

**San Francisco Bay Regional Water Quality Control Board**

**TENTATIVE ORDER No. R2-2015-00XX**  
**NPDES No. CA0005550**

The following discharger is subject to waste discharge requirements (WDRs) set forth in this Order.

**Table 1. Discharger Information**

<b>Discharger</b>	Valero Refining Company-California
<b>Facility Name</b>	Valero Benicia Refinery
<b>Facility Address</b>	3400 East Second Street Benicia, CA 94510 Solano County
<b>CIWQS Place Number</b>	223950

**Table 2. Discharge Locations**

<b>Discharge Point No.</b>	<b>Effluent Description</b>	<b>Discharge Point Latitude (North)</b>	<b>Discharge Point Longitude (West)</b>	<b>Receiving Water</b>
001	Treated refinery wastewater and stormwater	38.05500 <sup>[1]</sup>	-122.11980 <sup>[1]</sup>	Suisun Bay
002	Stormwater from 1.8-acre unpaved equipment storage area along western boundary of wastewater treatment plant (plant), discharged at northwest corner of plant area via ditch and several pipes.	38.06472	-122.12694	Sulphur Springs Creek
003	Stormwater from 18.6-acre unpaved area of refinery and Lower Level Tank Farm, discharged at north end of Avenue A via culvert.	38.08028	-122.13667	Sulphur Springs Creek
004	Stormwater from 0.5-acre gravel area between 1st Street and railway on south side of 1st Street, discharged west of Gate 4 via eastern end of Beaver Creek, culvert, Buffalo Wallow, and 72-inch culvert.	38.06639	-122.13278	Sulphur Springs Creek (via Beaver Creek)
005	Stormwater from 68.9-acre area (of which less than one acre is impervious) west of processing area, discharged west of Gate 4 on south side of processing area via spillway to western end of Beaver Creek, culvert, Buffalo Wallow, and 72-inch culvert.	38.06611	-122.13472	Sulphur Springs Creek (via Beaver Creek)

Discharge Point No.	Effluent Description	Discharge Point Latitude (North)	Discharge Point Longitude (West)	Receiving Water
006	Stormwater from 3.5-acre area beneath refinery crude pipeline, perimeter road on north side of crude tank field, 32-acre Crude Oil Storage Area Tank Farm, and small amounts of groundwater seepage and condensate from steam traps on pipeline, discharged on south side of Park Road via ditch.	38.06389	-122.13250	Sulphur Springs Creek
007	Stormwater from 0.7-acre gravel and paved area (of which 0.4 acres is impervious) near Gate 4, discharged east of Gate 4 via Buffalo Wallow and 72-inch culvert.	38.06722	-122.13167	Sulphur Springs Creek (via Buffalo Wallow)
008	Stormwater from 0.9-acre gravel area along railway and refinery fence line, discharged east of Gate 4 via culvert, Buffalo Wallow, and 72-inch culvert.	38.06722	-122.13139	Sulphur Springs Creek (via Buffalo Wallow)
009	Stormwater from 0.3-acre gravel and paved area (of which approximately 0.1 acres is impervious) between railway and Avenue A adjacent to Upper Level Tank Farm, discharged via culvert along Avenue A on southeast side of processing area.	38.07000	-122.13139	Sulphur Springs Creek
010	Stormwater from 0.8-acre gravel and paved area (of which 0.25 acres is impervious) between railway and Avenue A, and 63 acres of Upper Level Tank Farm, discharged on southeast side of processing area via culvert along Avenue A.	38.07000	-122.13139	Sulphur Springs Creek
011	Stormwater from 0.4 acres beneath refinery crude pipeline on north side of Park Road, discharged on north side of Park Road via culvert.	38.06444	-122.13250	Sulphur Springs Creek
012	Stormwater from 0.8-acre gravel and paved area (of which approximately 0.1 acres is impervious) under refinery crude pipeline southwest of crude tank field, discharged via City of Benicia storm drain system.	38.05417	-122.13861	Carquinez Strait

Discharge Point No.	Effluent Description	Discharge Point Latitude (North)	Discharge Point Longitude (West)	Receiving Water
013	Stormwater from 1.2-acre area (of which approximately 0.06 acres is impervious) under crude pipeline southwest of Discharge Point No. 012, discharged via City of Benicia storm drain system.	38.05222	-122.14028	Carquinez Strait
014	Stormwater from 0.4-acre unpaved area under crude pipeline south of Discharge Point No. 013, discharged via City of Benicia storm drain system.	38.05083	-122.13972	Carquinez Strait
015	Stormwater from 0.5-acre unpaved area under crude pipeline southeast of Discharge Point No. 014, discharged via City of Benicia storm drain system.	38.04722	-122.13194	Carquinez Strait
016 <sup>[2]</sup>	Discharge Point No. 016 is no longer authorized.	---	---	---
017	Stormwater from approximately 12.1 acres (of which 4.3 acres is impervious) at Asphalt Plant, collected in 425,000-gallon holding tank before batch discharge via underground culvert, Buffalo Wallow, and 72-inch culvert.	38.06611	-122.13472	Sulphur Springs Creek (via Buffalo Wallow)
018	Stormwater from 18-acre unpaved area within Lower Level Tank Farm secondary containment berms, discharged to Sulphur Springs Creek.	38.07514 (approx)	-122.13403 (approx.)	Sulphur Springs Creek

Footnotes:

<sup>[1]</sup> Latitude and longitude may change with outfall upgrade. See Provision VI.C.2.b.

<sup>[2]</sup> References to Discharge Point Nos. 002 through 018 exclude Discharge Point No. 016.

**Table 3. Administrative Information**

This Order was adopted on:	DATE
This Order shall become effective on:	September 1, 2015
This Order shall expire on:	August 31, 2020
CIWQS Regulatory Measure Number	TBD
The Discharger shall file a Report of Waste Discharge as an application for reissuance of WDRs in accordance with California Code of Regulations, title 23, and an application for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit no later than:	November 4, 2019
The U.S. Environmental Protection Agency (U.S. EPA) and the California Regional Water Quality Control Board, San Francisco Bay Region, have classified this discharge as follows:	Major

I, Bruce H. Wolfe, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of the Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on the date indicated above.

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Bruce H. Wolfe, Executive Officer

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## I. FACILITY INFORMATION

Information describing the Valero Benicia Refinery is summarized in Table 1 and Fact Sheet (Attachment F) sections I and II.

## II. FINDINGS

The California Regional Water Quality Control Board, San Francisco Bay Region (Regional Water Board), finds:

- A. Legal Authorities.** This Order serves as WDRs pursuant to California Water Code article 4, chapter 4, division 7 (commencing with § 13260). This Order is also issued pursuant to federal Clean Water Act (CWA) section 402 and implementing regulations adopted by U.S. EPA and Water Code chapter 5.5, division 7 (commencing with § 13370). It shall serve as an NPDES permit for point source discharges from this facility to surface waters.
- B. Background and Rationale for Requirements.** The Regional Water Board developed the requirements in this Order based on information the Discharger submitted as part of its application, information obtained through monitoring and reporting programs, and other available information. The Fact Sheet (Attachment F) contains background information and rationale for the requirements in this Order and is hereby incorporated into and constitutes findings for this Order. Attachments A through E and G are also incorporated into this Order.
- C. Provisions and Requirements Implementing State Law.** Provision VI.C.4.e implements state law only. This provision is not required or authorized under the federal CWA; consequently, violations of this provision are not subject to the enforcement remedies that are available for NPDES permit violations.
- D. Notification of Interested Parties.** The Regional Water Board notified the Discharger and interested agencies and persons of its intent to prescribe these WDRs and provided an opportunity to submit written comments and recommendations. The Fact Sheet provides details regarding the notification.
- E. Consideration of Public Comment.** The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. The Fact Sheet provides details regarding the public hearing.

**THEREFORE, IT IS HEREBY ORDERED** that Order No. R2-2009-0079, as amended by Order No. R2-2010-0054 (collectively the previous order), is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions of Water Code division 7 (commencing with § 13000) and regulations adopted thereunder, and the provisions of the CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order. This action in no way prevents the Regional Water Board from taking enforcement action for past violations of the previous order.

## III. DISCHARGE PROHIBITIONS

- A.** Discharge of treated wastewater at a location or in a manner different from that described in this Order is prohibited.

- B. Discharge at Discharge Point No. 001 is prohibited when treated wastewater does not receive an initial dilution of at least 17:1 as modeled. Compliance shall be achieved by proper operation and maintenance of the discharge outfall to ensure that it (or its replacement, in whole or part) is in good working order and is consistent with or can achieve better mixing than that described in Fact Sheet section IV.C.4.a. The Discharger shall address measures taken to ensure this as required by Provision VI.C.2.b.
- C. The bypass of untreated or partially-treated wastewater to waters of the United States is prohibited, except as provided for in the conditions stated in Attachment D section I.G.

**IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS**

**A. Discharge Point No. 001**

The Discharger shall comply with the following effluent limitations at Discharge Point No. 001, with compliance measured at Monitoring Location EFF-001 as described in the Monitoring and Reporting Program (MRP) (Attachment E):

**Table 4. Effluent Limitations – Discharge Point No. 001**

Parameter	Units	Effluent Limitations	
		Maximum Daily	Average Monthly
Biochemical Oxygen Demand, 5-day @ 20°C (BOD <sub>5</sub> )	lbs/day	3,400	1,900
Chemical Oxygen Demand (COD)	lbs/day	24,000	13,000
Oil and Grease	lbs/day	1,000	550
Phenolic Compounds (4AAP)	lbs/day	25	12
Sulfide	lbs/day	21	10
Total Suspended Solids (TSS)	lbs/day	2,400	1,500
Total Ammonia, as N	lbs/day	2,000	1,000
	mg/L	20	5.7
Total Chromium	lbs/day	46	16
Chromium (VI)	lbs/day	2.9	1.3
	µg/L	72	36
Bis(2-Ethylhexyl)Phthalate	µg/L	110	53
Chronic Toxicity	TUc	10 <sup>[1]</sup>	---
Copper, Total Recoverable	µg/L	120	58
Cyanide, Total	µg/L	42	19
Dioxin-TEQ	µg/L	2.8 × 10 <sup>-8</sup>	1.4 × 10 <sup>-8</sup>
Selenium, Total Recoverable	µg/L	50	42
pH	standard units	6.0 – 9.0 <sup>[2]</sup>	

Unit Abbreviations:

- µg/L = micrograms per liter
- mg/L = milligrams per liter
- lbs/day = pounds per day
- TUc = chronic toxicity units, equal to 100/NOEL, where NOEL = IC<sub>25</sub>, EC<sub>25</sub>, or NOEC as defined in MRP Appendix E-1.

Footnotes:

- <sup>[1]</sup> Bioassays shall be conducted in accordance with MRP section V.B. The maximum daily effluent limitation for chronic toxicity shall be interpreted as the maximum test result for the month.
- <sup>[2]</sup> If the Discharger monitors pH continuously, pursuant to 40 C.F.R. section 401.17 the Discharger shall be in compliance with this pH limitation provided that both of the following conditions are satisfied: (i) the total time during which the pH is outside the required range shall not exceed 7 hours and 26 minutes in any calendar month; and (ii) no individual excursion from the required pH range shall exceed 60 minutes.

**1. Selenium Mass Emissions.** Discharges at Discharge Point No. 001 shall not contain an annual average of more than 21 pounds of total recoverable selenium per month. Compliance shall be measured at Monitoring Location EFF-001 as described in the MRP. Each month's mass emission value shall be the average selenium concentration for the month times the total monthly flow. Compliance with the annual average limit shall be evaluated by calculating the running annual average mass emission. The annual average shall be calculated by averaging the current month's mass emission value and the mass emission values for each of the 11 previous months.

**2. Acute Toxicity**

**a.** Discharges at Discharge Point No. 001 shall comply with the following limitations, with compliance measured at Monitoring Location EFF-001 as described in the MRP:

- i.** An 11-sample median value of not less than 90 percent survival; and
- ii.** An 11-sample 90th percentile value of not less than 70 percent survival.

**b.** These acute toxicity limitations are defined as follows:

- i. 11-sample median.** A bioassay test showing survival of less than 90 percent represents a violation of this effluent limit if five or more of the past ten or fewer bioassay tests also show less than 90 percent survival.
- ii. 11-sample 90th percentile.** A bioassay test showing survival of less than 70 percent represents a violation of this effluent limit if one or more of the past ten or fewer bioassay tests also show less than 70 percent survival.

**c.** If the Discharger can demonstrate that ammonia causes acute toxicity in excess of the acute toxicity limits in this Order, and that the ammonia in the discharge complies with the ammonia effluent limits, then such toxicity does not constitute a violation of the effluent limits for whole effluent acute toxicity.

**3. Recycled Water Use Credit.** If the Discharger replaces potable water used in its operations with recycled water and complies with Provision VI.C.4.d, mass-based and concentration-based effluent limits shall be adjusted by calculating credits as described below and adding the results to the effluent limits:

**a. Concentration-based Credit.** The credit for a concentration-based effluent limit shall be the difference between its recycled water influent mass and potable water influent mass, divided by the effluent volume for the applicable monitoring interval (e.g., one week for a constituent monitored weekly), and shall be calculated according to the following example in which constituent B is monitored weekly and the lag time is Y days:



- Step 1: Influent mass of B = [(Influent recycled water concentration of B) – (influent potable water concentration of B)] x (Influent recycled water volume)
- Step 2: Effluent volume for monitoring period = Effluent volume at Monitoring Location EFF-001 beginning Y days after influent mass determined through one week later
- Step 3: Effluent limit credit for B = (Influent mass of B) / (Effluent volume for monitoring period)

**b. Mass-based Credit.** The credit for a mass-based effluent limit shall be the difference between the recycled water influent mass and potable water influent mass divided by the number of days in the monitoring period, and shall be calculated according to the following example in which constituent B is monitored weekly (lag time is irrelevant for this calculation):

- Step 1: Influent mass of B = [(Influent recycled water concentration of B) – (influent potable water concentration of B)] x (Influent recycled water volume)
- Step 2: Effluent limit credit for B = (Influent mass of B) / (Monitoring interval in days)

**B. Discharge Point Nos. 002 through 018**

1. The Discharger shall comply with the following effluent limitations at Discharge Point Nos. 002 through 018, with compliance measured at Monitoring Locations EFF-002 through EFF-018 as described in the MRP:

**Table 5. Effluent Limitations – Discharge Point Nos. 002 through 018**

Parameter	Units	Effluent Limitations	
		Maximum Daily	Average Monthly
Total Organic Carbon (TOC)	mg/L	110	---
Oil and Grease	mg/L	15	---
pH	standard units	6.5 – 8.5 (instantaneous)	
Visible Oil	---	None observed (instantaneous)	
Visible Color	---	None observed (instantaneous)	

Unit Abbreviation:

mg/L = milligrams per liter

2. If a total organic carbon (TOC) or oil and grease effluent limitation in Table 5 is exceeded at a particular monitoring monitoring location, the Discharger shall also comply with the following effluent limitations at the same monitoring location, as described in the MRP:

**Table 6. Effluent Limitations – Discharge Point Nos. 002 through 018 (Supplemental)**

Parameter	Units	Effluent Limitations	
		Maximum Daily	Average Monthly <sup>[1]</sup>
BOD <sub>5</sub>	mg/L	48	26
TSS	mg/L	33	21

Parameter	Units	Effluent Limitations	
		Maximum Daily	Average Monthly <sup>[1]</sup>
COD	mg/L	360	180
Oil and Grease	mg/L	15	8.0
Phenolic Compounds	mg/L	0.35	0.17
Total Chromium	mg/L	0.60	0.21
Chromium (VI)	mg/L	0.062	0.028

Footnote:

<sup>[1]</sup> These limitations shall not apply unless there is sufficient runoff for sampling on at least three days during the month.

**V. RECEIVING WATER LIMITATIONS**

- A. The discharge shall not cause the following conditions to exist in receiving waters at any place:
1. Floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses;
  2. Alteration of suspended sediment in such a manner as to cause nuisance or adversely affect beneficial uses, or detrimental increase in the concentrations of toxic pollutants in sediments or aquatic life;
  3. Suspended material in concentrations that cause nuisance or adversely affect beneficial uses;
  4. Bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses;
  5. Alteration of temperature beyond present natural background levels;
  6. Changes in turbidity that cause nuisance or adversely affect beneficial uses, or increases from normal background light penetration or turbidity greater than 10 percent in areas where natural turbidity is greater than 50 nephelometric turbidity units;
  7. Coloration that causes nuisance or adversely affects beneficial uses;
  8. Visible, floating, suspended, or deposited oil or other products of petroleum origin; or
  9. Toxic or other deleterious substances in concentrations or quantities that cause deleterious effects on wildlife, waterfowl, or other aquatic biota, or render any of these unfit for human consumption, either at levels created in the receiving waters or as a result of biological concentration.
- B. The discharge shall not cause the following limitations to be exceeded in receiving waters at any place within one foot of the water surface:
1. Dissolved Oxygen                      7.0 mg/L, minimum

The median dissolved oxygen concentration for any three consecutive months shall not be less than 80% of the dissolved oxygen content at saturation. When natural factors cause concentrations less than that specified above, the discharge shall

not cause further reduction in ambient dissolved oxygen concentrations.

2. Dissolved Sulfide Natural background levels.
3. pH The pH shall not be depressed below 6.5 or raised above 8.5. The discharge shall not cause changes greater than 0.5 pH units in normal ambient pH levels.
4. Nutrients Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

C. The discharge shall not cause a violation of any water quality standard for receiving waters adopted by the Regional Water Board or the State Water Resources Control Board (State Water Board) as required by the CWA and regulations adopted thereunder. If more stringent water quality standards are promulgated or approved pursuant to CWA section 303, or amendments thereto, the Regional Water Board may revise or modify this Order in accordance with the more stringent standards.

## VI. PROVISIONS

### A. Standard Provisions

1. The Discharger shall comply with all “Standard Provisions” in Attachment D.
2. The Discharger shall comply with all applicable provisions of the “Regional Standard Provisions, and Monitoring and Reporting Requirements for NPDES Wastewater Discharge Permits” (Attachment G).

### B. Monitoring and Reporting Provisions

The Discharger shall comply with the MRP (Attachment E), and future revisions thereto, and applicable sampling and reporting requirements in Attachments D and G.

### C. Special Provisions

#### 1. Reopener Provisions

The Regional Water Board may modify or reopen this Order prior to its expiration date in any of the following circumstances as allowed by law:

- a. If present or future investigations demonstrate that the discharges governed by this Order have or will have a reasonable potential to cause or contribute to, or will cease to have, adverse impacts on water quality or beneficial uses of the receiving waters.
- b. If new or revised water quality objectives or total maximum daily loads (TMDLs) come into effect for San Francisco Bay and/or its contiguous water bodies (whether statewide, regional, or site-specific). In such cases, effluent limitations in this Order may be modified as necessary to reflect the updated water quality objectives and wasteload allocations in the TMDLs. Adoption of the effluent limitations in this Order is not

intended to restrict in any way future modifications based on legally adopted water quality objectives or TMDLs, or as otherwise permitted under federal regulations governing NPDES permit modifications.

- c. If translator, dilution, or other water quality studies provide a basis for determining that a permit condition should be modified.
- d. If State Water Board precedential decisions, new policies, new laws, or new regulations are adopted.
- e. If an administrative or judicial decision on a separate NPDES permit or WDRs addresses requirements similar to this discharge.
- f. Or as otherwise authorized by law.

The Discharger may request a permit modification based on any of the circumstances above. With any such request, the Discharger shall include antidegradation and anti-backsliding analyses.

## 2. Special Studies and Additional Monitoring

### a. Effluent Characterization Study and Report

- i. **Study Elements.** The Discharger shall continue to characterize and evaluate the discharge from the following discharge point to verify that the “no” or “unknown” reasonable potential analysis conclusions of this Order remain valid and to inform the next permit reissuance. The Discharger shall collect representative samples at the monitoring stations set forth below, as defined in the MRP, at no less than the frequency specified below:

<u>Discharge Point</u>	<u>Monitoring Station</u>	<u>Minimum Frequency</u>
001	EFF-001	Twice per calendar year

The samples shall be analyzed for the priority pollutants listed in Attachment G, Table C, except for those priority pollutants with effluent limitations where the MRP already requires more frequent monitoring, and except for those priority pollutants for which there are no water quality criteria (see Fact Sheet Table F-9). Compliance with this requirement shall be achieved in accordance with the specifications of Attachment G sections III.A.1 and III.A.2.

The Discharger shall evaluate on an annual basis if concentrations of any of these pollutants significantly increase over past performance. The Discharger shall investigate the cause of any such increase. The investigation may include, but need not be limited to, an increase in monitoring frequency, monitoring of internal process streams, and monitoring of influent sources. The Discharger shall establish remedial measures addressing any increase resulting in reasonable potential to cause or contribute to an excursion above applicable water quality objectives. This requirement may be satisfied through identification of the constituent as a “pollutant of concern” in the Discharger’s Pollutant Minimization Program, described in Provision VI.C.3.

## ii. Reporting Requirements

**(a) Routine Reporting.** The Discharger shall, within 45 days of receipt of analytical results, report the following in the transmittal letter for the appropriate self-monitoring report (SMR):

- (1) Indication that a sample for this characterization study was collected; and
- (2) Identity of priority pollutants detected at or above applicable water quality criteria (see Fact Sheet Table F-9 for the criteria) and the detected concentrations of those pollutants.

**(b) Annual Reporting.** The Discharger shall summarize the annual data evaluation and source investigation in the annual SMR.

**(c) Final Report.** The Discharger shall submit a final report that presents all these data with the application for permit reissuance.

**b. Outfall or Diffuser Upgrade.** If the Discharger upgrades or replaces its Carquinez Strait outfall or diffuser (Discharge Point No. 001), the Discharger shall submit the following documentation upon completion of the new outfall or diffuser, and obtain Executive Officer acceptance in writing prior to operating the new outfall or diffuser:

- i. A dilution modeling report based on the characteristics of the actual installed outfall and diffuser that supports a dilution ratio of at least 17:1 at all times. The study shall use a U.S. EPA-approved model, such as Visual PLUMES or CORMIX, and estimate the initial dilution at slack tide for both the maximum wet-weather discharge and the average daily discharge.
- ii. Certification by a licensed engineer that the outfall and diffuser have been constructed as designed and are available for use.
- iii. Updates to the Operations and Maintenance Manual and the Contingency Plan that include any new outfall or diffuser.
- iv. Specific date that new outfall or diffuser will be put into service.

## 3. Pollutant Minimization Program

- a. The Discharger shall continue to improve its existing Pollutant Minimization Program to promote minimization of pollutant loadings to the treatment plant and therefore to the receiving waters.
- b. The Discharger shall submit an annual report no later than February 28 each year. Each annual report shall include at least the following information:
  - i. **Brief description of treatment plant.** The description shall include the service area and treatment plant processes.

- ii. Discussion of current pollutants of concern.** Periodically, the Discharger shall analyze its circumstances to determine which pollutants are currently a problem and which pollutants may be potential future problems. This discussion shall include the reasons for choosing the pollutants.
  - iii. Identification of sources for pollutants of concern.** This discussion shall include how the Discharger intends to estimate and identify pollutant sources. The Discharger shall include sources or potential sources not directly within the ability or authority of the Discharger to control, such as pollutants in the potable water supply and air deposition.
  - iv. Identification of tasks to reduce the sources of pollutants of concern.** This discussion shall identify and prioritize tasks to address the Discharger's pollutants of concern. The Discharger may implement the tasks by itself or participate in group, regional, or national tasks that address its pollutants of concern. The Discharger is strongly encouraged to participate in group, regional, or national tasks that address its pollutants of concern whenever it is efficient and appropriate to do so. An implementation timeline shall be included for each task.
  - v. Outreach to employees.** The Discharger shall inform employees about the pollutants of concern, potential sources, and how they might be able to help reduce the discharge of these pollutants of concern into the treatment facilities. The Discharger may provide a forum for employees to provide input.
  - vi. Discussion of criteria used to measure Pollutant Minimization Program and task effectiveness.** The Discharger shall establish criteria to evaluate the effectiveness of its Pollutant Minimization Program. This discussion shall identify the specific criteria used to measure the effectiveness of each task in Provisions VI.C.3.b.iii, iv, v, and vi.
  - vii. Documentation of efforts and progress.** This discussion shall detail all of the Discharger's Pollutant Minimization Program activities during the reporting year.
  - vii. Evaluation of Pollutant Minimization Program and task effectiveness.** The Discharger shall use the criteria established in Provision VI.C.3.b.vii to evaluate the program and task effectiveness.
  - ix. Identification of specific tasks and timelines for future efforts.** Based on the evaluation, the Discharger shall explain how it intends to continue or change its tasks to more effectively reduce the amount of pollutants flowing to the treatment plant and, subsequently, in its effluent.
- c.** The Discharger shall develop and conduct a Pollutant Minimization Program as further described below when there is evidence that a priority pollutant is present in the effluent above an effluent limitation (e.g., sample results reported as detected but not quantified [DNQ] when the effluent limitation is less than the method detection limit [MDL], sample results from analytical methods more sensitive than those methods required by this Order, presence of whole effluent toxicity, health advisories for fish consumption, or results of benthic or aquatic organism tissue sampling) and either:

- i. A sample result is reported as DNQ and the effluent limitation is less than the Reporting Level (RL); or
  - ii. A sample result is reported as not detected (ND) and the effluent limitation is less than the MDL, using definitions in Attachment A and reporting protocols described in the MRP.
- d. If triggered by the reasons set forth in Provision VI.C.3.c, above, the Discharger’s Pollutant Minimization Program shall include, but not be limited to, the following actions and submittals:
- i. Annual review and semi-annual monitoring of potential sources of the reportable priority pollutants, which may include fish tissue monitoring and other bio-uptake sampling, or alternative measures when source monitoring is unlikely to produce useful analytical data;
  - ii. Quarterly monitoring for the reportable priority pollutants in the influent to the wastewater treatment system. The Executive Officer may approve alternative measures when influent monitoring is unlikely to produce useful analytical data;
  - iii. Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutants in the effluent at or below the effluent limitation;
  - iv. Implementation of appropriate cost-effective control measures for the reportable priority pollutants, consistent with the control strategy; and
  - v. Inclusion of the following specific items within the annual report required by Provision VI.C.3.b above:
    - (a) All Pollutant Minimization Program monitoring results for the previous year;
    - (b) List of potential sources of the reportable priority pollutants;
    - (c) Summary of all actions undertaken pursuant to the control strategy; and
    - (d) Description of actions to be taken in the following year.

**4. Other Special Provisions**

- a. **Copper Action Plan.** The Discharger shall implement pretreatment, source control, and pollution prevention for copper in accordance with the following tasks and time schedule:

**Table 7. Copper Action Plan**

Task	Compliance Date
<b>1. Review Potential Copper Sources</b> The Discharger shall submit an inventory of potential copper sources to the facility.	<i>Completed April 1, 2010.</i>
<b>2. Implement Copper Control Program</b> The Discharger shall submit a plan for and begin implementation of a program to reduce copper sources identified in Task 1.	<i>Completed July 1, 2010. Plan implementation shall be ongoing.</i>

Task	Compliance Date
<p><b>3. Implement Additional Measures</b>                      If the Regional Water Board notifies the Discharger that the three-year rolling mean copper concentration in Suisun Bay exceeds 2.8 µg/L, then within 90 days of the notification, the Discharger shall evaluate the effluent copper concentration trend and, if it is increasing, develop and begin implementation of additional measures to control copper discharges. The Discharger shall report on the progress and effectiveness of actions taken, and provide a schedule for actions to be taken in the next 12 months.</p>	<p>With next annual pollution prevention report due February 28 (at least 90 days following notification)</p>
<p><b>4. Report Status of Copper Control Program.</b>                      The Discharger shall submit an annual report documenting copper control program implementation and addressing the effectiveness of the actions taken, including any additional copper controls required by Task 3 above, and provide a schedule for actions to be taken in the next 12 months. Additionally, the Discharger shall report the findings and results of the studies completed, planned, or in progress under Task 4. Regarding Task 4 studies, dischargers may collaborate and provide this information in a single report to satisfy this requirement for an entire group.</p>	<p>With annual pollution prevention report due February 28 each year</p>

- b. Cyanide Action Plan.** The Discharger shall implement monitoring and surveillance, pretreatment, source control, and pollution prevention for cyanide in accordance with the following tasks and time schedule:

**Table 8. Cyanide Action Plan**

Task	Compliance Date
<p><b>1. Review Potential Cyanide Sources</b>                      The Discharger shall submit an inventory of potential cyanide sources to Discharge Point 001.</p>	<p><i>Completed April 1, 2010</i></p>
<p><b>2. Implement Cyanide Control Program</b>                      The Discharger shall continue to implement its program to minimize cyanide discharges consisting, at a minimum, of the following elements:                      a. Inspect each potential source to assess the need to include that source in the control program.                      b. Inspect sources included in the control program annually.</p>	<p><i>Initial plan completed July 1, 2010.</i>                      Plan implementation is ongoing</p>
<p><b>3. Implement Additional Measures</b>                      If the Regional Water Board notifies the Discharger that ambient monitoring shows cyanide concentrations are 1.0 µg/L or higher in the main body of San Francisco Bay, then within 90 days of the notification, the Discharger shall commence actions to identify and abate cyanide sources responsible for the elevated ambient concentrations, report on the progress and effectiveness of actions taken, and provide a schedule for actions to be taken in the next 12 months.</p>	<p>If required, with next annual pollution prevention report due February 28 (at least 90 days following notification)</p>
<p><b>4. Report Status of Cyanide Control Program</b>                      The Discharger shall submit an annual report documenting cyanide control program implementation and addressing the effectiveness of actions taken, including any additional cyanide controls required by Task 3, above, and provide a schedule for actions to be taken in the next 12 months.</p>	<p>With annual pollution prevention report due February 28 each year</p>

**c. Stormwater Requirements**

- i. Stormwater Monitoring.** Prior to releasing stormwater from the Upper Level, Intermediate Level, Lower Level, or Crude Oil Storage Area Tank Farms' secondary containment areas through stormwater Discharge Point Nos. 003, 006, 009, 010, or 018, the Discharger shall visually inspect the stormwater for oil and color, and sample and analyze the stormwater for TOC, total suspended solids (TSS), oil and grease, and pH. The results of these observations and analyses shall be reported in the



appropriate monthly SMR. The Discharger shall direct any stormwater exceeding 100 mg/L TSS or otherwise not compliant with the effluent limitations in section IV.B of this Order to the wastewater treatment plant for treatment and discharge through Discharge Point No. 001.

Prior to discharging stormwater from Discharge Point Nos. 011 through 015 (Refinery Crude Pipeline Area), the Discharger shall visually inspect the stormwater for oil and color. The results of these observations and analyses shall be reported in the appropriate monthly SMR. If oil or color is observed, the Discharger shall direct any stormwater from these locations to the wastewater treatment plant for treatment and discharge through Discharge Point No. 001.

- ii. Wet Weather Discharge of Diverted Stormwater.** Process area stormwater runoff diverted to the Stormwater Retention Ponds or Crude Field Retention Ponds may be discharged at Discharge Point No. 001 without further treatment if the following conditions are met:
- (a) Use of storage, equalization, and treatment capacity is maximized.
  - (b) Prior to discharge, the Discharger visually inspects the stormwater for oil and color and finds no oil or color.
  - (c) Prior to discharge, the Discharger samples and analyzes the stormwater for TSS, oil and grease, and pH, and the results do not exceed 100 mg/L TSS or 15 mg/L oil and grease, and the pH is within the range of 6.0 to 9.0.

The results of the monitoring described above shall be reported in appropriate monthly SMRs.

- iii. Stormwater Pollution Prevention Plan and Annual Report.** The Discharger shall implement a Stormwater Pollution Prevention Plan (SWPPP) in accordance with Attachment G section I.J.

The Discharger shall submit an updated SWPPP, or a letter stating that no revisions are necessary and the last year it updated its SWPPP, annually by October 1. The Discharger shall also submit an annual stormwater report by July 1 each year covering data for the previous wet weather season. The annual stormwater report shall, at a minimum, include the following:

- (a) Tabulated summary of sampling results and visual observations for all stormwater discharge points;
- (b) Comprehensive discussion of compliance with effluent limits and other requirements of this Order, and corrective actions taken or planned;
- (c) Comprehensive discussion of source identification and control programs for constituents that do not have effluent limitations in Table 5 (e.g., TSS); and
- (d) Summary of best management practices changes implemented the previous year or planned for the following year.

**iv. Construction and Development Stormwater Requirements.** Whenever construction or development stormwater is directed to existing permitted stormwater outfalls (Discharge Point Nos. 002 through 018), the Discharger shall do one of the following:

- (a) Obtain coverage under the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (State Water Board Order No. 2009-0009-DWQ), or;
- (b) Include within its SWPPP measures providing a level of protection equivalent to that required by Order No. 2009-0009-DWQ.

**d. Conditions for Recycled Water Use Credits**

Prior to any adjustments to mass-based or concentration-based effluent limits due to recycled water use, the Discharger shall satisfy the following conditions:

- i. The Discharger shall sample and analyze influent recycled water for any constituents it seeks credits for at Monitoring Location INF-001 at least as frequently as the MRP requires for effluent monitoring at Monitoring Location EFF-001.
- ii. The Discharger shall sample and analyze influent potable water for any constituents it seeks credits for at Monitoring Location INF-002 at least once per year. The annual average concentration may be used in the calculations described in section IV.A.3 above.
- iii. The Discharger shall determine the interval between the introduction of a limited constituent in recycled water and the appearance of that constituent in the final effluent.
- iv. The Discharger shall submit a technical report demonstrating that proposed adjustments will not impair beneficial uses in the vicinity of the discharge (such as by creating a zone acutely toxic to aquatic organisms). At a minimum, the report shall assess whole effluent toxicity testing results and compare the effluent concentrations projected when using recycled water to the proposed adjusted effluent limits.
- v. The Discharger shall submit one or more examples of how influent recycled and potable water concentrations, lag time, and effluent limit credits will be calculated in accordance with section IV.A.3.
- vi. The Discharger shall obtain written concurrence from the Executive Officer stating that these conditions have been met.

**e. Treated Wastewater Recycling**

The Discharger may recycle treated wastewater for onsite landscape irrigation and use in the refinery firewater system as a water conservation measure, provided the following:

- i. there is no irrigation water runoff from the facility, and
- ii. all water in the firewater system is captured and re-treated at the plant.

## ATTACHMENT A – DEFINITIONS

### **Arithmetic Mean ( $\mu$ )**

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

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

### **Average Monthly Effluent Limitation (AMEL)**

The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

### **Average Weekly Effluent Limitation (AWEL)**

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

### **Bioaccumulative**

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**

Known to cause cancer in living organisms.

### **Coefficient of Variation**

Measure of data variability calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.

### **Daily Discharge**

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

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

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

### **Detected, but Not Quantified (DNQ)**

Sample result less than the RL, but greater than or equal to the laboratory's MDL. Sample results reported as DNQ are estimated concentrations.

### **Dilution Credit**

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 by conducting a mixing zone study or modeling the discharge and receiving water.

### **Effluent Concentration Allowance (ECA)**

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

### **Enclosed Bay**

Indentation along the coast that encloses an area of oceanic water within a 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**

Concentration that results from the confirmed detection of the substance below the ML value by the analytical method.

### **Estuaries**

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 are considered estuaries. Estuarine waters are 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, but are not limited to, the Sacramento-San Joaquin Delta, as defined in Water Code section 12220, Suisun Bay, Carquinez Strait downstream to the Carquinez Bridge, and appropriate areas of the Smith, Mad, Eel, Noyo, Russian, Klamath, San Diego, and Otay rivers. Estuaries do not include inland surface waters or ocean waters.

### **Inland Surface Waters**

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

### **Instantaneous Maximum Effluent Limitation**

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**

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)**

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**

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  $n/2$  and  $n/2+1$ ).

### **Method Detection Limit (MDL)**

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

### **Minimum Level (ML)**

Concentration at which the entire analytical system gives 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**

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

### **Not Detected (ND)**

Sample results less than the laboratory's MDL.

### **Persistent Pollutants**

Substances for which degradation or decomposition in the environment is nonexistent or very slow.

### **Pollutant Minimization Program**

Program of 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 Pollutant Minimization Program is to reduce all potential sources of a priority pollutant through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. Cost effectiveness may be considered when establishing the requirements of a Pollutant Minimization Program. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), is considered to fulfill Pollutant Minimization Program requirements.

### **Pollution Prevention**

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

### **Reporting Level (RL)**

ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order, including an additional factor if applicable as discussed herein. 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 SIP Appendix 4 in accordance with SIP section 2.4.2 or established in accordance with SIP section 2.4.3. 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.

### **Source of Drinking Water**

Any water designated as having a municipal or domestic supply (MUN) beneficial use.

### **Standard Deviation ( $\sigma$ )**

Measure of variability calculated as follows:

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

where:

x is the observed value;

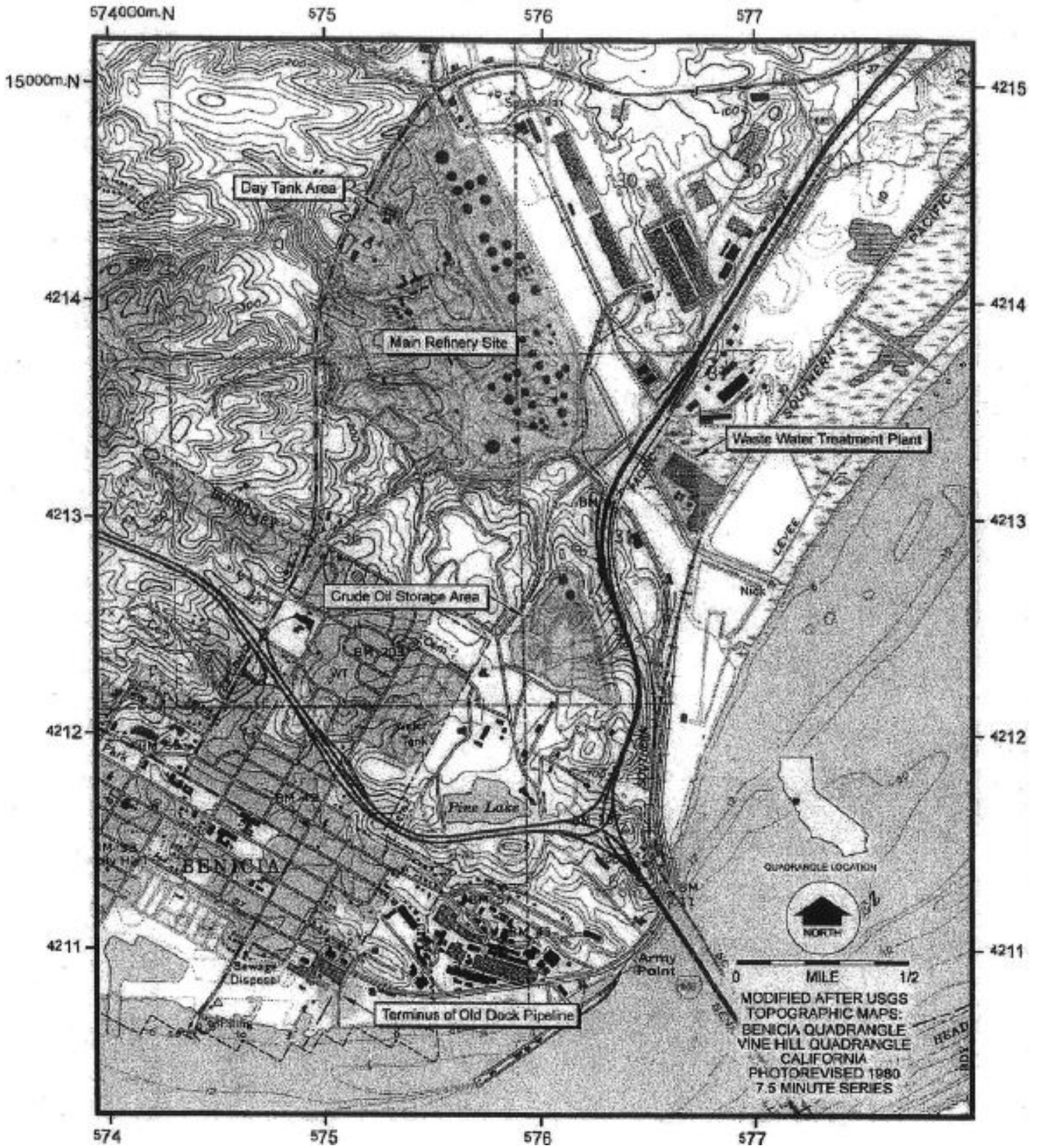
$\mu$  is the arithmetic mean of the observed values; and

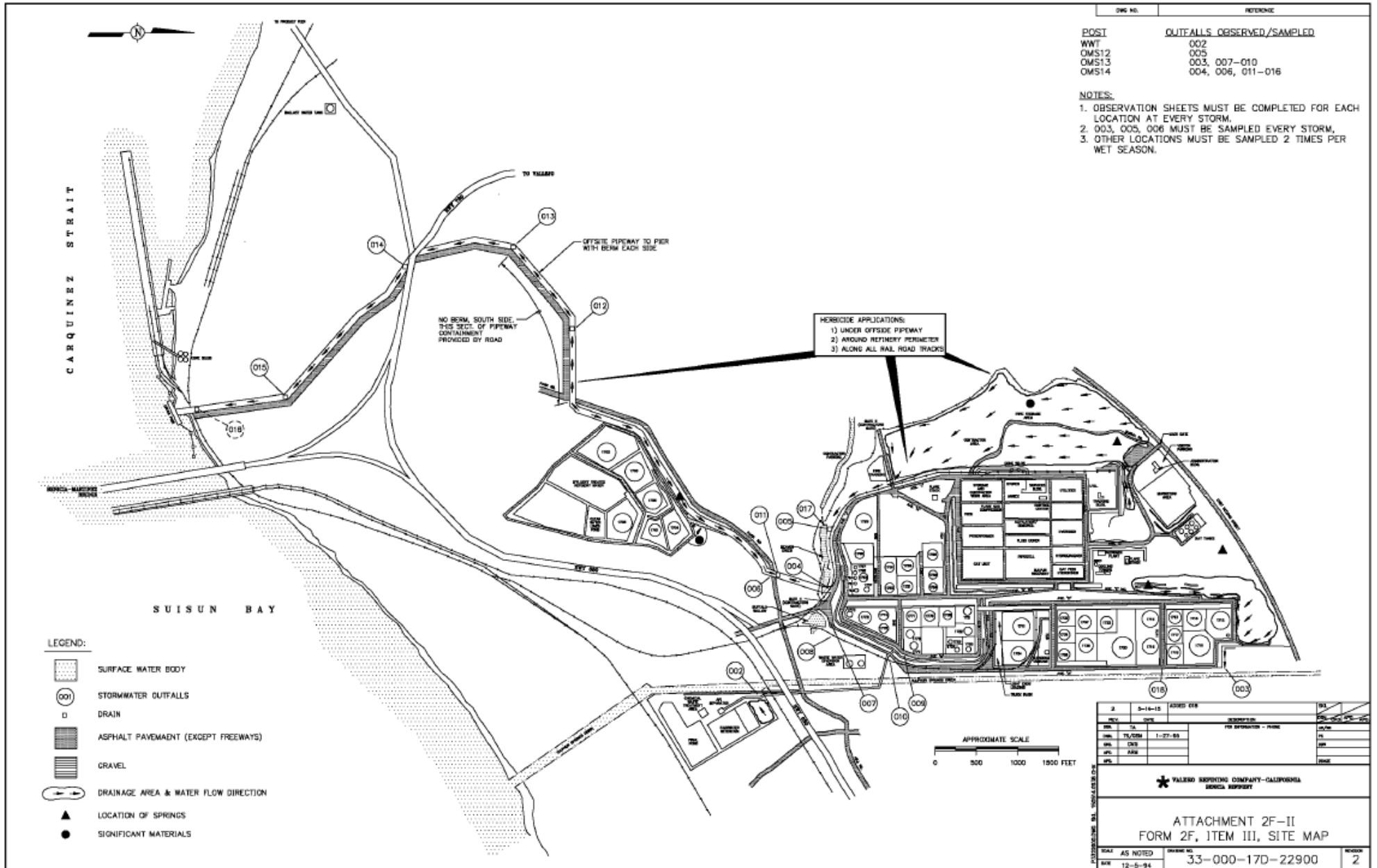
n is the number of samples.

### **Toxicity Reduction Evaluation (TRE)**

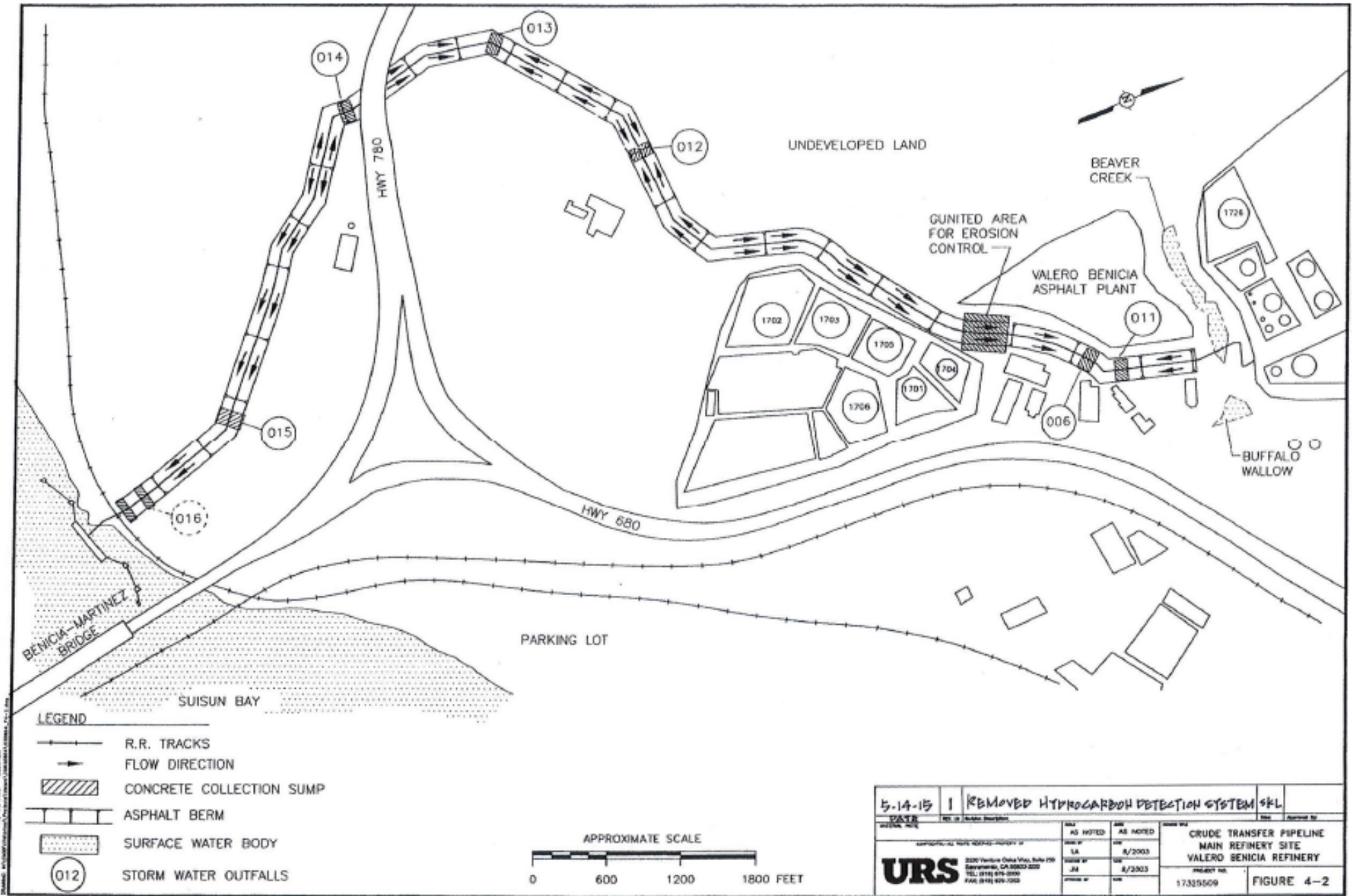
Study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of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

### ATTACHMENT B – LOCATION AND FACILITY MAPS

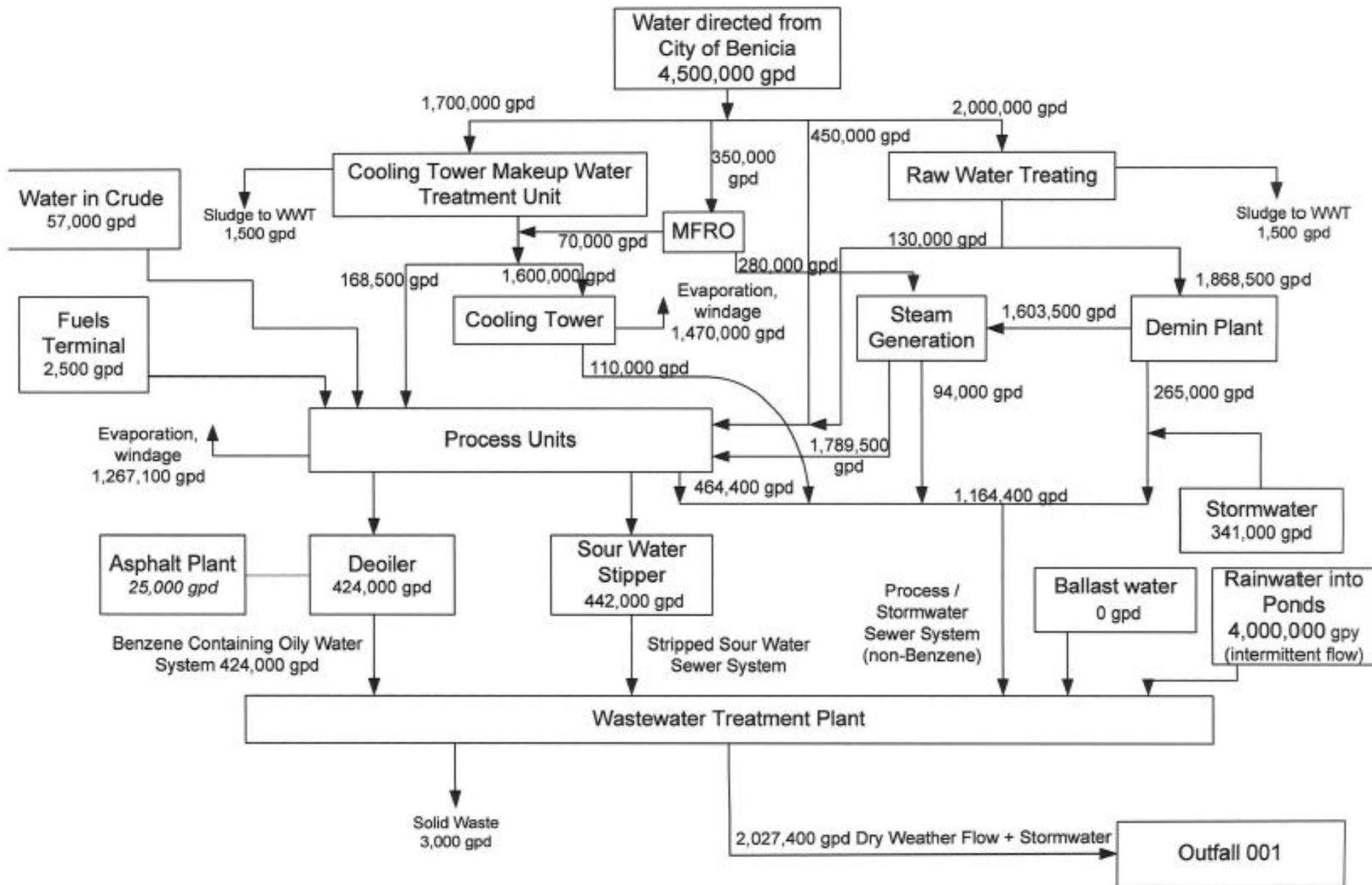




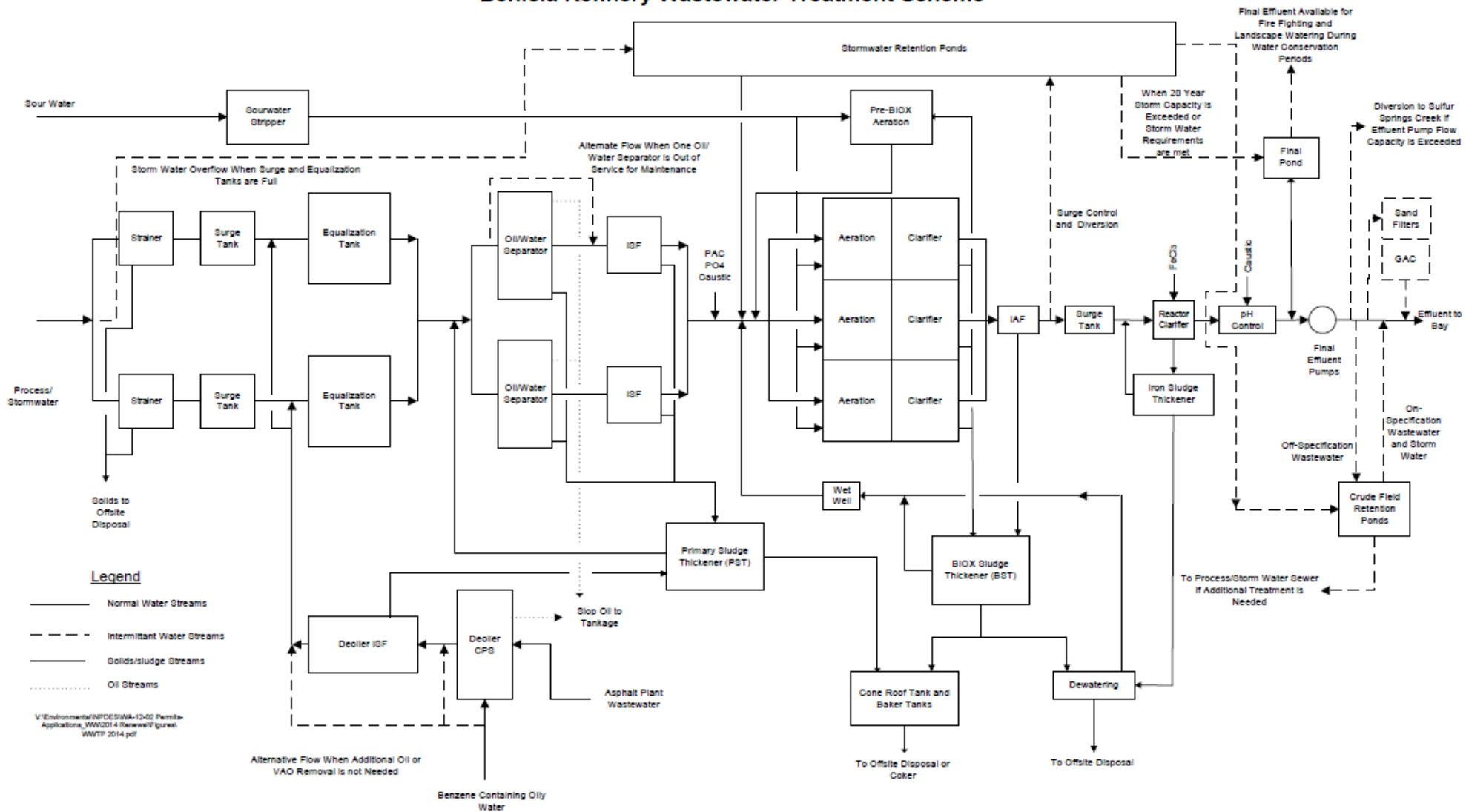




**ATTACHMENT C – PROCESS FLOW DIAGRAMS**



### Benicia Refinery Wastewater Treatment Scheme



## **ATTACHMENT D –STANDARD PROVISIONS**

### **I. STANDARD PROVISIONS – PERMIT COMPLIANCE**

#### **A. Duty to Comply**

1. The Discharger must comply with all of the terms, requirements, and conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action; permit termination, revocation and reissuance, or modification; denial of a permit renewal application; or a combination thereof. (40 C.F.R. § 122.41(a); Wat. Code §§ 13261, 13263, 13265, 13268, 13000, 13001, 13304, 13350, 13385.)
2. The Discharger shall comply with effluent standards or prohibitions established under CWA section 307(a) for toxic pollutants and with standards for sewage sludge use or disposal established under CWA section 405(d) 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 C.F.R. § 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 C.F.R. § 122.41(c).)

#### **C. Duty to Mitigate**

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

#### **D. Proper Operation and Maintenance**

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

#### **E. Property Rights**

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

## F. Inspection and Entry

The Discharger shall allow the Regional Water Board, State Water Board, U.S. EPA, and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (33 U.S.C. § 1318(a)(4)(B); 40 C.F.R. § 122.41(i); Wat. Code, §§ 13267, 13383):

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (33 U.S.C. § 1318(a)(4)(B)(i); 40 C.F.R. § 122.41(i)(1); Wat. Code, §§ 13267, 13383);
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (33 U.S.C. § 1318(a)(4)(B)(ii); 40 C.F.R. § 122.41(i)(2); Wat. Code, §§ 13267, 13383);
3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (33 U.S.C. § 1318(a)(4)(B)(ii); 40 C.F.R. § 122.41(i)(3); Wat. Code, §§ 13267, 13383); and
4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (33 U.S.C. § 1318(a)(4)(B); 40 C.F.R. § 122.41(i)(4); Wat. Code, §§ 13267, 13383.)

## G. Bypass

### 1. Definitions

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

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

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

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

- b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 C.F.R. § 122.41(m)(4)(i)(B)); and
  - c. The Discharger submitted notice to the Regional Water Board as required under Standard Provisions – Permit Compliance I.G.5 below. (40 C.F.R. § 122.41(m)(4)(i)(C).)
4. **Approval.** 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 C.F.R. § 122.41(m)(4)(ii).)
5. **Notice**
- a. **Anticipated bypass.** If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass. (40 C.F.R. § 122.41(m)(3)(i).)
  - b. **Unanticipated bypass.** The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). (40 C.F.R. § 122.41(m)(3)(ii).)

## H. Upset

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

- 1. **Effect of an upset.** An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 C.F.R. § 122.41(n)(2).)
- 2. **Conditions necessary for a demonstration of upset.** A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 C.F.R. § 122.41(n)(3)):
  - a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 C.F.R. § 122.41(n)(3)(i));
  - b. The permitted facility was, at the time, being properly operated (40 C.F.R. § 122.41(n)(3)(ii));

- c. The Discharger submitted notice of the upset as required in Standard Provisions—Reporting V.E.2.b below (24-hour notice) (40 C.F.R. § 122.41(n)(3)(iii)); and
  - d. The Discharger complied with any remedial measures required under Standard Provisions—Permit Compliance I.C above. (40 C.F.R. § 122.41(n)(3)(iv).)
3. **Burden of proof.** In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 C.F.R. § 122.41(n)(4).)

## II. STANDARD PROVISIONS—PERMIT ACTION

### A. General

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

### B. Duty to Reapply

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

### C. Transfers

This Order is not transferable to any person except after notice to the 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 C.F.R. §§ 122.41(l)(3), 122.61.)

## III. STANDARD PROVISIONS – MONITORING

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

## IV. STANDARD PROVISIONS—RECORDS

- A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 C.F.R. part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records

of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time. (40 C.F.R. § 122.41(j)(2).)

**B. Records of monitoring information shall include the following:**

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

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

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

**V. STANDARD PROVISIONS—REPORTING**

**A. Duty to Provide Information**

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

**B. Signatory and Certification Requirements**

1. All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or U.S. EPA shall be signed and certified in accordance with Standard Provisions—Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 C.F.R. § 122.41(k).)
2. For a corporation, all permit applications shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and



regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. (40 C.F.R. § 122.22(a)(1).)

For a partnership or sole proprietorship, all permit applications shall be signed by a general partner or the proprietor, respectively. (40 C.F.R. § 122.22(a)(2).)

For a municipality, state, federal, or other public agency, 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 U.S. EPA). (40 C.F.R. § 122.22(a)(3).)

3. All reports required by this Order and other information requested by the Regional Water Board, State Water Board, or U.S. EPA shall be signed by a person described in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:
  - a. The authorization is made in writing by a person described in Standard Provisions—Reporting V.B.2 above (40 C.F.R. § 122.22(b)(1));
  - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 C.F.R. § 122.22(b)(2)); and
  - c. The written authorization is submitted to the Regional Water Board and State Water Board. (40 C.F.R. § 122.22(b)(3).)
4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions—Reporting V.B.3 above must be submitted to the 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 C.F.R. § 122.22(c).)
5. Any person signing a document under Standard Provisions—Reporting V.B.2 or V.B.3 above shall make the following certification:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of

my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.” (40 C.F.R. § 122.22(d).)

### **C. Monitoring Reports**

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program in this Order. (40 C.F.R. § 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 C.F.R. § 122.41(l)(4)(i).)
3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 C.F.R. part 136, or another method required for an industry-specific waste stream under 40 C.F.R. subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board. (40 C.F.R. § 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 C.F.R. § 122.41(l)(4)(iii).)

### **D. Compliance Schedules**

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

### **E. Twenty-Four Hour Reporting**

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

3. The Regional Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours. (40 C.F.R. § 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 C.F.R. § 122.41(l)(1)):

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 C.F.R. section 122.29(b) (40 C.F.R. § 122.41(l)(1)(i)); or
2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this Order. (Alternatively, for an existing manufacturing, commercial, mining, or silvicultural discharge as referenced in 40 C.F.R. section 122.42(a), this notification applies to pollutants that are subject neither to effluent limitations in this Order nor to notification requirements under 40 C.F.R. section 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1).) (40 C.F.R. § 122.41(l)(1)(ii).)
3. The alteration or addition results in a significant change in the Discharger's 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 C.F.R. § 122.41(l)(1)(iii).)

## **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 this Order's requirements. (40 C.F.R. § 122.41(l)(2).)

## **H. Other Noncompliance**

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

## **I. Other Information**

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

## VI. STANDARD PROVISIONS – ENFORCEMENT

- A. The Regional Water Board is authorized to enforce the terms of this Order under several provisions of the Water Code, including, but not limited to, sections 13268, 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 C.F.R. § 122.42(a)):

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

### B. Publicly-Owned Treatment Works (POTWs)

All POTWs shall provide adequate notice to the Regional Water Board of the following (40 C.F.R. § 122.42(b)):

1. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to CWA sections 301 or 306 if it were directly discharging those pollutants (40 C.F.R. § 122.42(b)(1)); and

2. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of this Order. (40 C.F.R. § 122.42(b)(2).)
3. Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW. (40 C.F.R. § 122.42(b)(3).)

## ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

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**ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)**

The Clean Water Act section 308 and 40 C.F.R. sections 122.41(h), 122.41(j)-(l), 122.44(i), and 122.48 require that all NPDES permits specify monitoring and reporting requirements. Water Code sections 13267 and 13383 also authorize the Regional Water Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. This MRP establishes monitoring, reporting, and recordkeeping requirements that implement federal and State laws and regulations.

**I. GENERAL MONITORING PROVISIONS**

- A. The Discharger shall comply with this MRP. The Executive Officer may amend this MRP pursuant to 40 C.F.R. sections 122.62, 122.63, and 124.5. If any discrepancies exist between this MRP and the *Regional Standard Provisions, and Monitoring and Reporting Requirements (Supplement to Attachment D) for NPDES Wastewater Discharge Permits (Attachment G)*, this MRP shall prevail.
- B. The Discharger shall conduct all monitoring in accordance with Attachment D, section III, as supplemented by Attachment G. Equivalent test methods must be more sensitive than those specified in 40 C.F.R. section 136 and must be specified in this Order.

**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 Locations**

Sampling Location Type	Monitoring Location Name	Monitoring Location Description
Recycled Water Influent	INF-001	Any point in the pipeline that delivers only recycled water to the facility, upstream of any point of use
Potable Water Influent	INF-002	Any point in the pipeline that delivers only potable water to the facility, upstream of any point of use
Treated Process Wastewater and Stormwater	EFF-001	Any point after full treatment of process wastewater and commingling of all stormwater flow tributary to Discharge Point No. 001, before contact with Suisun Bay
Stormwater	EFF-002	Any point where all stormwater flow tributary to Discharge Point No. 002 is present
Stormwater	EFF-003	Any point where all stormwater flow tributary to Discharge Point No. 003 is present
Stormwater	EFF-004	Any point where all stormwater flow tributary to Discharge Point No. 004 is present
Stormwater	EFF-005	Any point where all stormwater flow tributary to Discharge Point No. 005 is present
Stormwater	EFF-006	Any point where all stormwater flow tributary to Discharge Point No. 006 is present
Stormwater	EFF-007	Any point where all stormwater flow tributary to Discharge Point No. 007 is present

Sampling Location Type	Monitoring Location Name	Monitoring Location Description
Stormwater	EFF-008	Any point where all stormwater flow tributary to Discharge Point No. 008 is present
Stormwater	EFF-009	Any point where all stormwater flow tributary to Discharge Point No. 009 is present
Stormwater	EFF-010	Any point where all stormwater flow tributary to Discharge Point No. 010 is present
Stormwater	EFF-011	Any point where all stormwater flow tributary to Discharge Point No. 011 is present
Stormwater	EFF-012	Any point where all stormwater flow tributary to Discharge Point No. 012 is present
Stormwater	EFF-013	Any point where all stormwater flow tributary to Discharge Point No. 013 is present
Stormwater	EFF-014	Any point where all stormwater flow tributary to Discharge Point No. 014 is present
Stormwater	EFF-015	Any point where all stormwater flow tributary to Discharge Point No. 015 is present
---	EFF-016	Monitoring is not required because there is no discharge from former Discharge Point No. 016.
Stormwater	EFF-017	Any point where all stormwater flow tributary to Discharge Point No. 017 is present
Stormwater	EFF-018	Any point where all stormwater flow tributary to Discharge Point No. 018 is present
Receiving Water	RSW-001	Any point within Sulphur Springs Creek between Discharge Point Nos. 002 and 003
Receiving Water	RSW-002	Any point within Beaver Creek between Discharge Point Nos. 004 and 005
Receiving Water	RSW-003	Any point within Buffalo Wallow

### III. EFFLUENT MONITORING REQUIREMENTS

#### A. Discharge Point No. 001

The Discharger shall monitor treated effluent and commingled stormwater at Monitoring Location EFF-001 as follows:

**Table E-2. Effluent Monitoring—Discharge Point No. 001**

Parameter	Units	Sample Type	Minimum Sampling Frequency <sup>[1]</sup>
Flow <sup>[2]</sup>	MGD	Continuous	Continuous/D
Biochemical Oxygen Demand, 5-day @ 20°C (BOD <sub>5</sub> )	mg/L, lbs/day	C-24	1/Month
Chemical Oxygen Demand	mg/L, lbs/day	C-24	1/Month



Parameter	Units	Sample Type	Minimum Sampling Frequency <sup>[1]</sup>
(COD)			
Oil and Grease <sup>[3]</sup>	mg/L	Grab, C-24	1/Week
Phenolic Compounds (4AP)	lbs/day	C-24	1/Month
Sulfide	mg/L, lbs/day	Grab	1/Month
Total Suspended Solids (TSS)	mg/L, lbs/day	C-24	1/Week
Total Ammonia, as N	mg/L, lbs/day	Grab	1/Month
Total Chromium	lbs/day	C-24	1/Month
Chromium (VI)	µg/L, lbs/day	Grab	1/Month
Bis(2-Ethylhexyl)Phthalate	µg/L	Grab	1/Month <sup>[4]</sup>
Acute Toxicity <sup>[5]</sup>	% survival	C-24	1/Week
Chronic Toxicity <sup>[6]</sup>	TUc	C-24	1/Quarter
Copper, Total Recoverable	µg/L	C-24	1/Month
Cyanide, Total	µg/L	Grab	1/Month
Dioxin-TEQ	µg/L	Grab	2/Year
Selenium	µg/L	C-24	1/Week
pH <sup>[7]</sup>	standard units	Continuous	Continuous/D
Standard Observations	---	---	1/Day

Unit Abbreviations:

MGD = million gallons per day  
 mg/L = milligrams per liter  
 µg/L = micrograms per liter  
 TUc = chronic toxicity units, equal to 100/NOEL, where NOEL = IC<sub>25</sub>, EC<sub>25</sub>, or NOEC  
 lbs/day = pounds per day  
 % survival = percent survival

Sample Types:

C-24 = 24 hour composite  
 Continuous = measured continuously  
 Grab = grab sample

Sampling Frequencies:

Continuous/D = measured continuously, and recorded and reported daily  
 1/Day = once per day  
 1/Week = once per week  
 1/Month = once per month  
 1/Quarter = once per calendar quarter  
 2/Year = twice per year

Footnotes:

- [1] The minimum monitoring frequency shall be increased to daily when discharging diverted stormwater pursuant to Provision VI.C.4.c.ii, except for bis(2-ethylhexyl)phthalate, dioxin-TEQ, acute toxicity, and chronic toxicity.
- [2] Flow shall be monitored continuously and the following information shall be reported in self-monitoring reports:
- Daily average flow (MGD)
  - Monthly average flow (MGD)
  - Total monthly flow volume (MG)
  - Maximum and minimum daily average flow rates (MGD)
- [3] Oil and grease sampling and analysis shall be conducted in accordance with U.S. EPA Method 1664A.

- [4] If bis(2-ethylhexyl)phthalate is not detected above effluent limits for twelve calendar months from the date this Order becomes effective, the monitoring frequency shall be reduced to semiannual.
- [5] Acute toxicity tests shall be performed in accordance with MRP section V.A.
- [6] Chronic toxicity tests shall be performed in accordance with MRP section V.B.
- [7] If pH is monitored continuously, the minimum and maximum pH for each day shall be reported in self-monitoring reports.

**B. Discharge Point Nos. 002 through 018**

The Discharger shall monitor stormwater at Monitoring Locations EFF-002 through EFF-018 according to the following table. Monitoring data from Monitoring Location EFF-010 may be used to represent Monitoring Location EFF-009; however, Monitoring Location EFF-009 shall be monitored directly at least once during a wet season and once during a dry season over the term of this Order. Monitoring is not required at Monitoring Location E-008 if flow at that location is insufficient for sampling.

**Table E-3. Effluent Monitoring—Discharge Point Nos. 002 through 018**

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow	MGD	Continuous	1/Month <sup>[1]</sup>
Oil and Grease	mg/L	Grab <sup>[2]</sup>	1/Quarter <sup>[3]</sup>
Total Organic Carbon (TOC)	mg/L	Grab <sup>[2]</sup>	1/Quarter <sup>[3]</sup>
pH	standard units	Grab <sup>[2]</sup>	1/Quarter <sup>[3]</sup>
BOD <sub>5</sub>	mg/L	Grab <sup>[2]</sup>	1/Day during storm <sup>[4]</sup>
COD	mg/L	Grab <sup>[2]</sup>	1/Day during storm <sup>[4]</sup>
Phenolic Compounds	mg/L	Grab <sup>[2]</sup>	1/Day during storm <sup>[4]</sup>
TSS	mg/L	Grab <sup>[2]</sup>	1/Day during storm <sup>[4]</sup>
Total Chromium	mg/L	Grab <sup>[2]</sup>	1/Day during storm <sup>[4]</sup>
Chromium (VI)	mg/L	Grab <sup>[2]</sup>	1/Day during storm <sup>[4]</sup>
Specific Conductance	µS/cm	Grab <sup>[2]</sup>	1/Day during storm <sup>[4]</sup>
Standard Observations <sup>[5]</sup>	---	---	1/Day during storm

Unit Abbreviations:

MGD = million gallons per day  
mg/L = milligrams per liter  
µS/cm = microseimens per centimeter

Sample Types:

Continuous = measured continuously  
Grab = grab sample

Sampling Frequencies:

1/Day = once per day  
1/Month = once per month  
1/Quarter = once per calendar quarter

Footnotes:

- [1] The monthly cumulative rainfall shall be measured, and the total volume of stormwater discharged for each month shall be calculated based on the drainage area served by each discharge point. The monthly rainfall amount and the monthly discharge volume for each discharge point shall be reported on a monthly basis.
- [2] At least one grab sample shall be collected within the first 30 minutes of significant stormwater flow.

- [3] The monitoring frequency at a particular monitoring location shall increase to daily during each storm through the following June 30 if the TOC or oil and grease effluent limit in Table 5 is exceeded. The Discharger shall also monitor the affected monitoring location at least once during during the first daylight storm of the following wet season (commencing October 1).
- [4] Monitoring to determine compliance with Table 6 of this Order is required at a particular monitoring location if the TOC or oil and grease effluent limit in Table 5 of this Order is exceeded. The Discharger shall continue monitoring the affected monitoring location daily during each storm through June 30, and at least once during the first daylight storm of the following wet season (commencing October 1).
- [5] Standard observations are described in Attachment G section III.A.3.c.

## IV. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

### A. Whole Effluent Acute Toxicity

1. Compliance with the acute toxicity effluent limits at Discharge Point No. 001 shall be evaluated at Monitoring Location EFF-001 by measuring survival of test organisms exposed to 96-hour continuous flow-through bioassays.
2. Test organisms shall be fathead minnow (*Pimephales promelas*) or rainbow trout (*Onchorhynchus mykiss*). The Executive Officer may specify a more sensitive organism or, if testing a particular organism proves unworkable, the most sensitive organism available.
3. All bioassays shall be performed according to the most up-to-date protocols in 40 C.F.R. part 136, currently *Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms, 5<sup>th</sup> Edition* (EPA-821-R-02-012).
4. If the Discharger demonstrates that specific identifiable substances in the discharge are rapidly rendered harmless upon discharge to the receiving water, compliance with the acute toxicity limit may be determined after test samples are adjusted to remove the influence of those substances. Written acknowledgement that the Executive Officer concurs with the Discharger's demonstration and that the adjustment will not remove the influence of other substances must be obtained prior to any such adjustment. The Discharger may manually adjust the pH of whole effluent acute toxicity samples prior to performing bioassays to minimize ammonia toxicity interference.
5. Bioassay water monitoring shall include, on a daily basis, pH, dissolved oxygen, ammonia (if toxicity is observed), temperature, hardness, and alkalinity. These results shall be reported. If final or intermediate results of an acute bioassay test indicate a violation or threatened violation (e.g., the percentage of surviving test organisms is less than 70 percent), the Discharger shall initiate a new test as soon as practical and shall investigate the cause of the mortalities and report its findings in the next self-monitoring report. The Discharger shall repeat the test until a test fish survival rate of 90 percent or greater is observed. If the control fish survival rate is less than 90 percent, the bioassay test shall be restarted with new fish and shall continue as soon as practical until an acceptable test is completed (i.e., control fish survival rate is 90 percent or greater).

## B. Whole Effluent Chronic Toxicity

### 1. Monitoring Requirements

- a. **Sampling.** The Discharger shall collect 24-hour composite effluent samples at Monitoring Location EFF-001 for critical life stage toxicity tests as indicated below. For toxicity tests requiring renewals, the Discharger shall collect 24-hour composite samples on alternating days.
- b. **Test Species.** The test species shall be mysid shrimp (*Americamysis bahia*) unless a more sensitive species is identified.

The Discharger shall conduct a chronic toxicity screening test as described in Appendix E-1, or as described in applicable State Water Board plan provisions that become effective after adoption of this Order, following any significant change in the nature of the effluent. If there is no significant change in the nature of the effluent, the Discharger shall conduct a screening test and submit the results with its application for permit reissuance.

- c. **Methodology.** Sample collection, handling, and preservation shall be in accordance with U.S. EPA protocols. In addition, bioassays shall be conducted in compliance with the most recently promulgated test methods, as shown in Appendix E-2. These are *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms*, currently third edition (EPA-821-R-02-014). If these protocols prove unworkable, the Executive Officer and the Environmental Laboratory Accreditation Program may grant exceptions in writing upon the Discharger's request with justification. If the Discharger demonstrates that specific identifiable substances in the discharge are rapidly rendered harmless upon discharge to the receiving water, compliance with the chronic toxicity limit may be determined after test samples are adjusted to remove the influence of those substances. Written acknowledgement that the Executive Officer concurs with the Discharger's demonstration and that the adjustment will not remove the influence of other substances must be obtained prior to any such adjustment.
- d. **Dilution Series.** The Discharger shall conduct tests at 40%, 20%, 10%, 5%, and 2.5%. The "%" represents percent effluent as discharged. Test sample pH may be controlled to the level of the effluent sample as received prior to being salted up.

### 2. Reporting Requirements

- a. The Discharger shall provide toxicity test results for the current reporting period in the self-monitoring report and shall include the following, at a minimum, for each test:
  - i. Sample date
  - ii. Test initiation date
  - iii. Test species

- iv. End point values for each dilution (e.g., number of young, growth rate, percent survival)
- v. No Observable Effect Level (NOEL) values in percent effluent. The NOEL shall equal the IC<sub>25</sub> or EC<sub>25</sub> (see MRP Appendix E-1). If the IC<sub>25</sub> or EC<sub>25</sub> cannot be statistically determined, the NOEL shall equal to the No Observable Effect Concentration (NOEC) derived using hypothesis testing. The NOEC is the maximum percent effluent concentration that causes no observable effect on test organisms based on a critical life stage toxicity test.
- vi. IC<sub>15</sub>, IC<sub>25</sub>, IC<sub>40</sub>, and IC<sub>50</sub> values (or EC<sub>15</sub>, EC<sub>25</sub>, EC<sub>40</sub>, and EC<sub>50</sub>) as percent effluent
- vii. TUc values (100/NOEL, where NOEL = IC<sub>25</sub>, EC<sub>25</sub>, or NOEC)
- viii. Mean percent mortality ( $\pm$ s.d.) after 96 hours in 100% effluent (if applicable)
- ix. IC<sub>50</sub> or EC<sub>50</sub> values for reference toxicant tests
- x. Available water quality measurements for each test (e.g., pH, dissolved oxygen, temperature, conductivity, hardness, salinity, and ammonia)

### 3. Toxicity Reduction Evaluation (TRE)

- a. The Discharger shall prepare a generic TRE work plan within 90 days of the effective date of this Order to be ready to respond to toxicity events. The Discharger shall review and update the work plan as necessary so that it remains current and applicable to the discharge and discharge facilities.
- b. Within 30 days of exceeding the chronic toxicity limit in Table 4 of the Order, the Discharger shall submit a TRE work plan, which shall be the generic work plan revised as appropriate for this toxicity event after consideration of available discharge data.
- c. Within 30 days of completing an accelerated monitoring test observed to exceed the chronic toxicity limit, the Discharger shall initiate a TRE in accordance with a TRE work plan that incorporates any and all comments from the Executive Officer.
- d. The TRE shall be specific to the discharge and be in accordance with current technical guidance and reference materials, including U.S. EPA guidance materials. The Discharger shall conduct the TRE as a tiered evaluation as summarized below:
  - i. Tier 1 shall consist of basic data collection and review (routine and accelerated monitoring).
  - ii. Tier 2 shall consist of a facility performance evaluation including treatment process optimization, including operational practices and in-plant process chemical uses.
  - iii. Tier 3 shall consist of a toxicity identification evaluation (TIE).
  - iv. Tier 4 shall consist of a toxicity source evaluation.

- v. Tier 5 shall consist of a toxicity control evaluation, including options for modifications of in-plant treatment processes.
- vi. Tier 6 shall consist of implementation of selected toxicity control measures, and followup monitoring and confirmation of implementation success.
- e. The Discharger may end the TRE at any stage if monitoring finds there is no longer consistent toxicity (i.e., compliance with Provision IV.A.4.a).
- f. The objective of the TIE shall be to identify the substance or combination of substances causing the observed toxicity. The Discharger shall employ all reasonable efforts using currently available TIE methodologies.
- g. As toxic substances are identified or characterized, the Discharger shall continue the TRE by determining the sources and evaluating alternative strategies for reducing or eliminating the toxic substances from the discharge. The Discharger shall take all reasonable steps to reduce toxicity to levels below the chronic toxicity limit.
- h. Many recommended TRE elements parallel required or recommended efforts related to source control, pollution prevention, and stormwater control programs. TRE efforts should be coordinated with such efforts. To prevent duplication of efforts, evidence of complying with requirements or recommended efforts of such programs may be acceptable to demonstrate compliance with TRE requirements.
- i. Chronic toxicity may be episodic and identification of causes of and reduction of sources of chronic toxicity may not be successful. Regional Water Board enforcement considerations will be based in part on the Discharger's actions and efforts to identify and control or reduce sources of consistent toxicity.

## **V. RECEIVING WATER MONITORING REQUIREMENTS**

The Discharger shall continue to participate in the Regional Monitoring Program, which collects data on pollutants and toxicity in San Francisco Bay water, sediment, and biota. The Discharger shall also monitor Sulphur Springs Creek, Beaver Creek, and Buffalo Wallow at Monitoring Locations RSW-001, RSW-002, and RSW-003 for the standard observations listed in Attachment G section III.C.1 at least once per month and once during each storm that produces significant stormwater discharge (i.e., sufficient flow for sample collection).

## **VI. REPORTING REQUIREMENTS**

### **A. General Monitoring and Reporting Requirements**

The Discharger shall comply with all standard provisions in Attachments D and G related to monitoring, reporting, and recordkeeping, with the modifications shown in MRP section VIII.

**B. Self-Monitoring Reports (SMRs)**

**1. SMR Format.** The Discharger shall electronically submit SMRs using the State Water Board’s California Integrated Water Quality System (CIWQS) Web site (<http://www.waterboards.ca.gov/ciwqs/index.html>). The CIWQS website will provide additional information for SMR submittal in the event of a planned service interruption for electronic submittal.

**2. SMR Due Dates and Contents.** The Discharger shall submit SMRs by the due dates, and with the contents, specified below:

**a. Monthly SMRs** — Monthly SMRs shall be due 30 days after the end of each calendar month, covering that calendar month. The monthly SMR shall contain the applicable items described in sections V.B and V.C of both Attachments D and G. See Provision VI.C.2 (Effluent Characterization Study and Report) of the Order for information that must also be reported with monthly SMRs.

Monthly SMRs shall include all new monitoring results obtained since the last SMR was submitted. If the Discharger monitors any pollutant more frequently than required by this Order, the Discharger shall include the results of such monitoring in the calculations and reporting for the SMR.

**b. Annual SMR** — Annual SMRs shall be due February 1 each year, covering the previous calendar year. The annual SMR shall contain the items described in Attachment G section V.C.1.f. See also Provision VI.C.2 (Effluent Characterization Study and Report) of the Order for information that must also be reported with the annual SMR.

**3. Specifications for Submitting SMRs to CIWQS.** The Discharger shall submit analytical results and other information using one of the following methods:

**Table E-4. CIWQS Reporting**

Parameter	Method of Reporting	
	EDF/CDF data upload or manual entry	Attached File
All parameters identified in influent, effluent, and receiving water monitoring tables (except Dissolved Oxygen and Temperature)	Required for all results	
Dissolved Oxygen Temperature	Required for monthly maximum and minimum results only <sup>[1]</sup>	Discharger may use this method for all results or keep records
Antimony Arsenic Beryllium Cadmium Chromium Copper Cyanide Lead Mercury Nickel	Selenium Silver Thallium Zinc Dioxins & Furans (by U.S. EPA Method 1613) Other Pollutants (by U.S. EPA methods 601, 602, 608, 610, 614, 624, and 625)	Required for all results <sup>[2]</sup>

Parameter	Method of Reporting	
	EDF/CDF data upload or manual entry	Attached File
Analytical Method	Not required (Discharger may select “data unavailable”) <sup>[1]</sup>	
Collection Time Analysis Time	Not required (Discharger may select “0:00”) <sup>[1]</sup>	

**Footnotes:**

- <sup>[1]</sup> The Discharger shall continue to monitor at the minimum frequency specified in this MRP, keep records of the measurements, and make the records available upon request.
- <sup>[2]</sup> These parameters require EDF/CDF data upload or manual entry regardless of whether monitoring is required by this MRP or other provisions of this Order.

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

**4. Monitoring Periods.** Monitoring periods for all required monitoring shall be as set forth below unless otherwise specified:

**Table E-5. Monitoring Periods**

Sampling Frequency	Monitoring Period Begins On...	Monitoring Period
Continuous	Order effective date	All times
1/Day	Order effective date	Daily, 12:00 a.m. through 11:59 p.m.
1/Week	Sunday following (or on) Order effective date	Sunday through Saturday
1/Month	First day of calendar month following (or on) Order effective date	First day of calendar month through last day of calendar month
1/Quarter <sup>[1]</sup>	Closest January 1, April 1, July 1, or October 1 before or after Order effective date	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31
2/Year <sup>[1]</sup>	Closest May 1 or November 1 before or after Order effective date	Once during wet season (typically November 1 through April 30) and once during the dry season (typically May 1 through October 31)
1/Year	Closest January 1 before or after Order effective date	January 1 through December 31
Each Storm <sup>[2]</sup>	As soon as possible after the Discharger becomes aware of the event	Anytime during the discharge event when sampling represents conditions during the discharge event

**Footnote:**

- <sup>[1]</sup> Monitoring conducted during the term of the previous order may be used to satisfy monitoring required by this Order.
- <sup>[2]</sup> Each storm that produces significant stormwater discharge (i.e., sufficient flow for sample collection).



**5. RL and MDL Reporting.** The Discharger shall report with each sample result the Reporting Level (RL) and Method Detection Limit (MDL) as determined by the procedure in 40 C.F.R. part 136. The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

- a. Sample results greater than or equal to the RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
- b. Sample results less than the RL, but greater than or equal to the laboratory’s MDL, shall be reported as “Detected, but Not Quantified,” or DNQ. The estimated chemical concentration of the sample shall also be reported.

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

- c. Sample results less than the laboratory’s MDL shall be reported as “Not Detected” ND.
- d. The Discharger shall instruct laboratories to establish calibration standards so that the minimum level (ML) value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

**6. Compliance Determination.** Compliance with effluent limits for priority pollutants shall be determined using sample reporting protocols defined above and in the Fact Sheet and Attachments A, D, and G. For purposes of reporting and administrative enforcement by the Regional Water Board and State Water Board, the Discharger shall be deemed out of compliance with effluent limits if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limit and greater than or equal to the reporting level RL.

**C. Discharge Monitoring Reports (DMRs)**

- 1. The State Water Board has notified the Discharger to electronically submit DMRs. If such notification is rescinded, the Discharger shall submit DMRs in accordance with the requirements described below.
- 2. The Discharger shall submit hard copy DMRs. The Discharger shall sign and certify DMRs as Attachment D requires. The Discharger shall submit DMRs to one of the addresses listed below:

Standard Mail	FedEx/UPS/Other Private Carriers
State Water Resources Control Board Division of Water Quality c/o DMR Processing Center PO Box 100 Sacramento, CA 95812-1000	State Water Resources Control Board Division of Water Quality c/o DMR Processing Center 1001 I Street, 15 <sup>th</sup> Floor Sacramento, CA 95814

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

## VII. MODIFICATIONS TO ATTACHMENT G

This MRP modifies Attachment G as indicated below:

### A. Attachment G section V.C.1.c.2 is revised as follows:

- 2) When determining compliance with an average monthly or maximum daily effluent limit 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 nondetect (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:
  - i. The data set shall be ranked from low to high, reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.
  - ii. 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.

If a sample result, or the arithmetic mean or median of multiple sample results, is below the reporting limit, and there is evidence that the priority pollutant is present in the effluent above an effluent limit and the Discharger conducts a Pollutant Minimization Program, the Discharger shall not be deemed out of compliance.

### B. Attachment G sections V.C.1.f and V.C.1.g are revised as follows, and section V.C.1.h (Reporting data in electronic format) is deleted:

- f. Annual self monitoring report requirements

By the date specified in the MRP, the Discharger shall submit an annual report to the Regional Water Board covering the previous calendar year. The report shall contain the following:

- 1) Annual compliance summary table of treatment plant performance, including documentation of any blending events (this summary table is not required if the Discharger has submitted the year's monitoring results to CIWQS in electronic reporting format by EDF/CDF upload or manual entry);
- 2) Comprehensive discussion of treatment plant performance and compliance with the permit (This discussion shall include any corrective actions taken or planned, such as changes to facility equipment or operation practices that may be needed to achieve compliance, and any other actions taken or planned that are intended to improve

- performance and reliability of the Discharger's wastewater collection, treatment, or disposal practices.);
- 3) Both tabular and graphical summaries of the monitoring data for the previous year if parameters are monitored at a frequency of monthly or greater (this item is not required if the Discharger has submitted the year's monitoring results to CIWQS in electronic reporting format by EDF/CDF upload or manual entry);
  - 4) List of approved analyses, including the following:
    - (i) List of analyses for which the Discharger is certified;
    - (ii) List of analyses performed for the Discharger by a separate certified laboratory (copies of reports signed by the laboratory director of that laboratory shall not be submitted but be retained onsite); and
    - (iii) List of "waived" analyses, as approved;
  - 5) Plan view drawing or map showing the Discharger's facility, flow routing, and sampling and observation station locations;
  - 6) Results of annual facility inspection to verify that all elements of the SWPP Plan are accurate and up to date (only required if the Discharger does not route all stormwater to the headworks of its wastewater treatment plant); and
  - 7) Results of facility report reviews. (The Discharger shall regularly review, revise, and update, as necessary, the O&M Manual, the Contingency Plan, the Spill Prevention Plan, and Wastewater Facilities Status Report so that these documents remain useful and relevant to current practices. At a minimum, reviews shall be conducted annually. The Discharger shall include, in each Annual Report, a description or summary of review and evaluation procedures, recommended or planned actions, and an estimated time schedule for implementing these actions. The Discharger shall complete changes to these documents to ensure they are up-to-date.)

g. Report submittal

The Discharger shall submit SMRs addressed as follows, unless the Discharger submits SMRs electronically to CIWQS:

California Regional Water Quality Control Board  
San Francisco Bay Region  
1515 Clay Street, Suite 1400  
Oakland, CA 94612  
Attn: NPDES Wastewater Division

h. Reporting data in electronic format – *Deleted*

**3. Attachment G sections V.E.2, V.E.2.a, and V.E.2.c are revised as follows, and sections V.E.2.b (24-hour Certification) and V.E.2.d (Communication Protocol) are deleted:**

2. Unauthorized Discharges from Municipal Wastewater Treatment Plants<sup>1</sup>

The following requirements apply to municipal wastewater treatment plants that experience an unauthorized discharge at their treatment facilities and supersede requirements imposed on the Discharger by the Executive Officer by letter of May 1, 2008.

a. Two (2)-Hour Notification

For any unauthorized discharges that enter a drainage channel or a surface water, the Discharger shall, as soon as possible, but not later than two (2) hours after becoming aware of the discharge, notify the California Office of Emergency Services (CalOES, currently 800-852-7550), the local health officers or directors of environmental health with jurisdiction over the affected water bodies, and the Regional Water Board. Timely notification by the Discharger to CalOES also satisfies notification to the Regional Water Board. Notification shall include the following:

- 1) Incident description and cause;
- 2) Location of threatened or involved waterway(s) or storm drains;
- 3) Date and time the unauthorized discharge started;
- 4) Estimated quantity and duration of the unauthorized discharge (to the extent known), and the estimated amount recovered;
- 5) Level of treatment prior to discharge (e.g., raw wastewater, primary treated, undisinfected secondary treated, and so on); and
- 6) Identity of the person reporting the unauthorized discharge.

b. 24-hour Certification – *Deleted*

c. 5-day Written Report

Within five business days, the Discharger shall submit a written report that includes, in addition to the information required above, the following:

- 1) Methods used to delineate the geographical extent of the unauthorized discharge within receiving waters;
- 2) Efforts implemented to minimize public exposure to the unauthorized discharge;
- 3) Visual observations of the impacts (if any) noted in the receiving waters (e.g., fish kill, discoloration of water) and the extent of sampling if conducted;

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<sup>1</sup> California Code of Regulations, Title 23, Section 2250(b), defines an unauthorized discharge to be a discharge, not regulated by waste discharge requirements, of treated, partially-treated, or untreated wastewater resulting from the intentional or unintentional diversion of wastewater from a collection, treatment or disposal system.

- 4) Corrective measures taken to minimize the impact of the unauthorized discharge;
  - 5) Measures to be taken to minimize the chances of a similar unauthorized discharge occurring in the future;
  - 6) Summary of Spill Prevention Plan or O&M Manual modifications to be made, if necessary, to minimize the chances of future unauthorized discharges; and
  - 7) Quantity and duration of the unauthorized discharge, and the amount recovered.
- d. Communication Protocol – *Deleted*

**APPENDIX E-1**  
**CHRONIC TOXICITY**  
**DEFINITION OF TERMS AND SCREENING PHASE REQUIREMENTS**

**I. Definition of Terms**

- A. No observed effect level (NOEL) for compliance determination is equal to IC<sub>25</sub> or EC<sub>25</sub>. If the IC<sub>25</sub> or EC<sub>25</sub> cannot be statistically determined, the NOEL shall be equal to the NOEC derived using hypothesis testing.
- B. Effective concentration (EC) is a point estimate of the toxicant concentration that would cause an adverse effect on a quantal, “all or nothing,” response (such as death, immobilization, or serious incapacitation) in a given percent of the test organisms. If the effect is death or immobility, the term lethal concentration (LC) may be used. EC values may be calculated using point estimation techniques such as probit, logit, and Spearman-Kärber. EC<sub>25</sub> is the concentration of toxicant (in percent effluent) that causes a response in 25 percent of the test organisms.
- C. Inhibition concentration (IC) is a point estimate of the toxicant concentration that would cause a given percent reduction in a nonlethal, nonquantal biological measurement, such as growth. For example, an IC<sub>25</sub> is the estimated concentration of toxicant that would cause a 25 percent reduction in average young per female or growth. IC values may be calculated using a linear interpolation method such as U.S. EPA's Bootstrap Procedure.
- D. No observed effect concentration (NOEC) is the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specific time of observation. It is determined using hypothesis testing.

**II. Chronic Toxicity Screening Phase Requirements**

- A. The Discharger shall perform screening phase monitoring:
  - 1. Subsequent to any significant change in the nature of the effluent discharged through changes in sources or treatment, except those changes resulting from reductions in pollutant concentrations attributable to source control efforts, or
  - 2. Prior to permit reissuance. Screening phase monitoring data shall be included in the NPDES permit application for reissuance. The information shall be as recent as possible, but may be based on screening phase monitoring conducted within 5 years before the permit expiration date.
- B. Design of the screening phase shall, at a minimum, consist of the following elements:
  - 1. Use of test species specified in Appendix E-2, attached, and use of the protocols referenced in those tables.

2. Two stages:
    - a. Stage 1 shall consist of a minimum of one battery of tests conducted concurrently. Selection of the type of test species and minimum number of tests shall be based on Appendix E-2 (attached).
    - b. Stage 2 shall consist of a minimum of two test batteries conducted at a monthly frequency using the three most sensitive species based on the Stage 1 test results.
  3. Appropriate controls.
  4. Concurrent reference toxicant tests.
  5. Dilution series of 100%, 50%, 25%, 10%, 5%, and 0%, where “%” is percent effluent as discharged, or as otherwise approved by the Executive Officer if different dilution ratios are needed to reflect discharge conditions.
- C. The Discharger shall submit a screening phase proposal. The proposal shall address each of the elements listed above. If within 30 days, the Executive Officer does not comment, the Discharger shall commence with screening phase monitoring.

**APPENDIX E-2  
 SUMMARY OF TOXICITY TEST SPECIES REQUIREMENTS**

**Table AE-1. Critical Life Stage Toxicity Tests for Estuarine Waters**

Species	(Scientific Name)	Effect	Test Duration	Reference
Alga	<i>(Skeletonema costatum)</i> <i>(Thalassiosira pseudonana)</i>	Growth rate	4 days	1
Red alga	<i>(Champia parvula)</i>	Number of cystocarps	7–9 days	3
Giant kelp	<i>(Macrocystis pyrifera)</i>	Percent germination; germ tube length	48 hours	2
Abalone	<i>(Haliotis rufescens)</i>	Abnormal shell development	48 hours	2
Oyster Mussel	<i>(Crassostrea gigas)</i> <i>(Mytilus edulis)</i>	Abnormal shell development; percent survival	48 hours	2
Echinoderms - Urchins Sand dollar	<i>(Strongylocentrotus purpuratus,</i> <i>S. franciscanus)</i> <i>(Dendraster excentricus)</i>	Percent fertilization or larval development	1 hour or 72 hours	2
Shrimp	<i>(Americamysis bahia)</i>	Percent survival; growth	7 days	3
Shrimp	<i>(Holmesimysis costata)</i>	Percent survival; growth	7 days	2
Topsmelt	<i>(Atherinops affinis)</i>	Percent survival; growth	7 days	2
Silversides	<i>(Menidia beryllina)</i>	Larval growth rate; percent survival	7 days	3

**Toxicity Test References:**

1. American Society for Testing Materials (ASTM). 1990. Standard Guide for Conducting Static 96-Hour Toxicity Tests with Microalgae. Procedure E 1218-90. ASTM, Philadelphia, PA.
2. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to West Coast Marine and Estuarine Organisms. EPA/600/R-95/136. August 1995.
3. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Marine and Estuarine Organisms. EPA/821/R-02/014. October 2002.



**Table AE-2. Critical Life Stage Toxicity Tests for Fresh Waters**

Species	(Scientific Name)	Effect	Test Duration	Reference
Fathead minnow	<i>(Pimephales promelas)</i>	Survival; growth rate	7 days	4
Water flea	<i>(Ceriodaphnia dubia)</i>	Survival; number of young	7 days	4
Alga	<i>(Selenastrum capricornutum)</i>	Final cell density	4 days	4

**Toxicity Test Reference:**

1. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, fourth Edition Chronic manual (EPA-821-R-02-013, October 2002).

**Table AE-3. Toxicity Test Requirements for Stage One Screening Phase**

Requirements	Receiving Water Characteristics		
	Discharges to Coast	Discharges to San Francisco Bay <sup>[1]</sup>	
	Ocean	Marine/Estuarine	Freshwater
Taxonomic diversity	1 plant 1 invertebrate 1 fish	1 plant 1 invertebrate 1 fish	1 plant 1 invertebrate 1 fish
Number of tests of each salinity type: Freshwater <sup>[2]</sup>	0	1 or 2	3
Marine/Estuarine	4	3 or 4	0
Total number of tests	4	5	3

Footnotes:

- <sup>[1]</sup> (a) Marine refers to receiving water salinities greater than 1 part per thousand (ppt) at least 95 percent of the time during a normal water year.  
 (b) Freshwater refers to receiving water with salinities less than 1 ppt at least 95 percent of the time during a normal water year.  
 (c) Estuarine refers to receiving water salinities that fall between those of marine and freshwater, as described above.
- <sup>[2]</sup> The freshwater species may be substituted with marine species if:  
 (a) The salinity of the effluent is above 1 ppt greater than 95 percent of the time, or  
 (b) The ionic strength (TDS or conductivity) of the effluent at the test concentration used to determine compliance is documented to be toxic to the test species.

## ATTACHMENT F - FACT SHEET

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## ATTACHMENT F – FACT SHEET

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

### I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility:

**Table F-1. Facility Information**

<b>WDID</b>	2 482004001
<b>CIWQS Place ID</b>	223950
<b>Discharger</b>	Valero Refining Company-California
<b>Facility Name</b>	Valero Benicia Refinery
<b>Facility Address</b>	3400 East Second Street Benicia, CA 94510 Solano County
<b>Facility Contact, Title, Phone</b>	Kimberly Ronan, Environmental Engineer, (707) 745-7990
<b>Authorized Person to Sign and Submit Reports</b>	Christopher W. Howe, Director of Health, Safety, Environment, and Government Affairs, (707) 745-7534
<b>Mailing Address</b>	Same as facility address
<b>Billing Address</b>	Same as mailing address
<b>Facility Type</b>	Petroleum Refinery
<b>Major or Minor Facility</b>	Major
<b>Threat to Water Quality</b>	1
<b>Complexity</b>	A
<b>Pretreatment Program</b>	N/A
<b>Reclamation Requirements</b>	N
<b>Mercury and PCBs Requirements</b>	NPDES Permit No. CA0038849
<b>Wastewater Treatment Plant Design Flow</b>	3.7 million gallons per day (MGD)
<b>Average Facility Flow (2014)</b>	2.09 MGD
<b>Watershed</b>	Suisun Basin
<b>Receiving Water</b>	Suisun Bay, Carquinez Strait
<b>Receiving Water Type</b>	Estuarine

**A.** Valero Refining Company-California (Discharger) owns and operates the Valero Benicia Refinery (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 Discharger is regulated pursuant to National Pollutant Discharge Elimination System (NPDES) Permit No. CA0005550. It was previously subject to Order No. R2-2009-0079 (previous order),

which was adopted on November 18, 2009, and expired on December 31, 2014, but was administratively extended by operation of law.

The Facility discharges wastewater and stormwater to Suisun Bay and Carquinez Strait, waters of the United States within the Suisun Basin watershed. Attachment B provides a location map. Attachment C provides process flow diagrams for the Facility and its wastewater treatment plant.

When applicable, State law requires dischargers to file a petition with the State Water Resources Control Board's (State Water Board's) Division of Water Rights and receive approval for any change in the point of discharge, place of use, or purpose of use of treated wastewater that decreases the flow in any portion of a watercourse. The State Water Board retains separate jurisdictional authority to enforce such requirements under Water Code 1211. This is not an NPDES permit requirement.

- C. The Discharger filed a Report of Waste Discharge and submitted an application for reissuance of its Waste Discharge Requirements (WDRs) and NPDES permit on June 26, 2014.
- D. The discharge is also regulated under NPDES Permit No. CA0038849, which establishes mercury and polychlorinated biphenyls (PCBs) requirements for wastewater discharges to San Francisco Bay. This Order does not affect that permit. The Facility is also regulated by Order Nos. R2-2013-0033 (Updated Waste Discharge Requirements) and R2-2014-0004 (Updated Site Cleanup Requirements).

## II. FACILITY DESCRIPTION

### A. Wastewater Treatment and Control

#### 1. Facility Overview

The Facility can process 165,000 barrels per day (bbls/d) of crude oil, producing hydrocarbon products, byproducts, and intermediates. The Facility processed an average of approximately 140,100 bbls/d from 2010 through 2013. Facility wastewaters include asphalt plant wastewater, sour water (i.e., process wastewater containing significant hydrogen sulfide), crude water from onsite and offsite storage facilities, cooling tower and steam boiler blowdown, raw water treatment backwash, process area stormwater runoff, and miscellaneous wastewaters. These wastewaters are treated at the wastewater treatment plant and discharged to Suisun Bay, a water of the State and United States, through a submerged diffuser approximately 1,100 feet offshore (Discharge Point No. 001). The Facility also discharges stormwater runoff as described in Fact Sheet section II.A.3, below.

The treatment plant design flow is approximately 3.7 million gallons per day (MGD). The Facility's maximum discharge capacity (i.e., discharge pumping rate) through Discharge Point No. 001 is 4.1 MGD. This higher flow can be reached when both treated wastewater and stormwater are discharged. The average flow for 2014 was 2.09 MGD.

To conserve potable water, the Discharger also recycles treated effluent for onsite landscape irrigation and the refinery firewater system.

## 2. Wastewater Treatment

The plant's major components include the following:

- Surge and Equalization Tanks,
- Oil/Water Separators,
- Induced Static Flotation system,
- Activated sludge system (Biox system),
- Induced Air Flotation system,
- Reactor Clarifier (for selenium removal),
- Final Pond, and
- Stormwater Retention Ponds.

Prior to entering the plant, some wastewater is also pre-treated by a Deoiler, Sour Water Stripper, or Sour Water Stripper and pre-Biox Aerator. The treatment processes are discussed in more detail below. Attachment C contains process flow diagrams.

- a. **Initial Treatment.** Wastewater enters the plant as three streams: benzene-containing oily wastewater (oily wastewater), process wastewater (including stormwater from process areas), and stripped sour water. These three streams are treated separately, then combined and treated as described below.
  - i. **Oily Wastewater.** Oily wastewater may be pre-treated by the Deoiler, which consists of a corrugated plate separator and induced static flotation unit. The Deoiler is not operated continuously. Removed oil is sent to slop tanks. Oily wastewater enters the plant upstream of the Surge and Equalization Tanks, where it combines with process wastewater.
  - ii. **Process Wastewater.** Process wastewater enters the treatment plant through Strainers and the Surge and Equalization Tanks. The Strainers remove grit, which is transported offsite for disposal. The Surge and Equalization Tanks provide surge and equalization capacity, and can store approximately 500,000 gallons of first flush stormwater. They typically operate at 60 percent capacity.

The selenium removal system (see Fact Sheet section II.A.2.b.iii, below) limits the plant treatment capacity to approximately 2,000 gallons per minute (gpm). Oily wastewater and stripped sour water (see Fact Sheet sections II.A.2.a.ii and II.A.2.a.iv, below) use about 400 gpm of this capacity. Therefore, during heavy storms, influent exceeding approximately 1,600 gpm flows through a diversion pipeline to unlined, 12.5-million-gallon (MG) Stormwater Retention Ponds and, if necessary, to 15.3-MG Crude Field Retention Ponds (see Fact Sheet section II.A.3.c, below).

Effluent from the Surge and Equalization Tanks is treated by the Oil/Water Separators, followed by the Induced Static Flotation units. The Oil/Water Separators provide primary oil and suspended solids removal. The Induced Static Flotation units provide secondary oil and suspended solids removal through coagulation, flocculation, and flotation. Two of each of these units are configured in parallel; typically only one treatment train is operated at a time. The Oil/Water Separators can be bypassed for

maintenance. Removed oil is sent to slop tanks. Removed solids are routed to the Primary Sludge Thickener. Effluent from the Induced Static Flotation units flows to the Biox system.

- iii. Sour Water.** Sour water is pre-treated by the Sour Water Stripper (located outside the plant in the refinery process area). The Sour Water Stripper removes ammonia and hydrogen sulfide. Stripped sour water then enters the plant, where approximately one-third flows directly to the Biox system, and approximately two-thirds is further aerated by the pre-Biox Aerator before flowing to the Biox system.
- b. Combined Wastewater Treatment.** The combined wastewater from all three influent streams is treated by the Biox system, then the Induced Air Flotation unit, and then the Reactor Clarifier. Sodium hydroxide is added to Reactor Clarifier effluent to control pH. Treated effluent then flows to the Final Pond, from which it is discharged to Suisun Bay. These treatment steps are described in greater detail below:
    - i. Biox System.** The Biox system is an activated sludge treatment system consisting of three aeration cells, with corresponding clarifiers operated in parallel. Powdered activated carbon is added to each aeration cell to absorb toxicants and otherwise improve effluent quality. The clarifiers separate treated wastewater from biological solids. Biological solids are returned to the aeration cells to maintain biomass health and density. A portion is periodically sent to the Biox Sludge Thickener.
    - ii. Induced Air Flotation System.** The Induced Air Flotation system provides additional solids separation by introducing air to float residual solids, which are then skimmed from the top. The solids are pumped to the Biox Sludge Thickener.
    - iii. Reactor Clarifier.** The Reactor Clarifier co-precipitates selenium as selenite using ferric chloride, pH adjustment, and polymer addition to enhance flocculation. The resulting iron sludge is pumped to the Iron Sludge Thickener. The Reactor Clarifier includes a surge tank to provide surge capacity for Induced Air Flotation system effluent. Reactor Clarifier effluent is sent to Tank TK-2078, where sodium hydroxide is added to increase the pH as necessary.
    - iv. Final Pond.** The Final Pond provides flow equalization for the effluent pumps. Moreover, if treated wastewater in the Final Pond exceeds effluent limits, it can be pumped to the Crude Field Retention Ponds for storage and later treatment, or discharged without further treatment if it later meets effluent limits. An 8-inch pipe allows emergency or maintenance bypasses of the Final Pond to Sulphur Springs Creek if severe damage to treatment equipment is imminent. Such bypasses are subject to Attachment D section I.G.
- c. Solids Handling**
    - i. Primary Sludge Thickener.** The Primary Sludge Thickener provides solids thickening for Deoiler, Oil/Water Separator, and Induced Static Flotation sludge. Supernatant from the Primary Sludge Thickener is sent to the Oil/Water Separators or the Biox system.

- ii. **Biox Sludge Thickener.** The Biox Sludge Thickener collects activated sludge and skimmed solids from the Biox system, and separates water from the solids. The settled sludge is pumped to the Cone Tank or Frac Tanks; supernatant flows to the Wet Well.
- iii. **Wet Well.** The Wet Well collects supernatant from the Biox Sludge Thickener and water from wastewater treatment area drains, and pumps it to the Biox system.
- iv. **Cone Tank and Frac Tanks.** The Cone Tank and Frac Tanks hold sludges from the Primary Sludge Thickener and Biox Sludge Thickener. These sludges are transported by vacuum truck to the Fluid Coker for reuse or offsite for disposal.
- v. **Iron Sludge Thickener.** Sludge from the Reactor Clarifier is pumped to the Iron Sludge Thickener for gravity dewatering. Supernatant is returned to the Reactor Clarifier.

### 3. Stormwater Management

The Facility discharges stormwater runoff from non-process areas through 16 stormwater discharge points (see Table 1 of the Order). This Order removes former Discharge Point No. 016 and authorizes new Discharge Point No. 018 (see Fact Sheet section IV.D.2).

The Facility also discharges stormwater runoff from process areas and storage tank secondary containment areas. This stormwater is treated at the plant and discharged at Discharge Point No. 001 or at stormwater discharge points as described below.

- a. **Secondary Containment Areas.** Stormwater from the following secondary containment areas may be discharged at the following stormwater outfalls if the Discharger complies with Provision VI.C.4.c.i:
  - Lower Level Tank Farm (Discharge Point Nos. 003 and 018);
  - Refinery Tank Farm and Crude Oil Storage Area (Discharge Point Nos. 006, 009, and 010); and
  - Intermediate Level Tank Farm (Discharge Point Nos. 009 and 010).

Most of these outfalls are open ditches or culverts; however, discharge is controlled by valves that are normally closed and can only be released manually, which facilitates monitoring prior to discharge. Stormwater not meeting effluent limits is sent to the plant for treatment and discharged at Discharge Point No. 001 (see Fact Sheet section VI.C.4.c.i).

- b. **Refinery Crude Pipeline Area.** Stormwater from areas under or near the crude pipeline, as described in Table 1, flows to Discharge Point Nos. 011 through 015. It is collected in sumps controlled by valves that are normally closed and can only be released manually, which allows visual inspection prior to discharge. If oil or color is observed, stormwater from these locations is collected using vacuum trucks and sent to the plant for treatment and discharged at Discharge Point No. 001.



- c. **Diverted Stormwater.** Stormwater diverted to the Stormwater Retention Ponds and Crude Field Retention Ponds (see Fact Sheet section II.A.2.a.i) may be discharged without further treatment with treated process wastewater at Discharge Point No. 001 if it complies with Provision VI.C.4.c.ii of the Order. Otherwise, this stormwater is sent to the plant for treatment prior to discharge (see Fact Sheet section VI.C.4.c.ii). Provision VI.C.4.c.ii of the Order requires the Discharger to sample and analyze for TSS, oil and grease, and pH prior to discharge. The Discharger may discharge this stormwater directly through Discharge Point No. 001 only if the results do not exceed the levels listed in Provision VI.C.4.c.ii(c), and stormwater discharges from Discharge Point No. 001 are subject to all effluent limits that apply to Discharge Point No. 001 (see section IV.A of the Order).

Previously, the Discharger has been required to treat all such diverted stormwater; however, because it is usually relatively cold and typically contains relatively low pollutant concentrations, treating large volumes of this water can significantly reduce the treatment efficiency of activated sludge treatment systems, such as the Biox system. Authorizing more flexibility in handling large stormwater flows is expected to reduce the frequency of bypasses and flooding.

- d. **Construction Stormwater.** Construction stormwater is discharged at permitted stormwater discharge points if the Discharger has revised its Stormwater Pollution Prevention Plan (SWPPP) as required by Provision VI.C.4.c.iv (see Fact Sheet section VI.C.4.c.iv).

**B. Discharge Points and Receiving Waters**

Treated wastewater is discharged to Suisun Bay through a submerged diffuser approximately 1,100 feet offshore (Discharge Point No. 001). The Discharger may upgrade this outfall and diffuser during the term of this Order. Stormwater is discharged to Suisun Bay and Carquinez Strait through various tributaries and the City of Benicia storm drain system (Discharge Point Nos. 002 through 018).

**C. Summary of Previous Requirements and Monitoring Data**

Effluent limits and representative monitoring data from the previous order term are presented below for Discharge Point No. 001:

**Table F-2. Previous Effluent Limits and Monitoring Data – Discharge Point No. 001**

Parameter	Units	Effluent Limits		Monitoring Data (1/7/10 – 7/1/14)	
		Average Monthly	Maximum Daily	Highest Monthly Average	Highest Daily Discharge
Biochemical Oxygen Demand, 5-day @ 20°C (BOD <sub>5</sub> )	lbs/day	1,900	3,400	334	334
Chemical Oxygen Demand (COD)	lbs/day	13,000	26,000	3,130	3,130
Total Suspended Solids (TSS)	lbs/day	1,500	2,400	477	1,643

Parameter	Units	Effluent Limits		Monitoring Data (1/7/10 – 7/1/14)	
		Average Monthly	Maximum Daily	Highest Monthly Average	Highest Daily Discharge
Oil and Grease	lbs/day	550	1,000	53	118
Phenolic Compounds	lbs/day	12	26	0.96	1.8
Total Ammonia, as N <sup>[1]</sup>	lbs/day	1,000	2,300	39	73
	mg/L	5.7	20	3.9	3.9
Sulfide	lbs/day	10	22	2.5	2.9
Total Chromium	lbs/day	18	52	0.080	0.14
Chromium (VI)	lbs/day	1.5	3.5	0.45	0.45
pH	standard units	6.0 – 9.0 at all times		Min 6.1 – Max 8.8	
Acute Toxicity	% Survival	<sup>[2]</sup>		<sup>[2]</sup>	
Copper, Total Recoverable	µg/L	70	120	12	16
Selenium, Total Recoverable	µg/L	43	60	26	67
Zinc, Total Recoverable	µg/L	240	560	69	69
Cyanide, Total	µg/L	21	42	22	65
Dioxin-TEQ <sup>[3]</sup>	µg/L	$1.4 \times 10^{-7}$ <sup>[3]</sup>	---	$2.3 \times 10^{-8}$	$2.3 \times 10^{-8}$
Dioxin-TEQ	µg/L	$1.4 \times 10^{-8}$	$2.8 \times 10^{-8}$	$1.3 \times 10^{-8}$	$1.3 \times 10^{-8}$

Unit Abbreviations:

lbs/day = pounds per day  
kg/day = kilograms per day  
µg/L = micrograms per liter  
mg/L = milligrams per liter as nitrogen

Footnotes:

- <sup>[1]</sup> These were two separate limits, a technology-based limit in lbs/day and a water quality-based limit in mg/L.  
<sup>[2]</sup> The limits were an 11-sample median value of not less than 90 percent survival and an 11-sample 90th percentile value of not less than 70 percent survival. The lowest survival reported was 0 percent from March through May 2011; however, these 8 results did not lead to permit violations because the toxicity was due solely to ammonia at concentrations below the ammonia effluent limits.  
<sup>[3]</sup> Interim effluent limit effective from January 1, 2003 through January 1, 2013.

The previous order’s effluent stormwater limits for Discharge Point Nos. 002 through 017 are presented below (no data are provided for Discharge Point No. 018 because the outfall has not yet been constructed):

**Table F-3. Previous Effluent Limits – Discharge Point Nos. 002 through 017**

Parameter	Units	Average Monthly	Maximum Daily
Oil and Grease	mg/L		15
Total Organic Carbon (TOC)	mg/L	---	110
pH	standard units	6.5 – 8.5 at all times	

Unit Abbreviation:

mg/L = milligrams per liter

Footnote:

- [1] Supplemental limits effective if oil and grease or TOC maximum daily limits are exceeded.  
 [2] Rolling 30-day average, calculated as arithmetic average of the concentrations detected over the current day and previous 29 days, applicable only if there is sufficient runoff for sampling on at least three out of 30 consecutive days.

Maximum and average monitoring data for the previous order term are presented in the tables below for Discharge Point Nos. 002 through 017:

**Table F-4. Previous Monitoring Data – Discharge Point Nos. 002 through 017**

Discharge Point No.	TOC (mg/L)		Oil and Grease (mg/L)		pH (standard units)	
	Daily Maximum	Average	Daily Maximum	Average	Minimum	Maximum
002	37	14	<5	<5	7.7	8.2
003	48	21	<5	<5	6.9	8.4
004	56	18	5.5	<5	7.5	8.3
005	45	19	<5	<5	7.3	8.5
006	47	19	<5	<5	8.0	8.5
007	93	31	13	5.7	7.0	8.4
008	43	17	<5	<5	7.5	8.3
009	29	12	25	<5	7.1	8.3
010	16	10	8.2	<5	7.5	8.3
011	14	6.2	<5	<5	7.0	8.3
012	56	14	<5	<5	6.7	8.3
013	59	18	<5	<5	7.3	8.1
014	26	11	<5	<5	7.4	8.3
015	44	12	<5	<5	7.5	8.2
016	11	7.2	<5	<5	7.3	8.3
017	65	9.3	6.2	<5	7.6	8.5

Unit Abbreviation:  
 mg/L = milligrams per liter

**Table F-5. Previous Monitoring Data – Discharge Point Nos. 002 through 017 (Supplemental)**

Discharge Point No.	BOD (mg/L)		TSS (mg/L)		COD (mg/L)		Phenolic Compounds (mg/L)		Total Chromium (µg/L) [1]	
	Daily Maximum	Average	Daily Maximum	Average	Daily Maximum	Average	Daily Maximum	Average	Daily Maximum	Average
002	--	--	100	100	--	--	--	--	--	--
003	--	--	100	100	--	--	--	--	--	--
004	--	--	150	150	--	--	--	--	--	--
005	--	--	59	59	--	--	--	--	--	--
006	--	--	200	200	--	--	--	--	--	--
007	--	--	3,100	3,100	--	--	--	--	--	--
008	--	--	420	420	--	--	--	--	--	--
009	8	5	520	86	233	<50	0.015	0.0063	0.022	0.0076
010	--	--	200	200	--	--	--	--	--	--
011	--	--	530	530	--	--	--	--	--	--
012	--	--	54	54	--	--	--	--	--	--
013	--	--	59	59	--	--	--	--	--	--
014	--	--	180	180	--	--	--	--	--	--
015	--	--	160	160	--	--	--	--	--	--

Discharge Point No.	BOD (mg/L)		TSS (mg/L)		COD (mg/L)		Phenolic Compounds (mg/L)		Total Chromium (µg/L) <sup>[1]</sup>	
017	--	--	200	68	--	--	--	--	--	--

Unit Abbreviations:

mg/L = milligrams per liter  
µg/L = micrograms per liter

Footnote:

<sup>[1]</sup> Chromium (VI) not shown because no total chromium concentration exceeded limits for chromium (VI).

## D. Compliance Summary

During the previous order term, the Discharger violated the selenium and cyanide effluent limits at Discharge Point No. 001, and oil and grease and total suspended solids (TSS) effluent limits at Discharge Point No. 009, as listed below:

**Table F-6. Compliance Summary**

Violation Date	Unit	Discharge Point No.	Effluent Limit	Reported Value
3/18/2011	Selenium, Total Recoverable, Daily Maximum	001	50 µg/L	67 µg/L
3/22/2011	Cyanide, Total (as CN), Daily Maximum	001	42 µg/L	65 µg/L
1/21/2012	Oil and Grease, Daily Maximum	009	15 mg/L	25 mg/L
2/13/2012	TSS, Daily Maximum	009	33 mg/L	529 mg/L
3/13/2012	TSS, Daily Maximum	009	33 mg/L	63 mg/L
3/14/2012	TSS, Daily Maximum	009	33 mg/L	96 mg/L
3/16/2012	TSS, 30-Day Average	009	21 mg/L	62 mg/L
3/25/2012	TSS, 30-Day Average	009	21 mg/L	48 mg/L
3/27/2012	TSS, 30-Day Average	009	21 mg/L	41 mg/L
12/2/14	Cyanide, Total (as CN), Daily Maximum	001	42 µg/L	80 µg/L
12/4/14	Cyanide, Total (as CN), Daily Maximum	001	42 µg/L	48 µg/L
12/6/14	Cyanide, Total (as CN), Daily Maximum	001	42 µg/L	51 µg/L
12/17/14	Cyanide, Total (as CN), Daily Maximum	001	42 µg/L	57 µg/L
12/18/14	Cyanide, Total (as CN), Daily Maximum	001	42 µg/L	66 µg/L
12/31/14	Cyanide, Total (as CN), Monthly Average	001	21 µg/L	34 µg/L

Unit Abbreviations:

mg/L = milligrams per liter  
µg/L = micrograms per liter

On August 28, 2012, the Executive Officer issued Order No. R2-2012-0065, fining the Discharger \$27,000 in mandatory minimum penalties. Order R2-2012-0065 covered 11 process wastewater and stormwater violations from February 13, 2000, through March 27, 2012.

- 1. Corrective Actions for Discharge Point No. 001.** The March 2011 selenium violation was caused by a loss of utility water flow and subsequent collapse of the sludge bed in the selenium co-precipitation unit. The Discharger restored utility water flow and allowed the sludge bed to regenerate. Accelerated monitoring indicated no further violations.

The March 2011 cyanide violation was caused by insufficient ammonium polysulfide injection at the Fluid Catalytic Cracking and Coker units. The Discharger replaced an ammonium polysulfide injection pump and increased the injection rate. Accelerated monitoring indicated no further violations.

The December 2014 cyanide violations were again caused by insufficient ammonium polysulfide injection at the Fluid Catalytic Cracking and Coker units. The Discharger again replaced an ammonium polysulfide injection pump. Accelerated monitoring resulted in five additional maximum daily effluent limit violations and one monthly average effluent limit violation. Enforcement for these violations is pending.

2. **Corrective Actions for Discharge Point Nos. 009.** The January 2012 oil and grease violation triggered accelerated stormwater monitoring and supplemental stormwater effluent limits. The Discharger violated the daily maximum TSS limit and 30-day average TSS limit three times each. The Discharger added rocks and an oil boom around the catch basin inlet to Discharge Point No. 009, and vacuumed and cleaned out the catch basin. The Discharger later also paved the area around the catch basin to reduce dirt and silt runoff.

#### **E. Planned Changes**

The Discharger plans to complete the following projects. These changes are discussed for informational purposes only, and are not requirements of this Order, except to the extent that they pertain to increasing or ensuring treatment or wastewater collection system reliability. Inclusion here does not imply Regional Water Board authorization. The Discharger must obtain any necessary permits or permit modifications to implement these changes.

The Discharger may take measures yet to be determined to reduce the stripped sour water temperature by 10°F. This would compensate for the surface area no longer available for ambient cooling since November 22, 2013, when the previous Pre-Biox II Aerator was shut down due to damage caused by shifting soil.

The Discharger may also upgrade its deep-water outfall or diffuser. The existing effluent pipeline and diffuser are aging, and the Discharger may install a new diffuser at the current location or nearby. Provision VI.C.2.c contains requirements related to this project.

### **III. APPLICABLE PLANS, POLICIES, AND REGULATIONS**

- A. **Legal Authorities.** This Order serves as WDRs pursuant to California Water Code article 4, chapter 4, division 7 (commencing with § 13260). This Order is also issued pursuant to Clean Water Act (CWA) section 402 and implementing regulations adopted by U.S. EPA and Water Code chapter 5.5, division 7 (commencing with § 13370). It shall serve as an NPDES permit for point source discharges from the Facility to surface waters.
- B. **California Environmental Quality Act.** Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act, Public Resources Code division 13, chapter 3 (commencing with § 21100).
- C. **State and Federal Regulations, Policies, and Plans**

**1. Water Quality Control Plan.** The Regional Water Board adopted the *Water Quality Control Plan for the San Francisco Bay Basin* (Basin Plan), which designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Requirements in this Order implement the Basin Plan. In addition, this Order implements State Water Board Resolution No. 88-63, which established State policy that all waters, with certain exceptions, are to be considered suitable or potentially suitable for municipal or domestic supply.

Discharge Point No. 001 flows to Suisun Bay. Discharge Point Nos. 012 through 015 discharge to the City of Benicia storm drain system and ultimately to Carquinez Strait. Discharge Point Nos. 002 through 011, 017, and 018 flow to Sulphur Springs Creek, or to creeks and wetlands tributary to Sulphur Springs Creek; therefore, Sulphur Springs Creek’s beneficial uses apply. Total suspended solids (TSS) levels exceed 3,000 mg/L in Suisun Bay and Carquinez Strait, and Sulphur Springs Creek is heavily modified to collect storm water runoff. Therefore, all three receiving waters meet an exception to State Water Board Resolution No. 88-63, and none supports the municipal or domestic supply beneficial use. Beneficial uses applicable to Suisun Bay, Carquinez Strait, and Sulphur Springs Creek are as follows:

**Table F-7. Beneficial Uses**

Discharge Point No.	Receiving Water	Beneficial Uses
001	Suisun Bay	Industrial Service Supply (IND) Industrial Process Supply (PRO) Ocean, Commercial and Sport Fishing (COMM) Estuarine Habitat (EST) Fish Migration (MIGR) Preservation of Rare and Endangered Species (RARE) Fish Spawning (SPWN) Wildlife Habitat (WILD) Water Contact Recreation (REC1) Non-Contact Water Recreation (REC2) Navigation (NAV)
012 013 014 015	Carquinez Strait	Industrial Service Supply (IND) Ocean, Commercial and Sport Fishing (COMM) Estuarine Habitat (EST) Fish Migration (MIGR) Preservation of Rare and Endangered Species (RARE) Fish Spawning (SPWN) Wildlife Habitat (WILD) Water Contact Recreation (REC1) Non-Contact Water Recreation (REC2) Navigation (NAV)

Discharge Point No.	Receiving Water	Beneficial Uses
002 006 010 003 007 011 004 008 017 005 009 018	Sulphur Springs Creek	Freshwater Replenishment (FRSH) Warm Freshwater Habitat (WARM) Wildlife Habitat (WILD) Water Contact Recreation (REC1) Non-Contact Water Recreation (REC2)

2. **Sediment Quality.** The State Water Board adopted the *Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1, Sediment Quality* on September 16, 2008, and it became effective on August 25, 2009. This plan supersedes other narrative sediment quality objectives, and establishes new sediment quality objectives and related implementation provisions for specifically defined sediments in most bays and estuaries. This Order implements the sediment quality objectives of this plan.
3. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** U.S. EPA adopted the NTR on December 22, 1992, and amended it on May 4, 1995, and November 9, 1999. About 40 criteria in the NTR apply in California. On May 18, 2000, U.S. EPA adopted the CTR. The CTR promulgated new toxics criteria for California and incorporated the previously adopted NTR criteria that applied in the State. U.S. EPA amended the CTR on February 13, 2001. These rules contain water quality criteria for priority pollutants.
4. **State Implementation Policy.** On March 2, 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 April 28, 2000, with respect to the priority pollutant criteria U.S. EPA promulgated for California through the NTR and the priority pollutant objectives the Regional Water Board established in the Basin Plan. The SIP became effective on May 18, 2000, with respect to the priority pollutant criteria U.S. EPA promulgated through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005, that became effective on July 13, 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.
5. **Antidegradation Policy.** Federal regulations at 40 C.F.R. section 131.12 require that state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California’s antidegradation policy through State Water Board Resolution 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California*, which is deemed to incorporate the federal antidegradation policy where the federal policy applies under federal law. Resolution 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. Permitted discharges must be consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution 68-16.
6. **Anti-Backsliding Requirements.** CWA sections 402(o) and 303(d)(4) and 40 C.F.R. section 122.44(l) restrict backsliding in NPDES permits. These anti-backsliding provisions require

that effluent limits in a reissued permit be as stringent as those in the previous order, with some exceptions in which limits may be relaxed.

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

- D. Impaired Waters.** In October 2011, U.S. EPA approved a revised list of impaired waters pursuant to CWA section 303(d), which requires identification of specific water bodies where it is expected that water quality standards will not be met after implementation of technology-based effluent limits on point sources. Where it has not done so already, the Regional Water Board plans to adopt Total Maximum Daily Loads (TMDLs) for listed pollutants. TMDLs establish wasteload allocations for point sources and load allocations for non-point sources, and are established to achieve water quality standards.

Suisun Bay is listed as an impaired waterbody for chlordane, DDT, dieldrin, dioxin and furan compounds, mercury, nickel, PCBs, dioxin-like PCBs, and selenium. Carquinez Strait is also listed as impaired for those pollutants, except nickel. On February 12, 2008, U.S. EPA approved a TMDL for mercury in San Francisco Bay. On March 29, 2010, U.S. EPA approved a TMDL for PCBs in San Francisco Bay. NPDES Permit No. CA0038849 implements the mercury and PCBs TMDLs with respect to discharges covered by this Order. As shown in Fact Sheet section IV.C.3, chlordane, DDT, or dieldrin have not been detected in Facility discharges. Facility discharges are also not a source of invasive species. Facility discharges are an insignificant source of nickel because effluent concentrations are consistently below water quality objectives.

#### **IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS**

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants discharged into waters of the United States. The control of pollutants discharged is established through effluent limits and other requirements in NPDES permits. There are two principal bases for effluent limits: 40 C.F.R. section 122.44(a) requires that permits include applicable technology-based limits and standards; and 40 C.F.R. section 122.44(d) requires that permits include water quality-based effluent limits to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of receiving waters.

##### **A. Discharge Prohibitions**

- 1. Discharge Prohibition III.A (No discharge other than as described in this Order):** This prohibition is based on 40 C.F.R. section 122.21(a) and Water Code section 13260, which require filing an application and Report of Waste Discharge before a discharge can occur. Discharges not described in the application and Report of Waste Discharge, and subsequently in this Order, are prohibited.



- 2. Discharge Prohibition III.B (Minimum initial dilution ratio of 17:1):** This Order is based on a dilution ratio of 17:1 for the calculation of one or more effluent limits reflecting available information regarding the instantaneous dilution achieved at Discharge Point No. 001. Therefore, this prohibition is necessary to ensure that the assumptions used to derive the dilution credit remain appropriate and the resulting limits remain protective of water quality.

Basin Plan Table 4-1, Discharge Prohibition No. 1, prohibits discharges not receiving a minimum initial dilution of 10:1 and discharges into shallow waters or dead-end sloughs. Stormwater Discharge Point Nos. 002 through 018 discharge to shallow inland creeks where a minimum initial dilution of 10:1 is not achieved. However, Basin Plan section 4.2 also states that this prohibition applies wastewater with particular characteristics of concern, in particular treated sewage and other discharges where the treatment process is subject to upset. Since these stormwater discharges do not contain treated sewage or wastewater from a treatment process subject to upset, the prohibition does not apply.

- 3. Discharge Prohibition III.C (No bypass or overflow, except as provided for in Attachment D):** This prohibition is based on 40 C.F.R. section 122.41(m). Bypass of untreated or partially-treated wastewater from any portion of the Facility is prohibited except in accordance with 40 C.F.R. section 122.41(m)(2) (see Attachment D sections I.G.2 and I.G.4).

## **B. Technology-Based Effluent Limitations**

### **1. Scope and Authority**

CWA section 301(b) and 40 C.F.R. section 122.44 require that permits include conditions meeting technology-based requirements at a minimum, and any more stringent effluent limits necessary to meet water quality standards. The CWA requires that technology-based effluent limits 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 biochemical oxygen demand (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 limits that represent state-of-the-art treatment technology for new sources.

Where U.S. EPA has not yet developed technology-based standards for a particular industry or a particular pollutant, CWA section 402(a)(1) and 40 C.F.R. section 125.3 authorize the use of best professional judgment to derive technology-based effluent limits on a case-by-case basis. When best professional judgment is used, the permit must reflect specific factors outlined at 40 C.F.R. section 125.3.

U.S. EPA has established technology-based limits and standards for the petroleum refining industry at 40 C.F.R. section 419, “Effluent Limitations Guidelines for the Petroleum Refining Point Source Category.” Subpart B, “Cracking Subcategory,” applies to Facility discharges.

## 2. Discharge Point No. 001

The effluent limitations guidelines established in 40 C.F.R. section 419 require that technology-based effluent limits for Discharge Point No. 001 be derived based on refinery production (total crude oil throughput) and the treatment processes used. Attachment F-1 presents the derivation of the production-based effluent limits based on 40 C.F.R. section 419, subpart B. Crude oil throughput is currently 140,100 barrels per day (bbls/d).

The table below lists the most stringent of the calculated BPT, BAT, and BCT limits. (NSPS limits do not apply because the Facility was constructed prior to October 18, 1982.) The table also presents the previous order’s limits. To avoid backsliding, this Order retains the average monthly phenolic compounds limit from the previous order because it is more stringent than the newly calculated limit. The Discharger can readily comply with the previous limit (see Table F-2).

**Table F-8. Technology-Based Effluent Limits**

Pollutant	Newly Calculated Effluent Limits (pounds/day)		Previous Effluent Limits (pounds/day)	
	Maximum Daily	Average Monthly	Maximum Daily	Average Monthly
BOD <sub>5</sub>	3,400	1,900	3,400	1,900
TSS	2,400	1,500	2,400	1,500
COD	24,000	13,000	26,000	13,000
Oil and Grease	1,000	550	1,000	550
Phenolic Compounds (4AAP)	25	12	26	12
Total Ammonia, as N	2,200	1,000	2,300	1,000
Sulfide	21	10	22	10
Total Chromium	46	16	52	18
Chromium (VI)	2.9	1.3	3.5	1.5
pH	6.0 – 9.0 pH units		6.0 – 9.0 pH units	

### 3. Discharge Point Nos. 002 through 018

The technology-based effluent limits for the stormwater outfalls are also based on 40 C.F.R. section 419, subpart B (see the derivation in Attachment F-1). However, the pH limits in the Order are based on Basin Plan section 3.3.9 because the water quality-based effluent limitations are more stringent than the technology-based effluent limitations required by 40 C.F.R. section 419, subpart B.

## C. Water Quality-Based Effluent Limitations

### 1. Scope and Authority

This Order contains water quality-based effluent limits (WQBELs) that implement water quality objectives that protect beneficial uses. CWA section 301(b) and 40 C.F.R. section 122.44(d) require that permits include limits more stringent than federal technology-based requirements where necessary to achieve applicable water quality standards. According to 40 C.F.R. section 122.44(d)(1)(i), permits must include effluent limits for all pollutants that are or may be discharged at levels that have a 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, WQBELs must be established using (1) U.S. EPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting a narrative criterion, supplemented with relevant information (40 C.F.R. § 122.44[d][1][vi]). The process for determining reasonable potential and calculating WQBELs is intended to achieve applicable water quality objectives and criteria and to protect designated uses of receiving waters as specified in the Basin Plan. This Order imposes numeric effluent limits for pollutants with reasonable potential to cause or contribute to exceedances of water quality standards.

### 2. Beneficial Uses and Water Quality Criteria and Objectives

Fact Sheet section III.C.1 (Table F-7) identifies the receiving waters for Facility discharges and their beneficial uses. Water quality criteria and objectives to protect these beneficial uses are described below. The text there focuses on Suisun Bay because it is the receiving water for discharges of treated process wastewater from Discharge Point No. 001; Carquinez Strait and Sulphur Springs Creek are receiving waters for stormwater discharges. These stormwater discharges are subject to technology-based limits or WQBELs established by the Basin Plan, as discussed in Fact Sheet section IV.B.3, above, and section IV.C.4.e, below.

- a. **Basin Plan Objectives.** The Basin Plan specifies numeric water quality objectives for 10 priority pollutants and narrative water quality objectives for toxicity and bioaccumulation. The narrative toxicity objective states, “All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms.” The narrative bioaccumulation objective states, “Controllable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life. Effects on aquatic organisms, wildlife, and human health will be considered.”

- i. Ammonia.** For the Central San Francisco Bay and upstream waters, Basin Plan section 3.3.20 contains water quality objectives for un-ionized ammonia of 0.025 mg/L as an annual median and 0.16 mg/L as a maximum. For this Order, these un-ionized ammonia objectives were translated to equivalent total ammonia criteria since (1) sampling and laboratory methods are unavailable to analyze for un-ionized ammonia, and (2) the fraction of total ammonia that exists in the toxic un-ionized form depends on the pH, salinity, and temperature of the receiving water. Based on Regional Monitoring Program (RMP) data from the Pacheco Creek station (BC10) (see Fact Sheet section IV.C.3.c below), the un-ionized fraction of total ammonia was calculated as follows:

$$\text{For salinity} > 10 \text{ ppt: fraction of NH}_3 = \frac{1}{1 + 10^{(pK-pH)}}$$

where:

$$pK = 9.245 + 0.116(I) + 0.0324(298 - T) + \frac{0.0415(P)}{(T)}$$

$$I = \text{Molal ionic strength of saltwater} = \frac{19.9273(S)}{(1,000 - 1.005109(S))}$$

$S$  = Salinity (parts per thousand)

$T$  = Temperature (Kelvin)

$P$  = Pressure (one atmosphere)

The median and 90<sup>th</sup> percentile un-ionized ammonia fractions were then used to express the daily maximum and annual average un-ionized objectives as chronic and acute total ammonia criteria. This approach is consistent with U.S. EPA guidance on translating dissolved metal water quality objectives to total recoverable metal water quality objectives (U.S. EPA, *The Metals Translator: Guidance for Calculating a Total Recoverable Limit from a Dissolved Criterion*, EPA Publication 823-B-96-007, 1996). The total ammonia chronic and acute criteria are 1.4 mg/L and 4.8 mg/L as nitrogen.

- ii. Dioxin-TEQ.** The Basin Plan narrative water quality objective for bioaccumulative substances states, “Many pollutants can accumulate on particulates, in sediments, or bioaccumulate in fish and other aquatic organisms. Controllable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life. Effects on aquatic organisms, wildlife, and human health will be considered.”

Because it is the consensus of the scientific community that dioxins and furans associate with particulates, accumulate in sediments, and bioaccumulate in the fatty tissue of fish and other organisms, the Basin Plan’s narrative bioaccumulation water quality objective applies to these pollutants. Elevated levels of dioxins and furans in San Francisco Bay fish tissue demonstrate that the narrative bioaccumulation water quality objective is not being met. U.S. EPA has therefore placed Suisun Bay on its 303(d)-list of receiving waters where water quality objectives are not being met after imposition of applicable technology-based requirements.

When the CTR was promulgated, U.S. EPA stated its support of the regulation of dioxin and dioxin-like compounds through the use of toxicity equivalencies (TEQs). U.S. EPA stated, “For California waters, if the discharge of dioxin or dioxin-like compounds has reasonable potential to cause or contribute to a violation of a narrative criterion, numeric WQBELs for dioxin or dioxin-like compounds should be included in NPDES permits and should be expressed using a TEQ scheme” (65 Fed. Reg. 31695-31696, May 18, 2000). This Order uses a TEQ scheme based on a set of toxicity equivalency factors (TEFs) the World Health Organization developed in 1998, and a set of bioaccumulation equivalency factors (BEFs) U.S. EPA developed for the Great Lakes region (40 C.F.R. part 132, Appendix F) to convert the concentration of any congener of dioxin or furan into an equivalent concentration of 2,3,7,8-tetrachlorinated dibenzo-p-dioxin (2,3,7,8-TCDD). Although the 1998 World Health Organization scheme includes TEFs for dioxin-like PCBs, they are not included in this Order’s TEQ scheme. The CTR has established a specific water quality criterion for PCBs, and dioxin-like PCBs are included in the analysis of total PCBs.

The CTR establishes a numeric water quality objective for 2,3,7,8-TCDD of  $1.4 \times 10^{-8}$  µg/L for the protection of human health when aquatic organisms are consumed. The CTR criterion is used as a criterion for dioxin-TEQ because dioxin-TEQ represents a toxicity weighted concentration equivalent to 2,3,7,8-TCDD, thus translating the narrative bioaccumulation objective into a numeric criterion.

- b. CTR Criteria.** The CTR specifies numeric aquatic life and human health criteria for numerous priority pollutants. These criteria apply to inland surface waters and enclosed bays and estuaries. Some human health criteria are for consumption of “water and organisms” and others are for consumption of “organisms only.” The criteria applicable to “organisms only” apply to Suisun Bay and Carquinez Strait because they are not drinking water sources.
- c. NTR Criteria.** The NTR establishes numeric aquatic life and human health criteria for a number of toxic pollutants for San Francisco Bay waters upstream to and including Suisun Bay and the Sacramento-San Joaquin Delta. The NTR criteria apply to Suisun Bay and Carquinez Strait.
- d. Sediment Quality Objectives.** The *Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1, Sediment Quality* contains a narrative water quality objective: “Pollutants in sediments shall not be present in quantities that, alone or in combination, are toxic to benthic communities in bays and estuaries of California.” This objective is to be implemented by integrating three lines of evidence: sediment toxicity, benthic community condition, and sediment chemistry. The policy requires that if the Regional Water Board determines that a discharge has reasonable potential to cause or contribute to an exceedance of this objective, it is to impose the objective as a receiving water limit.
- e. Receiving Water Salinity.** Basin Plan section 4.6.2 (like the CTR and NTR) states that the salinity characteristics (i.e., freshwater vs. saltwater) of the receiving water are to be considered in determining the applicable water quality objectives. Freshwater criteria apply to discharges to waters with salinities equal to or less than one part per thousand

(ppt) at least 95 percent of the time. Saltwater criteria apply to discharges to waters with salinities equal to or greater than 10 ppt at least 95 percent of the time in a normal water year. Suisun Bay and Carquinez Strait are estuarine environments based on salinity data generated through the Regional Monitoring Program (RMP) at the Pacheco Creek (BF10) sampling station between 1993 and 2001. In that period, the receiving water's minimum salinity was 0.0 ppt, its maximum salinity was 12.8 ppt, and its average salinity was 4.7 ppt. The salinity was between 1 and 10 ppt in 36 percent of receiving water samples. Therefore, the reasonable potential analysis and WQBELs are based on the lower of the freshwater and saltwater water quality criteria and objectives.

- f. Receiving Water Hardness.** Ambient hardness data were used to calculate freshwater water quality objectives that are hardness dependent. Receiving water monitoring for hardness were conducted at RMP station BF10 from February 1993 through August 2001. Hardness ranged from 46 to 1,930 mg/L as CaCO<sub>3</sub>. The adjusted geometric mean of the data is a hardness of 88 mg/L as CaCO<sub>3</sub>, which was used to calculate the water quality objectives for this Order.
- g. Site-Specific Metals Translators.** Effluent limits for metals must be expressed as total recoverable metal (40 C.F.R. § 122.45[c]). Since the water quality criteria for metals are typically expressed as dissolved metal, translators must be used to convert metals concentrations from dissolved to total recoverable and vice versa. The CTR contains default translators; however, site-specific conditions, such as water temperature, pH, suspended solids, and organic carbon may affect the form of metal (dissolved, non-filterable, or otherwise) present and therefore available to cause toxicity. In general, dissolved metals are more available and more toxic to aquatic life than other forms. Site-specific translators can account for site-specific conditions, thereby preventing overly stringent or under-protective water quality objectives.

The requirements of this Order are based on site-specific translators for copper from Basin Plan Table 7.2.1-2 and for nickel from *North of Dumbarton Bridge Copper and Nickel Development and Selection of Final Translators* (Clean Estuary Partnershp, March 2005). These translators are 0.38 and 0.66 for average monthly and maximum daily copper limits, respectively; and 0.27 and 0.57 for average monthly and maximum daily nickel limits, respectively. This Order uses CTR default translators for all other metals.

### **3. Need for Water Quality-Based Effluent Limits (Reasonable Potential Analysis)**

Assessing whether a pollutant has reasonable potential to exceed a water quality objective is the fundamental step in determining whether a WQBEL is required. The reasonable potential analysis below applies to Discharge Point No. 001, where process wastewaters are actively generated and discharged. These process wastewater discharges are subject to numeric WQBELs where reasonable potential is indicated. The remaining discharge points discharge stormwater and are subject to technology-based limits or WQBELs as established by the Basin Plan and described in Fact Sheet section IV.B.3. A quantitative reasonable potential analysis is unnecessary for these discharge points as discussed in Fact Sheet section IV.C.3.e.

- a. Methodology.** SIP section 1.3 sets forth the methodology used for this Order to assess

whether a pollutant has reasonable potential to exceed a water quality objective. SIP section 1.3 applies to priority pollutants and is used for other pollutants in this Order as guidance. The analysis begins with identifying the maximum effluent concentration (MEC) observed for each pollutant based on available effluent concentration data and the ambient background concentration (B). SIP section 1.4.3 states that ambient background concentrations are either the maximum ambient concentration observed or, for water quality objectives intended to protect human health, the arithmetic mean of observed concentrations. There are three triggers in determining reasonable potential:

- i. **Trigger 1** is activated if the maximum effluent concentration is greater than or equal to the lowest applicable water quality objective ( $MEC \geq$  water quality objective).
  - ii. **Trigger 2** is activated if the ambient background concentration observed in the receiving water is greater than the water quality objective ( $B >$  water quality objective) *and* the pollutant is detected in any effluent sample.
  - iii. **Trigger 3** is activated if a review of other information indicates that a WQBEL is needed to protect beneficial uses.
- b. Effluent Data.** The reasonable potential analysis for this Order is based on effluent monitoring data the Discharger collected from January 2010 through July 2014.
- c. Ambient Background Data.** The reasonable potential analysis for this Order is based on Regional Monitoring Program (RMP) data collected at the Yerba Buena Island station (BC10) from 1993 through 2013, and additional Bay Area Clean Water Agencies data from *San Francisco Bay Ambient Water Monitoring Interim Report (2003)* and *Ambient Water Monitoring: Final CTR Sampling Update (2004)*. These latter reports contain monitoring results from 2002 and 2003 for priority pollutants the RMP did not monitor at the time.

For ammonia, data collected at the Pacheco Creek RMP station (BF10) was used because it is the RMP station nearest Discharge Point No. 001. RMP monitoring station BF10, relative to other RMP stations, fits SIP guidance for establishing ammonia background conditions. SIP section 1.4.3 requires that background water quality data be representative of the ambient receiving water that will mix with the discharge. Because the ammonia WQBELs are based on actual dilution at the edge of the initial mixing zone, data from this RMP station best represent the water at the edge of the initial mixing zone.

- d. Discharge Point No. 001.** The maximum effluent concentrations, most stringent applicable water quality criteria and objectives, and ambient background concentrations used in the analysis are presented in the following table, along with the reasonable potential analysis results (yes or no) for each pollutant. Reasonable potential was not determined for all pollutants because there are not water quality objectives for all pollutants, and monitoring data are unavailable for others. The pollutants that exhibit reasonable potential are ammonia, bis(2-ethylhexyl)phthalate, chromium (VI), copper, cyanide, dioxin-TEQ, and selenium.

Due to the complexity of the discharge, there is also reasonable potential for it to cause or contribute to exceedance of the narrative toxicity objective in Basin Plan section 3.3.18,

which states, “There shall be no chronic toxicity in ambient waters. Chronic toxicity is a detrimental biological effect on growth rate, reproduction, fertilization success, larval development, population abundance, community composition, or any other relevant measure of the health of an organism, population, or community.” Refinery dischargers can contain many different combinations of potentially toxic pollutants in addition to those for which numeric water quality objectives have been established. Acute and chronic toxicity WQBELs are needed to ensure that the toxicity objective is met in Suisun Bay.

**Table F-9. Reasonable Potential Analysis**

CTR No.	Priority Pollutant	Lowest Criterion or Objective (µg/L)	MEC or Minimum DL (µg/L) <sup>[1][2]</sup>	B or Minimum DL (µg/L) <sup>[1][2]</sup>	Result <sup>[3]</sup>
1	Antimony	4,300	1.8	1.8	No
2	Arsenic	36	3.2	2.81	No
3	Beryllium	No Criteria	<0.06	0.215	U
4	Cadmium	1.0	0.11	0.13	No
5a	Chromium (III)	186	22	4.4	No
<b>5b</b>	<b>Chromium (VI)</b>	<b>11</b>	<b>26</b>	<b>4.4</b>	<b>Yes</b>
<b>6</b>	<b>Copper</b>	<b>14</b>	<b>16</b>	<b>2.549</b>	<b>Yes</b> <sup>[4]</sup>
7	Lead	2.7	<0.03	0.8	No
8	Mercury (303d listed)	---	---	---	<sup>[5]</sup>
9	Nickel	30	26	3.7	No
<b>10</b>	<b>Selenium (303d listed)</b>	<b>5.0</b>	<b>67</b>	<b>0.39</b>	<b>Yes</b>
11	Silver	2.2	<0.02	0.052	No
12	Thallium	6.3	<0.05	0.21	No
13	Zinc	86	69	5.1	No
<b>14</b>	<b>Cyanide</b>	<b>2.9</b>	<b>65</b>	<b>&lt;0.4</b>	<b>Yes</b> <sup>[4]</sup>
	Asbestos	No Criteria	Not Available	Not Available	U
16	2,3,7,8-TCDD (303d listed)	1.40E-08	<0.26	8.20E-09	No
	<b>Dioxin TEQ (303d listed)</b>	<b>1.40E-08</b>	<b>2.28E-08</b>	<b>5.32E-08</b>	<b>Yes</b>
17	Acrolein	780	<1.7	<0.5	No
18	Acrylonitrile	0.66	<0.69	0.03	No
19	Benzene	71	<0.18	<0.05	No
20	Bromoform	360	<0.15	<0.5	No
21	Carbon Tetrachloride	4.4	<0.16	0.06	No
22	Chlorobenzene	21,000	<0.18	<0.5	No
23	Chlorodibromomethane	34	<0.17	<0.05	No
24	Chloroethane	No Criteria	<0.38	<0.5	U
25	2-Chloroethylvinyl Ether	No Criteria	<0.28	<0.5	U
26	Chloroform	No Criteria	1.6	<0.5	U
27	Dichlorobromomethane	46	<0.16	<0.05	No
28	1,1-Dichloroethane	No Criteria	<0.19	<0.05	U
29	1,2-Dichloroethane	99	<0.18	0.04	No
30	1,1-Dichloroethylene	3.2	<0.21	<0.5	No
31	1,2-Dichloropropane	39	<0.18	<0.05	No
32	1,3-Dichloropropylene	1,700	<0.16	<0.5	No



CTR No.	Priority Pollutant	Lowest Criterion or Objective (µg/L)	MEC or Minimum DL (µg/L) <sup>[1][2]</sup>	B or Minimum DL (µg/L) <sup>[1][2]</sup>	Result <sup>[3]</sup>
33	Ethylbenzene	29,000	<0.26	<0.5	No
34	Methyl Bromide	4,000	<0.17	<0.5	No
35	Methyl Chloride	No Criteria	<0.23	<0.5	U
36	Methylene Chloride (Dichloromethane)	1,600	<0.2	22	No
37	1,1,2,2-Tetrachloroethane	11	<0.1	<0.05	No
38	Tetrachloroethylene	8.9	<0.19	<0.05	No
39	Toluene	200,000	<0.19	<0.3	No
40	1,2-Trans-Dichloroethylene	140,000	<0.22	<0.5	No
41	1,1,1-Trichloroethane	No Criteria	<0.19	<0.5	U
42	1,1,2-Trichloroethane	42	<0.16	<0.05	No
43	Trichloroethylene	81	<0.2	<0.5	No
44	Vinyl Chloride	525	<0.25	<0.5	No
45	Chlorophenol	400	<0.98	<1.2	No
46	2,4-Dichlorophenol	790	<0.99	<1.3	No
47	2,4-Dimethylphenol	2,300	<0.87	<1.3	No
48	2-Methyl-4,6-Dinitrophenol	765	<0.91	<1.2	No
49	2,4-Dinitrophenol	14,000	<0.83	<0.7	No
50	2-Nitrophenol	No Criteria	<0.89	<1.3	U
51	4-Nitrophenol	No Criteria	<0.83	<1.6	U
52	3-Methyl-4-Chlorophenol	No Criteria	<0.99	<1.1	U
53	Pentachlorophenol	7.9	<0.81	<1	No
54	Phenol	4,600,000	<0.69	<1.3	No
55	2,4,6-Trichlorophenol	6.5	<0.97	<1.3	No
56	Acenaphthene	2,700	0.6	0.001931	No
57	Acenaphthylene	No Criteria	<0.03	0.001285	U
58	Anthracene	110,000	<0.03	0.000592	No
59	Benzidine	0.00054	<5	<0.0015	No
60	Benzo(a)Anthracene	0.049	<0.03	0.005315	No
61	Benzo(a)Pyrene	0.049	<0.03	0.00333	No
62	Benzo(b)Fluoranthene	0.049	<0.03	0.00459	No
63	Benzo(ghi)Perylene	No Criteria	<0.03	0.004544	U
64	Benzo(k)Fluoranthene	0.049	<0.03	0.00177	No
65	Bis(2-Chloroethoxy)Methane	No Criteria	<0.93	<0.3	U
66	Bis(2-Chloroethyl)Ether	1.4	<0.95	<0.000151	No
67	Bis(2-Chloroisopropyl)Ether	170,000	<0.81	Unavailable	No
<b>68</b>	<b>Bis(2-Ethylhexyl)Phthalate</b>	<b>5.9</b>	<b>7.3</b>	<b>&lt;0.7</b>	<b>Yes</b>
69	4-Bromophenyl Phenyl Ether	No Criteria	<0.97	<0.23	U
70	Butylbenzyl Phthalate	5,200	<0.98	0.0056	No
71	2-Chloronaphthalene	4,300	<0.98	<0.3	No
72	4-Chlorophenyl Phenyl Ether	No Criteria	<0.99	<0.3	U
73	Chrysene	0.049	<0.03	0.002781	No
74	Dibenzo(a,h)Anthracene	0.049	<0.03	0.00064	No

CTR No.	Priority Pollutant	Lowest Criterion or Objective (µg/L)	MEC or Minimum DL (µg/L) <sup>[1][2]</sup>	B or Minimum DL (µg/L) <sup>[1][2]</sup>	Result <sup>[3]</sup>
75	1,2-Dichlorobenzene	17,000	<0.27	<0.3	No
76	1,3-Dichlorobenzene	2,600	<0.18	<0.3	No
77	1,4-Dichlorobenzene	2,600	<0.18	<0.3	No
78	3,3-Dichlorobenzidine	0.077	<5	<0.001	No
79	Diethyl Phthalate	120,000	<0.86	<0.21	No
80	Dimethyl Phthalate	2,900,000	<0.97	<0.21	No
81	Di-n-Butyl Phthalate	12,000	<0.91	0.016	No
82	2,4-Dinitrotoluene	9.1	<0.96	<0.27	No
83	2,6-Dinitrotoluene	No Criteria	<0.98	<0.29	U
84	Di-n-Octyl Phthalate	No Criteria	<0.92	<0.38	U
85	1,2-Diphenylhydrazine	0.54	<0.9	0.0037	No
86	Fluoranthene	370	<0.03	0.0109	No
87	Fluorene	14,000	0.6	0.00208	No
88	Hexachlorobenzene	0.00077	<0.91	0.0000221	No
89	Hexachlorobutadiene	50	<0.92	<0.3	No
90	Hexachlorocyclopentadiene	17,000	<0.9	<0.3	No
91	Hexachloroethane	8.9	<0.94	<0.2	No
92	Indeno(1,2,3-cd) Pyrene	0.049	<0.03	0.00398	No
93	Isophorone	600	<0.93	<0.3	No
94	Naphthalene	No Criteria	2.4	0.01262	U
95	Nitrobenzene	1,900	<0.95	<0.25	No
96	N-Nitrosodimethylamine	8.1	<0.88	<0.3	No
97	N-Nitrosodi-n-Propylamine	1.4	<0.97	<0.001	No
98	N-Nitrosodiphenylamine	16	<0.83	<0.001	No
99	Phenanthrene	No Criteria	0.9	0.00951	U
100	Pyrene	11,000	<0.03	0.0194	No
101	1,2,4-Trichlorobenzene	No Criteria	<0.98	<0.3	U
102	Aldrin	0.00014	<0.004	0.00002845	No
103	alpha-BHC	0.013	<0.005	0.0004957	No
104	beta-BHC	0.046	<0.004	0.000413	No
105	gamma-BHC (Lindane)	0.063	<0.004	0.000703	No
106	delta-BHC	No Criteria	<0.004	0.000053	U
107	Chlordane (303d listed)	0.00059	<0.005	0.000178	No
108	4,4-DDT (303d listed)	0.00059	<0.01	0.000167	No
109	4,4-DDE	0.00059	<0.003	0.000693	No
110	4,4-DDD	0.00084	<0.004	0.000313	No
111	Dieldrin (303d listed)	0.00014	<0.004	0.000264	No
112	alpha-Endosulfan	0.0087	<0.004	0.000031	No
113	beta-Endosulfan	0.0087	<0.005	0.000069	No
114	Endosulfan Sulfate	240	<0.005	0.0000819	No
115	Endrin	0.0023	<0.005	0.00004	No
116	Endrin Aldehyde	0.81	<0.005	Unavailable	No
117	Heptachlor	0.00021	<0.005	0.000019	No

CTR No.	Priority Pollutant	Lowest Criterion or Objective (µg/L)	MEC or Minimum DL (µg/L) <sup>[1][2]</sup>	B or Minimum DL (µg/L) <sup>[1][2]</sup>	Result <sup>[3]</sup>
118	Heptachlor Epoxide	0.00011	<0.004	0.000094	No
119-125	PCBs sum (303d listed)	---	---	---	<sup>[5]</sup>
126	Toxaphene	0.00020	<0.2	Unavailable	No
	Total PAHs	15	Not Available	0.027	No
	<b>Ammonia</b>	<b>1.4 mg/L <sup>[6]</sup></b>	<b>3.9 mg/L <sup>[6]</sup></b>	<b>0.2 mg/L <sup>[6]</sup></b>	<b>Yes</b>

Unit Abbreviations:

mg/L = milligrams per liter  
 µg/L = micrograms per liter  
 WQC = water quality criterion

Footnotes:

- <sup>[1]</sup> The maximum effluent concentration (MEC) and ambient background concentration (B) are the actual detected concentrations unless preceded by a “<” sign, in which case the value shown is the minimum detection level (DL).
- <sup>[2]</sup> The maximum effluent concentration or ambient background concentration is “unavailable” when there are no monitoring data for the constituent.
- <sup>[3]</sup> RPA Results = Yes, if MEC ≥ WQC, B > WQC and MEC is detected, or Trigger 3  
 = No, if MEC and B are < WQC or all effluent data are undetected  
 = U, unknown
- <sup>[4]</sup> Basin Plan section 7.2.1.2 requires copper WQBELs, and Basin Plan section 4.7.2.2 requires cyanide WQBELs.
- <sup>[5]</sup> SIP section 1.3 excludes from its reasonable potential analysis procedure priority pollutants for which a TMDL has been developed. TMDLs have been developed for mercury and PCBs in San Francisco Bay. Mercury and PCBs from wastewater discharges are regulated under NPDES Permit No. CA0038849, which implements the San Francisco Bay Mercury and PCBs TMDLs.
- <sup>[6]</sup> Total ammonia units are milligrams per liter as nitrogen.

- e. Discharge Point Nos. 002 through 018.** This Order establishes WQBELs at Discharge Point Nos. 002 through 018 by requiring implementation of best management practices in accordance with 40 C.F.R. section 122.44(k). A quantitative reasonable potential analysis is therefore unnecessary.
- f. Sediment Quality.** Pollutants in some receiving water sediments may be present in quantities that alone or in combination are toxic to benthic communities. Efforts are underway to identify stressors causing such conditions. However, to date there is no evidence directly linking compromised sediment conditions to the discharges subject to this Order; therefore, the Regional Water Board cannot draw a conclusion about reasonable potential for these discharges to cause or contribute to exceedances of the sediment quality objectives. Nevertheless, the Discharger continues to participate in the RMP, which monitors San Francisco Bay sediment and seeks to identify stressors responsible for degraded sediment quality. Thus far, the monitoring has provided only limited information about potential stressors and sediment transport. The Regional Water Board is exploring options for obtaining additional information that may inform future analyses.
- g. Constituents with limited data.** In some cases, reasonable potential cannot be determined because effluent data are limited or ambient background concentrations are unavailable. Provision VI.C.2 of this Order requires the Discharger to continue monitoring for these constituents in its effluent using analytical methods that provide the

best feasible detection limits. When additional data become available, further analysis will be conducted to determine whether numeric effluent limitations are necessary.

- h. Pollutants with No Reasonable Potential.** This Order does not contain WQBELs for constituents that do not demonstrate reasonable potential; however, Provision VI.C.2 of this Order still requires monitoring for those pollutants. If concentrations are found to have increased significantly, Provision VI.C.2 requires the Discharger to investigate the source of the increase and implement remedial measures if the increase poses a threat to receiving water quality.

#### 4. Water Quality-Based Effluent Limitations

WQBELs were developed for the pollutants determined to have reasonable potential to cause or contribute to exceedances of water quality objectives. The WQBELs are based on the procedures specified in SIP section 1.4 and 40 C.F.R. section 122.44(k).

##### a. Discharge Point No. 001

- i. Dilution Credits.** SIP section 1.4.2 allows dilution credits under certain circumstances. The outfall at Discharge Point No. 001 is designed to achieve a minimum initial dilution of 10:1. The Discharger reported an updated initial dilution estimate in *Dilution Analysis of the Valero Benicia Refinery Discharge into Suisun Bay* (Flow Science, Inc., June 25, 2014) based on the UM3 module of the U.S. EPA-supported plume-modeling program Visual Plumes. Based on the study, the Discharger estimates the minimum initial dilution to be 17:1 at a flow rate of 4.1 MGD, current speed of 0.99 feet per second, and salinity stratified linearly from 3.2 to 11.4 ppt. (The minimum initial dilution occurs at this salinity stratification rather than at slack tide; the minimum initial dilution at slack tide is estimated to be 24:1.) The flow rate of 4.1 MGD is the highest discharge rate observed over the term of the previous order. This discharge rate exceeds the plant design flow because it occurred while both treated wastewater and diverted stormwater were being discharged at Discharge Point No. 001. Diverted stormwater was combined with treated effluent downstream of the plant (i.e., the flow through the plant never exceeded the plant design flow).

- (a) Dioxins and Furans.** For certain bioaccumulative pollutants, dilution credit is significantly restricted or denied. Specifically, these pollutants include dioxin and furan compounds, which appear on the CWA section 303(d) list for Suisun Bay because, based on available data on the concentrations of these pollutants in aquatic organisms, sediment, and the water column, they impair Suisun Bay beneficial uses. The following factors suggest insufficient assimilative capacity in Suisun Bay for these pollutants.

Tissue samples taken from San Francisco Bay fish show the presence of these pollutants at concentrations greater than screening levels (*Contaminant Concentrations in Fish from San Francisco Bay*, May 1997). The results of a 1994 San Francisco Bay pilot study, presented in *Contaminated Levels in Fish Tissue from San Francisco Bay* (Regional Water Board, 1994) also show elevated levels of chemical contaminants in fish tissues. The Office of Environmental

Health and Hazard Assessment completed a preliminary review of the data in the 1994 report and in December 1994 issued an interim consumption advisory covering certain fish species in San Francisco Bay due to the levels of some of these pollutants. The Office of Environmental Health and Hazard Assessment updated this advisory in a May 2011 report, *Health Advisory and Safe Eating Guidelines for San Francisco Bay Fish and Shellfish*, which still suggests insufficient assimilative capacity in San Francisco Bay for dioxins and furans. Therefore, dilution credits are denied.

- (b) **Selenium.** San Francisco Bay waterfowl tissue data presented in the California Department of Fish and Game's Selenium Verification Study (1986-1990) showed elevated selenium levels in the livers of waterfowl that feed on bottom-dwelling organisms, such as clams. In addition, the State's Office of Environmental Health and Hazard Assessment issued an advisory in 1987 for consumption of two species of diving ducks in the North Bay found to have high tissue levels of selenium. This advisory is still in effect. Elevated selenium levels have also been found in the tissue of white sturgeon, which feed on clams.

This information, together with high uncertainty regarding how different sources of selenium contribute to bioaccumulation, has previously led the Regional Water Board to deny dilution credit for selenium. However, over the previous two permit terms, substantially more information has been generated to advance development of a selenium TMDL for north San Francisco Bay segments. Based on this preliminary information, this Order grants limited dilution credit for selenium sufficient to maintain existing treatment performance until the selenium TMDL is completed. Future selenium effluent limits will be consistent with TMDL wasteload allocations. Granting dilution credit for selenium is appropriate only because of the substantial amount of new information that has been generated that does not apply to other pollutants. Therefore, this order uses a dilution credit of  $D = 9$  (10:1 dilution) to calculate selenium WQBELs.

- (c) **Ammonia.** For ammonia, a conservative estimate of actual initial dilution of 17:1 ( $D = 16$ ) was used to calculate the effluent limits. This is justified because ammonia, a non-persistent pollutant, quickly disperses and degrades to a non-toxic state, and cumulative toxicity is unlikely.
- (d) **Other Non-Bioaccumulative Pollutants.** This Order grants a conservative dilution credit of 10:1 ( $D = 9$ ) for non-bioaccumulative pollutants (except ammonia). This dilution credit is based, in part, on Basin Plan Prohibition 1 (Table 4-1), which prohibits discharges with less than 10:1 dilution. SIP section 1.4.2 allows for limiting the dilution credit. The dilution credit is limited for the following reasons:
- (1) San Francisco Bay is a complex estuarine system with highly variable and seasonal upstream freshwater inflows and diurnal tidal saltwater inputs. SIP section 1.4.3 allows background conditions to be determined on a discharge-by-discharge or water body-by-water body basis. A water body-by-water body approach is taken here due to inherent uncertainties in characterizing ambient

background conditions in a complex estuarine system on a discharge-by-discharge basis.

(2) Because of the complex hydrology of San Francisco Bay, there are uncertainties in accurately determining an appropriate mixing zone. The models used to predict dilution do not consider the three dimensional nature of San Francisco Bay currents resulting from the interaction of tidal flushes and seasonal fresh water outflows. Being heavier and colder than fresh water, ocean salt water enters San Francisco Bay on a twice-daily tidal cycle, generally beneath the warmer fresh water that flows seaward. When these waters mix and interact, complex circulation patterns occur due to the varying densities of the fresh and ocean waters. The complex patterns occur throughout San Francisco Bay, but are most prevalent in San Pablo Bay, Carquinez Strait, and Suisun Bay. The locations of this mixing and interaction change, depending on the strength of each tide. Additionally, sediment loads from the Central Valley change on a long-term basis, affecting the depth of different parts of San Francisco Bay, resulting in alteration of flow patterns, mixing, and dilution at the outfall.

ii. **Calculations.** Average monthly effluent limits (AMELs) and maximum daily effluent limits (MDELs) were calculated for pollutants with reasonable potential as shown below:

**Table F-10. WQBEL Calculations**

PRIORITY POLLUTANTS	Cyanide	Copper	Chromium (VI)	Selenium	Bis (2-Ethylhexyl) Phthalate	Dioxin TEQ	Total Ammonia (acute)	Total Ammonia (chronic)
Units	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L N	mg/L N	µg/L
Basis and Criteria type	Basin Plan SSO	Basin Plan SSO	CTR Freshwater Criteria	CTR Aquatic Criteria	CTR HH	Basin Plan Aquatic Life	Basin Plan Aquatic Life	Basin Plan Narrative
Criteria –Acute	-----	-----	11	20	-----	-----	4.8	-----
Criteria –Chronic	-----	-----	11	5.0	-----	-----	-----	1.4
SSO Criteria-Acute	9.4	14	-----	-----	-----	-----	-----	-----
SSO Criteria - Chronic	2.9	16	-----	-----	-----	-----	-----	-----
Water Effects ratio (WER)	1	2.4	1	1	1	1	1	1
Lowest WQO	2.9	14	11	5.0	5.9	1.4E-08	4.8	1.4
Site Specific Translator - MDEL	-----	-----	-----	-----	-----	-----	-----	-----
Site Specific Translator - AMEL	-----	-----	-----	-----	-----	-----	-----	-----
Dilution Factor (D) (if applicable)	9	9	9	9	9	0	16	16
No. of samples per month	4	4	4	4	4	4	4	30 <sup>[1]</sup>

<b>PRIORITY POLLUTANTS</b>	<b>Cyanide</b>	<b>Copper</b>	<b>Chromium (VI)</b>	<b>Selenium</b>	<b>Bis (2-Ethylhexyl) Phthalate</b>	<b>Dioxin TEQ</b>	<b>Total Ammonia (acute)</b>	<b>Total Ammonia (chronic)</b>
<b>Units</b>	<b>µg/L</b>	<b>µg/L</b>	<b>µg/L</b>	<b>µg/L</b>	<b>µg/L</b>	<b>mg/L N</b>	<b>mg/L N</b>	<b>µg/L</b>
Aquatic life criteria analysis required? (Y/N)	Y	Y	Y	Y	N	N	Y	Y
HH criteria analysis required? (Y/N)	Y	N	N	N	Y	Y	N	N
Applicable Acute WQO	9.4	14	11	20	-----	-----	4.8	-----
Applicable Chronic WQO	2.9	16	11	5.0	-----	-----	-----	1.4
HH criteria	2.2E+05	-----	-----	-----	5.9E+00	1.40E-08	-----	-----
Background (Maximum Conc for Aquatic Life calc)	0.40	2.6	4.4	0.39	-----	-----	0.20	0.086
Background (Average Conc for Human Health calc)	0.40	-----	-----	-----	0.70	5.3E-08	-----	-----
Is the pollutant on the 303d list and/or bioaccumulative (Y/N)?	N	N	N	Y	N	Y	N	N
ECA acute	90	120	72	197	-----	-----	78	-----
ECA chronic	25	135	70	47	-----	-----	-----	22
ECA HH	2.2E+06	-----	-----	-----	5.3E+01	1.40E-08	-----	-----
No. of data points <10 or at least 80% of data reported non detect? (Y/N)	N	N	Y	N	Y	Y	N	N
Average of effluent data points	12	4.4	3.2	19	2.3	7.5E-09	0.37	0.37
Std. Dev. of effluent data points	11	2.8	5.0	6.2	1.7	8.8E-09	0.53	0.53
CV calculated	0.95	0.65	N/A	0.32	N/A	N/A	1.4	1.4
CV selected	0.95	0.65	0.60	0.32	0.60	0.6	1.4	1.4
ECA acute mult99	0.21	0.30	0.32	0.51	-----	-----	0.15	0.15
ECA chronic mult99	0.39	0.50	0.53	0.70	-----	-----	0.27	0.84
LTA acute	19	36	23	100	-----	-----	12	-----
LTA chronic	9.8	68	37	33	-----	-----	-----	19
Minimum of LTAs	9.8	36	23	33	-----	-----	12	19

PRIORITY POLLUTANTS	Cyanide	Copper	Chromium (VI)	Selenium	Bis (2-Ethylhexyl) Phthalate	Dioxin TEQ	Total Ammonia (acute)	Total Ammonia (chronic)
Units	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L N	mg/L N	µg/L
AMEL mult95	1.9	1.6	1.6	1.3	1.6	1.5E+00	2.4	1.5
MDEL mult99	4.7	3.3	3.1	2.0	3.1	3.1E+00	6.7	6.7
AMEL (aquatic life)	19	58	36	42	-----	-----	27	28
MDEL (aquatic life)	46	120	72	64	-----	-----	78	126
MDEL/AMEL Multiplier	2.5	2.1	2.0	1.5	2.0	2.0	2.9	4.5
AMEL (human health)	2.2.E+06	-----	-----	-----	5.3.E+01	1.4.E-08	-----	-----
MDEL (human health)	5.3.E+06	-----	-----	-----	1.1.E+02	2.8.E-08	-----	-----
Min. of AMEL for Aq. life vs HH	19	58	36	42	53	1.4E-08	27	28
Min. of MDEL for Aq. Life vs HH	46	120	72	64	106	2.8E-08	78	126
Previous order AMEL	21	70	---	43	---	1.4E-08	5.7	5.7
Previous order MDEL	42	120	---	50	---	2.8E-08	20	20
Final limit - AMEL	19	58	36	42	53	1.4E-08	5.7	5.7
Final limit - MDEL	42	120	72	50	110	2.8E-08	20	20

Footnote:

<sup>[1]</sup> The chronic un-ionized ammonia objective is expressed as a 365-day median. Therefore, the total ammonia WQBEL is calculated assuming a sampling frequency of 30 times per month, rather than the typical four times per month. This statistical adjustment is supported by U.S. EPA's *Water Quality Criteria; Notice of Availability; 1999 Update of Ambient Water Quality Criteria for Ammonia*, published December 22, 1999, in the Federal Register.

**iii. Selenium Mass Emission Limit.** SIP section 2.1.1 states that for bioaccumulative compounds on the 303(d) list, the Regional Water Board should consider whether mass emission limits should limit discharges to current levels. A selenium mass emission limit is warranted to ensure that the Discharger maintains its existing selenium treatment performance and does not further contribute to Suisun Bay impairment pending a TMDL.

This Order retains the previous order's selenium mass emission limit for Discharge Point No. 001 of 21 pounds per month as a running annual average. This limit was first established through Order No. 91-026 based on the Discharger's average flow of 2.3 MGD at that time and an interim MDEL of 50 µg/L.



- iv. Whole Effluent Acute Toxicity.** This Order includes whole effluent acute toxicity limits for Discharge Point No. 001 based on Basin Plan Table 4-3. All bioassays are to be performed according to the U.S. EPA approved method in 40 C.F.R. section 136, currently *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, 5th Edition (EPA-821-R-02-012). The test species specified in the MRP is fathead minnow (*Pimephales promelas*) or rainbow trout (*Onchorhynchus mykiss*).

Based on Basin Plan section 3.3.20, if the Discharger can demonstrate that ammonia causes acute toxicity in excess of the acute toxicity limitations in this Order, and that the ammonia in the discharge complies with the ammonia effluent limits, then such toxicity does not constitute a violation of the effluent limitations for whole effluent acute toxicity.

- v. Whole Effluent Chronic Toxicity.** For this Order, the narrative toxicity objective is translated into a numeric criterion of 1.0 chronic toxicity unit (TUC). At 1.0 TUC, there is no observable detrimental effect when the indicator organism is exposed to 100 percent effluent; therefore, 1.0 TUC is a direct translation of the narrative objective into a number. Moreover, in the *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001, March 1991) (see section 3.3.3), U.S. EPA recommends that 1.0 TUC be used as a criterion continuous concentration (typically a four-day average). Assuming a dilution of 10:1 (D=9), this Order establishes a single-sample WQBEL of 10 TUC, which is more stringent than the WQBELs in the previous order (an 11-sample median of 10 TUC and an 11-sample 90th percentile of 20 TUC). Therefore, the new toxicity limit is consistent with anti-backsliding requirements.

- vi. Effluent Limitation Adjustments for Recycled Water Use.** Provision IV.A.3 provides a process for the Discharger to obtain effluent limit credits for recycled water use in its processes (this provision does not apply to treated wastewater used onsite for landscape irrigation). This Provision is included to encourage wastewater recycling, consistent with Basin Plan section 4.16 and State Water Board Resolution Nos. 77-1 and 2009-0011, by accounting for increased pollutant concentrations that may result.

- b. Discharge Point Nos. 002 through 018.** In accordance with 40 C.F.R. section 122.44(k), implementation of best management practices constitutes compliance with the WQBELs for Discharge Point Nos. 002 through 018. Provision VI.C.4.c.iii requires best management practices through the preparation and implementation of a SWPPP. This Order also retains the previous order's narrative stormwater limits (no visible color or oil) based on Basin Plan sections 3.3.7 and 3.3.9, and numeric pH limits of 6.5 to 8.5 based on Basin Plan section 3.3.9. The Basin Plan's pH limits are more stringent than the technology-based effluent limitations required by 40 C.F.R. section 419, subpart B.

## **D. Effluent Limit Considerations**

- 1. Anti-backsliding.** This Order complies with the anti-backsliding provisions of CWA sections 402(o) and 303(d)(4) and 40 C.F.R. section 122.44(l), which generally require

effluent limits in a reissued permit to be as stringent as those in the previous order. The requirements of this Order are at least as stringent as those in the previous order. However, this Order does not retain the previous order's zinc WQBELs because effluent data no longer indicate reasonable potential for zinc to exceed the water quality objectives at Discharge Point No. 001. This is consistent with State Water Board Order WQ 2001-16.

- 2. Antidegradation.** This Order complies with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution 68-16. It continues the status quo with respect to the level of discharge authorized in the previous order, which is the baseline by which to measure whether degradation will occur. This Order does not allow for a flow increase, a reduced level of treatment, or higher effluent limits relative to those in the previous order.

The Discharger plans to add a new stormwater outfall, Discharge Point No. 018, to discharge stormwater accumulated in its Lower Level Tank Farm secondary containment berms and to improve the Facility's ability to adequately treat wastewater and manage stormwater during storm events. The new outfall will discharge to Sulphur Springs Creek and ultimately Suisun Bay. The previous order permitted discharge of Lower Level Tank Farm stormwater to Sulphur Springs Creek and ultimately Suisun Bay through Discharge Point Nos. 009 and 010. Discharge Point No. 018 will discharge the same stormwater at a similar location to the same receiving water. (Stormwater of this nature will continue to be discharged from Discharge Point Nos. 009 and 010, although the volume discharged from those points may decrease.) Overall stormwater discharges are not anticipated to increase; therefore, the change will not degrade receiving waters. The Discharger submitted an antidegradation report (*Antidegradation Analysis: New Storm Water Outfall from Lower Level Tank Farm at Valero Benicia Refinery*) on February 7, 2014, supporting this conclusion.

- 3. Stringency of Requirements for Individual Pollutants.** This Order contains both technology-based and water quality-based effluent limits for individual pollutants. This Order's technology-based requirements implement minimum, applicable federal technology-based requirements. In addition, this Order contains more stringent effluent limits as necessary to meet water quality standards. Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement CWA requirements.

This Order's WQBELs implement water quality objectives that protect beneficial uses. The beneficial uses and water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that WQBELs were derived from the CTR, the CTR is the applicable standard pursuant to 40 C.F.R. section 131.38. The procedures for calculating these WQBELs are based on the CTR, as implemented in accordance with the SIP, which U.S. EPA approved on May 18, 2000. U.S. EPA approved most Basin Plan beneficial uses and water quality objectives prior to May 30, 2000. Beneficial uses and water quality objectives submitted to U.S. EPA prior to May 30, 2000, but not approved by U.S. EPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to 40 C.F.R. section 131.21(c)(1). U.S. EPA approved the remaining beneficial uses and water quality objectives so they are applicable water quality standards pursuant to 40 C.F.R. section 131.21(c)(2).

## V. RATIONALE FOR RECEIVING WATER LIMITATIONS

The receiving water limits in sections V.A and V.B of this Order are based on Basin Plan narrative and numeric water quality objectives. The receiving water limit in section V.C of this Order requires compliance with federal and State water quality standards in accordance with the CWA and regulations adopted thereunder.

## VI. RATIONALE FOR PROVISIONS

### A. Standard Provisions

Attachment D contains standard provisions that apply to all NPDES permits in accordance with 40 C.F.R. section 122.41 and additional conditions applicable to specific categories of permits in accordance with 40 C.F.R. section 122.42. The Discharger must comply with these provisions. The conditions set forth in 40 C.F.R. sections 122.41(a)(1) and (b) through (n) apply to all state-issued NPDES permits and must be incorporated into the permits either expressly or by reference.

In accordance with 40 C.F.R. section 123.25(a)(12), states may omit or modify conditions to impose more stringent requirements. Attachment G contains standard provisions that supplement the federal standard provisions in Attachment D. This Order omits federal conditions that address enforcement authority specified in 40 C.F.R. sections 122.41(j)(5) and (k)(2) because the State's enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates Water Code section 13387(e) by reference.

### B. Monitoring and Reporting Provisions

CWA section 308 and 40 C.F.R. sections 122.41(h), 122.41(j) - (l), 122.44(i), and 122.48 require that NPDES permits specify monitoring and reporting requirements. Water Code sections 13267 and 13383 also authorize the Regional Water Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. The Monitoring and Reporting Program (Attachment E) establishes monitoring, reporting, and recordkeeping requirements that implement federal and State requirements. For more background regarding these requirements, see Fact Sheet section VII.

### C. Special Provisions

#### 1. Reopener Provisions

These provisions are based on 40 C.F.R. sections 122.62 and 122.63 and allow modification of this Order and its effluent limits as necessary in response to updated water quality objectives, regulations, or other new and relevant information that may become available in the future, and other circumstances as allowed by law.

#### 2. Special Studies and Additional Monitoring

- a. **Effluent Characterization Study and Report.** This Order does not include effluent limits for priority pollutants that do not demonstrate reasonable potential, but this provision requires the Discharger to continue monitoring for these pollutants as described

in the MRP and Attachment G. Monitoring data are necessary to verify that the “no” and “unknown” reasonable potential analysis conclusions of this Order remain valid. This requirement is authorized pursuant to Water Code section 13267 and is necessary to inform the next permit reissuance and to ensure that the Discharger takes timely steps in response to any unanticipated change in effluent quality during the term of this Order.

- b. Outfall or Diffuser Upgrade.** This provision allows the Discharger to repair or replace its existing outfall, diffuser, or both during the term of this Order. The Discharger plans to evaluate the technical and financial feasibility of this project before proceeding. This Order does not authorize degradation of the receiving water; this provision requires the Discharger to submit documentation showing that the new facilities will achieve a dilution ratio as high or higher than the current ratio of 17:1 if properly constructed and operated. Findings authorizing degradation are therefore unnecessary.

### 3. Pollutant Minimization Program

This provision is based on Basin Plan section 4.13.2 and SIP section 2.4.5.

### 4. Other Special Provisions

- a. Copper Action Plan.** This provision is based on Basin Plan section 7.2.1.2 and is necessary to ensure that use of copper site-specific objectives is consistent with antidegradation policies. Data compiled by the San Francisco Estuary Institute for 2009-2011 indicate no degradation of San Francisco Bay water quality with respect to copper (<http://www.sfei.org/content/copper-site-specific-objective-3-year-rolling-averages>).
- b. Cyanide Action Plan.** This provision is based on Basin Plan section 4.7.2.2 and is necessary to ensure that use of cyanide site-specific objectives is consistent with antidegradation policies. The Basin Plan requires a cyanide action plan to ensure compliance with State and federal antidegradation policies when cyanide limits are based on the site-specific objectives.
- c. Stormwater Requirements**
  - i. Stormwater Monitoring.** Provision VI.C.4.c.i is included to prevent discharge of pollutants exceeding effluent limits in stormwater discharged from the Upper Level Tank Farm, Intermediate Level Tank Farm, Lower Level Tank Farm, and Crude Oil Storage Area secondary containment areas (Discharge Point Nos. 003, 006, 009, 010, and 018). This provision is based on 40 C.F.R. section 122.44(i) and Water Code section 13267.
  - ii. Wet Weather Discharge of Diverted Stormwater.** Provision VI.C.4.c.ii is included to prevent discharge of pollutants exceeding effluent limits in stormwater diverted to the Stormwater Retention Ponds and Crude Field Retention Ponds, then discharged through Discharge Point No. 001. This provision is based on 40 C.F.R. section 122.44(i) and Water Code section 13267.

- iii. Stormwater Pollution Prevention Plan and Annual Report.** Provision VI.C.4.c.iii is based on Basin Plan section 4.8 and is consistent with the requirements of *Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities* (State Water Board Order No. 97-03-DWQ) and U.S. EPA's *NPDES Stormwater Multi-Sector General Permit for Industrial Activities* (Federal Register Volume 65, Number 210, October 30, 2000).
- iv. Construction and Development Stormwater Requirements.** Provision VI.C.4.c.iv clarifies when the Discharger must apply for coverage under *NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities* (Order No. 2009-0009-DWQ) and ensures that the stormwater requirements of this Order are comparable to those in that order. The Discharger may discharge construction stormwater through existing stormwater discharge points permitted by this Order if its SWPPP requires a level of protection equivalent to Order No. 2009-0009-DWQ. Otherwise, coverage under Order No. 2009-0009-DWQ is required. The April 2013 revision of the Discharger's SWPPP includes measures to address refinery construction stormwater directed to an existing stormwater outfall, including housekeeping of construction and waste materials, protocols for vehicle storage and maintenance, controls on erosion and sediment, and inspections to evaluate the effectiveness of best management practices.
- d. Conditions for Recycled Water Use Credits.** This provision protects beneficial uses identified in the Basin Plan by requiring the Discharger to ensure that any recycled water use credits will not cause toxicity. This provision does not authorize any increase in pollutant mass to the receiving water; it authorizes recycling of treated wastewater that could otherwise be discharged to the receiving water without further treatment.
- e. Treated Wastewater Recycling.** This provision allows the Discharger to recycle its final effluent for landscape irrigation and use in the Facility firewater system. This reuse is approved provided that there is no irrigation water runoff from the Facility and all water in the firewater system is captured and re-treated at the plant. This provision is based on the requirements of California Code of Regulations, title 22.

## VII. RATIONALE FOR MONITORING AND REPORTING PROGRAM

Attachment E contains the MRP for this Order. It specifies sampling stations, pollutants to be monitored (including all parameters for which effluent limits are specified), monitoring frequencies, and reporting requirements. The following provides the rationale for the MRP requirements:

### A. Monitoring and Reporting Program Requirements Rationale

#### 1. Effluent Monitoring.

Effluent monitoring for parameters subject to this Order's prohibitions and effluent limitations is necessary to evaluate compliance with the prohibitions and effluent limits, as discussed below.

- a. Monitoring Location EFF-001.** Flow monitoring is necessary to evaluate compliance with Prohibition III.E (average dry weather flow). Standard observations are necessary to confirm that the treatment plant is being properly operated and maintained.

**b. Monitoring Locations EFF-002 through EFF-018.** In addition to evaluating compliance, monitoring is necessary to confirm that the Discharger’s stormwater best management practices are adequate. Flow monitoring is necessary to understand the magnitude and potential impacts of stormwater discharges, such as the mass of pollutants discharged (in addition to the concentrations). Standard observations are necessary to evaluate compliance with this Order’s limits on visible oil and color, and to confirm that the Discharger’s stormwater best management practices are adequate. Attachment G, section III.A.3.c, requires specific conductance monitoring.

The Discharger may use data collected at Monitoring Location EFF-010 to represent Discharge Point Nos. 009 and 010 because the two stormwater discharges are expected to have similar characteristics, and the flow from Discharge Point No. 009 is relatively small. Low flows at Discharge Point No. 008 may preclude collection of some samples as required by the relevant analytical methods (e.g., oil and grease). Monitoring is required for all parameters for which a sample can be obtained in accordance with the relevant analytical method.

- 2. Whole Effluent Toxicity Testing.** Acute and chronic whole effluent toxicity tests are necessary to evaluate compliance with the acute and chronic toxicity effluent limits. Chronic toxicity tests are also necessary to evaluate whether chronic toxicity triggers the need for a Toxicity Reduction Evaluation.
- 3. Receiving Water Monitoring.** RMP participation is necessary to ensure that data on pollutants and toxicity in San Francisco Bay water, sediment, and biota are available to characterize the receiving water and to understand the effects of the discharges that this Order authorizes. In addition, standard observations of Sulphur Springs Creek, Buffalo Wallow, and Beaver Creek are necessary to ensure that the receiving water limits in Provision V are met.

**B. Monitoring Requirements Summary**

The table below summarizes routine monitoring requirements. This table is for informational purposes only. The actual requirements are specified in the MRP and elsewhere in this Order.

**Table F-11. Monitoring Requirements Summary**

Parameter	Influent INF-001 <sup>[1]</sup>	Influent INF-002 <sup>[1]</sup>	Effluent EFF-001	Stormwater EFF-002 through EFF-018	Receiving Waters RSW-001 through RSW-003	Receiving Waters Suisun Bay and Carquinez Strait
Flow	---	---	Continuous/D	1/Month	---	---
BOD <sub>5</sub>	1/Month	1/Year	1/Month	1/Day during storm <sup>[2]</sup>	---	---
COD	1/Month	1/Year	1/Month	1/Day during storm <sup>[2]</sup>	---	---
Oil and Grease	1/Week	1/Year	1/Week	1/Quarter <sup>[3]</sup>	---	---
Phenolic Compounds (4AP)	1/Month	1/Year	1/Month	1/Day during storm <sup>[2]</sup>	---	---
Sulfide	1/Month	1/Year	1/Month	---	---	---
TOC	---	---	---	1/Quarter <sup>[3,4]</sup>	---	Support RMP
TSS	1/Week	1/Year	1/Week	1/Day during storm <sup>[2,4]</sup>	---	---
Total Ammonia, as N	1/Month	1/Year	1/Month	---	---	Support RMP

Parameter	Influent INF-001 <sup>[1]</sup>	Influent INF-002 <sup>[1]</sup>	Effluent EFF-001	Stormwater EFF-002 through EFF-018	Receiving Waters RSW-001 through RSW-003	Receiving Waters Suisun Bay and Carquinez Strait
Total Chromium	1/Month	1/Year	1/Month	1/Day during storm <sup>[2]</sup>	---	Support RMP
Chromium (VI)	1/Month	1/Year	1/Month	1/Day during storm <sup>[2]</sup>	---	---
Bis(2-Ethylhexyl)Phthalate	1/Month	1/Year	1/Month	---	---	Support RMP
Acute Toxicity	---	---	1/Week	---	---	---
Chronic Toxicity	---	---	1/Quarter	---	---	---
Copper, Total Recoverable	1/Month	1/Year	1/Month	---	---	Support RMP
Cyanide, Total	1/Month	1/Year	1/Month	---	---	Support RMP
Dioxin TEQ	2/Year	1/Year	2/Year	---	---	Support RMP
Selenium	1/Week	1/Year	1/Week	---	---	Support RMP
pH	---	---	Continuous/D	1/Quarter <sup>[3,4]</sup>	---	Support RMP
Visible oil and color	---	---	---	--- <sup>[4]</sup>	---	---
Standard Observations	---	---	1/Day	1/Day during storm	1/Month and once per storm	---

**Footnotes:**

- <sup>[1]</sup> Sampling at INF-001 and INF-002 is required when the Discharger is using recycled water in place of potable water and for those constituents for which the Discharger wants to receive recycled water use credits.
- <sup>[2]</sup> Monitoring to determine compliance with Table 6 of this Order is required at a particular monitoring location if the TOC or oil and grease exceeds the effluent limit in Table 5 of this Order. Monitoring is to take place daily during each storm through June 30 and at least once during the first daylight storm of the following wet season (commencing October 1).
- <sup>[3]</sup> The monitoring frequency at a particular monitoring location is to increase to daily during each storm through the following June 30 if the TOC or oil and grease effluent limit in Table 5 is exceeded. Monitoring at affected monitoring locations is to take place at least once during the first daylight storm the following wet season (commencing October 1).
- <sup>[4]</sup> Prior to releasing stormwater from the Upper Level, Intermediate Level, Lower Level, or Crude Oil Storage Area Tank Farms secondary containment areas through stormwater Discharge Point Nos. 003, 006, 009, 010, or 018, the Discharger is to visually inspect the stormwater for oil and color, and sample and analyze it for TOC, TSS, and pH. Any stormwater exceeding 100 mg/L TSS or not compliant with effluent limitations is to be sent to the plant for treatment.

**VIII. PUBLIC PARTICIPATION**

The Regional Water Board considered the issuance of WDRs that will serve as an NPDES permit for the Facility. As a step in the WDR adoption process, Regional Water Board staff developed tentative WDRs and encouraged public participation in the WDR adoption process.

**A. Notification of Interested Parties.** The Regional Water Board notified the Discharger and interested agencies and persons of its intent to prescribe WDRs for the discharge and provided an opportunity to submit written comments and recommendations. Notification was provided through the *Benicia Herald*. The public had access to the agenda and any changes in dates and locations through the Regional Water Board’s website at <http://www.waterboards.ca.gov/sanfranciscobay>.

**B. Written Comments.** Interested persons were invited to submit written comments concerning the tentative WDRs as explained through the notification process. Comments were due either in person or by mail at the Regional Water Board office at 1515 Clay Street, Suite 1400, Oakland, California 94612, to the attention of John H. Madigan.

For full staff response and Regional Water Board consideration, the written comments were due at the Regional Water Board office by 5:00 p.m. on July 9, 2015.

**C. Public Hearing.** The Regional Water Board held a public hearing on the tentative WDRs during its regular meeting at the following date and time, and at the following location:

Date: August 12, 2015  
Time: 9:00 a.m.  
Location: Elihu Harris State Office Building  
1515 Clay Street, 1<sup>st</sup> Floor Auditorium  
Oakland, CA 94612

Contact: John Madigan, (510) 622-2460, John.Madigan@waterboards.ca.gov

Interested persons were invited to attend. At the public hearing, the Regional Water Board heard testimony pertinent to the discharge, WDRs, and permit. For accuracy of the record, important testimony was requested to be in writing.

Dates and venues change. The Regional Water Board web address is <http://www.waterboards.ca.gov/sanfranciscobay>, where one could access the current agenda for changes in dates and locations.

**D. Reconsideration of Waste Discharge Requirements.** Any aggrieved person may petition the State Water Board to review the Regional Water Board decision regarding the final WDRs. The State Water Board must receive the petition at the following address within 30 calendar days of the Regional Water Board action:

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

For instructions on how to file a petition for review, see [http://www.waterboards.ca.gov/public\\_notices/petitions/water\\_quality/wqpetition\\_instr.shtml](http://www.waterboards.ca.gov/public_notices/petitions/water_quality/wqpetition_instr.shtml).

**E. Information and Copying.** The Report of Waste Discharge, related supporting documents, and comments received are on file and may be inspected at the address above at any time between 9:00 a.m. and 5:00 p.m., Monday through Friday. Copying of documents may be arranged by calling (510) 622-2300.

**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 the 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 John Madigan at (510) 622-2460 or John.Madigan@waterboards.ca.gov.



## ATTACHMENT F-1

### Derivation of Technology-Based Effluent Limits Valero Benicia Refinery

#### **References**

1. 40 C.F.R. section 419, subpart B – Cracking Subcategory, *Effluent Limitation Guidelines and New Source Performance Standards for the Petroleum Refining Point Source Category* (2006)
2. *Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Petroleum Refining Point Source Category*, EPA/4401-82/014 (1982)
3. *Guide for the Application of Effluent Limitations Guidelines for the Petroleum Refining Industry*, U.S. EPA Office of Water Regulations and Standards (1985)
4. Valero Refining Company-California, *Application for Renewal, NPDES Permit No. CA0005550* (June 26, 2014)
5. Refinery Production Data, January 2010-July 2014, from *Application for Renewal, NPDES Permit No. CA0005550*. Attachment 2C-IIIC – Basis for Reporting Production Rates

#### **Applicable Definitions**

*Process Waste Water* means any water, which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product. [40 C.F.R. § 401.11(q)]

*Runoff* means the flow of stormwater resulting from precipitation coming into contact with petroleum refinery property. [40 C.F.R. § 419.11(b)]

*Contaminated Runoff* means runoff that comes into contact with any raw material, intermediate product, finished product, by-product, or waste product located on petroleum refinery property. [40 C.F.R. § 419.11(g)]

#### **Background**

Effluent Limitations Guidelines (ELGs) for the Cracking Subcategory of the Petroleum Refining Point Source Category at 40 C.F.R. section 419, subpart B, are based, in part, on a discharger's production rate. The Discharger's current production rate is 140,100 barrels per day (bbls/d).

*Process Wastewaters.* The ELGs include limits for process wastewaters based on best practicable control technology currently available (BPT), best available technology economically achievable (BAT), and best conventional pollutant control technology (BCT). Specific BPT, BAT, and BCT effluent limits that apply to the Discharger must be derived using methods described by the ELGs and take into account such factors as production rate, as well as refinery processes and configuration. The most stringent of BPT, BAT, and BCT limits apply.

To derive BPT, BAT, and BCT limits for process wastewaters discharged at Discharge Point No. 001, size factors and process factors are determined as follows.

**Size Factor.** At a crude processing rate of 141,100 bbls/day, the appropriate size factor is 1.35 based on the ELGs at 40 C.F.R. section 419.22(b)(1) for BPT, 40 C.F.R. section 419.23(b)(1) for BAT, and 40 C.F.R. section 419.24(b)(1) for BCT.

**Process Factor.** The process configuration for each process is determined by summing the process feedstock rates for each crude, cracking and coking, lube, and asphalt process at the refinery. Each individual feedstock rate is multiplied by the capacity relative to the throughput and a weight factor specific for each process to derive a “process configuration,” which in turn is used to determine a “process factor” in accordance with the ELGs at 40 C.F.R. section 419.22(b)(2) for BPT, 40 C.F.R. section 419.23(b)(2) for BAT, and 40 C.F.R. section 419.24(b)(2) for BCT.

Processes considered in deriving the process factors are those (as reported by the Discharger) within the crude and cracking and coking categories, which correspond to the process groups listed within the *Guide for the Application of Effluent Limitations Guidelines for the Petroleum Refining Industry* (page 19). The Discharger does not have lube processes, so this process group is not considered in determining the process factors.

Derivation of the process configuration for a production rate of 140,100 bbls/day is shown in the following table:

**Table F-1A. Process Configurations for Discharge Point No. 001**

Process	Process Feedstock Rate (x 1,000 bbls/day)	Process/Feedstock Ratio	Weighting Factor	Process Configuration
<b>Crude</b>				
Atmospheric Distillation	140.1	1		
Vacuum Crude Distillation	73.8	0.53		
Desalting	140.4	1		
Total	354.3	2.53	1	2.53
<b>Cracking</b>				
Fluid Catalytic Cracking	69.7	0.50		
Hydrocracking	29.3	0.21		
Hydrotreating	32.5	0.23		
Total	131.5	0.94	6	5.63
<b>Asphalt</b>				
	15.5	0.11	12	1.33
<b>Total Refinery Process Configuration</b>				<b>9.49</b>

Based on the total refinery process configuration, the process factor is 1.82 pursuant to 40 C.F.R. section 419.22(b)(2) for BPT, 40 C.F.R. section 419.23(b)(2) for BAT, and 40 C.F.R. section 419.24(b)(2) for BCT.

To determine BAT limits for total and hexavalent chromium and phenolic compounds in process wastewaters, the ELGs require consideration of effluent factors and refinery processes. BAT effluent factors are presented at 40 C.F.R. section 419.23(c)(1); the refinery processes considered are the crude, cracking and coking, and reforming and alkylation processes, which correspond to those identified within the *Guide for the Application of Effluent Limitations Guidelines for the Petroleum Refining Industry* (page 20).

Contaminated Runoff. The ELGs establish BPT, BAT, and BCT limits for contaminated runoff applicable to all stormwater discharges, except stormwater treated and discharged with process wastewaters through Discharge Point No. 001. The ELGs establish effluent limits for oil and grease and total organic carbon (TOC). If the oil and grease or TOC limits are exceeded, 40 C.F.R. sections 419.22(e)(2) and 419.23(f)(2) set forth additional limits for biochemical oxygen demand (BOD), chemical oxygen demand (COD), total suspended solids (TSS), phenolic compounds, pH, and hexavalent and total chromium.

In general, BPT limits are the most comprehensive and stringent of the applicable technology-based limits for contaminated runoff and, therefore, are incorporated into this Order as additional effluent limits for discharges of contaminated runoff where oil and grease or TOC limits are exceeded. The following table summarizes the applicable technology-based effluent limits based on the ELGs for contaminated runoff.

**Table F-1B. Contaminated Runoff Technology-Based Limits**

Pollutant	Effluent Limit <sup>[1]</sup>	
	Max Daily (mg/L)	30-day Average (mg/L)
Oil and Grease	15	---
TOC	110	---
If either limit above is exceeded, all limits below become effective.		
5-day biochemical oxygen demand (BOD <sub>5</sub> )	48	26
TSS	34	22
COD	360	180
Oil & Grease	15.6	8.0
Phenolic Compounds (4AAP)	0.35	0.17
Total Chromium	0.60	0.22
Chromium (VI)	0.062	0.028
pH	6.0-9.0 <sup>[2]</sup>	

<sup>[1]</sup> All effluent limits reflect BPT requirements from 40 C.F.R § 419, subpart B, except those for total chromium, which reflect BAT requirements.

<sup>[2]</sup> The pH limits are to be instantaneous.

This Order establishes effluent limits for oil and grease and TOC for all discharge points where contaminated runoff is discharged. Effluent limits for BOD<sub>5</sub>, TSS, COD, phenolic compounds, and chromium become effective immediately upon an exceedance of oil and grease or TOC limits for the outfall where the exceedance occurred. The pH effluent limit listed in the table above is less stringent than the applicable water quality objectives for pH; therefore, this Order retains the more stringent, water quality-based pH limit of 6.5 to 8.5 from the previous order, consistent with Basin Plan section 3.3.9 and Table 4-2 (for shallow-water discharges).

***Determination of Process Wastewater Effluent Limits at Discharge Point No. 001***

BPT. The following table shows the derivation of process wastewater BPT limits at a production rate of 140,100 bbls/day feedstock.

**Table F-1C. BPT Limits for Process Wastewaters**

	Preliminary Effluent Limit Factor (pounds/1,000 bbls feedstock) <sup>[1]</sup>		Size Factor	Process Factor	Feed Stock Rate	Effluent Limits (pounds/day)	
	Max Daily	Avg Monthly				Max Daily	Avg Monthly
BOD <sub>5</sub>	9.9	5.5	1.35	1.82	140.1	3,400	1,900
TSS	6.9	4.4	1.35	1.82	140.1	2,400	1,500
COD	74.0	38.4	1.35	1.82	140.1	25,000	13,000
Oil and Grease	3.0	1.6	1.35	1.82	140.1	1,000	550
Phenolic Compounds (4AAP)	0.074	0.36	1.35	1.82	140.1	25	120
Total Ammonia, as N	6.6	3.0	1.35	1.82	140.1	2,300	1,000
Sulfide	0.065	0.029	1.35	1.82	140.1	22	10
Total Chromium	0.15	0.088	1.35	1.82	140.1	52	30
Chromium (VI)	0.012	0.0056	1.35	1.82	140.1	4	2
pH	--	--	--	--	--	6.0 – 9.0 <sup>[2]</sup>	

<sup>[1]</sup> From 40 C.F.R. § 419.22(a)

<sup>[2]</sup> The pH limits are to be instantaneous.

**BAT.** The following table shows the derivation of BAT limits for process wastewaters at a production rate of 140,100 bbls/day feedstock.

**Table F-1D. BAT Limits for Process Wastewater**

	Preliminary Effluent Limit Factor (pounds/1,000 bbls feedstock) <sup>[1]</sup>		Size Factor	Process Factor	Feed Stock Rate	Effluent Limits (pounds/day)	
	Max Daily	Avg Monthly				Max Daily	Avg Monthly
<b>Production at 140,100 bbls/day</b>							
COD <sup>[2]</sup>	74.0	38.4	1.04	2.26	140.1	24,000	13,000
Total Ammonia, as N	6.6	3.0	1.04	2.26	140.1	2,200	1,000
Sulfide	0.065	0.029	1.04	2.26	140.1	21	10

<sup>[1]</sup> From 40 C.F.R. § 419.22(a)

<sup>[2]</sup> In any case in which the applicant can demonstrate that the chloride concentration in the effluent exceeds 1,000 mg/L (1,000 ppm), TOC may be substituted in lieu of COD. TOC effluent limits must be based on effluent data correlating TOC to BOD<sub>5</sub>.

BAT limits for total and hexavalent chromium and phenolic compounds are based on the following feedstock rates, which are based on a total production rate of 140,100 bbls/day feedstock.

**Table F-1E. Feedstock Rates for Determining BAT Limits**

	Feedstock Rate (bbls/day)
<b>Crude</b>	
Atmospheric Distillation	140.1
Vacuum Distillation	73.8

	<b>Feedstock Rate (bbls/day)</b>
Desalter	140.4
<b>Total</b>	<b>354.3</b>
<b>Cracking and Coking</b>	
Fluid Cat Cracking	69.7
Fluid Coking	29.3
Hydrocracking	32.5
Cat Feed Hydrofiner	36.6
Virgin Naptha Hydrofiner	28.3
Jet Hydrofiner	13.7
Heavy Cat Naptha Hydrofiner	16.8
Diene Hydrofiner	22.2
Light Cat Naptha Hydrofiner	20.4
Hardcut Saturation Unit	9.0
Ultra Low Sulfur Diesel	19.9
<b>Total</b>	<b>298.4</b>
<b>Asphalt</b>	
<b>Total</b>	<b>15.5</b>
<b>Reforming and Alkylation<sup>[1]</sup></b>	
Reforming	29.0
Alkylation	22.2
<b>Total</b>	<b>51.2</b>

<sup>[1]</sup> Although the Discahrger reported dimersol as a “Reforming and Alkylation” process, it was not considered such a process for purposes of these calculations.

Based on the total feedstock rates shown above, derivation of BAT limits for total and hexavalent chromium and phenolic compounds is shown in the following table.

**Table F-1F. BAT Limits for Process Wastewater (Chromium and Phenolic Compounds)**

Pollutant	Preliminary Effluent Limits Factor (pounds/1,000 bbls feedstock) <sup>[1]</sup>		Feedstock Rate	Effluent Limits (pounds/day)	
	Max Daily	Avg Monthly		Max Daily	Avg Monthly
<b><i>Phenolic Compounds</i></b>					
Crude	0.013	0.003	354.30	4.61	1.06
Cracking and Coking	0.147	0.036	298.40	43.86	10.74
Asphalt	0.079	0.019	15.50	1.22	0.29
Lube	0.369	0.090	0.00	0.00	0.00
Reforming and Alkylation	0.132	0.032	51.20	6.76	1.64
<b>Limit (Sum)</b>	---	---	---	<b>56.45</b>	<b>13.74</b>
<b><i>Total Chromium</i></b>					
Crude	0.011	0.004	354.30	3.90	1.42
Cracking and Coking	0.119	0.041	298.40	35.51	12.23
Asphalt	0.064	0.022	15.50	0.99	0.34
Lube	0.299	0.104	0.00	0.00	0.00

Pollutant	Preliminary Effluent Limits Factor (pounds/1,000 bbls feedstock) <sup>[1]</sup>		Feedstock Rate	Effluent Limits (pounds/day)	
	Max Daily	Avg Monthly		Max Daily	Avg Monthly
Reforming and Alkylation	0.107	0.037	51.20	5.48	1.89
<b>Limit (Sum)</b>	---	---	---	<b>45.88</b>	<b>15.89</b>
<b>Hexavalent Chromium</b>					
Crude	0.0007	0.0003	354.30	0.25	0.11
Cracking and Coking	0.0076	0.0034	298.40	2.27	1.01
Asphalt	0.0041	0.0019	15.50	0.06	0.03
Lube	0.0192	0.0087	0.00	0.00	0.00
Reforming and Alkylation	0.0069	0.0031	51.20	0.35	0.16
<b>Limit (Sum)</b>	---	---	---	<b>2.93</b>	<b>1.31</b>

<sup>[1]</sup> From 40 C.F.R. § 419.22(a)

**BCT.** The following table shows the derivation of BCT limits for process wastewaters at a production rate of 140,100 bbls/day feedstock.

**Table F-1G. BCT Limits for Process Wastewater**

Pollutant	Preliminary Effluent Limits Factor (pounds/1,000 bbls feedstock) <sup>[1]</sup>		Size Factor	Process Factor	Feed Stock Rate	Final Effluent Limits (pounds/day)	
	Max Daily	Avg Monthly				Max Daily	Avg Monthly
BOD <sub>5</sub>	9.9	5.5	1.35	1.82	140.1	3,400	1,900
TSS	6.9	4.4	1.35	1.82	140.1	2,400	1,500
Oil and Grease	3.0	1.6	1.35	1.82	140.1	1,000	550
pH	--	--	--	--	--	6.0 – 9.0 <sup>[2]</sup>	

<sup>[1]</sup> From 40 C.F.R. § 419.22(a)

<sup>[2]</sup> The pH limits are to be instantaneous.

**Most Stringent Technology-Based Process Wastewater Effluent Limits**

The following table presents the technology-based effluent limits for Facility process wastewater. The limits are the most stringent of the BPT, BAT, and BCT limits calculated above.

**Table F-1H. Summary of Technology-Based Process Wastewater Effluent Limits**

Pollutant	Effluent Limits (pounds/day) <sup>[1]</sup>	
	Max Daily	Avg Monthly
BOD <sub>5</sub>	3,400	1,900
TSS	2,400	1,500
COD	24,000	13,000
Oil and Grease	1,000	550
Phenolic Compounds (4AAP)	25	14 <sup>[2]</sup>
Total Ammonia, as N	2,200	1,000
Sulfide	21	10

Pollutant	Effluent Limits (pounds/day) <sup>[1]</sup>	
	Max Daily	Avg Monthly
Total Chromium	46 <sup>[2]</sup>	16 <sup>[2]</sup>
Chromium (VI)	2.9 <sup>[2]</sup>	1.3 <sup>[2]</sup>
pH	6.0 – 9.0 <sup>[3]</sup>	

<sup>[1]</sup> All limits are based on BPT unless otherwise noted.

<sup>[2]</sup> Limit is based on BAT.

<sup>[3]</sup> The pH limits are to be instantaneous.

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION**

**ATTACHMENT G  
REGIONAL STANDARD PROVISIONS, AND MONITORING  
AND REPORTING REQUIREMENTS  
(SUPPLEMENT TO ATTACHMENT D)**

For

**NPDES WASTEWATER DISCHARGE PERMITS**

March 2010



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**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION**

**REGIONAL STANDARD PROVISIONS, AND MONITORING AND  
REPORTING REQUIREMENTS  
(SUPPLEMENT TO ATTACHMENT D)**

**FOR**

**NPDES WASTEWATER DISCHARGE PERMITS**

**APPLICABILITY**

This document applies to dischargers covered by a National Pollutant Discharge Elimination System (NPDES) permit. This document does not apply to Municipal Separate Storm Sewer System (MS4) NPDES permits.

The purpose of this document is to supplement the requirements of Attachment D, Standard Provisions. The requirements in this supplemental document are designed to ensure permit compliance through preventative planning, monitoring, recordkeeping, and reporting. In addition, this document requires proper characterization of issues as they arise, and timely and full responses to problems encountered. To provide clarity on which sections of Attachment D this document supplements, this document is arranged in the same format as Attachment D.

**I. STANDARD PROVISIONS - PERMIT COMPLIANCE**

**A. Duty to Comply** – Not Supplemented

**B. Need to Halt or Reduce Activity Not a Defense** – Not Supplemented

**C. Duty to Mitigate** – This supplements I.C. of Standard Provisions (Attachment D)

**1. Contingency Plan** - The Discharger shall maintain a Contingency Plan as originally required by Regional Water Board Resolution 74-10 and as prudent in accordance with current municipal facility emergency planning. The Contingency Plan shall describe procedures to ensure that existing facilities remain in, or are rapidly returned to, operation in the event of a process failure or emergency incident, such as employee strike, strike by suppliers of chemicals or maintenance services, power outage, vandalism, earthquake, or fire. The Discharger may combine the Contingency Plan and Spill Prevention Plan into one document. Discharge in violation of the permit where the Discharger has failed to develop and implement a Contingency Plan as described below will be the basis for considering the discharge a willful and negligent violation of the permit pursuant to California Water Code Section 13387. The Contingency Plan shall, at a minimum, contain the provisions of a. through g. below.

a. Provision of personnel for continued operation and maintenance of sewerage facilities during employee strikes or strikes against contractors providing services.

- b. Maintenance of adequate chemicals or other supplies and spare parts necessary for continued operations of sewerage facilities.
  - c. Provisions of emergency standby power.
  - d. Protection against vandalism.
  - e. Expeditious action to repair failures of, or damage to, equipment and sewer lines.
  - f. Report of spills and discharges of untreated or inadequately treated wastes, including measures taken to clean up the effects of such discharges.
  - g. Programs for maintenance, replacement, and surveillance of physical condition of equipment, facilities, and sewer lines.
- 2. Spill Prevention Plan** - The Discharger shall maintain a Spill Prevention Plan to prevent accidental discharges and minimize the effects of such events. The Spill Prevention Plan shall:
- a. Identify the possible sources of accidental discharge, untreated or partially-treated waste bypass, and polluted drainage;
  - b. Evaluate the effectiveness of present facilities and procedures, and state when they became operational; and
  - c. 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.

This Regional Water Board, after review of the Contingency and Spill Prevention Plans or their updated revisions, may establish conditions it deems necessary to control accidental discharges and to minimize the effects of such events. Such conditions may be incorporated as part of the permit upon notice to the Discharger.

**D. Proper Operation & Maintenance** – This supplements I.D of Standard Provisions (Attachment D)

- 1. Operation and Maintenance (O&M) Manual** - The Discharger shall maintain an O&M Manual to provide the plant and regulatory personnel with a source of information describing all equipment, recommended operational strategies, process control monitoring, and maintenance activities. To remain a useful and relevant document, the O&M Manual shall be kept updated to reflect significant changes in treatment facility equipment and operational practices. The O&M Manual shall be maintained in usable condition and be available for reference and use by all relevant personnel and Regional Water Board staff.
- 2. Wastewater Facilities Status Report** - The Discharger shall regularly review, revise, or update, as necessary, its Wastewater Facilities Status Report. This report shall document how the Discharger operates and maintains its wastewater collection, treatment, and disposal facilities to ensure that all facilities are adequately staffed, supervised, financed, operated, maintained, repaired, and upgraded as necessary to provide adequate and reliable transport, treatment, and disposal of all wastewater from both existing and planned future wastewater sources under the Discharger's service responsibilities.

3. Proper Supervision and Operation of Publicly Owned Treatment Works (POTWs) - POTWs shall be supervised and operated by persons possessing certificates of appropriate grade pursuant to Division 4, Chapter 14, Title 23 of the California Code of Regulations.

**E. Property Rights** – Not Supplemented

**F. Inspection and Entry** – Not Supplemented

**G. Bypass** – Not Supplemented

**H. Upset** – Not Supplemented

**I. Other** – This section is an addition to Standard Provisions (Attachment D)

1. Neither the treatment nor the discharge of pollutants shall create pollution, contamination, or nuisance as defined by California Water Code Section 13050.
2. Collection, treatment, storage, and disposal systems shall be operated in a manner that precludes public contact with wastewater, except in cases where excluding the public is infeasible, such as private property. If public contact with wastewater could reasonably occur on public property, warning signs shall be posted.
3. If the Discharger submits a timely and complete Report of Waste Discharge for permit reissuance, this permit continues in force and effect until a new permit is issued or the Regional Water Board rescinds the permit.

**J. Stormwater** – This section is an addition to Standard Provisions (Attachment D)

These provisions apply to facilities that do not direct all stormwater flows from the facility to the wastewater treatment plant headworks.

**1. Stormwater Pollution Prevention Plan (SWPP Plan)**

The SWPP Plan shall be designed in accordance with good engineering practices and shall address the following objectives:

- a. To identify pollutant sources that may affect the quality of stormwater discharges; and
- b. To identify, assign, and implement control measures and management practices to reduce pollutants in stormwater discharges.

The SWPP Plan may be combined with the existing Spill Prevention Plan as required in accordance with Section C.2. The SWPP Plan shall be retained on-site and made available upon request of a representative of the Regional Water Board.

## 2. Source Identification

The SWPP Plan shall provide a description of potential sources that may be expected to add significant quantities of pollutants to stormwater discharges, or may result in non-stormwater discharges from the facility. The SWPP Plan shall include, at a minimum, the following items:

- a. A topographical map (or other acceptable map if a topographical map is unavailable), extending one-quarter mile beyond the property boundaries of the facility, showing the wastewater treatment facility process areas, surface water bodies (including springs and wells), and discharge point(s) where the facility's stormwater discharges to a municipal storm drain system or other points of discharge to waters of the State. The requirements of this paragraph may be included in the site map required under the following paragraph if appropriate.
- b. A site map showing the following:
  - 1) Stormwater conveyance, drainage, and discharge structures;
  - 2) An outline of the stormwater drainage areas for each stormwater discharge point;
  - 3) Paved areas and buildings;
  - 4) Areas of actual or potential pollutant contact with stormwater or release to stormwater, including but not limited to outdoor storage and process areas; material loading, unloading, and access areas; and waste treatment, storage, and disposal areas;
  - 5) Location of existing stormwater structural control measures (i.e., berms, coverings, etc.);
  - 6) Surface water locations, including springs and wetlands; and
  - 7) Vehicle service areas.
- c. A narrative description of the following:
  - 1) Wastewater treatment process activity areas;
  - 2) Materials, equipment, and vehicle management practices employed to minimize contact of significant materials of concern with stormwater discharges;
  - 3) Material storage, loading, unloading, and access areas;
  - 4) Existing structural and non-structural control measures (if any) to reduce pollutants in stormwater discharges; and
  - 5) Methods of on-site storage and disposal of significant materials.
- d. A list of pollutants that have a reasonable potential to be present in stormwater discharges in significant quantities.

### 3. Stormwater Management Controls

The SWPP Plan shall describe the stormwater management controls appropriate for the facility and a time schedule for fully implementing such controls. The appropriateness and priorities of controls in the SWPP Plan shall reflect identified potential sources of pollutants. The description of stormwater management controls to be implemented shall include, as appropriate:

a. Stormwater pollution prevention personnel

Identify specific individuals (and job titles) that are responsible for developing, implementing, and reviewing the SWPP Plan.

b. Good housekeeping

Good housekeeping requires the maintenance of clean, orderly facility areas that discharge stormwater. Material handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm drain conveyance system.

c. Spill prevention and response

Identify areas where significant materials can spill into or otherwise enter stormwater conveyance systems and their accompanying drainage points. Specific material handling procedures, storage requirements, and cleanup equipment and procedures shall be identified, as appropriate. The necessary equipment to implement a cleanup shall be available, and personnel shall be trained in proper response, containment, and cleanup of spills. Internal reporting procedures for spills of significant materials shall be established.

d. Source control

Source controls include, for example, elimination or reduction of the use of toxic pollutants, covering of pollutant source areas, sweeping of paved areas, containment of potential pollutants, labeling of all storm drain inlets with “No Dumping” signs, isolation or separation of industrial and non-industrial pollutant sources so that runoff from these areas does not mix, etc.

e. Stormwater management practices

Stormwater management practices are practices other than those that control the sources of pollutants. Such practices include treatment or conveyance structures, such as drop inlets, channels, retention and detention basins, treatment vaults, infiltration galleries, filters, oil/water separators, etc. Based on assessment of the potential of various sources to contribute pollutants to stormwater discharges in significant quantities, additional stormwater management practices to remove pollutants from stormwater discharges shall be implemented and design criteria shall be described.

f. Sediment and erosion control

Measures to minimize erosion around the stormwater drainage and discharge points, such as riprap, revegetation, slope stabilization, etc., shall be described.

g. Employee training

Employee training programs shall inform all personnel responsible for implementing the SWPP Plan. Training shall address spill response, good housekeeping, and material management practices. New employee and refresher training schedules shall be identified.

h. Inspections

All inspections shall be done by trained personnel. Material handling areas shall be inspected for evidence of, or the potential for, pollutants entering stormwater discharges. A tracking or followup procedure shall be used to ensure appropriate response has been taken in response to an inspection. Inspections and maintenance activities shall be documented and recorded. Inspection records shall be retained for five years.

i. Records

A tracking and followup procedure shall be described to ensure that adequate response and corrective actions have been taken in response to inspections.

**4. Annual Verification of SWPP Plan**

An annual facility inspection shall be conducted to verify that all elements of the SWPP Plan are accurate and up-to-date. The results of this review shall be reported in the Annual Report to the Regional Water Board described in Section V.C.f.

**K. Biosolids Management** – This section is an addition to Standard Provisions (Attachment D)

Biosolids must meet the following requirements prior to land application. The Discharger must either demonstrate compliance or, if it sends the biosolids to another party for further treatment or distribution, must give the recipient the information necessary to ensure compliance.

1. Exceptional quality biosolids meet the pollutant concentration limitations in Table III of 40 CFR Part 503.13, Class A pathogen limitations, and one of the vector attraction reduction requirements in 503.33(b)(1)-(b)(8). Such biosolids do not have to be tracked further for compliance with general requirements (503.12) and management practices (503.14).
2. Biosolids used for agricultural land, forest, or reclamation shall meet the pollutant limitations in Table I (ceiling concentrations) and Table II or Table III (cumulative loadings or pollutant concentration limitations) of 503.13. They shall also meet the general requirements (503.12) and management practices (503.14) (if not exceptional quality biosolids) for Class A or Class B pathogen levels with associated access restrictions (503.32) and one of the 10 vector attraction reduction requirements in 503.33(b)(1)-(b)(10).
3. Biosolids used for lawn or home gardens must meet exceptional quality biosolids limitations.
4. Biosolids sold or given away in a bag or other container must meet the pollutant limitations in either Table III or Table IV (pollutant concentration limitations or annual pollutant loading rate limitations) of 503.13. If Table IV is used, a label or information sheet must be attached to the biosolids packing that explains Table IV (see 503.14). The biosolids must also meet the Class A pathogen limitations and one of the vector attraction reduction requirements in 503.33(b)(1)-(b)(8).



## II. STANDARD PROVISIONS – PERMIT ACTION – Not Supplemented

## III. STANDARD PROVISIONS – MONITORING

### A. Sampling and Analyses – This section is a supplement to III.A and III.B of Standard Provisions (Attachment D)

#### 1. Use of Certified Laboratories

Water and waste analyses shall be performed by a laboratory certified for these analyses in accordance with California Water Code Section 13176.

#### 2. Use of Appropriate Minimum Levels

Table C lists the suggested analytical methods for the 126 priority pollutants and other toxic pollutants that should be used, unless a particular method or minimum level (ML) is required in the MRP.

For priority pollutant monitoring, when there is more than one ML value for a given substance, the Discharger may select any one of the analytical methods cited in Table C for compliance determination, or any other method described in 40 CFR part 136 or approved by U.S. EPA (such as the 1600 series) if authorized by the Regional Water Board. However, the ML must be below the effluent limitation and water quality objective. If no ML value is below the effluent limitation and water quality objective, then the method must achieve an ML no greater than the lowest ML value indicated in Table C. All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements.

#### 3. Frequency of Monitoring

The minimum schedule of sampling analysis is specified in the MRP portion of the permit.

##### a. Timing of Sample Collection

- 1) The Discharger shall collect samples of influent on varying days selected at random and shall not include any plant recirculation or other sidestream wastes, unless otherwise stipulated by the MRP.
- 2) The Discharger shall collect samples of effluent on days coincident with influent sampling unless otherwise stipulated by the MRP or the Executive Officer. The Executive Officer may approve an alternative sampling plan if it is demonstrated to be representative of plant discharge flow and in compliance with all other permit requirements.
- 3) The Discharger shall collect grab samples of effluent during periods of day-time maximum peak effluent flows (or peak flows through secondary treatment units for facilities that recycle effluent flows).
- 4) Effluent sampling for conventional pollutants shall occur on at least one day of any multiple-day bioassay test the MRP requires. During the course of the test, on at least one day, the Discharger shall collect and retain samples of the discharge. In the event a bioassay test does

not comply with permit limitations, the Discharger shall analyze these retained samples for pollutants that could be toxic to aquatic life and for which it has effluent limitations.

- i. The Discharger shall perform bioassay tests on final effluent samples; when chlorine is used for disinfection, bioassay tests shall be performed on effluent after chlorination-dechlorination; and
- ii. The Discharger shall analyze for total ammonia nitrogen and calculate the amount of un-ionized ammonia whenever test results fail to meet the percent survival specified in the permit.

b. Conditions Triggering Accelerated Monitoring

- 1) If the results from two consecutive samples of a constituent monitored in a 30-day period exceed the monthly average limit for any parameter (or if the required sampling frequency is once per month and the monthly sample exceeds the monthly average limit), the Discharger shall, within 24 hours after the results are received, increase its sampling frequency to daily until the results from the additional sampling show that the parameter is in compliance with the monthly average limit.
- 2) If any maximum daily limit is exceeded, the Discharger shall increase its sampling frequency to daily within 24 hours after the results are received that indicate the exceedance of the maximum daily limit until two samples collected on consecutive days show compliance with the maximum daily limit.
- 3) If final or intermediate results of an acute bioassay test indicate a violation or threatened violation (e.g., the percentage of surviving test organisms of any single acute bioassay test is less than 70 percent), the Discharger shall initiate a new test as soon as practical, and the Discharger shall investigate the cause of the mortalities and report its findings in the next self monitoring report (SMR).
- 4) The Discharger shall calibrate chlorine residual analyzers against grab samples as frequently as necessary to maintain accurate control and reliable operation. If an effluent violation is detected, the Discharger shall collect grab samples at least every 30 minutes until compliance with the limit is achieved, unless the Discharger monitors chlorine residual continuously. In such cases, the Discharger shall continue to conduct continuous monitoring as required by its permit.
- 5) When a bypass occurs (except one subject to provision III.A.3.b.6 below), the Discharger shall monitor flows and collect samples on a daily basis for all constituents at affected discharge points that have effluent limitations for the duration of the bypass (including acute toxicity using static renewals), except chronic toxicity, unless otherwise stipulated by the MRP.
- 6) Unless otherwise stipulated by the MRP, when a bypass approved pursuant to Attachment D, Standard Provisions, Sections I.G.2 or I.G.4, occurs, the Discharger shall monitor flows and, using appropriate procedures as specified in the MRP, collect and retain samples for affected discharge points on a daily basis for the duration of the bypass. The Discharger shall analyze for total suspended solids (TSS) using 24-hour composites (or more frequent increments) and for bacteria indicators with effluent limitations using grab samples. If TSS exceeds 45 mg/L in any composite sample, the Discharger shall also analyze the retained samples for that

discharge for all other constituents that have effluent limitations, except oil and grease, mercury, dioxin-TEQ, and acute and chronic toxicity. Additionally, at least once each year, the Discharger shall analyze the retained samples for one approved bypass discharge event for all other constituents that have effluent limitations, except oil and grease, mercury, dioxin-TEQ, and acute and chronic toxicity. This monitoring shall be in addition to the minimum monitoring specified in the MRP.

c. Stormwater Monitoring

The requirements of this section only apply to facilities that are not covered by an NPDES permit for stormwater discharges and where not all site storm drainage from process areas (i.e., areas of the treatment facility where chemicals or wastewater could come in contact with stormwater) is directed to the headworks. For stormwater not directed to the headworks during the wet season (October 1 to April 30), the Discharger shall:

- 1) Conduct visual observations of the stormwater discharge locations during daylight hours at least once per month during a storm event that produces significant stormwater discharge to observe the presence of floating and suspended materials, oil and grease, discoloration, turbidity, and odor, etc.
- 2) Measure (or estimate) the total volume of stormwater discharge, collect grab samples of stormwater discharge from at least two storm events that produce significant stormwater discharge, and analyze the samples for oil and grease, pH, TSS, and specific conductance.

The grab samples shall be taken during the first 30 minutes of the discharge. If collection of the grab samples during the first 30 minutes is impracticable, grab samples may be taken during the first hour of the discharge, and the Discharger shall explain in the Annual Report why the grab sample(s) could not be taken in the first 30 minutes.

- 3) Testing for the presence of non-stormwater discharges shall be conducted no less than twice during the dry season (May 1 to September 30) at all stormwater discharge locations. Tests may include visual observations of flows, stains, sludges, odors, and other abnormal conditions; dye tests; TV line surveys; or analysis and validation of accurate piping schematics. Records shall be maintained describing the method used, date of testing, locations observed, and test results.
- 4) Samples shall be collected from all locations where stormwater is discharged. Samples shall represent the quality and quantity of stormwater discharged from the facility. If a facility discharges stormwater at multiple locations, the Discharger may sample a reduced number of locations if it establishes and documents through the monitoring program that stormwater discharges from different locations are substantially identical.
- 5) Records of all stormwater monitoring information and copies of all reports required by the permit shall be retained for a period of at least three years from the date of sample, observation, or report.

d. Receiving Water Monitoring

The requirements of this section only apply when the MRP requires receiving water sampling.

- 1) Receiving water samples shall be collected on days coincident with effluent sampling for conventional pollutants.
- 2) Receiving water samples shall be collected at each station on each sampling day during the period within one hour following low slack water. Where sampling during lower slack water is impractical, sampling shall be performed during higher slack water. Samples shall be collected within the discharge plume and down current of the discharge point so as to be representative, unless otherwise stipulated in the MRP.
- 3) Samples shall be collected within one foot of the surface of the receiving water, unless otherwise stipulated in the MRP.

**B. Biosolids Monitoring** – This section supplements III.B of Standard Provisions (Attachment D)

When biosolids are sent to a landfill, sent to a surface disposal site, or applied to land as a soil amendment, they must be monitored as follows:

**1. Biosolids Monitoring Frequency**

Biosolids disposal must be monitored at the following frequency:

<u>Metric tons biosolids/365 days</u>	<u>Frequency</u>
0-290	Once per year
290-1500	Quarterly
1500-15,000	Six times per year
Over 15,000	Once per month

(Metric tons are on a dry weight basis)

**2. Biosolids Pollutants to Monitor**

Biosolids shall be monitored for the following constituents:

- Land Application: Arsenic, cadmium, copper, mercury, molybdenum, nickel, lead, selenium, and zinc
- Municipal Landfill: Paint filter test (pursuant to 40 CFR 258)
- Biosolids-only Landfill or Surface Disposal Site (if no liner and leachate system): arsenic, chromium, and nickel

**C. Standard Observations** – This section is an addition to III of Standard Provisions (AttachmentD)

**1. Receiving Water Observations**

The requirements of this section only apply when the MRP requires standard observations of the receiving water. Standard observations shall include the following:

- a. *Floating and suspended materials* (e.g., oil, grease, algae, and other macroscopic particulate matter): presence or absence, source, and size of affected area.
- b. *Discoloration and turbidity*: description of color, source, and size of affected area.
- c. *Odor*: presence or absence, characterization, source, distance of travel, and wind direction.
- d. *Beneficial water use*: presence of water-associated waterfowl or wildlife, fisherpeople, and other recreational activities in the vicinity of each sampling station.
- e. *Hydrographic condition*: time and height of corrected high and low tides (corrected to nearest National Oceanic and Atmospheric Administration location for the sampling date and time of sample collection).
- f. *Weather conditions*:
  - 1) Air temperature; and
  - 2) Total precipitation during the five days prior to observation.

## 2. Wastewater Effluent Observations

The requirements of this section only apply when the MRP requires wastewater effluent standard observations. Standard observations shall include the following:

- a. *Floating and suspended material of wastewater origin* (e.g., oil, grease, algae, and other macroscopic particulate matter): presence or absence.
- b. *Odor*: presence or absence, characterization, source, distance of travel, and wind direction.

## 3. Beach and Shoreline Observations

The requirements of this section only apply when the MRP requires beach and shoreline standard observations. Standard observations shall include the following:

- a. *Material of wastewater origin*: presence or absence, description of material, estimated size of affected area, and source.
- b. *Beneficial use*: estimate number of people participating in recreational water contact, non-water contact, or fishing activities.

## 4. Land Retention or Disposal Area Observations

The requirements of this section only apply to facilities with on-site surface impoundments or disposal areas that are in use. This section applies to both liquid and solid wastes, whether confined or unconfined. The Discharger shall conduct the following for each impoundment:

- a. Determine the amount of freeboard at the lowest point of dikes confining liquid wastes.
- b. Report evidence of leaching liquid from area of confinement and estimated size of affected area. Show affected area on a sketch and volume of flow (e.g., gallons per minute [gpm]).

- c. Regarding odor, describe presence or absence, characterization, source, distance of travel, and wind direction.
- d. Estimate number of waterfowl and other water-associated birds in the disposal area and vicinity.

**5. Periphery of Waste Treatment and/or Disposal Facilities Observations**

The requirements of this section only apply when the MRP specifies periphery standard observations. Standard observations shall include the following:

- a. *Odor*: presence or absence, characterization, source, and distance of travel.
- b. *Weather conditions*: wind direction and estimated velocity.

**IV. STANDARD PROVISIONS – RECORDS**

**A. Records to be Maintained** – This supplements IV.A of Standard Provisions (Attachment D)

The Discharger shall maintain records in a manner and at a location (e.g., wastewater treatment plant or Discharger offices) such that the records are accessible to Regional Water Board staff. The minimum period of retention specified in Section IV, Records, of the Federal Standard Provisions shall be extended during the course of any unresolved litigation regarding the subject discharge, or when requested by the Regional Water Board or Regional Administrator of U.S. EPA, Region IX.

A copy of the permit shall be maintained at the discharge facility and be available at all times to operating personnel.

**B. Records of monitoring information shall include** – This supplements IV.B of Standard Provision (Attachment D)

**1. Analytical Information**

Records shall include analytical method detection limitations, minimum levels, reporting levels, and related quantification parameters.

**2. Flow Monitoring Data**

For all required flow monitoring (e.g., influent and effluent flows), the additional records shall include the following, unless otherwise stipulated by the MRP:

- a. Total volume for each day; and
- b. Maximum, minimum, and average daily flows for each calendar month.

### 3. Wastewater Treatment Process Solids

- a. For each treatment unit process that involves solids removal from the wastewater stream, records shall include the following:
  - 1) Total volume or mass of solids removed from each collection unit (e.g., grit, skimmings, undigested biosolids, or combination) for each calendar month or other time period as appropriate, but not to exceed annually; and
  - 2) Final disposition of such solids (e.g., landfill, other subsequent treatment unit).
- b. For final dewatered biosolids from the treatment plant as a whole, records shall include the following:
  - 1) Total volume or mass of dewatered biosolids for each calendar month;
  - 2) Solids content of the dewatered biosolids; and
  - 3) Final disposition of dewatered biosolids (disposal location and disposal method).

### 4. Disinfection Process

For the disinfection process, these additional records shall be maintained documenting process operation and performance:

- a. For bacteriological analyses:
  - 1) Wastewater flow rate at the time of sample collection; and
  - 2) Required statistical parameters for cumulative bacterial values (e.g., moving median or geometric mean for the number of samples or sampling period identified in this Order).
- b. For the chlorination process, when chlorine is used for disinfection, at least daily average values for the following:
  - 1) Chlorine residual of treated wastewater as it enters the contact basin (mg/L);
  - 2) Chlorine dosage (kg/day); and
  - 3) Dechlorination chemical dosage (kg/day).

### 5. Treatment Process Bypasses

A chronological log of all treatment process bypasses, including wet weather blending, shall include the following:

- a. Identification of the treatment process bypassed;
- b. Dates and times of bypass beginning and end;
- c. Total bypass duration;

- d. Estimated total bypass volume; and
- e. Description of, or reference to other reports describing, the bypass event, the cause, the corrective actions taken (except for wet weather blending that is in compliance with permit conditions), and any additional monitoring conducted.

#### 6. Treatment Facility Overflows

This section applies to records for overflows at the treatment facility. This includes the headworks and all units and appurtenances downstream. The Discharger shall retain a chronological log of overflows at the treatment facility and records supporting the information provided in section V.E.2.

#### C. Claims of Confidentiality – Not Supplemented

### V. STANDARD PROVISIONS – REPORTING

#### A. Duty to Provide Information – Not Supplemented

#### B. Signatory and Certification Requirements – Not Supplemented

#### C. Monitoring Reports – This section supplements V.C of Standard Provisions (Attachment D)

##### 1. Self Monitoring Reports

For each reporting period established in the MRP, the Discharger shall submit an SMR to the Regional Water Board in accordance with the requirements listed in this document and at the frequency the MRP specifies. The purpose of the SMR is to document treatment performance, effluent quality, and compliance with the waste discharge requirements of this Order.

##### a. Transmittal letter

Each SMR shall be submitted with a transmittal letter. This letter shall include the following:

- 1) Identification of all violations of effluent limitations or other waste discharge requirements found during the reporting period;
- 2) Details regarding violations: parameters, magnitude, test results, frequency, and dates;
- 3) Causes of violations;
- 4) Discussion of corrective actions taken or planned to resolve violations and prevent recurrences, and dates or time schedule of action implementation (if previous reports have been submitted that address corrective actions, reference to the earlier reports is satisfactory);
- 5) Data invalidation (Data should not be submitted in an SMR if it does not meet quality assurance/quality control standards. However, if the Discharger wishes to invalidate any measurement after it was submitted in an SMR, a letter shall identify the measurement suspected to be invalid and state the Discharger's intent to submit, within 60 days, a formal request to invalidate the measurement. This request shall include the original measurement in



question, the reason for invalidating the measurement, all relevant documentation that supports invalidation [e.g., laboratory sheet, log entry, test results, etc.], and discussion of the corrective actions taken or planned [with a time schedule for completion] to prevent recurrence of the sampling or measurement problem.);

- 6) If the Discharger blends, the letter shall describe the duration of blending events and certify whether blended effluent was in compliance with the conditions for blending; and
  - 7) Signature (The transmittal letter shall be signed according to Section V.B of this Order, Attachment D – Standard Provisions.).
- b. Compliance evaluation summary

Each report shall include a compliance evaluation summary. This summary shall include each parameter for which the permit specifies effluent limitations, the number of samples taken during the monitoring period, and the number of samples that exceed applicable effluent limitations.

c. Results of analyses and observations

- 1) Tabulations of all required analyses and observations, including parameter, date, time, sample station, type of sample, test result, method detection limit, method minimum level, and method reporting level, if applicable, signed by the laboratory director or other responsible official.
- 2) When determining compliance with an average monthly effluent limitation and more than one sample result is available in a month, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of detected but not quantified (DNQ) or nondetect (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:
  - i. The data set shall be ranked from low to high, reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.
  - ii. 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.

If a sample result, or the arithmetic mean or median of multiple sample results, is below the reporting limit, and there is evidence that the priority pollutant is present in the effluent above an effluent limitation and the Discharger conducts a Pollutant Minimization Program, the Discharger shall not be deemed out of compliance.

- 3) Dioxin-TEQ Reporting: The Discharger shall report for each dioxin and furan congener the analytical results of effluent monitoring, including the quantifiable limit (reporting level), the method detection limit, and the measured concentration. The Discharger shall report all measured values of individual congeners, including data qualifiers. When calculating dioxin-TEQ, the Discharger shall set congener concentrations below the minimum levels (ML) to

zero. The Discharger shall calculate and report dioxin-TEQs using the following formula, where the MLs, toxicity equivalency factors (TEFs), and bioaccumulation equivalency factors (BEFs) are as provided in Table A:

$$\text{Dioxin-TEQ} = \Sigma (C_x \times \text{TEF}_x \times \text{BEF}_x)$$

where:  $C_x$  = measured or estimated concentration of congener  $x$   
 $\text{TEF}_x$  = toxicity equivalency factor for congener  $x$   
 $\text{BEF}_x$  = bioaccumulation equivalency factor for congener  $x$

**Table A**  
 Minimum Levels, Toxicity Equivalency Factors,  
 and Bioaccumulation Equivalency Factors

Dioxin or Furan Congener	Minimum Level (pg/L)	1998 Toxicity Equivalency Factor (TEF)	Bioaccumulation Equivalency Factor (BEF)
2,3,7,8-TCDD	10	1.0	1.0
1,2,3,7,8-PeCDD	50	1.0	0.9
1,2,3,4,7,8-HxCDD	50	0.1	0.3
1,2,3,6,7,8-HxCDD	50	0.1	0.1
1,2,3,7,8,9-HxCDD	50	0.1	0.1
1,2,3,4,6,7,8-HpCDD	50	0.01	0.05
OCDD	100	0.0001	0.01
2,3,7,8-TCDF	10	0.1	0.8
1,2,3,7,8-PeCDF	50	0.05	0.2
2,3,4,7,8-PeCDF	50	0.5	1.6
1,2,3,4,7,8-HxCDF	50	0.1	0.08
1,2,3,6,7,8-HxCDF	50	0.1	0.2
1,2,3,7,8,9-HxCDF	50	0.1	0.6
2,3,4,6,7,8-HxCDF	50	0.1	0.7
1,2,3,4,6,7,8-HpCDF	50	0.01	0.01
1,2,3,4,7,8,9-HpCDF	50	0.01	0.4
OCDF	100	0.0001	0.02

d. Data reporting for results not yet available

The Discharger shall make all reasonable efforts to obtain analytical data for required parameter sampling in a timely manner. Certain analyses require additional time to complete analytical processes and report results. For cases where required monitoring parameters require additional time to complete analytical processes and reports, and results are not available in time to be included in the SMR for the subject monitoring period, the Discharger shall describe such circumstances in the SMR and include the data for these parameters and relevant discussions of any observed exceedances in the next SMR due after the results are available.

e. Flow data

The Discharger shall provide flow data tabulation pursuant to Section IV.B.2.

f. Annual self monitoring report requirements

By the date specified in the MRP, the Discharger shall submit an annual report to the Regional Water Board covering the previous calendar year. The report shall contain the following:

- 1) Annual compliance summary table of treatment plant performance, including documentation of any blending events;
- 2) Comprehensive discussion of treatment plant performance and compliance with the permit (This discussion shall include any corrective actions taken or planned, such as changes to facility equipment or operation practices that may be needed to achieve compliance, and any other actions taken or planned that are intended to improve performance and reliability of the Discharger's wastewater collection, treatment, or disposal practices.);
- 3) Both tabular and graphical summaries of the monitoring data for the previous year if parameters are monitored at a frequency of monthly or greater;
- 4) List of approved analyses, including the following:
  - (i) List of analyses for which the Discharger is certified;
  - (ii) List of analyses performed for the Discharger by a separate certified laboratory (copies of reports signed by the laboratory director of that laboratory shall not be submitted but be retained onsite); and
  - (iii) List of "waived" analyses, as approved;
- 5) Plan view drawing or map showing the Discharger's facility, flow routing, and sampling and observation station locations;
- 6) Results of annual facility inspection to verify that all elements of the SWPP Plan are accurate and up to date (only required if the Discharger does not route all stormwater to the headworks of its wastewater treatment plant); and
- 7) Results of facility report reviews (The Discharger shall regularly review, revise, and update, as necessary, the O&M Manual, the Contingency Plan, the Spill Prevention Plan, and Wastewater Facilities Status Report so that these documents remain useful and relevant to current practices. At a minimum, reviews shall be conducted annually. The Discharger shall include, in each Annual Report, a description or summary of review and evaluation procedures, recommended or planned actions, and an estimated time schedule for implementing these actions. The Discharger shall complete changes to these documents to ensure they are up-to-date.).

g. Report submittal

The Discharger shall submit SMRs to:

California Regional Water Quality Control Board  
San Francisco Bay Region  
1515 Clay Street, Suite 1400  
Oakland, CA 94612  
Attn: NPDES Wastewater Division

h. Reporting data in electronic format

The Discharger has the option to submit all monitoring results in an electronic reporting format approved by the Executive Officer. If the Discharger chooses to submit SMRs electronically, the following shall apply:

- 1) *Reporting Method*: The Discharger shall submit SMRs electronically via a process approved by the Executive Officer (see, for example, the letter dated December 17, 1999, *Official Implementation of Electronic Reporting System [ERS]* and the progress report letter dated December 17, 2000).
- 2) *Monthly or Quarterly Reporting Requirements*: For each reporting period (monthly or quarterly as specified in the MRP), the Discharger shall submit an electronic SMR to the Regional Water Board in accordance with the provisions of Section V.C.1.a-e, except for requirements under Section V.C.1.c(1) where ERS does not have fields for dischargers to input certain information (e.g., sample time). However, until U.S. EPA approves the electronic signature or other signature technologies, Dischargers that use ERS shall submit a hard copy of the original transmittal letter, an ERS printout of the data sheet, and a violation report (a receipt of the electronic transmittal shall be retained by the Discharger). This electronic SMR submittal suffices for the signed tabulations specified under Section V.C.1.c(1).
- 3) *Annual Reporting Requirements*: Dischargers who have submitted data using the ERS for at least one calendar year are exempt from submitting the portion of the annual report required under Section V.C.1.f(1) and (3).

**D. Compliance Schedules – Not supplemented**

**E. Twenty-Four Hour Reporting – This section supplements V.E of Standard Provision (Attachment D)**

**1. Spill of Oil or Other Hazardous Material Reports**

- a. Within 24 hours of becoming aware of a spill of oil or other hazardous material that is not contained onsite and completely cleaned up, the Discharger shall report by telephone to the Regional Water Board at (510) 622-2369.
- b. The Discharger shall also report such spills to the State Office of Emergency Services [telephone (800) 852-7550] only when the spills are in accordance with applicable reporting quantities for hazardous materials.
- c. The Discharger shall submit a written report to the Regional Water Board within five working days following telephone notification unless directed otherwise by Regional Water Board staff. A report submitted electronically is acceptable. The written report shall include the following:

- 1) Date and time of spill, and duration if known;
- 2) Location of spill (street address or description of location);
- 3) Nature of material spilled;
- 4) Quantity of material involved;
- 5) Receiving water body affected, if any;
- 6) Cause of spill;
- 7) Estimated size of affected area;
- 8) Observed impacts to receiving waters (e.g., oil sheen, fish kill, water discoloration);
- 9) Corrective actions taken to contain, minimize, or clean up the spill;
- 10) Future corrective actions planned to be taken to prevent recurrence, and schedule of implementation; and
- 11) Persons or agencies notified.

## 2. Unauthorized Discharges from Municipal Wastewater Treatment Plants<sup>1</sup>

The following requirements apply to municipal wastewater treatment plants that experience an unauthorized discharge at their treatment facilities and are consistent with and supercede requirements imposed on the Discharger by the Executive Officer by letter of May 1, 2008, issued pursuant to California Water Code Section 13383.

### a. Two (2)-Hour Notification

For any unauthorized discharges that result in a discharge to a drainage channel or a surface water, the Discharger shall, as soon as possible, but not later than two (2) hours after becoming aware of the discharge, notify the State Office of Emergency Services (telephone 800-852-7550), the local health officers or directors of environmental health with jurisdiction over the affected water bodies, and the Regional Water Board. The notification to the Regional Water Board shall be via the Regional Water Board's online reporting system at [www.wbers.net](http://www.wbers.net), and shall include the following:

- 1) Incident description and cause;
- 2) Location of threatened or involved waterway(s) or storm drains;
- 3) Date and time the unauthorized discharge started;

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<sup>1</sup> California Code of Regulations, Title 23, Section 2250(b), defines an unauthorized discharge to be a discharge, not regulated by waste discharge requirements, of treated, partially-treated, or untreated wastewater resulting from the intentional or unintentional diversion of wastewater from a collection, treatment or disposal system.

- 4) Estimated quantity and duration of the unauthorized discharge (to the extent known), and the estimated amount recovered;
- 5) Level of treatment prior to discharge (e.g., raw wastewater, primary treated, undisinfected secondary treated, and so on); and
- 6) Identity of the person reporting the unauthorized discharge.

b. 24-hour Certification

Within 24 hours, the Discharger shall certify to the Regional Water Board, at [www.wbers.net](http://www.wbers.net), that the State Office of Emergency Services and the local health officers or directors of environmental health with jurisdiction over the affected water bodies have been notified of the unauthorized discharge.

c. 5-Day Written Report

Within five business days, the Discharger shall submit a written report, via the Regional Water Board's online reporting system at [www.wbers.net](http://www.wbers.net), that includes, in addition to the information required above, the following:

- 1) Methods used to delineate the geographical extent of the unauthorized discharge within receiving waters;
- 2) Efforts implemented to minimize public exposure to the unauthorized discharge;
- 3) Visual observations of the impacts (if any) noted in the receiving waters (e.g., fish kill, discoloration of water) and the extent of sampling if conducted;
- 4) Corrective measures taken to minimize the impact of the unauthorized discharge;
- 5) Measures to be taken to minimize the chances of a similar unauthorized discharge occurring in the future;
- 6) Summary of Spill Prevention Plan or O&M Manual modifications to be made, if necessary, to minimize the chances of future unauthorized discharges; and
- 7) Quantity and duration of the unauthorized discharge, and the amount recovered.

d. Communication Protocol

To clarify the multiple levels of notification, certification, and reporting, the current communication requirements for unauthorized discharges from municipal wastewater treatment plants are summarized in Table B that follows.

**Table B**  
 Summary of Communication Requirements for Unauthorized Discharges<sup>1</sup> from  
 Municipal Wastewater Treatment Plants

<b>Discharger is required to:</b>	<b>Agency Receiving Information</b>	<b>Time frame</b>	<b>Method for Contact</b>
1. Notify	California Emergency Management Agency (Cal EMA)	As soon as possible, but not later than <b>2 hours</b> after becoming aware of the unauthorized discharge.	Telephone – (800) 852-7550 (obtain a control number from Cal EMA)
	Local health department	As soon as possible, but not later than <b>2 hours</b> after becoming aware of the unauthorized discharge.	Depends on local health department
	Regional Water Board	As soon as possible, but not later than <b>2 hours</b> after becoming aware of the unauthorized discharge.	Electronic <sup>2</sup> <a href="http://www.wbers.net">www.wbers.net</a>
2. Certify	Regional Water Board	As soon as possible, but not later than <b>24 hours</b> after becoming aware of the unauthorized discharge.	Electronic <sup>3</sup> <a href="http://www.wbers.net">www.wbers.net</a>
3. Report	Regional Water Board	Within <b>5 business days</b> of becoming aware of the unauthorized discharge.	Electronic <sup>4</sup> <a href="http://www.wbers.net">www.wbers.net</a>

<sup>1</sup> California Code of Regulations, Title 23, Section 2250(b), defines an unauthorized discharge to be a discharge, not regulated by waste discharge requirements, of treated, partially-treated, or untreated wastewater resulting from the intentional or unintentional diversion of wastewater from a collection, treatment or disposal system.

<sup>2</sup> In the event that the Discharger is unable to provide online notification within 2 hours of becoming aware of an unauthorized discharge, it shall phone the Regional Water Board’s spill hotline at (510) 622-2369 and convey the same information contained in the notification form. In addition, within 3 business days of becoming aware of the unauthorized discharge, the Discharger shall enter the notification information into the Regional Water Board’s online system in electronic format.

<sup>3</sup> In most instances, the 2-hour notification will also satisfy 24-hour certification requirements. This is because the notification form includes fields for documenting that OES and the local health department have been contacted. In other words, if the Discharger is able to complete all the fields in the notification form within 2 hours, certification requirements are also satisfied. In the event that the Discharger is unable to provide online certification within 24 hours of becoming aware of an unauthorized discharge, it shall phone the Regional Water Board’s spill hotline at (510) 622-2369 and convey the same information contained in the certification form. In addition, within 3 business days of becoming aware of the unauthorized discharge, the Discharger shall enter the certification information into the Regional Water Board’s online system in electronic format.

<sup>4</sup> If the Discharger cannot satisfy the 5-day reporting requirements via the Regional Water Board’s online reporting system, it shall submit a written report (preferably electronically in pdf) to the appropriate Regional Water Board case manager. In cases where the Discharger cannot satisfy the 5-day reporting requirements via the online reporting system, it must still complete the Regional Water Board’s online reporting requirements within 15 calendar days of becoming aware of the unauthorized discharge.

**F. Planned Changes** – Not supplemented

**G. Anticipated Noncompliance** – Not supplemented

**H. Other Noncompliance** – Not supplemented

**I. Other Information** – Not supplemented

**VI. STANDARD PROVISION – ENFORCEMENT** – Not Supplemented

**VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS** – Not Supplemented

**VIII. DEFINITIONS** – This section is an addition to Standard Provisions (Attachment D)

More definitions can be found in Attachment A of this NPDES Permit.

1. Arithmetic Calculations

- a. Geometric mean is the antilog of the log mean or the back-transformed mean of the logarithmically transformed variables, which is equivalent to the multiplication of the antilogarithms. The geometric mean can be calculated with either of the following equations:

$$\text{Geometric Mean} = \text{Anti log} \left( \frac{1}{N} \sum_{i=1}^N \text{Log}(C_i) \right)$$

or

$$\text{Geometric Mean} = (C_1 * C_2 * \dots * C_N)^{1/N}$$

Where “N” is the number of data points for the period analyzed and “C” is the concentration for each of the “N” data points.

- b. Mass emission rate is obtained from the following calculation for any calendar day:

$$\text{Mass emission rate (lb/day)} = \frac{8.345}{N} \sum_{i=1}^N Q_i C_i$$

$$\text{Mass emission rate (kg/day)} = \frac{3.785}{N} \sum_{i=1}^N Q_i C_i$$

In which “N” is the number of samples analyzed in any calendar day and “Q<sub>i</sub>” and “C<sub>i</sub>” are the flow rate (MGD) and the constituent concentration (mg/L) associated with each of the “N” grab samples that may be taken in any calendar day. If a composite sample is taken, “C<sub>i</sub>” is the concentration measured in the composite sample and “Q<sub>i</sub>” is the average flow rate occurring during the period over which the samples are composited. The daily concentration of a constituent measured over any calendar day shall be determined from the flow-weighted average of the same constituent in the combined waste streams as follows:



$$C_d = \text{Average daily concentration} = \frac{1}{Q_t} \sum_{i=1}^N Q_i C_i$$

In which “N” is the number of component waste streams and “Q” and “C” are the flow rate (MGD) and the constituent concentration (mg/L) associated with each of the “N” waste streams. “Q<sub>t</sub>” is the total flow rate of the combined waste streams.

- c. Maximum allowable mass emission rate, whether for a 24-hour, weekly 7-day, monthly 30-day, or 6-month period, is a limitation expressed as a daily rate determined with the formulas in the paragraph above, using the effluent concentration limit specified in the permit for the period and the specified allowable flow.
- d. POTW removal efficiency is the ratio of pollutants removed by the treatment facilities to pollutants entering the treatment facilities (expressed as a percentage). The Discharger shall determine removal efficiencies using monthly averages (by calendar month unless otherwise specified) of pollutant concentration of influent and effluent samples collected at about the same time and using the following equation (or its equivalent):

$$\text{Removal Efficiency (\%)} = 100 \times [1 - (\text{Effluent Concentration} / \text{Influent Concentration})]$$

2. Biosolids means the solids, semi-liquid suspensions of solids, residues, screenings, grit, scum, and precipitates separated from or created in wastewater by the unit processes of a treatment system. It also includes, but is not limited to, all supernatant, filtrate, centrate, decantate, and thickener overflow and underflow in the solids handling parts of the wastewater treatment system.
3. Blending is the practice of recombining wastewater that has been biologically treated with wastewater that has bypassed around biological treatment units.
4. Bottom sediment sample is (1) a separate grab sample taken at each sampling station for the determination of selected physical-chemical parameters, or (2) four grab samples collected from different locations in the immediate vicinity of a sampling station while the boat is anchored and analyzed separately for macroinvertebrates.
5. Composite sample is a sample composed of individual grab samples collected manually or by an automatic sampling device on the basis of time or flow as specified in the MRP. For flow-based composites, the proportion of each grab sample included in the composite sample shall be within plus or minus five percent (+/-5%) of the representative flow rate of the waste stream being measured at the time of grab sample collection. Alternatively, equal volume grab samples may be individually analyzed with the flow-weighted average calculated by averaging flow-weighted ratios of each grab sample analytical result. Grab samples comprising time-based composite samples shall be collected at intervals not greater than those specified in the MRP. The quantity of each grab sample comprising a time-based composite sample shall be a set of flow proportional volumes as specified in the MRP. If a particular time-based or flow-based composite sampling protocol is not specified in the MRP, the Discharger shall determine and implement the most representative sampling protocol for the given parameter subject to Executive Officer approval.
6. Depth-integrated sample is defined as a water or waste sample collected by allowing a sampling device to fill during a vertical traverse in the waste or receiving water body being sampled. The Discharger shall collect depth-integrated samples in such a manner that the collected sample will be representative of the waste or water body at that sampling point.

7. Flow sample is an accurate measurement of the average daily flow volume using a properly calibrated and maintained flow measuring device.
8. Grab sample is an individual sample collected in a short period of time not exceeding 15 minutes. Grab samples represent only the condition that exists at the time the wastewater is collected.
9. Initial dilution is the process that results in the rapid and irreversible turbulent mixing of wastewater with receiving water around the point of discharge.
10. Overflow is the intentional or unintentional spilling or forcing out of untreated or partially-treated wastes from a transport system (e.g., through manholes, at pump stations, and at collection points) upstream from the treatment plant headworks or from any part of a treatment plant facility.
11. Priority pollutants are those constituents referred to in 40 CFR Part 122 as promulgated in the Federal Register, Vol. 65, No. 97, Thursday, May 18, 2000, also known as the California Toxics Rule, the presence or discharge of which could reasonably be expected to interfere with maintaining designated uses.
12. Stormwater means stormwater runoff, snow melt runoff, and surface runoff and drainage. It excludes infiltration and runoff from agricultural land.
13. Toxic pollutant means any pollutant listed as toxic under federal Clean Water Act section 307(a)(1) or under 40 CFR 401.15.
14. Untreated waste is raw wastewater.
15. Waste, waste discharge, discharge of waste, and discharge are used interchangeably in the permit. The requirements of the permit apply to the entire volume of water, and the material therein, that is disposed of to surface and ground waters of the State of California.

**Table C**  
**List of Monitoring Parameters and Analytical Methods**

CTR No.	Pollutant/Parameter	Analytical Method <sup>5</sup>	Minimum Levels <sup>6</sup> (µg/l)											
			GC	GCMS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
1.	Antimony	204.2					10	5	50	0.5	5	0.5		1,000
2.	Arsenic	206.3				20		2	10	2	2	1		1,000
3.	Beryllium						20	0.5	2	0.5	1			1,000
4.	Cadmium	200 or 213					10	0.5	10	0.25	0.5			1,000
5a.	Chromium (III)	SM 3500												
5b.	Chromium (VI)	SM 3500				10	5							1,000
	Chromium (total) <sup>7</sup>	SM 3500					50	2	10	0.5	1			1,000
6.	Copper	200.9					25	5	10	0.5	2			1,000
7.	Lead	200.9					20	5	5	0.5	2			10,000
8.	Mercury	1631 (note) <sup>8</sup>												
9.	Nickel	249.2					50	5	20	1	5			1,000
10.	Selenium	200.8 or SM 3114B or C						5	10	2	5	1		1,000
11.	Silver	272.2					10	1	10	0.25	2			1,000
12.	Thallium	279.2					10	2	10	1	5			1,000
13.	Zinc	200 or 289					20		20	1	10			
14.	Cyanide	SM 4500 CN <sup>-</sup> C or I				5								
15.	Asbestos (only required for dischargers to MUN waters) <sup>9</sup>	0100.2 <sup>10</sup>												
16.	2,3,7,8-TCDD and 17 congeners (Dioxin)	1613												
17.	Acrolein	603	2.0	5										
18.	Acrylonitrile	603	2.0	2										
19.	Benzene	602	0.5	2										
33.	Ethylbenzene	602	0.5	2										
39.	Toluene	602	0.5	2										
20.	Bromoform	601	0.5	2										
21.	Carbon Tetrachloride	601	0.5	2										
22.	Chlorobenzene	601	0.5	2										
23.	Chlorodibromomethane	601	0.5	2										

<sup>5</sup> The suggested method is the U.S. EPA Method unless otherwise specified (SM = Standard Methods). The Discharger may use another U.S. EPA-approved or recognized method if that method has a level of quantification below the applicable water quality objective. Where no method is suggested, the Discharger has the discretion to use any standard method.

<sup>6</sup> Minimum levels are from the *State Implementation Policy*. They are the concentration of the lowest calibration standard for that technique based on a survey of contract laboratories. Laboratory techniques are defined as follows: GC = Gas Chromatography; GCMS = Gas Chromatography/Mass Spectrometry; LC = High Pressure Liquid Chromatography; Color = Colorimetric; FAA = Flame Atomic Absorption; GFAA = Graphite Furnace Atomic Absorption; ICP = Inductively Coupled Plasma; ICPMS = Inductively Coupled Plasma/Mass Spectrometry; SPGFAA = Stabilized Platform Graphite Furnace Atomic Absorption (i.e., U.S. EPA 200.9); Hydride = Gaseous Hydride Atomic Absorption; CVAA = Cold Vapor Atomic Absorption; DCP = Direct Current Plasma.

<sup>7</sup> Analysis for total chromium may be substituted for analysis of chromium (III) and chromium (VI) if the concentration measured is below the lowest hexavalent chromium criterion (11 µg/L).

<sup>8</sup> The Discharger shall use ultra-clean sampling (U.S. EPA Method 1669) and ultra-clean analytical methods (U.S. EPA Method 1631) for mercury monitoring. The minimum level for mercury is 2 ng/l (or 0.002 µg/L).

<sup>9</sup> MUN = Municipal and Domestic Supply. This designation, if applicable, is in the Findings of the permit.

<sup>10</sup> Determination of Asbestos Structures over 10 [micrometers] in Length in Drinking Water Using MCE Filters, U.S. EPA 600/R-94-134, June 1994.

CTR No.	Pollutant/Parameter	Analytical Method <sup>5</sup>	Minimum Levels <sup>6</sup> (µg/l)											
			GC	GCMS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
24.	Chloroethane	601	0.5	2										
25.	2-Chloroethylvinyl Ether	601	1	1										
26.	Chloroform	601	0.5	2										
75.	1,2-Dichlorobenzene	601	0.5	2										
76.	1,3-Dichlorobenzene	601	0.5	2										
77.	1,4-Dichlorobenzene	601	0.5	2										
27.	Dichlorobromomethane	601	0.5	2										
28.	1,1-Dichloroethane	601	0.5	1										
29.	1,2-Dichloroethane	601	0.5	2										
30.	1,1-Dichloroethylene or 1,1-Dichloroethene	601	0.5	2										
31.	1,2-Dichloropropane	601	0.5	1										
32.	1,3-Dichloropropylene or 1,3-Dichloropropene	601	0.5	2										
34.	Methyl Bromide or Bromomethane	601	1.0	2										
35.	Methyl Chloride or Chloromethane	601	0.5	2										
36.	Methylene Chloride or Dichloromethane	601	0.5	2										
37.	1,1,2,2-Tetrachloroethane	601	0.5	1										
38.	Tetrachloroethylene	601	0.5	2										
40.	1,2-Trans-Dichloroethylene	601	0.5	1										
41.	1,1,1-Trichloroethane	601	0.5	2										
42.	1,1,2-Trichloroethane	601	0.5	2										
43.	Trichloroethene	601	0.5	2										
44.	Vinyl Chloride	601	0.5	2										
45.	2-Chlorophenol	604	2	5										
46.	2,4-Dichlorophenol	604	1	5										
47.	2,4-Dimethylphenol	604	1	2										
48.	2-Methyl-4,6-Dinitrophenol or Dinitro-2-methylphenol	604	10	5										
49.	2,4-Dinitrophenol	604	5	5										
50.	2-Nitrophenol	604		10										
51.	4-Nitrophenol	604	5	10										
52.	3-Methyl-4-Chlorophenol	604	5	1										
53.	Pentachlorophenol	604	1	5										
54.	Phenol	604	1	1		50								
55.	2,4,6-Trichlorophenol	604	10	10										
56.	Acenaphthene	610 HPLC	1	1	0.5									
57.	Acenaphthylene	610 HPLC		10	0.2									
58.	Anthracene	610 HPLC		10	2									
60.	Benzo(a)Anthracene or 1,2 Benzanthracene	610 HPLC	10	5										
61.	Benzo(a)Pyrene	610 HPLC		10	2									
62.	Benzo(b)Fluoranthene or 3,4 Benzo(b)fluoranthene	610 HPLC		10	10									
63.	Benzo(ghi)Perylene	610 HPLC		5	0.1									
64.	Benzo(k)Fluoranthene	610 HPLC		10	2									
74.	Dibenzo(a,h)Anthracene	610 HPLC		10	0.1									
86.	Fluoranthene	610 HPLC	10	1	0.05									
87.	Fluorene	610 HPLC		10	0.1									

CTR No.	Pollutant/Parameter	Analytical Method <sup>5</sup>	Minimum Levels <sup>6</sup> (µg/l)											
			GC	GCMS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
92.	Indeno(1,2,3-cd) Pyrene	610 HPLC		10	0.05									
100.	Pyrene	610 HPLC		10	0.05									
68.	Bis(2-Ethylhexyl)Phthalate	606 or 625	10	5										
70.	Butylbenzyl Phthalate	606 or 625	10	10										
79.	Diethyl Phthalate	606 or 625	10	2										
80.	Dimethyl Phthalate	606 or 625	10	2										
81.	Di-n-Butyl Phthalate	606 or 625		10										
84.	Di-n-Octyl Phthalate	606 or 625		10										
59.	Benzidine	625		5										
65.	Bis(2-Chloroethoxy)Methane	625		5										
66.	Bis(2-Chloroethyl)Ether	625	10	1										
67.	Bis(2-Chloroisopropyl)Ether	625	10	2										
69.	4-Bromophenyl Phenyl Ether	625	10	5										
71.	2-Chloronaphthalene	625		10										
72.	4-Chlorophenyl Phenyl Ether	625		5										
73.	Chrysene	625		10	5									
78.	3,3'-Dichlorobenzidine	625		5										
82.	2,4-Dinitrotoluene	625	10	5										
83.	2,6-Dinitrotoluene	625		5										
85.	1,2-Diphenylhydrazine (note) <sup>11</sup>	625		1										
88.	Hexachlorobenzene	625	5	1										
89.	Hexachlorobutadiene	625	5	1										
90.	Hexachlorocyclopentadiene	625	5	5										
91.	Hexachloroethane	625	5	1										
93.	Isophorone	625	10	1										
94.	Naphthalene	625	10	1	0.2									
95.	Nitrobenzene	625	10	1										
96.	N-Nitrosodimethylamine	625	10	5										
97.	N-Nitrosodi-n-Propylamine	625	10	5										
98.	N-Nitrosodiphenylamine	625	10	1										
99.	Phenanthrene	625		5	0.05									
101.	1,2,4-Trichlorobenzene	625	1	5										
102.	Aldrin	608	0.005											
103.	α-BHC	608	0.01											
104.	β-BHC	608	0.005											
105.	γ-BHC (Lindane)	608	0.02											
106.	δ-BHC	608	0.005											
107.	Chlordane	608	0.1											
108.	4,4'-DDT	608	0.01											
109.	4,4'-DDE	608	0.05											
110.	4,4'-DDD	608	0.05											
111.	Dieldrin	608	0.01											
112.	Endosulfan (alpha)	608	0.02											
113.	Endosulfan (beta)	608	0.01											
114.	Endosulfan Sulfate	608	0.05											

<sup>11</sup> Measurement for 1,2-Diphenylhydrazine may use azobenzene as a screen: if azobenzene is measured at >1 µg/L, then the Discharger shall analyze for 1,2-Diphenylhydrazine.

CTR No.	Pollutant/Parameter	Analytical Method <sup>5</sup>	Minimum Levels <sup>6</sup> (µg/l)											
			GC	GCMS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
115.	Endrin	608	0.01											
116.	Endrin Aldehyde	608	0.01											
117.	Heptachlor	608	0.01											
118.	Heptachlor Epoxide	608	0.01											
119-125	PCBs: Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260	608	0.5											
126.	Toxaphene	608	0.5											