery is now in disrepair. In 2002, concentrations of iron from the V-Adit exceeded the water quality criterion for iron. In the 2013 sample, TDS data collected from the V-Adit was reported at 870 mg/L; exceeding the TDS criterion. The treatment system/infiltration gallery must be rehabilitated, updated, and/or replaced as required in the following Task Schedule:

Task	Date Due
i Submit Assessment of Alternatives for treatment system rehabilitation and/or construction of new treatment units, with selected alternative.	**1 January 2017**
ii. Submit Workplan/Work Schedule for selected alternative for approval by Executive Officer.	**1 October 2017**
iii. Submit Report showing completion of work outlined in Task ii.	**1 December 2019**

5. Special Provisions for Municipal Facilities (POTW's Only) – Not Applicable

6. Other Special Provisions – Not Applicable

7. Compliance Schedules – Not Applicable

VII. COMPLIANCE DETERMINATION

1. Average Dry Weather Flow Effluent Limitations – Compliance with the average dry weather flow effluent limitations will be determined annually based on the average daily flow over three consecutive dry weather months (e.g., July, August, and September).

2. 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:

a. 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).

b. 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:

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

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

iii. 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.

iv. 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.

3. 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.

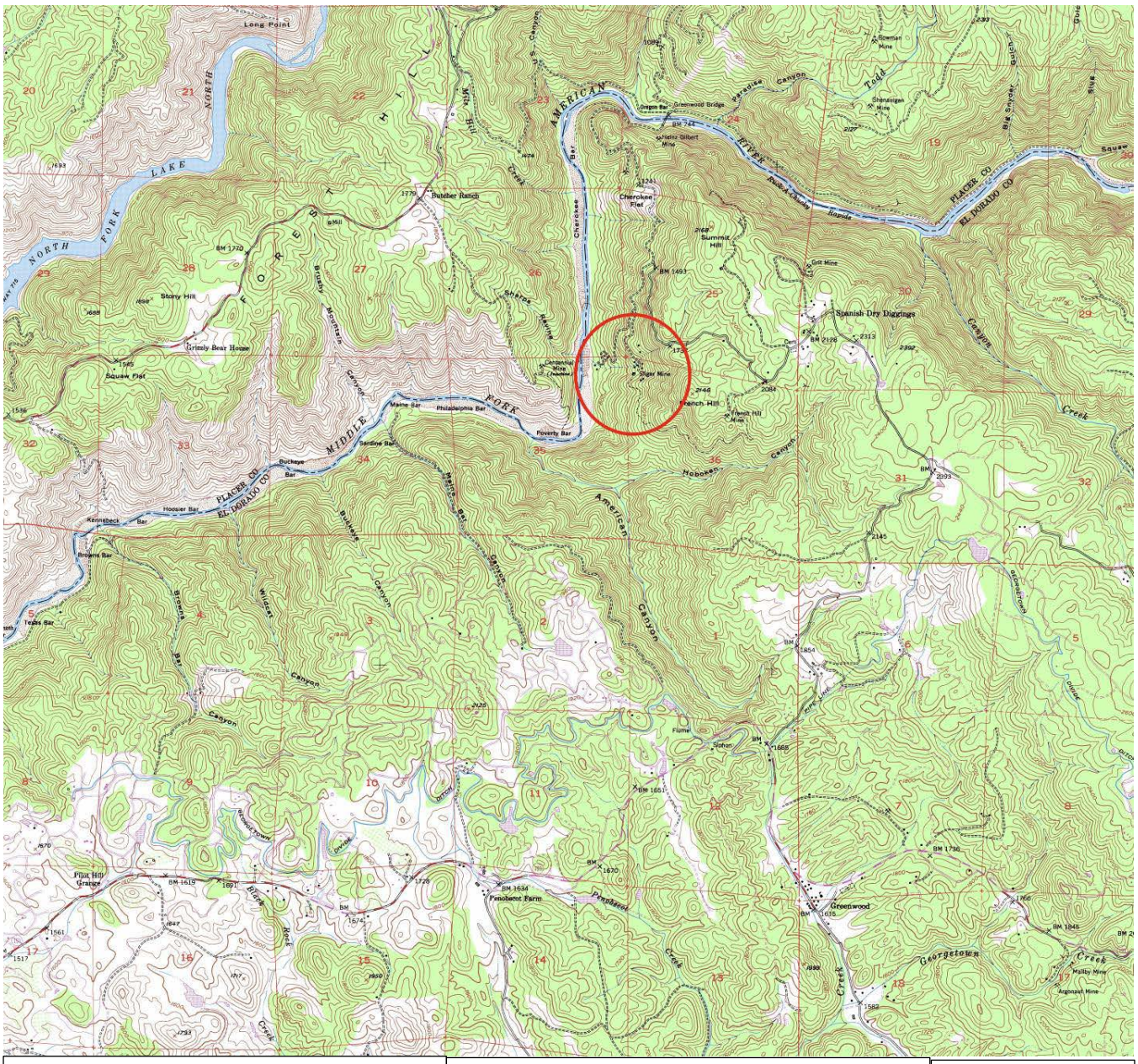
Standard Deviation (σ)
Standard Deviation is a measure of variability that is calculated as follows:

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

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

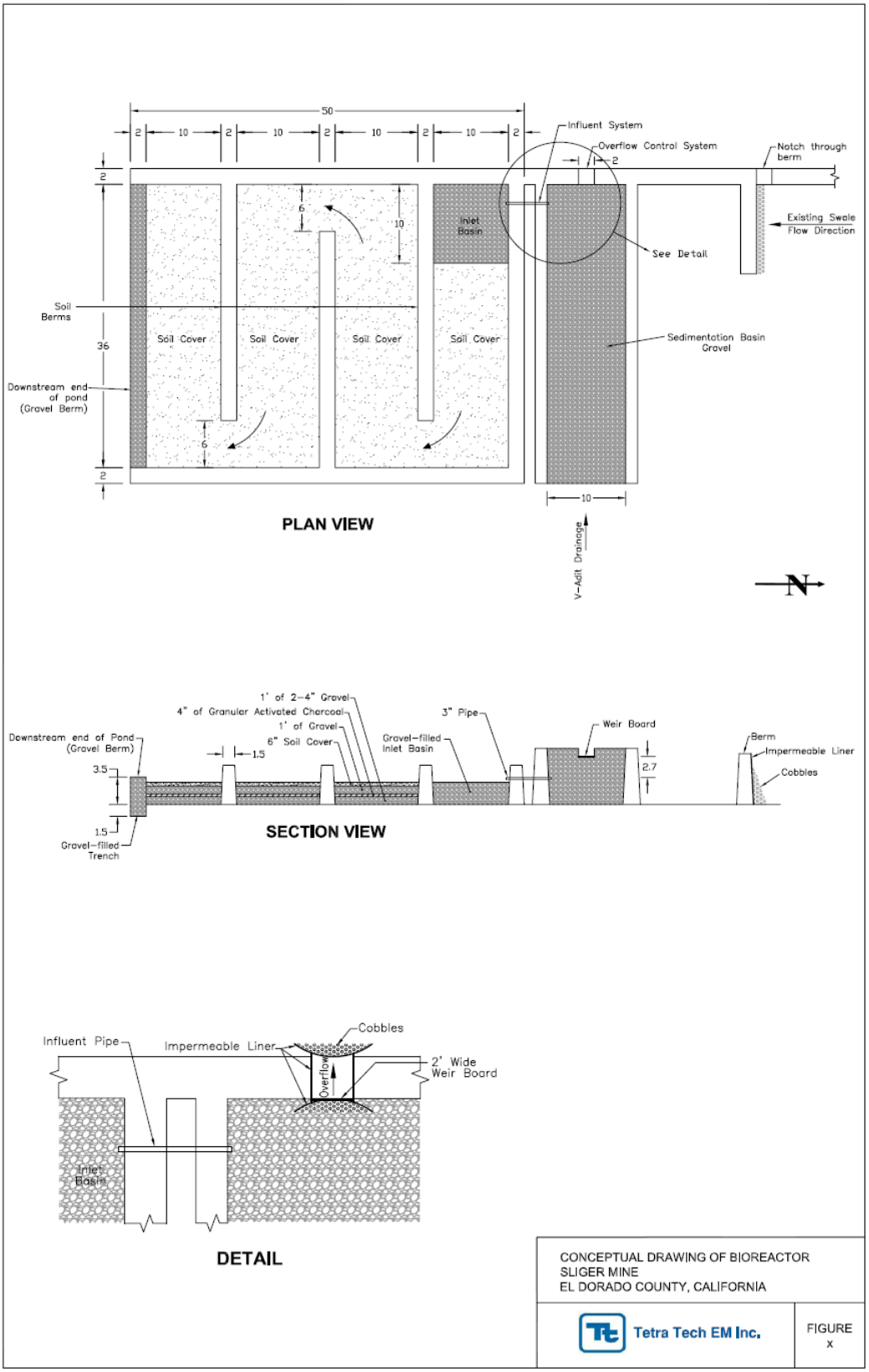
Toxicity Reduction Evaluation (TRE)
TRE is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first 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: Greenwood, Calif. U.S.G.S Topographic Map 7.5 Minute Quadrangle Photorevised 1973 Not to scale	SITE LOCATION MAP US Department of the Interior Bureau of Reclamation Sliger Mine El Dorado 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

Contents

I. General Monitoring Provisions E-2
II. Monitoring Locations E-3
III. Influent Monitoring Requirements E-3
  A. Monitoring Location INF-001 ..... E-3
IV. Effluent Monitoring Requirements E-4
  A. Monitoring Location EFF-001 ..... E-4
V. Whole Effluent Toxicity Testing Requirements E-5
VI. Land Discharge Monitoring Requirements – Not Applicable E-7
VII. Recycling Monitoring Requirements – Not Applicable E-7
VIII. Receiving Water Monitoring Requirements E-7
  A. Monitoring Location Surface Water RSW-001 ..... E-7
  B. Monitoring Location Surface Water RSW-002 ..... E-8
  C. Monitoring Location Groundwater - Not Applicable E-8
IX. Other Monitoring Requirements E-9
  A. Effluent and Receiving Water Characterization E-9
X. Reporting Requirements E-14
  A. General Monitoring and Reporting Requirements E-14
  B. Self-Monitoring Reports (SMRs) E-14
  C. Discharge Monitoring Reports (DMRs) E-16
  D. Other Reports E-17

Tables

Table E-1. Monitoring Station Locations E-3
Table E-2. Influent Monitoring E-3
Table E-3. Effluent Monitoring E-4
Table E-4. Chronic Toxicity Testing Dilution Series E-6
Table E-5. Receiving Water Monitoring Requirements RSW-001 ..... E-7
Table E-6. Receiving Water Monitoring Requirements RSW-002 ..... E-8
Table E-7. Liquid Mining Waste Discharge Characterization E-11
Table E-8. Effluent and Receiving Water Characterization Monitoring E-15
Table E-9. Monitoring Periods and Reporting Schedule E-16
Table E-10. Reporting Requirements for Special Provisions Reports E-17

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 Resources Control 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, temperature, and residual chlorine, 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, temperature, and residual chlorine 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 USEPA 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	**VAD-001**	Prior to the treatment system; discharge from the mine at the V-Adit (formerly EFF-002)
--	**INF-001**	Prior to the treatment system; inflow to the treatment system/infiltration gallery
001	**EFF-001**	Downstream from the last connection through which treated effluent from the V-Adit can be admitted into the outfall, prior to discharge to the receiving water; effluent from the treatment system (latitude 38º 56' 26" N; longitude 120º 56' 13" W)
--	**RSW-001**	50 feet upstream from the point of discharge into the Middle Fork of the American River
--	**RSW-002**	100 feet downstream from the point of discharge into the Middle Fork of the American River

The North latitude and West longitude information in Table E-1 are approximate for administrative purposes.

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INF-001

1. The Discharger shall monitor influent to the treatment system at INF-001 as follows:

Table E-2. Influent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow, diverted through the treatment system/infiltration gallery for treatment/infiltration	mgd	Measure/ Meter	1/Quarter	[1]
Flow, diverted around the treatment system/infiltration gallery for discharge directly to	mgd	Measure/ Meter	1/Quarter	[1]

Middle Fork American River at Discharge Point 001				

[1] Inability to collect quarterly flow data, after making three attempts per quarter, at the treatment system/infiltration gallery due to unsafe conditions shall be described and documented (e.g with photographs) in an addendum to the quarterly monitoring report.

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

1. The Discharger shall monitor Discharge Point 001 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-3. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	mgd	Measure/Meter	[1]	--
pH	pH Units	Grab	[1, 4, 5]	[2]
Temperature [3]	°F (°C)	Grab	[1, 5]	[2]
Dissolved Oxygen	mg/L	Grab	[1, 5]	[2]
Total Dissolved Solids	mg/L	Grab	[1, 5]	[2]
Hardness (as $CaCO_3$) [6]	mg/L	Grab	[1, 4, 5]	[2]
Chloride	mg/L	Grab	[1, 5]	[2]
Arsenic, Total Recoverable	µg/L	Grab	[1, 4, 5]	[2]
Copper, Total Recoverable [6]	µg/L	Grab	[1, 4, 5]	[2]
Iron, Total Recoverable	µg/L	Grab	[1, 5]	[2]
Lead, Total Recoverable [6]	µg/L	Grab	[1, 4, 5]	[2]
Priority Pollutants and Other Constituents of Concern [6]	See Section IX.A	See Section IX.A	See Section IX.A [4, 5]	[2, 7]
Whole Effluent Toxicity (see Section V. below)	--	--	--	--

[1] Quarterly sample collection. Inability to collect quarterly samples, after making three attempts per quarter, at the treatment system/infiltration gallery shall be described and documented (e.g. with photographs) in an addendum to the quarterly monitoring report.

[2] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136. For priority pollutant constituents with effluent limitations, detection limits shall be below the effluent limitations. If the lowest minimum level (ML) published in Appendix 4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Plan or SIP) is not below the effluent limitation, the detection limit shall be the lowest ML. For priority pollutant constituents without effluent limitations, the detection limits shall be equal to or less than the lowest ML published in Appendix 4 of the SIP. [Where no methods are specified for a given pollutant, by methods approved by this Regional Water Board or the State Water Board.]

[3] Effluent temperature monitoring shall be at the outfall location.

[4] Priority pollutants shall be sampled quarterly in 2020 and shall be conducted concurrently with upstream and downstream receiving water monitoring for hardness (as CaCO3) and pH.

[5] Concurrent with receiving surface water sampling.

[6] Hardness samples shall be collected concurrently with the metals samples collected during the Priority Pollutant sampling program and with copper and lead sampling.

[7] 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 E of this Order, Table E-7).

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

A. Acute Toxicity Testing. The Discharger shall conduct annual acute toxicity testing to determine whether the treatment system effluent is contributing acute toxicity to the receiving water. Acute toxicity shall be monitored at Monitoring Location EFF-001 during the 1 January to 31 March quarterly monitoring period. Inability to collect samples for the acute toxicity test, after making three attempts shall be described and documented (e.g. with photographs) in an addendum to the quarterly monitoring report. The Discharger shall meet the following acute toxicity testing requirements:

1. *Monitoring Frequency* – The Discharger shall perform annual acute toxicity testing between 1 December and 31 May.
2. *Sample Types* – The Discharger may use flow-through or static renewal testing. For static renewal testing, the samples shall be 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.
3. *Test Species* – Test species shall be fathead minnows (*Pimephales promelas*).
4. *Methods* – The acute toxicity testing samples shall be analyzed using EPA-821-R-02-012, Fifth Edition. Temperature and pH shall be recorded at the time of sample collection. No pH adjustment may be made unless approved by the Executive Officer.
5. *Test Failure* – If an acute toxicity test does not meet all test acceptability criteria, as specified in the test method, the Discharger must re-sample and re-test as soon as possible, not to exceed 7 days following notification of test failure.

B. Chronic Toxicity Testing. The Discharger shall conduct three species chronic toxicity testing to determine whether the treatment system effluent is contributing chronic toxicity to the receiving water. 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 be 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-4b, 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-4. Chronic Toxicity Testing Dilution Series

	Dilutions [a] (%)					Control
Sample	**100**	**75**	**50**	**25**	**12.5**	
% Effluent	100	75	50	25	12.5	0
% Control Water	0	25	50	75	87.5	100

[a] Receiving water control or laboratory water control may be used as the diluent.

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.)

C. 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.

D. 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 with the quarterly self monitoring report, 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.

Additionally, the quarterly self-monitoring reports shall contain an updated chronology of chronic toxicity test results expressed in TUc, and organized by test species, type of test (survival, growth or reproduction), and monitoring frequency, i.e., either quarterly, monthly, accelerated, or Toxicity Reduction Evaluation (TRE).

2. **Acute WET Reporting.** Acute toxicity test results shall be submitted with the quarterly discharger self-monitoring reports and reported as percent survival.

3. **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.

4. **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 Location RSW-001

1. The Discharger shall monitor the Middle Fork of the American River at Monitoring Location RSW-001 as follows:

Table E-5. Receiving Water Monitoring Requirements – RSW-001

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	mgd	[1]	[4, 5]	--
pH	pH Units	Grab	[4, 5]	[2]
Temperature	°F (°C)	Grab	[4, 5]	[2]
Dissolved Oxygen	mg/L	Grab	[4, 5]	[2]
Total Dissolved Solids	mg/L	Grab	[4, 5]	[2]
Hardness (as $CaCO_3$)	mg/L	Grab	[4, 5]	[2]
Chloride	mg/L	Grab	[4, 5]	[2]

Arsenic, Total Recoverable	µg/L	Grab	4, 5	2
Copper, Total Recoverable	µg/L	Grab	4. 5	2
Iron, Total Recoverable	µg/L	Grab	4, 5	2
Lead, Total Recoverable	µg/L	Grab	4, 5	2
Priority Pollutants	µg/L	Grab	3, 4	2

1 Estimate of receiving water flow, recorded for each day of sample collection. Use Placer County Water Agency gauging station, hourly measurements at Middle Fork American River near OXBOW PH.

2 Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136. For priority pollutant constituents with effluent limitations, detection limits shall be below the effluent limitations. If the lowest minimum level (ML) published in Appendix 4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Plan or SIP) is not below the effluent limitation, the detection limit shall be the lowest ML. For priority pollutant constituents without effluent limitations, the detection limits shall be equal to or less than the lowest ML published in Appendix 4 of the SIP. [Where no methods are specified for a given pollutant, by methods approved by this Regional Water Board or the State Water Board.]

3 Priority pollutants shall be sampled quarterly in 2020 and shall be conducted concurrently with effluent and receiving water monitoring for hardness (as CaCO3) and pH.

4 Concurrent with any effluent sampling.

5 Samples shall be taken twice per year; once during the period from 1 June to 30 November and once during the period 1 December to 31 May

6 Hardness samples shall be collected concurrently with the metals samples collected during the Priority Pollutant sampling program and with copper and lead sampling.

B. Monitoring Location RSW-002

1. The Discharger shall monitor the Middle Fork of the American River at Monitoring Location RSW-002 as follows:

Table E-6. Receiving Water Monitoring Requirements – RSW-002

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
pH	pH Units	Grab	2, 3	1
Temperature	°F (°C)	Grab	2, 3	1
Dissolved Oxygen	mg/L	Grab	2, 3	1
Electrical Conductivity @ 25°C	µmhos/cm	Grab	2, 3	1
Hardness (as $CaCO_3$) [4]	mg/L	Grab	2, 3	1
Chloride	mg/L	Grab	2, 3	1
Arsenic, Total Recoverable	µg/L	Grab	2, 3	1
Copper, Total Recoverable [4]	µg/L	Grab	2, 3	1
Iron, Total Recoverable	µg/L	Grab	2, 3	1
Lead, Total Recoverable [4]	µg/L	Grab	2, 3	1

1 Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136. For priority pollutant constituents with effluent limitations, detection limits shall be below the effluent limitations. If the lowest minimum level (ML) published in Appendix 4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Plan or SIP) is not below the effluent limitation, the detection limit shall be the lowest ML. For priority pollutant constituents without effluent limitations, the detection limits shall be equal to or less than the lowest ML published in Appendix 4 of the SIP. [Where no methods are specified for a given pollutant, by methods approved by this Regional Water Board or the State Water Board.]

2 Concurrent with any effluent sampling.

3 Samples shall be taken twice per year; once during the period from 1 June to 30 November and once during the period 1 December to 31 May

4 Hardness samples shall be collected concurrently with the metals samples collected with copper and lead sampling.

C. Monitoring Location – Groundwater – Not Applicable

IX. OTHER MONITORING REQUIREMENTS

A. Quarterly Facility Inspections

The Discharger shall conduct Quarterly Facility Inspections of the existing and any new units of the treatment system/infiltration gallery to make observations, statements, take photographs, and maintain the treatment system/infiltration gallery, piping, and flow structures as follows:

- Visual inspection of the treatment system/infiltration gallery berms and levees, influent, and effluent, flow/no flow to the river;
- Statement by inspecting staff regarding condition of berms, levees, and other components of the treatment system/infiltration gallery;
- Statement by inspecting staff that there is or is not flow to the Middle Fork American River from the V-Adit;
- Statement by inspecting staff that there is or is not flow to the River from the treatment system/infiltration gallery;
- Include any documentation (e.g., photographs) of the treatment system/infiltration gallery and/or of unsafe conditions that prevent quarterly sampling; and
- Address any corrective actions that require future activity at the treatment system/infiltration gallery with a schedule for conducting the repairs.

Observations, statements, photographs, and maintenance needs shall be reported in an addendum to the quarterly SMRs.

B. Liquid Mining Waste Discharge Characterization. Monitoring locations VAD-001 and INF-001 are described in the Monitoring and Reporting Program, Attachment E, Table E-1. The character of the liquid mining waste will be different at VAD-001 (V-Adit) than at INF-001 because, the discharge from the V-Adit travels overland for approximately 1/3 mile to the treatment system/infiltration gallery. During the overland travel, the factors affecting the discharge are not known but could include infiltration, exfiltration, storm flows, and pH changes. The Discharger shall characterize the liquid mining waste discharge quarterly for two years at VAD-001 and at INF-001, beginning on 1 April 2016 (the first day of the second quarter of 2016, as described in Table E-9, below) and ending 31 March 2018. The following constituents shall be included in the study:

Table E-7. Liquid Mining Waste Discharge Characterization at VAD-001 and INF-001

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	mgd	Grab/Continuous	Quarterly [1]	Measure
pH	pH Units	Grab	Quarterly [1, 3]	[2]
Dissolved Oxygen	mg/L	Grab	Quarterly [1, 3]	[2]
Electrical Conductivity	µmhos/cm	Grab	Quarterly [1, 3]	[2]
Hardness (as $CaCO_3$)	mg/L	Grab	Quarterly [1, 3]	[2, 4]
Aluminum, Total Recoverable	µg/L	Grab	Quarterly [1, 3]	[2]
Arsenic, Total Recoverable	µg/L	Grab	Quarterly [1, 3]	[2]

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Barium, Total Recoverable	µg/L	Grab	Quarterly [1, 3]	[2]
Boron	µg/L	Grab	Quarterly [1, 3]	[2]
Cadmium, Total Recoverable	µg/L	Grab	Quarterly [1, 3]	[2, 4]
Calcium	µg/L	Grab	Quarterly [1, 3]	[2]
Chloride	mg/L	Grab	Quarterly [1, 3]	[2]
Chromium, Total Recoverable	µg/L	Grab	Quarterly [1, 3]	[2, 4]
Copper, Total Recoverable	µg/L	Grab	Quarterly [1, 3]	[2, 4]
Cyanide	µg/L	Grab	Quarterly [1, 3]	[2]
Iron, Total Recoverable	µg/L	Grab	Quarterly [1, 3]	[2]
Lead, Total Recoverable	µg/L	Grab	Quarterly [1, 3]	[2, 4]
Manganese, Total Recoverable	µg/L	Grab	Quarterly [1, 3]	[2]
Mercury, Total Recoverable	µg/L	Grab	Quarterly [1, 3]	[2]
Nickel, Total Recoverable	µg/L	Grab	Quarterly [1, 3]	[2. 4]
Nitrate	mg/L	Grab	Quarterly [1, 3]	[2]
Phosphorus	mg/L	Grab	Quarterly [1, 3]	[2]
Potassium	mg/L	Grab	Quarterly [1, 3]	[2]
Selenium	µg/L	Grab	Quarterly [1, 3]	[2]
Silver, Total Recoverable	µg/L	Grab	Quarterly [1, 3]	[2, 4]
Sulfate	mg/L	Grab	Quarterly [1, 3]	[2]
Zinc, Total Recoverable	µg/L	Grab	Quarterly [1, 3]	[2, 4]

[1] Constituents shall be monitored quarterly, for two years after adoption of this Order. Inability to collect quarterly samples after three attempts per quarter at the V-Adit due to unsafe conditions shall be described and documented (e.g with photographs) in an addendum to each quarterly monitoring report.

[2] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136. For priority pollutant constituents with effluent limitations, detection limits shall be below the effluent limitations. If the lowest minimum level (ML) published in Appendix 4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Plan or SIP) is not below the effluent limitation, the detection limit shall be the lowest ML. For priority pollutant constituents without effluent limitations, the detection limits shall be equal to or less than the lowest ML published in Appendix 4 of the SIP. [Where no methods are specified for a given pollutant, by methods approved by the Central Valley Water Board or the State Water Board.]

[3] For constituents that are Priority Pollutants, and for Other Constituents of Concern, the reporting levels 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 E of this Order, Table E-7).

[4] Hardness samples shall be collected concurrently with the metals samples.

Results of the quarterly monitoring shall be submitted as an addendum to the quarterly SMRs.

C. Effluent and Receiving Water Characterization

1. **Quarterly Monitoring.** Quarterly 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-8, below. Quarterly monitoring shall be conducted during the year 2020 (4 consecutive samples, evenly distributed throughout the year) and the results of such monitoring shall be submitted to the Central Valley Water Board with the quarterly 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 receiving water samples shall be taken as grab samples. Effluent samples shall be taken as described in **Table E-8**, below.

Table E-8. Effluent and Receiving Water Characterization Monitoring

Parameter [3]	Units	Effluent Sample Type [4]	Maximum Reporting Level[1]
2- Chloroethyl vinyl ether	µg/L	Grab	1
Acrolein	µg/L	Grab	2
Acrylonitrile	µg/L	Grab	2
Benzene	µg/L	Grab	0.5
Bromoform	µg/L	Grab	0.5
Carbon Tetrachloride	µg/L	Grab	0.5
Chlorobenzene	µg/L	Grab	0.5
Chloroethane	µg/L	Grab	0.5
Chloroform	µg/L	Grab	2
Chloromethane	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
Hexachlorobutadiene	µg/L	Grab	1
Hexachloroethane	µg/L	Grab	1
Methyl bromide (Bromomethane)	µg/L	Grab	1
Naphthalene	µg/L	Grab	10
Parachlorometa cresol	µg/L	Grab	
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
Methyl-tert-butyl ether (MTBE)	µg/L	Grab	
Trichlorofluoromethane	µg/L	Grab	
1,1,1-Trichloroethane	µg/L	Grab	0.5
1,1-dichloroethane	µg/L	Grab	0.5
1,1-dichloroethylene	µg/L	Grab	0.5
1,2-dichloropropane	µg/L	Grab	0.5
1,3-dichloropropylene	µg/L	Grab	0.5
1,1,2,2-tetrachloroethane	µg/L	Grab	0.5
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	Grab	0.5
1,2,4-trichlorobenzene	µg/L	Grab	1
1,2-dichoroethane	µg/L	Grab	0.5
1,2-dichlorobenzene	µg/L	Grab	0.5
1,3-dichlorobenzene	µg/L	Grab	0.5
1,4-dichlorobenzene	µg/L	Grab	0.5
Styrene	µg/L	Grab	
Xylenes	µg/L	Grab	
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

Parameter [3]	Units	Effluent Sample Type [4]	Maximum Reporting Level[1]
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 [2]	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
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

Parameter [3]	Units	Effluent Sample Type [4]	Maximum Reporting Level[1]
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	
Nickel	µg/L	Grab	20
Selenium	µg/L	Grab	5
Silver	µg/L	Grab	0.25
Thallium	µg/L	Grab	1
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
Aldrin	µg/L	Grab	0.005
beta-Endosulfan	µg/L	Grab	0.01
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
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-Hexachlorocyclohexane)	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
Toxaphene	µg/L	Grab	
2,3,7,8-TCDD (Dioxin)	µg/L	Grab	
Boron	µg/L	Grab	
Chloride	mg/L	Grab	
Flow	MGD	Meter/Measure	
Hardness (as $CaCO_3$)	mg/L	Grab	
Mercury, Methyl	ng/L	Grab	
Nitrate (as N)	mg/L	Grab	
Nitrite (as N)	mg/L	Grab	
pH	Std Units	Grab	
Phosphorus, Total (as P)	mg/L	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.

[2] In order to verify if bis (2-ethylhexyl) phthalate is truly present, the Discharger shall take steps to assure that sample containers, sampling apparatus, and analytical equipment are not sources of the detected contaminant.
[3] The Discharger is not required to conduct effluent monitoring for constituents that have already been sampled in a given month, as required in Table E-3, except for hardness, pH, and temperature, which shall be conducted concurrently with the effluent sampling.
[4] 24-hour flow proportional composite.

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 (SMRs)

1. The Discharger shall electronically submit SMRs 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** SMRs including the results of all required monitoring using U.S. EPA-approved test methods or other test methods specified in this Order. SMRs 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. The Discharger shall include observations, photographs, statements, and maintenance needs made during the Quarterly Facility Inspections in an addendum to each quarterly SMR.
4. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-9. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Continuous	Permit effective date	All	Submit with quarterly SMR
1/Hour	Permit effective date	Hourly	Submit with quarterly SMR
1/Day	Permit effective date	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.	Submit with quarterly SMR
1/Week	Permit effective date	Sunday through Saturday	Submit with quarterly SMR
1/Month	Permit effective date	1st day of calendar month through last day of calendar month	Submit with quarterly SMR
1/Quarter	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 of following year
1/Year	Permit effective date	1 January through 31 December	1 February of following year

5. **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.

6. **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.

7. The Discharger shall submit SMRs 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.

c. The Discharger shall attach an addendum to the SMR containing the Quarterly Facility Inspection observations, photographs, statements, and maintenance needs, with a schedule for completion of any repairs.

8. The Discharger shall submit in the SMRs calculations and reports in accordance with the following requirements:

a. **Annual Average Limitations**. For constituents with effluent limitations specified as "annual average" the Discharger shall report the annual average in the January Quarterly SMR. The annual average shall be calculated as the average of the samples gathered for the year defined as 1 December through 30 November.

b. **Dissolved Oxygen Receiving Water Limitations**. The Discharger shall calculate and report monthly in the self-monitoring report: i) the dissolved oxygen concentration, ii) the percent of saturation in the main water mass, and iii) the 95th percentile dissolved oxygen concentration.

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 (DMRs)

1. At any time during the term of this permit, the State Water Board or Central Valley Water Board may notify the Discharger to electronically submit DMRs. Until such notification is

given specifically for the electronic submittal of DMR's, the Discharger shall submit DMR's in accordance with the requirements described below.

2. DMRs must be signed and certified as required by the standard provisions (Attachment D). The Discharger shall submit the original DMR and one copy of the DMR to the address listed below:

STANDARD MAIL	FEDEX/UPS/ OTHER PRIVATE CARRIERS
State Water Resources Control Board Division of Water Quality c/o DMR Processing Center PO Box 100 Sacramento, CA 95812-1000	State Water Resources Control Board Division of Water Quality c/o DMR Processing Center 1001 I Street, 15th Floor Sacramento, CA 95814

3. All discharge monitoring results must be reported on the official U.S. EPA pre-printed DMR forms (EPA Form 3320-1) or on self-generated forms that follow the exact same format of EPA Form 3320-1.

D. Other Reports

1. Special Study Reports and Progress Reports. As specified in the compliance time schedules required in the Special Provisions contained in section VI of this Order, special study and progress reports shall be submitted in accordance with the following reporting requirements. At minimum, the progress reports shall include a discussion of the status of final compliance, whether the Discharger is on schedule to meet the final compliance date, and the remaining tasks to meet the final compliance date.

Table E-10. Reporting Requirements for Special Provisions Reports

Special Provision	Reporting Requirements
Submit treatment system operation and maintenance plan (VI.C.4.a)	**1 April 2016**
Begin liquid mining waste discharge characterization study (VI.C.2.b)	**1 April 2016**
Submit Assessment of Alternatives for system rehabilitation and/or new units (VI.C.4.b, task i)	**1 January 2017**
Submit Workplan and Schedule for Rehabilitation of existing bioreactor and/or installation of new treatment/infiltration units (VI.C.4.b, task ii)	**1 October 2017**
End liquid mining waste discharge characterization study (VI.C.2.b)	**1 April 2018**
Submit final report on liquid mining waste discharge characterization study (VI.C.2.b)	**1 August 2018**
Submit report confirming completion of rehabilitation and/or installation of new units (VI.C.4.b, task iii)	**1 December 2019**

2. The Discharger shall report the results of any special studies, acute and chronic toxicity testing, TRE/TIE, and PMP required by Special Provisions – VI.C.2, 3, and 4. The Discharger shall submit reports in compliance with SMR reporting requirements described in subsection X.B above.

3. Within 60 days of permit adoption, the Discharger shall submit a report outlining reporting levels (RL's), 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 (ML's) 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 RL's, 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 E-8** (Attachment E) provides required maximum reporting levels in accordance with the SIP.

4. **Annual Operations Report.** By 30 January of each year, the Discharger shall submit a written report to the Executive Officer containing the following:

   a. The names and general responsibilities of all persons employed at the Facility.

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

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

   d. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the bioreactor/infiltration gallery currently constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.

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

ATTACHMENT F – FACT SHEET

Contents

I. Permit Information F-3
II. Facility Description F-4
A. Description of Wastewater Treatment and Controls F-5
B. Discharge Points and Receiving Waters F-7
C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data F-7
D. Compliance Summary F-8
E. Planned Changes F-9
III. Applicable Plans, Policies, and Regulations F-9
A. Legal Authorities F-10
B. California Environmental Quality Act (CEQA) F-10
C. State and Federal Laws, Regulations, Policies, and Plans F-10
D. Impaired Water Bodies on CWA 303(d) List F-12
E. Other Plans, Polices and Regulations – Not Applicable F-12
IV. Rationale For Effluent Limitations and Discharge Specifications F-12
A. Discharge Prohibitions F-13
B. Technology-Based Effluent Limitations F-13
1. Scope and Authority F-14
2. Applicable Technology-Based Effluent Limitations F-14
C. Water Quality-Based Effluent Limitations (WQBEL's) F-15
1. Scope and Authority F-15
2. Applicable Beneficial Uses and Water Quality Criteria and Objectives F-15
3. Determining the Need for WQBEL's F-25
4. WQBEL Calculations F-40
5. Whole Effluent Toxicity (WET) F-41
D. Final Effluent Limitation Considerations F-44
1. Mass-based Effluent Limitations – Not Applicable F-44
2. Averaging Periods for Effluent Limitations F-44
3. Satisfaction of Anti-Backsliding Requirements F-44
4. Antidegradation Policies F-45
5. Stringency of Requirements for Individual Pollutants F-46
E. Interim Effluent Limitations – Not Applicable F-46
F. Land Discharge Specifications – Not Applicable F-46
G. Recycling Specifications – Not Applicable F-46
V. Rationale for Receiving Water Limitations F-46
A. Surface Water F-46
B. Groundwater – Not Applicable F-47
VI. Rationale for Provisions F-47
A. Standard Provisions F-47
B. Special Provisions F-47
1. Reopener Provisions F-47
2. Special Studies and Additional Monitoring Requirements F-48
3. Best Management Practices and Pollution Prevention F-51
4. Construction, Operation, and Maintenance Specifications F-52
5. Special Provisions for Municipal Facilities (POTW's Only) – Not Applicable F-53
6. Other Special Provisions F-53

7. Compliance Schedules – Not Applicable F-53
VII. Rationale for Monitoring and Reporting Requirements F-53
A. Influent Monitoring F-53
B. Effluent Monitoring F-53
C. Whole Effluent Toxicity Testing Requirements F-54
D. Receiving Water Monitoring F-54
1. Surface Water F-54
2. Groundwater – Not Applicable F-54
E. Other Monitoring Requirements F-54
VIII. Public Participation F-55
A. Notification of Interested Parties F-55
B. Written Comments F-55
C. Public Hearing F-55
D. Reconsideration of Waste Discharge Requirements F-56
E. Information and Copying F-56
F. Register of Interested Persons F-56
G. Additional Information F-56

Tables

Table F-1. Facility Information F-3
Table F-1a. Water Quality Parameters in V-Adit and Middle Fork American River F-7
Table F-2a. Historic Effluent Limitations and Monitoring Data for EFF-001, 1 June to 30 November ... F-8
Table F-2b. Historic Effluent Limitations and Monitoring Data for VAD-001, 1 December to 31 May ... F-8
Table F-3. Basin Plan Beneficial Uses F-10
Table F-4. Summary of Technology-based Effluent Limitations F-14
Table F-5. Summary of Dilution Credits in Previous Order R5-2008-0168 ..... F-21
Table F-6. Summary of Effluent Limitations and Dilution Credits F-22
Table F-7. Hardness Values F-24
Table F-8. Summary of CTR Criteria for Hardness-dependent Metals F-25
Table F-9. Copper Effluent Limitations F-28
Table F-10. Lead Effluent Limitations F-28
Table F-11. Cadmium CTR Criteria Comparison F-29
Table F-12. Chromium CTR Criteria Comparison F-30
Table F-13. Nickel CTR Criteria Comparison F-31
Table F-14. Silver CTR Criteria Comparison F-32
Table F-15. Zinc CTR Criteria Comparison F-33
Table F-16. Copper CTR Criteria Comparison F-35
Table F-17. Lead CTR Criteria Comparison F-38
Table F-18. Salinity Water Quality Criteria/Objectives F-39
Table F-19. Summary of Water Quality-Based Effluent Limitations F-41
Table F-20 Summary of Final Effluent Limitations F-48

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	5A09NP00010
CIWQS Facility Place ID	257425
Discharger	U.S. Department of the Interior, Bureau of Reclamation
Name of Facility	Sliger Mine
Facility Address	Approximately 1,500 feet south of the junction of Sliger Mine Road and Fox Grove Lane
	El Dorado County, California 95635
	El Dorado County
Facility Contact, Title, Phone	Michael Biever, Point of Contact, 916-989-7170
Authorized Person to Sign and Submit Reports	Catherine Blackwell, Resources Chief, 916-989-7170
Mailing Address	US Department of the Interior, Bureau of Reclamation, Central California Office7794 Folsom Dam Road Folsom, CA 95630
Billing Address	SAME
Type of Facility	Inactive gold mine
Major or Minor Facility	Minor
Threat to Water Quality	2
Complexity	B
Pretreatment Program	Not Applicable
Recycling Requirements	Not Applicable
Facility Permitted Flow	0.194 million gallons per day (mgd) with existing bioreactor
Facility Design Flow	0.194 mgd with existing bioreactor
Watershed	Sacramento River
Receiving Water	Middle Fork, American River
Receiving Water Type	Inland surface water

A. The U.S. Department of the Interior, Bureau of Reclamation (hereinafter Discharger) is the owner of Sliger Mine (hereinafter Facility), an inactive 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. The Facility discharges wastewater to the Middle Fork of the American River, a water of the United States, tributary to the Sacramento River within the Sacramento River watershed. The Discharger was previously regulated by Order R5-2008-0168 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0084905, adopted on 24 October 2008 and expired on 1 October 2013. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.

Prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Board, Division of Water Rights, and receive approval for such a change. The State Water Board retains the jurisdictional authority to enforce such requirements under Water Code section 1211.

C. The Discharger filed a report of waste discharge and submitted an application for reissuance of its WDR's and NPDES permit on 27 September 2013. Additional information was submitted 2 December 2013 and the application was deemed complete.

II. FACILITY DESCRIPTION

Sliger Mine started mining operations in 1864 and produced more than $2.6 million of gold. Existing mining waste piles remaining at Sliger Mine were deposited before activity on site ceased in the 1940's. By 1953, most of the surface equipment had been sold. During operations in the 1870's, the ore was crushed in a stamp mill located on site. A larger stamp mill was installed in 1922, and in 1934 a ball mill and crushers replaced the stamp mill. The milled ore was passed through a rake classifier and then over a concentrator. The table tailings from the concentrator were sent to a conditioner and treated by flotation. The ore was mixed with sodium sulfate, pine oil, xanthate, copper sulfate, and soda ash in the flotation cells. Tailings from the flotation cells were passed over a concentrating table. Overflow from the table was thickened, dried, and shipped off site to the Selby smelter, in the San Francisco Bay Area, for gold recovery.

The ground surface of the mine encompasses approximately 6 acres of disturbed area. Significant site features include the following:

- A main production shaft that appears to have collapsed or been buried and is currently recognizable by remnants of the concrete supports.
- An inclined shaft that intersects the V-Adit between the adit portal and the main shaft. The portal of the inclined shaft appears to have collapsed, and an abandoned car remains at what appears to be the former opening.
- An apparent collapsed adit located east (uphill) from the main Sliger Mine area at an elevation of approximately 1,350 feet above sea level that might not be associated with the Sliger Mine.
- An open adit located 500 feet south of the main Sliger Mine area, of which the history is not known. The feature is generally referred to as the "South Sliger Adit."
- Concrete remains of a mine-related building located east (uphill) from the main production shaft, which may have been the former winch house.
- A concrete wall between the main production shaft and the building remnants that retains waste rock to form a flat pad (a presumed working area) on the steep hillside.
- Seven mining waste piles, including waste rock, tailings, and ore that were generated during on-site ore extraction and processing.
- Bioreactor/Infiltration Gallery

The Discharger has applied for coverage under the State Water Board general order for storm water discharges from the disturbed area at the Facility.

The Facility is currently an inactive historical gold mine located on federal lands administered by the U.S. Department of the Interior, Bureau of Reclamation (USBR). The Facility is located 6 miles northeast of the town of Cool and is 450 feet east of the Middle Fork American River and more than 200 feet higher in elevation. The mine consists of underground workings, mine openings, concrete foundations, and waste rock on the east side of the river canyon. USBR acquired the property as part of the land acquisition associated with the Auburn Dam site. A mine opening known as the ventilation adit (V-Adit) was developed during active mining at the site. Water that contains arsenic, iron, and other metals is discharged continuously from the V-Adit. The V-Adit drains at approximately 0.1 cubic feet per second (cfs) or 45 gallons per minute (gpm). In 2008, the Discharger estimated the V-Adit flows at 0.3 cubic feet per second during wet weather and 0.03 cfs during dry weather flows. Prior to installation of the bioreactor, discharge from the V-Adit flowed to the west in a drainage channel to the Middle Fork American River. The bioreactor was constructed so that it intercepts the drainage channel before it reaches the River and effluent from the bioreactor is directed to the drainage channel. The bioreactor is located approximately 100 feet higher in elevation than the Middle Fork American River.

The Discharger defines the site-specific wet season as 1 December through 31 May of each year and the site-specific dry season as 1 June through 30 November of each year. The wet season time frame is based on the fact that the V-Adit flows are dependent on groundwater levels in the vicinity of the V-Adit. The hydraulic conditions in the groundwater level near the V-Adit lag behind annual precipitation events because water must accumulate in the groundwater channels before the levels are high enough to affect the flows from the V-Adit.

A. Description of Wastewater Treatment and Controls

USBR evaluated several treatment alternatives including plugging the V-Adit, construction of an active treatment system at the V-Adit, land application, and semi-passive treatment systems.

In 2003, a preliminary underground survey of the Sliger Mine workings was completed to evaluate the feasibility of installing a hydraulic plug to prevent water discharge from the V-Adit. The primary source for the water discharging from the V-Adit is a rusted metal pipe that protrudes from the floor of the V-Adit approximately 305 feet in from the portal. The pipe presumably connects to deeper mine workings that have filled with groundwater. If the pipe were plugged, the water level in the main production shaft (located 15 feet further into the V-Adit from the pipe) would rise and continue to flow out the adit. Other alternatives were considered and rejected for various reasons. (Further information on the alternatives may be found in the Report of Waste Discharge for this Order.)

A semi-passive bioreactor/infiltration gallery treatment unit was selected as the most viable alternative for compliance with effluent limitations. When installed in 2008, the treatment unit was referred to as a bioreactor. Because the treatment unit may also be acting as an infiltration gallery, Central Valley Water Board staff now refers to the treatment unit as the bioreactor/infiltration gallery. In 2008 the bioreactor/infiltration gallery became operational for treatment of arsenic, iron, and other metals. Construction required minor repair of existing roads and temporary disturbance of a relatively flat area above the 100 year flood plain along the Middle Fork American River. No power is necessary to operate the bioreactor/infiltration

gallery. As designed, most inflow to the bioreactor/infiltration gallery evaporates, infiltrates, or is transpired by vegetation. The bioreactor was designed to create a reducing environment in which sulfate is reduced to sulfide to precipitate metals. Metal sulfides of iron and arsenic have much lower solubility than oxides and hydroxides, so a significant proportion of the arsenic is expected to precipitate within the bioreactor. Any arsenic remaining in solution would infiltrate and be removed from solution in the subsurface by attenuation mechanisms involving adsorption on iron oxides/hydroxides naturally present in the soil. The reduction of sulfate to sulfide results in removal of the major anion contributing to salinity. In addition, the growth of plants in the treatment cell would result in consumption of much of the water through evapotranspiration during low flow periods.

The bioreactor/infiltration gallery design consists of a flow control inlet structure, a reactive medium consisting of granular activated charcoal (GAC) in gravel, and an infiltration trench/berm. The bioreactor includes wooden baffles to direct flow in a sinuous path in order to increase the residence time for treatment. Water enters the bioreactor, flows through the gravel medium and into the trench. Under low flow conditions most of the water is expected be consumed by plants or evaporated prior to reaching the trench. Under average flow conditions, the water is expected to infiltrate into the soil underlying the trench, preventing a direct overland discharge. During wet weather, storm water runoff from adjacent areas will infiltrate the treatment system. Under high flow conditions, an influent weir will direct flows in excess 0.3 cfs away from the reactor to protect the treatment system from exceeding its capacity. The redirected flows, consisting of a portion of the V-Adit drainage mixed with infiltrating storm water, will flow directly to the receiving water. High flows are anticipated to occur during significant rainfall events and during high rainfall years. Under these conditions, the flow in the receiving water would also be increased resulting in an increased dilution capacity and minimal if any impact on receiving water quality. During dry seasons, no visible flow may be observed exiting the bioreactor and flowing to the Middle Fork American River.

Arsenic and iron will accumulate in the bioreactor matrix (mixture of gravel and granular activated carbon). The metal loading to the bioreactor is expected to be low enough that significant accumulation of metals will not occur for several years. For example, at an average concentration of 65 µg/L arsenic and an average flow rate of 0.2 cfs, the annual load of arsenic from V-adit drainage to the bioreactor would be approximately 11.7 kilograms (kg). The mass of the bioreactor matrix is estimated to be approximately 212,000 kg; therefore, the arsenic concentration in the matrix will increase by approximately 55 mg/kg per year. Based on this approximation, the Discharger estimates that the cell matrix would need to be changed a minimum of every 9 years (at an average flow of 0.2 cfs). The actual average flow from 10 March 2004 to 12 September 2007 was 0.08 cfs and the average concentration of arsenic for the same period was 53 µg/L, so the medium is expected to last at least 18 years before being changed. The bioreactor designer recommended sampling for arsenic in the matrix in year 10 (2018); two 4-point composite samples will be collected from within the bioreactor matrix. System monitoring and repair was also recommended on a quarterly basis. Sampling of the flow out of the V-Adit, effluent from the bioreactor, and receiving water was required twice per year in Order R5-2008-0168.

The design daily average flow capacity of the bioreactor/infiltration gallery is 0.194 million gallons per day (mgd).

During an inspection in April 2013, the bioreactor/infiltration gallery was found in disrepair. The mine was discharging to surface water without proper treatment, and arsenic was found in the bioreactor/infiltration gallery effluent at 28 µg/L and TDS was found both in the

bioreactor influent/V-Adit effluent at 450 mg/L. During an inspection in October 2014, the bioreactor/infiltration gallery remained in disrepair, however, there was no visible effluent exiting from the bioreactor/infiltration gallery.

B. Discharge Points and Receiving Waters

1. The Facility is located in Sections 35 and 36, T13N, R9E, MDB&M, as shown in Attachment B, a part of this Order.
2. Up to 0.194 mgd treated mine drainage is discharged at Discharge Point 001 to the Middle Fork American River, a water of the United States at a point latitude 38° 56' 26.22" N and longitude 120° 56' 13.10" W. Flows of untreated mine drainage over 0.194 mgd are diverted around the bioreactor/infiltration gallery and discharged at the same location.
3. The Facility's discharge to the Middle Fork American River is located approximately 5 miles upstream of the confluence of the Middle and North Forks of the American River. Flow in the Middle Fork American River is controlled by releases from the Hell Hole Reservoir, which is managed by the Placer County Water Agency (PCWA) and is used to generate electricity. PCWA is required to maintain a minimum in-stream flow of 75 cubic feet per second (cfs) as measured at the Oxbow Powerhouse, which is several miles upstream of Sliger Mine. Seasonal flows in the Middle Fork American River are generally higher in the spring due to runoff and lower in the fall due to the summer dry period. Daily flows are higher in the afternoon and evening and lower in the early morning due to flow variations in response to varying consumer power demands. The nearest known downstream intake for drinking water supply and irrigation use is approximately 15 miles downstream from the point of discharge from Sliger Mine.
4. A comparison of flow rates, hardness, arsenic, and iron concentrations, and electrIcal conductivity (EC) values for the V-Adit discharge and the receiving water, Middle Fork American River, are shown in the table below:

Table F-1a. Water Quality Parameters in V-Adit and Middle Fork American River

	Flow (cfs)	Hardness (mg/L)	Arsenic maximum (µg/L)	Iron maximum (µg/L)	EC maximum (µmhos/cm)
V-Adit	0.3 (late winter and spring)	140 – 144.3	110	1700	900
	0.03 (summer, fall and, early winter)				
Middle Fork American River	75 (minimum flow upstream of discharge point)	18 – 43.6 (upstream)	2	<50	43
	>75 (downstream of discharge point)	17 (downstream)			

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

1. Effluent limitations contained in Order R5-2008-0168 for discharges from Discharge Point 001 (Monitoring Location EFF-001) and representative monitoring data from the term of the previous Order are as shown in Table F-2a. EFF-001 is located downstream from the last connection through which treated effluent from the mine can be admitted into the outfall, prior to discharge to the receiving water.

Table F-2a. Historic Effluent Limitations and Monitoring Data for EFF-001, 1 June to 30 November

Parameter	Units	Effluent Limitation			Monitoring Data (From 2008 – To 2013)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Flow	mgd	--	--	0.194 (average daily)	--	--	--
pH	pH units	--	--	6.5 to 8.5	--	--	--
Electrical Conductivity @ 25 °C	µmhos/cm	1200 (annual average)	--	--	--	--	--
Arsenic, Total Recoverable	µg/L	10	--	--	--	--	--
Iron, Total Recoverable	µg/L	300 (6-month average)	--	--	--	--	500
Acute Toxicity	% survival	--	--	--	--	--	--

2. Effluent limitations contained in Order R5-2008-0168 for discharges from Discharge Point 001 (Monitoring Location VAD-001) and representative monitoring data from the term of the previous Order are as shown in Table F-2b. VAD-001 is located as close to the V-Adit opening as possible; prior to the treatment system and upstream of where the discharge has the potential to mix with storm water.

Table F-2b. Historic Effluent Limitations and Monitoring Data for VAD-001, 1 December to 31 May

Parameter	Units	Effluent Limitation			Monitoring Data (From 2008 – To 2013)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
pH	pH units	--	--	6.5 to 8.5	--	--	--
Electrical Conductivity @ 25 °C	µmhos/cm	1200 (annual average)	--	--	--	--	900
Arsenic, Total Recoverable	µg/L	--	--	115	--	--	28
Iron, Total Recoverable	µg/L	--	--	415	--	--	610
Acute Toxicity	% survival	--	--	--	--	--	--

D. Compliance Summary

USBR did not submit an ROWD before the 180 day submittal requirement, and did not monitor as required during the term of Order R5-2008-0168. Central Valley Water Board Compliance/Enforcement staff conducted an inspection in April 2013 to determine if

discharge from the treatment wetlands still flows to surface water; and it does during wet seasons. USBR collected an effluent sample based on Compliance/Enforcement staff recommendations, and the results indicated arsenic concentrations at 28 µg/L and iron concentrations at 610 µg/L. Because the concentrations of arsenic and iron exceed water quality objectives, the discharge does not qualify for the limited threat general permit; Limited Threat Discharges of Treated/Untreated Groundwater from Cleanup Sites, Wastewater from Superchlorination Projects, and Other Limited Threat Wastewaters to Surface Water. The USBR submitted a ROWD application package for an individual NPDES permit in September 2013 and additional information in November 2013. However, the existing NPDES permit cannot be administratively extended because the ROWD was not submitted within the 180 day submittal requirement.

The MRP of previous Order R5-2008-0168 required effluent sampling at EFF-001 once per year between 1 June and 30 November and discharge sampling at EFF-002 (now known as VAD-001) once per year between 1 December and 31 May. No effluent or discharge samples were collected between 2008 and 2011. During dry periods there is no effluent from EFF-001 at the bioreactor/infiltration gallery between 1 June and 30 November. Therefore samples were not collected at EFF-001. During the wet season, collection of samples at the V-Adit discharge from VAD-001 is not safe. Therefore samples were not collected at VAD-001.

A Compliance Inspection was conducted in April 2013, at which time the bioreactor components were found in disrepair and unlikely to be operating as designed. Central Valley Water Board staff reported a small discharge (<2 gpm) from the treatment facility (bioreactor). The Discharger received an NOV from the Central Valley Water Board on 14 June 2013 requesting that the Discharger sample the V-Adit (mine effluent at VAD-001) once a year per the MRP and sample upstream and downstream receiving water twice per year. The Discharger conducted the sampling required by the NOV. Also noted in the NOV, was an arsenic effluent limitation violation (Arsenic sample collected on 17 April 2013 during inspection resulted in a detection of 28 µg/L in the bioreactor effluent, which is in violation of the AMEL [10 µg/L]) while influent to the treatment system resulted in a detection of 41 µg/L).

A second Compliance/Pre-permitting inspection was conducted 1 October 2014, at which time the bioreactor components were still found in disrepair and unlikely to be operating as designed. In a letter dated 28 January 2015, Central Valley Water Board staff required that the Discharger submit a monitoring plan to conduct the monitoring required in previous Order R5-2008-0168. The letter also recommended installation of permanent inlet and outlet structures at the bioreactor/infiltration gallery and required submittal of a workplan and schedule by 1 March 2015. On 27 February 2015, the Discharger submitted a letter and a Quality Assurance Project Plan to conduct the sampling required by Order R5-2008-0168. The letter also stated that an inlet structure and outflow structure would be constructed, however, no final compliance date was provided.

E. Planned Changes

This Order requires upgrades and maintenance to the existing bioreactor/infiltration gallery and/or installation of new treatment units.

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 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. 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 Plans.

   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 Basins* (hereinafter Basin Plan) 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. 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. Beneficial uses applicable to the Middle Fork American River are as follows:

Table F-3. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Middle Fork American River	Existing: Municipal and Domestic Water Supply (MUN); Agricultural Irrigation and Stock Watering (AGR); Industrial Power Supply (POW); Contact Recreation, Canoeing and Rafting (REC-1); Other Noncontact Recreation (REC-2); Cold Freshwater Habitat (COLD); Cold Water Spawning Habitat (SPWN); and Wildlife Habitat (WILD). Potential: Warm Freshwater Habitat (WARM).

The Basin Plan also contains a Total Dissolved Solids (TDS) Water Quality Objective for the Middle Fork of the American River; TDS shall not exceed 125 mg/L (90 percentile).

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 that 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 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.** USEPA 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 mining activities. Gold mines are applicable industries under the storm water program and are obligated to comply with the

federal regulations. The Discharger has applied for coverage under the State Water Board general order for storm water discharges from the disturbed area at the Facility.

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 11 October 2011 USEPA gave final approval to California's 2008-2010 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 Middle Fork of the American River is not listed as a water quality limited segment.

2. **Total Maximum Daily Loads (TMDL's).** USEPA requires the Central Valley Water Board to develop TMDL's for each 303(d) listed pollutant and water body combination. No TMDL's have been developed for the Middle Fork of the American River.

E. Other Plans, Polices and Regulations – Not Applicable

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations and toxic and pretreatment effluent standards established pursuant to sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the 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 WQBEL's 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) USEPA'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 this Order; therefore, discharges not described in this Order are prohibited.

2. **Prohibition III.B (No bypasses or overflow of untreated wastewater, except under the conditions at CFR Part 122.41(m)(4)).** As stated in section I.G of Attachment D, Standard Provisions, this Order prohibits bypass from any portion of the treatment facility. Federal regulations, 40 CFR 122.41(m), define "bypass" as the intentional diversion of waste streams from any portion of a treatment facility. This section of the federal regulations, 40 CFR 122.41(m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Regional Water Board's prohibition of bypasses, the State Water Board adopted a precedential decision, Order WQO 2002-0015, which cites the federal regulations, 40 CFR 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation.

3. **Prohibition III.C (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 discharge authorized by this Order must meet minimum federal technology-based requirements based on Effluent Limitations Guidelines and Standards for the Ore Mining and Dressing Point Source Category in 40 C.F.R. part 440.

The CWA requires that technology-based effluent limitations be established based on several levels of controls:

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 (ELGs) representing application of BPT, BAT, BCT, and NSPS. 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. Summary of 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	pH 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.

However, Sliger Mine is not an active mine. Therefore, technology-based effluent limitations are not included in this Order. Water quality based effluent limitations are included in this Order where appropriate.

b. **Flow.** The existing bioreactor/infiltration gallery was designed to provide treatment for up to a design flow of 0.194 million gallons per day (mgd). Therefore, this Order contains a facility design flow limit of 0.194 mgd for the existing bioreactor/infiltration gallery.

C. Water Quality-Based Effluent Limitations (WQBEL's)

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 (WQBEL's) 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 WQBEL's 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 CTR and 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 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 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.** No data were collected between 2008 and 2011, and the results of sampling from 2012, 2013, and 2014 did not provide many data points to conduct the Reasonable Potential Analysis. However, the Discharger collected data between 1999 and 2008, and Central Valley Water Board staff evaluated the older data and found that the 2012, 2013, and 2014 data are consistent with the data collected between 1999 and 2008. Therefore, The Reasonable Potential Analysis for the draft permit was based on all available data from 1999 through 2014. New effluent limits have been calculated using all data from 1999 through 2014 as well.

c. **Assimilative Capacity/Mixing Zone.** Previous Order R5-2008-0168 contained dilution credits for arsenic, iron, and EC, to be applied to the discharge from 1 December through 31 May of each year. Dilution Credits were not allowed from 1 June through 30 November.

1) **Mixing Zone Definition.** The CWA directs the states to adopt water quality standards to protect the quality of its waters. USEPA'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 USEPA 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 USEPA *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001)(TSD).

For the non-Priority Pollutant constituents, including iron and EC, 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 [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, including arsenic, 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 TMDL's, 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. In granting a mixing zone, Section 1.4.2.2 of the SIP requires the following to be met:

"***A mixing zone shall be as small as practicable****. The following conditions must be met in allowing a mixing zone:* [emphasis added]

A: A mixing zone shall not:

1. *compromise the integrity of the entire water body;*
2. *cause acutely toxic conditions to aquatic life passing through the mixing zone;*
3. *restrict the passage of aquatic life;*
4. *adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws;*
5. *produce undesirable or nuisance aquatic life;*
6. *result in floating debris, oil, or scum;*
7. *produce objectionable color, odor, taste, or turbidity;*

8. *cause objectionable bottom deposits;*
9. *cause nuisance;*
10. *dominate the receiving water body or overlap a mixing zone from different outfalls; or*
11. *be allowed at or near any drinking water intake. A mixing zone is not a source of drinking water. To the extent of any conflict between this determination and the Sources of Drinking Water Policy (Resolution No. 88-63), this SIP supersedes the provisions of that policy.*"

Section 1.4.2.1 of the SIP establishes the authority for the Central Valley Water Board to consider dilution credits based on the mixing zone conditions in a receiving water. Section 1.4.2.1 in part states:

"The dilution credit, D, is a numerical value associated with the mixing zone that accounts for the receiving water entrained into the discharge. The dilution credit is a value used in the calculation of effluent limitations (described in Section 1.4). ***Dilution credits may be limited or denied on a pollutant-by-pollutant basis, which may result in a dilution credit for all, some, or no priority pollutants in the discharge.****"* [emphasis added]

2) **Dilution Study**

River Flow.
Flow in the Middle Fork American River is controlled by releases from Hell Hole Reservoir upstream of Sliger Mine. This Reservoir is managed by the Placer County Water Agency (PCWA) and is used to generate electricity. PCWA is required to maintain a minimum in-stream flow of 75 cfs at the Oxbow Powerhouse gauging station, several miles upstream from Sliger Mine.

V-Adit Flow.
The Discharger defines the site-specific wet season as 1 December through 31 May of each year and the site-specific dry season as 1 June through 30 November of each year. The wet season time frame is based on the fact that the V-Adit flows are dependent on groundwater levels in the vicinity of the V-Adit. The hydraulic conditions in the groundwater level near the V-Adit lag behind annual precipitation events because water must accumulate in the groundwater channels before the levels are high enough to affect the flows from the V-Adit. Central Valley Water Board staff has determined that the Discharger's estimation of a site-specific wet season lasting from 1 December to 31 May of each year is appropriate. The maximum flow from the V-Adit has been estimated by the Discharger to be approximately 0.3 cfs.

Dye studies performed in October 2005 and September 2006.
In October 2005, flows in both the receiving water and V-Adit drainage were low due to the seasonal dry period. V-Adit drainage was flowing overland into the Middle Fork American River. Field measurements of electrical conductivity (EC) were collected within and around the mixing zone during the dye study; and samples were collected for analysis of boron and arsenic concentrations. Boron and arsenic concentrations showed similar patterns to that of the EC measurements. The amount of dilution within the mixing zone (evaluated as percent receiving water) based on boron (87 to 92%), arsenic (82 to 98%), and EC (84 to 88%) were similar.

In September 2006, flow from the V-Adit drainage did not discharge directly to the River. V-Adit drainage was routed to the receiving water through a temporary pipe to allow the study to be conducted. Field measurements of EC and dye were collected to quantify the dilution within and around the mixing zone. The amount of dilution within the mixing zone (evaluated as percent receiving water) based on EC and dye concentration measurements ranged from 4.5% to 95%.

3) Mixing Zone calculated by Discharger.

The Discharger originally requested consideration for a mixing zone for discharges from the Facility in a submittal dated 22 December 2006. The submittal also outlined several treatment alternatives for the Facility. The request was based on applying dilution in lieu of other alternatives to control or treat the effluent from the Facility. The Regional Water Board denied this request and required that treatment of the Facility's discharge was necessary if a mixing zone was to be granted. In March 2008 the Discharger installed a passive treatment system, the current bioreactor, thereby satisfying the Board's requirement for treatment prior to allowing a mixing zone. The Discharger brought the treatment system online on 22 March 2008.

Subsequently, the Discharger requested that a mixing zone be allowed and dilution credits be applied to the discharge. The mixing zone and dilution credits are intended to account for events when stormwater inundates the bioreactor causing a portion of the V-Adit drainage to bypass the treatment system. But because such individual events are unpredictable, and access to the Facility is limited, the Discharger requested that the mixing zone and dilution credits apply from December through May of each year, during the rainy season.

Based on the dye studies and the associated sampling, the Discharger concluded that the mixing zone extends from the point of discharge upstream for 25 feet and away from shore for 5 feet. The dye studies also concluded that the proposed mixing zone is incompletely mixed, meaning there is potential for significant variation in the concentration of constituents within the mixing zone. The maximum concentration of arsenic within the mixing zone during the October 2005 dye study was 8.5 µg/L, which is well below the CTR freshwater aquatic life acute criterion (340 µg/L) and chronic criterion (150 µg/L). The maximum concentration of boron within the mixing zone during the October 2005 study was 34 µg/L, which is below the recommended lowest observed toxicity effect level for boron of 1,000 µg/L. The maximum level of EC within the mixing zone during the October 2005 study was 173 µmhos/cm, which is below the lowest associated water quality objective of 700 µmhos/cm. In addition, the lowest acute toxicity measurement of pure effluent in the data reviewed for this Order was 95 % survival, indicating that the discharge does not exhibit acutely toxic properties. These data show that the mixing zone meets the SIP requirements 1 through 5 listed above. Observations and photos from the Discharger show that the mixing zone meets SIP requirements 6 through 9. Finally, there are no other mixing zones in the vicinity of the discharge, the discharge flow is significantly smaller than the receiving water flow, and the nearest drinking water intake is more than 7 miles downstream of the discharge. Therefore, the Central Valley Water Board concluded that the mixing zone requested by the Discharger is protective of the beneficial uses and applicable water quality objectives for the American River. Because the Discharger did not

specify the vertical characteristics of the mixing zone, and the receiving water is relatively shallow in the vicinity of the discharge, the mixing zone was assumed to extend from the surface to bottom of the receiving water throughout the entire 25 foot by 5 foot area.

4) Dilution Credits Requested by Discharger.

The Discharger requested a dilution credit of 27 for arsenic, iron, and EC. This represents a dilution ratio of 27:1 (receiving water:discharge). The Discharger determined the dilution factor based on rhodamine probe readings taken during the September 2006 dye study. According to the Discharger, the rhodamine probe used during the September 2006 dye study had a sensitivity range of 0.5 parts per billion (ppb) to 500 ppb. The concentrations of rhodamine measured during the dye study ranged from 5.26 ppb to 7.72 ppb, which are well within the probe's sensitivity range. By contrast, measurements of arsenic and boron within the mixing zone, taken during the October 2005 study, are near the method detection limits, meaning there is a higher level of uncertainty for the measurements of these constituents. Therefore, the rhodamine measurements provide a more accurate measurement of available dilution than arsenic or boron measurements. The range of rhodamine probe readings taken throughout the mixing zone suggests available dilution in the mixing zone ranging from 62 to 91. The Discharger's requested dilution credit of 27 was determined as one third of the highest measured available dilution.

5) Seasonal Dilution Credits Granted by Previous Permit.

The Discharger also determined that the mixing zone is incompletely mixed, meaning that pollutant concentrations and the amount of mixing that actually occurs within the mixing zone varies by more than 5 percent. In an incomplete mixing scenario, there is the potential for parts of the mixing zone to have minimal mixing some of the time. The SIP allows the Central Valley Water Board to significantly limit mixing zones and dilution credits as necessary to protect beneficial uses. Because of the uncertainty associated with mixing characteristics in an incompletely mixed mixing zone, the Central Valley Water Board determined that is appropriate to limit dilution credits to levels that are lower than those determined by the Discharger, yet high enough so that the resulting effluent limitations are reasonably achievable by the Discharger. By establishing dilution credits significantly lower than those that were determined by the Discharger's mixing zone study, the Central Valley Water Board was ensuring that the beneficial uses are protected. The dilution credits were determined based on the assimilative capacity of the receiving water for the pollutants in question, minimizing the mixing zone and dilution credits, and allowing the Discharger to reasonably achieve compliance with its effluent limitations using the bioreactor/infiltration gallery to treat its effluent.

Because of the uncertainty associated with mixing characteristics in an incompletely mixed mixing zone, the Regional Water Board determined that it is appropriate to limit dilution credits to levels that are lower than those determined by the Discharger, yet high enough so that the resulting effluent limitations are reasonably achievable by the Discharger. By establishing dilution credits significantly lower than those that were determined by the Discharger's mixing zone study, the Regional Water Board attempted to ensure that the beneficial uses are protected. The Board determined that based on the assimilative capacity of the receiving water for the pollutants in question, minimizing the

mixing zone and dilution credits, and allowing the Discharger to reasonably achieve compliance with its effluent limitations, a dilution credit of 12 was granted for arsenic and iron. Both arsenic and iron have receiving water background concentrations of non-detect, meaning that the receiving water has assimilative capacity for these constituents. For arsenic and iron a dilution credit was determined based on the lowest possible dilution credit that will allow the Discharger to reasonably meet its effluent limitations for arsenic, which is the primary pollutant of concern for the discharge. Therefore, dilution credits of 12 were established in Order R5-2008-0168 for both arsenic and iron.

Because there is less assimilative capacity for EC, Board staff determined that a more stringent dilution credit was necessary to limit salinity loads to the receiving water. The dilution credit for EC was determined from the October 2005 dye study. The Discharger estimated that the initial dilution available at the point where the discharge enters the receiving water is 2.9. Therefore, a dilution credit of 2.9 was granted for EC.

Based on information provided by the Discharger, it was expected that flows from the Facility may not reach the river during dry periods between June and December, and with the installation of the passive treatment system, the Discharger believed that treated drainage would reach the river even less frequently than in the past. Therefore, the Central Valley Water Board determined that a mixing zone would only be allowed during the period from 1 December through 31 May when there is a greater potential for a discharge to occur. The dilution credits applied in Previous Order R5-2008-0168 from 1 December through 31 May are summarized below:

Table F-5. Summary of Dilution Credits in Previous Order R5-2008-0168

Constituent	Dilution Available	Dilution Credit Requested	Dilution Credit Allowed by Board
Arsenic	62 to 91	27 [1]	12 [2]
Iron	62 to 91	27 [1]	12 [2]
Electrical Conductivity	62 to 91	27 [1]	2.9 [2]

[1] Approximately one third of the highest measured available dilution of 91.
[2] Determination was described but calculation was not shown in previous Order R5-2008-0168.

6) New Assessment of Dilution Credits – Year Round.

Based on data obtained between 1999 and 2014, the maximum effluent concentrations from Sliger Mine exceed the criteria for arsenic, iron, copper, lead, and EC. However, as observed by staff, dilution is available year round due to the upstream reservoir discharge. Data collected by the Discharger through the years indicates that the effluent has no observable or measureable impact on the concentrations of constituents in the Middle Fork American River at RSW-001 and RSW-002. During the dry season, 1 June through 30 November, the minimum required flow of 75 cfs in the Middle Fork American River and the maximum flow from the V-Adit of 0.3 cfs results in dilution credit of 250. Thus the dilution credits adopted by the Board could be applied year round and still be protective. Effluent limitations based on a dilution credit of 250 would be excessive, therefore, effluent limitations were not calculated based on a dilution credit of 250.

Dilution credits were calculated based on system performance and as indicated by the footnotes to the table. The EC limit was held over from the previous permit because there is very little EC data available to calculate a new limit.

Table F-6. Summary of New Effluent Limitations and Dilution Credits

Parameter	Units	MEC	Proposed Effluent Limitations with Year Round Dilution			Dilution Credit
			Average Annual	Maximum Daily	Average Monthly	
EC	µmhos/cm	900	1200 [1]	--	--	1.33
Arsenic	µg/L	110	--	220 [3]	130 [4]	13.75/13.0
Iron	µg/L	500	480 [4]	--	--	1.6
Copper	µg/L	4.2	--	26 [3]	13 [2]	7.03/7.22
Lead	µg/L	1.9	--	12 [3]	6.0 [2]	13.79/13.95

[1] Limit from previous permit
[2] Effluent Limitation calculated as 3.11(MEC).
[3] Calculated as MDEL = AMEL x (Multiplier from Table 2 of the SIP)
[4] Based on the Mean plus 3.3 Standard Deviations of the Mean (1999-2014 dataset).

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. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The default USEPA conversion factors contained in Appendix 3 of the SIP were used to convert the applicable dissolved criteria to total recoverable criteria.

e. **Hardness-Dependent CTR Metals Criteria.**

Background

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 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 hardness of the receiving water (actual ambient hardness) as required by the SIP[1] and the CTR[2]. The SIP and the CTR require the use of “receiving water” or “actual ambient” hardness, respectively, to determine effluent limitations for these metals. 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]

[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.

[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 (40 C.F.R. § 131.38(c)(4)).

[3] 40 C.F.R. §131.3(c)(4)(ii)

[4] 40 C.F.R. §131.38(c)(2)(iii) Table 4

This section of the CTR also indicates that the design conditions should be established such that the appropriate criteria are not exceeded more than once in a three year period on average.[1] The CTR 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. [2] 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[3], is as follows:

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

Where:

H = hardness (as $CaCO_3$)[4]

WER = water-effect ratio

m, b = metal- and criterion-specific constants

The direction in the CTR regarding hardness selection is that it must be based on ambient hardness and consistent with design discharge conditions for design flows and mixing zones. Consistent with design discharge conditions and design flows means that the selected "design" hardness must result in effluent limitations under design discharge conditions that do not result in more than one exceedance of the applicable criteria in a three year period.[5] Flow in the Middle Fork American River is controlled by releases from Hell Hole Reservoir upstream of Sliger Mine. The Placer County Water Agency is required to maintain a minimum in-stream flow of 75 cfs at the Oxbow Powerhouse gauging station, several miles upstream from Sliger Mine. Therefore, 75 cfs represents the minimum design flow of the receiving water.

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[1] 40 C.F.R. §131.38(c)(2)(iii) Table 4, notes 1 and 2

[2] 40 C.F.R. §131.38(c)(2)(i)

[3] 40 CFR § 131.38(b)(2).

[4] For this discussion, all hardness values are in mg/L as $CaCO_3$.

[5] 40 C.F.R. §131.38(c)(2)(iii) Table 4, notes 1 and 2

Ambient Conditions

Table F-7 shows the full extent of the hardness data available for the Facility. The minimum receiving water hardness upstream and downstream of the discharge are 18 mg/L and 17 mg/L, respectively. The receiving water has very low hardness values. Relatively low concentrations of metals will be toxic under low hardness conditions. The minimum effluent hardness was 140 mg/L.

Table F-7. Hardness Values

Date	Hardness (mg/L as $CaCO_3$)		
	Ambient Upstream	Effluent	Ambient Downstream
3/9/2005	18.9	140.6	--
3/24/2005	43.6	--	--
5/16/2007	--	144.3	--
5/15/2012	18	--	17
5/13/2013	25	140	--

The average hardness of the Middle Fork American River upstream of the discharge was calculated from data collected between 2005 to 2013 (four data points) and was found to be 26.4 mg/L and the median was 22.0 mg/L. The SIP, CTR, and State Water Board do not require use of the minimum observed ambient hardness in the CTR equations. The hardness selected must be protective of water quality criteria under all flow conditions. In this case, the median receiving water hardness of 22.0 mg/L represents typical conditions in the receiving water and was used in the CTR equations to determine metals 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. Using the lowest ambient hardness value of 18 mg/L would result in more conservative effluent limits that are not needed to protect beneficial uses yet will result in additional costs to the Discharger. The effluent hardness maintains around 140 mg/L which is much greater than the range of hardness observed in the Middle Fork of the American River.

Using an ambient hardness that is higher than the minimum of 18 mg/L will result in a limit that may allow increased metals to be discharged to the river, but such discharge is allowed under the antidegradation policy (State Water Board Resolution 68-16). The Board finds that this degradation is consistent with the antidegradation policy (see antidegradation findings in Section IV.D.4 of the Fact Sheet). The Antidegradation policy requires the Discharger 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.

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-8.

Table F-8. Summary of CTR Criteria for Hardness-dependent Metals

CTR Metals	Design Ambient Hardness (mg/L)	Criteria (µg/L, total recoverable) [1]	
		acute	chronic
Cadmium	22	0.82	0.75
Chromium III	22	500	60
Copper	22	3.4	2.6
Lead	22	12	0.46
Nickel	22	130	15
Silver	22	0.30	--
Zinc	22	33	33

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

Approach to derivation of criteria

As shown above in Table F-7, while the data set is limited, ambient hardness varies significantly between 18 and 43.6 mg/L. Because of the variation, there is no single hardness value that describes the ambient receiving water for all possible scenarios (e.g., minimum, maximum, mid-point). While the hardness selected must be hardness of the ambient receiving water, selection of an ambient receiving water hardness that is too high would result in effluent limitations that do not protect beneficial uses. Also, the use of the minimum receiving water hardness would result in criteria that are protective of beneficial uses, but such criteria may not be representative or fair and reasonable considering the wide range of ambient conditions.

Reasonable worst-case ambient conditions. To determine whether the selected ambient hardness value results in fair and reasonable effluent limitations that are fully protective, staff have conducted an analysis considering varying ambient hardness and flow conditions. To do this, the Board has ensured that the receiving water hardness and criteria selected for effluent limitations are protective under "reasonable-worst case ambient conditions." These conditions represent the receiving water conditions under which derived effluent limitations would ensure protection of beneficial uses under all ambient flow and hardness conditions.

Reasonable worst-case ambient conditions:

- "Low receiving water flow." The lowest allowable flow in the Middle Fork American River, 75 cfs, has been selected to represent reasonable worst case receiving water flow conditions.
- "High receiving water flow (maximum receiving water flow)." This additional flow condition has been selected consistent with the Davis Order, which required that the hardness selected be protective of water quality criteria under all flow conditions. The maximum flow recorded on a date that the Discharger collected receiving water hardness data was 549 cfs with a corresponding hardness of 43.6 mg/L.
- "Low receiving water hardness." The minimum receiving water hardness condition of 18 mg/L was selected to represent the reasonable worst case receiving water hardness.

- "Upstream ambient metal concentration at criteria." This condition assumes that the metal concentration in the upstream receiving water is equal to CTR criteria (upstream of the facility's discharge).

Iterative approach. An iterative analysis has been used to select the ambient hardness to calculate the criteria that will result in fair and reasonable effluent limitations that protect beneficial uses under all flow conditions.

The iterative approach is summarized in the following algorithm and described below in more detail.

1. CRITERIA CALCULATION. CTR criteria are initially calculated based on the ambient median receiving water hardness, then the CTR criteria are calculated based on actual measured ambient hardness sample results if the median upstream water hardness is not protective under all flow conditions.
2. CHECK. Using USEPA's simple mass balance equation[1], maximum discharge at the computed effluent concentration is assumed. Resultant downstream metal concentration is then compared with downstream calculated CTR criteria under reasonable worst-case ambient conditions.
3. ADAPT. If step 2 results in:
   (A) receiving water metal concentration that complies with CTR criteria under reasonable worst-case ambient conditions, then the hardness value is selected.
   (B) receiving water metal concentration greater than CTR criteria, then return to step 1, selecting a lower ambient hardness value.

Steps 1 through 3 must be repeated separately for each metal until ambient hardness values are determined that will result in criteria and effluent limitations that comply with the CTR and protect beneficial uses for all metals.

Results of iterative analysis

Using the iterative analysis described above for each CTR hardness-dependent metal results in the selected ambient hardness values shown in Table F-8, above. Using the median receiving water hardness of 22 mg/L to calculate criteria will result in effluent limitations that are protective under all ambient flow conditions. Copper and lead are used as examples below to illustrate the results of the analysis. Tables F-9 and F-10 below summarize the numeric results of the three step iterative approach for copper and lead. As shown in the example tables, the median ambient hardness value of 22 mg/L is used to derive criteria and effluent limitations. Then under the "check" step, worst-case ambient receiving water conditions are used to test whether discharge at the computed effluent limitations results in compliance with CTR criteria and protection of beneficial uses. In the case of Sliger Mine the maximum discharge from the V-Adit is 0.3 cfs and the minimum design flow of the Middle Fork of the American River is 75 cfs; therefore, even under worst-case flow conditions the American River Flow envelops the effluent flow and the iterative approach is resolved in one step.

[1] U.S. EPA NPDES Permit Writers' Handbook (EPA 833-K-10-001 September 2010, pg. 6-24)

The results of the iterative analysis described above and summarized in the tables below, show that the ambient hardness values selected using the three-step iterative process results in protective effluent limitations that achieve CTR criteria under all flow conditions that are fair and reasonable.

Table F-9. Copper Effluent Limitations

Receiving water hardness used to compute effluent limitations				**22 mg/L**
Effluent limitations for copper				**2.8**
	Downstream Ambient Concentrations Under Worst-Case Ambient Receiving Water Conditions			**Complies with CTR Criteria?**
	Hardness	**CTR Criteria (µg/L)**	**Ambient Copper Concentration[1] (µg/L)**	
Min receiving water flow 75 cfs	18	2.2	2.2	**Yes**
75 cfs < Flow < 549 cfs	22	2.8	2.8	**Yes**
Max receiving water flow 549 cfs	43.6	4.6	4.6	**Yes**

[1] This concentration is derived using worst-case ambient conditions. These conservative assumptions will ensure that the receiving water always complies with CTR criteria.

Table F-10. Lead Effluent Limitations

Receiving water hardness used to compute effluent limitations				**22 mg/L**
Effluent limitations for lead				**0.46**
	Downstream Ambient Concentrations Under Worst-Case Ambient Receiving Water Conditions			**Complies with CTR Criteria?**
	Hardness	**CTR Criteria (µg/L)**	**Ambient Lead Concentration[1] (µg/L)**	
Min receiving water flow 75 cfs	18	0.36	0.36	**Yes**
75 cfs < Flow < 549 cfs	22	0.46	0.46	**Yes**
Max receiving water flow 549 cfs	43.6	1.11	1.11	**Yes**

[1] This concentration is derived using worst-case ambient conditions. These conservative assumptions will ensure that the receiving water always complies with CTR criteria.

3. Determining the Need for WQBEL's

a. **Constituents with No Reasonable Potential.** WQBEL's 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); however, monitoring for those pollutants is established in this Order as required by the SIP. If the results of effluent monitoring demonstrate reasonable potential, 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:

i. **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. Sliger Mine is not an active gold mine, therefore, this Order contains no technology based effluent limitations based on the ELGs.

The CTR includes hardness dependent criteria for the protection of freshwater aquatic life for cadmium. These criteria for cadmium 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 cadmium 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 cadmium. Based on seven samples collected between 1999 and 2014, cadmium was not detected in the upstream receiving water with a maximum laboratory Reporting Level of 0.31 µg/L. The RPA was conducted using the upstream receiving water hardness of 18 mg/L to calculate the criteria for comparison to the maximum ambient background concentration. However, there is no reasonable potential for cadmium in the upstream receiving water because it was not detected.

Cadmium was not detected in the effluent, based on seven samples collected between 1999 and 2014. The maximum laboratory reporting level was 1.0 µg/L, which is higher than the chronic criterion. However, there is no reasonable potential for the cadmium in the effluent because it was not detected. The RPA was conducted using the median receiving water hardness of 22 mg/L to calculate the criteria for comparison to the maximum effluent concentration. The table below shows the specific criteria calculated for the RPA.

Table F-11. Cadmium CTR Criteria Comparison

	CTR Acute Criterion (Total Recoverable)	CTR Chronic Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
Receiving Water	0.65 µg/L [1]	0.64 µg/L [1]	ND at 0.31 µg/L	No [3]
Effluent	0.82 µg/L [2]	0.75 µg/L [2]	ND at 1.0 µg/L	No [4]

[1] Based on lowest observed upstream hardness of 18 mg/L (as $CaCO_3$)
[2] Based on the median receiving water hardness of 22 mg/L.
[3] Per Section 1.3, step 4 of the SIP.
[4] Per Section 1.3, step 6 of the SIP.

ii. **Chromium III**

(a) **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.

(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 chromium III. Based on eight samples collected between 1999 and 2014, chromium III was detected in the upstream receiving water with a maximum concentration of 1.3 µg/L, which is lower than the criteria. Therefore, there is no reasonable potential for chromium III in the upstream receiving water.

Chromium III was detected in the effluent, based on eight samples collected between 1999 and 2014. The MEC was 5.6 µg/L, which is lower than the criteria. Therefore, there is no reasonable potential for chromium III in the effluent.

Table F-12. Chromium III CTR Criteria Comparison

	CTR Acute Criterion (Total Recoverable)	CTR Chronic Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
Receiving Water	430 µg/L[1]	51 µg/L[1]	1.3 µg/L	No[3]
Effluent	500 µg/L[2]	60 µg/L[2]	5.6 µg/L	No[4]

[1] Based on lowest upstream ambient hardness of 18 mg/L (as $CaCO_3$)
[2] Based on the median receiving water hardness of 22 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.

iii. **Mercury**

(a) **WQO.** The current NAWQC 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, USEPA 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, USEPA reserved the mercury criteria for freshwater and aquatic life and may adopt new criteria at a later date.

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 between 1999 and 2014, the MEC for mercury was 10 ng/L, which does not exceed the CTR human health criterion or the technology based effluent limitations of the ELGs. 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 effluent limitations for mercury have not been established in this Order.

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.)

iii. **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 a maximum RL of 2.0 µg/L based on seven samples collected between 1999 and 2014. The RPA was conducted using the upstream receiving water hardness of 18 mg/L to calculate the criteria for comparison to the maximum ambient background concentration. The maximum observed effluent concentration was 6.6 µg/L, based on eleven samples collected between 1999 and 2014. The RPA was conducted using the median receiving water hardness of 22 mg/L to calculate the criteria for comparison to the maximum effluent concentration. The table below shows the specific criteria calculated for the RPA.

Table F-13. Nickel CTR Criteria Comparison

	CTR Acute Criterion (Total Recoverable)	CTR Chronic Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
Receiving Water	110 µg/L[1]	12 µg/L[1]	ND at 2.0 µg/L	No[3]
Effluent	130 µg/L[2]	15 µg/L[2]	6.6 µg/L	No[4]

[1] Based on the lowest upstream observed hardness of 18 mg/L (as $CaCO_3$)
[2] Based on the median receiving water hardness of 22 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.

Nickel in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR chronic criterion for

the protection of freshwater aquatic life and therefore, water quality-based effluent limitations for nickel have not been included in this Order.

i. **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.

(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 silver. Based on nine samples collected between 1999 and 2014, silver was not detected in the upstream receiving water with a maximum laboratory Reporting Level of 0.62 µg/L, which is higher than the criterion. The RPA was conducted using the upstream receiving water hardness of 18 mg/L to calculate the criteria for comparison to the maximum ambient background concentration. 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 ten samples collected between 1999 and 2014. The maximum laboratory reporting level was 1.0 µg/L, which is higher than the criterion. However, there is no reasonable potential for silver in the effluent because it was not detected.

Table F-14. Silver CTR Criteria for Comparison

	CTR Acute Criterion (Total Recoverable)	CTR Chronic Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
Receiving Water	0.21 µg/L[1]	--	ND at 0.62 µg/L	No[3]
Effluent	0.30 µg/L[2]	--	ND at 1.0 µg/L	No[4]

[1] Based on lowest upstream ambient hardness of 18 mg/L (as $CaCO_3$)
[2] Based on median receiving water hardness of 22 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.

ii. **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. Sliger Mine is not an active gold mine, therefore, this Order contains no technology-based effluent limitations for zinc based on the ELGs.

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 seven samples collected between 1999 and 2014, zinc was not detected in the upstream receiving water. The maximum laboratory Reporting Level was 5.0 µg/L, which is lower than the criteria and therefore, there is no reasonable potential for zinc in the upstream receiving water. The RPA was conducted using the upstream receiving water hardness of 18 mg/L to calculate the criteria for comparison to the maximum ambient background concentration. The maximum observed effluent concentration was 7.6 µg/L, based on six samples collected between 1999 and 2014. The RPA was conducted using the median receiving water hardness of 22 mg/L to calculate the criteria for comparison to the maximum effluent concentration. The table below shows the specific criteria calculated for the RPA.

Table F-15. Zinc CTR Criteria Comparison

	CTR Acute Criterion (Total Recoverable)	CTR Chronic Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
Receiving Water	28 µg/L[1]	28 µg/L[1]	ND at 5.0 µg/L	No[3]
Effluent	33 µg/L[2]	33 µg/L[2]	7.6 µg/L	No[4]

[1] Based on the lowest upstream ambient hardness of 18 mg/L (as $CaCO_3$)
[2] Based on the median receiving water hardness of 22 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.

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 water quality standards for arsenic, copper, EC (salinity), iron, lead, and pH. WQBEL's 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. **Arsenic, Total Recoverable**

(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.

(b) **RPA Results.** From monitoring data collected by the Discharger between 1999 and 2014, twenty-seven (27) samples were analyzed for total recoverable arsenic. The maximum effluent concentration (MEC) for arsenic was 140 µg/L while the maximum observed upstream receiving water concentration was 2.0 µg/L and the maximum downstream receiving water concentration was ND with a maximum reporting level of 2.0 µg/L. The MEC exceeded the primary MCL, therefore, arsenic in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the primary MCL. Therefore, this Order contains water quality based effluent limitations for arsenic based on the primary MCL.

The only existing bioreactor/infiltration gallery effluent sample collected, in April 2013 by the Discharger, indicates that the bioreactor is not effectively removing arsenic; the mine's V-adit arsenic discharge concentration was 37 µg/L and the bioreactor treated effluent discharge was 28 µg/L.

(c) **WQBELs.** Order R5-2008-0168, contained arsenic effluent limitations of 10 µg/L as a monthly average from 1 June to 30 November based on the Primary MCL and flow, and a maximum daily effluent limit of 115 µg/L from 1 December to 31 May, based on a dilution credit of 12. The process that resulted in a dilution credit of 12 and a limit of 115 µg/L, was not fully explained in Order R5-2008-0168.

Assuming no dilution, effluent limitations for arsenic were calculated based on the Primary MCL of 10 µg/L and the Basin Plan's narrative chemical constituents objective for protection of the MUN beneficial use. The Average Monthly Effluent Limit (AMEL) was calculated to be 10 µg/L and the Maximum Daily Effluent Limit (MDEL) was calculated to be 16 µg/L.

Year round dilution is available in the Middle Fork American River. The full dilution credit based on the minimum flow in the River and maximum flow from the V-Adit was 250:1. However, effluent limitations based on this dilution credit are excessive. Therefore, final performance based effluent limitations for arsenic were calculated based on the mean plus 3.3 standard deviations of the mean (1999-2014 dataset), which results in an AMEL of 130 µg/L. The MDEL was calculated as AMEL x (Multiplier from Table 2 of the SIP), which results in an MDEL of 220 µg/L.

Dilution credits were calculated to be 13.0 for the AMEL and 13.75 for the MDEL. Well below the Discharger's requested dilution credit of 27 and the flow based dilution credit of 250.

Selection of a dilution credit of 12 and calculation of the 115 µg/L limit in the previous Order R5-2008-0168 could not be duplicated. Based on new information that was not available for previous Order R5-2008-0168, new effluent limitations were calculated in accordance with antibacksliding requirements.

(d) **Discharge Treatment System Performance and Attainability.** It is unknown at this time whether the bioreactor/infiltration gallery is operating as proposed. However, because of the dilution credits for arsenic, the discharge should be able to comply with the effluent limitations for arsenic.

ii. **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. Sliger Mine is not an active gold mine, therefore, this Order contains no technology-based effluent limitations for copper based on the ELGs.

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 0.5 µg/L based on six samples collected between 1999 and 2014. The RPA was conducted using the upstream receiving water hardness of 18 mg/L to calculate the criteria for comparison to the maximum ambient background concentration. The maximum observed effluent concentration was 4.2 µg/L, based on seven samples collected between 1999 and 2014. The RPA was conducted using the median receiving water hardness of 22 mg/L to calculate the criteria for comparison to the maximum effluent concentration. The table below shows the specific criteria calculated for the RPA.

Table F-16. Copper CTR Criteria Comparison

	CTR Acute Criterion (Total Recoverable)	CTR Chronic Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
Receiving Water	2.8 µg/L[1]	2.2 µg/L[1]	0.5 µg/L	No[3]
Effluent	3.7 µg/L[2]	2.8 µg/L[2]	4.2 µg/L	Yes[4]

[1] Based on the lowest observed upstream receiving water hardness of 18 mg/L (as $CaCO_3$)
[2] Based on the median receiving water hardness of 22 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 effluent 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.

(c) **WQBELs.** Assuming no dilution, effluent limitations for copper were calculated based on the CTR criteria for the protection of freshwater aquatic life for copper. The Average Monthly Effluent Limit (AMEL) was calculated to be 2.8 µg/L and the Maximum Daily Effluent Limit (MDEL) was calculated to be 3.7 µg/L.

Year round dilution is available in the Middle Fork American River. The full dilution credit based on the minimum flow in the River and maximum flow from the V-Adit was 250:1. However, effluent limitations based on this dilution credit are excessive. Therefore, final performance based effluent limitations for copper were calculated. The AMEL was calculated as 3.11x(MEC) or 13 µg/L and the MDEL was calculated as the AMEL x (Multiplier from Table 2 of the SIP) or 26 µg/L.

Dilution credits were calculated to be 7.22 for the AMEL and 7.03 for the MDEL. Well below the flow based dilution credit of 250.

(d) **Discharge Treatment System Performance and Attainability.** It is unknown at this time whether the bioreactor/infiltration gallery is operating as proposed. However, because of the dilution credits for copper, the discharge should be able to comply with the effluent limitations for copper.

iii. **Iron**

(a) **WQO.** The DDWP 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 between 1999 and 2014, twenty-seven (27) samples were analyzed for total recoverable iron. The maximum effluent concentration for iron was 500 µg/L while the maximum observed upstream receiving water concentration was ND with a maximum reporting level of 50 µg/L, and the maximum downstream receiving water concentration was 279 µg/L. The maximum effluent concentration exceeded the criterion, therefore, iron in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the secondary MCL. Therefore, this Order contains water quality based effluent limitations for iron based on the secondary MCL.

(c) **WQBELs.** Order R5-2008-0168, contained a six month average effluent limitation of 300 µg/L from 1 June to 30 November based on the Secondary MCL, and a maximum daily effluent limitation of 415 µg/L from 1 December to 31 May, based on a dilution credit of 12. The process that resulted in the selection of a dilution credit of 12 and a limit of 415 µg/L, was not fully explained in Order R5-2008-0168.

With no dilution, an effluent limitation for iron of 300 µg/L as an annual average based on the secondary MCL would be used.

Year round dilution is available in the Middle Fork American River. The full dilution credit based on the minimum flow in the River and maximum flow from the V-Adit was 250:1. However, effluent limitations based on this dilution credit are excessive. Therefore, this Order contains an effluent limitation for iron of 480 µg/L as an annual average. The limit was calculated based on the mean plus 3.3 standard deviations of the mean (1999-2014 dataset).

Dilution credits were calculated to be 1.6. Which is well below the Discharger's requested dilution credit of 27 and the flow based dilution credit of 250.

Selection of a dilution credit of 12 and calculation of the 415 µg/L limit in the previous Order R5-2008-0168 could not be duplicated. Based on new information that was not available for previous Order R5-2008-0168, new effluent limitations were calculated in accordance with antibacksliding requirements.

(d) **Discharge Treatment System Performance and Attainability.** It is unknown at this time whether the bioreactor/infiltration gallery is operating as proposed. However, because of the dilution credits for iron, the discharge should be able to comply with the effluent limitations for iron.

iv. **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. Sliger Mine is not an active gold mine, therefore, this Order contains no technology-based effluent limitations for lead based on the ELGs.

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 a maximum RL of 0.60 µg/L based on seven samples collected between 1999 and 2014. The RPA was conducted using the upstream receiving water hardness of 18 mg/L to calculate the criteria for comparison to the maximum ambient background concentration. The maximum observed effluent concentration was 1.9 µg/L, based on nine samples collected between 1999 and 2014. The RPA was conducted using the median receiving water hardness of 22 mg/L to calculate the criteria for comparison to the maximum effluent concentration. The table below shows the specific criteria calculated for the RPA.

Table F-17. Lead CTR Criteria Comparison

	CTR Acute Criterion (Total Recoverable)	CTR Chronic Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
Receiving Water	9.2 µg/L[1]	0.36 µg/L[1]	ND at 0.60 µg/L	No[3]
Effluent	12 µg/L[2]	0.46 µg/L[2]	1.9 µg/L	Yes[4]

[1] Based on the lowest observed upstream hardness of 18 mg/L (as $CaCO_3$)
[2] Based on the median receiving water hardness of 22 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.

(c) **WQBELs.** Assuming no dilution, effluent limitations for lead were calculated based on the CTR criteria for the protection of freshwater aquatic life for lead. The Average Monthly Effluent Limit (AMEL) was calculated to be 0.43 µg/L and the Maximum Daily Effluent Limit (MDEL) was calculated to be 0.87 µg/L.

Year round dilution is available in the Middle Fork American River. The full dilution credit based on the minimum flow in the River and maximum flow from the V-Adit was 250:1. However, effluent limitations based on this dilution credit are excessive. Therefore, final performance based effluent limitations for lead were calculated. The AMEL was calculated as 3.11x(MEC) or 6.0 µg/L and the MDEL was calculated as the AMEL x (Multiplier from Table 2 of the SIP) or 12 µg/L.

Dilution credits were calculated to be 13.95 for the AMEL and 13.79 for the MDEL. Well below the flow based dilution credit of 250.

(d) **Discharge Treatment System Performance and Attainability.** It is unknown at this time whether the bioreactor/infiltration gallery is operating as proposed. However, because of the dilution credits for lead, the discharge should be able to comply with the effluent limitations for lead.

v. **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.** The effluent pH ranged from 7.4 to 8.0 in seven samples collected between 1999 and 2014. The upstream receiving water pH was reported at 7.6 in only one sample and downstream receiving water ranged from 6.3 to 8 in three samples. The pH in the discharge does not exceed the Basin Plan water quality objective, however, the effluent pH appears to exceed the receiving water pH.

(c) **WQBELs.** Order R5-2008-0168, Amended, contained year round effluent limitations for pH based on the Basin Plan; an Instantaneous Minimum of 6.5 and an Instantaneous Maximum of 8.5. This Order retains the year round pH limitations based on the Basin Plan.

(d) **Discharge Treatment System Performance and Attainability.** It is unknown at this time whether the bioreactor/infiltration gallery is operating as proposed. However, based on the sample results, it appears that the discharge will comply with the final effluent limitations for pH.

vi. **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-18. Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Objective[1]	DDWP 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.

The Basin Plan has a Salinity Water Quality Objective for the Middle Fork American River, from sources to Folsom Lake, of 125 mg/L TDS (90 percentile).

(b) **RPA Results.**

1) **Chloride.** From seven samples collected between 1999 and 2014, chloride was detected in the effluent at up to 370 mg/L. Receiving water chloride ranged between 0.69 mg/L and 2.6 mg/L based on seven samples. The maximum effluent concentration exceeded the Secondary MCL of 250 mg/L as a recommended level.

2) **Electrical Conductivity.** Only 1 sample was analyzed for EC in the effluent and reported at 900 µmhos/cm. Only 1 sample was analyzed in the upstream receiving water and reported at 44 µmhos/cm. The maximum effluent concentration equals the Secondary MCL as a recommended level.

3) **Sulfate.** From eight samples collected between 1999 and 2014, sulfate was detected in the effluent at up to 49 mg/L. Receiving water sulfate ranged between 1.1 mg/L and 1.6 mg/L based on six samples. While the maximum effluent concentration is elevated, it does not exceed the Secondary MCL, therefore, there is no reasonable potential for sulfate.

4) **Total Dissolved Solids.** From six samples collected between 1999 and 2014, TDS was detected in the effluent at up to 870 mg/L. Receiving water TDS ranged between 30 mg/L and 43 mg/L based on six samples. The maximum effluent concentration exceeded the Secondary MCL of 500 mg/L as a recommended level. (However, the receiving water concentrations did not exceed the Basin Plan Water Quality Objective; Receiving Water Limitation of 125 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 900 µmhos/cm, for chloride was 370 mg/L, and for TDS was 870 mg/L. The upstream receiving water EC, chloride, and TDS were substantially lower than the effluent concentrations. Therefore, EC, chloride, and TDS in the discharge have a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan narrative toxicity objective.

Order R5-2008-0168 contained a year round final effluent limitation for EC of 1200 µmhos/cm as an annual average. This Order continues the year-round EC effluent limitation of 1200 µmhos/cm, which was retained from previous Order R5-2008-0168. The EC effluent limitations are sufficient for regulating the various components of salinity including chloride and TDS.

(d) **Discharge Treatment System Performance and Attainability.** It is unknown at this time whether the bioreactor/infiltration gallery is operating as proposed. However, because of the dilution credits for EC, the discharge should be able to comply with the effluent limitation for EC.

4. WQBEL Calculations

a. This Order includes WQBEL's for arsenic, copper, iron, lead, pH, and EC. The general methodology for calculating WQBEL's based on the different criteria/objectives is described in subsections IV.C.5.b through e, below. See Attachment H for the WQBEL calculations.

b. **Effluent Concentration Allowance.** 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 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 WQBEL's based on site-specific numeric Basin Plan objectives or MCLs, the effluent limitations are applied directly as the ECA as either an MDEL, AMEL, or average annual effluent limitations, depending on the averaging period of the objective.

d. **Aquatic Toxicity Criteria.** WQBEL's 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.** WQBEL's based on human health criteria, are also calculated in accordance with Section 1.4 of the SIP. The AMEL is set equal to ECA 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 001

Table F-19 Summary of Water Quality-Based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Annual	Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Arsenic, Total Recoverable	µg/L	--	130	220	--	--
Copper, Total Recoverable	µg/L	--	13	26	--	--
Iron, Total Recoverable	µg/L	480	--	--	--	--
Lead, Total Recoverable	µg/L	--	6.0	12	--	--

Parameter	Units	Effluent Limitations				
		Average Annual	Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
pH	pH units	--	--	--	6.5	8.5
Electrical Conductivity	µmhos/cm	1200	--	--	--	--

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 acute and chronic toxicity, as specified in the Monitoring and Reporting Program (Attachment E section V). This Order also contains effluent limitations for acute toxicity and requires the Discharger to implement best management practices to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity.

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 toxicity is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. 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 . USEPA'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 WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters).*" Acute toxicity effluent limits are required to ensure compliance with the Basin Plan's narrative toxicity objective.

USEPA 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. Section B.2. "Toxicity Requirements" (pgs. 14-15) 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%

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.

No dilution has been granted for the chronic condition. Therefore, chronic toxicity testing results exceeding 1 chronic toxicity unit (TUc) demonstrates the discharge has a reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective.

The Monitoring and Reporting Program of this Order requires chronic WET monitoring once during the permit term 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[1] 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*

[1] In the Matter of the Review of Own Motion of Waste Discharge Requirements Orders R4-2002-0121 [NPDES No. CA0054011] and R4-2002-0123 [NPDES No. CA0055119] and Time Schedule Orders 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).

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 workplan. 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 – Not Applicable

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. The rationale for using alternative averaging periods for arsenic, copper, and lead is discussed in section IV.C.3 of this Fact Sheet.

For effluent limitations based on Primary and Secondary MCLs, this Order includes annual average effluent limitations (iron and TDS). The Primary and 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.

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).

All effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order.

a. **CWA section 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 304(d)(4)(A) specifies that any effluent limit based on a TMDL or other WLA may be revised only if the cumulative effect of all such revised effluent limits based on such TMDL's or WLAs will assure the attainment of such water quality standards.

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 Middle Fork of the American River is considered an attainment water for arsenic, copper, iron, lead, pH, and EC because the receiving water is not listed as impaired on the 303(d) list for these constituents.[1] Existing effluent limitations have been relaxed in this Order for copper and iron. .

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.

Selection of a dilution credit of 12 and calculation of the 115 µg/L limit for arsenic in the previous Order R5-2008-0168 could not be duplicated. Based on new information that was not available for previous Order R5-2008-0168, new effluent limitations were calculated in accordance with antibacksliding requirements.

Selection of a dilution credit of 12 and calculation of the 415 µg/L limit for iron in the previous Order R5-2008-0168 could not be duplicated. Based on new information that was not available for previous Order R5-2008-0168, new effluent limitations were calculated in accordance with antibacksliding requirements.

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 applicable federal technology-based standards and with WQBEL's 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 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.

[1] "The exceptions in Section 303(d)(4) address both waters in attainment with water quality standards and those not in attainment, i.e. waters on the section 303(d) impaired waters list." State Water Board Order WQ 2008-0006, Berry Petroleum Company, Poso Creek/McVan Facility.

5. Stringency of Requirements for Individual Pollutants

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 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).

Summary of Final Effluent Limitations
Discharge Point 001

Table F-20 Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations					Basis[1]
		Average Annual	Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Arsenic, Total Recoverable	µg/L	--	130	220	--	--	PBDC
Copper, Total Recoverable	µg/L	--	13	26	--	--	PBDC
Iron, Total Recoverable	µg/L	480	--	--	--	--	PBDC
Lead, Total Recoverable	µg/L	--	6.0	12	--	--	PBDC
pH	pH units	--	--	--	6.5	8.5	BP
Electrical Conductivity	µmhos/cm	1200	--	--	--	--	PP

BP – Based on water quality objectives contained in the Basin Plan.
PBDC – Based on facility performance with dilution credit
PP – Based on the previous permit

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 biostimulatory substances, color, chemical constituents, dissolved oxygen, floating material, pH, suspended sediment, settleable substances, suspended material, tastes and odors, TDS, 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. **Mercury.** This provision allows the Central Valley Water Board to reopen this Order in the event mercury is found to be causing toxicity based on acute or 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.

b. **Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through 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 a numeric chronic toxicity water quality objective is adopted by the State Water Board, this Order may be reopened to include a numeric chronic toxicity limitation based on that objective.

c. **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 copper and lead. If the Discharger performs studies 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.

d. **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.) 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:

i. Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants, EPA/833-B-99/002, August 1999.

ii. Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs), EPA/600/2-88/070, April 1989.

iii. Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures, Second Edition, EPA 600/6-91/003, February 1991.

iv. Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I, EPA/600/6-91/005F, May 1992.

v. 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.

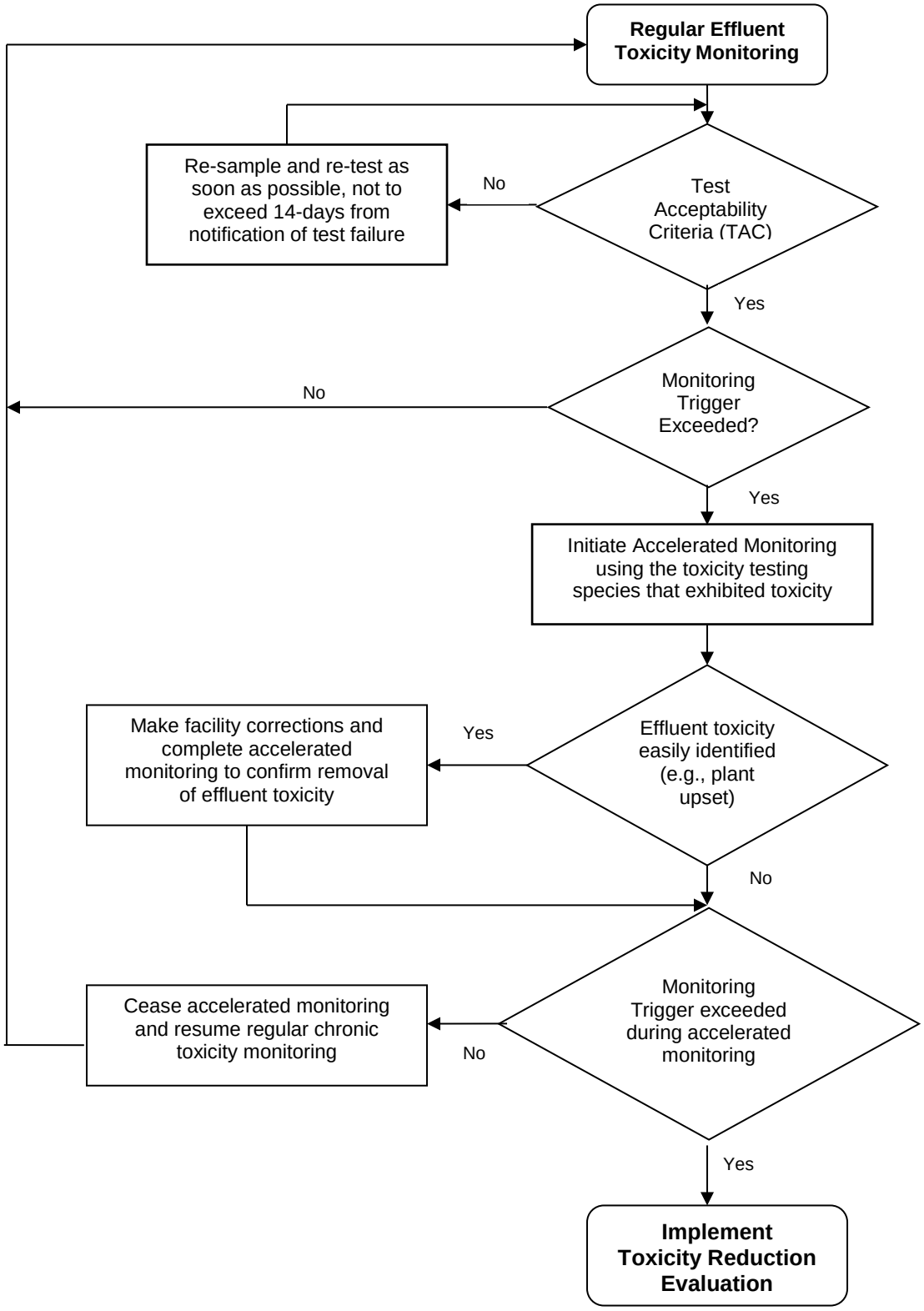
vi. Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA 600/R-92/081, September 1993.

vii. 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.

viii. 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.

ix. Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991.

Figure F-1
WET Accelerated Monitoring Flow Chart



b. **Liquid Mining Waste Discharge Characterization.** Monitoring locations VAD-001 and INF-001 are described in the Monitoring and Reporting Program, Attachment E, Table E-1. The character of the liquid mining waste will be different at VAD-001 (V-Adit) than at INF-001 because, the discharge from the V-Adit travels overland for approximately 1/3 mile to the treatment system/infiltration gallery. During the overland travel, the factors affecting the discharge are not known but could include infiltration, exfiltration, storm flows, and pH changes. The Discharger shall characterize the liquid mining waste discharge quarterly for two years at VAD-001 and at INF-001 as described in Table E-7 and Table E-9 of the MRP (Attachment E).

The liquid mining waste characterization study shall be conducted according to the following schedule:

Task	Compliance Date
i. Begin liquid mining waste characterization study	**1 April 2016**
ii. End liquid mining waste characterization study	**1 April 2018**
ii Submit final report on the liquid mining waste characterization study	**1 August 2018**

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, copper, and lead) in the effluent at or below the effluent limitations;

ii. Implementation of appropriate cost-effective control measures for the reportable priority pollutants (arsenic, copper, and lead), 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

b. Treatment System/Infiltration Gallery Operation and Maintenance Specifications. The treatment system/infiltration gallery must be operated in accordance with an operations and maintenance plan that assures continued optimal operation of the treatment system/infiltration gallery.

i. The Discharger shall conduct quarterly inspections of the existing and any new units of the treatment system/infiltration gallery to make observations, statements, take photographs, and maintain the treatment system/infiltration gallery, piping, and flow structures as follows:

- Visual inspection of the treatment system/infiltration gallery berms and levees, influent, and effluent, flow/no flow to the river;
- Statement by inspecting staff regarding condition of berms, levees, and other components of the treatment system/infiltration gallery;
- Statement by inspecting staff that there is or is not flow to the River from the V-Adit;
- Statement by inspecting staff that there is or is not flow to the River from the treatment system/infiltration gallery;
- Include any documentation (e.g. photographs) of the treatment system/infiltration gallery and/or of unsafe conditions that prevent quarterly sampling; and
- Address any corrective actions that require future activity at the treatment system/infiltration gallery with a schedule for conducting the repairs.

ii. The Discharger shall report the observations, statements, and maintenance needs in an addendum to the quarterly SMR, with a schedule for completion of any repairs.

iii. The Discharger shall submit an operations and maintenance plan for the existing treatment system/infiltration gallery as follows:

Task	Compliance Date
i. Submit operations and maintenance plan for approval by the Executive Officer.	**1 April 2016**

b. Treatment System Rehabilitation and/or New Construction Specifications. The existing bioreactor/infiltration gallery was in disrepair during the inspections in 2013 and 2014. Due to the disrepair, the bioreactor/infiltration gallery is unlikely to be operating as designed and representative samples could not be collected at INF-001 or EFF-001. Representative samples must be collected by the Discharger at INF-001 and EFF-001 as specified in Attachment E, the Monitoring and Reporting Program. The only existing bioreactor/infiltration gallery effluent sample collected, in April 2013 by the Discharger, indicates that the bioreactor is not effectively removing arsenic; the mine's V-adit arsenic discharge concentration was 37 µg/L and the bioreactor treated effluent discharge was 28 µg/L. The existing permit's arsenic monthly average effluent limit is 10 µg/L from 1 June to 30 November, and 115 µg/L from 1 December to 31 May. Any discharges to the Middle Fork American River between 1 June and 30 November will likely exceed the arsenic effluent limitations. In 2012, the influent to the treatment system contained concentrations of copper and lead above the calculated criteria. No data exists

regarding copper and lead concentrations in the treated effluent, and the bioreactor/infiltration gallery is now in disrepair. In 2002, concentrations of iron from the V-Adit exceeded the water quality criterion for iron. In the 2013 sample, TDS data collected from the V-Adit was reported at 870 mg/L; exceeding the TDS criterion. The treatment system/infiltration gallery must be rehabilitated, updated, and/or replaced as required in the following Task Schedule:

	Task	Date Due
i	Submit Assessment of Alternatives for treatment system rehabilitation and/or construction of new treatment units, with selected alternative	**1 January 2017**
ii.	Submit Workplan/Work Schedule for selected alternative for approval by Executive Officer	**1 October 2017**
iii.	Submit Report showing completion of work outlined in Task ii.	**1 December 2019**

5. Special Provisions for Municipal Facilities (POTW's Only) – Not Applicable

6. Other Special Provisions – Not Applicable

7. Compliance Schedules – Not Applicable

VII. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

CWA section 308 and 40 C.F.R. sections 122.41(h), (j)-(l), 122.44(i), and 122.48 require that all NPDES permits specify monitoring and reporting requirements. Water Code sections 13267 and 13383 also authorize the Central Valley Water Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. The Monitoring and Reporting Program (MRP), Attachment E of this Order establishes monitoring, reporting, and recordkeeping 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

1. Influent monitoring is required to collect data on the flow characteristics of the wastewater entering the treatment system and/or being discharged to the Middle Fork American River.

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. The effluent monitoring program in this Order differs substantially from that in previous Order R5-2008-0168. Order R5-2008-0168 had effluent monitoring requirements for TDS, arsenic, and iron. This Order also contains effluent monitoring requirements for TDS, arsenic, and iron, as well as copper and lead monitoring. This Order also includes a requirement for influent monitoring of TDS, arsenic, iron, copper, and lead.
3. Monitoring data collected over the previous permit term for silver did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, specific monitoring requirements for this parameter have not been retained from Order R5-2008-0168.

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*…." No constituents were reported with this condition.

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 Department of Public Health 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 the Facility, 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. **Acute Toxicity.** Twice per year 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity with a non-operational treatment system. Annual 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity with an operational treatment system. See Monitoring and Reporting Program Attachment E, section V for complete instructions on conducting Acute Toxicity Testing.

2. **Chronic Toxicity.** Chronic whole effluent toxicity testing is required in order to demonstrate compliance with the Basin Plan's narrative toxicity objective with a non-operational treatment system. Once per permit term chronic whole effluent toxicity testing is required in order to demonstrate compliance with the Basin Plan's narrative toxicity objective with an operational treatment system. See Monitoring and Reporting Program Attachment E, section V for complete instructions on conducting Chronic Toxicity Testing.

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.

2. Groundwater – Not Applicable

E. Other Monitoring Requirements

1. Effluent and Ambient Priority Pollutant Scans

Effluent and receiving water samples, upstream and downstream of the discharge, must be sampled for Priority Pollutant analysis as described in the Monitoring and Reporting Program Attachment E, section IX.

2. **Treatment System Observations**

As described in Section VI.C.4, Treatment System/Infiltration Gallery Operation and Maintenance Specifications, the treatment system will be inspected quarterly and observations will be reported in the Quarterly SMRs. The observer will include a Statement that the berms and levees are intact and will note any corrective actions that are necessary with a schedule for completion of any repairs.

VIII. PUBLIC PARTICIPATION

The Central Valley Water Board has considered the issuance of WDR's that will serve as an NPDES permit for Sliger 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 posting of the Notice of Public Hearing at the nearest court house, at the nearest post office, and in one other public location.

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 by email to centralvalleysacramento@waterboards.ca.gov, attention NPDES Permitting Section.

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 30 August 2015.

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:	1/2 October 2015
Time:	8:30 a.m.
Location:	Regional Water Quality Control Board, Central Valley Region 777 Cypress Avenue Redding, CA 96001

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

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Arsenic	µg/L	140	2	10	340	150	--	--	--	10	Yes
Cadmium	µg/L	ND	ND	0.75	0.82	0.75	--	--	--	--	No
Chloride	mg/L	370	2.6	250	--	--	--	--	--	250	Yes
Chromium III	µg/L	5.6	1.3	60	500	60	--	--	--	--	No
Copper	µg/L	4.2	0.5	2.8	3.7	2.8	--	--	--	--	Yes
EC	µmhos/cm	900	44	900	--	--	--	--	--	900	Yes
Iron	µg/L	500	ND	300	--	--	--	--	--	300	Yes
Lead	µg/L	1.9	ND	0.46	12	0.46	--	--	--	--	Yes
Mercury	ng/L	10	--	770	--	770	--	--	--	--	No
Nickel	µg/L	6.6	ND	15	130	15	--	--	--	--	No
Silver	µg/L	ND	ND	0.30	0.30	--	--	--	--	--	No
TDS	mg/L	870	43	500	--	--	--	--	--	500	Yes
Zinc	µg/L	7.6	ND	33	33	33	--	--	--	--	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

ATTACHMENT H – CALCULATION OF WQBEL'S

Human Health WQBEL's Calculations										
Parameter	**Units**	**Criteria**	**Mean Background Concentration**	**Dilution Factor**	**MDEL/AMEL Multiplier**	**AMEL Multiplier**	**AMEL**	**MDEL**	**AWEL**	**AYEL**
Arsenic	µg/L	10	2.0	--	1.63	1.34	10	16	--	--
Iron, Total Recoverable	µg/L	300	ND	--	--	--	--	--	--	300
Total Dissolved Solids	µg/L	500	40	--	--	--	--	--	--	500

1 Calculated by setting the LTA equal to the Secondary MCL of 200 µg/L and using the AMEL multiplier to set the AMEL. The AWEL was calculated from the AMEL using the MDEL/AMEL multiplier. (Table 2 of the SIP)
2 Maximum background concentration.

Aquatic Life WQBEL's Calculations															
Parameter	**Units**	**Criteria**		**Dilution Factors**		**Aquatic Life Calculations**							**Final Effluent Limitations**		
		CMC	**CCC**	**CMC**	**CCC**	**ECA Multiplier$_{acute}$**	**LTA$_{acute}$**	**ECA Multiplier$_{chronic}$**	**LTA$_{chronic}$**	**AMEL Multiplier$_{95}$**	**AWEL Multiplier**	**MDEL Multiplier$_{99}$**	**AMEL[1]**	**AWEL[2]**	**MDEL[3]**
Copper	µg/L	3.7	2.8	--	--	0.32	1.2	0.53	1.48	1.55	--	3.11	1.8	--	3.7
Lead	µg/L	13.4	0.53	--	--	0.32	4.3	0.53	0.28	1.55	--	3.11	0.43	--	0.87

1 Average Monthly Effluent Limitations are calculated according to Section 1.4 of the SIP using a 95th percentile occurrence probability.
2 Average Weekly Effluent Limitations are calculated according to Section 1.4 of the SIP using a 98th percentile occurrence probability.
3 Maximum Daily Effluent Limitations are calculated according to Section 1.4 of the SIP using a 99th percentile occurrence probability.