CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

CENTRAL VALLEY REGION

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ORDER NO. R5-2008-XXXX
NPDES NO. CA0081850

WASTE DISCHARGE REQUIREMENTS FOR THE UNITED STATES DEPARTMENT OF THE AIR FORCE, AIR FORCE REAL PROPERTY AGENCY FORMER McCLELLAN AIR FORCE BASE, GROUNDWATER EXTRACTION AND TREATMENT SYSTEM SACRAMENTO COUNTY

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

Table 1. Discharger Information

Discharger	United States Department of the Air Force, Air Force Real Property Agency
Name of Facility	Former McClellan Air Force Base, Groundwater Extraction and Treatment System
Facility Address	4934 Patrol Road, Building 740
	McClellan, CA 95652
	Sacramento County
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Quality Control Board have classified this discharge as a **minor** discharge.	

The discharge by the United States Department of the Air Force, Air Force Real Property Agency 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	Treated Groundwater	38º 39’ 30” N	121º 24’ 54.6” W	Magpie Creek
002	Treated Groundwater	38º 39’ 46” N	121º 25’ 30” W	Beaver Pond/Don Julio 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**

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>.

~~IT IS HEREBY ORDERED, that Order No. R5-2003-0052-A01 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code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 Clean Water Act (CWA) and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.~~

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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	United States Department of the Air Force, Air Force Real Property Agency
Name of Facility	Former McClellan Air Force Base, Groundwater Extraction and Treatment System
Facility Address	4934 Patrol Road, Building 740
	McClellan, CA 95652
	Sacramento County
Facility Contact, Title, and Phone	Steve Mayer, P.E., Remedial Program Manager, (916) 643-0830 ext. 224
Mailing Address	AFRPA Western Region Execution Center
	3411 Olson Street
	McClellan, CA 95652
Type of Facility	Groundwater Extraction and Treatment System (GWTS)
Facility Design Flow	2.88 million gallons per day (MGD)

II. FINDINGS

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

A. Background. The United States Department of the Air Force, Air Force Real Property Agency (hereinafter Discharger) is currently discharging pursuant to Order No. R5-2003-0052-A01 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0081850. This NPDES permit renewal is for the discharge of up to 2.88 MGD of treated groundwater from the Former McClellan Air Force Base, Groundwater Extraction and Treatment System (hereinafter Facility).

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 GWTS to extract groundwater contaminated with volatile organic compounds (VOCs), remove contaminants, and discharge treated water. The treatment system consists of a 64,000-gallon influent tank, ~~a low-profile tray air stripper~~an air stripping tower, six 20,000-pound liquid-phase granular activated carbon (GAC) vessels, and two ion exchange (IX) resin vessels. Process piping allows each treatment technology to be bypassed or reconfigured as necessary to effectively and efficiently treat the process stream. Wastewater is discharged from Discharge Point Nos. 001 and 002 (see table on cover page) to Magpie Creek and Beaver Pond (a wetlands area adjacent to Don Julio

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Creek), both waters of the United States, and tributaries to Robla (Rio Linda) Creek and the Natomas East Main Drainage Canal (NEMDC) within the Sacramento River Basin. 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 federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and Chapter 5.5, Division 7 of the California 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 Regional 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 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 Title 40 of the Code of Federal Regulations (CFR)[1], Part 122.44 (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 discharge authorized by this Order must meet minimum federal technology-based requirements based on Best Professional Judgment (BPJ) in accordance with 40 CFR 125.3. A detailed discussion of the technology-based effluent limitations development is included in the Fact Sheet (Attachment F).

G. Water Quality-based Effluent Limitations. 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, water quality-based effluent limitations (WQBELs) must be established using: (1)

[1] All further statutory references are to title 40 of the Code of Federal Regulations unless otherwise indicated.

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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 Regional Water Board adopted a *Water Quality Control Plan, Fourth Edition (Revised February 2007), 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*." The Basin Plan does not specifically identify beneficial uses for Magpie Creek, Beaver Pond, or Don Julio Creek, but does identify present and potential uses for the Sacramento River from the Colusa Basin Drain to the I Street Bridge, to which Magpie Creek and Don Julio Creek, via Robla Creek and the NEMDC, is tributary. These beneficial uses are as follows: municipal and domestic supply; agricultural supply, including irrigation; water contact recreation, including canoeing and rafting; non-contact water recreation, including aesthetic enjoyment; warm freshwater habitat; cold freshwater habitat; warm and cold migration of aquatic organisms; warm and cold spawning, reproduction, and/or early development; wildlife habitat; and navigation.

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 Magpie Creek, Beaver Pond, and Don Julio Creek are as follows:

Table 5. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001 and 002	Magpie Creek, Beaver Pond, and Don Julio Creek	Municipal and domestic water supply (MUN). agricultural supply including irrigation (AGR); water contact recreation, including canoeing and rafting (REC-1); non-contact water recreation, including non-contact water recreation (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD); warm and cold migration of aquatic organisms (MIGR); warm and cold spawning, reproduction, and/or early development (SPAWN); wildlife habitat (WILD); and navigation (NAV).

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*

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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." Magpie Creek, Beaver Pond, and Don Julio Creek are not listed in the 303(d) list of impaired water bodies. The NEMDC (upstream of the confluence with Arcade Creek), to which Magpie Creek and Don Julio Creek are tributary, is listed as a WQLS for polychlorinated ~~byphenyls~~ biphenyls (PCBs) on the 303(d) list of impaired water bodies. Additionally, the Sacramento River (from Knights Landing to the Delta), to which Magpie Creek and Don Julio Creek are tributary via Robla Creek and NEMDC, is listed as a WQLS for mercury and unknown toxicity. Effluent Limitations for mercury are included in this Order.

Requirements of this Order 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 forty 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 the USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plan. The SIP became effective on 18 May 2000 with respect to the priority pollutant criteria promulgated by the 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 Clean Water Act section 301 and with 40 CFR 122.44(d). There are exceptions to this general rule. The State Water Board has concluded that where the Regional Water Board's Basin Plan allows for schedules of compliance and the Regional Water Board is newly interpreting a narrative standard, it may include schedules of compliance in the permit to meet effluent limits that implement a narrative standard. See In the Matter of Waste Discharge Requirements for Avon Refinery (State Water Board Order WQ 2001-06 at pp. 53-55). See also Communities for a Better Environment et al. v. State Water Resources Control Board, 34 Cal.Rptr.3d 396, 410 (2005). The Basin Plan for the Sacramento and San Joaquin Rivers includes a provision that authorizes the use of compliance schedules in NPDES permits for water quality objectives that are adopted after the date of adoption of the Basin Plan, which was 25 September 1995 (see Basin Plan at page IV-16). Consistent with the State Water Board's Order in the CBE matter, the Regional Water

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Board has the discretion to include compliance schedules in NPDES permits when it is including an effluent limitation that is a "new interpretation" of a narrative water quality objective. This conclusion is also consistent with the United States Environmental Protection Agency policies and administrative decisions. See, e.g., Whole Effluent Toxicity (WET) Control Policy. The Regional Water Board, however, is not required to include a schedule of compliance, 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 Regional 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 Basin Plan, should consider feasibility of achieving compliance, and must impose a schedule that is as short as practicable to achieve compliance with the objectives, criteria, or effluent limit based on the objective or criteria.

For CTR constituents, Section 2.1 of the SIP provides that, based on a Discharger's request and demonstration that it is infeasible for an existing Discharger to achieve immediate compliance with an effluent limitation derived from a CTR criterion, compliance schedules may be allowed in an NPDES permit. Unless an exception has been granted under section 5.3 of the SIP, a compliance schedule may not exceed 5 years from the date that the permit is issued or reissued, nor may it extend beyond 10 years from the effective date of the SIP (or 18 May 2010) to establish and comply with CTR criterion-based effluent limitations. Where a compliance schedule for a final effluent limitation exceeds 1 year, the Order must include interim numeric limitations for that constituent or parameter. Where allowed by the Basin Plan, compliance schedules and interim effluent limitations or discharge specifications may also be granted to allow time to implement a new or revised water quality objective. This Order does not include compliance schedules or interim effluent limitations and/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 (WQS) become effective for CWA purposes. (40 CFR §131.21; 65 Fed. Reg. 24641 (April 27, 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 both technology-based effluent limitations and WQBELs for individual pollutants. The technology-based effluent limitations consist of restrictions on flow, 1,1-dichloroethane, cis-1,2-dichloroethylene, tetrachloroethylene, ~~1,1,1-trichloroethane,~~ trichloroethylene, vinyl chloride, dichlorobromomethane, ~~1,1,2-trichloroethane,~~ and 1,2-dichloroethane (MDEL). The WQBELs consist of restrictions on mercury, chromium VI, carbon tetrachloride, 1,2-dichloroethane (AMEL), and 1,1-dichloroethylene. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements.

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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 section 131.38. The scientific procedures for calculating the individual WQBELs are based on the CTR-SIP, which was approved by USEPA on 1 May 2001. 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 section 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. Section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 is consistent with 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 Regional 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 section 131.12 and State Water Board Resolution No. 68-16.

O. Anti-Backsliding Requirements. Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at title 40, Code of Federal Regulations section 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 where limitations may be relaxed. Some effluent limitations in this Order are less stringent that those in the previous Order. 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. Monitoring and Reporting. Section 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorizes the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements. This Monitoring and Reporting Program is provided in Attachment E.

Q. Standard and Special Provisions. Standard Provisions, which apply to all NPDES permits in accordance with section 122.41, and additional conditions applicable to specified categories of permits in accordance with section 122.42, are provided in Attachment D. The Discharger must comply with all standard provisions and with those

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additional conditions that are applicable under section 122.42. The Regional Water Board has also included in this Order special provisions applicable to the Discharger. A rationale for the special provisions contained in this Order is provided in the attached Fact Sheet.

R. Provisions and Requirements Implementing State Law. The provisions/requirements in VI.A.2.v 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

S. Notification of Interested Parties. The Regional 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. Details of notification are provided in the Fact Sheet of this Order.

T. Consideration of Public Comment. The Regional 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 of this Order.

IT IS HEREBY ORDERED, that Order No. R5-2003-0052-A01 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 Clean Water Act (CWA) and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

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III. DISCHARGE PROHIBITIONS

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

B. The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by Federal Standard Provisions I.G. and I.H. (Attachment D).

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

D. The Discharger shall not allow pollutant-free wastewater to be discharged into the collection, treatment, and disposal system in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.

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IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point No. 001

1. Final Effluent Limitations – Discharge Point No. 001

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 attached MRP (Attachment E):

a. The Discharger shall maintain compliance with the effluent limitations specified in Table 6.

Table 6. Effluent Limitations – Discharge Point No. 001

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants					
pH	standard units	--	--	6.5	8.5
Priority Pollutants					
Carbon Tetrachloride	µg/L	0.25	0.50	--	--
Chromium VI, Total Recoverable	µg/L	11	13	--	--
Dichlorobromomethane	µg/L	--	0.5	--	--
1,1-Dichloroethane	µg/L	--	0.5	--	--
1,2-Dichloroethane	µg/L	0.38	0.5	--	--
1,1-Dichloroethylene	µg/L	0.06	0.11	--	--
Selenium, Total Recoverable	µg/L	3.6	9.1	--	--
	lbs/day[1]	0.09[2]	0.22[3]		
Tetrachloroethylene	µg/L	--	0.5	--	--
Trichloroethylene	µg/L	--	0.5	--	--
Vinyl Chloride	µg/L	--	0.5	--	--
Non-Conventional Pollutants					
cis-1,2-Dichloroethylene	µg/L	--	0.5	--	--

[1] Based on the daily average discharge flow of 2.88 MGD.
[2] The ~~total~~ average monthly mass loading from Discharge Point No. 001 shall not exceed 0.09 ~~MGD.~~pounds per day. The total combined average monthly mass loading from Discharge Point Nos. 001 and 002 shall not exceed 0.09 ~~MGD~~pounds per day.
[3] The total maximum daily mass loading from Discharge Point No. 001 shall not exceed 0.22 ~~MGD.~~pounds per day. The total combined maximum daily mass loading from Discharge Point Nos. 001 and 002 shall not exceed 0.22 ~~MGD.~~pounds per day.

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b. **Flow.** The daily average discharge flow from Discharge Point No. 001 shall not exceed 2.88 MGD. The total combined daily average discharge flow from Discharge Point Nos. 001 and 002 shall not exceed 2.88 MGD.

c. **Mercury.** The total annual mass discharge of total mercury from Discharge Point No. 001 shall not exceed 0.021 pounds. The total combined annual mass

discharge of total mercury from Discharge Point Nos. 001 and 002 shall not exceed 0.021 pounds.

d. **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.

2. Interim Effluent Limitations – Not Applicable

B. Effluent Limitations – Discharge Point No. 002

1. Final Effluent Limitations – Discharge Point No. 002

The Discharger shall maintain compliance with the following effluent limitations at Discharge Point No. 002, with compliance measured at Monitoring Location EFF-002 as described in the attached MRP (Attachment E):

a. The Discharger shall maintain compliance with the effluent limitations specified in Table 7.

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Table 7. Effluent Limitations – Discharge Point No. 002

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants					
pH	standard units	--	--	6.5	8.5
Priority Pollutants					
Carbon Tetrachloride	µg/L	0.25	0.50	--	--
Chromium VI, Total Recoverable	µg/L	11	13	--	--
Dichlorobromomethane	µg/L	--	0.5	--	--
1,1-Dichloroethane	µg/L	--	0.5	--	--
1,2-Dichloroethane	µg/L	0.38	0.5	--	--
1,1-Dichloroethylene	µg/L	0.06	0.11	--	--
Selenium, Total Recoverable	µg/L	3.6	9.1	--	--
	lbs/day[1]	0.004[2]	0.011[3]	--	--
Tetrachloroethylene	µg/L	--	0.5	--	--
Trichloroethylene	µg/L	--	0.5	--	--
Vinyl Chloride	µg/L	--	0.5	--	--
Non-Conventional Pollutants					
cis-1,2-Dichloroethylene	µg/L	--	0.5	--	--

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum

[1] Based on the daily average discharge flow of 0.144 MGD.
[2] The ~~total~~ average monthly mass loading from Discharge Point No. 002 shall not exceed 0.004 ~~MGD.~~pounds per day. The total combined average monthly mass loading from Discharge Point Nos. 001 and 002 shall not exceed 0.09 ~~MGD~~pounds per day.
[3] The total maximum daily mass loading from Discharge Point No. 002 shall not exceed 0.011 ~~MGD.~~pounds per day. The total combined maximum daily mass loading from Discharge Point Nos. 001 and 002 shall not exceed 0.22 ~~MGD.~~pounds per day.

b. **Flow.** The daily average discharge flow from Discharge Point No. 002 shall not exceed 0.144 MGD. The total combined daily average discharge flow from Discharge Point Nos. 001 and 002 shall not exceed 2.88 MGD.

c. **Mercury.** The total annual mass discharge of total mercury from Discharge Point No. 002 shall not exceed 0.0011 pounds. The total combined annual mass discharge of total mercury from Discharge Point Nos. 001 and 002 shall not exceed 0.021 pounds.

d. **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.

e. **Chronic Whole Effluent Toxicity**. There shall be no chronic toxicity in the effluent discharge.

2. Interim Effluent Limitations – Not Applicable

C. Land Discharge Specifications – Not Applicable

D. Reclamation Specifications – Not Applicable

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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 Magpie Creek, Beaver Pond, and Don Julio 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 ten 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, raised above 8.5, nor changed by more than 0.5 units on an annual basis.

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;

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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 California Code of Regulations, 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 specified in Table 4 (MCL Radioactivity) 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/or to domestic or municipal water supplies.

15. **Temperature**. The natural temperature to be increased by more than 5°F on an annual basis.

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**. The turbidity to increase as follows:

    a. More than 1 Nephelometric Turbidity Unit (NTU) where natural turbidity is between 0 and 5 NTUs.

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b. More than 20 percent where natural turbidity is between 5 and 50 NTUs.
c. More than 10 NTU where natural turbidity is between 50 and 100 NTUs.
d. More than 10 percent where natural turbidity is greater than 100 NTUs.

B. Groundwater Limitations – Not Applicable

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VI. PROVISIONS

A. Standard Provisions

1. The Discharger shall comply with all Standard Provisions 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 Clean Water Act, 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 Code of Federal Regulations (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 Regional Water Board may review and revise this Order at any time upon application of any affected person or the Regional 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

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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 Regional 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. The discharge of any radiological, chemical or biological warfare agent or high-level, radiological waste is prohibited.

i. 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.

j. 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.

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ii. Upon written request by the Regional 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 Regional Water Board.

iii. Should the treatment works not include safeguards against reduction, loss, or failure of electric power, or should the Regional Water Board not approve the existing safeguards, the Discharger shall, within 90 days of having been advised in writing by the Regional Water Board that the existing safeguards are inadequate, provide to the Regional 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 Regional Water Board, become a condition of this Order.

k. The Discharger, upon written request of the Regional 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 Regional Water Board Standard Provision VI.A.2.m.

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 Regional 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.

l. A publicly owned treatment works (POTW) 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

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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 Regional 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 Regional Water Board may extend the time for submitting the report.

m. 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.

n. Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the Regional Water Board and USEPA.

o. 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.

p. 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.

q. All monitoring and analysis 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.

r. The Discharger shall file with the Regional Water Board technical reports on self-monitoring performed according to the detailed specifications contained in the Monitoring and Reporting Program attached to this Order.

s. The results of all monitoring required by this Order shall be reported to the Regional 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.

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t. The Regional Water Board is authorized to enforce the terms of this permit under several provisions of the CWC, including, but not limited to, sections 13385, 13386, and 13387.

u. For POTWs, prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Board, Division of Water Rights, and receive approval for such a change. (CWC section 1211).

v. 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 Regional 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 Regional Water Board waives confirmation. The written notification shall include the information required by Attachment D, Section V.E.1 [40 CFR section 122.41(l)(6)(i)].

B. Monitoring and Reporting Program (MRP) Requirements

1. The Discharger shall comply with the MRP, and future revisions thereto, in Attachment E of this Order.

C. Special Provisions

1. Reopener Provisions

a. 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.

b. Conditions that necessitate a major modification of a permit are described in 40 CFR section 122.62, including:

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.

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c. **Mercury.** If mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted, this Order shall be reopened and the mass effluent limitation modified (higher or lower) or an effluent concentration limitation imposed. If the Regional Water Board determines that a mercury offset program is feasible for Dischargers subject to a NPDES permit, then this Order may be reopened to reevaluate the mercury mass loading limitation(s) and the need for a mercury offset program for the Discharger.

d. **Whole Effluent Toxicity.** As a result of 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 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.

e. **Water Effects Ratios (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable when developing effluent limitations for inorganic constituents. 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.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. **Chronic Whole Effluent Toxicity.** For compliance with the Basin Plan's narrative toxicity objective and the Chronic Whole Effluent Toxicity Effluent Limitation, this Order requires the Discharger to conduct chronic whole effluent toxicity 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 exceeds the toxicity numeric monitoring trigger established in this Provision, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE), in accordance with an approved TRE Work Plan, and take actions to mitigate the impact of the discharge and prevent reoccurrence of toxicity. A TRE is a site-specific study conducted in a stepwise process to identify the source(s) of toxicity and the effective control measures for effluent toxicity. TREs are designed to identify the causative agents and sources of whole effluent toxicity, evaluate the effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity. This Provision includes requirements for the Discharger to develop and submit a TRE Work Plan and includes procedures for accelerated chronic toxicity monitoring and TRE initiation.

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i. **Initial Investigative Toxicity Reduction Evaluation (TRE) Work Plan. Within 90 days of the effective date of this Order,** the Discharger shall submit to the Regional Water Board an Initial Investigative TRE Work Plan for approval by the Executive Officer. This should be a one to two page document including, at minimum:

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

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

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

i. **Accelerated Monitoring and TRE Initiation.** When the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity monitoring, and the testing meets all test acceptability criteria, the Discharger shall initiate accelerated monitoring as required in the Accelerated Monitoring Specifications. WET testing results exceeding the monitoring trigger during accelerated monitoring demonstrates a pattern of toxicity and requires the Discharger to initiate a TRE to address the effluent toxicity.

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

Accelerated Monitoring Specifications. If the monitoring trigger is exceeded during regular chronic toxicity testing, within 14 days of notification by the laboratory of the test results, the Discharger shall initiate accelerated monitoring. Accelerated monitoring shall consist of four (4) chronic toxicity tests in a 6-week period (i.e. one test 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 adequate evidence of a pattern of effluent toxicity, the Executive Officer may require that the Discharger initiate a TRE.

b) If the source(s) of the toxicity is easily identified (i.e. 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

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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 initiate 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 the test results exceeding the monitoring trigger during accelerated monitoring, the Discharger shall submit a TRE Action Plan to the Regional Water Board including, at minimum:

1) Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including 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 Regional Water Board a TRE Work Plan for approval by the Executive Officer. The TRE Work Plan shall outline the procedures for identifying the source(s) of, and reducing or eliminating effluent toxicity. The TRE Work Plan must be developed in accordance with USEPA guidance[1].

~~b.**Receiving Water pH and Temperature Objective Investigation.** There are indications that the discharge may have a reasonable potential to cause or contribute to an exceedance of water quality objectives for pH and temperature. The Discharger shall comply with the following time schedule in conducting a study to evaluate the cause for these exceedances and propose a plan, including a schedule, for ensuring water quality objectives will not be violated in the future:~~

~~Task~~	~~Compliance Date~~
~~i. Submit Workplan and Time Schedule for approval by the Executive Officer~~	~~**Within 6 months** following adoption of this Order.~~
~~ii. Complete Study and submit Study Report~~	~~**Within 27 months** following Executive Officer approval of the Workplan and Time Schedule.~~

3. Best Management Practices and Pollution Prevention

a. **Salinity Evaluation and Minimization Plan.** The Discharger shall prepare a salinity evaluation and minimization plan to address any salinity increases in the extracted groundwater resulting from treatment at the Facility. ~~.~~ The plan shall be completed and submitted to the Regional Water Board within 9 months of the adoption date of this Order for the approval by the Executive Officer.

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

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4. Construction, Operation and Maintenance Specifications – Not Applicable

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

6. Other Special Provisions

a. 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 Regional 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 Regional 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 California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

7. Compliance Schedules – Not Applicable

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VII. COMPLIANCE DETERMINATION

Compliance with the effluent limitations contained in section IV of this Order will be determined as specified below:

A. **Total Mercury Mass Loading Effluent Limitations.** The procedures for calculating mass loadings are as follows:

1. 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. All monitoring data collected under the monitoring and reporting program, pretreatment program and any special studies shall be used for these calculations. The total of 12 months summed shall be reported as a moving, 12 month total.
2. In calculating compliance, the Discharger shall count all non-detect measures at one-half of the detection level. If compliance with the effluent limitation is not attained due to the non-detect contribution, the Discharger shall improve and implement available analytical capabilities and compliance shall be evaluated with consideration of the detection limits.

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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.

Best Practicable Treatment or Control (BPTC): BPTC is a requirement of State Water Resources Control Board Resolution 68-16 – "Statement of Policy with Respect to Maintaining High Quality of Waters in California" (referred to as the "Antidegradation Policy"). BPTC is the treatment or control of a 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."* Pollution is defined in CWC Section 13050(l). In general, an exceedance of a water quality objective in the Basin Plan constitutes "pollution".

Bioaccumulative pollutants are 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*) is a measure of the data variability and is calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.

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

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

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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) are those sample results less than the RL, but greater than or equal to the laboratory's MDL.

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) 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 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 is the estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

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 include~~d~~, 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 are all surface waters of the State that do not include the ocean, enclosed bays, or estuaries.

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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) means 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 is 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) 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 title 40 of the Code of Federal Regulations, Part 136, Attachment B, revised as of 3 July 1999.

Minimum Level (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 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) are those sample results less than the laboratory's MDL.

Ocean Waters are 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 are substances for which degradation or decomposition in the environment is nonexistent or very slow.

Pollutant Minimization Program (PMP) means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce all potential sources of a priority pollutant(s) through

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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 Regional Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

Pollution Prevention 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) is the ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order. The MLs included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the Regional Water Board either from Appendix 4 of the SIP in accordance with section 2.4.2 of the SIP or established in accordance with section 2.4.3 of the SIP. The ML 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 ML 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 to the ML in the computation of the RL.

Satellite Collection System is 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 is any water designated as municipal or domestic supply (MUN) in a Regional Water Board Basin Plan.

Standard Deviation (σ) 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) 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

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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.)

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ATTACHMENT B – MAP

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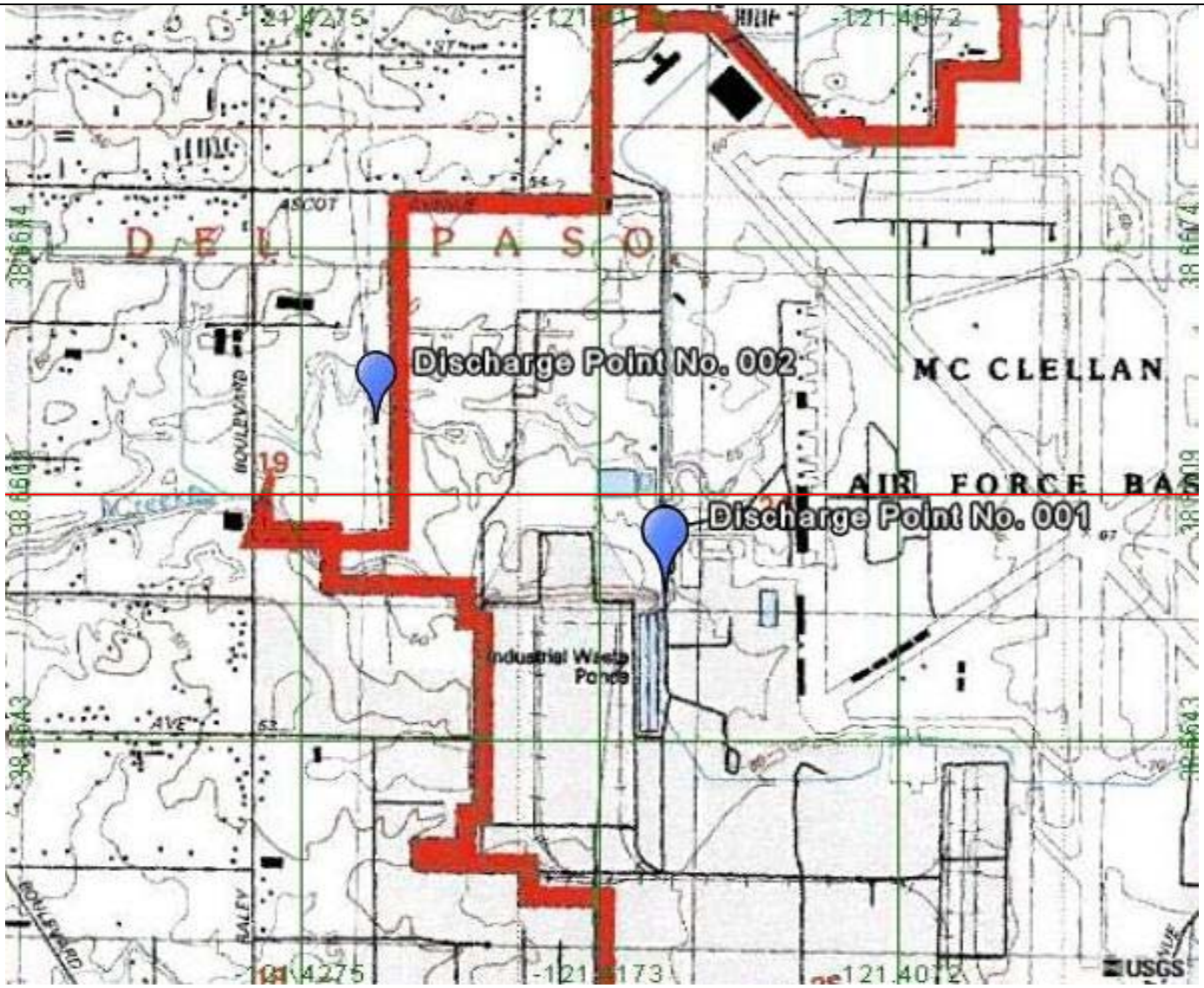

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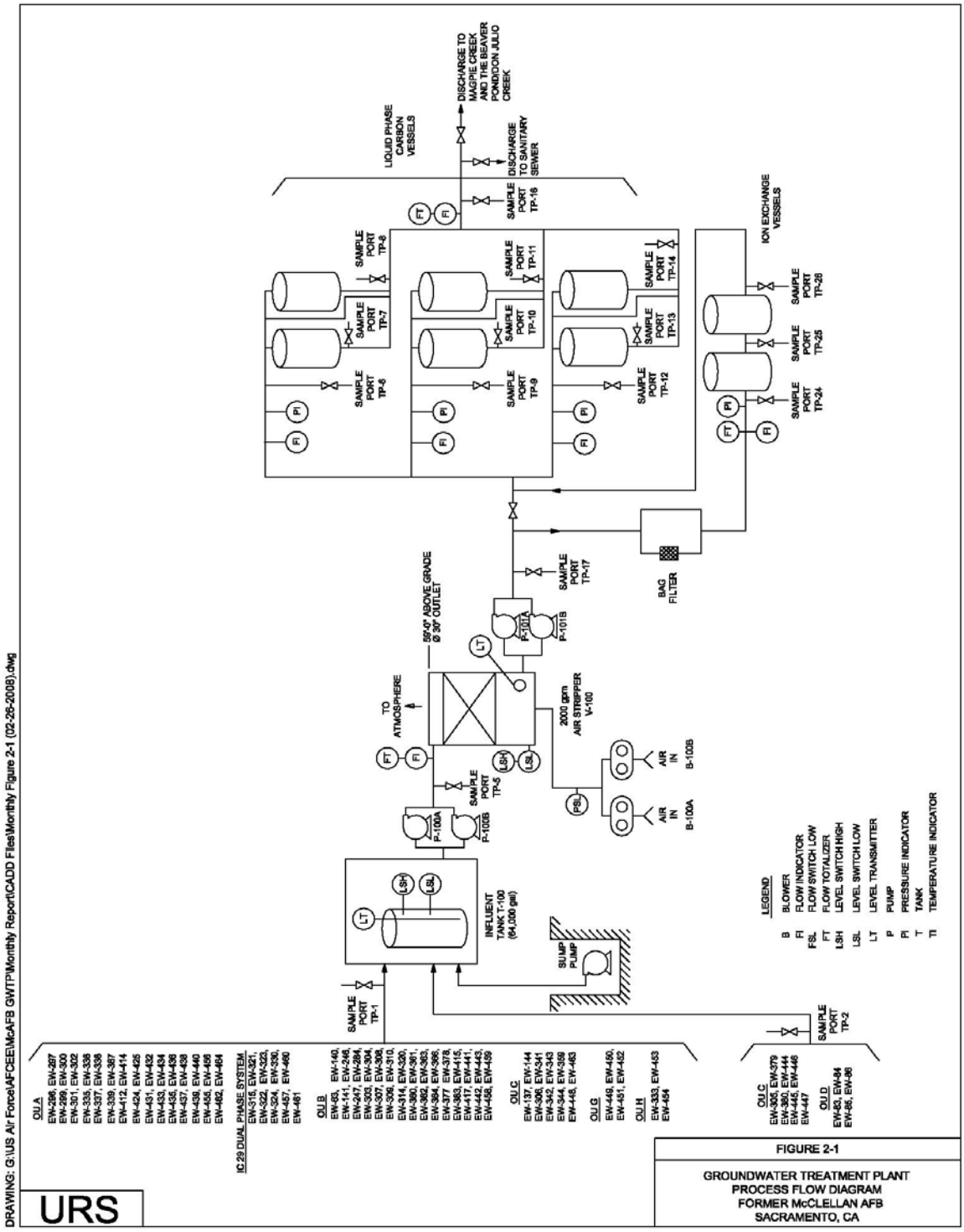
SITE LOCATION MAP

UNITED STATES DEPARTMENT OF THE AIR FORCE, AIR FORCE REAL PROPERTY AGENCY
FORMER MCCLELLAN AIR FORCE BASE, GROUNDWATER EXTRACTION AND TREATMENT SYSTEM
SACRAMENTO COUNTY

ATTACHMENT C – FLOW SCHEMATIC



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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 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 §122.41(c).)

C. Duty to Mitigate

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

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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); Wat. Code, §13383):

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (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).)

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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 Provisions - Reporting V.E below (24-hour notice). (40 CFR §122.41(m)(3)(ii).)

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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); § 122.61.)

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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 Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503 unless other test procedures have been specified in this Order. (40 CFR §122.41(j)(4); §122.44(i)(1)(iv).)

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least 5 years (or longer as required by 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).)

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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 as follows:

   All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA). (40 CFR §122.22(a)(3).).

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).)

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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 Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in 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).)

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E. Violation Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within **2 hours** from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 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 2 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 section 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 subject neither to effluent limitations in this Order nor to notification requirements under section 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1). (40 CFR §122.41(l)(1)(ii).)

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 CFR §122.41(l)(1)(iii).)

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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

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d. The level established by the Regional Water Board in accordance with section 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 (MRP)

The Code of Federal Regulations section 122.48 requires that all NPDES permits specify monitoring and reporting requirements. Water Code Sections 13267 and 13383 also authorize the Regional Water Quality Control Board (Regional Water Board) to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements, which implement the federal and state 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 this Regional Water Board.

B. Chemical, bacteriological, and bioassay analyses shall be conducted at a laboratory certified for such analyses by the State Department of Health Services. In the event a certified laboratory is not available to the Discharger, 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 must be kept in the laboratory and shall be available for inspection by Regional Water Board staff. The Quality Assurance-Quality Control Program must conform to USEPA guidelines or to procedures approved by the Regional Water Board.

C. All analyses shall be performed in a laboratory certified to perform such analyses by the California Department of Health Services. Laboratories that perform sample analyses shall be identified in all monitoring reports.

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 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.

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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 (include Latitude and Longitude when available)
--	INF-001	A location where a representative sample of the influent to the Facility can be collected prior to treatment.
001	EFF-001	Downstream from the last connection through which wastes can be admitted to the outfall to Magpie Creek (Latitude 38° 39' 30" N, Longitude 121° 24' 54.6" W)
002	EFF-002	Downstream from the last connection through which wastes can be admitted to the outfall to Beaver Pond (Latitude 38° 39' 46" N, Longitude 121° 25' 30" W)
--	RSW-001	100 feet upstream from Discharge Point No. 001 in Magpie Creek
--	RSW-002	100 feet downstream from Discharge Point No. 001 in Magpie Creek
--	RSW-003	Within 100 feet from Discharge Point No. 002 in Beaver Pond

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INF-001

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

Table E-2. Influent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Priority Pollutants				
Carbon Tetrachloride	µg/L	Grab	1/Year	[1,2]
Dichlorobromomethane	µg/L	Grab	1/Year	[1,2]
1,1-Dichloroethane	µg/L	Grab	1/Year	[1,2]
1,2-Dichloroethane	µg/L	Grab	1/Year	[1,2]
1,1-Dichloroethylene	µg/L	Grab	1/Year	[1,2]
Selenium, Total Recoverable	µg/L	Grab	1/Year	[1,2,3]
Tetrachloroethylene	µg/L	Grab	1/Year	[1,2]
Trichloroethylene	µg/L	Grab	1/Year	[1,2]
Vinyl Chloride	µg/L	Grab	1/Year	[1,2]
Non-Conventional Pollutants				
cis-1,2-Dichloroethylene	µg/L	Grab	1/Year	[1,2]

[1] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136.
[2] Using USEPA Test Method with MLs equal to or less than MLs specified by the SIP, Appendix 4, Table 2a, or later amendment.
[3] Selenium shall be sampled using EPA Test Method 7742 or later amendment.

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IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001 and EFF-002

1. The Discharger shall monitor treated groundwater at EFF-001 and EFF-002 as follows. If more than one analytical test method is listed for a given parameter, the Discharger must select from the listed methods and corresponding minimum level:

Table E-3. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	--
Conventional Pollutants				
pH	Standard units	Grab	1/~~Week~~Month	1
Total Suspended Solids	mg/L	Grab	1/Quarter	1
Priority Pollutants				
Carbon Tetrachloride	µg/L	Grab	1/Month	1,2
Chromium VI, Total Recoverable	µg/L	~~24 hr. composite~~[3]Grab	1/Month	1,2
~~Copper, Total Recoverable~~	~~µg/L~~	~~Grab~~	~~1/Quarter~~	~~1,2~~
~~Copper, Dissolved~~	~~µg/L~~	~~Grab~~	~~1/Quarter~~	~~1,2~~
Dichlorobromomethane	µg/L	Grab	1/Month	1,2
1,1-Dichloroethane	µg/L	Grab	1/Month	1,2
1,2-Dichloroethane	µg/L	Grab	1/Month	1,2
1,1-Dichloroethylene	µg/L	Grab	1/Month	1,2
Mercury, Total Recoverable	µg/L, lbs/day	Grab	~~1/Month~~2/Year	1,2,~~4~~3
Selenium, Total Recoverable	µg/L, lbs/day	~~24 hr. composite~~[3]Grab	1/~~Month~~Quarter	1,2,~~5~~4
Tetrachloroethylene	µg/L	Grab	1/Month	1,2
Trichloroethylene	µg/L	Grab	1/Month	1,2
Vinyl Chloride	µg/L	Grab	1/Month	1,2
~~Zinc, Total Recoverable~~	~~µg/L~~	~~Grab~~	~~1/Quarter~~	~~1,2~~
~~Zinc, Dissolved~~	~~µg/L~~	~~Grab~~	~~1/Quarter~~	~~1,2~~
Priority Pollutants	µg/L	Grab	~~6~~5	1,2
Non-Conventional Pollutants				
cis-1,2-Dichloroethylene	µg/L	Grab	1/Month	1
1,4-Dioxane	µg/L	Grab	1/Year	1
Dissolved Oxygen	mg/L	Grab	1/~~Week~~Month	1
Electrical Conductivity @ 25ºC	µmhos/cm	Grab	1/~~Week~~Month	1
Hardness (as $CaCO_3$)	mg/L	Grab	1/Quarter	1
Methylmercury	µg/L	Grab	~~1/Quarter~~2/Year	1,~~3~~4
Nitrate Nitrogen, Total (as N)	µg/L	Grab	1/Year	1
Temperature	°F/°C	Grab	1/~~Week~~Month	1
Total Dissolved Solids	mg/L	Grab	1/~~Quarter~~Year	1
Turbidity	NTU	Grab	1/Quarter	1

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Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method

[1] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136.

[2] 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.

~~[3] 24-hour flow proportional composite samples.~~

[~~4~~3] Unfiltered methylmercury and total mercury samples shall be taken using clean hands/dirty hands procedures, as described in USEPA Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Levels, for collection of equipment blanks (section 9.4.4.2), and shall be analyzed by USEPA Method 1630/1631 (Revision E) with a method detection limit of 0.02 ng/L for methylmercury and 0.2 ng/L for total mercury.

[~~5~~4] Selenium shall be sampled using EPA Test Method 7742 or later amendment.

[~~6~~5] Monitoring is required for all pollutants listed in Appendix 4 of the SIP. Priority pollutants shall be sampled ~~quarterly~~ once during the third year following the date of permit adoption and shall be conducted concurrently with up stream receiving water monitoring for hardness (as $CaCO_3$) and pH. To be conducted concurrent with receiving surface water sampling for priority pollutants.

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 semi-annual acute toxicity testing, concurrent with effluent ammonia sampling.

2. *Sample Types* – For static non-renewal and static renewal testing, the samples shall be grab samples and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at the effluent monitoring location EFF-001 or EFF-002 prior to entering the receiving water.

3. *Test Species* – Test species shall be fathead minnows (*Pimephales promelas*).

4. *Methods* – The acute toxicity testing samples shall be analyzed using EPA-821-R-02-012, Fifth Edition. Temperature, total residual chlorine, 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.

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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* –T~~t~~he Discharger shall perform semi-annual three species chronic toxicity testing.

2. *Sample Types* – Effluent samples shall be grab samples and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at the effluent monitoring location specified in the Monitoring and Reporting Program. The receiving water control shall be a grab sample obtained from the RSW-001 sampling location, as identified in the 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 100% effluent and two controls. If toxicity is found in any effluent test, the Discharger must immediately retest using the dilution series identified in Table E-4, below. The receiving water control shall be used as the diluent (unless the receiving water is toxic).

Table E-4. 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

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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 Special Provisions VI.C.2.a.iii.)

C. **WET Testing Notification Requirements**. The Discharger shall notify the Regional Water Board within 24-hrs 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 Regional 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 $100/LC_{50}$, $100/EC_{25}$, $100/IC_{25}$, and $100/IC_{50}$, 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 TRE.

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

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3. **TRE Reporting.** Reports for Toxicity Reduction Evaluations shall be submitted in accordance with the schedule contained in the Discharger's approved TRE Work 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 APPLICABLE

VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER AND GROUNDWATER

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

1. The Discharger shall monitor Magpie Creek at Monitoring Locations RSW-001 and RSW-002 and Beaver Pond at RSW-003 as follows:

Table E-5. Receiving Water Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Estimate	[1],2	--
Conventional Pollutants				
pH	standard units	Grab	1/~~Week~~Month	~~2~~3
Total Suspended Solids	mg/L	Grab	1/Quarter	~~2~~3
Priority Pollutants				
Carbon Tetrachloride	µg/L	Grab	1/Quarter[2]	~~2,3~~3,4
Chromium VI, Total Recoverable	µg/L	Grab	1/Year[2]	~~2,3~~3,4
~~Copper, Total Recoverable~~	~~µg/L~~	~~Grab~~	~~1/Quarter~~	~~2,3~~
~~Copper, Dissolved~~	~~µg/L~~	~~Grab~~	~~1/Quarter~~	~~2,3~~
Dichlorobromomethane	µg/L	Grab	1/Year[2]~~1/Quarter~~	~~3,4~~2,3
1,1-Dichloroethane	µg/L	Grab	1/Year[2]~~1/Quarter~~	~~3,4~~2,3
1,2-Dichloroethane	µg/L	Grab	1/Year[2]~~1/Quarter~~	~~3,4~~2,3
1,1-Dichloroethylene	µg/L	Grab	1/Year[2]~~1/Quarter~~	~~3,4~~2,3
Mercury, Total Recoverable	µg/L	Grab	1/Year[2]	~~2,3,4~~3,4,5
Selenium, Total Recoverable	µg/L	Grab	1/Year[2]	~~2,3,5~~3,4,6
Tetrachloroethylene	µg/L	Grab	1/Year[2]~~1/Quarter~~	~~3,4~~2,3

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Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Trichloroethylene	µg/L	Grab	1/Year[2]~~1/Quarter~~	~~3,4~~[2,3]
Vinyl Chloride	µg/L	Grab	1/Year[2]~~1/Quarter~~	~~3,4~~[2,3]
~~Zinc, Total Recoverable~~	~~µg/L~~	~~Grab~~	~~1/Quarter~~	~~2,3~~
~~Zinc, Dissolved~~	~~µg/L~~	~~Grab~~	~~1/Quarter~~	~~2,3~~
Priority Pollutants	µg/L	Grab	~~2,6~~[7]	~~3,4~~[2,3]
Non-Conventional Pollutants				
cis-1,2-Dichloroethylene	µg/L	Grab	1/Year[2]~~1/Quarter~~	~~2~~[3]
Dissolved Oxygen	mg/L	Grab	1/~~Week~~Month	~~2~~[3]
Electrical Conductivity @25ºC	µmhos/cm	Grab	1/~~Week~~Month	~~2~~[3]
Hardness (as $CaCO_3$)	mg/L	Grab	1/Quarter	~~2~~[3]
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/Year	~~2~~[3]
Temperature	°F/°C	Grab	1/~~Week~~Month	~~2~~[3]
Total Dissolved Solids	mg/L	Grab	1/~~Quarter~~Year	~~2~~[3]
Turbidity	NTU	Grab	1/Quarter	~~2~~[3]
Water Level	feet	Measure	1/Week~~[8]~~[7]	--

[1] Estimate of receiving water flow, recorded for each day of sample collection.

[2] Monitoring required at RSW-001 only.

~~2~~[3] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136.

~~3~~[4] The detection limits for priority pollutants shall be equal to or less than the lowest ML published in Appendix 4 of the SIP.

~~4~~[5] Unfiltered methylmercury and total mercury samples shall be taken using clean hands/dirty hands procedures, as described in USEPA Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Levels, for collection of equipment blanks (section 9.4.4.2), and shall be analyzed by USEPA Method 1630/1631 (Revision E) with a method detection limit of 0.02 ng/L for methylmercury and 0.2 ng/L for total mercury.

~~5~~[6] Selenium shall be sampled using EPA Test Method 7742 or later amendment.

~~6~~[7] ~~Only required at Monitoring Location RSW-001.~~ Monitoring is required for all pollutants listed in Appendix 4 of the SIP. Priority pollutants shall be sampled ~~quarterly~~ once during the third year following the date of permit adoption and shall be conducted concurrently with up stream receiving water monitoring for hardness (as $CaCO_3$) and pH. To be conducted concurrent with effluent sampling for priority pollutants.

~~7~~[8] Monitoring required at RSW-003 only.

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2. In conducting receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by Monitoring Locations RSW-001 and RSW-002 in Magpie Creek and RSW-003 in Beaver Pond. Attention shall be given to the presence 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 reports.

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 Regional 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 Regional 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 Regional Water Board by letter when it returns to compliance with the compliance time schedule.

4. The Discharger shall report to the Regional 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.

5. **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 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.

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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 ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from *extrapolation* beyond the lowest point of the calibration curve.

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

B. Self Monitoring Reports (SMRs)

1. At any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit Self-Monitoring Reports (SMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). Until such notification is given, the Discharger shall submit hard copy SMRs. The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal.

2. Monitoring results shall be submitted to the Regional Water Board by the **first day** of the second month following sample collection. Quarterly and annual monitoring results shall be submitted by the **first day of the second month following each calendar quarter, semi-annual period, and year**, respectively.

3. 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. The data shall be summarized in such a manner to illustrate clearly whether the discharge complies with waste discharge requirements. The highest daily maximum for the month, monthly and weekly averages, and medians, and removal efficiencies (%) for BOD and Total Suspended Solids, shall be determined and recorded as needed to demonstrate compliance.

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

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

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

7. SMRs must be submitted to the Regional Water Board, signed and certified as required by the Standard Provisions (Attachment D), to the address listed below:

   Regional Water Quality Control Board
   Central Valley Region
   NPDES Compliance and Enforcement Unit
   11020 Sun Center Dr., Suite #200
   Rancho Cordova, CA 95670-6114

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

Table E-6. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Continuous	Permit effective date	All	First day of second calendar month following month of sampling
1/Hour	Permit effective date	Hourly	First day of second calendar month following month of sampling
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.	First day of second calendar month following month of sampling

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Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
1/Week	Sunday following permit effective date or on permit effective date if on a Sunday	Sunday through Saturday	First day of second calendar month following month of sampling
1/Month	First day of calendar month following permit effective date or on permit effective date if that date is first day of the month	First day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
1/Quarter	Closest of 1 January, 1 April, 1 July, or 1 October following (or on) 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
2/Year	Closest of 1 January or 1 July following (or on) permit effective date	1 January through 30 June 1 July through 31 December	1 August 1 February
1/Year	1 January following (or on) permit effective date	1 January through 31 December	1 February

C. Discharge Monitoring Reports (DMRs) – Not Applicable

D. Other Reports

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

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

   a. The names and telephone numbers of persons to contact regarding the groundwater treatment and extractions system for emergency and routine situations.

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

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

   d. The Discharger may also be requested to submit an annual report to the Regional Water Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be

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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.

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ATTACHMENT F – FACT SHEET

As described 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	XXXXXXXX
Discharger	United States Department of the Air Force, Army Real Property Agency
Name of Facility	Former McClellan Air Force Base, Groundwater Extraction and Treatment System
Facility Address	4934 Patrol Road, Building 740
	McClellan, CA 95652
	Sacramento County
Facility Contact, Title and Phone	Steve Mayer, P.E., Base Realignment and Closure (~~Remedial Program Manager~~BRAC) Environmental Coordinator, (916) 643-0830 ext. 224
Authorized Person to Sign and Submit Reports	Steve Mayer, P.E., ~~Remedial Program Manager~~BRAC Environmental Coordinator, (916) 643-0830 ext. 224
Mailing Address	AFRPA Western Region Execution Center
	3411 Olson Street
	McClellan, CA 95652
Billing Address	Same as Mailing Address
Type of Facility	Groundwater Extraction and Treatment System (GWTS)
Major or Minor Facility	Minor
Threat to Water Quality	2
Complexity	B
Pretreatment Program	N/A
Reclamation Requirements	N/A
Facility Permitted Flow	Discharge Point No. 001 – 2.88 million gallons per day (MGD) Discharge Point No. 002 – 0.144 MGD
Facility Design Flow	2.88 MGD
Watershed	Sacramento River
Receiving Water	Magpie Creek and Beaver Pond (wetlands area adjacent to Don Julio Creek)
Receiving Water Type	Inland surface water

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A. The United States Department of the Air Force, Army Real Property Agency (hereinafter Discharger) is the owner and operator of the Former McClellan Air Force Base, Groundwater Extraction and Treatment System (hereinafter Facility).

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 Magpie Creek and Beaver Pond (a wetlands area tributary to Don Julio Creek), waters of the United States, and is currently regulated by Order No. R5-2003-0052-A01. Order No. R5-2003-0052 ~~which~~ was adopted on ~~24~~ 24 ~~April~~ April 2003 and expired on 1 March 2008.

~~**C.**~~ On 21 October 2005, the Regional Water Board adopted ~~Amendment No. 1 to~~ Order No. R5-2003-0052-A01 to amend Order No. R5-2003-0052 to allow the increase in discharge flow from 2.16 MGD to 2.88 MGD and to allow the use of temporary storage basins which were configured to allow for diversion of the effluent discharge from Magpie Creek at times when effluent quality is uncertain and may potentially exceed effluent limitations.

~~**E**~~**C.** The terms and conditions of Order No. R5-~~2002~~2003-~~0210~~ 0052-A01 ~~and the subsequent amendment~~ have been automatically continued and remain in effect until new Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit are adopted pursuant to this Order.

~~**F**~~**D.** The Discharger did not submit a Report of Waste Discharge, but did submit information necessary for permit renewal in several other documents. The NPDES Program and the California Toxics Rule are included as Applicable, Relevant, and Appropriate Requirements (ARARs) in the final Record of Decision (ROD), signed in August 2007, for the Facility. As such, the Discharger will continue to comply with the substantive requirements of the permit.~~The Discharger has stated in the past that they are not required to obtain a permit as CERCLA allows for an exemption from the necessity of obtaining a permit for onsite remedial response activities. However, one of the requirements that allows the exemption is that all substantive requirements that would be contained in the permit must be in the CERCLA decision document that governs the activity that would be permitted. An Interim Record of Decision (IROD) was signed in the summer of 1995 which does not contain all the substantive requirements contained in the NPDES permit. The substantive requirements are also known as Applicable, Relevant, and Appropriate Requirements (ARARs). Since the appropriate decision document, the IROD, does not contain all of the necessary ARARs, the NPDES permit is necessary to regulate the discharge.~~

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II. FACILITY DESCRIPTION

The former McClellan Air Force Base (Base) is approximately 8 miles northeast of downtown Sacramento in North Highlands. As part of the ~~Base Realignment and Closure (~~BRAC~~)~~ Program, the Base was officially closed on 13 July 2001. Clean-up of the Base is currently supervised by the Department of Defense (DOD) Installation and Restoration

Program (IRP). The IRP is designed to manage the overall DOD activities with respect to past waste disposal practices and site remediation. This program has identified 318 sites on the Base. The cleanup of IRP sites, and reuse and transfer of the former property, is being directed by the Discharger. To date, seven Operable Units (OUs) have been identified for evaluation under the McClellan Federal Facilities Agreement (FFA). Many contamination source areas have been identified and found to have soil and groundwater contamination due to buried and burned wastes, spills, unregulated disposal practices, leaking underground storage tanks, and industrial activities on the Base. Contamination is found to extend from the surface to 150 to 200 feet in depth and includes many volatile organic compounds (VOCs), semi-volatile compounds, and heavy metals.

One of the first sites to be addressed at the Base was Site S in OU D, located in the northwest portion of the Base. The plan for controlling and remediating the contamination in OU D included removing 20,000 cubic yards of soils and sludges; installing a plastic membrane and soil cap to stop rainfall infiltration into the contaminated area; and operation of a GWTS.

A. Description of Wastewater and Biosolids Treatment or Controls

The Facility is used to extract groundwater contaminated with VOCs, remove the contaminants, and discharge the treated water. The Facility is designed to treat 2.88 MGD of contaminated groundwater that is extracted from the Groundwater~~seven~~ Operable Unit~~s~~ (OU~~s~~). The system includes a 64,000-gallon influent tank, ~~a low-profile tray air stripper~~an air stripping tower, ~~six 20,000-pound liquid-phase granular activated carbon (GAC) vessels, and~~ two ion exchange (IX) resin vessels, and process piping that can allow each treatment technology to be bypassed if appropriate.

The treatment system consists of an air-stripper with two blowers (one for backup and redundancy) designed to treat up to 2,000 gallons per minute (GPM), ~~and~~ removing greater than ~~e approximately~~ 99% of VOCs in groundwater entering the stripper, and discharges the off-gas to the atmosphere. ~~The Discharger previously used an Alzata (off-gas)~~An off-gas treatment system ~~which~~ was removed in March 2006.

The existing GAC vessels are mothballed and no longer in use. ~~GAC trains are utilized for effluent polishing subsequent to air stripping. Each GAC train consists of two vessels, operated in parallel or in series. Each GAC contact vessel is 10 feet in diameter and 10 feet in length, providing 10.5 minutes of contact.~~ The GWTS configuration was changed in ~~2005~~ 2003 to accommodate the IX Hexavalent Chromium Full Scale Treatment System. Two converted carbon vessels ~~are now~~ used in series (lead/lag) contain IX resin and are capable of ~~to accommodate the new IX system,~~ operating at flows of up to 750 GPM. ~~The other six vessels are operated in parallel for VOC polishing.~~

The GWTS previously included an ultraviolet/peroxide (UVOX) system. The UVOX system was designed to reduce contaminant loading from specific wells, particularly contaminants that use a significant amount of carbon during treatment (such as vinyl chloride and chlorinated ethanes). In January 2002, the UVOX system was bypassed and shut down because lower concentrations of contaminants entering the system

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made treatment using the UVOX system unnecessary. The UVOX system was restarted in September 2003 to reduce 1,4-dioxane concentrations entering the GWTP from the OU D and northern OU C extraction wells. The UVOX system was decommissioned in July 2005.

Treated groundwater is discharged to Magpie Creek from Discharge Point No. 001. Up to 0.144 MGD of the 2.88 MGD may be discharged to Beaver Pond, a wetlands area, via Discharge Point No. 002, which is hydraulically connected to Don Julio Creek, tributary to Magpie Creek downstream of Discharge Point No. 001. As of August 2005, effluent is discharged to Beaver Pond only when the water level in the pond is below 2 feet for 2 consecutive weeks. The GWTS is configured to allow for discharge to the municipal sewer system if there is potential to exceed limitations or if the effluent quality is uncertain. Under the Discharger's current permit with the Sacramento County Regional Sanitation District, the ~~GWTS~~ Discharger is allowed to discharge a maximum monthly volume of 3.3 million gallons to the municipal sewer system from all of their outfalls. The Discharger has two storage basins which can provide up to 10 million gallons of treated effluent temporary storage to support the GWTS restart protocol. The stored effluent may subsequently be discharged back to Discharge Point No. 001 or may be metered at a slower rate into the sanitary sewer as the new industrial permit allows after the effluent has been characterized.

B. Discharge Points and Receiving Waters

1. The Facility is located in Section 24, T19N R5E, MDB&M, as shown in Attachment B ~~(Figure B-1)~~, a part of this Order.

2. Treated ~~municipal wastewater~~groundwater is discharged from Discharge Point No. 001 to Magpie Creek, a water of the United States, and a tributary the Sacramento River via Robla (Rio Linda) Creek and Natomas East Main Discharge Canal (NEMDC) at a point Latitude 38° 39' 30" N and longitude 121° 24',54.6" W.

3. Treated ~~municipal wastewater~~groundwater is discharged from Point No. 002 to Beaver Pond, a water of the United States, at a point Latitude 38° 39' 46" N and longitude 121° 25' 30" W. Beaver Pond is a wetlands area adjacent to Don Julio Creek, which is tributary to the Sacramento River via Magpie Creek, Robla Creek, and NEMDC.

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

Effluent limitations contained in Order No. R5-2003-0052-A01 for discharges from Discharge Point No. 001 (Monitoring Location EFF-001) and Discharge Point No. 002 (Monitoring Location EFF-002) and representative monitoring data from the term of Order No. R5-2003-0052-A01 are as follows:

Table F-2. Historic Effluent Limitations and Monitoring Data

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Parameter	Units	Effluent Limitation			Monitoring Data (From 1 April 2005 – To 31 March 2008)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
1,1-Dichloroethane	µg/L	[1]	--	1.0	--	--	--
1,2-Dichloroethane	µg/L	[1]	--	1.0	ND	--	ND
1,1-Dichloroethylene	µg/L	[1]	--	1.0	ND	--	ND
cis-1,2-Dichloroethylene	µg/L	[1]	--	1.0	ND	--	ND
Tetrachloroethylene	µg/L	[1]	--	1.0	ND	--	0.47[2]
1,1,1-Trichloroethane	µg/L	[1]	--	1.0	ND	--	ND
Trichloroethylene	µg/L	[1]	--	1.0	ND	--	ND
Vinyl Chloride	µg/L	[1]	--	1.0	ND	--	ND
Pesticides	µg/L	[3]	--	--	--	--	ND
Chromium VI	µg/L	10[4]	--	14.1[4]	--	--	~~11.0~~8.8
		16.5[5]	--	19.5[5]	--	--	~~--~~11.0
Selenium, Total Recoverable	µg/L	4.1[4]	--	8.2[4]	--	--	--
		--	--	10.0[5]	--	--	--
Mercury, Total Recoverable	µg/L	0.012	--	--	--	--	0.0024

[1] Less than ML's identified in Table 2a of Appendix 4 to the SIP.
[2] Detected but not quantified (DNQ).
[3] Less than ML's for those pesticides identified in Table 2d of Appendix 4 to the SIP.
[4] Effective 1 March 2008.
[5] Effective until to 1 March 2008.

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D. Compliance Summary

Order No. R5-2003-0052-A01 contained a compliance schedule and interim limitations for chromium VI and selenium. The Discharger submitted a justification for a compliance schedule on 13 May 2003. In June 2003, the Discharger started up an IX treatment system to remove chromium VI from groundwater. The required dates for compliance with final chromium VI and selenium limits was 8 March 2008. Recent data indicates the Discharger has achieved compliance with these limitations.

Order No. R5-2005-0052 prohibits the discharge from causing a change in ambient temperature of greater than 3°C. From the period of April 2005 through March 2008, the Discharger reported 20 instances of upstream and downstream receiving water temperature differences greater than 3°C.

Order No. R5-2005-0052 also prohibits the discharge from causing the normal ambient pH to change by more than 0.5. From 1 April 2005 through 31 March 2008, the Discharger reported 73 instances where upstream and downstream pH difference was greater than 0.5 units. The effluent pH during this period varied from 6.68 to 8.5.

E. Planned Changes ~~NEED TO DESCRIBE ANY CHANGES TO THE PERMIT. CERTAINLY THE AVERAGING PERIODS FOR RECEIVING WATER PH AND TEMPERATURE SHOULD BE DESCRIBED.~~ – Not Applicable

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the applicable plans, policies, and regulations identified in section II of the Limitations and Discharge Requirements (Findings). This section provides supplemental information, where appropriate, for the plans, policies, and regulations relevant to the discharge.

A. Legal Authority

See Limitations and Discharge Requirements - Findings, Section II.C.

B. California Environmental Quality Act (CEQA)

See Limitations and Discharge Requirements - Findings, Section II.E.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans**. The Regional Water Board adopted a *Water Quality Control Plan, Fourth Edition (Revised August 2006), for the Sacramento and San Joaquin River Basins* (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. In addition, State Water Board Resolution No. 88-63 requires that, with certain exceptions, the Regional Water Board assign the municipal and domestic supply use to water bodies that do not have beneficial uses listed in the Basin Plan. The beneficial uses of the Magpie Creek, Beaver Pond, and Don Julio Creek downstream of the discharge are municipal and domestic supply; agricultural supply, including irrigation; water contact recreation, including canoeing and rafting; non-contact water recreation, including aesthetic enjoyment; warm freshwater habitat; cold freshwater habitat; warm and cold migration of aquatic organisms; warm and cold spawning, reproduction, and/or early development; wildlife habitat; and navigation.

   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

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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.

In reviewing what beneficial uses that may apply to Magpie Creek, Beaver Pond, and Don Julio Creek, the Regional Water Board has considered the following facts:

a. Domestic, Municipal, and Agricultural Irrigation Supply

The Regional Water Board is required to apply the beneficial uses of municipal and domestic supply to Magpie Creek, Beaver Pond, and Don Julio Creek based on State Water Board Resolution No. 88-63, which was incorporated into the Basin Plan pursuant to Regional Water Board Resolution No. 89-056. In addition, the State Water Board has issued water rights to existing water users along the Sacramento River downstream of the discharge ~~fro~~ for domestic and irrigation uses. As documented in Order No. R5-2003-0052-A01, ~~As noted in~~ reports provided by the Discharger~~,~~ indicate that Magpie Creek and Don Julio Creek are losing streams, losing some of their surface flow to the subsurface vadose zone and groundwater zones via surface water infiltration. Groundwater is a source of domestic, municipal, and irrigation supply water. In addition to the existing water uses, growth in the area downstream of the discharge is expected to continue, which presents a potential for increased domestic and agricultural uses of the water in Magpie Creek and Don Julio Creek. Municipal and domestic supply is also identified as an existing beneficial use of the Sacramento River.

b. Water Contact and Non-Contact Recreation and Esthetic Enjoyment

The Regional Water Board finds that the discharge flows through residential areas, and there is ready public access to Magpie Creek and Don Julio Creek. Exclusion of the public is unrealistic and contact recreational activities currently exist along the creeks. These uses are likely to increase as the population in the area grows.

c. Preservation and Enhancement of Fish, Wildlife, and Other Aquatic Resources

From the point of discharge, Magpie Creek flows into the Magpie Creek Diversion which empties into Robla Creek. Robla Creek, in turn, empties into the NEMDC. From the point the NEMDC flows south to the north side of the American River, then turns west, paralleling the American River before emptying into the Sacramento River just north of Discovery Park and upstream from the

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confluence with the American River. While the beneficial uses of Magpie Creek are not identified in the Basin Plan, Table II-1 of the Basin Plan designates cold freshwater habitat (COLD) as an existing beneficial use of the Sacramento River, from the Colusa Basin Drain to the I Street Bridge, downstream of the discharge (#30, Hydro Unit Number 520.00). There is limited information on the specific types of habitats provided by Magpie Creek. However, Magpie Creek has been observed to retain pools of water several feet deep throughout the summer due to the discharge from the Facility. Magpie Creek, via Magpie Creek Diversion and Robla Creek Creek, is tributary to and in hydraulic continuity with the NEMDC during periods of the year. Information is available on the NEMDC which suggests it has served in the past as an important migration pathway for cold water aquatic life fish species like salmon and steelhead. There are no known permanent barriers to flow between Magpie Creek and the NEMDC which would prevent the migration or movement of cold water species between the water bodies at times of the year. Use of the tributary language in the Basin Plan results in the designation of the COLD beneficial use to Magpie Creek. Evidence in the record suggests that the COLD beneficial use is an appropriate designation for Magpie Creek.

Upon review of the flow conditions, habitat values, existing and potential beneficial uses of the Sacramento River, and the facts described above, the Regional Water Board finds that the beneficial uses identified in the Basin Plan for the Sacramento River from the Colusa Basin Drain to the I Street Bridge are applicable to Magpie Creek, Beaver Pond, and Don Julio Creek.

2. **Antidegradation Policy.** Section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 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 water quality be maintained unless degradation is justified based on specific findings. The Regional 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 (Attachment F, Section IV.D.4.) the discharge is consistent with the antidegradation provisions of 40 CFR section 131.12 and State Water Board Resolution 68-16.

3. **Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at title 40, Code of Federal Regulations section 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed. Compliance with the anti-backsliding requirements is discussed in section IV.D.3 of this Fact Sheet.

4. **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

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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.

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

1. Under Section 303(d) of the 1972 Clean Water Act, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 30 November 2006 USEPA gave final approval to California's 2006 Section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of Water Quality Limited Segments (WQLSs), which are defined as "…*those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR 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.*" Magpie Creek, Beaver Pond, and Don Julio Creek are not listed in the 303(d) list of impaired water bodies. The NEMDC (upstream of the confluence with Arcade Creek), to which Magpie Creek and Don Julio Creek are tributary, is listed as a WQLS for polychlorinated byphenyls (PCBs) on the 303(d) list of impaired water bodies. Additionally, the Sacramento River (from Knights Landing to the Delta), to which Magpie Creek and Don Julio Creek are tributary via Robla Creek and NEMDC, is listed as a WQLS for mercury and unknown toxicity.

2. **Total Maximum Daily Loads.** The USEPA requires the Regional Water Board to develop total maximum daily loads (TMDLs) for each 303(d) listed pollutant and water body combination. TMDLs have not been developed for Magpie Creek, Beaver Pond, Don Julio Creek, or any of the downstream receiving waters.

E. Other Plans, Polices and Regulations

The Facility is being addressed primarily through federal actions directed by the Air Force Real Property Agency and overseen by USEPA Region 9, California State Department of Toxic Substances Control (DTSC), and the Regional Water Board. The Air Force, USEPA, and State work together under the terms of a Federal Facilities Agreement (FFA) signed in 1990.

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 Clean Water Act (CWA) and amendments thereto are applicable to the discharge.

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The Federal 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 discharges 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: 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 water quality-based effluent limitations 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 Regional Water Board's Basin Plan, page IV-17.00 contains an implementation policy ("Policy for Application of Water Quality Objectives" that specifies that the Regional 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 Regional 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 Regional 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 contains a narrative objective requiring that: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*" (narrative toxicity objective). The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, discoloration, toxic substances, radionuclides, or taste and odor producing substances that adversely affect beneficial uses. 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 Basin Plan also limits chemical constituents in concentrations that adversely affect surface water beneficial uses. For waters designated as municipal, the Basin Plan specifies that, at a minimum, waters shall not contain concentrations of constituents that exceed Maximum Contaminant Levels (MCL) of CCR Title 22. The Basin Plan further states that, to protect all beneficial uses, the Regional Water Board may apply limits more

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stringent than MCLs.

A. Discharge Prohibitions

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

B. Technology-Based Effluent Limitations

1. Scope and Authority

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

- 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.

- 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.

- Best conventional pollutant control technology (BCT) represents the control from existing industrial point sources of conventional pollutants including BOD, 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.

- 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. Section 402(a)(1) of the CWA and section 125.3 of the Code of Federal Regulations 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

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and/or pollutants of concern. Where BPJ is used, the permit writer must consider specific factors outlined in section 125.3.

2. Applicable Technology-Based Effluent Limitations

a. **1,1-Dichloroethane; 1,2-Dichloroethane; 1,1-Dichloroethylene; cis-1,2-Dichloroethylene; Tetrachloroethylene; 1,1,1-Trichloroethane; Trichloroethylene; and Vinyl Chloride.** Air stripping treatment systems are commonly used to remove VOCs from extracted groundwater at cleanup sites. The GWTS utilizes air stripping and activated carbon and is capable of dependably removing the groundwater contaminants to concentrations that are non-detectable by current analytical technology. Order No. R5-2003-0052-~~AO1~~ A01 included technology-based effluent limitations for VOC constituents of concern (CoCs), including 1,1-dichloroethane; 1,2-dichloroethane; 1,1-dichloroethylene; cis-1,2-dichloroethylene; tetrachloroethylene; 1,1,1-trichloroethane; trichloroethylene; and vinyl chloride, based on the ability of the groundwater treatment system technology to removing the groundwater contaminants to concentrations that are non-detectable by current analytical technology. The technology-based effluent limitations contained in Order No. R5-2003-0052-A01 consisted of a maximum daily effluent limitation (MDEL) of 1 µg/L and a monthly median effluent limitation equivalent to the MLs specified by Appendix 4, Table 2a of the SIP.

Limitations for 1,1,1-trichloroethane are not retained in this Order, as it was not detected in either the effluent or the influent. Consistent with 40 CFR 122.45(d) and recently adopted orders by the Regional Water Board, the monthly median effluent limitations for the remaining VOCs will be revised to MDELs. The MDELs for 1,1-dichloroethane; 1,2-dichloroethane; 1,1-dichloroethylene; tetrachloroethylene; trichloroethylene; and vinyl chloride are based in Appendix 4, Table 2a of the SIP. Because the SIP does not specify an ML for cis-1,2-dichloroethylene, the MDEL reflects the commonly achieved reporting level for this constituent. The MLs and current, commonly achieved reporting levels for 1,1-dichloroethane; 1,2-dichloroethane; 1,1-dichloroethylene; cis-1,2-dichloroethylene; tetrachloroethylene; ~~1,1,1-trichloroethane;~~ trichloroethylene; and vinyl chloride are as follows:

Table F-3. Summary of Minimum Levels for 1,1-Dichloroethane; 1,2-Dichloroethane; 1,1-Dichloroethylene; cis-1,2-Dichloroethylene; Tetrachloroethylene; Trichloroethylene; and Vinyl Chloride

Parameter	Minimum Level	Units	Analytical Method
1,1-Dichloroethane	0.5	µg/L	EPA Method 8260B (and as specified in the SIP)
1,2-Dichloroethane	0.5	µg/L	EPA Method 8260B (and as specified in the SIP)
1,1-Dichloroethylene	0.5	µg/L	EPA Method 8260B (and as specified in the SIP)
cis 1,2-Dichloroethylene	0.5	µg/L	EPA Method 8260B
Tetrachloroethylene	0.5	µg/L	EPA Method 8260B (and as specified in the SIP)
Trichloroethylene	0.5	µg/L	EPA Method 8260B (and as specified in the SIP)
Vinyl Chloride	0.5	µg/L	EPA Method 8260B (and as specified in the SIP)

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b. **Carbon Tetrachloride and Dichlorobromomethane.** Two additional VOC~~s~~ CoCs were detected in the influent monitoring data collected from 1 April 2005 through 31 March 2008, and include carbon tetrachloride and dichlorobromomethane. Consistent with the limitations established for the other VOC CoCs, this Order establishes MDELs for carbon tetrachloride and dichlorobromomethane based on the MLs contained in Appendix 4, Table 2a of the SIP. The MLs for carbon tetrachloride and dichlorobromomethane are as follows:

Table F-4. Summary of Minimum Levels for Carbon Tetrachloride and Dichlorobromomethane

Parameter	Minimum Level	Units	Analytical Method
Carbon Tetrachloride	0.5	µg/L	EPA Method 8260B (and as specified in the SIP)
Dichlorobromomethane	0.5	µg/L	EPA Method 8260B (and as specified in the SIP)

b. **Flow.** A technology-based effluent limitation for flow is established in this Order to monitor the performance of the groundwater treatment system from the standpoint of volumes being treated. The maximum daily flow rate in Order No. R5-2003-0052-A01 was established at 2.88 MGD, the maximum design flow, and is retained in this Order. Up to 0.144 MGD of the 2.88 MGD may be discharged from Discharge Point No. 002 to Beaver Pond when the water level in the pond is below 2 feet for 2 consecutive weeks.

As discussed under IV.D.5, in some instances the water quality-based effluent limitations (WQBELs) are more stringent than the applicable technology-based effluent limitations and are therefore applied in lieu of the technology-based effluent limitations.

Summary of Technology-based Effluent Limitations
Discharge Point No. 001

Table F-5. Summary of Technology-based Effluent Limitations

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Flow	MGD	--	[1]	--	--
Priority Pollutants					
Carbon tetrachloride	µg/L	--	0.5	--	--
Dichlorobromomethane	µg/L	--	0.5	--	--
1,1-Dichloroethane	µg/L	--	0.5	--	--
1,2-Dichloroethane	µg/L	--	0.5	--	--
1,1-Dichloroethylene	µg/L	--	0.5	--	--
Tetrachloroethylene	µg/L	--	0.5	--	--
Trichloroethylene	µg/L	--	0.5	--	--
Vinyl Chloride	µg/L	--	0.5	--	--
Non-Conventional Pollutants					
cis-1,2-Dichloroethylene	µg/L	--	0.5	--	--

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[1] The daily average discharge flow from Discharge Point No. 001 shall not exceed 2.88 MGD. The total combined daily average discharge flow from Discharge Point Nos. 001 and 002 shall not exceed 2.88 MGD. The daily average discharge flow from Discharge Point No. 002 shall not exceed 0.144 MGD.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

As specified in section 122.44(d)(1)(i), permits are required to include WQBELs for pollutants (including toxicity) that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an in-stream excursion above any state water quality standard. 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

a. **Receiving Water.** Treated groundwater is primarily discharged via Discharge Point No. 001 to Magpie Creek. According to documents provided by the Discharger (IRP Creeks and Floodplains Conceptual Site Model, 4 June 2002), Magpie Creek originates to the east of the Base boundary, in the Foothill Farms area, flowing in general from east to west through the Base. The tributary land area of Magpie Creek is approximately 4 square miles. Magpie Creek carries flows onto the Base through a set of culverts under Roseville Road and conveys water across the developed portions of the Base through a series of channels and underground pipes. Portions of Magpie Creek channel have been modified, at various times since 1945, from their original course. Within much of the Base, Magpie Creek is lined with concrete, gunite, or corrugated steel half-pipe. Downstream of Discharge Point No. 001 at Lang Avenue, the modified creek channel connects with the old alignment of Magpie Creek. From this point west to Raley Boulevard, Magpie Creek follows its original course and has not been re-routed or channelized.

Off the Base and west of Raley Boulevard, Magpie Creek and Don Julio Creek flow into the Magpie Creek Diversion which empties into Robla Creek. This diversion was constructed in the 1950s to alleviate flooding along the lower reaches of Magpie Creek by diverting water to Robla Creek. Robla Creek, in turn, empties into NEMDC. From this point the NEMDC flows south to the north side of the American River, then turns west, paralleling the American River before emptying into the Sacramento River just north of Discovery Park, upstream from the confluence with the American River.

A portion of the 2.88 MGD currently discharged by the GWTS, up to 0.144 MGD, may be discharged via Discharge Point No. 002 to Beaver Pond, a wetlands area, which drains to adjacent Don Julio Creek, which is tributary to Magpie Creek east of the Base boundary and east of Raley Boulevard. Don Julio Creek

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originates east of the Base, in the North Highlands area. Don Julio Creek also flows, in general, from east to west, entering the Base near James Way via two 60-inch diameter culverts. After entering the Base, flow in Don Julio Creek is conveyed underground, resurfacing on the west side of the Base. In addition, a pair of creeks or drainage ditches originating from the Building 772 and 774 areas feed into Don Julio Creek. Don Julio Creek then exits the Base, flows through a residential area, and re-enters the Base near the northwest corner. From the northwest corner of the Base, Don Julio Creek continues as a gunite lined ditch and flows south along Patrol Road, turning west near the center of the Base and exiting the Base near Raley Boulevard. Absent the discharge of treated groundwater from the GWTS, there are periods of limited or no flow in Magpie Creek and Don Julio Creek. In August, 2005, the Discharger modified operation of Discharge Point No. 002 to discharge to Beaver Pond only when the water level in the pond is below 2 feet for 2 consecutive weeks, in order to maintain the wetlands habitat. The water level in the pond is monitored weekly.

Beneficial uses of Magpie Creek, Beaver Pond, and Don Julio Creek are described in Section III.C.I.

b. **Hardness.** While no effluent limitation for hardness is necessary in this Order, hardness is critical to the assessment of the need for, and the development of, effluent limitations for certain metals. 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 hardness-dependent metal criteria include cadmium, copper, chromium III, lead, nickel, silver, and zinc. ~~The equation describing the total recoverable regulatory criterion, as established in the CTR, is as follows:~~

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

~~Where:~~

~~H = Hardness~~
~~b = metal- and criterion-specific constant~~
~~m = metal- and criterion-specific constant~~

~~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 relationship between hardness and the resulting criterion in Equation 1 can exhibit either a downward-facing (i.e., concave downward) or an upward-facing (i.e., concave upward) curve depending on the values of the criterion-specific constants. The curve shapes for acute and chronic criteria for the metals are as follows:~~

~~Concave Downward: cadmium (chronic), chromium (III), copper, nickel, and zinc~~

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~~Concave Upward: cadmium (acute), lead, and silver (acute)~~

Effluent limitations for the discharge must be set to protect the beneficial uses of the receiving water for all discharge conditions. In the absence of the option of including condition-dependent, "floating" effluent limitations that are reflective of actual hardness conditions at the time of discharge, effluent limitations must be set using a reasonable worst-case condition in order to protect beneficial uses for all discharge conditions. The SIP does not address how to determine 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. 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.[1] The CTR does not define whether the term "ambient," as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions.

The point in the receiving water affected by the discharge is downstream of the discharge. As the effluent mixes with the receiving water, the hardness of the receiving water can change. Therefore, it is appropriate to use the ambient hardness downstream of the discharge that is a mixture of the effluent and receiving water for the determination of the CTR hardness-dependent metals criteria. Recent studies indicate that using the lowest recorded receiving water hardness for establishing water quality criteria is not protective of the receiving water under various mixing conditions (e.g. when the effluent hardness is less than the receiving water hardness). The studies evaluated the relationships between hardness and the CTR metals criterion that is calculated using the CTR metals equation. The equation describing the total recoverable regulatory criterion, as established in the CTR, is as follows:

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

Where:

H = Design Hardness
b = metal- and criterion-specific constant
m = metal- and criterion-specific constant

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 relationship between the Design Hardness and the resulting criterion in Equation 1 can exhibit either a downward-facing (i.e., concave downward) or an

[1] See 40 CFR 131.38(c)(4)(i)

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upward-facing (i.e., concave upward) curve depending on the values of the criterion-specific constants. The curve shapes for acute and chronic criteria for the metals are as follows:

Concave Downward: cadmium (chronic), chromium (III), copper, nickel, and zinc

Concave Upward: cadmium (acute), lead, and silver (acute)
~~The Regional Water Board has evaluated these studies and concurs that for some parameters the beneficial uses of the receiving water are best protected using the lowest hardness value of the effluent. For some parameters, the use of the lowest hardness value of the effluent and either lowest or highest hardness value of the receiving water the is the most protective.~~

For those contaminants where the regulatory criteria exhibit a concave downward relationship as a function of hardness, use of the lowest recorded effluent hardness for establishment of water quality objectives is fully protective of all beneficial uses regardless of whether the effluent or receiving water hardness is higher. Use of the lowest recorded effluent hardness is also protective under all possible mixing conditions between the effluent and the receiving water (i.e., from high dilution to no dilution). Therefore, for cadmium (chronic), chromium (III), copper, nickel, and zinc, the reasonable worst-case ambient hardness can be estimated by using the lowest effluent hardness. The ~~-~~water quality criteria for these metals were calculated using Equation 1 and a reported minimum effluent hardness of 120 mg/L as $CaCO_3$, based on 10 samples taken between ~~1~~ 1 April 2005 and 31 March 2008.

For those metals where the regulatory criteria exhibit a concave upward relationship as a function of hardness, a water quality objective based on either the effluent hardness or the receiving water hardness would not be protective under all mixing scenarios. Instead, ~~a water quality objective that accounts for~~ both the hardness of the upstream receiving water and the effluent is required to determine the reasonable worst-case ambient hardness. In this case, using the lowest upstream receiving water hardness in Equation 2, below, is protective if the effluent hardness is ALWAYS higher than the receiving water hardness. Under circumstances where the effluent hardness is not ALWAYS higher than the receiving water hardness, it may be appropriate to use the highest reported upstream receiving water hardness in Equation 2. The following equations provide fully protective water quality criteria for those metals that exhibit a concave upward relationship.

$$\text{CTR Criterion} = \left[\frac{m}{H_{rw}} \cdot \left(H_{eff} - H_{rw}\right) + 1\right] \cdot e^{m \cdot \ln(H_{rw}) + b} \quad \text{(Equation 2)}$$

Where:

H_{eff} = ~~lowest recorded~~ effluent hardness
H_{rw} = ~~lowest recorded~~upstream receiving water hardness

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b = metal- and criterion-specific constant
m = metal- and criterion-specific constant

~~Because the lowest receiving water hardness is less than the lowest effluent hardness, using the lowest recorded receiving water hardness increases the difference between the hardness of the two waters and leads to the development of more restrictive water quality criteria.~~ Therefore, for cadmium (acute), lead, and silver (acute) water quality criteria were calculated using Equation 2 with a lowest reported effluent hardness of 120 mg/L as $CaCO_3$ and a lowest reported receiving water hardness of 38 mg/L as $CaCO_3$, based on ~~10~~ 11 samples taken between 1 April 2005 and 31 March 2008.

c. **Assimilative Capacity/Mixing Zone.** Based on available information, Magpie Creek and Don Julio Creek, absent the discharges, are at times seasonal and/or ephemeral waterbodies. The seasonal and/or ephemeral nature of Magpie Creek and Don Julio Creek means that the beneficial uses must be protected, but that no year-round credit for receiving water dilution is available. Although the discharges, at times, maintain the aquatic habitat, constituents may not be discharged in concentrations that may cause harm to aquatic life. At other times, flows within Magpie Creek and Don Julio Creek help support aquatic life. Both conditions may exist within a short time span, where the creeks would be dry without the discharge and periods when sufficient background flows provide hydraulic continuity with the NEMDC and the Sacramento River. The lack of dilution results in more stringent effluent limitations to protect recreational uses and aquatic life.

3. Determining the Need for WQBELs

a. CWA section 301 (b)(1) requires NPDES permits to include effluent limitations that achieve technology-based standards and any more stringent limitations necessary to meet water quality standards. Water quality standards include Regional Water Board Basin Plan beneficial uses and narrative and numeric water quality objectives, State Water Board-adopted standards, and federal standards, including the CTR and NTR. The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, 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.) With regards to the narrative chemical constituents objective, the Basin Plan 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 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.*"

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b. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs, the Regional 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 carbon tetrachloride, chromium VI, dichlorobromomethane, 1,1-dichloroethane, 1,2-dichloroethane, cis-1,2-dichloroethylene, 1,1-dichloroethylene, mercury, pH, selenium, tetrachloroethylene, trichloroethylene, and vinyl chloride. WQBELs for these constituents were calculated in this Order. A summary of the reasonable potential analysis (RPA) is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

c. The Regional 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 Board may use the SIP as guidance for water quality-based toxics control.[2] The SIP states 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.

d. WQBELs were calculated in accordance with section 1.4 of the SIP, as described in Attachment F, Section IV.C.4.

e. **Carbon tetrachloride.** The CTR includes a carbon tetrachloride criterion of 0.25 µg/L for the protection of human health and is based on a one-in-a-million cancer risk for waters from which both water and organisms are consumed. Carbon tetrachloride was not detected in the effluent. However, the maximum concentration of carbon tetrachloride in the influent was 2.8 µg/L based on 36 samples collected between 1 April 2005 through 31 March 2008, while the maximum observed upstream receiving water carbon tetrachloride concentration was 1.3 µg/L. Based on the presence of carbon tetrachloride in the influent in concentrations exceeding the CTR criterion, the discharge exhibits reasonable to cause or contribute an exceedance of water quality standards.

   No dilution is allowed due to periods of no flow in the receiving water. An AMEL and MDEL for carbon tetrachloride of 0.25 µg/L and 0.50 µg/L, respectively, are included in this Order based on the CTR criterion for the protection of human health (see Attachment F, Table F-7 for WQBEL calculations). Based on the sample results for the effluent, it appears the Discharger can meet these new limitations

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

f. **Chromium VI (Hexavalent Chromium).** The CTR includes maximum 1-hour average and 4-day average total recoverable chromium VI concentrations of 16.29 µg/L and 11.43 µg/L, respectively, for the protection of freshwater aquatic life. The MEC for chromium VI was 11 µg/L, based on 47 samples collected between 1 April 2005 and 31 March 2008, while the maximum observed upstream receiving water chromium VI concentration was 0.38 µg/L (detected but not quantified or DNQ), based on 11 samples collected between 1 April 2005 and 31 March 2008. Although the MEC does not exceed the criteria, a maximum concentration of 12.4 µg/L was observed in the influent. Due to the presence of chromium VI in the influent in concentrations that exceed the CTR criterion, the discharge exhibits reasonable potential to cause or contribute to an exceedance of water quality standards.

No dilution is allowed due to periods of no flow in the receiving water. Order No. R5-2003-0052-A01 contained final effluent limitations for chromium VI of 10 µg/L as an AMEL and 14.1 µg/L as an MDEL. This Order contains revised effluent limitations for chromium VI, which were calculated according to SIP procedures using recent monitoring data. The final effluent limitations contained in this Order consist of an AMEL and MDEL for chromium VI of 11 µg/L and 13 µg/L, respectively, based on the CTR criteria for the protection of freshwater aquatic life (see Attachment F, Table F-8 for WQBEL calculations). As discussed in section IV.D.3 of this Fact Sheet, the revised effluent limitations are consistent with anti-backsliding requirements. Based on the sample results for the effluent, it appears the Discharger can meet these new limitations.

g. **Copper.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for copper. The criteria for copper are presented in dissolved concentrations. Using the worst-case measured hardness as discussed in section IV.C.2.b of this Fact Sheet, the applicable chronic criterion (maximum 4-day average concentration) is 10.47 µg/L and the applicable acute criterion (maximum 1-hour average concentration) is 15.96 µg/L, as dissolved. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The USEPA default conversion factors for copper in freshwater are 0.96 for both the acute and the chronic criteria. Using the worst-case measured hardness as discussed in section IV.C.2.b of this Fact Sheet and the USEPA recommended dissolved-to-total translator, the applicable chronic criterion is 10.90 µg/L and the applicable acute criterion is 16.62 µg/L, as total recoverable.

The Discharger submitted effluent and receiving water monitoring data for copper collected from 4 April 2001 through 10 October 2007. Total copper was not detected in the effluent, based on ~~two~~ 57 samples collected ~~in~~ between ~~October 2006~~4 April 2001 and ~~October 2007~~10 October 2007, while the maximum observed upstream receiving water total copper concentration was 12 µg/L, based on ~~two~~ 34 samples collected ~~in~~ between ~~October 2006~~4 April 2001 and ~~October 2007~~10 October 2007. ~~Therefore, the discharge does not exhibit reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for total copper.~~ The MEC for dissolved copper was ~~2.1 µg/L~~

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~~(DNQ)~~1 µg/L, based on ~~two~~ one sample~~s~~ collected ~~in~~ on 10 October 2007~~ and February 2008~~, while the maximum observed upstream dissolved copper concentration was 14 µg/L, based on one sample collected ~~i~~on 10 ~~February 2008~~October 2007. Because dissolved copper represents a fraction of total copper, dissolved copper concentrations are expected to be lower than total concentrations. However, the effluent and receiving water dissolved samples collected on 10 October 2007 were greater than the corresponding samples for total copper taken on the same day, which were not detected with an MDL of 0.18 µg/L. Thus, the effluent and receiving water total and dissolved samples collected on 10 October 2007 are questionable and should not be used as part of the reasonable potential analysis. Thus, the actual maximum observed receiving water total copper concentration is 9.5 µg/L. Additional dissolved samples are not available. Because total copper was not detected in 57 effluent samples, copper does not exhibit reasonable potential to cause or contribute to an exceedance of a water quality standard. ~~Although the upstream dissolved copper concentration is greater than the criterion and dissolved copper was detected in the effluent, based on the limited data set and due to the fact that total copper was not detected in the effluent, it is uncertain whether reasonable potential actually exists and therefore effluent limitations for copper are not being established at this time. Instead of limitations, additional monitoring has been established for total copper; should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, then this Order may be reopened and modified by adding an appropriate effluent limitation.~~

h. **Dichlorobromomethane***.* The CTR includes a dichlorobromomethane criterion of 0.56 µg/L for the protection of human health and is based on a one-in-a-million cancer risk for waters from which both water and organisms are consumed. Dichlorobromomethane was not detected in the effluent. However, the maximum concentration of dichlorobromomethane in the influent was 0.77 µg/L based on 36 samples collected between 1 April 2005 through 31 March 2008, while the maximum observed upstream receiving water dichlorobromomethane concentration was 0.92 µg/L. Based on the presence of dichlorobromomethane in the influent in concentrations exceeding the CTR criterion, the discharge exhibits reasonable to cause or contribute an exceedance of water quality standards.

No dilution is allowed due to periods of no flow in the receiving water. An AMEL and MDEL for dichlorobromomethane of 0.56 µg/L and 1.12 µg/L, respectively, were calculated based on the CTR criterion for the protection of human health (see Attachment F, Table F-9 for WQBEL calculations). As discussed in section IV.B.2 and section IV.D.5 of this Fact Sheet, the applicable technology-based limitation for dichlorobromomethane of 0.5 µg/L as an MDEL is more stringent than the applicable WQBELs. Therefore, the more stringent technology-based effluent limitations are included as final effluent limitations in this Order.

i. **1,1-Dichloroethane.** The CTR includes a 1,1-dichloroethane criterion of 3.0 µg/L for the protection of human health and is based on a one-in-a-million cancer risk

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for waters from which both water and organisms are consumed. 1,1-Dichloroethane was not detected in the effluent. However, the maximum concentration of 1,1-dichloroethane in the influent was 10 µg/L based on 36 samples collected between 1 April 2005 through 31 March 2008, while 1,1-dichloroethane was not detected in the upstream receiving water. Based on the presence of 1,1-dichloroethane in the influent in concentrations exceeding the CTR criterion, the discharge exhibits reasonable to cause or contribute an exceedance of water quality standards.

No dilution is allowed due to periods of no flow in the receiving water. An AMEL and MDEL for 1,1-dichloroethane of 3.0 µg/L and 6.0 µg/L, respectively, were calculated based on the CTR criterion for the protection of human health (see Attachment F, Table F-10 for WQBEL calculations). As discussed in section IV.B.2 and section IV.D.5 of this Fact Sheet, the applicable technology-based limitation for 1,1-dichloroethane of 0.5 µg/L as an MDEL is more stringent than the applicable WQBELs. Therefore, the more stringent technology-based effluent limitations are included as final effluent limitations in this Order.

j. **1,2-Dichloroethane.** The CTR includes a 1,2-dichloroethane criterion of 0.38 µg/L for the protection of human health and is based on a one-in-a-million cancer risk for waters from which both water and organisms are consumed. 1,2-Dichloroethane was not detected in the effluent. However, the maximum concentration of 1,2-dichloroethane in the influent was 4.8 µg/L based on 36 samples collected between 1 April 2005 through 31 March 2008, while 1,2-dichloroethane was not detected in the upstream receiving water. Based on the presence of 1,2-dichloroethane in the influent in concentrations exceeding the CTR criterion, the discharge exhibits reasonable to cause or contribute an exceedance of water quality standards.

No dilution is allowed due to periods of no flow in the receiving water. An AMEL and MDEL for 1,2-dichloroethane of 0.38 µg/L and 0.76 µg/L, respectively, were calculated based on the CTR criterion for the protection of human health (see Attachment F, Table F-11 for WQBEL calculations). As discussed in section IV.B.2 and section IV.D.5 of this Fact Sheet, the applicable technology-based limitation for 1,2-dichloroethane of 0.5 µg/L as an MDEL is more stringent than the applicable water quality-based MDEL of 0.76. Therefore, the more stringent technology-based effluent MDEL and the water quality-based AMEL are included as final effluent limitations in this Order.

k. **cis-1,2-Dichloroethylene***.* The Primary MCL for cis-1,2-dichloroethylene is 6 µg/L. Cis-1,2-dichloroethylene was not detected in the effluent. However, the maximum concentration of cis-1,2-dichloroethylene in the influent was 8.6 µg/L based on 36 samples collected between 1 April 2005 through 31 March 2008, while cis-1,2-dichloroethylene was not detected in the upstream receiving water. Based on the presence of cis-1,2-dichloroethylene in the influent in concentrations exceeding the Primary MCL, the discharge exhibits reasonable to cause or contribute an exceedance of water quality standards.

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No dilution is allowed due to periods of no flow in the receiving water. In accordance with guidance from the Department of Public Health (DPH; formerly the Department of Health Services), annual average effluent limitations are considered appropriate for constituents with Primary MCLs designed to protect human health over long periods of time. Therefore, the applicable WQBEL for cis-1,2-dichloroethylene is an annual average of 6 µg/L. As discussed in section IV.B.2 and section IV.D.5 of this Fact Sheet, the applicable technology-based limitation for cis-1,2-dichloroethylene of 0.5 µg/L as an MDEL is more stringent than the applicable WQBEL. Therefore, the more stringent technology-based effluent limitations are included as final effluent limitations in this Order.

l. **1,1-Dichloroethylene.** The CTR includes a 1,1-dichloroethylene criterion of 0.057 µg/L for the protection of human health and is based on a one-in-a-million cancer risk for waters from which both water and organisms are consumed. 1,1-Dichloroethylene was not detected in the effluent. However, the maximum concentration of 1,1-dichloroethylene in the influent was 28 µg/L based on 36 samples collected between 1 April 2005 through 31 March 2008, while 1,1-dichloroethylene was not detected in the upstream receiving water. Based on the presence of 1,1-dichloroethylene in the influent in concentrations exceeding the CTR criterion, the discharge exhibits reasonable to cause or contribute an exceedance of water quality standards.

No dilution is allowed due to periods of no flow in the receiving water. An AMEL and MDEL for 1,1-dichloroethylene of 0.06 µg/L and 0.11 µg/L, respectively, are included in this Order based on the CTR criterion for the protection of human health (see Attachment F, Table F-12 for WQBEL calculations). Based on the sample results for the effluent, it appears the Discharger can meet these new limitations.

m. **1,4-Dioxane.** No CTR/NTR criteria or MCLs have been established for 1,4-dioxane. Based on detectable concentrations of 1,4-dioxane in the effluent, monthly monitoring requirements were included in Order No. R5-2003-0052-A01 to determine if 1,4-dioxane had reasonable potential to cause or contribute to an exceedance of a water quality standard. The treatment system at the Facility previously included UVOX technology to treat for high concentrations of certain organics, including 1,4-dioxane. The use UVOX technology was discontinued in 2004. At that time, the Discharger was achieving effluent levels below the State's Preliminary Reduction Goal for 1,4-dioxane of 6.1 µg/L. The MEC for 1,4-dioxane was 3.9 µg/L, based on 44 samples collected between 1 April 2005 through 31 March 2008. Because there is no applicable criterion on which to determine reasonable potential, this Order will not establish effluent limitations for 1,4-dioxane, but will continue to require monitoring. If in the future appropriate criteria are developed, this permit may be reopened to include effluent limitations for 1,4-dioxane.

n. **Mercury.** The current USEPA Ambient Water Quality Criteria for Protection of Freshwater Aquatic Life, continuous concentration, for mercury is 0.77 µg/L (30-day average, chronic criteria). The CTR contains a human health criterion

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(based on a threshold dose level causing neurological effects in infants) of 0.050 µg/L for waters from which both water and aquatic organisms are consumed. Both values are controversial and subject to change. In 40 CFR Part 131, USEPA acknowledges that the human health criteria may not be protective of some aquatic or endangered species and that "…*more stringent mercury limits may be determined and implemented through use of the State's narrative criterion.*" In the CTR, USEPA reserved the mercury criteria for freshwater and aquatic life and may adopt new criteria at a later date.

The maximum observed effluent mercury concentration was 0.0024 µg/L. The Sacramento River from Knights Landing to the Delta, to which Maqpie Creek and Don Julio Creek are tributary via Roblas Creek and the NEMDC, has been listed as an impaired water body pursuant to section 303(d) of the Clean Water Act because of mercury. Mercury bioaccumulates in fish tissue and, therefore, discharge of mercury to the receiving water is likely to contribute to exceedances of the narrative toxicity objective and impact beneficial uses. Because the Sacramento River from Knights Landing to the Delta has been listed as an impaired water body for mercury, the discharge must not cause or contribute to increased mercury levels. The SIP, Section 1.3, requires the establishment of an effluent limitation for a constituent when the receiving stream background water quality exceeds an applicable criterion or objective.

This Order establishes a final performance-based mass limitation of 0.021 lbs for the discharge to Magpie Creek from Discharge Point No. 001 and 0.0011 lbs for the discharge to Beaver Pond from Discharge Point No. 002. The total combined mass discharge from Discharge Point Nos. 001 and 002 shall not exceed 0.021 lbs. These limitations are based on maintaining the mercury loading at the current level until a total maximum daily load (TMDL) can be established and USEPA develops mercury standards that are protective of human health. The mass limitations were derived using the maximum observed effluent mercury concentration of 0.0000024 mg/L and the total maximum permitted discharge flow for Discharge Point Nos. 001 and 002:

Discharge Point No. 001
(0.0000024 mg/L) * 2.88 MGD * 8.34 * [365 days/year] = 0.021 lbs/year

Discharge Point No. 002
(0.0000024 mg/L) * 0.144 MGD * 8.34 * [365 days/year] = 0.0011 lbs/year

If USEPA develops new water quality standards for mercury, this permit may be reopened and the effluent limitations adjusted.

o. **pH.** The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the "…*pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses.*" Effluent Limitations for pH are included in this Order based on the Basin Plan objectives for pH.

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p. **Salinity.** The discharge contains electrical conductivity and total dissolved solids. These are water quality parameters that are indicative of the salinity of the water. Their presence in water can be growth limiting to certain agricultural crops and can affect the taste of water for human consumption. There are no USEPA water quality criteria for the protection of aquatic organisms for these constituents. The Basin Plan contains a chemical constituent objective that incorporates State MCLs, contains a narrative objective, and contains numeric water quality objectives for electrical conductivity and total dissolved solids.

Table F-6. Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Goal[1]	Secondary MCL[3]	Effluent	
			Average	Maximum
Electrical Conductivity (µmhos/cm)	Varies[2]	900, 1600, 2200	312	400
Total Dissolved Solids (mg/L)	Varies	500, 1000, 1500	202	310

1 Agricultural water quality goals based on *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985)

2 The EC level in irrigation water that harms crop production depends on the crop type, soil type, irrigation methods, rainfall, and other factors. An EC level of 700 umhos/cm is generally considered to present no risk of salinity impacts to crops. However, many crops are grown successfully with higher salinities.

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

i. **Electrical Conductivity**. The secondary MCL for electrical conductivity is 900 µmhos/cm as a recommended level; 1,600 µmhos/cm as an upper level; and 2,200 µmhos/cm as a short-term maximum. The agricultural water quality goal, that would apply the narrative chemical constituents objective, is 700 µmhos/cm as a long-term average based on Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). The 700 µmhos/cm agricultural water quality goal is intended to prevent reduction in crop yield, i.e. a restriction on use of water, for salt-sensitive crops, such as beans, carrots, turnips, and strawberries. These crops are either currently grown in the area or may be grown in the future. Most other crops can tolerate higher electrical conductivity concentrations without harm, however, as the salinity of the irrigation water increases, more crops are potentially harmed by the electrical conductivity, or extra measures must be taken by the farmer to minimize or eliminate any harmful impacts.

A review of the Discharger's monitoring reports from April 2005 through March 2008 shows an average effluent electrical conductivity of 311 µmhos/cm, with a range from 210 µmhos/cm to 400 µmhos/cm for 152 samples. The background receiving water electrical conductivity averaged 218 µmhos/cm in 152 sampling events collected by the Discharger from April 2005 through March 2008. Therefore, the discharge of electrical conductivity does not exhibit reasonable potential to exceed the agricultural water goal of 700 µmhos/cm.

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ii. **Total Dissolved Solids.** The secondary MCL for total dissolved solids is 500 mg/L as a recommended level; 1,000 mg/L as an upper level; and 1,500 mg/L as a short-term maximum. The recommended agricultural water quality goal for total dissolved solids, that would apply the narrative chemical constituent objective, is 450 mg/L as a long-term average based on Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). Water Quality for Agriculture evaluates the impacts of salinity levels on crop tolerance and yield reduction, and establishes water quality goals that are protective of the agricultural uses. The 450 mg/L water quality goal is intended to prevent reduction in crop yield, i.e. a restriction on use of water, for salt-sensitive crops. Only the most salt sensitive crops require irrigation water of 450 mg/L or less to prevent loss of yield. Most other crops can tolerate higher total dissolved solids concentrations without harm, however, as the salinity of the irrigation water increases, more crops are potentially harmed by the total dissolved solids, or extra measures must be taken by the farmer to minimize or eliminate any harmful impacts.

A review of the Discharger's monitoring reports from April 2005 through March 2008 shows an average effluent total dissolved solids concentration of 219 mg/L, with a range from <4.2 mg/L to 310 mg/L for 12 samples. The background receiving water total dissolved solids concentration averaged 132 mg/L in 11 sampling events collected by the Discharger from April 2005 through March 2008. Therefore, the discharge of total dissolved solids does not exhibit reasonable potential to exceed the agricultural water goal of 450 mg/L.

iii. **Salinity.** Based on the relatively low reported salinity, the discharge currently does not have reasonable potential to cause or contribute to an in-stream excursion of water quality objectives for salinity. Therefore, no effluent limitations for salinity are included in this Order. However, since the Discharger discharges to Magpie Creek and Don Julio Creek, tributaries of the Sacramento River via Roblas Creek the NEMDC, and eventually the Sacramento – San Joaquin Delta, of additional concern is the salt contribution to Delta waters. In an effort to minimize salt loading to the receiving waters, this Order requires the Discharger to submit a Salinity Evaluation and Minimization Plan to address any increases in wastewater salinity from treatment of groundwater at the Facility.

q. **Selenium.** The CTR includes maximum 1-hour average and 4-day average selenium concentrations of 20 µg/L and 5 µg/L, respectively, for protection of freshwater aquatic life. Order No. R5-2003-0052-A01 established daily maximum and monthly average concentrations and mass limits for selenium based on the presence of selenium in the effluent in concentrations exceeding the chronic criterion. The MEC for selenium was 2.7 µg/L, based on 40 samples collected between April 2005 and March 2008, while the maximum observed upstream selenium concentration was 0.14 µg/L, based on 11 samples collected between April 2005 and March 2008. Additionally, selenium was detected in 12

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samples, nine of which were DNQ. Monitoring data for selenium in the influent is unavailable. Although monitoring data during this period indicates that selenium in the effluent does not exhibit reasonable potential to exceed the CTR criterion, this Order retains effluent limitations for selenium due to continued detections of selenium in the effluent, the lack of monitoring data that demonstrates that selenium is also not present in the influent, the fact that selenium is a bioaccumulative pollutant, and to ensure that the Discharger continues to treat the contaminated groundwater for selenium.

Order No. R5-2003-0052-A01 contained final effluent limitations for selenium of 4.1 µg/L as an AMEL and 8.2 µg/L as an MDEL. This Order contains revised effluent limitations for selenium, which were calculated according to SIP procedures using recent monitoring data. The final effluent limitations contained in this Order consist of an AMEL and MDEL for selenium of 3.6 µg/L and 9.1 µg/L, respectively, based on the CTR criteria for the protection of freshwater aquatic life (see Attachment F, Table F-13 for WQBEL calculations). As discussed in section IV.D.3 of this Fact Sheet, the revised effluent limitations are consistent with anti-backsliding requirements. Based on the sample results for the effluent, it appears the Discharger can meet these new limitations.

r. **Tetrachloroethylene.** The CTR includes a tetrachloroethylene criterion of 0.8 µg/L for the protection of human health and is based on a one-in-a-million cancer risk for waters from which both water and organisms are consumed. The MEC for tetrachloroethylene was 0.47 (DNQ), which does not exceed the CTR criterion. However, the maximum concentration of tetrachloroethylene in the influent was 9.2 µg/L based on 36 samples collected between 1 April 2005 through 31 March 2008, while tetrachloroethylene was not detected in the upstream receiving water. Based on the presence of tetrachloroethylene in the influent in concentrations exceeding the CTR criterion, the discharge exhibits reasonable to cause or contribute an exceedance of water quality standards.

No dilution is allowed due to periods of no flow in the receiving water. An AMEL and MDEL for tetrachloroethylene of 0.8 µg/L and 1.6 µg/L, respectively, were calculated based on the CTR criterion for the protection of human health (see Attachment F, Table F-14 for WQBEL calculations). As discussed in section IV.B.2 and section IV.D.5 of this Fact Sheet, the applicable technology-based limitation for tetrachloroethylene of 0.5 µg/L as an MDEL is more stringent than the applicable WQBELs. Therefore, the more stringent technology-based effluent limitations are included as final effluent limitations limitations in this Order.

s. **Trichloroethylene.** The CTR includes a trichloroethylene criterion of 2.7 µg/L for the protection of human health and is based on a one-in-a-million cancer risk for waters from which both water and organisms are consumed. Trichloroethylene was not detected in the effluent. However, the maximum concentration of trichloroethylene in the influent was 110 µg/L based on 36 samples collected between 1 April 2005 through 31 March 2008, while the maximum observed upstream receiving water trichloroethylene concentration was 0.05 µg/L (DNQ). Based on the presence of trichloroethylene in the influent in concentrations

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exceeding the CTR criterion, the discharge exhibits reasonable to cause or contribute an exceedance of water quality standards.

No dilution is allowed due to periods of no flow in the receiving water. An AMEL and MDEL for trichloroethylene of 2.7 µg/L and 5.4 µg/L, respectively, were calculated based on the CTR criterion for the protection of human health (see Attachment F, Table F-15 for WQBEL calculations). As discussed in section IV.B.2 and section IV.D.5 of this Fact Sheet, the applicable technology-based limitation for trichloroethylene of 0.5 µg/L as an MDEL is more stringent than the applicable WQBELs. Therefore, the more stringent technology-based effluent limitations are included as final effluent limitations in this Order.

t. **Toxicity.** See Section IV.C.5. of the Fact Sheet regarding whole effluent toxicity.

u. **Vinyl chloride**. The Primary MCL for vinyl chloride is 0.5 µg/L. Vinyl chloride was not detected in the effluent. However, the maximum concentration of vinyl chloride in the influent was 0.61 µg/L based on 36 samples collected between 1 April 2005 through 31 March 2008, while vinyl chloride was not detected in the upstream receiving water. Based on the presence of vinyl chloride in the influent in concentrations exceeding the Primary MCL, the discharge exhibits reasonable to cause or contribute an exceedance of water quality standards.

v. No dilution is allowed due to periods of no flow in the receiving water. In accordance with guidance from DPH, annual average effluent limitations are considered appropriate for constituents with Primary MCLs designed to protect human health over long periods of time. Therefore, the applicable WQBEL for vinyl chloride is an annual average of 0.5 µg/L. As discussed in section IV.B.2 and section IV.D.5 of this Fact Sheet, the applicable technology-based limitation for vinyl chloride of 0.5 µg/L as an MDEL is more stringent than the applicable WQBEL. Therefore, the more stringent technology-based effluent limitations are included as final effluent limitations in this Order.

w. **Zinc.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for zinc. The criteria for zinc are presented in dissolved concentrations. Using the worst-case measured hardness as discussed in section IV.C.2.b of this Fact Sheet, the applicable chronic criterion (maximum 4-day average concentration) is 138 µg/L and the applicable acute criterion (maximum 1-hour average concentration) is 137 µg/L, as dissolved. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The USEPA default conversion factors for zinc in freshwater are 0.986 for the chronic criterion and 0.986 for the acute criterion. Using the worst-case measured hardness as discussed in section IV.C.2.b of this Fact Sheet and the USEPA recommended dissolved-to-total translator, the applicable chronic criterion is 140 µg/L and the applicable acute criterion is 140 µg/L, as total recoverable.

The MEC for total zinc was ~~11~~ 33 µg/L, based on ~~two~~ 57 samples collected ~~in~~ between 4 April 2001 and ~~October~~ 10 ~~2006 and~~ October 2007, while the

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maximum observed upstream receiving water total zinc concentration was 120 µg/L, based on ~~two~~ 33 samples collected ~~in~~ between~~October 2006~~ 4 April 2001 and ~~October 2007~~10 October 2006. ~~Therefore, the discharge does not exhibit reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for total zinc.~~ The MEC for dissolved zinc was ~~41~~10 µg/L, based on ~~two~~ one sample~~s~~ collected o~~i~~n 10 October 2007~~ and February 2008~~, while the maximum observed upstream dissolved zinc~~r~~ concentration was 140 µg/L, based on one sample collected in ~~February 2008~~October 2007. Because dissolved zinc represents a fraction of total zinc, dissolved zinc concentrations are expected to be lower than total concentrations. However, the receiving water dissolved sample (140 µg/L) collected on 10 October 2007 is greater than the sample for total zinc (120 µg/L) taken on the same day. Thus, the receiving water total and dissolved samples collected on 10 October 2007 are questionable and should not be used as part of the reasonable potential analysis. Therefore, the actual maximum receiving water concentration is 116 µg/L for total zinc. Additional dissolved samples are not available. Because both the effluent and receiving water concentrations of total zinc are below the applicable criteria, zinc does not exhibit reasonable potential to cause or contribute to an exceedance of a water quality standard. ~~Although the upstream dissolved zinc concentration is greater than the criterion and dissolved zinc was detected in the effluent, based on the limited data set and due to the fact that total zinc was not detected in the effluent, it is uncertain whether reasonable potential actually exists and therefore effluent limitations for zinc are not being established at this time. Instead of limitations, additional monitoring has been established for total zinc; should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, then this Order may be reopened and modified by adding an appropriate effluent limitation.~~

4. WQBEL Calculations

a. As discussed in section IV.C.3 above, WQBELs for pH were based on Basin Plan objectives and applied directly as effluent limitations. Based on input from DPH, the WQBELs for cis-1,2-dichloroethylene and vinyl chloride are based on the Primary MCL and established directly as annual average effluent limitations. Performance-based mass limitations were established for mercury based on maintaining the mercury loading at the current level until a total maximum daily load (TMDL) can be established and USEPA develops mercury standards that are protective of human health.

b. WQBELs for carbon tetrachloride, chromium VI, dichlorobromomethane, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethylene, selenium, tetrachloroethylene, and trichloroethylene calculated in accordance with section 1.4 of the SIP. The following paragraphs describe the methodology used for calculating effluent limitations for these parameters.

c. **Effluent Limitation Calculations.** In calculating maximum effluent limitations, the effluent concentration allowances were set equal to the criteria/standards/objectives.

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

For the human health, agriculture, or other long-term criterion/objective, a dilution credit can be applied. The ECA is calculated as follows:

$$ECA_{HH} = HH + D(HH - B)$$

where:

ECA_{acute} = effluent concentration allowance for acute (1-hour average) toxicity criterion

$ECA_{chronic}$ = effluent concentration allowance for chronic (4-day average) toxicity criterion

ECA_{HH} = effluent concentration allowance for human health, agriculture, or other long-term criterion/objective

CMC = criteria maximum concentration (1-hour average)

CCC = criteria continuous concentration (4-day average, unless otherwise noted)

HH = human health, agriculture, or other long-term criterion/objective

D = dilution credit

B = maximum receiving water concentration

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

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

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

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

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

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

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WQBELs were calculated for carbon tetrachloride, chromium VI, dichlorobromomethane, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethylene, selenium, tetrachloroethylene, and trichloroethylene as follows in Tables F-7 through F-15, below.

Table F-7. WQBEL Calculations for Carbon Tetrachloride

	Human Health
Criteria (mg/L)	0.25
Dilution Credit	No Dilution
ECA	0.25
AMEL (mg/L) (1)	**0.25**
MDEL/AMEL Multiplier(2)	2.01
MDEL (mg/L)	**0.50**

1 AMEL = ECA per section 1.4.B, Step 6 of SIP
2 Assumes sampling frequency n<=4. Uses MDEL/AMEL multiplier from Table 2 of SIP.

Table F-8. WQBEL Calculations for Chromium VI

	Acute	Chronic
Criteria (µg/L) (1)	16.29	11.43
Dilution Credit	No Dilution	No Dilution
ECA	16.29	11.43
ECA Multiplier	0.77	0.88
LTA	12.5	10.0
AMEL Multiplier (95th%)	(2)	1.1
AMEL (µg/L)	(2)	**11**
MDEL Multiplier (99th%)	(2)	1.3
MDEL (µg/L)	(2)	**13**

1 USEPA Ambient Water Quality Criteria
2 Limitations based on chronic LTA (Chronic LTA < Acute LTA)

Table F-9. WQBEL Calculations for Dichlorobromomethane

	Human Health
Criteria (µg/L)	0.56
Dilution Credit	No Dilution
ECA	0.56
AMEL (µg/L)1	**0.56**
MDEL/AMEL Multiplier2	2.01
MDEL (µg/L)	**1.12**

1 AMEL = ECA per section 1.4.B, Step 6 of SIP
2 Assumes sampling frequency n<=4. Uses MDEL/AMEL multiplier from Table 2 of SIP.

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Table F-10. WQBEL Calculations for 1,1-Dichloroethane

	Human Health
Criteria (mg/L)	3.0
Dilution Credit	No Dilution
ECA	3.0
AMEL (mg/L) (1)	**3.0**
MDEL/AMEL Multiplier(2)	2.01
MDEL (mg/L)	**6.0**

1 AMEL = ECA per section 1.4.B, Step 6 of SIP
2 Assumes sampling frequency n<=4. Uses MDEL/AMEL multiplier from Table 2 of SIP.

Table F-11. WQBEL Calculations for 1,2-Dichloroethane

	Human Health
Criteria (mg/L)	0.38
Dilution Credit	No Dilution
ECA	0.38
AMEL (mg/L) (1)	**0.38**
MDEL/AMEL Multiplier(2)	2.01
MDEL (mg/L)	**0.76**

1 AMEL = ECA per section 1.4.B, Step 6 of SIP
2 Assumes sampling frequency n<=4. Uses MDEL/AMEL multiplier from Table 2 of SIP.

Table F-12. WQBEL Calculations for 1,1-Dichloroethylene

	Human Health
Criteria (mg/L)	0.06
Dilution Credit	No Dilution
ECA	0.06
AMEL (mg/L) (1)	**0.06**
MDEL/AMEL Multiplier(2)	2.01
MDEL (mg/L)	**0.11**

1 AMEL = ECA per section 1.4.B, Step 6 of SIP
2 Assumes sampling frequency n<=4. Uses MDEL/AMEL multiplier from Table 2 of SIP.

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Table F-13. WQBEL Calculations for Selenium

	Acute	Chronic
Criteria (µg/L) [1]	20	5
Dilution Credit	No Dilution	No Dilution
ECA	20	5
ECA Multiplier	0.20	0.37
LTA	4.08	1.86
AMEL Multiplier (95th%)	(2)	1.95
AMEL (µg/L)	(2)	**3.6**
MDEL Multiplier (99th%)	(2)	4.90
MDEL (µg/L)	(2)	**9.1**

1 USEPA Ambient Water Quality Criteria

2 Limitations based on chronic LTA (Chronic LTA < Acute LTA)

Table F-14. WQBEL Calculations for Tetrachloroethylene

	Human Health
Criteria (mg/L)	0.8
Dilution Credit	No Dilution
ECA	0.8
AMEL (mg/L) [1]	**0.8**
MDEL/AMEL Multiplier[2]	2.01
MDEL (mg/L)	**1.6**

1 AMEL = ECA per section 1.4.B, Step 6 of SIP

2 Assumes sampling frequency n<=4. Uses MDEL/AMEL multiplier from Table 2 of SIP.

Table F-15. WQBEL Calculations for Trichloroethylene

	Human Health
Criteria (mg/L)	2.7
Dilution Credit	No Dilution
ECA	2.7
AMEL (mg/L) [1]	**2.7**
MDEL/AMEL Multiplier[2]	2.01
MDEL (mg/L)	**5.4**

1 AMEL = ECA per section 1.4.B, Step 6 of SIP

2 Assumes sampling frequency n<=4. Uses MDEL/AMEL multiplier from Table 2 of SIP.

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Summary of Water Quality-based Effluent Limitations
Discharge Point Nos. 001 and 002

Table F-16. 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

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Priority Pollutants					
Carbon Tetrachloride	µg/L	0.25	0.50	--	--
Chromium VI, Total Recoverable	µg/L	11	13	--	--
Dichlorobromomethane	µg/L	0.56	1.12	--	--
1,1-Dichloroethane	µg/L	3.0	6.0	--	--
1,2-Dichloroethane	µg/L	0.38	0.76	--	--
1,1-Dichloroethylene	µg/L	0.06	0.11	--	--
Mercury, Total Recoverable	lbs	[1]	--	--	--
Selenium, Total Recoverable	µg/L	3.6	9.1	--	--
	lbs/day[2]	0.09[3]	0.22[4]	--	--
	lbs/day[5]	0.004[6]	0.011[7]	--	--
Tetrachloroethylene	µg/L	0.8	1.6	--	--
Trichloroethylene	µg/L	2.7	5.4	--	--
Vinyl Chloride	µg/L	0.5[8]	--	--	--
Non-Conventional Pollutants					
cis-1,2-Dichloroethane	µg/L	6[8]	--	--	--

[1] The total annual mass discharge of total mercury from Discharge Point No. 001 shall not exceed 0.021 pounds. The total annual mass discharge of total mercury from Discharge Point No. 002 shall not exceed 0.0011 pounds. The total combined annual mass discharge of total mercury from Discharge Point Nos. 001 and 002 shall not exceed 0.021 pounds.

[2] Based on the daily average discharge flow of 2.88 MGD.

[3] The ~~total~~ average monthly mass loading from Discharge Point No. 001 shall not exceed 0.09 ~~MGD~~pounds per day. The total combined average monthly mass loading from Discharge Point Nos. 001 and 002 shall not exceed 0.09 ~~MGD~~pounds per day.

[4] The total maximum daily mass loading from Discharge Point No. 001 shall not exceed 0.22 ~~MGD~~pounds per day. The total combined maximum daily mass loading from Discharge Point Nos. 001 and 002 shall not exceed 0.22 ~~MGD~~pounds per day.

[5] Based on the daily average discharge flow of 0.144 MGD.

[6] The ~~total~~ average monthly mass loading from Discharge Point No. 002 shall not exceed 0.004 ~~MGD~~pounds per day. The total combined average monthly mass loading from Discharge Point Nos. 001 and 002 shall not exceed 0.09 ~~MGD~~pounds per day.

[7] The total maximum daily mass loading from Discharge Point No. 002 shall not exceed 0.011 ~~MGD~~pounds per day. The total combined maximum daily mass loading from Discharge Point Nos. 001 and 002 shall not exceed 0.22 ~~MGD~~pounds per day.

[8] Applied as an annual average effluent limitation.

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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 III-8.00) The Basin Plan also states that, "…*effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate*…". 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."* Accordingly, effluent limitations for acute toxicity have been included in this Order as follows:

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

Minimum for any one bioassay-- ----------	70%
Median for any three or more 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 III-8.00) Adequate chronic WET data is not available to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective. Attachment E of this Order requires semiannual chronic WET monitoring for demonstration of compliance with the narrative toxicity objective.

In addition to WET monitoring, Special Provision VI.C.2.a requires the Discharger to submit to the Regional Water Board an Initial Investigative TRE Work Plan for approval by the Executive Officer, to ensure the Discharger has a plan to immediately move forward with the initial tiers of a TRE, in the event effluent toxicity is encountered in the future. The provision also includes a numeric toxicity monitoring trigger and requirements for accelerated monitoring, as well as, requirements for TRE initiation if a pattern of toxicity is demonstrated.

D. Final Effluent Limitations

1. Mass-based Effluent Limitations

Title 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

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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.

Except for selenium, for those pollutant parameters for which effluent limitations are based on water quality objectives and criteria that are concentration-based, mass-based effluent limitations are not included in this Order. For selenium, a bioaccumulative pollutant, mass-based effluent limitations were included in this Order based on the maximum permitted discharge flow of 2.88 MGD for Discharge Point No. 001 and 0.144 MGD for Discharge Point No. 002.

Mass-based effluent limitations for mercury were calculated as described in section IV.C.3.n of this Fact Sheet and were based on the maximum permitted discharge flow of 2.88 MGD for Discharge Point No. 001 and 0.144 MGD for Discharge Point No. 002.

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.

Water quality objectives in the Basin Plan for pH are applied directly as instantaneous effluent limitations. Final effluent limitations for dichlorobromomethane, 1,1-dichloroethane, cis-1,2-dichloroethylene, tetrachloroethylene, trichloroethylene, and vinyl chloride are technology-based effluent limitations which have been established as MDELs based on the MLs in the SIP and/or current, commonly achieved reporting levels. These effluent limitations are more stringent than the applicable water quality-based AMELs and MDELs. Therefore, there are no AMELs for these constituents in this Order. For the remaining constituents, AMELs and MDELs have been established.

3. Satisfaction of Anti-Backsliding Requirements

Some effluent limitations in this Order are less stringent than those in Order No. R5-2003-0052-A01. As discussed below this relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

Order No. R5-2003-0052-A01 included effluent limitations for pesticides because data for some of the pesticides were not of sufficient quality (i.e., the MLs were higher than those specified in the SIP Appendix 4, Table 2d). The Discharger monitored for pesticides on 4 October 2006 and again on 10 October 2007. None of the pesticides were detected in the effluent using more sensitive analytical methods

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with MLs lower than those specified in the SIP. Therefore, effluent limitations for pesticides are not retained in this Order. Based on this new information, this Order does not include effluent limitations for pesticides. The monitoring data submitted by the Discharger is considered new information by the Regional Water Board.

This Order includes revised effluent limitations for chromium VI and selenium based on monitoring data conducted over the term of Order No. R5-2003-0052-A01 and calculated according to SIP procedures. Using updated monitoring data to determine the CV for the LTA calculation results in a less stringent AMEL than the AMEL established in Order No. R5-2003-0052-A01, but a more stringent MDEL. Because the new effluent limitations for chromium VI and selenium are protective of water quality standards, and because the monitoring data submitted by the Facility is considered new information by the Regional Water Board, the revised effluent limitations for chromium VI and selenium are consistent with antibacksliding requirements.

Order No. R5-2002-0052 contained mass-based effluent limitations for VOCs and chromium VI. This Order does not carry forth mass-based effluent limitations for VOCs or chromium VI, consistent with federal regulations.

The removal of the effluent limitations for pesticides, the removal of mass-based effluent limitations for VOCs and chromium VI, and the relaxation of the AMEL for chromium VI and selenium is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16. Any impact on existing water quality will be insignificant.

4. Satisfaction of Antidegradation Policy

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

5. Final Effluent Limitations

Final effluent limitations were determined by comparing the technology-based effluent limitations and the WQBELs and applying the most stringent limitations for each individual parameter. Effluent limitations for chromium VI, pH, mercury, and selenium are based on WQBELs, as no technology-based effluent limitations are applicable to these parameters.

For those VOC CoCs with reasonable potential, WQBELs were calculated in accordance with the procedures in the SIP. The WQBELs for dichlorobromomethane, 1,1-dichloroethane, cis-1,2-dichloroethylene, tetrachloroethylene, trichloroethylene, and vinyl chloride are less stringent than the technology-based effluent limitations. Therefore, the applicable technology-based effluent limitations for these constituents have been established as final effluent limitations in this Order. The WQBELs for carbon tetrachloride and 1,1-dichloroethylene are more stringent than the applicable technology-based effluent

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limitations. Therefore, the applicable WQBELs for these constituents have been established as final effluent limitations in this Order. The applicable technology-based limitation for 1,2-dichloroethane of 0.5 µg/L as an MDEL is more stringent than the applicable water quality-based MDEL of 0.76 µg/L, but may not be protective of the water quality-based AMEL of 0.38 µg/L. Therefore, the more stringent technology-based effluent MDEL and the water quality-based AMEL are included as final effluent limitations in this Order.

Summary of Final Effluent Limitations
Discharge Point Nos. 001 and 002

Table F-17. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations				Basis[1]
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Flow	MGD	--	[2]	--	--	DC
Conventional Pollutants						
pH	standard units	--	--	6.5	8.5	BP
Priority Pollutants						
Carbon Tetrachloride	µg/L	0.25	0.50	--	--	CTR
Chromium VI, Total Recoverable	µg/L	11	13	--	--	CTR
Dichlorobromomethane	µg/L	--	0.5	--	--	RL
1,1-Dichloroethane	µg/L	--	0.5	--	--	RL
1,2-Dichloroethane	µg/L	0.38	0.5	--	--	CTR, RL
1,1-Dichloroethylene	µg/L	0.06	0.11	--	--	CTR
Mercury, Total Recoverable	µg/L	[3]	--	--	--	PB
Selenium, Total Recoverable	µg/L	3.6	9.1	--	--	CTR
	lbs/day[4]	0.09[5]	0.22[6]	--	--	
	lbs/day[7]	0.004[8]	0.011[9]	--	--	
Tetrachloroethylene	µg/L	--	0.5	--	--	RL
Trichloroethylene	µg/L	--	0.5	--	--	RL
Vinyl Chloride	µg/L	--	0.5	--	--	RL
Non-Conventional Pollutants						
Acute Toxicity	% Survival	[10]	--	--	--	BP
cis-1,2-Dichloroethylene	µg/L	--	0.5	--	--	RL

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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.
CTR – Based on water quality criteria contained in the California Toxics Rule and applied as specified in the SIP.
RL – Based on the technical capability of the groundwater treatment system to dependably remove the groundwater contaminants to concentrations that are non-detectable by current analytical technology.
PB – Performance-based effluent limitation based on maintaining the mercury loading at the current level until a TMDL can be established and USEPA develops mercury standards that are protective of human health.

[2] The daily average discharge flow from Discharge Point No. 001 shall not exceed 2.88 MGD. The total combined daily average discharge flow from Discharge Point Nos. 001 and 002 shall not exceed 2.88 MGD. The daily average discharge flow from Discharge Point No. 002 shall not exceed 0.144 MGD.

[3] The total annual mass discharge of total mercury from Discharge Point No. 001 shall not exceed 0.021 pounds. The total annual mass discharge of total mercury from Discharge Point No. 002 shall not exceed 0.0011 pounds. The total combined annual mass discharge of total mercury from Discharge Point Nos. 001 and 002 shall not exceed 0.021 pounds.

[4] Based on the daily average discharge flow of 2.88 MGD.

[5] The t~~otal~~ average monthly mass loading from Discharge Point No. 001 shall not exceed 0.09 ~~MGD~~pounds per day. The total combined average monthly mass loading from Discharge Point Nos. 001 and 002 shall not exceed 0.09 ~~MGD~~pounds per day.

[6] The total maximum daily mass loading from Discharge Point No. 001 shall not exceed 0.22 ~~MGD~~pounds per day. The total combined maximum daily mass loading from Discharge Point Nos. 001 and 002 shall not exceed 0.22 ~~MGD~~pounds per day.

[7] Based on the daily average discharge flow of 0.144 MGD.

[8] The ~~total~~ average monthly mass loading from Discharge Point No. 002 shall not exceed 0.004 ~~MGD~~pounds per day. The total combined average monthly mass loading from Discharge Point Nos. 001 and 002 shall not exceed 0.09 ~~MGD~~pounds per day.

[9] The total maximum daily mass loading from Discharge Point No. 002 shall not exceed 0.011 ~~MGD~~pounds per day. The total combined maximum daily mass loading from Discharge Point Nos. 001 and 002 shall not exceed 0.22 ~~MGD~~pounds per day.

[10] 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 or more consecutive bioassays ---- 90%

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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 Regional 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, chemical constituents, color, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, sediment, settleable material, suspended material, taste and odors, temperature, toxicity, and turbidity.

2. **pH.** The Basin Plan includes water quality objective that *"[T]he pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses*" This Order includes receiving water limitations for both pH range and pH change.

   Additionally, the Regional Water Board recently adopted Resolution No. R5-2007-0136 to adopt a Basin Plan amendment to remove the objective for pH change. The Basin Plan amendment was approved by the State Water Board and is awaiting approval from the Office of Administrative Law and USEPA. As described in the Final Staff Report for the amendment, the pH change water quality objective is not supported by current science regarding the effects of pH on beneficial uses, nor are they consistent with current USEPA criteria for pH in ambient waters. Creeks and streams, particularly under low flow conditions such as Magpie Creek and Don Julio Creek, may be subject to substantial, natural diurnal fluctuations in pH, often greater than 0.5 pH units. Scientific literature, supported by pH criteria for the protection of aquatic life, provides evidence that, when pH is maintained within the range of 6.5 to 8.5, rapid changes in pH would not cause adverse impacts to freshwater aquatic life.

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

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3. **Temperature.** Magpie Creek, Beaver Pond, and Don Julio Creek have the beneficial uses of both COLD and WARM. The Basin Plan includes the objective that *"[a]t no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5ºF above natural receiving water temperature*." This Order includes receiving water limitations based on this objective.

   The Basin Plan allows an appropriate averaging period for temperature change in the receiving stream. Because Magpie Creek and Don Julio Creek are ephemeral streams, the temperature of the upstream receiving waters is highly variable. Evaluation of upstream and downstream monitoring data indicates that the effluent decreased the temperature of the receiving water by 2.49°F for April through December 2005, by 0.17°F for January through December 2006, and increased the temperature of the receiving water by 0.70°F for January 2007 through December 2007. Because the influence of the discharge from the Facility tends to even the temperatures within the receiving waters, an averaging period is appropriate and an annual averaging period for determining compliance with the 5°F receiving water temperature limitations is included in this Order.

B. Groundwater- Not Applicable

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Section 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorizes the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (MRP), 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 MRP for this facility.

A. Influent Monitoring

1. Influent monitoring is required to collect data on the characteristics of the contaminated groundwater and to assess the performance of the GWTS. The monitoring frequency and sample type from Order No. R5-2003-0052-A01 for 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethylene, cis-1,2-dichloroethylene, tetrachloroethylene, trichloroethylene, and vinyl chloride are retained in this Order.

2. Order No. R5-2003-0052-A01 contained effluent limitations and influent and effluent monitoring requirements for 1,1,1-trichloroethane and pesticides. Monitoring data from the term of Order No. R5-2003-0052-A01 indicates that 1,1,1-trichloroethane and pesticides are not present in the influent or effluent. Therefore, effluent limitations and influent and effluent monitoring requirements have not been retained in this Order.

3. Monitoring data collected over the term of Order No. R5-2003-0052-A01 for carbon tetrachloride and dichlorobromomethane indicate reasonable potential to exceed

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water quality criteria for these pollutants. Therefore, annual influent monitoring for carbon tetrachloride and dichlorobromomethane has been established in this Order.

4. Order No. R5-2003-0052-A01 contained influent monitoring requirements for acetone, methyl ethyl ketone, and methyl isobutyl ketone based on the removal of effluent limitations contained in Order No. 96-067. Methyl ethyl ketone concentrations reported for influent monitoring data collected from 1 April 2003 through 31 March 2008 were either measured below RLs or not detected. Neither acetone nor methyl isobutyl ketone was detected in influent during this same period. Considering ~~the~~ this new information regarding influent and effluent quality~~,~~ and the use of air stripping for VOC removal~~, and the use of GAC units for effluent polishing~~, the influent monitoring requirements for acetone, methyl ethyl ketone, and methyl isobutyl ketone have not been retained in this Order.

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. The monitoring frequency and sample type from Order No. R5-2003-0052-A01 for flow, ~~pH, electrical conductivity, temperature, dissolved oxygen, chromium VI, selenium,~~ hardness, ~~total dissolved solids,~~ total suspended solids, turbidity, ~~mercury,~~ nitrate, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethylene, cis-1,2-dichloroethylene, tetrachloroethylene, trichloroethylene, and vinyl chloride are retained in this Order.

2. Because the Discharger discharges to Magpie Creek and Don Julio Creek, tributaries of the Sacramento River via Roblas Creek the NEMDC, and eventually the Sacramento – San Joaquin Delta, the Regional Water Board is concerned over the salt contribution to Delta waters. Therefore, monitoring for electrical conductivity and total dissolved solids, indicators of salinity, is required by this Order. However, monitoring data collected over the term of Order No. R5-2003-0052-A01 for electrical conductivity and total dissolved solids do not indicate reasonable potential to exceed water quality criteria. Thus, the monitoring frequency has been decreased from weekly to monthly for electrical conductivity and from quarterly to annually for total dissolved solids in order to continue to characterize salinity in the effluent.

3. Receiving water limitations have been included in this Order for dissolved oxygen. Receiving water monitoring conducted over the term of Order No. R5-2003-0052-A01 does not indicate that the discharge has affected the dissolved oxygen concentration of the receiving waters. Therefore, the monitoring frequency for dissolved oxygen has been reduced from weekly to monthly in order to continue to evaluate the effects of the discharge on the receiving waters.

4. Although monitoring data during the term of Order No. R5-2003-0052-A01 indicates that selenium in the effluent does not exhibit reasonable potential to exceed water

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quality criteria, this Order retains effluent limitations for selenium due to continued detections of selenium in the effluent, the lack of monitoring data that demonstrates that selenium is also not present in the influent, the fact that selenium is a bioaccumulative pollutant, and to ensure that the Discharger continues to treat the contaminated groundwater for selenium. Order No. R5-2003-0052-A01 required monthly monitoring for selenium. Because effluent concentrations of selenium have been below the applicable water quality criteria, the Regional Water Board finds that relaxed effluent monitoring is appropriate. However, annual monitoring is unlikely to provide sufficient data to determine compliance with effluent limitations or evaluate the performance of the GWTS at removing selenium from the influent. Therefore, monthly monitoring has been reduced to quarterly in this Order. Because variability is not expected in the effluent from a groundwater cleanup, this Order requires grab samples for selenium.

~~2.~~5. Monitoring data collected over the term of Order No. R5-2003-0052-A01 for carbon tetrachloride and dichlorobromomethane indicate reasonable potential to exceed water quality criteria for these pollutants and effluent limitations have been established in this Order. Therefore, this Order requires monthly effluent monitoring for carbon tetrachloride and dichlorobromomethane.

~~3.~~6. Order No. R5-2003-0052-A01 contained effluent and receiving water monitoring requirements for 1,4-dioxane. Because an appropriate criterion is not available for 1,4-dioxane, reasonable potential cannot be determined at the time of this permit issuance. Because 1,4-dioxane was detected in the effluent 43 times in 44 sampling events, this Order retains monitoring requirements for 1,4-dioxane to continue to evaluate its impact on the beneficial uses of the receiving waters. However, because reasonable potential has not been determined for 1,4-dioxane, the monitoring frequency has been reduced from monthly to annually.

~~4.~~7. Order No. R5-2003-0052-A01 contained effluent monitoring requirements for Basin Plan metals, including arsenic, barium, copper, cyanide, iron, manganese, silver, and zinc, all in the dissolved form; total cadmium, copper, lead, and zinc; and pesticides. ~~Except for copper and zinc, m~~Monitoring data from 1 April 2003 through 31 March 2008 indicates there is no reasonable potential for these constituents to exceed water quality criteria. As a result, the effluent monitoring requirements for these constituents are discontinued in this Order.

~~5.As discussed in section IV.C.3 of this Fact Sheet, it is uncertain whether reasonable potential for copper and zinc actually exists and therefore effluent limitations for copper and zinc are not being established at this time. To collect the data necessary to determine reasonable potential, this Order establishes quarterly effluent monitoring for total recoverable and dissolved copper and zinc.~~

~~6.~~Order No. R5-2003-0052-A01 required annual effluent monitoring for total chromium and chromium VI. The discharge from the Facility exhibited reasonable potential to exceed water quality objectives for chromium VI, which is the most toxic and common form of chromium in surface water, but not for total chromium. Because total chromium does not exhibit reasonable potential to exceed water quality

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objectives and to eliminate redundancy, this Order discontinues the effluent monitoring requirements for total chromium. For chromium VI, this Order retains monthly monitoring of the effluent.

8. Because variability is not expected in the effluent from a groundwater cleanup, this Order requires grab samples for chromium VI.

~~7.~~9. Order No. R5-2003-0052-A01 contained effluent monitoring requirements for acetone, methyl ethyl ketone and methyl isobutyl ketone based on the removal of effluent limitations contained in Order No. 96-067. Methyl ethyl ketone concentrations reported for effluent monitoring data collected from 1 April 2003 through 31 March 2008 were either measured below RLs or not detected. Neither acetone nor methyl isobutyl ketone was detected in effluent during this same period. Considering this new information regarding influent and effluent quality~~,~~ and the use of air stripping for VOC removal~~, and the use of GAC units for effluent polishing~~, the effluent monitoring requirements for acetone, methyl ethyl ketone, and methyl isobutyl ketone have been removed from this Order.

10. The Sacramento River from Knights Landing to the Delta and the Sacramento – San Joaquin Delta downstream of the discharge are on the 303(d) list for mercury. The Regional Water Board is proposing to adopt a TMDL for total mercury and/or methylmercury~~ in 2008~~. Monthly effluent monitoring data collected during the term of Order No. R5-2003-0052-A01 indicates multiple detections of total mercury in the effluent, but not at concentrations that exceed water quality criteria. Therefore, this Order reduces the monitoring frequency from ~~establishes~~ monthly to semi-annually ~~monitoring~~ for total mercury~~ and methylmercury in order to collect data on the presence of mercury in the effluent~~.

The Discharger submitted a letter to the Regional Water Board on 1 November 2004 stating that the Discharger "*does not believe that [methylmercury] sampling is necessary because there is no reasonable basis for suspecting the presence of methylmercury in the subject discharges of the former McClellan and Mather Air Force Bases.*" Furthermore, the letter explains that methylation occurs primarily in aquatic environments with low pH, anaerobic conditions, with high concentrations of organic matter and suitable microorganisms, conditions that do not occur at any stage of the GWTS. However, information on the presence of methylmercury in the groundwater is unavailable and, based on multiple detections of mercury in the effluent there is the potential for methylation (i.e., the transformation of mercury to methylmercury) to occur in the receiving water. Due to the impairment of surface waters downstream of the discharge, and the pending TMDL, Regional Water Board staff finds that monitoring for methylmercury is necessary. This Order requires semi-annual monitoring for methylmercury in the discharge.

11. Weekly effluent and receiving water monitoring data for pH and temperature submitted over the term of Order No. 2003-0052-A01 provided for a thorough data set to sufficiently characterize the effluent and its effect on the receiving stream. Based on this information, the Regional Water Board concluded that the effluent

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temperature does not have the reasonable potential to cause temperature increases in the receiving water greater than water quality objectives on an annual basis. Although the pH of the effluent may cause pH changes in the receiving water greater than water quality objective for pH change, the pH of the effluent tends to bring the receiving waters into compliance with the water quality objective for a pH range of 6.5 to 8.5. Because monthly monitoring will provide sufficient data to further evaluate the effects of the effluent on the receiving stream and determine compliance with receiving water limitations, weekly effluent monitoring requirements have been reduced to monthly.

~~9.~~12. 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. ~~Periodic priority pollutant monitoring is also necessary to provide data that would account for changes in the service population.~~ This Order includes monitoring for priority pollutants ~~quarterly~~ once during the third year of the permit term to provide sufficient monitoring data to conduct a meaningful reasonable potential analysis for the next permit renewal.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Semi-annual 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity, consistent with Order No. R5-2003-0052-A01.

2. **Chronic Toxicity.** Order No. R5-2003-0052-A01 required chronic WET testing once within the first 12 months after adoption of the Order. This Order requires semi-annual chronic WET testing in order to demonstrate compliance with the Basin Plan's narrative toxicity objective.

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. Monitoring frequencies and sample types established in Order No. R5-2003-0052-A01 for flow, ~~pH, temperature,~~ hardness, turbidity, ~~electrical conductivity, dissolved oxygen,~~ nitrate, and ~~total dissolved solids,~~ total suspended solids ~~, chromium VI, mercury, selenium, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethylene, cis-1,2-dichloroethylene, tetrachloroethylene, trichloroethylene, and vinyl chloride~~ are retained in this Order.

b. Upstream receiving water monitoring for chromium VI, mercury, selenium, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethylene, cis-1,2-dichloroethylene, tetrachloroethylene, trichloroethylene, and vinyl chloride is necessary to provide data to conduct a reasonable potential analysis for the next permit renewal. Monitoring frequencies and sample types have been retained

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from Order No. R5-2003-0052-A01. Downstream monitoring requirements have not been retained.

c. Because the Discharger discharges to Magpie Creek and Don Julio Creek, tributaries of the Sacramento River via Roblas Creek the NEMDC, and eventually the Sacramento – San Joaquin Delta, the Regional Water Board is concerned over the salt contribution to Delta waters. Therefore, receiving water monitoring for electrical conductivity and total dissolved solids, indicators of salinity, is required by this Order in order to determine the effects of the discharge on the receiving water. Monitoring data collected over the term of Order No. R5-2003-0052-A01 for electrical conductivity and total dissolved solids do not indicate reasonable potential to exceed water quality criteria. Thus, the monitoring frequency has been decreased from weekly to monthly for electrical conductivity and from quarterly to annually for total dissolved solids in order to continue to characterize salinity in the receiving water.

d. Receiving water limitations have been included in this Order for dissolved oxygen. Receiving water monitoring conducted over the term of Order No. R5-2003-0052-A01 does not indicate that the discharge has affected the dissolved oxygen concentration of the receiving waters. Therefore, the monitoring frequency for dissolved oxygen has been reduced from weekly to monthly in order to continue to evaluate the effects of the discharge on the receiving waters.

e. Order No. R5-2003-0052-A01 contained receiving water monitoring requirements for Basin Plan metals, including arsenic, barium, copper, cyanide, iron, manganese, silver, and zinc, all in the dissolved form; total cadmium, copper, lead, and zinc; and pesticides. ~~Except for copper and zinc, m~~Monitoring data from 1 April 2003 through 31 -March 2008 indicates there is no reasonable potential for these constituents to exceed water quality criteria. As a result, the receiving water monitoring requirements for these constituents are discontinued in this Order.

~~c.As discussed in section IV.C.3 of this Fact Sheet, it is uncertain whether reasonable potential for copper and zinc actually exists and therefore effluent limitations for copper and zinc are not being established at this time. To collect the data necessary to determine reasonable potential, this Order establishes quarterly receiving water monitoring for total recoverable and dissolved copper and zinc.~~

~~d.~~f. Order No. R5-2003-0052-A01 required annual receiving water monitoring for total chromium and chromium VI. The discharge from the Facility exhibited reasonable potential to exceed water quality objectives for chromium VI, which is the most toxic and common form of chromium in surface water, but not for total chromium. Because total chromium does not exhibit reasonable potential to exceed water quality objectives and to eliminate redundancy, this Order discontinues the receiving water monitoring requirements for total chromium.

~~e.~~g. In August 2005, the Discharger modified their operating procedures to discharge into Beaver Pond through Discharge Point No. 002 only when the

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water level in the pond is below 2 feet for 2 consecutive weeks. Therefore, this Order requires the Discharger to measure the water level weekly.

h. Weekly effluent and receiving water monitoring data for pH and temperature submitted over the term of Order No. 2003-0052-A01 provided for a thorough data set to sufficiently characterize the effluent and its effect on the receiving stream. Based on this information, the Regional Water Board concluded that the effluent temperature does not have the reasonable potential to cause temperature increases in the receiving water greater than water quality objectives on an annual basis. Although the pH of the effluent may cause pH changes in the receiving water greater than water quality objective for pH change, the pH of the effluent tends to bring the receiving waters into compliance with the water quality objective for a pH range of 6.5 to 8.5. Because monthly monitoring will provide sufficient data to further evaluate the effects of the effluent on the receiving stream and determine compliance with receiving water limitations, weekly receiving water monitoring requirements have been reduced from weekly to monthly.

~~f.~~i. ~~Quarterly m~~Monitoring during the third year of the permit term for priority pollutants is required to collect the necessary data to determine reasonable potential as required in section 1.2 of the SIP. The hardness (as $CaCO_3$) of the upstream receiving water shall also be monitoring concurrently with the priority pollutants as well as pH to ensure the water quality criteria/objectives are correctly adjusted for the receiving water when determining reasonable potential as specified in section 1.3 of the SIP.

2. Groundwater – Not Applicable

E. Other Monitoring Requirements – Not Applicable

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions

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

Section 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. Section 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with section 123.25, this Order omits federal conditions that address enforcement authority specified in sections 122.41(j)(5) and (k)(2) because the enforcement authority under

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the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. Reopener Provisions

a. **Mercury.** This provision allows the Regional Water Board to reopen this Order in the event mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted. In addition, this Order may be reopened if the Regional Water Board determines that a mercury offset program is feasible for dischargers subject to NPDES permits.

b. **Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through a Toxicity Reduction Evaluation (TRE). This Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if a numeric chronic toxicity water quality objective is adopted by the State Water Board, this Order may be reopened to include a numeric chronic toxicity limitation based on that objective.

c. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant inorganic constituents. 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.

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 III-8.00.) Adequate WET data is not available to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective. Attachment E of this Order requires q~~Q~~uarterly chronic WET monitoring for demonstration of compliance with the narrative toxicity objective.

In addition to WET monitoring, this provision requires the Discharger to submit to the Regional Water Board an Initial Investigative TRE Work Plan for approval by the Executive Officer, to ensure the Discharger has a plan to immediately move forward with the initial tiers of a TRE, in the event effluent toxicity is encountered in the future. The provision also includes a numeric toxicity monitoring trigger and requirements for accelerated monitoring, as well as, requirements for TRE initiation if a pattern of toxicity is demonstrated.

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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 a pattern of 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 every 2 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 a pattern of effluent toxicity (i.e. toxicity present exceeding the monitoring trigger more than 20 percent of the time), the Executive Officer may require that the Discharger initiate a TRE.

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

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

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

- Generalized Methodology for Conducting Industrial TREs, EPA/600/2-88/070, April 1989.

- *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures,* Second Edition, EPA 600/6-91/005F, February 1991.

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

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- *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.

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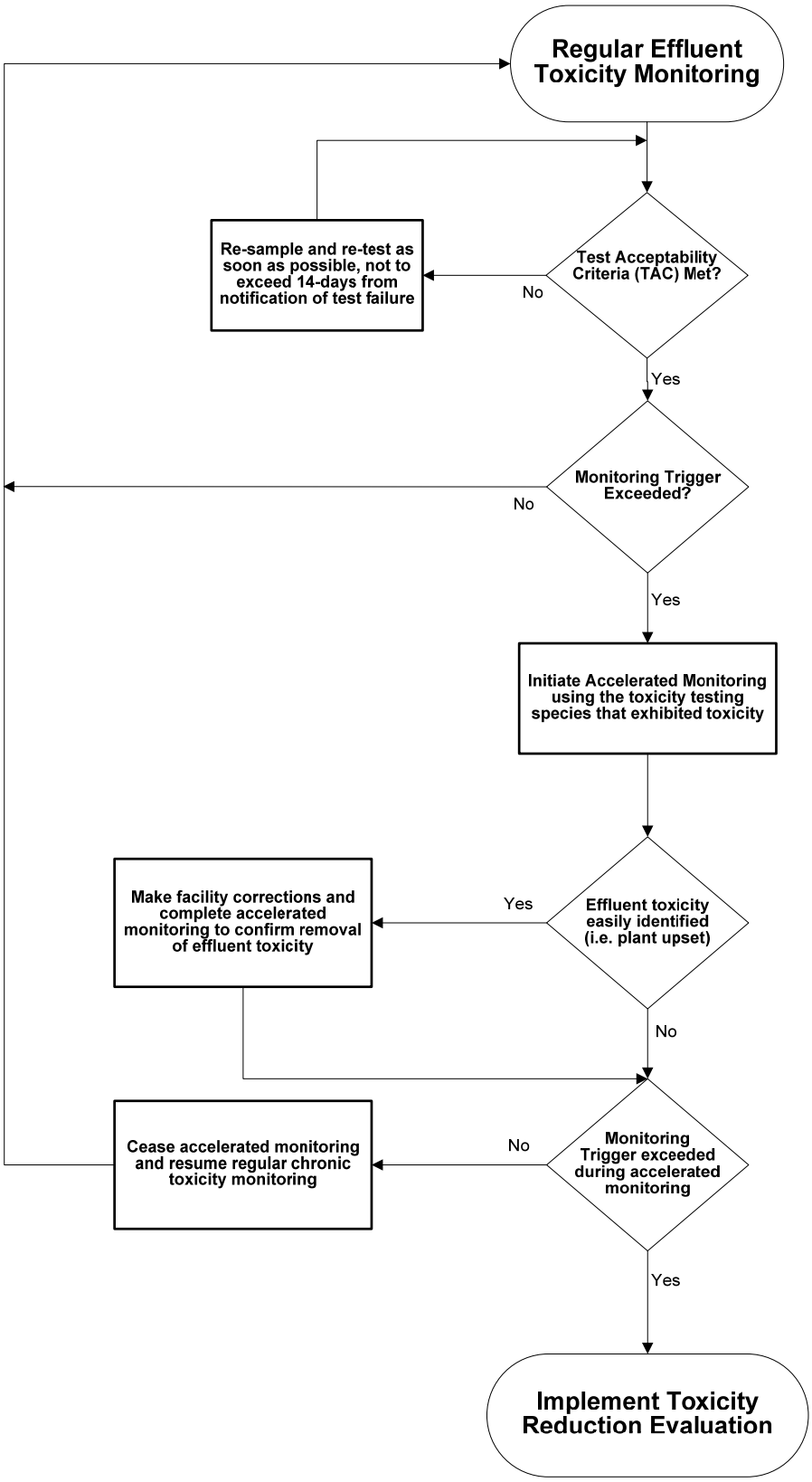
Figure F-1
WET Accelerated Monitoring Flow Chart



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~~b. **Receiving Water pH and Temperature Objective Investigation.** Order No. R5-2005-0052 prohibited the discharge from causing a change in ambient temperature of greater than 3°C. From the period of April 2005 through March 2008, the Discharger reported 20 instances of upstream and downstream receiving water temperature differences greater than 3°C.~~

~~Order No. R5-2005-0052 also prohibited the discharge from causing the normal ambient pH to change by more than 0.5. From 1 April 2005 through 31 March 2008 the Discharger reported 73 instances where upstream and downstream pH difference was greater than 0.5 units. The effluent pH during this period varied from 6.68 to 8.5.~~

~~Due to the frequency of exceedances of receiving water limitations for pH and temperature, this Order will require the Discharger to perform a study to evaluate the cause for these exceedances and propose a plan, including a schedule, for ensuring water quality objectives will not be violated in the future.~~

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

   a. **Salinity Evaluation and Minimization Plan.** An Evaluation and Minimization Plan for salinity is required in this Order to ensure adequate measures are developed and implemented by the Discharger to reduce the discharge of salinity to the receiving waters.

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

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

6. **Other Special Provisions**

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

7. **Compliance Schedules – Not Applicable**

VIII. PUBLIC PARTICIPATION

The California Regional Water Quality Control Board, Central Valley Region (Regional Water Board) is considering the issuance of waste discharge requirements (WDRs) that will serve as a National Pollutant Discharge Elimination System (NPDES) permit for the Former McClellan Air Force Base GWTS. As a step in the WDR adoption process, the Regional Water Board staff has developed tentative WDRs. The Regional Water Board encourages public participation in the WDR adoption process.

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A. Notification of Interested Parties

The Regional 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 following:

- The Notice of Public Hearing was posted by the Discharger at the facility, mailed to known interested parties, and posted on the Regional Board's web site, and
- Notice of the Tentative NPDES Permit was mailed to known interested parties and posted on the Regional Board's we site.

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 Regional Water Board at the address above on the cover page of this Order.

To be fully responded to by staff and considered by the Regional Water Board, written comments should be received at the Regional Water Board offices by 5:00 p.m. on 17 September 2008

C. Public Hearing

The Regional 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: 23/24 October 2008
Time: 8:30 am
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 Regional 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 http://www.waterboards.ca.gov/rwqcb5/ 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 Resources Control Board to review the decision of the Regional Water Board regarding the final WDRs. The petition must

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be submitted within 30 days of the Regional Water Board's action 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 (RWD), 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 Regional 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 Regional 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 Ken Landau at 916-464-4726.

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ATTACHMENT G - SUMMARY OF REASONABLE POTENTIAL ANALYSIS

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Arsenic, Dissolved	µg/L	4.3	--	10	340	150	--	--	--	10	N
Barium, Dissolved	µg/L	64	51	1,000	--	--	--	--	--	1,000	N
Cadmium, Total Recoverable	µg/L	ND	0.31	2.56	3.58	2.56	--	--	--	5	N
Carbon Tetrachloride	µg/L	ND	--	0.25	--	--	0.25	4.4	--	0.5	Y[1]
Chromium VI, Total Recoverable	µg/L	11	1	11.43	16.29	11.43	--	--	--	50	Y[1]
Chromium, Total Recoverable	µg/L	9.9	4.3	50	--	--	--	--	--	50	N
Copper, Total Recoverable	µg/L	ND	~~12~~9.5	10.90	16.62	10.90	1,300	--	--	1,000	N
Copper, Dissolved	µg/L	~~--2.1~~	~~14~~--	10.47	15.96	10.47	--	--	--	--	~~Y~~N
1,3-Dichlorobenzene	µg/L	0.5	ND	400	--	--	400	2,600	--	--	N
1,4-Dichlorobenzene	µg/L	0.5	ND	5	--	--	400	2,600	--	5	N
Dichlorobromomethane	µg/L	ND	--	0.56	--	--	0.56	46	--	80	Y[1]
1,1-Dichloroethane	µg/L	ND	--	5	--	--	--	--	--	5	Y[1]
1,2-Dichloroethane	µg/L	ND	--	0.38	--	--	0.38	99		0.5	Y[1]
1,1-Dichloroethylene	µg/L	ND	--	0.057	--	--	0.057	3.2	--	6	Y[1]
cis-1,2-Dichloroethylene	µg/L	ND	--	6	--	--	--	--	--	6	Y[1]
1,2-Trans-Dichloroethylene	µg/L	0.25	ND	10	--	--	700	140,000	--	10	N
1,4-Dioxane	µg/L	3.9	ND	--	--	--	--	--	--	--	N
Electrical Conductivity @ 25°C	µmhos/cm	400	510	700[2]	--	--	--	--	--	--	N
Lead, Total Recoverable	µg/L	ND	--	1.25	52	1.25	--	--		15	N
Manganese, Dissolved	µg/L	ND	15	--	--	--	--	--	--	--	N
Mercury, Total Recoverable	µg/L	0.0024	0.031	0.050	--	--	0.050	0.051	--	2	N
Methyl Chloride	µg/L	1.9	ND	--	--	--	--	--	--	--	N
Methylene Chloride	µg/L	0.4	ND	4.7	--	--	4.7	1,600	--	5	N
Nickel, Total Recoverable	µg/L	2.4	4.3	61	--	61	610	4,600	--	100	N
Nickel, Dissolved	µg/L	0.28	4.3	61	547	61	--	--	--	--	N
Nitrate Nitrogen, Total (as N)	mg/L	6.8	ND	10	--	--	--	--	--	10	N
Selenium, Total Recoverable	µg/L	2.7	0.14	5	20	5	--	--	--	5	Y[3]
Tetrachloroethylene	µg/L	0.47	--	0.8	--	--	0.8	8.85	--	5	Y[1]
Total Dissolved Solids	mg/L	310	--	450[2]	--	--	--	--	--	5	N
1,1,1-Trichloroethane	µg/L	ND	--	200	--	--	--	--	--	200	Y[1]
1,1,2-Trichloroethane	µg/L	ND	--	6	--	--	--	42	--	5	Y
Trichloroethylene	µg/L	ND	--	2.7	--	--	2.7	81	--	5	Y[1]
Vinyl Chloride	µg/L	ND	--	0.5	--	--	2	525	--	0.5	Y[1]
Zinc, Total Recoverable	µg/L	~~11~~33	116~~120~~	140	140	140	--	--	--	5,000	N
Zinc, Dissolved	µg/L	~~41~~10	~~140~~--	137	137	138	--	--	--	--	~~Y~~N

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

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)
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] Presence in influent at levels greater than criteria triggers reasonable potential.
[2] Water Quality for Agriculture (Ayers & Westcot).
[3] See section IV.C.3.q of the Fact Sheet (Attachment F).

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