CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

CENTRAL VALLEY REGION

11020 Sun Center Drive, #200 Rancho Cordova, California 95670-6114
Phone (916) 464-3291 • Fax (916) 464-4645
http://www.waterboards.ca.gov/centralvalley

ORDER R5-2013-XXXX
NPDES NO. CA0085243

WASTE DISCHARGE REQUIREMENTS FOR THE MERIDIAN BEARTRACK COMPANY ROYAL MOUNTAIN KING MINE CALAVERAS COUNTY

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 1. Discharger Information

Discharger	Meridian Beartrack Company
Name of Facility	Royal Mountain King Mine
Facility Address	4461 Rock Creek Road
	Copperopolis, CA 95228
	Calaveras County
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Quality Control Board have classified this discharge as a major discharge.	

The discharge by the Meridian Beartrack Company from the discharge points identified below is subject to waste discharge requirements as set forth in this Order:

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Groundwater	37º 59’ 22” N	120º 41’ 12” W	Littlejohns Creek

Table 3. Administrative Information

This Order was adopted by the Regional Water Quality Control Board on:	**<Adoption Date>**
This Order shall become effective on:	**<Effective Date>**
This Order shall expire on:	**<Expiration Date>**
The Discharger shall file a Report of Waste Discharge in accordance with title 23, California Code of Regulations, as application for issuance of new waste discharge requirements no later than:	**<180 days prior to the Order expiration date OR insert date>**

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

_____

Pamela C. Creedon, Executive Officer

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I. FACILITY INFORMATION

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 4. Facility Information

Discharger	Meridian Beartrack Company
Name of Facility	Royal Mountain King Mine
Facility Address	4461 Rock Creek Road
	Copperopolis, CA 95228
	Calaveras County
Facility Contact, Title, and Phone	John Teagle, Environmental Coordinator, (209)785-3222 ext. 27
Mailing Address	P.O. Box 190, Copperopolis, CA 95228
Type of Facility	Industrial
Facility Design Flow	43 million gallons per day (MGD) (peak design flow)

II. FINDINGS

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

A. Background. Meridian Beartrack Company (hereinafter Discharger) was authorized to discharge pursuant to Order R5-2007-0162-01 (as amended by Order R5-2011-0087) and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0085243. The Discharger submitted a Report of Waste Discharge, dated 4 June 2012, and applied for a NPDES permit renewal to discharge up to 3.0 MGD (monthly average) of treated wastewater from the Royal Mountain King Mine, hereinafter Facility. The application was deemed complete on 12 June 2012.

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. Facility Description. The Discharger owns and operates a mine reclamation site. Closure Waste Discharge Requirements (WDR) Order R5-2008-0021 regulates the closure of the Facility. The Facility consists of three waste management units (WMUs), three overburden disposal sites (ODSs), three former mining pits, and an administrative building and related facilities.

The treatment system consists of commingling and discharging groundwater from three overburden disposal sites (ODSs), the flotation tailings reservoir (FTR), and excess water in Skyrocket Pit Lake. Wastewater is discharged from Discharge Point No. 001 (see table on cover page) to Littlejohns Creek, a water of the United States, and a tributary to the San Joaquin River within the boundaries of the Sacramento – San Joaquin Delta. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.

C. Legal Authorities. This Order is issued pursuant to section 402 of the Clean Water Act (CWA) and implementing regulations adopted by USEPA and chapter 5.5, division 7 of the California Water Code (Water Code; commencing with section 13370). It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260).

D. 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 Order requirements, is hereby incorporated into this Order and constitutes part of the Findings for this Order. Attachments A through E and G through I are also incorporated into this Order.

E. California Environmental Quality Act (CEQA). Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code sections 21100-21177.

F. Technology-based Effluent Limitations. Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, title 40 of the Code of Federal Regulations (40 CFR 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. Technology-based effluent limitations are not applicable to the discharge authorized by this Order. A detailed discussion of the technology-based effluent limitations development is included in the Fact Sheet.

G. Water Quality-based Effluent Limitations (WQBELs). Section 301(b) of the CWA and 40 CFR 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

40 CFR 122.44(d)(1)(i) mandates 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, WQBELs must be established using: (1) USEPA 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 40 CFR 122.44(d)(1)(vi).

H. Water Quality Control Plans. 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. The Basin Plan at page II-2.00 states that the "…*beneficial uses of any specifically identified water body generally apply to its tributary streams*." Table II-1 of the Basin Plan identifies the beneficial uses of certain specific water bodies. The Basin Plan does not specifically identify beneficial uses for Littlejohns Creek, but does identify present and potential uses in Table II-1 for the Sacramento – San Joaquin Delta, to which Littlejohns Creek, via French Camp Slough, is tributary. In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Thus, as discussed in detail in the Fact Sheet, beneficial uses applicable to Littlejohns Creek are as follows:

Table 5. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Littlejohns Creek	Existing uses from Table II-1 of the Basin Plan: Municipal and domestic supply (MUN); Agricultural supply, including irrigation and stock watering (AGR); Industrial process supply (PROC); Industrial service supply (IND); Water contact recreation, including canoeing and rafting (REC-1); Non-contact water recreation (REC-2); Warm freshwater habitat (WARM); Cold freshwater habitat (COLD); Migration of aquatic organisms, warm and cold (MIGR); Spawning, reproduction, and/or early development, warm (SPWN); Wildlife habitat (WILD); and Navigation (NAV). Suitable uses from State Water Board Resolution No. 88-63: Municipal and domestic supply (MUN).

The Basin Plan includes a list of Water Quality Limited Segments (WQLSs), which are defined as "…*those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR 130, et seq.)*." The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to WQLSs. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment*." Littlejohns Creek is listed as a WQLS for *Escherichia coli* (E. coli) and unknown toxicity in the 303(d) list of impaired water bodies. Effluent limitations for acute toxicity are included in this Order.

Requirements of this Order specifically implement the Basin Plan.

I. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on 22 December 1992, and later amended it on 4 May 1995 and

9 November 1999. About 40 criteria in the NTR applied in California. On 18 May 2000, USEPA 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 water quality criteria for priority pollutants.

J. **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 USEPA 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 USEPA 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.

K. **Compliance Schedules and Interim Requirements.** In general, an NPDES permit must include final effluent limitations that are consistent with CWA section 301 and with 40 CFR 122.44(d). There are exceptions to this general rule. The State Water Board's *Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits* (Compliance Schedule Policy) allows compliance schedules for new, revised, or newly interpreted water quality objectives or criteria, or in accordance with a TMDL. All compliance schedules must be as short as possible, and may not exceed ten years from the effective date of the adoption, revision, or new interpretation of the applicable water quality objective or criterion, unless a TMDL allows a longer schedule. A Regional Water Board, however, is not required to include a compliance schedule, but may issue a Time Schedule Order pursuant to Water Code section 13300 or a Cease and Desist Order pursuant to Water Code section 13301 where it finds that the discharger is violating or threatening to violate the permit. The Central Valley Water Board will consider the merits of each case in determining whether it is appropriate to include a compliance schedule in a permit, and, consistent with the Compliance Schedule Policy, should consider feasibility of achieving compliance, and must impose a schedule that is as short as possible to achieve compliance with the effluent limit based on the objective or criteria.

The Compliance Schedule Policy and the SIP do not allow compliance schedules for priority pollutants beyond 18 May 2010, except for new or more stringent priority pollutant criteria adopted by USEPA after 17 December 2008.

Where a compliance schedule for a final effluent limitation exceeds one year, the Order must include interim numeric limitations for that constituent or parameter, interim milestones and compliance reporting within 14 days after each interim milestone. The permit may also include interim requirements to control the pollutant, such as pollutant minimization and source control measures. This Order does not include interim effluent limitations or discharge specifications.

L. Alaska Rule. On 30 March 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards become effective for CWA purposes. (40 CFR 131.21 and 65 FR 24641 (27 April 2000).) Under the revised regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after 30 May 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by 30 May 2000 may be used for CWA purposes, whether or not approved by USEPA.

M. Stringency of Requirements for Individual Pollutants. This Order contains WQBELs for individual pollutants. Technology-based effluent limitations are not applicable to the discharge. The WQBELs consist of restrictions on antimony, arsenic, pH, selenium, and total dissolved solids.

WQBELs have been scientifically 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 WQBELs were derived from the CTR, the CTR is the applicable standard pursuant to 40 CFR 131.38. The scientific procedures for calculating the individual WQBELs for priority pollutants are based on the CTR-SIP, which was approved by USEPA on 18 May 2000. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to 30 May 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to 30 May 2000, but not approved by USEPA before that date, are nonetheless "*applicable water quality standards for purposes of the [Clean Water] Act*" pursuant to 40 CFR 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the technology-based requirements of the CWA and the applicable water quality standards for purposes of the CWA.

N. Antidegradation Policy. 40 CFR 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 No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing quality of waters 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. As discussed in detail in the Fact Sheet, the permitted discharge is consistent with the antidegradation provision of 40 CFR 131.12 and Resolution No. 68-16.

O. Anti-Backsliding Requirements. Sections 303(d)(4) and 402(o)(2) of the CWA and federal regulations at 40 CFR 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions. Some effluent limitations in this Order are less stringent that those in Order R5-2007-0162-01. As discussed in detail in the Fact Sheet, this relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

P. Endangered Species Act. 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 sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 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.

Q. 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 or 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 that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. 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 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.

R. Standard and Special Provisions. Standard Provisions, which apply to all NPDES permits in accordance with 40 CFR 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under 40 CFR 122.42. The Central Valley Water Board has also included in this Order special provisions applicable to the Discharger. Some special provisions require submittal of technical reports. All technical reports are required in accordance with Water Code section 13267. The rationale for the special provisions and need for technical reports required in this Order is provided in the Fact Sheet.

S. Provisions and Requirements Implementing State Law. The provisions/requirements in sections VI.C.6.a of this Order 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.

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

U. 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 Order R5-2007-0162-01 is rescinded upon the effective date of this Order 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 federal CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

III. DISCHARGE PROHIBITIONS

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

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

C. The discharge of wastewater at Discharge Point No. 001 is prohibited when the daily average flow rate of Littlejohns Creek is less than 1,000 gallons per minute as measured at Monitoring Location RSW-002.

D. The discharge of wastewater at Discharge Point No. 001 is prohibited except when Littlejohns Creek flows provide a flow ratio greater than or equal to 7:1 (Littlejohns Creek flow : effluent flow) as a daily average.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point No. 001

1. Final Effluent Limitations – Discharge Point No. 001

a. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point No. 001, with compliance measured at Monitoring Location EFF-001 as described in the Monitoring and Reporting Program:

Table 6. Effluent Limitations

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants					
pH	standard units	--	--	6.5	8.5
Priority Pollutants					
Antimony, Total Recoverable	µg/L	20	33	--	--
Selenium, Total Recoverable	µg/L	14	~~20~~14	--	--
	lbs/day	0.35[1]	~~7.2~~5.0[2]	--	--
Non-Conventional Pollutants					
Total Dissolved Solids	mg/L	--	4,000	--	--

[1] Based on an average monthly flow effluent limit of 3 million gallons per day (MGD)
[2] Based on a design capacity of 43 MGD.

b. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point No. 001, with compliance measured at Monitoring Location EFF-001, as described in the Monitoring and Reporting Program. Applicable effluent limitations shall be based on the corresponding flow ratio (Littlejohns Creek flow: Effluent flow) at the time of discharge.

Table 7. Effluent Limitations – Arsenic

Parameter	Units	Flow Ratio[1]	Effluent Limitations	
			Average Monthly	Maximum Daily
Arsenic, Total Recoverable	µg/L	7:1 ≤ Flow Ratio < 8:1	69	85
		8:1 ≤ Flow Ratio < 9:1	77	95
		9:1 ≤ Flow Ratio < 10:1	86	110
		10:1 ≤ Flow Ratio	94	120

[1] Daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively.

c. **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.

d. **Total Dissolved Solids.** The total annual (1 August – 31 July) mass discharge of total dissolved solids shall not exceed 3,000 tons/year.

e. **Average Monthly Flow.** The average monthly discharge flow shall not exceed 3.0 million gallons per day (MGD).

2. **Interim Effluent Limitations – Not Applicable**

B. Land Discharge Specifications – Not Applicable

C. Reclamation Specifications – Not Applicable

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

Receiving water limitations are based on water quality objectives contained in the Basin Plan and are a required part of this Order. The discharge shall not cause the following in Littlejohns Creek:

1. **Bacteria.** The fecal coliform concentration, based on a minimum of not less than five samples for any 30-day period, to exceed a geometric mean of 200 MPN/100 mL, nor more than 10 percent of the total number of fecal coliform samples taken during any 30-day period to exceed 400 MPN/100 mL.

2. **Biostimulatory Substances.** Water to contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.

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

4. **Color.** Discoloration that causes nuisance or adversely affects beneficial uses.

5. **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.

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

7. **Oil and Grease.** Oils, greases, waxes, or other materials to be present in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.

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

9. **Pesticides:**

   a. Pesticides to be present, individually or in combination, in concentrations that adversely affect beneficial uses;

   b. Pesticides to be present in bottom sediments or aquatic life in concentrations that adversely affect beneficial uses;

   c. Total identifiable persistent chlorinated hydrocarbon pesticides to be present in the water column at concentrations detectable within the accuracy of analytical methods approved by USEPA or the Executive Officer;

   d. Pesticide concentrations to exceed those allowable by applicable antidegradation policies (see State Water Board Resolution No. 68-16 and 40 CFR 131.12.);

   e. Pesticide concentrations to exceed the lowest levels technically and economically achievable;

   f. Pesticides to be present in concentration in excess of the maximum contaminant levels set forth in CCR, Title 22, division 4, chapter 15; nor

   g. Thiobencarb to be present in excess of 1.0 µg/L.

10. **Radioactivity:**

   a. Radionuclides to be present in concentrations that are harmful to human, plant, animal, or aquatic life nor that result in the accumulation of radionuclides in the

food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

b. Radionuclides to be present in excess of the maximum contaminant levels (MCLs) specified in Table 64442 of section 64442 and Table 64443 of section 64443 of Title 22 of the California Code of Regulations.

11. 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.

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

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

14. 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.

15. Temperature. The natural temperature to be increased by more than 5°F. Compliance to be determined based on the difference in temperature at RSW-002 and RSW-003.

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

17. 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.

18. Total Dissolved Solids. The total dissolved solids to exceed 1,000 mg/L.

19. **Arsenic, Total Recoverable.** The total recoverable arsenic to exceed 10 µg/L.

B. Groundwater Limitations – Not Applicable

VI. PROVISIONS

A. Standard Provisions

1. The Discharger shall comply with all Standard Provisions (federal NPDES standard conditions from 40 CFR Part 122) included in Attachment D of this Order.

2. The Discharger shall comply with the following provisions:

   a. If the Discharger's wastewater treatment plant is publicly owned or subject to regulation by California Public Utilities Commission, it shall be supervised and operated by persons possessing certificates of appropriate grade according to Title 23, CCR, division 3, chapter 26.

   b. 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:

   - *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.

   - *Land application plans.* When required by a permit condition to incorporate a land application plan for beneficial reuse of sewage sludge, to revise an existing land application plan, or to add a land application plan.

   - *Change in sludge use or disposal practice.* Under 40 CFR 122.62(a)(1), a change in the Discharger's sludge use or 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.

c. 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.

d. 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.

e. 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.

f. 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 sludge use 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 sludge use or disposal.

g. The Discharger shall ensure compliance with any existing or future pretreatment standard promulgated by USEPA under section 307 of the CWA, or amendment thereto, for any discharge to the municipal system.

h. 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.

i. Safeguard to electric power failure:

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

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

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

j. 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.

k. A publicly owned treatment works whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment and disposal facilities. The projections shall be made in January, based on the last 3 years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in 4 years, the Discharger shall notify the Central Valley Water Board by 31 January. A copy of the notification shall be sent to appropriate local elected officials, local permitting agencies and the press. Within 120 days of the notification, the Discharger shall submit a technical report showing how it will prevent flow volumes from exceeding capacity or how it will increase capacity to handle the larger flows. The Central Valley Water Board may extend the time for submitting the report.

l. 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.

m. 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.

n. For publicly owned treatment works, prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a permanent 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. (Water Code section 1211).

o. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, maximum daily effluent limitation, 1-hour average 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)].

p. 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.

q. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.

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

B. Monitoring and Reporting Program Requirements

The Discharger shall comply with the Monitoring and Reporting Program, and future revisions thereto, in Attachment E of this Order.

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. This Order may be reopened for modification, or revocation and reissuance, as a result of the detection of a reportable priority pollutant generated by special conditions included in this Order. These special conditions may be, but are not limited to, fish tissue sampling, whole effluent toxicity, monitoring requirements

on internal waste stream(s), and monitoring for surrogate parameters. Additional requirements may be included in this Order as a result of the special condition monitoring data.

c. **Whole Effluent Toxicity.** As a result of a Toxicity Reduction Evaluation (TRE), this Order may be reopened to include a narrative or numeric chronic toxicity effluent 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. **Water Effects Ratios (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating criteria for applicable inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable. 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.

e. **Flow Ratio.** Should the Discharger provide additional information that indicates a lower flow ratio would be adequately protective of the beneficial uses of the receiving water, this Order may be reopened to modify Discharge Prohibition III.D.

f. **Drinking Water Policy.** The Central Valley Water Board is developing a Drinking Water Policy. 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. **Chronic Whole Effluent Toxicity.** 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 the Monitoring and Reporting Program (Attachment E, 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 exhibits toxicity, as described in subsection ii below, the Discharger is required to initiate a TRE in accordance with an approved TRE Workplan, 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 effluent toxicity, evaluate the effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity. This Provision includes procedures for accelerated chronic toxicity monitoring and TRE initiation.

i. **Accelerated Monitoring and TRE Initiation.** When the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity monitoring, 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.

ii. **Numeric Toxicity Monitoring Trigger.** The numeric toxicity monitoring trigger to initiate a TRE is > 7 TU_C (where TU_C = 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 when the effluent exhibits toxicity.

iii. **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 (4) chronic toxicity tests conducted once every 2 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 (4) 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 evidence 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 (4) 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.

Within sixty (60) days of notification by the laboratory of the test results, the Discharger shall submit to the Central Valley Water Board a TRE Workplan for approval by the Executive Officer. The TRE Workplan shall outline the procedures for identifying the source(s) of, and reducing or eliminating effluent toxicity. The TRE Workplan must be developed in accordance with USEPA guidance[1].

b. **Skyrocket Pit Lake Water Level and Water Quality Assessment.** The Discharger shall submit a status report 1 June, annually, on the water level projections for Skyrocket Pit Lake. Each report shall include an assessment of the Discharger's progress towards meeting the long-term lake level objective required in WDR Order R5-2008-0021 to mitigate dry weather groundwater flows into Littlejohns Creek. This report shall also include an evaluation (e.g., trend analyses) of total dissolved solids and arsenic concentrations in Skyrocket Pit Lake and Littlejohns Creek at Monitoring Locations RSW-001 and RSW-002 (as defined in Attachment E). It is necessary to include the concentrations of total dissolved solids and arsenic in Littlejohns Creek in order to evaluate whether lowering the level of Skyrocket Pit Lake effects water quality in Littlejohns Creek. This Order includes a reopener provision to allow the permit to be reopened to lower or raise the required flow ratio (Discharge Prohibitions III.D), based on the changes in constituent concentrations in Skyrocket Pit Lake and Littlejohns Creek as the level of Skyrocket Pit Lake is lowered.

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

a. **Surface Water Discharge Minimization Plan.** The Discharger shall update and implement the 22 July 2008 *Surface Water Discharge Minimization Plan* and submit updated plan to Central Valley Water Board by **1 February 2014**. The plan shall include measures to reduce surface water discharges to Littlejohns Creek by lowering the level of Skyrocket Pit Lake through evaporation or other means of disposal. The plan shall evaluate disposal alternatives, such as evaporation measures, spray irrigation, etc.

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

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

6. **Other Special Provisions – Not Applicable**

7. **Compliance Schedules – Not Applicable**

[1] See the Fact Sheet (Attachment F section VII.B.2.a.) for a list of USEPA guidance documents that must be considered in development of the TRE Workplan.

VII. COMPLIANCE DETERMINATION

A. Reporting Due Dates. Reporting requirements shall be in accordance with due dates specified in this Order. If the due date is on a Saturday, Sunday, State holiday, or a day the corresponding Water Board(s) office(s) is(are) closed, the due date shall be on the next business day.

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

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

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

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

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

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

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

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

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

C. **Average Monthly Flow Effluent Limitation (Section IV.A.1.d).** To evaluate compliance with the average monthly flow effluent limitation the average monthly flow shall be calculated as the total volume of wastewater discharged to Littlejohns Creek during the month (million gallons) divided by the number of days in the month.

D. **Mass Effluent Limitations.** The mass effluent limitations contained in the Final Effluent Limitations IV.A.1.a for total recoverable selenium are based on the permitted average monthly flow (average monthly effluent limitation) and the daily design flow (maximum daily effluent limitation). The average monthly and daily maximum mass of total recoverable selenium shall be calculated as follows:

Average Monthly
Mass (lbs/day) = Average Monthly Flow, MGD (calculated per section VII.C) x Average Monthly Concentration, mg/L x 8.34

Maximum Daily
Mass (lbs/day) = Average Daily Flow, MGD x Average Daily Concentration, mg/L x 8.34

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 1 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.

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 USEPA guidance (Technical Support Document For Water Quality-based Toxics Control, March 1991, second printing, EPA/505/2-90-001).

Enclosed Bays
Enclosed Bays means indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. Enclosed bays include, but are not limited to, Humboldt Bay, Bodega Harbor, Tomales Bay, Drake's Estero, San Francisco Bay, Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay. Enclosed bays do not include inland surface waters or ocean waters.

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

Estuaries
Estuaries means waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters shall be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuarine waters included, but are not limited to, the Sacramento-San Joaquin Delta, as defined in Water Code section 12220, Suisun Bay, Carquinez Strait downstream to the Carquinez Bridge, and appropriate areas of the Smith, Mad, Eel, Noyo, Russian, Klamath, San Diego, and Otay rivers. Estuaries do not include inland surface waters or ocean waters.

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 40 CFR Part 136, Appendix B, revised as of 14 May 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.

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.

Ocean Waters
The territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. Discharges to ocean waters are regulated in accordance with the State Water Board's California Ocean Plan.

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

Pollutant Minimization Program (PMP)
Pollutant minimization 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 PMP shall be prepared in accordance with section 2.4.5.1 of the SIP. 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 of the SIP.

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 or Regional Water Board.

Reporting Level (RL)
The RL is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the RL depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied in the computation of the RL.

Satellite Collection System
The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility that a sanitary sewer system is tributary to.

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

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

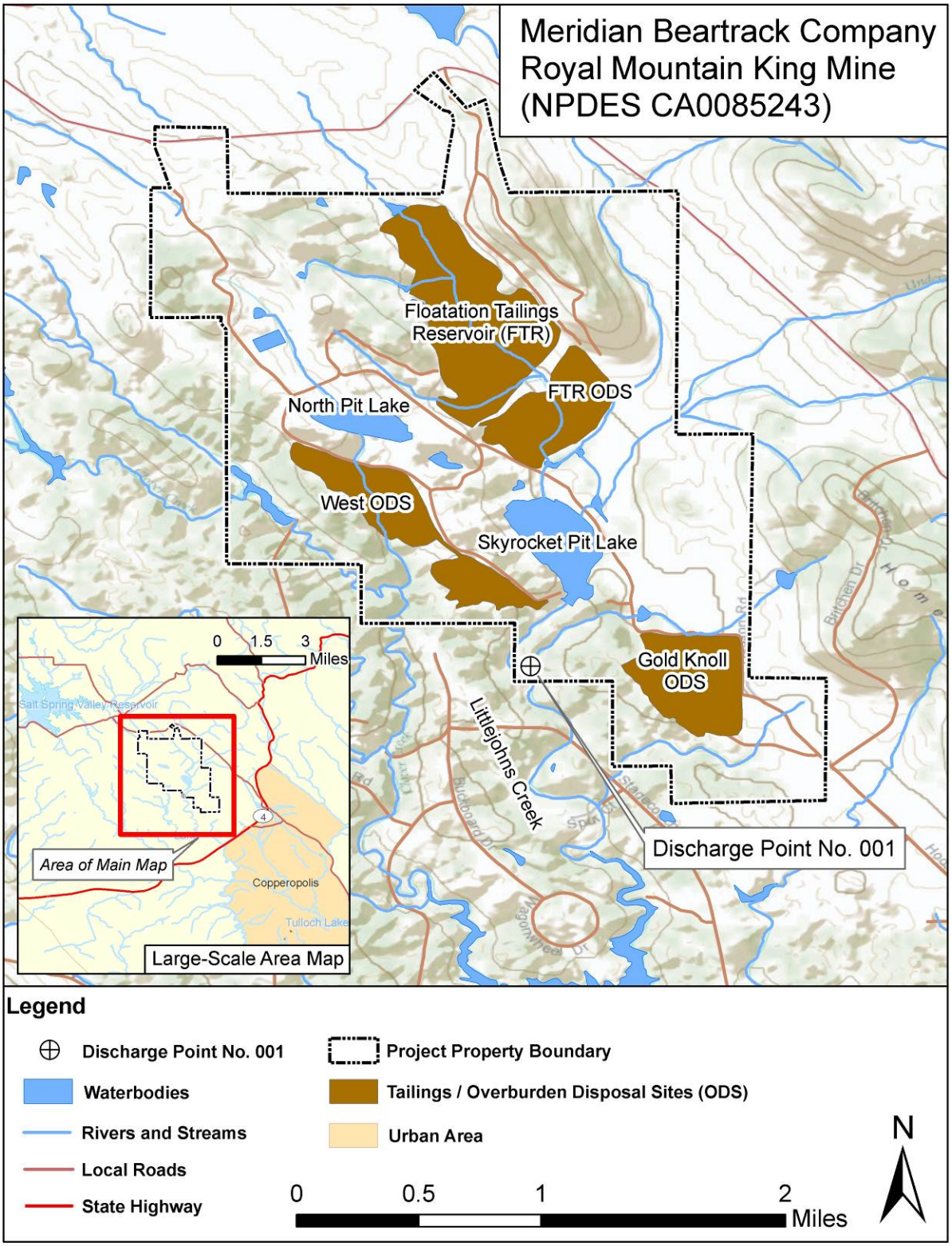
$$\sigma = (\sum[(x - \mu)^2]/(n - 1))^{0.5}$$

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

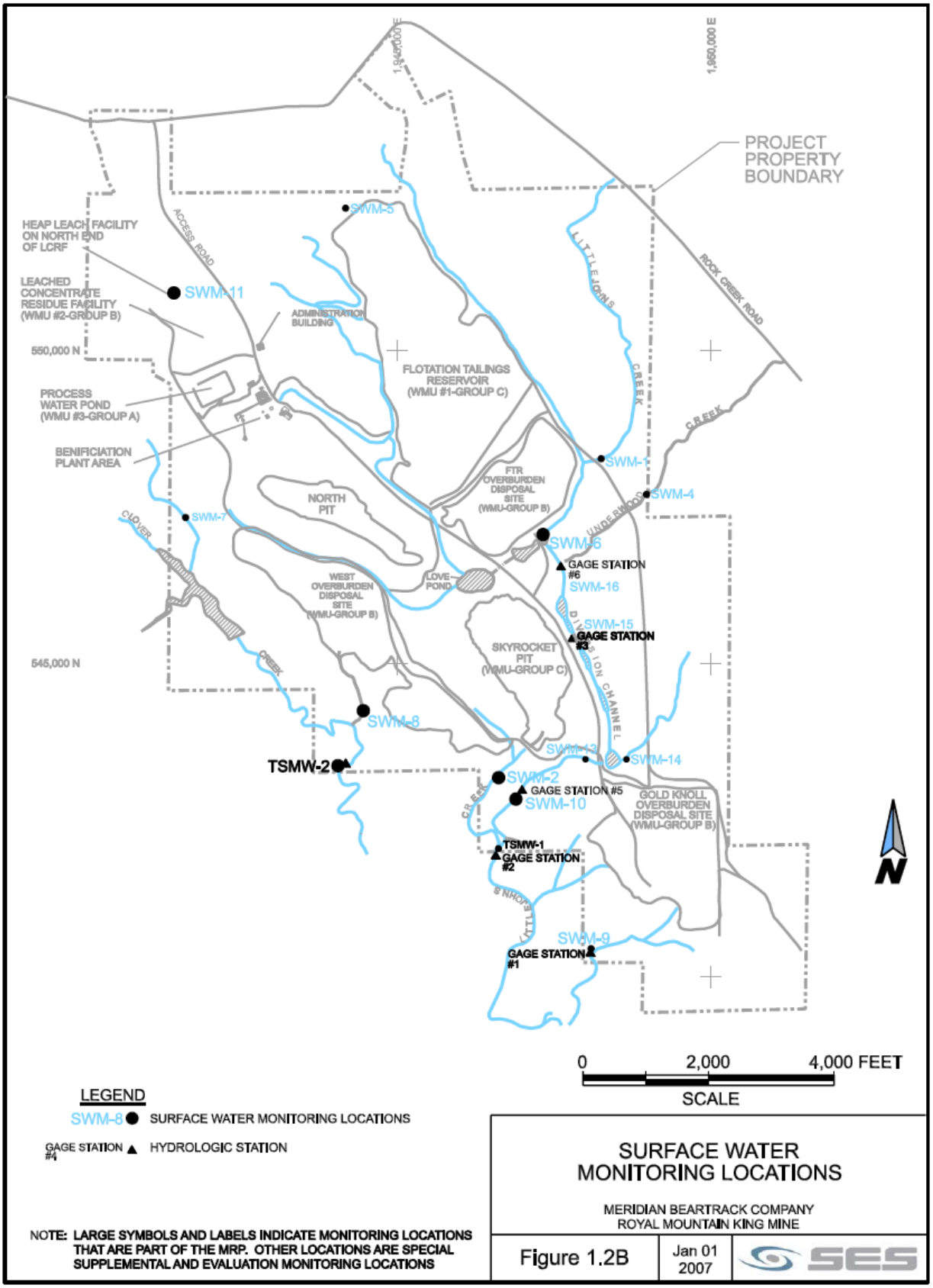
Toxicity Reduction Evaluation (TRE)
TRE is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first 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 – MAPS

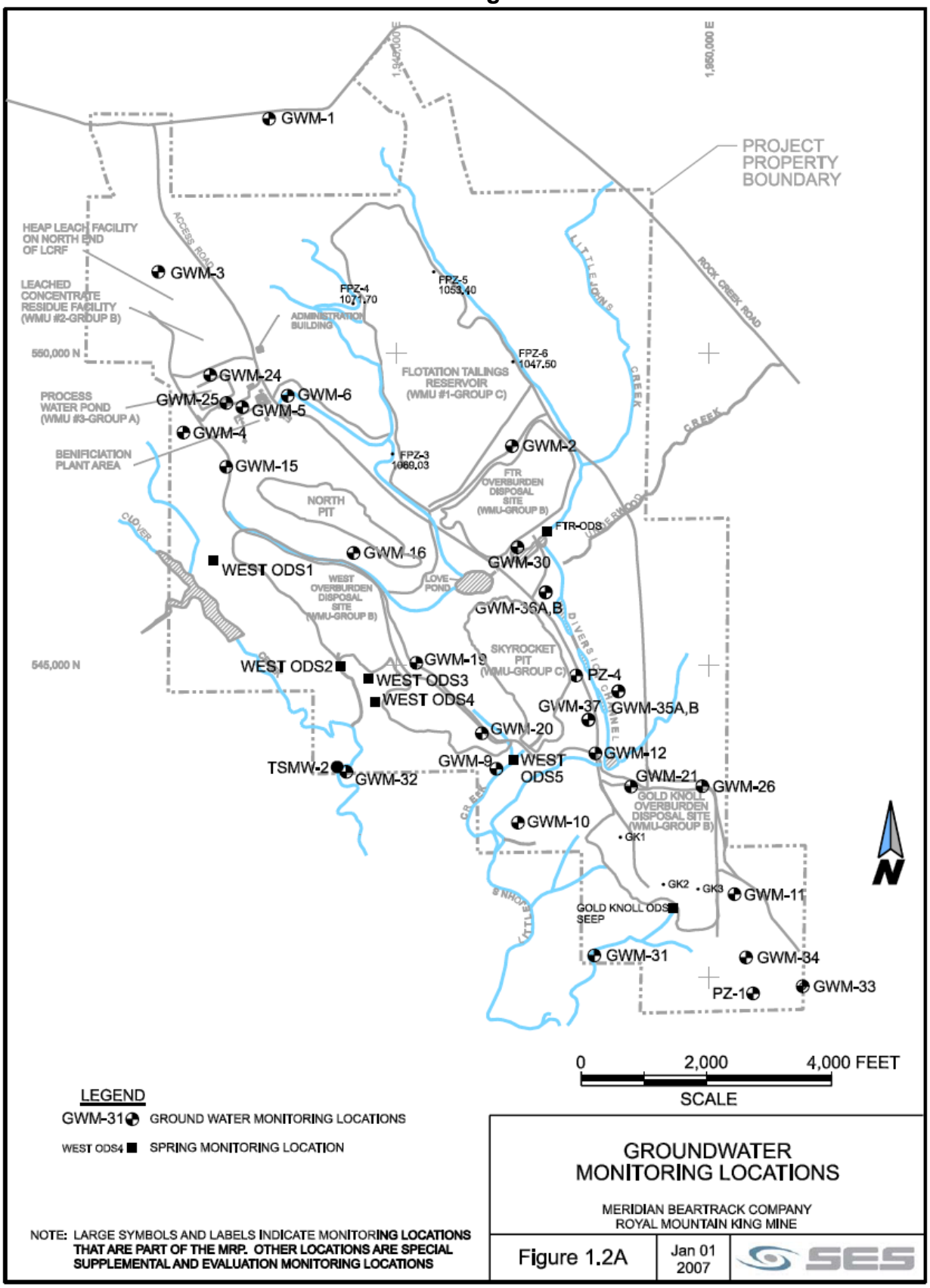
Attachment B-1. Facility Map



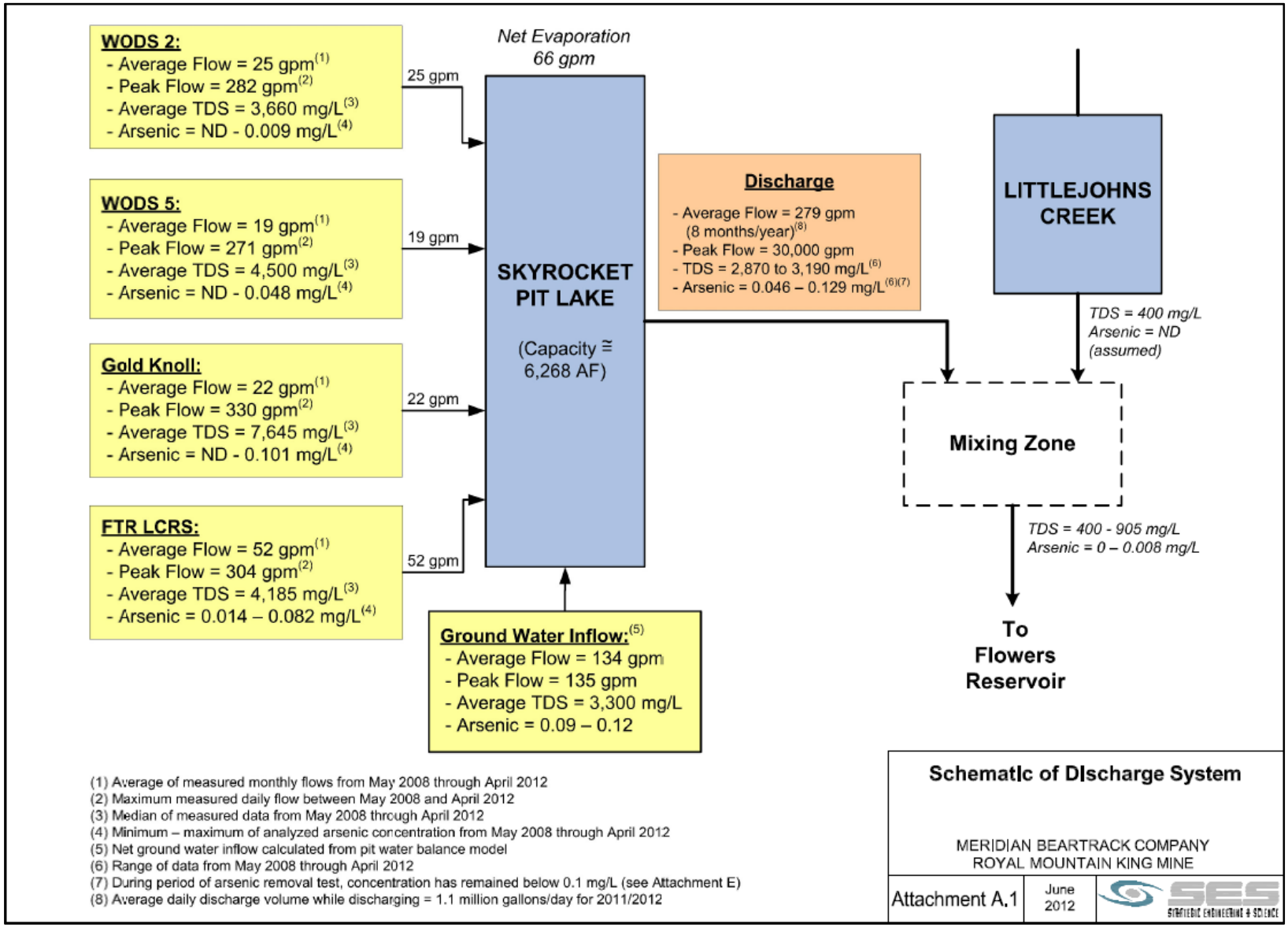
Attachment B-2. Surface Water Monitoring Location



Attachment B-3. Groundwater Monitoring Locations



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 conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code (Water Code) and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. (40 CFR 122.41(a).)

2. The Discharger shall comply with effluent standards or prohibitions established under section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 CFR 122.41(a)(1).)

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 CFR 122.41I)

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 CFR 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 CFR 122.41(e).)

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 CFR 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 CFR 122.5(c))

F. Inspection and Entry

The Discharger shall allow the Regional Water Board, State Water Board, United States Environmental Protection Agency (USEPA), 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 (40 CFR 122.41(i); Water Code section 13383):

1. Enter upon the Dischar'er's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (40 CFR 122.41(i)(1));

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (40 CFR 122.41(i)(2));

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (40 CFR 122.41(i)(3)); 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. (40 CFR 122.41(i)(4))

G. Bypass

1. Definitions

   a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. (40 CFR 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 CFR 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 CFR 122.41(m)(2))

3. Prohibition of bypass. Bypass is prohibited, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless (40 CFR 122.41(m)(4)(i)):

a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 CFR 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 CFR 122.41(m)(4)(i)(B)); and

c. The Discharger submitted notice to the Regional Water Board as required under Standard Provisions – Permit Compliance I.G.5 below. (40 CFR 122.41(m)(4)I(C))

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

b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provi–ions - Reporting V.E below (24-hour notice). (40 CFR 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 CFR 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 CFR 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 CFR 122.41(n)(3)):

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

b. The permitted facility was, at the time, being properly operated (40 CFR 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 CFR 122.41(n)(3)(iii)); and

d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 CFR 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 CFR 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 CFR 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 CFR 122.41(b))

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional 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 CFR 122.41(l)(3) and 122.61)

III. STANDARD PROVISIONS – MONITORING

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

B. Monitoring results must be conducted according to test procedures under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503 unless other test procedures have been specified in this Order. (40 CFR 122.41(j)(4) and 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 5 years (or longer as required by 40 CFR 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 Regional Water Board Executive Officer at any time. (40 CFR 122.41(j)(2))

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements (40 CFR 122.41(j)(3)(i));

2. The individual(s) who performed the sampling or measurements (40 CFR 122.41(j)(3)(ii));

3. The date(s) analyses were performed (40 CFR 122.41(j)(3)(iii));

4. The individual(s) who performed the analyses (40 CFR 122.41(j)(3)(iv));

5. The analytical techniques or methods used (40 CFR 122.41(j)(3)(v)); and

6. The results of such analyses. (40 CFR 122.41(j)(3)(vi))

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

1. The name and address of any permit applicant or Discharger (40 CFR 122.7(b)(1)); and

2. Permit applications and attachments, permits and effluent data. (40 CFR 122.7(b)(2))

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, State Water Board, or USEPA within a reasonable time, any information which the Regional Water Board, State Water Board, or USEPA 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 Regional Water Board, State Water Board, or USEPA copies of records required to be kept by this Order. (40 CFR 122.41(h); Wat. Code, § 13267)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or USEPA 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 CFR 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 CFR 122.22(a)(1))

3. All reports required by this Order and other information requested by the Regional Water Board, State Water Board, or USEPA 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 CFR 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 CFR 122.22(b)(2)); and

c. The written authorization is submitted to the Regional Water Board and State Water Board. (40 CFR 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 Regional Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 CFR 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 CFR 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 CFR 122.22(l)(4))

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices. (40 CFR 122.41(l)(4)(i))

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board. (40 CFR 122.41(l)(4)(ii))

4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. (40 CFR 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 CFR 122.41(l)(5))

E. Twenty-Four Hour Reporting

1. The Discharger shall notify the Office of Emergency Services of any noncompliance that may endanger health or the environment within two (2) hours from the time the Discharger becomes aware of the circumstances. The Discharger shall notify the Central Valley Water Board of the noncompliance by telephone or fax within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided to the Central Valley Water Board 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 CFR 122.41(l)(6)(i))

2. The following shall be included as information that must be reported within 24 hours under this paragraph (40 CFR 122.41(l)(6)(ii)):

a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 CFR 122.41(l)(6)(ii)(A))

b. Any upset that exceeds any effluent limitation in this Order. (40 CFR 122.41(l)(6)(ii)(B))

3. The Regional 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 CFR 122.41(l)(6)(iii))

F. Planned Changes

The Discharger shall give notice to the Regional 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 CFR 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 40 CFR 122.29(b) (40 CFR 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 not subject to effluent limitations in this Order. (40 CFR 122.41(l)(1)(ii))

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 40 CFR 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1). (40 CFR 122.41(l)(1)(ii))

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements. (40 CFR 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 CFR 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 Regional Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information. (40 CFR 122.41(l)(8))

VI. STANDARD PROVISIONS – ENFORCEMENT

A. The Regional 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 Regional Water Board as soon as they know or have reason to believe (40 CFR 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 CFR 122.42(a)(1)):

a. 100 micrograms per liter (µg/L) (40 CFR 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 CFR 122.42(a)(1)(ii));

c. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 CFR 122.42(a)(1)(iii)); or

d. The level established by the Regional Water Board in accordance with 40 CFR 122.44(f). (40 CFR 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 CFR 122.42(a)(2)):

a. 500 micrograms per liter (µg/L) (40 CFR 122.42(a)(2)(i));

b. 1 milligram per liter (mg/L) for antimony (40 CFR 122.42(a)(2)(ii));

c. Ten (10) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 CFR 122.42(a)(2)(iii)); or

d. The level established by the Regional Water Board in accordance with section 122.44(f). (40 CFR 122.42(a)(2)(iv))

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM

Title 40 of the Code of Federal Regulations (CFR), section 122.48 (40 CFR 122.48) requires that all NPDES permits specify monitoring and reporting requirements. California Water Code (Water Code) sections 13267 and 13383 also authorize the Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) to require technical and monitoring reports. This Monitoring and Reporting Program establishes monitoring and reporting requirements, which implement the 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 Department of Public Health (DPH). 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, dissolved oxygen, 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, dissolved oxygen, 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 DPH, 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 conduct analysis on any sample provided by USEPA as part of the Discharge Monitoring Quality Assurance (DMQA) program. The results of any such analysis shall be submitted to’USEPA's DMQA manager.

H. 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.

I. 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.

II. MONITORING LOCATIONS

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

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
001	EFF-001	The outfall pipe from Skyrocket Pit Lake, prior to its being split to the three control valves.
--	RSW-001	In Littlejohns Creek upstream of Discharge Point No. 001 at monitoring location SWM-6 (see Attachment B2).
--	RSW-002	In Littlejohns Creek 100 feet upstream of Discharge Point No. 001.
--	RSW-003	In Littlejohns Creek 300 feet downstream of Discharge Point No. 001 at monitoring location TSWM-1 (see Attachment B2).

III. INFLUENT MONITORING REQUIREMENTS – NOT APPLICABLE

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

1. When discharging to Littlejohns Creek, the Discharger shall monitor discharges from Discharge Point No. 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. Where a CTR constituent is listed in Appendix 4 of the SIP, the reporting level specified in Attachment I must be achieved by the laboratory conducting the analysis.

Table E-2. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	
Daily Average Flow Ratio (Littlejohns Creek Flow : Effluent Flow)	--	Calculate	1/Day	
Conventional Pollutants				
pH	standard units	Grab	1/Day	[1,2]
Total Suspended Solids	mg/L	Grab	1/Event[3]	[1]
Priority Pollutants				
Antimony, Total Recoverable	µg/L	Grab	1/Event[3]	[1,5]
Arsenic, Total Recoverable	µg/L	Grab	1/Event[4]	[1,5]
Selenium Total Recoverable	µg/L	Grab	1/Event[3]	[1,5]
Zinc, Total Recoverable	µg/L	Grab	1/Event[3]	[1,5]
Priority Pollutants and Other Constituents of Concern	µg/L	See Att. I	See Att.I	[1,5]

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Non-Conventional Pollutants				
Dissolved Oxygen	mg/L	Meter	1/Event[4]	[1,2]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Event[4]	[1,2]
Hardness (as $CaCO_3$)	mg/L	Grab	1/Event[3]	[1,6]
Sulfate	mg/L	Grab	1/Event[3]	[1]
Total Dissolved Solids	mg/L	Grab	1/Event[4]	[1]

[1] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or an EPA approved Alternate Testing Procedure; where no methods are specified for a given pollutant that meet a specific reporting limit or method performance standard, an alternate method can be approved by the Central Valley Water Board.

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

[3] Monitoring shall be once per discharge event, with a maximum of once per month if there are multiple discharge events in any given month. The monitoring shall be at least once per month if the discharge is continuous for multiple months.

[4] Monitoring shall be once per discharge event, with a maximum of once per week if there are multiple discharge events in a week. The monitoring shall be at least once per week if the discharge is continuous for multiple weeks.

[5] The Reporting Limits shall be below the effluent limitations. If the lowest 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 Reporting Limit shall be the lowest ML. The Reporting Levels are specified in Attachment I, Table I-1, Priority Pollutants and Other Constituents of Concern.

[6] Hardness samples shall be collected concurrently with metals samples.

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

A. Acute Toxicity Testing. The Discharger shall conduct acute toxicity testing to determine whether the effluent is contributing acute toxicity to the receiving water. The Discharger shall meet the following acute toxicity testing requirements:

1. *Monitoring Frequency* – The Discharger shall perform annual acute toxicity testing.

2. *Sample Types* – The Discharger may use flow-through or static renewal testing. For static renewal testing, the samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at Monitoring Location EFF-001.

3. *Test Species* – Test species shall be rainbow trout (*Oncorhynchus mykiss*).

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 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 annual three species chronic toxicity testing.

2. *Sample Types* – Effluent samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at Monitoring Location EFF-001. The receiving water control shall be a grab sample obtained from Monitoring Location RSW-001, 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:

   - The cladoceran, water flea, *Ceriodaphnia dubia* (survival and reproduction test);
   - The fathead minnow, *Pimephales promelas* (larval survival and growth test); and
   - 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* – The chronic toxicity testing shall be performed using the dilution series identified in Table E-3, below, unless use of an alternative diluent is detailed in the submitted TRE Action Plan, or when the receiving water is toxic.

Table E-3. Chronic Toxicity Testing Dilution Series

Sample	Dilutions (%)					Controls	
	100	75	50	25	12.5	Receiving Water	Laboratory Water
% Effluent	100	75	50	25	12.5	0	0
% Receiving Water	0	25	50	75	87.5	100	0
% Laboratory Water	0	0	0	0	0	0	100

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

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

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

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 within 30 days following completion of the test, and shall contain, at minimum:

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

b. The statistical methods used to calculate endpoints;

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

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

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

Additionally, the monthly discharger 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 monthly 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. RECLAMATION MONITORING REQUIREMENTS – NOT APPLICALBLE

VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER AND GROUNDWATER

A. Monitoring Location RSW-001, RSW-002, and RSW-003

1. When discharging to Littlejohns Creek, the Discharger shall monitor Littlejohns Creek at RSW-001, RSW-002, and RSW-003 as follows.

Table E-4. Receiving Water Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	gpm	Meter	Continuous	
Conventional Pollutants				
pH	standard units	Grab	1/Event[2]	[1,3]
Priority Pollutants				
Antimony, Total Recoverable	µg/L	Grab	1/Event[2]	[1,4]
Arsenic, Total Recoverable	µg/L	Grab	1/Event[5]	[1,4]
Selenium Total Recoverable	µg/L	Grab	1/Event[2]	[1,4]
Priority Pollutants and Other Constituents of Concern	µg/L	Att. I	Att. I[6]	[1,4]
Non-Conventional Pollutants				
Chloride	µg/L	Grab	1/Event[2]	[1]
Dissolved Oxygen	mg/L	Meter	1/Event[2]	[1,3]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Event[5]	[1,3]
Hardness (as $CaCO_3$)	mg/L	Grab	1/Event[2]	[1,3]
Sulfate	mg/L	Grab	1/Event[2]	[1]
Temperature	°C	Grab	1/Event[2]	[1]
Total Dissolved Solids	mg/L	Grab	1/Event[5]	[1]

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

[2] When discharging to Littlejohns Creek, monitoring at Monitoring Locations RSW-001 and RSW-002 shall be monthly. Monitoring at Monitoring Location RSW-003 shall be once per discharge event, with a maximum of once per month if there are multiple discharge events in any given month. Furthermore, the monitoring at Monitoring Location RSW-003 shall be at least once per month if the discharge is continuous for multiple months.

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

[4] 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.

[5] When discharging to Littlejohns Creek, monitoring at Monitoring Locations RSW-001 and RSW-002 shall be monthly. Monitoring at Monitoring Location RSW-003 shall be once per discharge event, with a maximum of once per week if there are multiple discharge events in a week. Furthermore, the monitoring at Monitoring Location RSW-003 shall be at least once per week if the discharge is continuous for multiple weeks.

[6] Monitoring is only required at Monitoring Location RSW-001 and shall be conducted concurrently with effluent sampling for priority pollutants and other constituents of concern identified in Table I-1. If no discharge has occurred during the calendar year, a sample shall be collected in December.

2. In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by Monitoring Locations RSW-001, RSW-002, and RSW-003. Attention shall be given to the presence or absence of:

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

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

IX. OTHER MONITORING REQUIREMENTS – NOT APPLICABLE

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 continue to submit eSMRs using the State Water Board's CIWQS Program Web site (http:www.waterboards.ca.gov/ciwqs/index.html). The Discharger shall maintain sufficient staffing and resources to ensure it submits eSMRs during the effective duration of this Order. This includes provision of training and supervision of individuals (e.g., Discharger personnel or consultant) on how to prepare and submit eSMRs.

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

Table E-5. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Continuous	Permit effective date	Continuous	Submit with monthly 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 monthly SMR
1/Week	Permit effective date	Sunday through Saturday	Submit with monthly SMR
1/Month	Permit effective date	First day of calendar month through last day of calendar month	Submit with monthly 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 July through 30 June	1 August

3. **Reporting Protocols.** The Discharger shall report with each sample result the applicable Reporting Level (RL) and the current Method Detection Limit (MDL), as determined by the procedure in 40 CFR 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 as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). 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 RL 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. The Discharger's laboratory(ies) may, as allowed for by the rules governing alterations to minimum level (ML) values in section 2.4.3 of the SIP, employ a calibration standard lower than the ML value in Appendix 4 of the SIP.

4. **Multiple Sample Data.** When determining compliance with an AMEL, AWEL, 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.

5. **Reporting Requirements.** In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible.

   a. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations or with other waste discharge requirements (e.g., discharge specifications, receiving water limitations, special provisions, etc.).

   b. Reports must clearly show when discharging to EFF-001 or other permitted discharge locations. Reports must show the date and time that the discharge started and stopped at each location.

   c. The highest daily maximum for the month and monthly and weekly averages shall be determined and recorded as needed to demonstrate compliance.

6. **Calculation Requirements.** The following shall be calculated and reported in the SMRs:

   a. Mass Loading Limitations. For selenium, the Discharger shall calculate and report the mass loading (lbs/day) in the SMRs. The mass loading shall be

calculated as described in Section VII of the Limitations and Discharge Requirements:

For total dissolved solids, the Discharger shall calculate and report the total annual (1 August – 31 July) mass discharge (tons/year) in the SMRs. The total annual mass loading shall be the sum of the individual calendar months. The total pollutant mass load for each individual calendar month shall be determined using an average of all concentration data collected that month and the corresponding total monthly flow.

b. Flow Ratio. The flow ratio shall be calculated as the daily average flow of Littlejohns Creek (measured at RSW-002) divided by the daily average discharge flow (measured at EFF-001).

7. The Discharger shall submit eSMRs in accordance with the following requirements:

a. 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. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS.

b. The Discharger shall attach a cover letter with the eSMR. The information contained in the cover letter shall clearly identify violations of the WDRs; 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. Discharge Monitoring Reports (DMRs)

1. As described in section X.B.1 above, 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 SMRs that will satisfy federal requirements for submittal of Discharge Monitoring Reports (DMRs). Until such notification is given, the Discharger shall submit DMRs 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 USEPA pre-printed DMR forms (EPA Form 3320-1). Forms that are self-generated will not be accepted unless they follow the exact same format of EPA Form 3320-1.

D. Other Reports

1. **Special Study Reports and Progress Reports.** As specified in the Special Provisions contained in section VI of the Order, special study reports shall be submitted in accordance with the following reporting requirements.

Table E-6. Reporting Requirements for Special Provisions Reports

Special Provision	Reporting Requirements
Skyrocket Pit Lake Water Level and Water Quality Assessment (Section VI.C.2.b)	**1 June**, annually
Surface Water Discharge Minimization Plan (Section VI.C.3.a)	**1 February 2014**

2. The Discharger shall report the results of any special studies, acute and chronic toxicity testing, and TRE/TIE required by Special Provisions VI.C of this Order. The Discharger shall submit reports with the first monthly SMR scheduled to be submitted on or immediately following the report due date.

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

associated analytical method, listed in Appendix 4 for inclusion in the permit. Table I-1 (Attachment I) provides required maximum reporting levels in accordance with the SIP.

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, certificate grades, 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 wastewater treatment plant as 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

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ATTACHMENT F – FACT SHEET

As described in the Findings in section II 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	5B05NP00009
Discharger	Meridian Beartrack Company
Name of Facility	Royal Mountain King Mine
Facility Address	4461 Rock Creek Road
	Copperopolis, CA 95228
	Calaveras County
Facility Contact, Title and Phone	John Teagle, Environmental Coordinator, (209) 785-3222 ext. 27
Authorized Person to Sign and Submit Reports	Adam Whitman, President, (775) 200-4959 Mark Trevor, SLR International Corporation, (510) 451-1761
Mailing Address	P.O. Box 190, Copperopolis, CA 95228
Billing Address	4635 Longley Lane, Unit 110, Suite 4A, Reno, NV 89502
Type of Facility	Industrial – Not Classified
Major or Minor Facility	Major
Threat to Water Quality	2
Complexity	C
Pretreatment Program	N
Reclamation Requirements	N/A
Facility Permitted Flow	3.0 million gallons per day (MGD) (monthly average)
Facility Design Flow	43 MGD (peak daily flow)
Watershed	Middle San Joaquin-Lower Merced-Lower Stan
Receiving Water	Littlejohns Creek
Receiving Water Type	Inland surface water

A. Meridian Beartrack Company (hereinafter Discharger) is the owner and SLR International Corporation is the operator of the Royal Mountain King Mine (hereinafter Facility), a reclaimed gold mine site.

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 Littlejohns Creek, a water of the United States, and was regulated by Order R5-2007-0162-01 which was adopted on 6 December 2007, amended on 1 December 2011, and expired on 1 December 2012. The terms and conditions of Order R5-2007-0162-01 were automatically continued and remained in effect until new Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit were adopted pursuant to this Order.

C. The Discharger filed a report of waste discharge (ROWD) and submitted an application for renewal of its WDRs and NPDES permit on 4 June 2012. Supplemental information was requested and received on 20 June 2012. A site visit was conducted on 22 May 2012 to observe operations and collect additional data to develop permit limitations and conditions.

II. FACILITY DESCRIPTION

The Facility was a gold mine operated by the Discharger between 1988 and 1994. The Facility was originally regulated by Order 88-176, which addressed the removal, transport, processing, and disposal of mined material. Closure WDR Order R5-2008-0021 regulates the closure of the Facility. The Facility consists of three waste management units (WMUs), three overburden disposal sites (ODSs), three former mining pits, and an administrative building and related facilities.

The WMUs include the flotation tailings reservoir (FTR), process water pond (PWP), and leached concentrate residue facility (LCRF). These WMUs are regulated under separate WDRs Order R5-2008-0021. The FTR and LCRF have been closed and the PWP is used for wastewater evaporation.

The FTR includes a Leachate Collection and Removal System (LCRS) that underlies the FTR and was designed to drain leachate from the tailings to prevent development of a hydraulic head on the outer clay liner of the FTR. The FTR LCRS was operated during operation of the mine through closure of the FTR until 2003, when it was blocked due to water balance issues. The FTR LCRS was re-opened in 2008 upon observation of a surface seep. Since the FTR LCRS has been re-opened, the water collected from the LCRS drain has been transferred to Skyrocket Pit Lake. Flow monitoring since the initial drawdown in the FTR indicates that the average flow of FTR LCRS water transferred to Skyrocket Pit Lake is between 45 and 50 gallons per minute (gpm).

The ODSs include the FTR ODS, Gold Knoll ODS, and West ODS. The ODSs have been reclaimed; however, spring water seeps from a spring under the Gold Knoll ODS, referred to as the Gold Knoll spring, and from two springs under the West ODS, referred to as West ODS2 and West ODS5. The Discharger historically recirculated the collected seepage water to the ODSs for evaporation via sprinkler systems; however, since November 2005, the Discharger discontinued recirculation of the seepage water and began transferring it to Skyrocket Pit Lake to avoid unauthorized discharges from the recirculation systems during wet weather.

The three former mining pits include Gold Knoll, North Pit Lake, and Skyrocket Pit Lake. The Gold Knoll pit has been backfilled. The North Pit Lake and Skyrocket Pit Lake have been filled with water. A dam is located in the southwest corner of Skyrocket Pit Lake. The emergency spillway for the dam is at 973 feet above mean sea level (amsl). Skyrocket Pit Lake is intended to act as a groundwater sink to manage groundwater on the site. However, the current level of Skyrocket Pit Lake is too high, so low quality groundwater seeps into Littlejohns Creek. The NPDES surface water discharge is a part of the overall water management system on the site to ensure Skyrocket Pit Lake operates as a groundwater sink to reduce dry weather flows in Littlejohns Creek.

This Order allows the management of the discharges from Skyrocket Pit Lake so as to reduce impacts to beneficial uses caused by previous mining operations (predominantly from high total dissolved solids, sulfate, and arsenic concentrations). Because these constituents have a greater impact upon beneficial uses during low-flow/dry seasons due to its concentration in smaller volumes of water, the loading of salt and arsenic has the potential to impact water supplies downstream. During high flow periods (i.e., during storm events) there is assimilative capacity in Littlejohns Creek, thus, the volume of water moving through the watershed and into the Sacramento-San Joaquin Delta allows for a reduction in the potential for impacts to beneficial uses.

A. Description of Wastewater and Biosolids Treatment or Controls

The sources of water discharged include spring water emanating from West ODS2, West ODS5, Gold Knoll spring; seepage from the FTR LCRS; and water from Skyrocket Pit Lake. The spring water consists of groundwater that has risen into the ODSs and some storm water that infiltrates through the ODSs. Skyrocket Pit Lake receives natural flows primarily from groundwater, including subsurface flows from North Pit Lake, but also receives some surface water runoff.

1. **ODSs.** Seepage from the Gold Knoll spring is collected in two collection ponds and seepage from the West ODS2 and West ODS5 springs are collected in subsurface sumps. Both the Gold Knoll ODS and West ODS have a series of concrete-lined ditches designed to isolate the spring water from surface water runoff.

2. **Skyrocket Pit Lake and Final Discharge.** Skyrocket Pit also acted as a hydraulic sink when mining operations ceased, drawing groundwater from surrounding areas. In 1998 the Discharger constructed Skyrocket Dam, National ID No. CA01428, in the southwest corner of the Skyrocket Pit Lake, which is operated and maintained under the CA Department of Water Resources (DWR), Division of Safety of Dams (DSOD) Permit No. 1500-004. The current spill level of Skyrocket Pit Lake is 973 feet amsl.

   Discharges from Skyrocket Pit Lake are controlled to ensure a minimum dilution rate. The flow control system includes a 32-inch outside diameter (OD) discharge line, equipped with a three branch manifold system with 13-inch, 20-inch, and 32-inch OD diameter branches and automated flow control valves for each branch. Effluent is discharged to Littlejohns Creek through a multiport diffuser. The diffuser includes 48 1-inch ports and three 8-inch flap gates.

B. Discharge Points and Receiving Waters

1. The Facility is located in Section 19, T2N, R12E, MDB&M, as shown in Attachment B, a part of this Order.

2. Wastewater is discharged at Discharge Point No. 001 to Littlejohns Creek, a water of the United States and a tributary to French Camp Slough, which is a tributary to the San Joaquin River within the boundaries of the Sacramento – San Joaquin Delta, at a point latitude 37° 59' 22" N and longitude 120° 41' 12" W.

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

Effluent limitations contained in Order R5-2007-0162-01 for discharges from Discharge Point No. 001 (Monitoring Location EFF-001) and representative monitoring data from the term of Order R5-2007-0162-01 are as follows:

Table F-2. Historic Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitations		Monitoring Data (From January 2009 To April 2012)	
		Average Monthly	Maximum Daily	Highest Average Monthly Discharge	Highest Daily Discharge
Flow	MGD	3.0	43.0	2.87	7.74
pH	standard units	--	6.5 – 8.5	--	8.4
Antimony, Total Recoverable	µg/L	--	17	--	120
Arsenic, Total Recoverable	µg/L	--	140	--	120
Cadmium, Total Recoverable	µg/L	50	100	ND	ND
Chromium, Total	µg/L	--	160	--	8
Copper, Total Recoverable	µg/L	150	300	--	6.2
Iron, Total Recoverable	µg/L	--	1,300	--	480
Lead, Total Recoverable	µg/L	300	600	1.2	2.1
Mercury, Total Recoverable	µg/L	1.0	2.0	ND	ND
Nitrate (as N)	mg/L	--	3.0[1]	--	1.26
Selenium, Total Recoverable	µg/L	--	14	--	7.7
	lbs/day[2]	--	5.0	--	NR
Zinc, Total Recoverable	µg/L	190	390	23	295
Dissolved Oxygen	mg/L	--	7.0[3]	--	5.7
Total Dissolved Solids	mg/L	--	4,000	--	3,120

Parameter	Units	Effluent Limitations		Monitoring Data (From January 2009 To April 2012)	
		Average Monthly	Maximum Daily	Highest Average Monthly Discharge	Highest Daily Discharge
Total Suspended Solids	mg/L	20	30	--	22
Acute Toxicity	% survival	--	[4]	--	100[5]

[1] Effective until 30 April 2013 or when the water level in Skyrocket Pit Lake drops below 955 amsl, whichever is sooner the maximum daily effluent nitrate (as N) concentration shall not exceed 5.0 mg/L.
[2] Based on a maximum design flow of 43 mgd.
[3] Instantaneous minimum
[4] Minimum for any one bioassay---------- 70%
Median for any three consecutive bioassays ---------- 90%
[5] Represents the minimum observed percent survival.

D. Compliance Summary

A compliance evaluation inspection conducted at the Facility by the Central Valley Water Board on 10 June 2008 did not find any effluent limitation violations. A compliance evaluation conducted by a USEPA contractor on 25 April 2012 did not have any findings.

E. Planned Changes

In order to reduce arsenic levels in Skyrocket Pit Lake, the Discharger pilot tested in-situ treatment with ferrous sulfate during the summers of 2010 and 2011. The Discharger is confident that treatment of the pit lake early in the discharge season can reduce the arsenic concentrations sufficiently to allow a lower flow ratio (i.e., below 65 µg/L which corresponds to a flow ratio of 7:1). Additionally, the Discharger plans to conduct testing to evaluate potential refinements and optimize arsenic treatment. Testing will include investigating the cause for rebound in pit lake arsenic concentration to help identify more permanent treatment alternatives for dissolved arsenic.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the applicable plans, policies, and regulations identified in the Findings in section II of this Order. The applicable plans, policies, and regulations relevant to the discharge include the following:

A. Legal Authorities

This Order is issued pursuant to regulations in the Clean Water Act (CWA) and the California Water Code (Water Code) as specified in the Finding contained at section II.C of this Order.

B. California Environmental Quality Act (CEQA)

This Order meets the requirements of CEQA as specified in the Finding contained at section II.E of this Order.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans.** This Order implements the following water quality control plans as specified in the Finding contained at section II.H of this Order.

   a. *Water Quality Control Plan, Fourth Edition (Revised October 2011), for the Sacramento and San Joaquin River Basins*

2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** This Order implements the NTR and CTR as specified in the Finding contained at section II.I of this Order.

3. **State Implementation Policy (SIP).** This Order implements the SIP as specified in the Finding contained at section II.J of this Order.

4. **Alaska Rule.** This Order is consistent with the Alaska Rule as specified in the Finding contained at section II.L of this Order.

5. **Antidegradation Policy.** As specified in the Finding contained at section II.N of this Order and as discussed in detail in the Fact Sheet (Attachment F, Section IV.D.4.), the discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board (State Water Board) Resolution 68-16.

6. **Anti-Backsliding Requirements.** This Order is consistent with anti-backsliding policies as specified in the Finding contained at section II.O of this Order. Compliance with the anti-backsliding requirements is discussed in the Fact Sheet (Attachment F, Section IV.D.3).

7. **Endangered Species Act.** This Order is consistent with the Endangered Species Act as specified in the Finding contained at section II.P of this Order.

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 12 November 2010 USEPA gave final approval to California's 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." Littlejohns Creek is listed as a WQLS for *Escherichia coli* (E. coli) and unknown toxicity in the 303(d) list of impaired water bodies.

2. **Total Maximum Daily Loads (TMDLs).** USEPA requires the Central Valley Water Board to develop TMDLs for each 303(d) listed pollutant and water body combination. No TMDLs have been adopted for Littlejohns Creek.

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

E. Other Plans, Policies 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 WQBELs to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Basin Plan at page IV-17.00, contains an implementation policy, "*Policy for Application of Water Quality Objectives*", that specifies that the Central Valley Water Board "*will, on a case-by-case basis, adopt numerical*

limitations in orders which will implement the narrative objectives." This Policy complies with 40 CFR 122.44(d)(1). With respect to narrative objectives, the Central Valley Water Board must establish effluent limitations using one or more of three specified sources, including: (1) 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 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

3. **Prohibition III.C (No discharge when the daily average flow rate of Littlejohns Creek is less than 1,000 gpm as measured at Monitoring Location RSW-002).** The peak design flow of the outfall is 43 MGD. However, this Order only allows an average monthly flow of 3.0 MGD. The average monthly flow effluent limitation is retained from Order R5-2007-0162-01 and is based on rainfall over a monthly period with a return of 2 to 5 years, a 10:1 flow ratio, and a maximum total annual total dissolved solids discharge of 3,000 tons.

Prohibition III.D (No discharge except when Littlejohns Creek flows provide a flow ratio greater than or equal to 7:1 as a daily average). This Order allows a mixing zone for human health criteria. Dilution is accomplished by discharging through a diffuser only during periods when sufficient flow is present in Littlejohns Creek to provide the dilution necessary to meet applicable water quality objectives at the edge of the mixing zone. Therefore, a minimum ratio of creek flow to effluent flow has been applied as a discharge prohibition in order to protect applicable water quality objectives.

The constituent that requires the highest level of dilution in order to meet applicable water quality objectives at the edge of the mixing zone is arsenic. The concentrations of arsenic since the Discharger began in-situ treatment for arsenic in Skyrocket Pit Lake in the summer of 2010 has varied from 60 µg/L to 100 µg/L, and the maximum receiving water level was 2.7 µg/L. The most stringent water quality objective is 10 µg/L, based on the primary maximum contaminant level (MCL). Within the range of the previously attained effluent concentrations, the discharge would need a dilution ratio of between 7:1 and 10:1 (creek flow : effluent flow) in order to meet the applicable water quality objective at the end of the approved mixing zone. Typically the highest effluent concentration would be used to set a single effluent limit and a corresponding flow ratio prohibition. However, due to the Discharger's ability to treat arsenic and in order to maximize surface water discharges, this Order allows tiered effluent limitations for arsenic depending the flow ratio at the time of discharge. Therefore, a minimum flow ratio of 7:1 is required, which ensures compliance with water quality objectives at the end of the mixing zone for all constituents, except potentially for arsenic. The tiered effluent limits for arsenic effectively increase the flow ratio requirement to ensure compliance with the water quality objective for arsenic at the edge of the mixing zone, in the event a 7:1 flow ratio is not sufficient to meet water quality objectives at the edge of the mixing zone.

B. Technology-Based Effluent Limitations

1. Scope and Authority

Section 301(b) of the CWA and implementing USEPA permit regulations at 40 CFR 122.44 require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards.

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

a. Best practicable treatment control technology (BPT) represents the average of the best performance by plants 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.

c. Best conventional pollutant control technology (BCT) represents the control from existing industrial point sources of conventional pollutants including BOD, total suspended solids (TSS), fecal coliform, pH, and oil and grease. The BCT standard is established after considering the "cost reasonableness" of the relationship between the cost of attaining a reduction in effluent discharge and the benefits that would result, and also the cost effectiveness of additional industrial treatment beyond BPT.

d. New source performance standards (NSPS) represent the best available demonstrated control technology standards. The intent of NSPS guidelines is to set limitations that represent state-of-the-art treatment technology for new sources.

The CWA requires USEPA to develop effluent limitations, guidelines and standards (ELGs) representing application of BPT, BAT, BCT, and NSPS. CWA section 402(a)(1) and 40 CFR 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 permit writer must consider specific factors outlined in 40 CFR 125.3.

2. Applicable Technology-Based Effluent Limitations

ELGs were established at 40 CFR Part 440, Subpart J for the Copper, Lead, Zinc, Gold, Silver, and Molybdenum Ores Subcategory of the Ore Mining and Dressing Point Source Category, which is applicable to discharges from mines that produce gold bearing ores from open-pit or underground operations, among others. For the purposes of 40 CFR Part 440, "mine" is defined as an active mining area used in or resulting from the work of extracting metal ore or minerals from their natural deposits by any means or method, and "active mining area" is defined as a place where work or other activity related to the extraction, removal, or recovery of metal ore is being conducted. The Facility consists of land and property previously used in and resulting from the work of extracting metal ore or minerals, specifically gold, from their natural deposits by any means or method. The discharge from the Facility is groundwater and some surface water runoff drained from the Royal Mountain King Mine site, an inactive mine. Therefore, the Facility is not an "active mining area" as defined in 40 CFR Part 440 and is not a categorical discharge subject to ELGs. Thus, technology-based effluent limitations for the Facility must be based on BPJ.

Order R5-2007-0162-01 established effluent limitations for cadmium, copper, lead, mercury, and TSS based on BPJ and applied the ELGs from 40 CFR Part 440 for mine drainage at gold ore mines. Because the Facility is not an active mining area as defined in 40 CFR Part 440, the effluent limitations representing BPT and BAT for an active mine are not applicable and this Order does not contain effluent limitations for the constituents contained in the ELGS at 40 CFR Part 440. This Order does,

however, require monitoring for these constituents which include cadmium, copper, lead, mercury, pH, TSS, and zinc. Monitoring data for these constituents indicates that the discharge does not have reasonable potential to cause or contribute to an exceedance of applicable water quality objectives. Thus, removal of these effluent limitations will not result in an allowed increase in pollutants or any additional degradation of the receiving water. Thus, removal of effluent limitations is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

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

40 CFR 122.44(d)(1)(i) mandates 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, WQBELs must be established using: (1) USEPA 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 40 CFR 122.44(d)(1)(vi).

The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the 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 No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply.

The Basin Plan on page II-1.00 states: "*Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning…*" and with respect to disposal of wastewaters states that "...*disposal of wastewaters is [not] a*

prohibited use of waters of the State; it is merely a use which cannot be satisfied to the detriment of beneficial uses."

The federal CWA section 101(a)(2), states: "*it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water be achieved by July 1, 1983.*" Federal Regulations, developed to implement the requirements of the CWA, create a rebuttable presumption that all waters be designated as fishable and swimmable. Federal Regulations, 40 CFR sections 131.2 and 131.10, require that all waters of the State 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.** Wastewater is discharged at Discharge Point No. 001 to Littlejohns Creek, a water of the United States and a tributary to French Camp Slough, which is a tributary to the San Joaquin River within the boundaries of the Sacramento – San Joaquin Delta.

   The Basin Plan at II-2.00 states that the beneficial uses of any specifically identified water body generally apply to its tributary streams. The Basin Plan in Table II-1, Section II, does not specifically identify beneficial uses for Littlejohns Creek, but does identify present and potential uses for the San Joaquin River, to which Littlejohns Creek, via French Camp Slough, is tributary. Thus, beneficial uses applicable to Littlejohns Creek are as follows:

Table F-3. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Littlejohns Creek	<u>Existing uses from Table II-1 of the Basin Plan:</u> Municipal and domestic supply (MUN); Agricultural supply, including irrigation and stock watering (AGR); Industrial process supply (PROC); Industrial service supply (IND); Water contact recreation, including canoeing and rafting (REC-1); Non-contact water recreation (REC-2); Warm freshwater habitat (WARM); Cold freshwater habitat (COLD); Migration of aquatic organisms, warm and cold (MIGR); Spawning, reproduction, and/or early development, warm (SPWN); Wildlife habitat (WILD); and Navigation (NAV). <u>Suitable uses from State Water Board Resolution 88-63:</u> Municipal and domestic water supply (MUN).

b. Effluent and Ambient Background Data. The reasonable potential analysis (RPA), as described in section IV.C.3 of this Fact Sheet, was based on effluent data collected between January 2009 (i.e., when the Discharger commenced discharges at Discharge Point No. 001) and April 2012 and receiving water data collected between January 2008 and April 2012, which includes effluent and ambient background data submitted in SMRs and the ROWD. Additional data outside of this range was also analyzed where there was inadequate data to perform an analysis for receiving water hardness, as discussed further in section IV.C.2.e.

The Discharger collected upstream receiving water samples at two locations, Monitoring Location RSW-001 and RSW-002. Monitoring Location RSW-002 is located 100 feet upstream of Discharge Point No. 001 and, at low flows, contains groundwater. Therefore, monitoring data collected at Monitoring Location RSW-002 may not be representative of the upstream receiving water quality. However, at high flows when discharges to Littlejohns Creek are permitted, monitoring data at this location is representative of the upstream receiving water quality. Monitoring Location RSW-001 is located farther upstream near the FTR diversion ditch and does not contain groundwater. For the purposes of the RPA, all monitoring data collected at Monitoring Location RSW-001 and monitoring data collected at Monitoring Location RSW-002 during periods of discharge were used for the RPA.

c. Assimilative Capacity/Mixing Zone

i. Regulatory Guidance for Dilution Credits and Mixing Zones. The Discharger has requested mixing zones and dilution credits for compliance with aquatic life and human carcinogen water quality criteria. The Central Valley Water Board has the discretion to accept or deny mixing zones and dilution credits. 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).

The TSD defines a mixing zone as follows, "…*a mixing zone is an area where an effluent discharge undergoes initial dilution and is extended to cover the secondary mixing in the ambient waterbody. A mixing zone is an allocated impact zone where water quality criteria can be exceeded as long as acutely*

toxic conditions are prevented."[1] The SIP provides guidance on mixing zones and dilution credits in establishing WQBELs.

Water quality criteria and objectives must be met throughout a water body except within a mixing zone. All mixing zones shall be as small as practicable and must meet specific conditions. The allowance of mixing zones by the Central Valley Water Board is discretionary and can be granted parameter-by-parameter and/or type of criteria (e.g., acute or chronic aquatic life criteria).

For non-priority pollutant constituents the allowance of mixing zones by the Central Valley Water Board is discussed in the Basin Plan, *Policy for Application of Water Quality Objectives*, which states in part, "*In conjunction with the issuance of NPDES and storm water permits, the Regional Board may designate mixing zones within which water quality objectives will not apply provided the discharger has demonstrated to the satisfaction of the Regional Board that the mixing zone will not adversely impact beneficial uses. If allowed, different mixing zones may be designated for different types of objectives, including, but not limited to, acute aquatic life objectives, chronic aquatic life objectives, human health objectives, and acute and chronic whole effluent toxicity objectives, depending in part on the averaging period over which the objectives apply. In determining the size of such mixing zones, the Regional Board will consider the applicable procedures and guidelines in the EPA's Water Quality Standards Handbook and the [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.*"[2]

For priority pollutants, the SIP supersedes the Basin Plan mixing zone provisions. Section 1.4.2 of the SIP states, in part, "…*with the exception of effluent limitations derived from TMDLs, in establishing and determining compliance with effluent limitations for applicable human health, acute aquatic life, or chronic aquatic life priority pollutant criteria/objectives or the toxicity objective for aquatic life protection in a basin plan, the Regional Board may grant mixing zones and dilution credits to dischargers…The applicable priority pollutant criteria and objectives are to be met through a water body except within any mixing zone granted by the Regional Board. <u>The allowance of mixing zones is discretionary and shall be determined on a discharge-by-discharge basis.</u> 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)[3]

[1] TSD, Glossary
[2] Basin Plan, page IV-16.00
[3] SIP, page 15

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)

The mixing zone is thus an administrative construct defined as an area around the outfall that may exceed water quality objectives, but is otherwise protective of the beneficial uses. Dilution is defined as the amount of mixing that has occurred at the edge of this mixing zone under critical conditions, thus protecting the beneficial uses at the concentration and for the duration and frequency required.

ii. Dilution/Mixing Zone Study Results. Order R5-2007-0162-01 allows the Discharger to dilute its effluent with water from Littlejohns Creek by discharging through a diffuser during periods when sufficient flow is present in Littlejohns Creek to provide the dilution necessary to meet applicable water quality objectives. A dilution credit of 15:1 was initially granted for chronic aquatic toxicity and human health criteria. Order R5-2007-0162-01 also allowed an interim dilution credit of 10:1 through 30 April 2013 or when the water level in Skyrocket Pit Lake drops below 955 feet amsl, whichever is sooner. The purpose of the interim flow ratio limit of 10:1 was to allow for a quick draw down of Skyrocket Pit Lake to the level necessary for Skyrocket Pit Lake to operate as a ground water sink, which has the effect of reducing groundwater flows containing high total dissolved solids and arsenic to Littlejohns Creek. However, due to lower-than-expected storm flows in Littlejohns Creek and higher-than-expected flows to Skyrocket Pit Lake, the Discharger was unable to significantly reduce the level of Skyrocket Pit Lake between 2008 and 2011.

The Discharger discharges water from Skyrocket Pit Lake to Littlejohns Creek via a multiport diffuser. The diffuser includes 48 1-inch ports and three 8 inch flap gates. The discharge rate is controlled using automated control valves designed to maintain total dissolved solids and other constituent concentrations below the applicable water quality objectives by providing a minimum amount of dilution with Littlejohns Creek water. The flow control system includes a 32-inch OD discharge line, equipped with a three branch manifold system with 13-inch, 20-inch, and 32-inch OD diameter branches and automated flow control valves for each branch. The purpose of the manifold is to precisely control the flow across the range of 0 to 30,000 gpm and allow for fast closing for the discharge line when flows in the creek or water quality standards require it. The flow control valves are controlled based on Littlejohns Creek flow and electrical conductivity measurements. The operating logic is as follows:

(a) When the flow in Littlejohns Creek rises above a present low flow level (flow recorder-low), an activation signal is sent to the control system and the appropriate flow control valve(s) are opened.

(b) If the electrical conductivity measured in Littlejohns Creek is below a predetermined set point when an flow control valve is activated, a control signal is sent to gradually open the flow control valve(s). This allows water from Skyrocket Pit Lake to flow through the discharge line at a controlled rate and mix with Littlejohns Creek water. If the electrical conductivity set point is exceeded, then the flow control valve(s) are gradually closed until the set point is reached.

(c) As long as conductivity in Littlejohns Creek remains below the set point, the flow control valves will slowly respond to allow additional water to be blended into Littlejohns Creek until the electrical conductivity set point is reached, or until all three valves are fully opened.

(d) When the flow in Littlejohns Creek drops below the flow recorder-high, a signal will be sent to reduce the flow. This will occur even if the electrical conductivity is below the set point to prevent a potential upset condition that could result if the flow in Littlejohns Creek were to drop quicker than the control response time of the flow control valves.

(e) When the level in Skyrocket Pit Lake falls below a predetermined low level, then all three valves would remain closed regardless of the flow in Littlejohns Creek.

The Discharger submitted a 6 June 2008 *Mixing Zone Study Report* (SES) describing the results of a field mixing zone study conducted on 5/6 March 2008. The mixing zone study consisted of evaluating the mixing of water containing a dye discharged from a tank into the water flowing in Littlejohns Creek and measurements of the downstream concentrations of the dye.

Littlejohns Creek is relatively small and mixing occurs fairly rapidly. The Discharger has installed a 28-foot long low concrete sill across the creek at the location of the multi-port diffuser. The stream width at the site of the diffuser varies from 20 feet to 150 feet depending on flow. The stream width at the time of the mixing zone study was approximately 22 feet and the mixing zone study determined that complete mixing would occur within 44 feet of the diffuser (i.e., within two stream-widths of the outfall location).

The mixing zone study included three field tests. The field tests used an experimental low flow diffuser consisting of an 8-inch pipe equipped with 12 2-inch discharge ports, each equipped with a valve. The diffuser was laid across Littlejohns Creek and secured with sandbags to simulate the full-scale diffuser, which includes the concrete sill overlying the diffuser pipe. Near-field mixing is achieved by having the discharge from the nozzles impinge on rip-rap immediately downstream of the diffuser and allowing the creek flow to go over the concrete sill to cascade down of the nozzle discharges.

Three measuring profiles were established at 20, 50 and 85 feet downstream of the diffuser to represent approximately one, two, and four stream widths from the diffuser and samples were collected and measured for dye concentration and turbidity to calculate mixing percentage at each location. The initial two field tests did not indicate complete mixing within two stream widths of the diffuser, so the Discharger modified the diffuser for the third field test to include a larger number (24) of smaller (1-inch) diffuser ports located about 9-inches center to center. The test indicated a mixing percentage of 90.4 percent at the 20 foot profile and 97.3 percent at the 50 foot profile. Assuming a linear distribution of mixing between 20 and 50 feet, these mixing percentages yield a mixing percentage of 96 percent 44 feet downstream (i.e., two stream widths downstream).

The mixing zone study simulated worst-case conditions, even though dilution ratios were higher than the minimum dilution ratios required for discharges allowed by this Order. Mixing within the creek is accomplished through turbulence generated by flow in the creek. Mixing at the lower dilution ratios allowed by this Order is only expected to result in a slight increase in length of the mixing zone. At lower stream flows (i.e., less than 5,000 gpm), water cascades over the ledge created by the concrete sill and counteracts the effects of the flow velocity discharging from the orifices. Additionally, the Discharger doubled the number of discharge ports in the diffuser, compared with the test diffuser, to provide a further significant factor of mixing efficiency and result in further reduction in the mixing zone length.

iii. Evaluation of Available Dilution for Acute and Chronic Aquatic Life Criteria. USEPA Region VIII, in its "EPA Region VIII Mixing Zones and Dilution Policy", recommends no dilution for acute aquatic life criteria, stating the following, "*In incomplete mix situations, discharge limitations to implement acute chemical-specific aquatic life criteria and narrative (no acute toxicity) criteria shall be based on achieving such acute criteria at the end-of-pipe (i.e., without an allowance for dilution). This approach is intended to implement the narrative requirement prohibiting acutely toxic conditions in the mixing zone.*"

A dilution credit for acute toxicity criteria has not been allowed in this Order. The chronic aquatic life mixing zone is sized to protect the water body as a whole. A mixing zone for chronic aquatic life criteria has been allowed in this Order for development of the WQBELs for selenium. The chronic aquatic life mixing zone is 22 feet wide and extends 44 feet downstream of the diffuser.

The chronic mixing zone meets the requirements of the SIP as follows:

(a) *Shall not compromise the integrity of the entire waterbody* - The TSD states that, "*If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats*." Littlejohns Creek is approximately 28 feet wide at the diffuser. The Discharger's study indicated that complete mixing occurs within 44 feet downstream of the diffuser. The mixing zone is small does not compromise the integrity of the entire waterbody.

(b) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* – The SIP requires that the acute mixing zone be appropriately sized to prevent lethality to organisms passing through the mixing zone. USEPA recommends that float times through a mixing zone less than 15 minutes ensures that there will not be lethality to passing organisms. This Order does not allow mixing zones for acute criteria. In addition, this Order includes an acute toxicity effluent limitation that requires compliance to be determined based on acute bioassays using

100% effluent. Compliance with these requirements ensures that acutely toxic conditions to aquatic life passing through the acute and chronic mixing zones do not occur.

(c) *Shall not restrict the passage of aquatic life* – The Discharger conducted a mixing zone study to evaluate the near-field effects of the discharge. The Discharger evaluated the mixing zone where water quality objectives are met. This Order does not allow a mixing zone for acute criteria. Based on the requirements in this Order, discharges will only occur intermittently during relatively high and flood flow conditions, which occurs only for a few days to a few weeks per year. During these times the width of the creek will vary from 20 feet to 150 feet and high physical stresses to aquatic organisms will be occurring during these periods due to the higher velocity and turbidity of the receiving water.

(d) *Shall not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws* – The chronic mixing zone will not cause acutely toxic conditions, will allow an adequate zone of passage, and is sized appropriately to ensure that there will be no adverse impacts to biologically sensitive or critical habitats.

(e) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance* – The current discharge has not been shown to result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance.

(f) *Shall not dominate the receiving water body or overlap a mixing zone from different outfalls* – The chronic mixing zone is small relative to the water body, so it will not dominate the water body. Furthermore, the mixing zone does not overlap mixing zones from other outfalls. There are no outfalls or mixing zones in the vicinity of the discharge.

(g) *Shall not be allowed at or near any drinking water intake* – The acute and chronic mixing zones are not near a drinking water intake.

iv. Evaluation of Available Dilution for Human Health Criteria. Section 1.4.2.2 of the SIP, provides that mixing zones should not be allowed at or near drinking water intakes. Furthermore, regarding the application of a mixing zone for protection of human health, the TSD states that," …*the presence of mixing zones should not result in significant health risks, when evaluated using reasonable assumptions about exposure pathways. Thus, where drinking water contaminants are a concern, mixing zones should not encroach on drinking water intakes*." There are no drinking water intakes in the human health mixing zone. Based on the Discharger's 6 June 2008 mixing zone study, the human health mixing zone extends 44 feet

downstream of the diffuser and a dilution credit of 7:1 is allowed. Human health criteria dilution credits have been used in the calculation of the WQBELs for antimony, arsenic, and total dissolved solids.

The human health criteria mixing zone meets the requirements of the SIP as follows:

(a) *Shall not compromise the integrity of the entire waterbody* - The TSD states that, "*If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats*." The human health mixing zone is not applicable to aquatic life criteria. The human health mixing zone does not compromise the integrity of the entire waterbody.

(b) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* –The human health mixing zone is not applicable to aquatic life criteria. Therefore, acutely toxic conditions will not occur in the mixing zone.

(c) *Shall not restrict the passage of aquatic life* – The human health mixing zone is not applicable to aquatic life criteria. Therefore, the mixing zone will not restrict the passage of aquatic life.

(d) *Shall not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws* – The human health mixing zone is not applicable to aquatic life criteria. The mixing zone will not impact biologically sensitive or critical habitats.

(e) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance* – The allowance of a human health mixing zone will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance.

(f) *Shall not dominate the receiving water body or overlap a mixing zone from different outfalls* – The human health mixing zone is small relative to the water body, so it will not dominate the water body. Furthermore, the mixing zone does not overlap mixing zones from other outfalls. There are no outfalls or mixing zones in the vicinity of the discharge.

(g) *Shall not be allowed at or near any drinking water intake* – There are no drinking water intakes within the human health mixing zone.

The human health mixing zone therefore complies with the SIP. The mixing zone also complies with the Basin Plan, which requires that the mixing zone not adversely impact beneficial uses. Beneficial uses will not be adversely affected for the same reasons discussed above. In determining the size of the mixing zone, the Central Valley Water Board considered the procedures and guidelines in the EPA's Water Quality Standards Handbook, 2d Edition (updated July 2007), Section 5.1, and Section 2.2.2 of the Technical Support Document for Water Quality-based Toxics Control (TSD). The SIP incorporates the same guidelines.

v. **Evaluation of Available Dilution for Specific Constituents (Pollutant-by-Pollutant Evaluation).** When determining to allow dilution credits for a specific pollutant several factors must be considered, such as, available assimilative capacity, facility performance, and best practicable treatment or control. In this subsection a pollutant-by-pollutant evaluation of dilution is discussed. The constituents that require the highest level of dilution in order to meet applicable water quality objectives are arsenic and total dissolved solids. As described below, a minimum dilution ratio ranging from 7:1 to 10:1 is necessary to comply with effluent limitations for arsenic. Therefore, the required minimum dilution ratio has been revised from 15:1 to 7:1 and the applicable dilution ratio for chronic and human health criteria is a range from 7:1 to 10:1. A pollutant-by-pollutant evaluation is discussed below.

(a) **Antimony, Total Recoverable** – The receiving water contains assimilative capacity for antimony. As discussed above, a human health criteria mixing zone extending 44 feet downstream of the discharge and a dilution credit of 7:1 meets the mixing zone requirements of the SIP. For antimony, the WQBELs based on a human health dilution credit of 7:1 are an AMEL of 38 µg/L and an MDEL of 63 µg/L, respectively. Section 1.4.2.2 of the SIP requires that, "*A mixing zone shall be as small as practicable*", and Section 1.4.2.2.B requires, "*The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements*." Based on existing Facility performance, the Facility can meet WQBELs calculated using a dilution credit of 3:1 (i.e., AMEL of 20 µg/L and MDEL of 33 µg/L), which correlates to a smaller mixing zone. Based on modeling by the Discharger this level of dilution would occur less than 20 feet downstream of the outfall. This represents a mixing zone that is as small as practicable for this Facility and that fully complies with the SIP.

Furthermore, the Central Valley Water Board finds that granting of the full dilution credits could allocate an unnecessarily large portion of the receiving water's assimilative capacity for antimony and could violate the Antidegradation Policy. Although the Antidegradation Policy does not apply within a mixing zone, the allowance of a mixing zone allows an increase in the discharge of pollutants. Therefore, when a mixing zone

and dilution credits are allowed, it is necessary to ensure the discharge complies with the Antidegradation Policy outside the mixing zone. The Antidegradation Policy requires that any activity which produces a waste or increased volume or concentration of waste which discharges to existing high quality waters is required to meet waste discharge requirements that result in BPTC, which in this case for antimony is, at minimum, existing facility performance. Allowing the full dilution credit would allow the Discharger to increase its loading of antimony to Littlejohns Creek and reduce the treatment and/or control of the pollutant. Allowing the Discharger to reduce the level of treatment and/or control would not comply with the BPTC requirements of the Antidegradation Policy.

(b) Arsenic, Total Recoverable – The receiving water contains assimilative capacity for arsenic. As discussed above, a human health criteria mixing zone extending 44 feet downstream of the discharge and a dilution credit ranging from 7:1 to 10:1 meets the mixing zone requirements of the SIP. For arsenic, the WQBELs based on human health dilution credits ranging from 7:1 to 10:1 are as follows:

Table F-4. Flow Ratios and Associated WQBELs for Arsenic

Flow Ratio[1]	Effluent Limitations	
	Average Monthly	Maximum Daily
7:1 ≤ Flow Ratio < 8:1	69	85
8:1 ≤ Flow Ratio < 9:1	77	95
9:1 ≤ Flow Ratio < 10:1	86	110
10:1 ≤ Flow Ratio	94	120

[1] Daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively.

Section 1.4.2.2 of the SIP requires that, "*A mixing zone shall be as small as practicable", and Section 1.4.2.2.B requires, "The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements*." The Discharger began in-situ treatment for arsenic in the summer of 2010. The MEC for arsenic based on data collected since the Discharger initiated in-situ treatment was 100 µg/L; however, the Discharger's June 2012 *Skyrocket Pit Lake Arsenic Treatment Pilot Study Report of Results* (Strategic Engineering and Science, Inc.) indicates that the treatment was shown to reduce arsenic levels in Skyrocket Pit Lake to less than 60 µg/L. Based on current effluent quality, a mixing zone of 44 feet represents a mixing zone that is as small as practicable for this Facility and that fully complies with the SIP.

(c) Selenium, Total Recoverable – The receiving water contains assimilative capacity for selenium. As discussed above, a chronic aquatic life criteria mixing zone extending 44 feet downstream of the

discharge and a dilution credit of 7:1 meets the mixing zone requirements of the SIP. No dilution is allowed for acute aquatic life criteria. For selenium, the WQBELs based on a chronic aquatic life criteria dilution credit of 7:1 and no dilution for acute aquatic life criteria are an AMEL of 14 µg/L and an MDEL of 20 µg/L, respectively. Section 1.4.2.2 of the SIP requires that, "*A mixing zone shall be as small as practicable*", and Section 1.4.2.2.B requires, "*The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements*." The MEC for selenium is 7.7 µg/L. Based on current effluent quality, a mixing zone of 44 feet represents a mixing zone that is as small as practicable for this Facility and that fully complies with the SIP.

(d) Total Dissolved Solids (TDS) – The receiving water contains assimilative capacity for TDS. As discussed above, a human health mixing zone extending 44 feet downstream of the discharge and a dilution credit of 7:1 meets the mixing zone requirements of the SIP. Based on current effluent quality, a mixing zone of 44 feet represents a mixing zone that is as small as practicable for this Facility and that fully complies with the SIP.

vi. Regulatory Compliance for Dilution Credits and Mixing Zones. To fully comply with all applicable laws, regulations and policies of the State, Central Valley Water Board approved a mixing zone and the associated dilution credits based on the following:

(a) Mixing zones are allowed under the SIP provided all elements contained in Section 1.4.2.2 are met. Based on the mixing zone study conducted by the Discharger the Central Valley Water Board has determined that these factors are met.

(b) Section 1.4.2.2.of the SIP requires mixing zones to be as small as practicable. Based on the mixing zone study conducted by the Discharger the Central Valley Water Board has determined the mixing zone is as small as practicable.

(c) In accordance with Section 1.4.2.2 of the SIP, the Board has determined the mixing zone is as small as practicable, will not compromise the integrity of the entire water body, restrict the passage of aquatic life, dominate the water body or overlap existing mixing zones from different outfalls. The mixing zone is small relative to the size of the receiving water, is not at or near a drinking water intake, and does not overlap a mixing zone from a different outfall.

(d) The Central Valley Water Board is allowing a mixing zone for human health and chronic aquatic life criteria only and has determined allowing

such mixing zone will not cause acutely toxic conditions to aquatic life passing through the mixing zone.

(e) The Central Valley Water Board has determined the discharge will not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under the federal or State endangered species laws, because the mixing zone is for human health criteria only, is relatively small, and acutely toxic conditions will not occur in the mixing zone. The discharge will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum, produce objectionable odor, taste, or turbidity, cause objectionable bottom deposits, or cause nuisance, because the proposed Order establishes end-of-pipe effluent limitations (e.g., for BOD_5 and TSS) and discharge prohibitions to prevent these conditions from occurring.

(f) As required by the SIP, in determining the extent of or whether to allow a mixing zone and dilution credit, the Central Valley Water Board has considered the presence of pollutants in the discharge that are carcinogenic, mutagenic, teratogenic, persistent, bioaccumulative, or attractive to aquatic organisms, and concluded that the allowance of the mixing zone and dilution credit is adequately protective of the beneficial uses of the receiving water.

(g) The Central Valley Water Board has determined the mixing zone complies with the SIP for priority pollutants.

(h) The maximum allowed dilution factor is 10:1 for human health and chronic aquatic life criteria. Section 1.4.2.2B of the SIP, in part states, *"The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements."* The Central Valley Water Board has determined a dilution factor of 10:1 is not needed or necessary for the Discharger to achieve compliance with all constituents in this Order.

(i) The Central Valley Water Board has determined the mixing zone complies with the Basin Plan for non-priority pollutants. The Basin Plan requires a mixing zone not adversely impact beneficial uses. Beneficial uses will not be adversely affected for the same reasons discussed above. In determining the size of the mixing zone, the Central Valley Water Board has considered the procedures and guidelines in Section 5.1 of USEPA's *Water Quality Standards Handbook*, 2nd Edition (updated July 2007) and Section 2.2.2 of the TSD. The SIP incorporates the same guidelines.

(j) The Central Valley Water Board has determined that allowing dilution factors that exceed those proposed by this Order would not comply with the State Anti-degradation Policy for receiving waters outside the

allowable mixing zone for antimony, arsenic, selenium, total dissolved solids, and chronic toxicity. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy and requires that existing quality of waters be maintained unless degradation is justified based on specific findings. Item 2 of Resolution 68-16 states:

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

The effluent limitations established in the Order for antimony, arsenic, selenium, and total dissolved solids that have been adjusted for dilution credits were developed based on performance of the Discharger's current wastewater treatment capabilities. Therefore, the Central Valley Water Board determined the effluent limitations required by this Order will result in the Discharger implementing best practicable treatment or control of the discharge necessary to assure that pollution or nuisance will not occur and the highest water quality consistent with maximum benefit to the people of the State will be maintained. The Central Valley Water Board also determined the Discharger will be in immediate compliance with the effluent limitations,

The Central Valley Water Board also determined establishing effluent limitations for antimony, arsenic, selenium, and total dissolved solids that have been adjusted for dilution credits is consistent with Section 1.4.2.2B of the SIP that requires the Central Valley Water Board to shall deny or significantly limit a mixing zone and dilution credits as necessary to comply with other regulatory requirements.

Therefore, the Central Valley Water Board has determined the effluent limitations established in the Order for antimony, arsenic, selenium, and total dissolved solids that have been adjusted for dilution credits are appropriate and necessary to comply with the Basin Plan, SIP, Federal anti-degradation regulations and Resolution 68-16.

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. The *California Toxics Rule* and the *National Toxics Rule* 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 include cadmium, copper, chromium III, lead, nickel, silver, and zinc.

This Order has established the criteria for hardness-dependent metals based on the reasonable worst-case ambient hardness as required by the SIP[1], the CTR[2] and State Water Board Order WQO 2008-0008 (City of Davis). The SIP and the CTR require the use of "receiving water" or "actual ambient" hardness, respectively, to determine effluent limitations for these metals. (SIP, § 1.2; 40 CFR § 131.38(c)(4)) The CTR does not define whether the term "ambient," as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions. Therefore, where reliable, representative data are available, the hardness value for calculating criteria can be the downstream receiving water hardness, after mixing with the effluent (Order WQO 2008-0008, p. 11). The Central Valley Water Board thus has considerable discretion in determining ambient hardness (Id., p.10).

As discussed below, scientific literature provides a reliable method for calculating protective hardness-dependent CTR criteria, considering all discharge conditions. This methodology produces hardness-dependent CTR criteria based on the reasonable worst-case downstream ambient hardness that ensure these metals do not cause receiving water toxicity under any downstream receiving water condition. Under this methodology, the Central Valley Water Board considers all hardness conditions that could occur in the ambient downstream receiving water after the effluent has mixed with the water body[3]. This ensures that effluent limitations are fully protective of aquatic life in all areas of the receiving water affected by the discharge under all flow conditions, at the fully mixed location, and throughout the water body including at the point of discharge into the water body.

i. Conducting the Reasonable Potential Analysis (RPA). The SIP in Section 1.3 states, "*The RWQCB shall…determine whether a discharge may: (1) cause, (2) have a reasonable potential to cause, or (3) contribute to an excursion above any applicable priority pollutant criterion or objective*." Section 1.3 provides a step-by-step procedure for conducting the RPA. The procedure requires the comparison of the maximum effluent concentration (MEC) and maximum ambient background concentration to the applicable

[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. It further requires that the hardness values used must be consistent with the design discharge conditions for design flows and mixing zones.

[3] All effluent discharges will change the ambient downstream metals concentration and hardness. It is not possible to change the metals concentration without also changing the hardness.

criterion that has been properly adjusted for hardness. Unless otherwise noted, for the hardness-dependent CTR metals criteria the following procedures were followed for properly adjusting the criterion for hardness when conducting the RPA.

(a) The SIP requires WQBELs if the MEC is equal to or exceeds the applicable criterion, adjusted for hardness. For comparing the MEC to the applicable criterion, the "fully mixed" reasonable worst-case downstream ambient hardness was used to adjust the criterion. In this evaluation the portion of the receiving water affected by the discharge is analyzed. For hardness-dependent criteria, the hardness of the effluent has an impact on the determination of the applicable criterion in areas of the receiving water affected by the discharge. Therefore, for comparing the MEC to the applicable criterion, the reasonable worst-case downstream ambient hardness was used to adjust the criterion. For this situation it is necessary to consider the hardness of the effluent in determining the applicable hardness to adjust the criterion. The procedures for determining the applicable criterion after proper adjustment using the reasonable worst-case downstream ambient hardness is outlined in subsection ii, below.

(b) The SIP requires WQBELs if the receiving water is impaired upstream (outside the influence) of the discharge, i.e., if the maximum ambient background concentration of a pollutant exceeds the applicable criterion, adjusted for hardness[1]. For comparing the maximum ambient background concentration to the applicable criterion, the reasonable worst-case upstream ambient hardness was used to adjust the criteria. This is appropriate, because this area is outside the influence of the discharge. Since the discharge does not impact the upstream hardness, the effect of the effluent hardness was not included in this evaluation.

ii. Calculating WQBELs. The remaining discussion in this section relates to the development of WQBELs when it has been determined that the discharge has reasonable potential to cause or contribute to an exceedance of the CTR hardness-dependent metals criteria in the receiving water.

A 2006 Study[2] developed procedures for calculating the effluent concentration allowance (ECA)[3] for CTR hardness-dependent metals. The 2006 Study demonstrated that it is necessary to evaluate all discharge conditions (e.g., high and low flow conditions) and the hardness and metals concentrations of the effluent and receiving water when determining the appropriate ECA for these hardness-dependent metals. This method is

[1] The pollutant must also be detected in the effluent.
[2] Emerick, R.W.; Borroum, Y.; & Pedri, J.E., 2006. California and National Toxics Rule Implementation and Development of Protective Hardness Based Metal Effluent Limitations. WEFTEC, Chicago, Ill.
[3] The ECA is defined in Appendix 1 of the SIP (page Appendix 1-2). The ECA is used to calculate WQBELs in accordance with Section 1.4 of the SIP.

superior to relying on downstream receiving water samples alone because it captures all possible mixed conditions in the receiving water. Both receiving water and effluent hardness vary based on flow and other factors, but the variability of receiving water and effluent hardness is sometimes independent. Using a calculated hardness value ensures that the Central Valley Water Board considers all possible mixed downstream values that may result from these two independent variables. Relying on receiving water sampling alone is less likely to capture all possible mixed downstream conditions.

The equation describing the total recoverable regulatory criterion, as established in the CTR[1], is as follows:

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

Where:

H = hardness (as $CaCO_3$)[2]
WER = water-effect ratio
m, b = metal- and criterion-specific constants

In accordance with the CTR, the default value for the WER is 1. A WER study must be conducted to use a value other than 1. The constants "m" and "b" are specific to both the metal under consideration, and the type of total recoverable criterion (i.e., acute or chronic). The metal-specific values for these constants are provided in the CTR at paragraph (b)(2), Table 1.

The equation for the ECA is defined in Section 1.4, Step 2, of the SIP and is as follows:

$$\text{ECA} = C \quad (\text{when } C \leq B)^{3} \quad \text{(Equation 2)}$$

Where:

C = the priority pollutant criterion/objective, adjusted for hardness (see Equation 1, above)
B = the ambient background concentration

The 2006 Study demonstrated that the relationship between hardness and the calculated criteria is the same for some metals, so the same procedure for calculating the ECA may be used for these metals. The same procedure can be used for chronic cadmium, chromium III, copper, nickel, and zinc. These metals are hereinafter referred to as "Concave Down Metals". "Concave Down" refers to the shape of the curve represented by the relationship

[1] 40 CFR § 131.38(b)(2).
[2] For this discussion, all hardness values are in mg/L as $CaCO_3$.
[3] The 2006 Study assumes the ambient background metals concentration is equal to the CTR criterion (i.e., $C \leq B$)

between hardness and the CTR criteria in Equation 1. Another similar procedure can be used for determining the ECA for acute cadmium, lead, and acute silver, which are referred to hereafter as "Concave Up Metals".

ECA for Chronic Cadmium, Chromium III, Copper, Nickel, and Zinc – For Concave Down Metals (i.e., chronic cadmium, chromium III, copper, nickel, and zinc) the 2006 Study demonstrates that when the effluent is in compliance with the CTR criteria and the upstream receiving water is in compliance with the CTR criteria, any mixture of the effluent and receiving water will always be in compliance with the CTR criteria[1]. The 2006 Study proves that regardless of whether the effluent hardness is lower or greater than the upstream hardness, the reasonable worst-case flow condition is the effluent dominated condition (i.e., no receiving water flow)[2]. Consequently, for Concave Down Metals, the CTR criteria have been calculated using the downstream ambient hardness under this condition.

The Discharger did not collect effluent or receiving water hardness during the term of the existing permit. Consistent with Order R5-2007-0162-01, the effluent hardness used for the RPA was 400 mg/L because the actual hardness of Skyrocket Pit Lake was 800 mg/L. The upstream receiving water hardness varied from 42 mg/L to 551 mg/L, calculated using magnesium and calcium data based on 41 samples from November 1991 to January 2011. Under the effluent dominated condition, the reasonable worst-case downstream ambient hardness is 400 mg/L. As demonstrated in the example shown in Table F-5, below, using this hardness to calculate the ECA for all Concave Down Metals will result in WQBELs that are protective under all flow conditions, from the effluent dominated condition to high flow condition. This example for zinc assumes the following conservative conditions for the upstream receiving water:

- Upstream receiving water <u>always</u> at the lowest observed upstream receiving water hardness (i.e., 42 mg/L)
- Upstream receiving water zinc concentration <u>always</u> at the CTR criteria (i.e., no assimilative capacity).

Using these reasonable worst-case receiving water conditions, a simple mass balance (as shown in Equation 3, below) accounts for all possible mixtures of effluent and receiving water under all flow conditions.

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[1] 2006 Study, p. 5700

[2] There are two typographical errors in the 2006 Study in the discussion of Concave Down Metals when the effluent hardness is less than the receiving water hardness. The effluent and receiving water hardness were transposed in the discussion, but the correct hardness values were used in the calculations. The typographical errors were confirmed by the author of the 2006 Study, by email dated 1 April 2011, from Dr. Robert Emerick to Mr. James Marshall, Central Valley Water Board.

$$C_{MIX} = C_{RW} \times (1\text{-}EF) + C_{Eff} \times (EF) \qquad \text{(Equation 3)}$$

Where:

C_{MIX} = Mixed concentration (e.g. metals or hardness)
C_{RW} = Upstream receiving water concentration
C_{Eff} = Effluent concentration
EF = Effluent Fraction

In this example, for zinc, for any receiving water flow condition (high flow to low flow), the fully-mixed downstream ambient zinc concentration is in compliance with the CTR criteria[1].

Table F-5. Zinc ECA Evaluation

Lowest Observed Effluent Hardness					**400 mg/L (as $CaCO_3$)**
Lowest Observed Upstream Receiving Water Hardness					**42 mg/L (as $CaCO_3$)**
Highest Assumed Upstream Receiving Water Zinc Concentration					**58 µg/L[1]**
Zinc $ECA_{chronic}$[2]					**388 µg/L**
Effluent Fraction[6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness[3] (mg/L)	**CTR Criteria[4] (µg/L)**	**Zinc[5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	46	62	61	**Yes**
	5%	60	78	74	**Yes**
	15%	96	115	107	**Yes**
	25%	132	151	140	**Yes**
	50%	221	235	223	**Yes**
	75%	311	313	305	**Yes**
Low Flow	100%	400	388	388	**Yes**

1 Highest assumed upstream receiving water zinc concentration calculated using Equation 1 for chronic criterion at a hardness of 42 mg/L.
2 ECA calculated using Equation 1 for chronic criterion at a hardness of 400 mg/L.
3 Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction using Equation 3.
4 Fully mixed downstream ambient criteria are the chronic criteria calculated using Equation 1 at the mixed hardness.
5 Fully mixed downstream ambient zinc concentration is the mixture of the receiving water and effluent zinc concentrations at the applicable effluent fraction using Equation 3.
6 The effluent fraction ranges from 1% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

ECA for Acute Cadmium, Lead, and Acute Silver – For Concave Up Metals (i.e., acute cadmium, lead, and acute silver), the relationship between

[1] This method considers the actual lowest observed upstream hardness and actual lowest observed effluent hardness to determine the reasonable worst-case ambient downstream hardness under all possible receiving water flow conditions. Table F-5 demonstrates that the receiving water is always in compliance with the CTR criteria at the fully-mixed location in the receiving water. It also demonstrates that the receiving water is in compliance with the CTR criteria for all mixtures from the point of discharge to the fully-mixed location. Therefore, a mixing zone is not used for compliance.

hardness and the metals criteria is different than for Concave Down Metals. The 2006 Study demonstrates that for Concave Up Metals, the effluent and upstream receiving water can be in compliance with the CTR criteria, but the resulting mixture may contain metals concentrations that exceed the CTR criteria and could cause toxicity. For these metals, the 2006 Study provides a mathematical approach to calculate the ECA that is protective of aquatic life, in all areas of the receiving water affected by the discharge, under all discharge and receiving water flow conditions (see Equation 4, below).

The ECA, as calculated using Equation 4, is based on the reasonable worst-case upstream receiving water hardness, the lowest observed effluent hardness, and assuming no receiving water assimilative capacity for metals (i.e., ambient background metals concentrations are at their respective CTR criterion). Equation 4 is not used in place of the CTR equation (Equation 1). Rather, Equation 4, which is derived using the CTR equation, is used as a direct approach for calculating the ECA. This replaces an iterative approach for calculating the ECA. The CTR equation has been used to evaluate the receiving water downstream of the discharge at all discharge and flow conditions to ensure the ECA is protective (e.g., see Table F-5).

$$\text{ECA} \quad \left(\frac{m(H_e - H_{rw})\left(e^{m\{ln(H_{rw})\}+b}\right)}{H_{rw}} \right) + e^{m\{ln(H_{rw})\}+b} \qquad \text{(Equation 4)}$$

Where:

m, b = criterion specific constants (from CTR)
H_e = lowest observed effluent hardness
H_{rw} = reasonable worst-case upstream receiving water hardness

An example similar to the Concave Down Metals is shown for lead, a Concave Up Metal, in Table F-6, below. As previously mentioned, the lowest effluent hardness is 400 mg/L, while the upstream receiving water hardness ranged from 42 mg/L to 400 mg/L. In this case, the reasonable worst-case upstream receiving water hardness to use in Equation 4 to calculate the ECA is 42 mg/L.

Table F-6. Lead ECA Evaluation

Lowest Observed Effluent Hardness					**400 mg/L**
Reasonable Worst-case Upstream Receiving Water Hardness					**42 mg/L**
Reasonable Worst-case Upstream Receiving Water Lead Concentration					**1.1 µg/L[1]**
Lead $ECA_{chronic}$[2]					**12 µg/L**
Effluent Fraction[6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness[3] (mg/L) (as $CaCO_3$)	**CTR Criteria[4] (µg/L)**	**Lead[5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	46	1.2	1.2	**Yes**
	5%	60	1.7	1.6	**Yes**
	15%	96	3.0	2.8	**Yes**
	25%	132	4.5	3.9	**Yes**
	50%	221	8.7	6.8	**Yes**
Low Flow	75%	311	13	9.6	**Yes**
	100%	400	19	12	**Yes**

1 Reasonable worst-case upstream receiving water lead concentration calculated using Equation 1 for chronic criterion at a hardness of 42 mg/L.
2 ECA calculated using Equation 4 for chronic criteria.
3 Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction.
4 Fully mixed downstream ambient criteria are the chronic criteria calculated using Equation 1 at the mixed hardness.
5 Fully mixed downstream ambient lead concentration is the mixture of the receiving water and effluent lead concentrations at the applicable effluent fraction.
6 The effluent fraction ranges from 1% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

Based on the procedures discussed above, Table F-7 lists all the CTR hardness-dependent metals and the associated ECA used in this Order.

Table F-7. Summary of ECA Evaluations for CTR Hardness-dependent Metals

CTR Metals	ECA (µg/L, total recoverable)	
	Acute	Chronic
Copper	52	30
Chromium III	5,405	644
Cadmium	18	7.3
Lead	321	12
Nickel	1,516	169
Silver	14	--
Zinc	388	388

3. Determining the Need for WQBELs

a. The Central Valley Water Board conducted the RPA in accordance with section 1.3 of the SIP. Although the SIP applies directly to the control of CTR priority pollutants, the State Water Board has held that the Regional Water Boards may use the SIP as guidance for water quality-based toxics control.[1] The SIP states

[1] See Order WQO 2001-16 (Napa) and Order WQO 2004-0013 (Yuba City).

in the introduction "*The goal of this Policy is to establish a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency*." Therefore, in this Order the RPA procedures from the SIP were used to evaluate reasonable potential for both CTR and non-CTR constituents based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs.

b. Constituents with No Reasonable Potential. WQBELs are not included in this Order for constituents that do not demonstrate reasonable potential (i.e., constituents were not detected in the effluent or receiving water); 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. Chromium (Total)

(a) WQO. DPH has adopted a Primary MCL for chromium of 50 µg/L, which is protective of the Basin Plan's chemical constituent objective. Order R5-2007-0162-01 included effluent limitations for chromium based on the Primary MCL for the protection of human health.

(b) RPA Results. Based on 17 samples collected between 24 January 2009 and 13 April 2012, the MEC for chromium was 8 µg/L. The MEC of 8 µg/L occurred on 19 January 2010 and the Discharger analyzed a duplicate sample for the same day which resulted in 0.7 µg/L. The remaining samples ranged from <0.2 to 1 µg/L. The maximum upstream receiving water concentration was 14.7 µg/L based on 31 samples collected between 24 January 2009 and 13 April 2012. Therefore, chromium in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the Primary MCL of 50 µg/L and the WQBELs for total chromium have not been retained in this Order. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

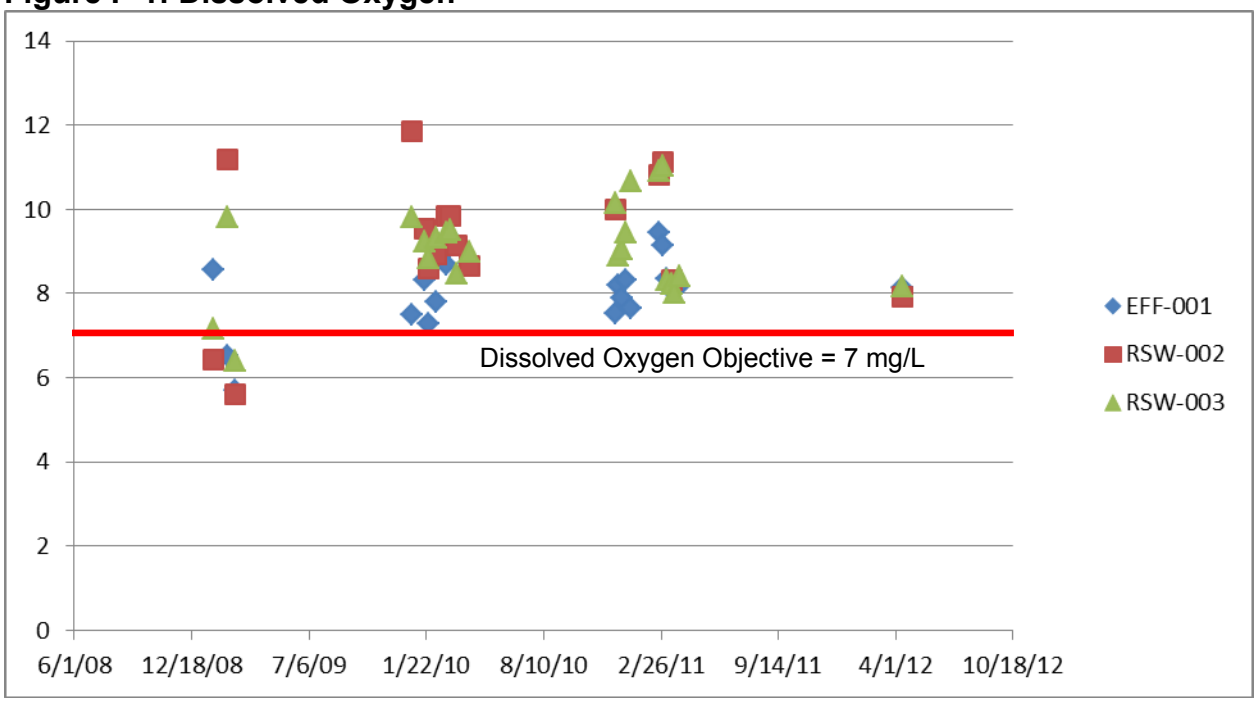
ii. Dissolved Oxygen

(a) WQO. For water bodies designated as having COLD as a beneficial use, the Basin Plan includes a water quality objective of maintaining a minimum of 7.0 mg/L of dissolved oxygen (DO). For surface water bodies outside of the Delta, the Basin Plan includes the water quality objective that "*…the monthly median of the mean daily dissolved oxygen (DO) concentration shall not fall below 85 percent of saturation in the main*

water mass, and the 95 percentile concentration shall not fall below 75 percent of saturation."

(b) RPA Results. Previous Order R5-2007-0162-01 included WQBELs for dissolved oxygen based on data collected within Skyrocket Pit Lake, which indicated low dissolved oxygen concentrations could be discharged. During the term of the previous Order the effluent dissolved oxygen was measured 77 times during effluent discharge conditions. Although the minimum observed dissolved oxygen concentration in the effluent was 5.7 mg/L, the effluent dissolved oxygen concentrations were only below the Basin Plan Objective twice (on 17 February 2009 and 2 March 2009) and were nearly always greater than the Basin Plan Objective with an average of 8.7 mg/L. Dissolved oxygen concentrations in Littlejohns Creek were also greater than the objective, with an average of 9 mg/L upstream and downstream of the discharge. On 17 February 2009, although the effluent dissolved oxygen concentration of 6.52 mg/L was below the Basin Plan Objective, the downstream dissolved oxygen concentration remained above the Basin Plan Objective at 9.8 mg/L, which indicates that the effluent did not cause or contribute to an exceedance of the Basin Plan Objective on this occasion. On 2 March 2009, the effluent dissolved concentration of 5.7 mg/L was greater than the upstream receiving water concentration of 5.6 mg/L, which was already below the Basin Plan Objective. Figure F-1, below, shows dissolved oxygen concentrations measured in the effluent (EFF-001) and receiving water (RSW-002 upstream, RSW-003 downstream) during the term of the previous Order. Based on this new data and the fact that the discharge does not contain oxygen demanding substances, the discharge does not demonstrate reasonable potential to cause or contribute to an exceedance of the Basin Plan Objective for dissolved oxygen in the receiving water. Therefore, WQBELs for dissolved oxygen have not been carried forward from the previous Order. Removal of this effluent limitation is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

Figure F-1: Dissolved Oxygen



iii. Iron

(a) WQO. DPH has adopted a Secondary MCL for iron of 300 µg/L, which is protective of the Basin Plan's chemical constituent objective. Order R5-2007-0162-01 included performance-based effluent limitations for iron based on the Secondary MCL for the protection of human health.

(b) RPA Results. 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. Iron is not a priority pollutant and the RPA procedures in section 1.3 of the SIP are not required. 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 for this non-priority pollutant constituent. To be consistent with how compliance with the standards is determined, the RPA was conducted based on the calendar annual average effluent iron concentrations.

The maximum calendar annual average effluent concentration for iron was 173 µg/L. Therefore, the Central Valley Water Board finds the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the Secondary MCL in the receiving water and the Facility is adequately controlling the discharge of iron. Since the discharge does not exhibit reasonable potential, the WQBEL for iron has not been retained in this Order. Removal of this

effluent limitation is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

iv. Manganese

(a) WQO. DPH has adopted a Secondary MCL for manganese of 50 µg/L, which is protective of the Basin Plan's chemical constituent objective.

(b) RPA Results. 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. Manganese is not a priority pollutant and the RPA procedures in section 1.3 of the SIP are not required. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used best professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent. To be consistent with how compliance with the standards is determined, the RPA was conducted based on the running annual average effluent manganese concentrations.

The maximum running annual average effluent concentration based on effluent data collected between December 2009 and March 2011 is 38 µg/L, which does not exceed the Secondary MCL. Therefore, the discharge does not have reasonable potential for manganese.

v. Nitrate

(a) WQO. DPH has adopted a Primary MCL for the protection of human health for nitrate of 10 mg/L (measured as nitrogen). DPH has also adopted a primary MCL of 10 mg/L for the sum of nitrate and nitrite, measured as nitrogen.

For nitrate, USEPA has developed Drinking Water Standards (10 mg/L as Primary MCL) and NAWQC for protection of human health (10 mg/L for non-cancer health effects). Recent toxicity studies have indicated a possibility that nitrate is toxic to aquatic organisms.

(b) RPA Results. The MEC for nitrate was 1.26 mg/L, while the maximum observed upstream receiving water nitrate concentration was 2.01 mg/L, which are below the Primary MCL. Therefore, the effluent does not have reasonable potential to cause or contribute to an exceedance of the applicable water quality objective in the receiving water and WQBELs are not necessary.

Due to a settlement agreement between the Discharger and the California Sportfishing Protection Alliance, Order R5-2007-0162-01 established an MDEL for nitrate of 3.0 mg/L. Since the settlement agreement is no longer in effect and based on updated effluent and receiving water data indicating

that concentrations are consistently below the existing effluent limitation, this Order does not retain the effluent limitation for nitrate.

vi. Zinc

(a) WQO. The CTR includes hardness dependent criteria for the protection of freshwater aquatic life for copper. These criteria for copper are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default USEPA translators were used in this Order. Order R5-2007-0162-01 included performance-based effluent limitations for zinc based on the CTR criteria for protection of aquatic life.

(b) RPA Results. Section IV.C.2.e includes procedures for conducting the RPA for zinc. The maximum observed upstream receiving water zinc concentration was 12 µg/L (total recoverable), based on 31 samples collected between January 2008 and April 2012. Based on the lowest observed upstream receiving water hardness of 42 mg/L (as $CaCO_3$), the applicable total recoverable criteria for evaluating the ambient background concentration are 57 µg/L for both the chronic and acute criteria respectively. Based on this data, the maximum ambient zinc concentration does not exceed the applicable CTR criteria.

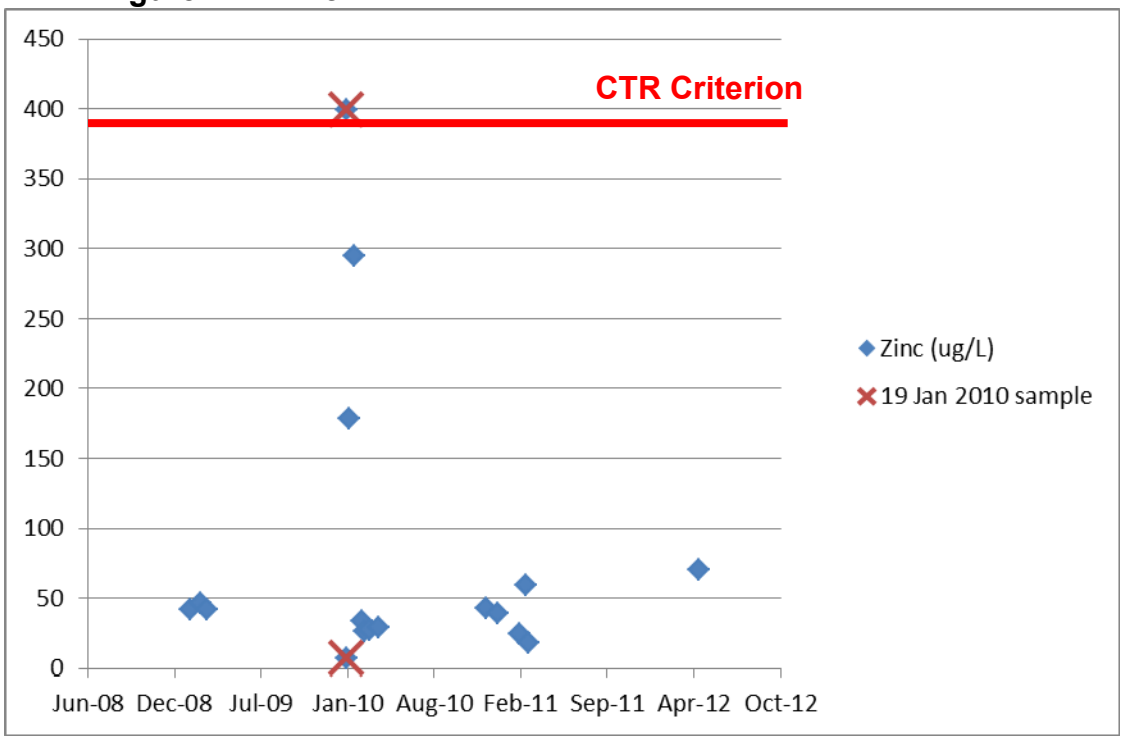
As discussed in Section IV.C.2.e for comparing the MEC to the criteria, the reasonable worst-case downstream ambient hardness should be used. Based on a hardness of 400 mg/L (as $CaCO_3$), the applicable total recoverable criteria are 388 µg/L for both the chronic and acute criteria.

A 19 January 2010 effluent zinc sample was measured as 7 µg/L and re-analyzed a month later as 399 µg/L. The 19 January 2010 sample was re-analyzed for metals a month later, because the sample had an unusually low arsenic result. Due to the fact that the same sample resulted in very different results, both of the zinc results are suspicious. Furthermore, the two results are not consistent with the remaining zinc data (see figure below). There are two other suspicious zinc samples collected on 26 January 2010 and 7 February 2010 (see figure below showing all effluent zinc data). These results are significantly higher than all other sample results collected before and after this period. The results are suspicious, because constituent concentrations in Skyrocket Pit Lake are not expected to vary significantly over short periods due to a long residence time in the lake. This information puts into question the validity of these sample results.

Section 1.2 of the SIP states "*The RWQCB shall have discretion to consider if any data are inappropriate or insufficient for use in implementing this Policy. Instances where such consideration is warranted include, but are not limited to, the following: evidence that a sample has been erroneously reported or is not representative of effluent or ambient*

receiving water quality; questionable quality control/quality assurance practices; and varying seasonal conditions." The Central Valley Water Board finds that the 19 January 2010 zinc effluent sample results are not representative of the discharge and these results were not used in conducting the RPA. The 26 January and 7 February 2010 results are also suspicious, but have not been excluded. Excluding the 19 January 2010 results, the MEC for zinc was 295 µg/L, which does not exceed the CTR criteria. Therefore, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion, and the WQBELs for zinc have not been retained in this Order. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

Figure F-2: Zinc



c. **Constituents with Reasonable Potential.** The Central Valley Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for antimony, arsenic, selenium, and total dissolved solids. WQBELs for these constituents are included in this Order. A summary of the RPA is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

i. **Antimony**

(a) **WQO.** DPH has adopted a Primary MCL for antimony of 6 µg/L, which is protective of the Basin Plan's chemical constituent objective.

(b) RPA Results. Antimony was detected in the effluent at a concentration of 120 µg/L on 13 April 2012. However, effluent antimony concentrations ranged from <0.8 µg/L to 11.1 µg/L in 16 additional samples collected between January 2009 and April 2012. Using one-half the MDL for non-detect results, the mean of the dataset is 8.1 µg/L and the standard deviation is 3.1 µg/L. The result of 120 µg/L is 36 standard deviations from the mean of the data, which is clearly an outlier. Values more than 4 standard deviations from the mean are considered outliers. Section 1.2 of the SIP states "*The RWQCB shall have discretion to consider if any data are inappropriate or insufficient for use in implementing this Policy. Instances where such consideration is warranted include, but are not limited to, the following: evidence that a sample has been erroneously reported or is not representative of effluent or ambient receiving water quality; questionable quality control/quality assurance practices; and varying seasonal conditions*." The Central Valley Water Board finds that the 13 April 2012 antimony effluent sample is not representative of the discharge and the sample was not used in conducting the RPA.

Excluding the 13 April 2012 result, the MEC for antimony was 11.1 µg/L. The maximum observed upstream receiving water concentration was 4 µg/L, based on 31 samples collected between January 2008 and April 2012. Therefore, antimony in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Primary MCL.

(c) WQBELs. As described further in section IV.C.2.c of this Fact Sheet, assimilative capacity is available and a dilution credit of 3:1 is appropriate for calculating effluent limitations for antimony. Following the procedures established by the SIP for calculating WQBELs and applying a dilution credit of 3:1 to the Primary MCL, the resulting AMEL and MDEL for antimony are 20 µg/L and 33 µg/L, respectively.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 11.1 µg/L is less than the WQBEL. The Central Valley Water Board concludes, therefore, that immediate compliance with this effluent limitation is feasible.

ii. Arsenic

(a) WQO. DPH has adopted a Primary MCL for arsenic of 10 µg/L, which is protective of the Basin Plan's chemical constituent objective.

(b) RPA Results. The Discharger initiated a pilot test to reduce arsenic concentrations in Skyrocket Pit Lake in the summer of 2010. The pilot test included in-situ addition of ferrous sulfate solution. The Discharger intends to continue the ferrous sulfate addition. Effluent monitoring data for arsenic collected since the Discharger began adding ferrous sulfate in the summer of 2010 ranged from 82 µg/L to 100 µg/L, based on 13

samples. The maximum observed upstream receiving water concentration for arsenic was 2.7 µg/L. Therefore, arsenic in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the primary MCL.

(c) WQBELs. As described further in section IV.C.2.c of this Fact Sheet, assimilative capacity is available and dilution credits ranging from 7 to 10 are appropriate for calculating effluent limitations for arsenic. Following the procedures established by the SIP for calculating WQBELs and applying dilution credits ranging from 7 to 10 to the Primary MCL, this Order includes tiered effluent limitations for arsenic as shown in Table F-4.

(d) Plant Performance and Attainability. The tiered effluent limitations for arsenic in this Order are based on the effluent quality and results of the Discharger's in-situ treatment using ferrous sulfate. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

iii. pH

(a) WQO. 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. Federal regulations at 40 CFR 122.44(d)(1)(i) require that, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines 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.*" For priority pollutants, the SIP dictates the procedures for conducting the RPA. pH is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. 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 for this non-priority pollutant constituent.

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 WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters)*." USEPA's TSD also recommends that factors other than effluent data should be considered in

the RPA, "*When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data*." (TSD, p. 50)

The Facility is a reclaimed gold mine site. The effluent pH ranged from 7.57 to 8.4 based on 77 samples collected between January 2009 and April 2012. The Facility does not include controls to regulate the pH of the effluent and the Facility's effluent varies due to the nature of spring water emanating from the ODSs and seepage from the FTR LCRS, which provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's numeric objective for pH in the receiving water. Therefore, WQBELs for pH are required in this Order.

(c) WQBELs. Effluent limitations for pH of 6.5 as an instantaneous minimum and 8.5 as an instantaneous maximum are included in this Order based on protection of the Basin Plan objectives for pH.

(d) Plant Performance and Attainability. The effluent pH ranged from 7.57 to 8.4. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

iv. Salinity

(a) WQO. The Basin Plan contains a chemical constituent objective that incorporates state 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 USEPA Ambient Water Quality Criteria for Chloride recommends acute and chronic criteria for the protection of aquatic life. There are no USEPA water quality criteria for the protection of aquatic life for electrical conductivity, total dissolved solids, and sulfate, chloride. Additionally, there are no USEPA 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 is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objective is to be interpreted for the protection of agricultural use. All studies conducted through this Order to establish an

agricultural limit to implement the narrative objective will be reviewed by and consistent with the efforts currently underway by CV-SALTS.

Table F-8. Salinity Water Quality Criteria/Objectives

Parameter	Secondary MCL[3]	USEPA NAWQC	Effluent	
			Average	Maximum
EC (µmhos/cm)	900, 1600, 2200	N/A	3,782	3,956
TDS (mg/L)	500, 1000, 1500	N/A	2,944	3,120
Sulfate (mg/L)	250, 500, 600	N/A	1,365	1,460
Chloride (mg/L)	250, 500, 600	860 1-hr 230 4-day	--	--

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

(1) Chloride. The Secondary 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. 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. The secondary MCL for total dissolved solids is 500 mg/L as a recommended level, 1000 mg/L as an upper level, and 1500 mg/L as a short-term maximum.

(b) RPA Results

(1) Chloride. Effluent and receiving water monitoring data for chloride is not available.

(2) Electrical Conductivity. A review of the Discharger's monitoring reports shows an average effluent EC of 3,782 µmhos/cm, with a range from 3,328 µmhos/cm to 3,956 µmhos/cm. These levels exceed the Secondary MCL. The background receiving water EC averaged 407 µmhos/cm.

(3) Sulfate. Sulfate concentrations in the effluent ranged from 1,290 mg/L to 1,460 mg/L, with an average of 1,365 mg/L. These levels exceed the Secondary MCL. Background concentrations in Littlejohns Creek ranged from <10 mg/L to 530 mg/L, with an average of 110 mg/L.

(4) Total Dissolved Solids. The average total dissolved solids effluent concentration was 2,945 mg/L with concentrations ranging from 2,820 mg/L to 3,120 mg/L. These levels exceed the Secondary MCL. The combined background receiving water total dissolved solids at Monitoring Locations RSW-001 and RSW-002 ranged from 90 mg/L to 780 mg/L, with an average of 226 mg/L.

(c) WQBELs. Total dissolved solids is an indicator parameter for salinity, and establishing an effluent limitation for total dissolved solids is expected to effectively control the constituents that contribute to salinity, including chloride, electrical conductivity, and sulfate. Due to the short-term nature of discharges from the Facility, effluent limitations for TDS are based on the upper level Secondary MCL of 1,000 mg/L. As described further in section IV.C.2.c of this Fact Sheet, assimilative capacity is available and a dilution credit of 7 is appropriate for calculating the effluent limitations for total dissolved solids. Applying a dilution credit of 7:1 to the upper level Secondary MCL, the resulting AMEL for total dissolved solids is 6,400 mg/L. However, effluent limitations may only be as high as is justified under State and federal antidegradation policies. The average total dissolved solids effluent concentration was 2,945 mg/L with concentrations ranging from 2,820 mg/L to 3,120 mg/L. However, as the level of Skyrocket Pit Lake decreases and with the addition of high total dissolved solids flows from the ODSs, the Discharger anticipates that the total dissolved solids of Skyrocket Pit Lake will increase over time. Based on the projections, an MDEL for total dissolved solids of 4,000 µg/L is included in this Order, consistent with Order R5-2007-0162-01. Furthermore, since Littlejohns Creek is tributary to the Sacramento-San Joaquin Delta, of additional concern is the salt contribution to the Delta. Therefore, this Order includes an annual total dissolved solids mass-based limitation of 3,000 tons/year, based on the expected annual discharge during an extremely wet year. Compliance with the annual total dissolved solids loading limitation shall be determined based on water year (i.e., 1 August through 31 July).

(d) Performance and Attainability. Analysis of the effluent data shows that the MEC of 3,120 µg/L is less than the WQBEL. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

v. Selenium

(a) WQO. The CTR includes maximum 1-hour average and 4-day average criteria of 20 µg/L and 5 µg/L, respectively, for total recoverable selenium for the protection of freshwater aquatic life.

(b) RPA Results. The MEC for selenium was 7.7 µg/L while the maximum observed upstream receiving water concentration was 2.6 µg/L. Therefore, selenium in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of aquatic life.

(c) WQBELs. As described further in section IV.C.2.c of this Fact Sheet, assimilative capacity is available and a chronic aquatic life criteria dilution credit of 7:1 is appropriate for calculating effluent limitations for selenium for the chronic criterion. No dilution has been allowed for acute aquatic life criteria. In calculating the coefficient of variation (CV) for effluent selenium, non-detect samples reported on 10 March 2011 and 13 April 2011 were not considered, because the method detection levels (MDL) were exceedingly high and would result in a non-representative CV if one-half the MDL were used in the CV calculation. Following the procedures established by the SIP for calculating WQBELs and applying a dilution credit of 7:1 to the chronic criterion and no acute dilution, the resulting AMEL and MDEL for selenium are based on the acute criterion and are 14 µg/L and 20 µg/L, respectively. Mass effluent limits for selenium have also been required, because selenium is a bioaccumulative constituent. The mass limits have been calculated using an average monthly flow of 3.0 MGD and a maximum daily flow of 43 MGD for the AMEL and MDEL, respectively.

The MDEL calculated above is less stringent than the MDEL of 14 µg/L required in the previous permit. The CWA 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 CWA sections 402(o) or 303(d)(4), or, where applicable, 40 CFR 122.44(l). The conditions for selenium do not meet the exceptions to the anti-backsliding regulations. Therefore, the MDEL for selenium must remain at 14 µg/L. This Order includes an AMEL and MDEL of 14 µg/L.

~~(c)~~

(d) Plant Performance and Attainability. The MEC of 7.7 µg/L is less than the WQBELs. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

4. WQBEL Calculations

a. This Order includes WQBELs for antimony, arsenic, pH, total dissolved solids, and selenium. The general methodology for calculating WQBELs based on the different criteria/objectives is described in subsections IV.C.4.b through e, below. See Attachment H for the WQBEL calculations.

b. Effluent Concentration Allowance. 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 WQBELs 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. WQBELs based on acute and chronic aquatic toxicity criteria are calculated in accordance with Section 1.4 of the SIP. The ECAs are converted to equivalent long-term averages (i.e., LTA_{acute} and $LTA_{chronic}$) using statistical multipliers and the lowest LTA is used to calculate the AMEL and MDEL using additional statistical multipliers.

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

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

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

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

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

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

Table F-9. Summary of Water Quality-Based Effluent Limitations

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants					
pH	standard units	--	--	6.5	8.5
Priority Pollutants					
Antimony, Total Recoverable	µg/L	20	33	--	--
Arsenic, Total Recoverable	µg/L	69[1]	85[1]	--	--
		77[2]	95[2]	--	--
		86[3]	110[3]	--	--
		94[4]	120[4]	--	--
Selenium, Total Recoverable	µg/L	14	~~20~~14	--	--
	lbs/day	0.35[5]	5.0~~7.2~~[6]	--	--
Non-Conventional Pollutants					
Total Dissolved Solids	mg/L	--	4,000	--	--
	tons/year	--	3,000	--	--

[1] Applicable at a daily average flow ratio from 7:1 to 8:1 (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively.
[2] Applicable at a daily average flow ratio from 8:1 to 9:1 (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively.
[3] Applicable at a daily average flow ratio from 9:1 to 10:1 (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively.
[4] Applicable at a daily average flow ratio greater than or equal to 10:1 (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively.
[5] Based on an average monthly flow effluent limit of 3 MGD.
[6] Based on a peak design flow of 43 MGD.

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. 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 WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters).*" Although the discharge has been consistently in compliance with the acute toxicity effluent limitations, the Facility is a reclaimed gold mine site that discharges wastewater containing acutely toxic pollutants. Acute toxicity effluent limitations 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. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "*In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc.*" Consistent with Order R5-2007-0162-01, 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). For priority pollutants, the SIP dictates the procedures for conducting the RPA. Chronic toxicity is not a priority pollutant; therefore the Central Valley Water Board is not restricted to one particular RPA method. 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 for chronic toxicity. For conducting the RPA, the USEPA recommends using a mass-balance approach to determine the expected critical downstream receiving water concentration using a steady-state approach[1]. This downstream receiving water concentration is then compared to the applicable water quality objectives to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion. This USEPA recommended approach has been used for chronic toxicity.

This Order requires a minimum flow ratio of 7:1 (creek: effluent). Therefore, to evaluate the RPA an effluent toxicity of 7 TUc was used. Based on chronic WET testing performed by the Discharger from January 2010 through April 2011, the maximum effluent toxicity was 4 TUc, as shown in Table F-10 below. Therefore, the discharge does not demonstrate a reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

Table F-10. Whole Effluent Chronic Toxicity Testing Results

Date	Fathead Minnow		Water Flea		Green Algae
	Pimephales promelas		*Ceriodaphnia dubia*		*Selenastrum capricornutum*
	Survival (TUc)	Growth (TUc)	Survival (TUc)	Reproduction (TUc)	Growth (TUc)
January 2010	--	<1	--	>1	>1
February 2010	--	--	--	<1	4
March 2010	--	<1	--	>1	>1
29 March 2010	--	--	--	--	2
April 2010	--	--	2	--	--
January 2011	--	--	1	--	4
March 2011	--	Pass	--	Pass	Pass
13 April 2011	--	--	1	--	4
16 April 2011	--	<1	1	<1	>1

[1] USEPA NPDES Permit Writers' Course (EPA 833-B-97-001 rev. October 2009)

Date	Fathead Minnow		Water Flea		Green Algae
	Pimephales promelas		*Ceriodaphnia dubia*		*Selenastrum capricornutum*
	Survival (TUc)	Growth (TUc)	Survival (TUc)	Reproduction (TUc)	Growth (TUc)
24 April 2011	--	--	--	--	4

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 Limitations

1. Mass-based Effluent Limitations

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

Mass-based effluent limitations were calculated by multiplying the concentration limitation by the Facility's reasonable measure of actual flow and the appropriate unit conversion factor. Consistent with 40 CFR 122.45(b)(2)(i), the reasonable measure of actual flow for the Facility is 43 MGD. Unless otherwise noted, all mass limitations in this Order were calculated using the reasonable measure of actual flow.

Mass-based effluent limitations have been established for selenium because it is a bioaccumulative pollutant and total dissolved solids because it is of the concern for salt contributions to the Sacramento-San Joaquin Delta. Except for selenium, mass-based effluent limitations are not included in this Order for pollutant parameters for which effluent limitations are based on water quality objectives and criteria that are concentration-based.

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 total dissolved solids, and pH is discussed in section IV.C.3 of this Fact Sheet.

3. Satisfaction of Anti-Backsliding Requirements

The CWA 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 CWA sections 402(o) or 303(d)(4), or, where applicable, 40 CFR 122.44(l).

The effluent limitations in this Order are at least as stringent as the effluent limitations in the existing Order, with the exception of effluent limitations for antimony, cadmium, chromium (total), copper, dissolved oxygen, iron, lead, mercury, nitrate, ~~selenium,~~ TSS, and zinc. The effluent limitations for these pollutants are less stringent than those in Order R5-2007-0162-01. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

a. **CWA section 402(o)(1) and 303(d)(4).** CWA section 402(o)(1) specifies that, in the case of effluent limitations established on the basis of CWA section 301(b)(1)(C) (i.e., WQBELs), a permit may not be renewed, reissued, or modified to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit except in compliance with CWA section 303(d)(4). The effluent limitations for antimony, chromium (total), iron, nitrate, ~~selenium,~~ and zinc established in Order R5-2007-0162-01 are WQBELs and may be relaxed if the requirements of CWA section 303(d)(4) are satisfied.

   CWA section 303(d)(4) has two parts: paragraph (A) which applies to nonattainment waters and paragraph (B) which applies to attainment waters. 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 303(d) listings for Littlejohns Creek, as described in section III.D.1 of this Fact Sheet, do not include antimony, chromium (total), iron, nitrate, ~~selenium,~~ or zinc. Thus the receiving water is an attainment water for these constituents. The removal of WQBELs for chromium (total), iron, nitrate, and zinc and the relaxation of WQBELs for antimony ~~and selenium is~~ are consistent with CWA sections 402(o)(1) and 303(d)(4) and, as described in section IV.D.4 of this Fact Sheet, the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Therefore, the modifications to these effluent limitations do not violate ant-backsliding requirements.

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. CWA section 402(o)(2)(B)(ii) allows a renewed, reissued, or modified permit to contain a less stringent effluent limitation for a pollutant where technical mistakes or mistaken interpretations of law were made.

As described in section IV.B.2 of this Fact Sheet, this Order discontinues technology-based effluent limitations for cadmium, copper, lead, mercury, and TSS. As described further in section IV.C.3.b of this Fact Sheet, updated information that was not available at the time Order R5-2007-0162-01 was issued indicates that chromium (total), iron, nitrate, and zinc do not exhibit reasonable potential to cause or contribute to an exceedance of water quality objectives in the receiving water and supports relaxed effluent limitations for antimony ~~and selenium~~ based on available dilution. The updated information that supports the relaxation of effluent limitations for these constituents includes the following:

i. **Cadmium, Copper, Lead, Mercury, and TSS.** Order R5-2007-0162-01 established technology-based effluent limitations for cadmium, copper, lead, mercury, and TSS based on BPJ and applying the ELGs at 40 CFR Part 440 which applies to active mining areas. As described in section IV.B.2 of this Fact Sheet, the Facility is not an “active mining area” as defined in 40 CFR Part 440, and has not been in operation for many years before the Board’s adoption of Order R5-2007-0162-01. Therefore, the Facility is not a categorical discharge subject to ELGs and technology-based effluent limitations for the Facility must be based on BPJ. CWA section 402(o)(2)(B)(ii) provides an exception to anti-backsliding requirements for effluent limitations based on BPJ where technical mistakes or mistaken interpretations of law were made. Because the Facility is not an active mining area as defined in 40 CFR Part 440, and has not been an active mining area for many years prior to the adoption of Order R5-2007-0162-01, the effluent limitations representing BPT and BAT for an active mine are not applicable to this Facility. Therefore, it is appropriate to discontinue effluent limitations for cadmium, copper, lead, mercury, and TSS in accordance with CWA sections 402(o)(2)(B)(ii). This Order discontinues effluent limitations for cadmium, copper, lead, mercury, and TSS in accordance with CWA section 402(o)(2)(B)(ii). Monitoring data for these constituents indicates that the discharge does not have reasonable potential to cause or contribute to an exceedance of applicable water quality objectives. Thus, removal of these effluent limitations will not result in an allowed increase in pollutants or any additional degradation of the receiving water. Thus, removal of effluent limitations is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16.

ii. **Antimony.** Order R5-2007-0162-01 established a performance-based MDEL of 17 µg/L for antimony, calculated as the 99.9th percentile of the data available at that time (i.e., the mean plus 3.3 standard deviations). Based on

a dilution/mixing zone study conducted on 5/6 March 2008 and receiving water monitoring data collected between January 2008 and April 2012, a mixing zone and dilution credit of 7:1 is applicable and the receiving water contains assimilative capacity for antimony, as discussed in section IV.C.2.c of this Fact Sheet. Based on updated effluent monitoring data, the 99th percentile of the effluent is 19 µg/L (mean 8.3 µg/L, standard deviation 3.2 µg/L), which corresponds to a dilution credit of 3:1. Therefore, this Order includes less stringent effluent limitations for antimony based on the recent performance of the Facility and a dilution of 3:1.

iii. **Chromium (Total).** Effluent and receiving water monitoring data for chromium (total) collected during the term of Order R5-2007-0162-01 indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Primary MCL.

iv. **Dissolved Oxygen.** Effluent and receiving water monitoring data for dissolved oxygen collected during the term of Order R5-2007-0162-01 indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Basin Plan water quality objective.

v. **Iron.** Effluent monitoring data for iron collected during the term of Order R5-2007-0162-01 indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Secondary MCL.

vi. **Nitrate.** Effluent and receiving water monitoring data for nitrate collected during the term of Order R5-2007-0162-01 indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Primary MCL or the existing MDEL of 3.0 mg/L, which was based on a settlement agreement with the California Sportfishing Protection Alliance that is no longer in effect.

~~vii. **Selenium**. Order R5-2007-0162-01 established a performance-based MDEL of 14 µg/L for selenium, calculated as the 99.9th percentile of the data available at that time (i.e., the mean plus 3.3 standard deviations). Based on a dilution/mixing zone study conducted on 5/6 March 2008 and receiving water monitoring data collected between January 2008 and April 2012, a mixing zone and chronic dilution credit of 7:1 is applicable and the receiving water contains assimilative capacity for selenium, as discussed in section IV.C.2.c of this Fact Sheet. For selenium, the WQBELs based on a chronic aquatic life criteria dilution credit of 7:1 and no dilution for acute aquatic life criteria are an AMEL of 14 µg/L and an MDEL of 20 µg/L, respectively. Although the MDEL of 20 µg/L is less stringent than the previous MDEL of 14 µg/L, the AMEL is equivalent. Because the previous Order and this Order require grab samples for selenium once per discharge event, not to exceed once per month, the change in averaging period is not less stringent.~~

~~viii.~~vii. **Zinc.** Effluent and receiving water monitoring data for zinc collected during the term of Order R5-2007-0162-01 indicates that the discharge does

not exhibit reasonable potential to cause or contribute to an exceedance of the CTR criteria.

Thus, relaxation of the effluent limitations for antimony, cadmium, chromium (total), copper, dissolved oxygen, iron, lead, nitrate, mercury, ~~selenium,~~ TSS, and zinc from Order R5-2007-0162-01 is in accordance with CWA sections 402(o)(2)(B)(i) and (ii).

4. Satisfaction of Antidegradation Policy

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 WQBELs where the discharge could have the reasonable potential to cause or contribute to an exceedance of water quality standards. The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

This Order removes existing effluent limitations for constituents in which updated monitoring data demonstrates that the effluent does not cause or contribute to an exceedance of the applicable water quality criteria or objectives in the receiving water, relaxes existing effluent limitations for constituents in which updated mixing zone/dilution studies and receiving water data support allowance of a mixing zone and dilution credits, and removes existing effluent limitations that were based on technical mistakes or mistaken interpretations of law. The Central Valley Water Board finds that the removal and relaxation of the effluent limitations do not result in an allowed increase in pollutants or any additional degradation of the receiving water. Thus, removal and relaxation of effluent limitations is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16.

5. Stringency of Requirements for Individual Pollutants

This Order contains WQBELs for individual pollutants. Technology-based effluent limitations are not applicable to the discharge. The WQBELs consist of restrictions on antimony, arsenic, pH, selenium, and total dissolved solids.

WQBELs have been scientifically 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 WQBELs were derived from the CTR, the CTR is the applicable standard pursuant to 40 CFR 131.38. The scientific procedures for calculating the individual WQBELs for priority pollutants are based on the CTR-SIP, which was approved by USEPA on 18 May 2000. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to 30 May 2000. Any water

quality objectives and beneficial uses submitted to USEPA prior to 30 May 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to 40 CFR 131.21(c)(1).

This Order contains pollutant restrictions that are more stringent than applicable federal requirements and standards. Specifically, this Order includes effluent limitations for antimony, arsenic, and selenium that are more stringent than applicable federal standards, but that are nonetheless necessary to meet numeric objectives or protect beneficial uses. The rationale for including these limitations is explained in section IV.C of this Fact Sheet.

Summary of Final Effluent Limitations
Discharge Point No. 001

Table F-11. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations				Basis[1]
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Flow	MGD	3.0	--	--	--	DC
Conventional Pollutants						
pH	standard units	--	--	6.5	8.5	BP
Priority Pollutants						
Antimony, Total Recoverable	µg/L	20	33	--	--	MCL
Arsenic, Total Recoverable	µg/L	69[2]	85[2]	--	--	MCL
		77[3]	95[3]	--	--	
		86[4]	110[4]	--	--	
		94[5]	120[5]	--	--	
Selenium, Total Recoverable	µg/L	14	~~20~~14	--	--	CTR
	lbs/day	0.35[6]	5.0~~7.2~~[7]	--	--	
Non-Conventional Pollutants						
Total Dissolved Solids	mg/L	--	4,000	--	--	SEC MCL
	tons/year	--	3,000	--	--	
Acute Toxicity	% Survival	--	[8]	--	--	BP

Parameter	Units	Effluent Limitations				Basis[1]
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	

[1] DC – Based on the design capacity of the Facility.
BP – Based on water quality objectives contained in the Basin Plan.
MCL – Based on the Primary Maximum Contaminant Level.
PB – Based on Facility performance.
CTR – Based on water quality criteria contained in the California Toxics Rule and applied as specified in the SIP.
SEC MCL – Based on the Secondary Maximum Contaminant Level.

[2] Applicable at a daily average flow ratio from 7:1 to 8:1 (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively.

[3] Applicable at a daily average flow ratio from 8:1 to 9:1 (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively.

[4] Applicable at a daily average flow ratio from 9:1 to 10:1 (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively.

[5] Applicable at a daily average flow ratio greater than or equal to 10:1 (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively.

[6] Based on an average monthly flow effluent limit of 3 MGD.

[7] Based on a peak design flow of 43 MGD.

[8] 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%

E. Interim Effluent Limitations – Not Applicable

F. Land Discharge Specifications – Not Applicable

G. Reclamation Specifications – Not Applicable

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

Basin Plan water quality objectives to protect the beneficial uses of surface water and groundwater include numeric objectives and narrative objectives, including objectives for chemical constituents, toxicity, and tastes and odors. The toxicity objective requires that surface water and groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective requires that surface water and groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use or that exceed the maximum contaminant levels (MCLs) in Title 22, CCR. The tastes and odors objective states that surface water and groundwater shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, toxic substances, radionuclides, or taste and odor producing substances in concentrations that adversely affect domestic drinking water supply, agricultural supply, or any other beneficial use.

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 bacteria, biostimulatory substances, color, chemical constituents, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, suspended sediment, settleable substances, suspended material, tastes and odors, temperature, toxicity, and turbidity.

a. pH. Order R5-2007-0162-01 established a receiving water limitation for pH specifying that discharges from the Facility shall not cause the ambient pH to change by more than 0.5 units based on the water quality objective for pH in the Basin Plan, and allowed a 1-month averaging period for calculating pH change. The Central Valley Water Board adopted Resolution No. R5-2007-0136 on 25 October 2007, amending the Basin Plan to delete the portion of the pH water quality objective that limits the change in pH to 0.5 units and the allowance of averaging periods for pH. The Basin Plan amendment has been approved by the State Water Board, the Office of Administrative Law, and USEPA. Consistent with the revised water quality objective in the Basin Plan, this Order does not require a receiving water limitation for pH change.

In Finding No. 14 of Resolution No. R5-2007-0136 the Central Valley Water Board found that the change in the pH receiving water objective is consistent with the State Water Board Resolution No. 68-16, in that the changes to water quality objectives (i) consider maximum benefit to the people of the State, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

There are no other constituents regulated by this Order directly related to pH. Therefore the relaxation of the pH receiving water limitation will protect aquatic life and other beneficial uses and will not unreasonably affect present and anticipated beneficial uses nor result in water quality less than described in applicable policies. The relaxation of the receiving water limitation is not expected to cause other impacts on water quality. The Central Valley Water Board finds that the relaxation of the pH receiving water limitation (i) is to the maximum benefit to the people of the State, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

The revised receiving water limitation for pH, which is based on the amendment to the Basin Plan's pH water quality objective, reflects current scientifically supported pH requirements for the protection of aquatic life and other beneficial uses. The revised receiving water limitation for pH is more consistent with the current USEPA recommended criteria and is fully protective of aquatic life and the other beneficial uses listed in the Basin Plan. Changes in pH when pH is maintained within the range of 6.5 to 8.5 are neither beneficial nor adverse and, therefore, are not considered to be degradation in water quality. Attempting to restrict pH changes to 0.5 pH units would incur substantial costs without demonstrable benefits to beneficial uses. Thus, any changes in pH that would occur under the revised pH limitation would not only be protective of beneficial uses, but also would be consistent with maximum benefit to people of the State. Therefore the proposed amendment will not violate antidegradation policies.

b. **Turbidity.** Order R5-2007-0162-01 established a receiving water limitation for turbidity specifying that discharges from the Facility shall not cause the turbidity to increase more than 1 NTU where natural turbidity is between 0 and 5 NTU based on the water quality objective for turbidity in the Basin Plan. The Central Valley Water Board adopted Resolution No. R5-2007-0136 on 25 October 2007, amending the Basin Plan to limit turbidity to 2 NTU when the natural turbidity is less than 1 NTU. The Basin Plan amendment has been approved by the State Water Board, the Office of Administrative Law, and USEPA. Consistent with the revised water quality objective in the Basin Plan, this Order limits turbidity to 2 NTU when the natural turbidity is less than 1 NTU.

In Finding No. 14 of Resolution R5-2007-0136 the Central Valley Water Board found that the change in the turbidity receiving water objective is consistent with the State Water Board Resolution No. 68-16, in that the changes to water quality objectives (i) consider maximum benefit to the people of the State, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

This Order will be protective of the receiving water under all natural background conditions as defined in the Basin Plan’s revised water quality objective turbidity. The relaxation of the turbidity receiving water limitation will protect aquatic life and other beneficial uses and will not unreasonably affect present and anticipated beneficial uses nor result in water quality less than described in applicable policies. The relaxation of the receiving water limitation is not expected to cause other impacts on water quality. The Central Valley Water Board finds that the relaxation of the turbidity receiving water limitation is to the maximum benefit to the people of the State, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

The revised receiving water limitation for turbidity, which is based on the amendment to the Basin Plan's turbidity water quality objective, reflects current

scientifically supported turbidity requirements for the protection of aquatic life and other beneficial uses and, therefore, will be fully protective of aquatic life and the other beneficial uses listed in the Basin Plan. Changes in turbidity allowed by the revised receiving water limitation, when ambient turbidity is below 1 NTU, would not adversely affect beneficial uses and would maintain water quality at a level higher than necessary to protect beneficial uses. Restricting low-level turbidity changes further may require costly upgrades, which would not provide any additional protection of beneficial uses. Thus, any changes in turbidity that would occur under the amended turbidity receiving water limitation would not only be protective of beneficial uses, but also would be consistent with maximum benefit to people of the State. Therefore, the relaxed receiving water limitations for turbidity will not violate antidegradation policies.

B. Groundwater – Not Applicable

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

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 Regional Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program (Attachment E) of this Order, establishes monitoring and reporting requirements to implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the Monitoring and Reporting Program for the Facility.

A. Influent Monitoring – Not Applicable

B. Effluent Monitoring

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

2. Effluent monitoring frequencies and sample types for flow (continuous), pH (daily), TSS (once per discharge event), antimony (once per discharge event), arsenic (once per discharge event), selenium (once per discharge event), zinc (once per discharge event), electrical conductivity (once per discharge event), iron (once per discharge event), sulfate (once per discharge event), and total dissolved solids (once per discharge event) have been retained from Order R5-2007-0162-01 to determine compliance with effluent limitations, where applicable, and characterize the discharge for these parameters.

3. Order R5-2007-0162-01 did not require monitoring for hardness. This Order requires effluent monitoring for hardness once per discharge event at Monitoring Location EFF-001 to ensure that adequate data is available to properly adjust water quality criteria for hardness-based metals in future permit renewals.

4. Monitoring data collected over the existing permit term for aluminum, cadmium, chromium (total), copper, iron, lead, manganese, mercury, and nitrate did not demonstrate reasonable potential to exceed water quality objectives/criteria and effluent limitations have not been retained in this Order. Thus, specific monitoring requirements for these parameters have not been retained from Order R5-2007-0162-01.

5. Monitoring data collected over the existing permit term for dissolved oxygen did not demonstrate reasonable potential to exceed water quality objectives/criteria and effluent limitations have not been retained in this Order. Thus, the monitoring frequency for dissolved oxygen has been reduced from daily to once per discharge event.

6. Priority pollutant data for the effluent has been provided by the Discharger and was used to conduct an RPA. In accordance with Section 1.3 of the SIP, periodic monitoring for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established is required. Consistent with Order R5-2007-0162-01, this Order requires annual monitoring during the permit term in order to collect data to conduct an RPA for the next permit renewal. See Attachment I for more detailed requirements related to performing priority pollutant monitoring.

7. 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 to Article 3 (commencing with Section 100825) of Chapter 4 of Part 1 of Division 101 of the Health and Safety Code.*" DPH 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 chlorine residual, 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.** Order R5-2007-0162-01 required 96-hour acute bioassay testing once every 2 months to demonstrate compliance with the effluent limitation for acute toxicity. The monitoring frequency has been reduced to annually because the Discharger has demonstrated consistent compliance with the acute toxicity effluent limitations. Based on six acute bioassays using 100% effluent, all testing results were 100% survival of the test species.

2. **Chronic Toxicity.** Order R5-2007-0162-01 required three species chronic whole effluent toxicity testing quarterly in order to demonstrate compliance with the Basin Plan's narrative toxicity objective. The monitoring frequency has been reduced to annually because all chronic toxicity testing results were below the monitoring trigger (10 chronic WET tests between January 2010 and April 2011, see Table F-10).

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.

b. Order R5-2007-0162-01 established receiving water monitoring requirements at Monitoring Location RSW-004 downstream of the discharge at the outfall of Flowers Reservoir, to which Littlejohns Creek is tributary. Flowers Reservoir receives water from several tributaries in addition to Littlejohns Creek and changes in receiving water quality in Flowers Reservoir may not be attributable to the discharge. Therefore, this Order discontinues monitoring requirements at Monitoring Location RSW-004. This Order continues to require downstream receiving water monitoring at Monitoring Location RSW-003.

c. Receiving water monitoring frequencies and sample types for flow (continuous), pH (once per discharge event), antimony (once per discharge event), arsenic (once per discharge event), selenium (once per discharge event), chloride (once per discharge event), dissolved oxygen (once per discharge event), electrical conductivity (once per discharge event), sulfate (once per discharge event), temperature (once per discharge event), and total dissolved solids (once per discharge event) have been retained from Order R5-2007-0162.

d. Monitoring data collected over the existing permit term for aluminum, chromium (total), iron, manganese, nitrate, and zinc did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, specific monitoring requirements for these constituents have not been retained from Order R5-2007-0162-01.

e. Order R5-2007-0162-01 did not require monitoring for hardness. This Order requires receiving water monitoring for hardness once per discharge event to ensure that adequate data is available to properly adjust water quality criteria for hardness-based metals in future permit renewals.

f. Priority pollutant data for the receiving water has been provided by the Discharger over the term of Order R5-2007-0162-01, and was used to conduct a RPA. In accordance with Section 1.3 of the SIP, periodic monitoring for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established is required. This Order requires annual monitoring for priority pollutants and other pollutants of concern, performed

concurrently with effluent monitoring, at Monitoring Location RSW-001 in order to collect data to conduct an RPA for the next permit renewal. See Attachment I for more detailed requirements related to performing priority pollutant monitoring.

2. Groundwater – Not Applicable

E. Other Monitoring Requirements

1. **Effluent and Receiving Water Characterization Study.** An effluent and receiving water monitoring study is required to ensure adequate information is available for the next permit renewal. The Discharger is required to conduct annual monitoring of the effluent at Monitoring Location EFF-001 and of the receiving water at Monitoring Location RSW-001 for all priority pollutants and other constituents of concern as described in Attachment I.

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions

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

40 CFR 122.41(a)(1) and (b) through (n) 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. 40 CFR 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 CFR 123.25, this Order omits federal conditions that address enforcement authority specified in 40 CFR 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. **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 chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if a chronic toxicity water quality objective is adopted by the State Water Board, this Order may be reopened to include a chronic toxicity limitation based on that objective.

b. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating 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. 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.

c. **Flow Ratio.** The purpose of the discharge is to allow management of the site-wide water balance and to lower Skyrocket Pit Lake to an operating level that would allow the lake to act as a groundwater sink to prevent groundwater seepage into Littlejohns Creek. The main issue related to groundwater and surface water at this site is that water has come into contact with mining waste, dissolved metals, and other inorganic constituents associated with localized naturally-occurring mineralized rock, some of which has been relocated to the WMUs as a result of mining. Groundwater associated with these WMUs contains dissolved inorganic constituents that exceed background concentrations and beneficial use criteria.

   The Discharger's model suggests that a flow ratio of 7:1 is needed to reduce the level of Skyrocket Pit Lake to ensure it acts as a groundwater sink. Due to uncertainty in the background receiving water and effluent constituent concentrations after the lowering of Skyrocket Pit Lake, the required flow ratio required by Discharge Prohibitions III.D has been conservatively established at 7:1. Should the Discharger provide additional information that indicates a lower dilution ratio would be adequately protective of the beneficial uses of the receiving water, this Order may be reopened to modify the Discharge Prohibition.

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

a. **Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*." (Basin Plan at page III-8.00) Based on whole effluent chronic toxicity testing performed by the Discharger from January 2010 through April 2012, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

   This provision provides a numeric toxicity monitoring trigger and requirements for accelerated monitoring, as well as, requirements for TRE initiation if toxicity has been demonstrated.

   Monitoring Trigger. A numeric toxicity monitoring trigger of > 7 TUc (where TUc = 100/NOEC) is applied in the provision, which corresponds to a dilution credit of 7:1. Therefore, a TRE is triggered when the effluent exhibits toxicity at 14.3% effluent. As shown in Table F-10, the maximum observed chronic toxicity result was 4 TUc and the Discharger is able to consistently comply with this numeric trigger.

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-2), 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:

- Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants, EPA/833-B-99/002, August 1999.
- Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs), EPA/600/2-88/070, April 1989.
- Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures, Second Edition, EPA 600/6-91/003, February 1991.
- Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I, EPA/600/6-91/005F, May 1992.
- 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.

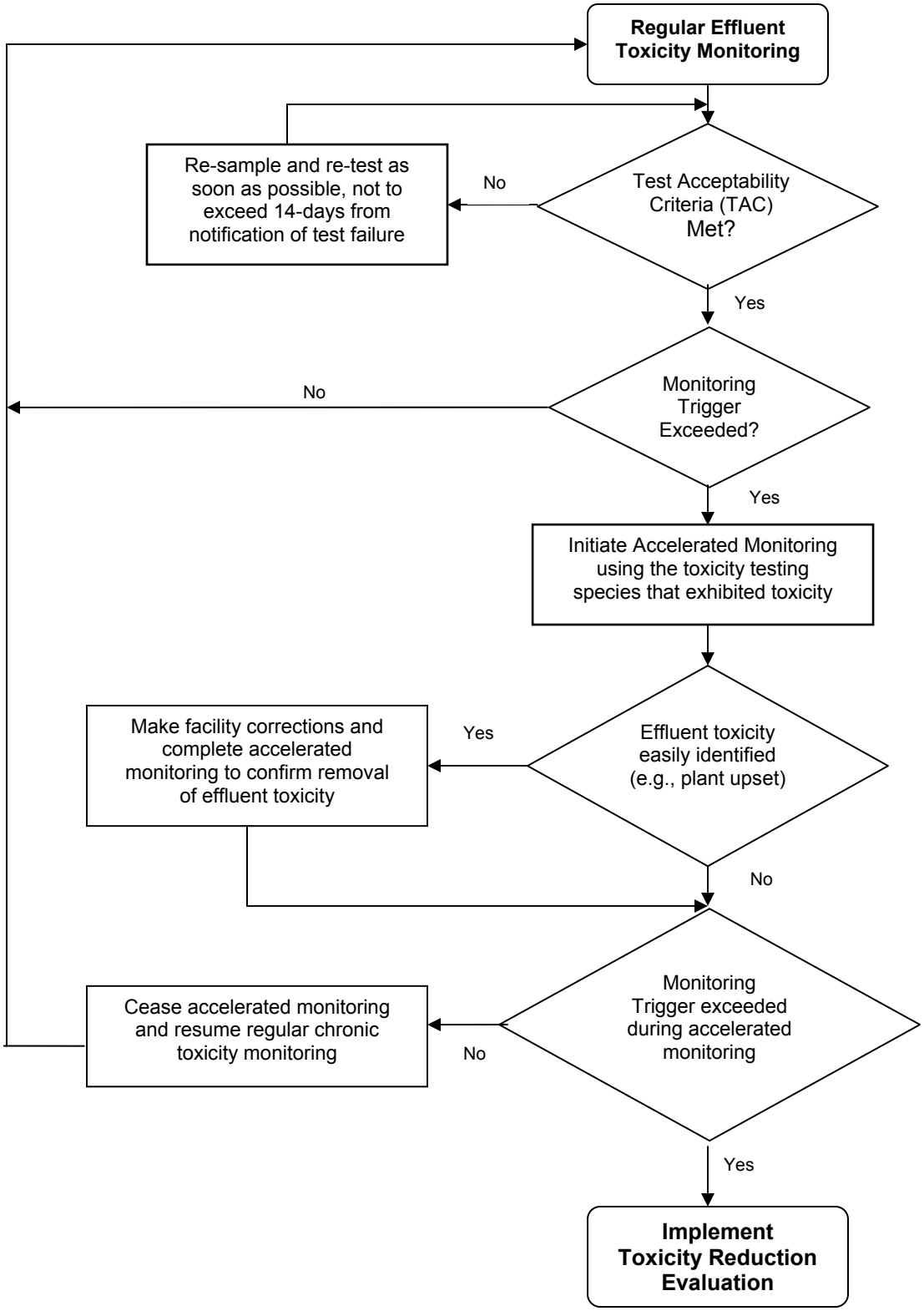
- Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA 600/R-92/081, September 1993.

- 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.

- 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.

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

Figure F-2
WET Accelerated Monitoring Flow Chart



b. **Skyrocket Pit Lake Water Level and Water Quality Assessment.** In order to track the Dischargers' progress towards meeting the long-term lake level objective in WDR Order R5-2008-0021, this Order requires the Discharger to report annually on the water level projections for Skyrocket Pit Lake. Each report should include an assessment of the Discharger's progress towards meeting the long-term lake level objective.

   This report shall also include an evaluation of total dissolved solids and arsenic levels in Skyrocket Pit Lake and in Littlejohns Creek at Monitoring Locations RSW-001 and RSW-002. The Discharger's modeling analysis has indicated that water quality is expected to improve in the creek, thereby providing potentially more dilution than is currently available. It is necessary to include the levels of total dissolved solids and arsenic in Littlejohns Creek in order to evaluate the effects of the lowering of Skyrocket Pit Lake on water quality in Littlejohns Creek. This Order includes a reopener provision to allow the permit to be reopened to lower or raise the required flow ratio, based on the changes in constituent concentrations in Skyrocket Pit Lake and Littlejohns Creek as the level of Skyrocket Pit Lake is lowered.

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

   a. **Surface Water Discharge Minimization Plan.** Previous Order R5-2007-0162-01 required the Discharger to develop and implement Surface Water Discharge Minimization Plan. The Discharger is required to update and continue to implement their 22 July 2008 *Surface Water Discharge Minimization Plan*. The plan shall include measures to reduce surface water discharges to Littlejohns Creek by lowering the level of Skyrocket Pit Lake. The plan shall evaluate disposal alternatives, such as evaporation measures, spray irrigation, etc.

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

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

6. **Other Special Provisions – Not Applicable**

7. **Compliance Schedules – Not Applicable**

VIII. PUBLIC PARTICIPATION

The Central Valley Water Board is considering the issuance of WDRs that will serve as an NPDES permit for the Facility. As a step in the WDR adoption process, the Central Valley Water Board staff has developed tentative WDRs. The Central Valley Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Central Valley Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided through the posting of a Notice of Public Hearing at the Facility, via an email sent to interested parties, and through posting on the Central Valley Water Board's internet website.

B. Written Comments

The staff determinations are tentative. Interested persons are invited to submit written comments concerning these tentative WDRs. Comments must be submitted either in person or by mail to the Executive Office at the Central Valley Water Board at the address above on the cover page of this Order.

To be fully responded to by staff and considered by the Central Valley Water Board, written comments must be received at the Central Valley Water Board offices by 5:00 p.m. on **12 April 2013**.

C. Public Hearing

The Central Valley Water Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date: 30/31 May 2013
Time: 8:30 a.m.
Location: Regional Water Quality Control Board, Central Valley Region
11020 Sun Center Dr., Suite #200
Rancho Cordova, CA 95670

Interested persons are invited to attend. At the public hearing, the Central Valley Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our Web address is www.waterboards.ca.gov/centralvalley where you can access the current agenda for changes in dates and locations.

D. Waste Discharge Requirements Petitions

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

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

E. Information and Copying

The Report of Waste Discharge, related documents, tentative effluent limitations and special provisions, comments received, and other information 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 WDRs 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 Kathleen Harder at (916) 464-4778.

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

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Antimony, Total Recoverable	µg/L	11.1	4	6	--	--	14	4,300	--	6	Yes
Arsenic, Total Recoverable	µg/L	100[1]	2.7	10	340	150	--	--	--	10	Yes
Cadmium, Total Recoverable	µg/L	<0.1	<0.5	5[2]/1.2[3]	18[2]/1.7[3]	7.3[2]/1.2[3]	--	--	--	5	No
Chloride	µg/L	No Data	140	250	860	230	--	--	--	250	No
Chromium (Total)	µg/L	8	14.7	50	--	--	--	--	--	50	No
Copper, Total Recoverable	µg/L	6.2	1.0	30[2]/4.4[3]	52[2]/6.2[3]	30[2]/4.4[3]	1,300	--	--	1,000	No
Electrical Conductivity @ 25°C	µmhos/cm	3,956	1,575	900	--	--	--	--	--	900	Yes
Iron, Total Recoverable	µg/L	173[4]	1,440[4]	300	--	1,000	--	--	--	300	No
Lead, Total Recoverable	µg/L	2.1	<2.5	13[2]/1.1[3]	320[2]/27[3]	13[2]/1.1[3]	--	--	--	15	No
Manganese, Total Recoverable	µg/L	38[4]	43[4]	50	--	--	--	100	--	50	No
Mercury, Total Recoverable	µg/L	<0.1	<0.1	0.050	--	--	0.050	0.051	--	2	No
Nitrate Nitrogen, Total (as N)	mg/L	1.26	2.01	10	--	--	10	--	--	10	No
Selenium, Total Recoverable	µg/L	7.7	2.6	5	20	5	170	4,200	--	50	Yes
Sulfate	mg/L	1,460	530	250	--	--	--	--	--	250	Yes
Total Dissolved Solids	mg/L	3,120	780	500	--	--	--	--	--	500	Yes
Total Suspended Solids	mg/L	22	<5	--	--	--	--	--	--	--	No
Zinc, Total Recoverable	µg/L	295	12	388[2]/57[3]	388[2]/57[3]	388[2]/57[3]	7,400	26,000	--	5,000	No

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential

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

Footnotes:
(1) Represents monitoring data collected since the addition of ferrous sulfate to remove arsenic in Skyrocket Pit Lake in summer 2010.
(2) Criterion to be compared to the maximum effluent concentration.
(3) Criterion to be compared to the maximum upstream receiving water concentration.
(4) Represents the maximum observed annual average effluent concentration for comparison with the Secondary MCL.

ATTACHMENT H – CALCULATION OF WQBELS

Parameter	Units	Most Stringent Criteria			Dilution Factors			HH Calculations			Aquatic Life Calculations									Final Effluent Limitations	
		HH	CMC	CCC	HH	CMC	CCC	ECA_{HH} = $AMEL_{HH}$	AMEL/MDEL $Multiplier_{HH}$	$MDEL_{HH}$	ECA $Multiplier_{acute}$	LTA_{acute}	ECA $Multiplier_{chronic}$	$LTA_{chronic}$	Lowest LTA	AMEL $Multiplier_{95}$	$AMEL_{AL}$	MDEL $Multiplier_{99}$	$MDEL_{AL}$	Lowest AMEL	Lowest MDEL
Antimony, Total Recoverable	µg/L	6	--	--	3	0	3	20	1.68	33	--	--	--	--	--	--	--	--	--	20	33
Arsenic, Total Recoverable	µg/L	10	340	150	7	0	7	69	1.23	85	0.55	189	0.74	882	189	1.24	234	1.80	340	69	85
		10	340	150	8	0	8	77	1.23	95	0.55	189	0.74	992	189	1.24	234	1.80	340	77	95
		10	340	150	9	0	9	86	1.23	110	0.55	189	0.74	1,102	189	1.24	234	1.80	340	86	110
		10	340	150	10	0	10	94	1.23	120	0.55	189	0.74	1,213	189	1.24	234	1.80	340	94	120
Selenium, Total Recoverable	µg/L	50	20	5	7	0	7	3.73	2.70	1,009	0.56	11	0.74	25	11	1.23	14	1.77	20	14	20

[1] See section IV.C.3.c of the Fact Sheet (Attachment F).

ATTACHMENT I – EFFLUENT AND RECEIVING WATER CHARACTERIZATION STUDY

I. Background. Sections 2.4.1 through 2.4.4 of the SIP provide minimum standards for analyses and reporting. (Copies of the SIP may be obtained from the State Water Resources Control Board, or downloaded from http://www.waterboards.ca.gov/iswp/index.html). To implement the SIP, effluent and receiving water data are needed for all priority pollutants. Effluent and receiving water pH and hardness are required to evaluate the toxicity of certain priority pollutants (such as heavy metals) where the toxicity of the constituents varies with pH and/or hardness. Section 3 of the SIP prescribes mandatory monitoring of dioxin congeners. In addition to specific requirements of the SIP, the Central Valley Water Board is requiring the following monitoring:

A. Drinking water constituents. Constituents for which drinking water Maximum Contaminant Levels (MCLs) have been prescribed in the California Code of Regulation are included in the *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (Basin Plan). The Basin Plan defines virtually all surface waters within the Central Valley Region as having existing or potential beneficial uses for municipal and domestic supply. The Basin Plan further requires that, at a minimum, water designated for use as domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the MCLs contained in the California Code of Regulations.

B. Effluent and receiving water temperature. This is both a concern for application of certain temperature-sensitive constituents, such as fluoride, and for compliance with the Basin Plan's thermal discharge requirements.

C. Effluent and receiving water hardness and pH. These are necessary because several of the CTR constituents are hardness and pH dependent.

II. Monitoring Requirements.

A. Annual Monitoring. Annual samples shall be collected from the effluent and upstream receiving water (Monitoring Locations EFF-001 and RSW-001) and analyzed for the constituents listed in Table I-1. The results of such monitoring shall be submitted to the Central Valley Water Board in the SMR following the sampling event. Each individual monitoring event shall provide representative sample results for the effluent and upstream receiving water.

B. Concurrent Sampling. Effluent and receiving water sampling shall be performed at approximately the same time, on the same date.

C. Sample type. All effluent and receiving water samples shall be taken as grab samples.

D. Additional Monitoring/Reporting Requirements. The Discharger shall conduct the monitoring and reporting in accordance with the General Monitoring Provisions and Reporting Requirements in Attachment E.

Table I-1. Priority Pollutants and Other Constituents of Concern

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
28	1,1-Dichloroethane	75343	1
30	1,1-Dichloroethene	75354	0.5
41	1,1,1-Trichloroethane	71556	2
42	1,1,2-Trichloroethane	79005	0.5
37	1,1,2,2-Tetrachloroethane	79345	0.5
75	1,2-Dichlorobenzene	95501	2
29	1,2-Dichloroethane	107062	0.5
	cis-1,2-Dichloroethene	156592	--
31	1,2-Dichloropropane	78875	0.5
101	1,2,4-Trichlorobenzene	120821	1
76	1,3-Dichlorobenzene	541731	2
32	1,3-Dichloropropene	542756	0.5
77	1,4-Dichlorobenzene	106467	2
17	Acrolein	107028	2
18	Acrylonitrile	107131	2
19	Benzene	71432	0.5
20	Bromoform	75252	2
34	Bromomethane	74839	2
21	Carbon tetrachloride	56235	0.5
22	Chlorobenzene (mono chlorobenzene)	108907	2
24	Chloroethane	75003	2
25	2- Chloroethyl vinyl ether	110758	1
26	Chloroform	67663	2
35	Chloromethane	74873	2
23	Dibromochloromethane	124481	0.5
27	Dichlorobromomethane	75274	0.5
36	Dichloromethane	75092	2
33	Ethylbenzene	100414	2
88	Hexachlorobenzene	118741	1
89	Hexachlorobutadiene	87683	1
91	Hexachloroethane	67721	1

[1] The reporting levels required in these tables for priority pollutant constituents are established based on Section 2.4.2 and Appendix 4 of the SIP.

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
94	Naphthalene	91203	10
38	Tetrachloroethene	127184	0.5
39	Toluene	108883	2
40	trans-1,2-Dichloroethylene	156605	1
43	Trichloroethene	79016	2
44	Vinyl chloride	75014	0.5
	Methyl-tert-butyl ether (MTBE)	1634044	--
	Trichlorofluoromethane	75694	--
	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	--
	Styrene	100425	--
	Xylenes	1330207	--
60	1,2-Benzanthracene	56553	5
85	1,2-Diphenylhydrazine	122667	1
45	2-Chlorophenol	95578	5
46	2,4-Dichlorophenol	120832	5
47	2,4-Dimethylphenol	105679	2
49	2,4-Dinitrophenol	51285	5
82	2,4-Dinitrotoluene	121142	5
55	2,4,6-Trichlorophenol	88062	10
83	2,6-Dinitrotoluene	606202	5
50	2-Nitrophenol	25154557	10
71	2-Chloronaphthalene	91587	10
78	3,3'-Dichlorobenzidine	91941	5
62	3,4-Benzofluoranthene	205992	10
52	4-Chloro-3-methylphenol	59507	5
48	4,6-Dinitro-2-methylphenol	534521	10
51	4-Nitrophenol	100027	10
69	4-Bromophenyl phenyl ether	101553	10
72	4-Chlorophenyl phenyl ether	7005723	5
56	Acenaphthene	83329	1
57	Acenaphthylene	208968	10
58	Anthracene	120127	10
59	Benzidine	92875	5
61	Benzo(a)pyrene (3,4-Benzopyrene)	50328	2
63	Benzo(g,h,i)perylene	191242	5
64	Benzo(k)fluoranthene	207089	2

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
65	Bis(2-chloroethoxy) methane	111911	5
66	Bis(2-chloroethyl) ether	111444	1
67	Bis(2-chloroisopropyl) ether	39638329	10
68	Bis(2-ethylhexyl) phthalate	117817	5
70	Butyl benzyl phthalate	85687	10
73	Chrysene	218019	5
81	Di-n-butylphthalate	84742	10
84	Di-n-octylphthalate	117840	10
74	Dibenzo(a,h)-anthracene	53703	0.1
79	Diethyl phthalate	84662	10
80	Dimethyl phthalate	131113	10
86	Fluoranthene	206440	10
87	Fluorene	86737	10
90	Hexachlorocyclopentadiene	77474	5
92	Indeno(1,2,3-c,d)pyrene	193395	0.05
93	Isophorone	78591	1
98	N-Nitrosodiphenylamine	86306	1
96	N-Nitrosodimethylamine	62759	5
97	N-Nitrosodi-n-propylamine	621647	5
95	Nitrobenzene	98953	10
53	Pentachlorophenol	87865	1
99	Phenanthrene	85018	5
54	Phenol	108952	1
100	Pyrene	129000	10
	Aluminum	7429905	50
1	Antimony	7440360	5
2	Arsenic	7440382	10
15	Asbestos	1332214	--
	Barium	7440393	--
3	Beryllium	7440417	2
4	Cadmium	7440439	0.5
5a	Chromium (III)	7440473	50
5b	Chromium (VI)	18540299	10
6	Copper	7440508	2
14	Cyanide	57125	5
	Fluoride	7782414	--

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
	Iron	7439896	--
7	Lead	7439921	0.5
8	Mercury	7439976	0.5
	Manganese	7439965	--
	Molybdenum	7439987	--
9	Nickel	7440020	20
10	Selenium	7782492	5
11	Silver	7440224	0.25
12	Thallium	7440280	1
	Tributyltin	688733	--
13	Zinc	7440666	20
110	4,4'-DDD	72548	0.05
109	4,4'-DDE	72559	0.05
108	4,4'-DDT	50293	0.01
112	alpha-Endosulfan	959988	0.02
103	alpha-Hexachlorocyclohexane (BHC)	319846	0.01
	Alachlor	15972608	--
102	Aldrin	309002	0.005
113	beta-Endosulfan	33213659	0.01
104	beta-Hexachlorocyclohexane	319857	0.005
107	Chlordane	57749	0.1
106	delta-Hexachlorocyclohexane	319868	0.005
111	Dieldrin	60571	0.01
114	Endosulfan sulfate	1031078	0.05
115	Endrin	72208	0.01
116	Endrin Aldehyde	7421934	0.01
117	Heptachlor	76448	0.01
118	Heptachlor Epoxide	1024573	0.01
105	Lindane (gamma-Hexachlorocyclohexane)	58899	0.02
119	PCB-1016	12674112	0.5
120	PCB-1221	11104282	0.5
121	PCB-1232	11141165	0.5
122	PCB-1242	53469219	0.5
123	PCB-1248	12672296	0.5
124	PCB-1254	11097691	0.5
125	PCB-1260	11096825	0.5

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
126	Toxaphene	8001352	0.5
	Atrazine	1912249	--
	Bentazon	25057890	--
	Carbofuran	1563662	--
	2,4-D	94757	--
	Dalapon	75990	--
	1,2-Dibromo-3-chloropropane (DBCP)	96128	--
	Di(2-ethylhexyl)adipate	103231	--
	Dinoseb	88857	--
	Diquat	85007	--
	Endothal	145733	--
	Ethylene Dibromide	106934	--
	Glyphosate	1071836	--
	Methoxychlor	72435	--
	Molinate (Ordram)	2212671	--
	Oxamyl	23135220	--
	Picloram	1918021	--
	Simazine (Princep)	122349	--
	Thiobencarb	28249776	--
16	2,3,7,8-TCDD (Dioxin)	1746016	--
	2,4,5-TP (Silvex)	93765	--
	Diazinon	333415	--
	Chlorpyrifos	2921882	--
	Ammonia (as N)	7664417	--
	Chloride	16887006	--
	Flow	--	--
	Hardness (as $CaCO_3$)	--	--
	Foaming Agents (MBAS)	--	--
	Mercury, Methyl	22967926	--
	Nitrate (as N)	14797558	2,000
	Nitrite (as N)	14797650	400
	pH	--	0.1
	Phosphorus, Total (as P)	7723140	--
	Specific conductance (EC)	--	--
	Sulfate	--	500
	Sulfide (as S)	--	--

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
	Sulfite (as SO_3)	--	--
	Temperature	--	--
	Total Dissolved Solids (TDS)	--	--