

San Francisco Bay Regional Water Quality Control Board

REVISED TENTATIVE ORDER R2-2020-00XX NPDES CA0005550

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

Table 1. Discharger Information

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

Table 2. Discharge Locations

| Discharge Point | Effluent Description | Discharge Point Latitude (North) | Discharge Point Longitude (West) | Receiving Water |
|------------------------|---|---|---|---|
| 001 | Treated refinery process wastewater and stormwater | 38.05500 ^[1] ° | -122.11980 ^[1] ° | Suisun Bay |
| 002 | Stormwater from 1.8-acre unpaved equipment storage area along western boundary of wastewater treatment 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 (less than one acre of which 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 | 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, and 32-acre Crude Oil Storage Area Tank Farm, and small amounts of groundwater seepage and condensate from steam traps on pipeline, collected in concrete sump equipped with containment valve and hydrocarbon detector before being discharged on south side of Park Road via ditch. (Hydrocarbon detector automatically closes containment valve and alarms central control house in event of hydrocarbon detection.) | 38.06389° | -122.13250° | Sulphur Springs Creek |
| 007 | Stormwater from 0.7-acre gravel and paved area (0.4 acres of which 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 (approximately 0.1 acres of which 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 (0.25 acres of which 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 (approximately 0.1 acres of which 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 |
| 013 | Stormwater from 1.2-acre area (approximately 0.06 acres of which is impervious) under crude pipeline southwest of Discharge Point 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 013, discharged via City of Benicia storm drain system. | 38.05083° | -122.13972° | Carquinez Strait |

| Discharge Point | Effluent Description | Discharge Point Latitude (North) | Discharge Point Longitude (West) | Receiving Water |
|--------------------|--|----------------------------------|----------------------------------|---|
| 015 | Stormwater from 0.5-acre unpaved area under crude pipeline southeast of Discharge Point 014, discharged via City of Benicia storm drain system. | 38.04722° | -122.13194° | Carquinez Strait |
| 016 ^[2] | Discharge Point 016 is not authorized. | — | — | — |
| 017 | Stormwater and small amounts of condensate from steam traps from approximately 12.1 acres (4.3 acres of which 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:

^[1] Latitude and longitude may change with outfall upgrade. See Provision VI.C.2.b.

^[2] References within this Order to “Discharge Points 002 through 018” exclude Discharge Point 016 because Discharge Point 016 is no longer in service.

Table 3. Administrative Information

| | |
|---|-------------------|
| This Order was adopted on: | DATE |
| This Order shall become effective on: | January 1, 2021 |
| This Order shall expire on: | December 31, 2025 |
| CIWQS Regulatory Measure Number | XXXX |
| The Discharger shall file a Report of Waste Discharge for updated WDRs in accordance with California Code of Regulations, title 23, and as an application for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit no later than: | April 5, 2025 |
| 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 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.

Michael Montgomery, Executive Officer

Contents

| | | |
|------|---|----|
| I. | Facility Information | 5 |
| II. | Findings..... | 5 |
| III. | Discharge Prohibitions..... | 5 |
| IV. | Effluent Limitations and Discharge Specifications | 6 |
| V. | Receiving Water Limitations | 9 |
| VI. | Provisions..... | 11 |
| | A. Standard Provisions | 11 |
| | B. Monitoring and Reporting..... | 11 |
| | C. Special Provisions | 11 |
| | 1. Reopener Provisions | 11 |
| | 2. Special Studies and Additional Monitoring | 12 |
| | 3. Pollutant Minimization Program | 13 |
| | 4. Other Special Provisions | 15 |

Tables

| | | |
|-----------|---|----|
| Table 1. | Discharger Information..... | 1 |
| Table 2. | Discharge Locations | 1 |
| Table 3. | Administrative Information | 3 |
| Table 4. | Effluent Limitations – Discharge Point 001 | 6 |
| Table 5. | Stormwater Runoff Allocation..... | 7 |
| Table 6. | Ballast Water Allocation..... | 7 |
| Table 7. | Effluent Limitations – Discharge Points 002 through 018 | 9 |
| Table 8. | Effluent Limitations – Discharge Points 002 through 018 (Supplemental)..... | 9 |
| Table 9. | Copper Action Plan..... | 15 |
| Table 10. | Cyanide Action Plan | 15 |

Attachments

| | |
|--|-------|
| Attachment A – Definitions..... | A-1 |
| Attachment B – Location and Facility Maps | B-1 |
| Attachment C – Process Flow Diagrams..... | C-1 |
| Attachment D – Standard Provisions | D-1 |
| Attachment E – Monitoring and Reporting Program (MRP)..... | E-1 |
| Attachment F – Fact Sheet..... | F-1 |
| Attachment F-1 Derivation of Technology-Based Effluent Limitations | F-1-1 |
| Attachment G – Regional Standard Provisions, and Monitoring and Reporting Requirements | G-1 |
| Attachment S – Stormwater Requirements..... | S-1 |

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 sources 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 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, G, and S 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 R2-2015-0037 (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 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 in its application for permit reissuance. The Discharger shall also demonstrate compliance with the minimum-required dilution in accordance with Provision VI.C.2.b.
- C.** 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.
- D.** Discharge of construction or development stormwater to Discharge Points 002 through 018.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Discharge Point 001

- 1. Effluent Limitations.** The Discharger shall comply with the following effluent limitations at Discharge Point 001, with compliance measured at Monitoring Location EFF-001 as described in the Monitoring and Reporting Program (MRP) (Attachment E):

Table 4. Effluent Limitations – Discharge Point 001

| Parameter | Units | Maximum Daily | Average Monthly | Instantaneous |
|---|-----------------|----------------------|----------------------|---------------|
| Biochemical Oxygen Demand, 5-day @ 20°C (BOD ₅) | 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 | — |
| Total Ammonia, as N | mg/L | 20 | 5.7 | — |
| Total Chromium | lbs/day | 46 | 16 | — |
| Chromium (VI) | lbs/day | 2.9 | 1.3 | — |
| Chromium (VI) | µg/L | 72 | 36 | — |
| Chronic Toxicity | TU _c | 10 ^[1] | — | — |
| Copper, Total Recoverable | µg/L | 120 | 58 | — |
| Cyanide, Total | µg/L | 42 | 19 | — |
| Dioxin-TEQ | µg/L | 2.8×10^{-8} | 1.4×10^{-8} | — |
| Selenium, Total Recoverable ^[2] | kg/day | — | 0.34 | — |
| Nickel, Total Recoverable | µg/L | 430 | 230 | — |
| pH ^[3] | s.u. | — | — | 6.0 – 9.0 |

Unit Abbreviations:

lbs/day = pounds per day
mg/L = milligrams per liter
µg/L = micrograms per liter
TU_c = toxicity units
kg/day = kilograms per day
s.u. = standard units

Footnotes:

- [1] Bioassays shall be conducted in accordance with MRP section IV.B. The maximum daily effluent limitation for chronic toxicity shall be interpreted as the maximum test result for the month.
- [2] Compliance shall be evaluated by calculating the arithmetic mean of daily selenium mass discharges for each day of the calendar month. Daily mass discharges shall be calculated based on the total daily flow and the corresponding selenium concentration for each day that selenium is measured.
- [3] 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.

- 2. Additional Contaminated Runoff Effluent Limitation Allocations.** Additional effluent limitation allocations for contaminated runoff commingled with process wastewater are established on top of the process wastewater mass-based limitations in Table 4. When contaminated runoff is discharged through Discharge Point 001, an additional effluent limitation allocation may be added to the effluent limitation in Table 4 for each pollutant in Table 5, below. The additional allocation shall be equal to the contaminated runoff flow times the pollutant concentration in Table 5.

Table 5. Stormwater Runoff Allocation

| Pollutant | Units | Maximum Daily | Average Monthly |
|---------------------|-------|---------------|-----------------|
| BOD ₅ | mg/L | 48 | 26 |
| TSS | mg/L | 33 | 21 |
| 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 |
| Hexavalent Chromium | mg/L | 0.062 | 0.028 |

- 3. Additional Ballast Water Effluent Limitation Allocations.** Additional effluent limitation allocations for ballast water commingled with process wastewater are established on top of the process wastewater mass-based limitations in Table 4. When ballast water is discharged through Discharge Point 001, an additional effluent limitation allocation may be added to the effluent limitation in Table 4 for each pollutant in Table 6, below. The additional allocation shall be equal to the ballast water flow times the pollutant concentration in Table 6.

Table 6. Ballast Water Allocation

| Pollutant | Units | Maximum Daily | Average Monthly |
|------------------|-------|---------------|-----------------|
| BOD ₅ | mg/L | 48 | 26 |
| TSS | mg/L | 33 | 21 |
| COD | mg/L | 470 | 240 |
| Oil and Grease | mg/L | 15 | 8.0 |

- 4. Acute Toxicity.** The discharge at Discharge Point 001 shall comply with the following acute toxicity effluent limitations, with compliance measured at Monitoring Location EFF-001 as described in the MRP:
 - a. An 11-sample median value of not less than 90 percent survival; and
 - b. An 11-sample 90th percentile value of not less than 70 percent survival.

These acute toxicity limitations are defined as follows:

- **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.
- **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.

If the Discharger can demonstrate that toxicity exceeding the levels above is caused by ammonia and that the ammonia in the discharge complies with the ammonia effluent limitations of this Order, then such toxicity shall not constitute a violation of this effluent limitation.

- 5. Recycled Water Use Adjustments.** If the Discharger replaces raw water used in its operations with recycled water and complies with Provision VI.C.4.d, mass-based and concentration-based effluent limitations shall be revised by calculating adjustments as described below and adding the results to the effluent limitations:

- a. Concentration-based Effluent Limitation Adjustments.** The adjustment for a concentration-based effluent limit shall be the difference between its recycled water influent mass and raw 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 raw 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 adjustment for B = (Influent mass of B) / (Effluent volume for monitoring period)

- b. Mass-based Effluent Limitation Adjustments.** The adjustment for a mass-based effluent limit shall be the difference between the recycled water influent mass and raw 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 raw water concentration of B)] x (Influent recycled water volume)

Step 2: Effluent limit adjustment for B = (Influent mass of B) / (Monitoring interval in days)

B. Discharge Points 002 through 018

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

Table 7. Effluent Limitations – Discharge Points 002 through 018

| Parameter | Units | Maximum Daily | Average Monthly | Instantaneous |
|----------------------|-------|---------------|-----------------|---------------|
| Total Organic Carbon | mg/L | 110 | — | — |
| Oil and Grease | mg/L | 15 | — | — |
| pH | s.u. | — | — | 6.5 – 8.5 |
| Visible Oil | — | — | — | None observed |
| Visible Color | — | — | — | None observed |

Unit Abbreviations:

mg/L = milligrams per liter
s.u. = standard units

2. If a total organic carbon or oil and grease effluent limitation in Table 7 is exceeded at a particular monitoring location, the Discharger shall also comply with the following effluent limitations at the same monitoring location, as described in the MRP:

Table 8. Effluent Limitations – Discharge Points 002 through 018 (Supplemental)

| Parameter | Units | Maximum Daily | Average Monthly ^[1] |
|--------------------|-------|---------------|--------------------------------|
| BOD ₅ | mg/L | 48 | 26 |
| TSS ^[2] | mg/L | 33 | 21 |
| 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 |

Unit Abbreviations:

mg/L = milligrams per liter

Footnote:

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

^[2] As indicated in Provision VI.C.4.c, the numeric action levels for TSS are an annual average of 100 mg/L and a daily maximum of 400 mg/L.

V. RECEIVING WATER LIMITATIONS

- A. The discharge shall not cause or contribute to the following conditions 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 unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses;
 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, or above 55 nephelometric turbidity units in areas where natural turbidity is less than or equal 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 percent 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 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 Attachment G (*Regional Standard Provisions, and Monitoring and Reporting Requirements for NPDES Wastewater Discharge Permits*).
3. For discharges from Discharge Points 002 through 018, the Discharger shall comply with all applicable provisions of Attachment S (*Stormwater Provisions, Monitoring, and Reporting Requirements*).

B. Monitoring and Reporting

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 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 or 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 Discharge Point 001 as required by the MRP, to verify that the reasonable potential analysis conclusions of this Order remain valid and to inform the next permit reissuance. The Discharger shall evaluate on annual basis if concentrations of any of the priority pollutants listed in Attachment G, Table B, 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 exceedance of 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:

- (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-10 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 self-monitoring report.

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

- b. Demonstration of Compliance with Minimum Required Dilution.** If the daily maximum discharge at Discharge Point 001, excluding untreated stormwater discharges, exceeds 4.1 MGD, or if the Discharger upgrades or replaces its Carquinez Strait outfall or diffuser (Discharge Point 001), the Discharger shall submit the following documentation within 180 days of the discharge or upon completion of the new outfall or diffuser to demonstrate compliance with the minimum dilution required by Prohibition III.B:

- i.** A dilution modeling report of the outfall and diffuser that supports a dilution ratio of at least 17:1 at maximum-observed daily discharge flow 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-observed wet-weather

discharge or a flow rate of 4.1 MGD, whichever is greater, and the average daily discharge.

- ii. For a new outfall and diffuser, a certification by a licensed engineer that the outfall and diffuser have been constructed as designed and a description of updates to the Operations and Maintenance Manual that include the new outfall or diffuser.
- c. **Maximize Treatment During Wet Weather.** The Discharger shall submit a report by September 1, 2021, that evaluates the feasibility of measures to maximize treatment capacity utilization and minimize bypasses during wet weather. Measures evaluated shall include, but not be limited to, expanding selenium treatment capacity, adding storage, and rerouting or segregating process wastewater flows to optimize use of existing treatment units. The report shall include a schedule for implementing feasible measures as soon as practical. The Discharger shall implement the feasible measures according to the schedule.

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 raw 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, and v.
 - vii. Documentation of efforts and progress.** This discussion shall detail all of the Discharger's Pollutant Minimization Program activities during the reporting year.
 - viii. Evaluation of Pollutant Minimization Program and task effectiveness.** The Discharger shall use the criteria established in Provision VI.C.3.b.vi 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 9. Copper Action Plan

| Task | Compliance Date |
|--|--|
| 1. Review Potential Copper Sources Submit an up-to-date inventory of potential copper sources. | With annual pollutant minimization program report due February 28, 2021 |
| 2. Implement Copper Control Program Continue to minimize copper sources, as identified in the Discharger's Pollutant Minimization Program. Incorporate additional measures as appropriate to address newly identified copper sources. | Implementation shall be ongoing |
| 3. Implement Additional Measures If the Regional Water Board notifies the Discharger that the three-year rolling mean dissolved 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. | With next annual pollutant minimization program report due February 28 (at least 90 days following notification) |
| 4. Report Status of Copper Control Program Submit an annual report documenting copper control program implementation that evaluates the effectiveness of the actions taken, including any additional copper controls required by Task 2 above, and provide a schedule for actions to be taken in the next 12 months. | With annual pollutant minimization program report due February 28 each year |

- 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 10. Cyanide Action Plan

| Task | Compliance Date |
|---|---|
| 1. Review Potential Cyanide Sources Submit an inventory of potential cyanide sources. | With annual pollutant minimization program report due February 28, 2021 |

| Task | Compliance Date |
|--|---|
| 2. Implement Cyanide Control Program Continue to minimize cyanide discharges as identified in the Discharger's Pollutant Minimization Program consisting, at a minimum, of the following elements: <ol style="list-style-type: none"> Inspect each potential source to assess the need to include that source in the control program. Inspect sources included in the control program annually. | Implementation shall be ongoing |
| 3. Implement Additional Measures 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 the actions taken, and provide a schedule for actions to be taken within the next 12 months. | If required, with next annual pollutant minimization program report due February 28 (at least 90 days following notification) |
| 4. Report Status of Cyanide Control Program 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 within the next 12 months. | With annual pollutant minimization program report due February 28 each year |

c. Stormwater Requirements

- i. Stormwater Management.** Process area diverted stormwater and stormwater runoff from certain secondary containment areas and from the Refinery Crude Pipeline Area may be discharged, as follows:

(a) Secondary Containment Areas. Prior to releasing stormwater from the Intermediate and Upper Level, Lower Level, or Crude Oil Storage Area Tank Farms secondary containment areas through stormwater Discharge Points 003, 006, 009, 010, or 018, the Discharger shall visually inspect the stormwater for oil and color, and sample and analyze the stormwater for total organic carbon (TOC), TSS, oil and grease, and pH. The results of these observations and analyses shall be reported in the appropriate monthly self-monitoring report. The Discharger shall direct any stormwater exceeding a daily maximum of 100 mg/L TSS or otherwise not compliant with Table 7 effluent limitations of this Order to the wastewater treatment plant for treatment and discharge through Discharge Point 001.

(b) Refinery Crude Pipeline Area. Prior to discharging stormwater from the Refinery Crude Pipeline Area through Discharge Points 011 through 015, 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 self-monitoring report. 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 001.

(c) Process Area Diverted Stormwater. Process area stormwater runoff diverted to the Stormwater Retention Ponds or Crude Field Retention Ponds may be discharged at Discharge Points 001 and 006 without further treatment if the following conditions are met:

- (i) Use of storage, equalization, and treatment capacity is maximized.
- (ii) Prior to discharge, only process area stormwater runoff is stored in the Stormwater Retention Ponds or Crude Field Retention Ponds.
- (iii) Prior to discharge, the Discharger visually inspects the stormwater for oil and color and finds no oil or color.
- (iv) Prior to discharge, the Discharger samples and analyzes the stormwater for TSS, TOC, oil and grease, and pH, and the results do not exceed 100 mg/L TSS, 110 mg/L TOC, 15 mg/L oil and grease, and pH is within the range of 6.0 to 9.0 for Discharge Point 001 and within the range of 6.5 to 8.5 for Discharge Point 006.

The results of the monitoring described above shall be reported in appropriate monthly self-monitoring reports.

- ii. **Stormwater Pollution Prevention Plan and Annual Report.** By October 1, 2022, the Discharger shall submit and implement an updated Stormwater Pollution Prevention Plan (SWPPP). In subsequent years, the Discharger shall update and 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 implement each SWPPP update. The SWPPP shall contain the elements listed in Attachment S section I.J.

The Discharger shall submit an annual stormwater report by July 30 of 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 limitations and other requirements of this Order, and corrective actions taken or planned;
- (c) Comprehensive discussion of source identification and control programs for pollutants of concern, including TSS. If TSS levels at any stormwater discharge point exceed the numeric action levels of an annual average of 100 mg/L or a daily maximum of 400 mg/L, the Discharger shall identify in its next SWPPP update additional best management practices that it will implement to reduce TSS levels below these thresholds.
- (d) Comprehensive discussion of source identification and appropriate modifications to existing best management practices or additional best management practices to reduce TSS concentrations at Discharge Points 007, 011, and 013 below stormwater action levels, in accordance with Attachment S section I.P.

- d. **Conditions for Recycled Water Use Adjustments.** Prior to any adjustments to mass-based or concentration-based effluent limitations 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 adjustments 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 raw water for any constituents it seeks adjustments 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 limitations.
- v. The Discharger shall submit one or more examples of how influent recycled and raw water concentrations, lag time, and effluent limit adjustments 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 the water in the firewater system is captured and re-treated at the plant.
- f. **Acceptance of Ballast Water.** Before accepting ballast water at its treatment plant, the Discharger shall obtain approval from the California State Lands Commission and notify the Regional Water Board of that approval.
- g. **Average Annual Selenium Load.** The Discharger shall report the average annual selenium load with its application for permit reissuance. The average annual load shall be the arithmetic mean of the annual mass discharges for the previous permit term. Annual mass emissions shall be computed as follows:

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

where:

N = number of samples in a year

Q_i = flow rate (MGD) associated with the i^{th} sample, valid until a new sample is collected

C_i = selenium concentration (mg/L) associated with the i^{th} sample, valid until a new sample is collected.

When calculating selenium loads, the Discharger shall use estimated values and assume data reported below the method detection limit equal half of the detection limit.

ATTACHMENT A – DEFINITIONS

Arithmetic Mean (μ)

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.

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 (CV)

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 wasteload 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 reported with 99 percent confidence that the measured concentration is distinguishable from method blank results, as defined in 40 C.F.R. part 136, Attachment B.

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 (σ)

Measure of variability calculated as follows:

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

where:

x is the observed value;

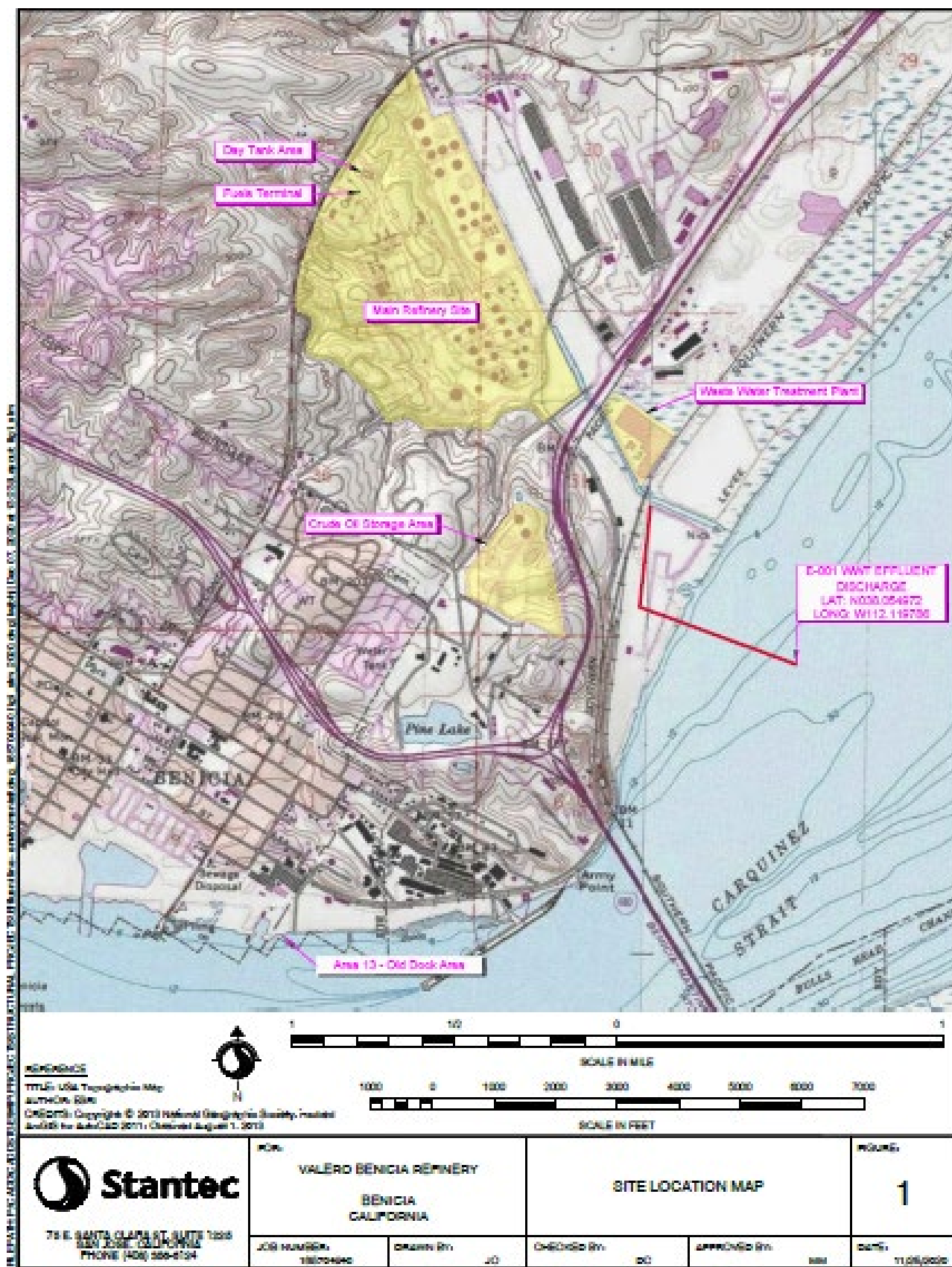
μ is the arithmetic mean of the observed values; and

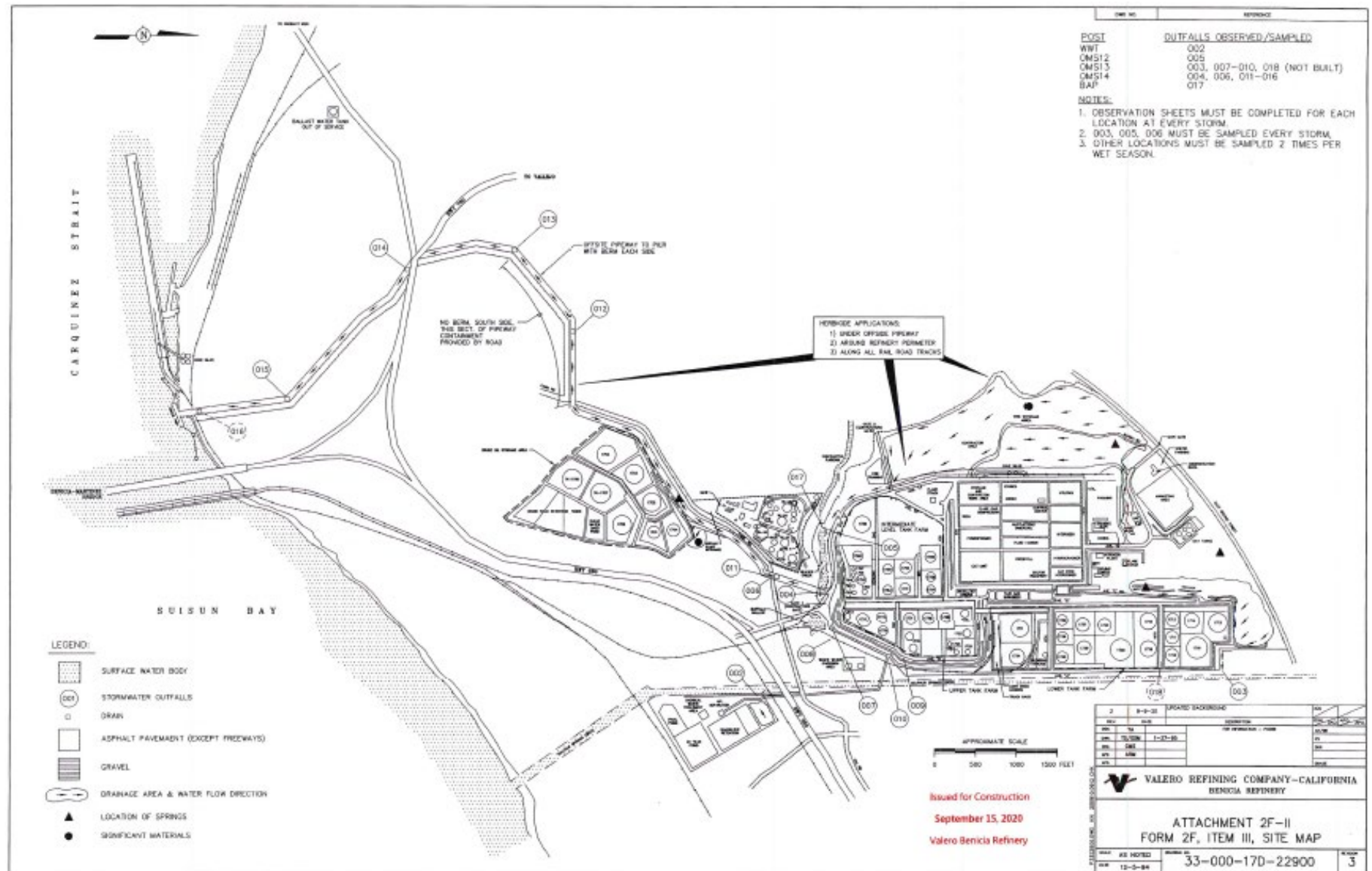
n is the number of samples.

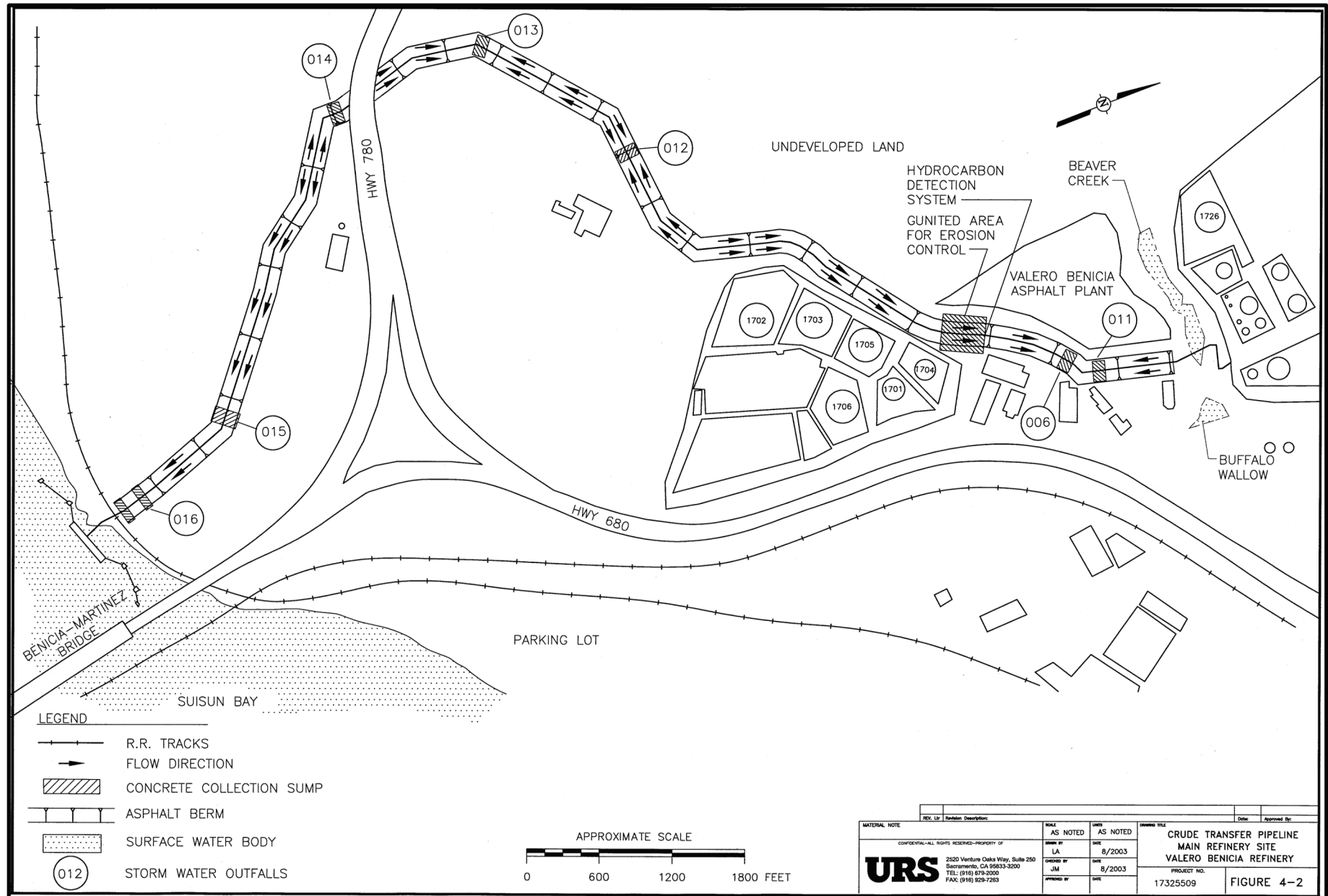
Toxicity Reduction Evaluation (TRE)

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

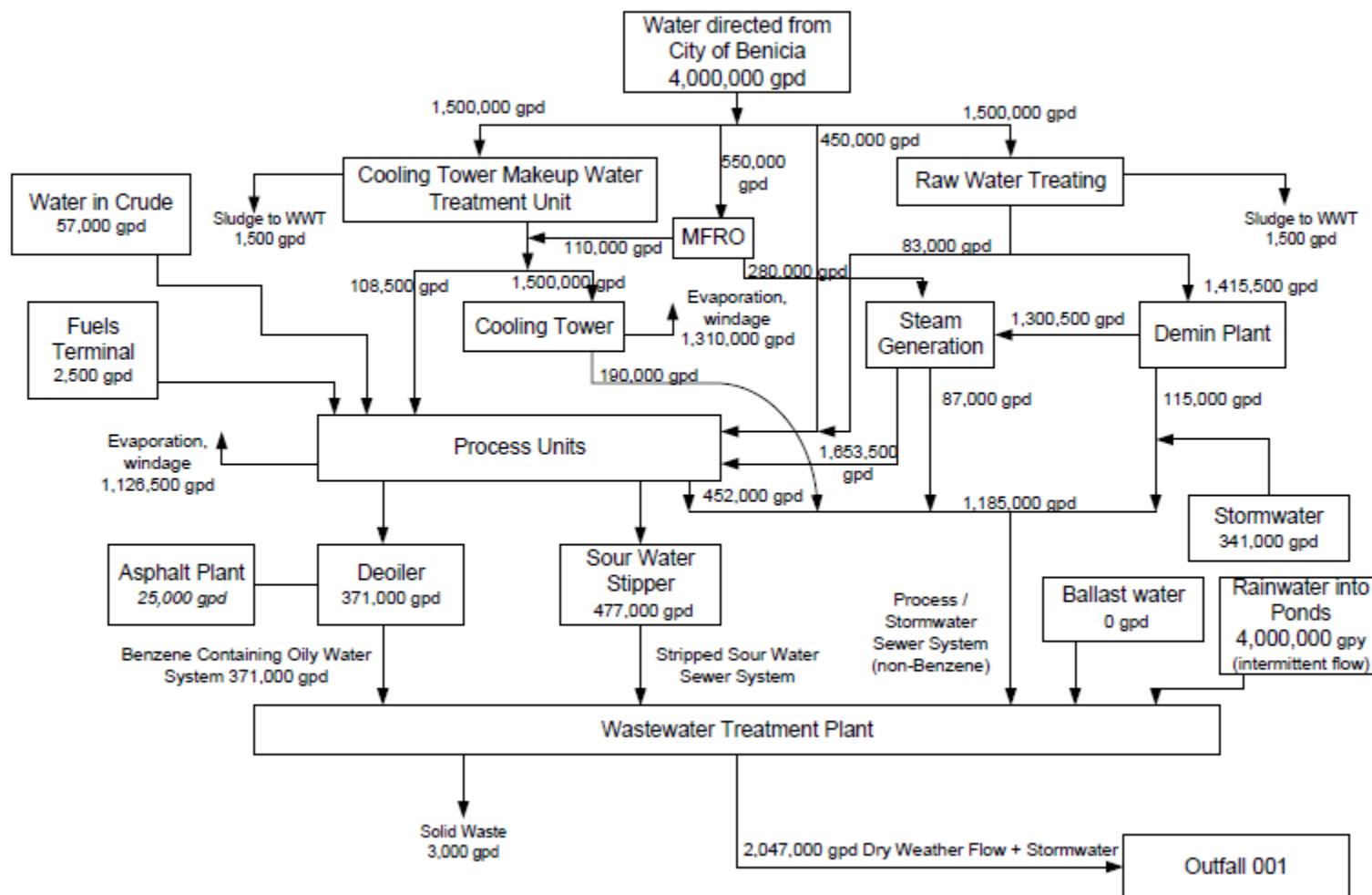




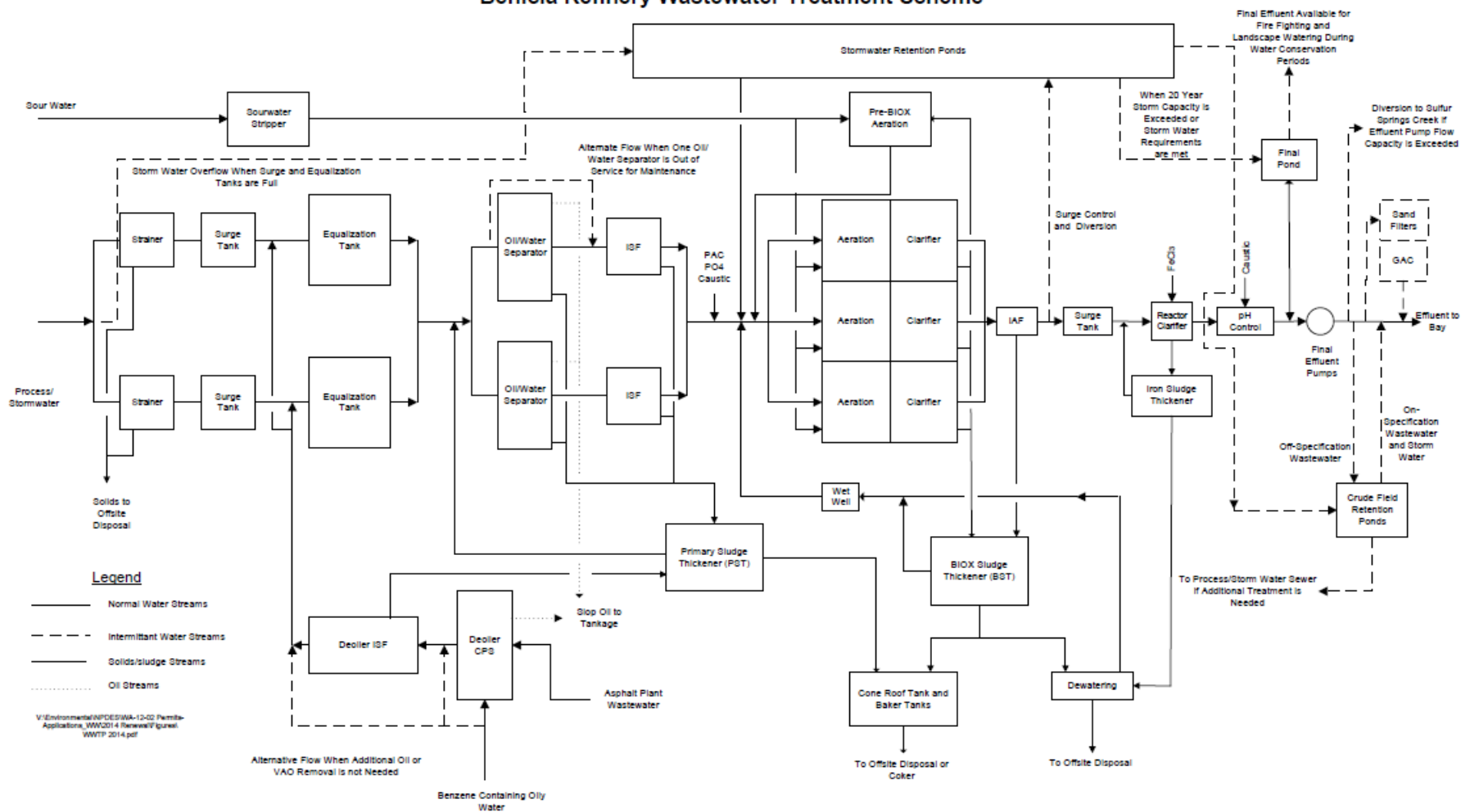


ATTACHMENT C – PROCESS FLOW DIAGRAMS

LINE DRAWING OF WATER FLOW THROUGH VALERO BENICIA REFINERY



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; for permit termination, revocation and reissuance, or modification; or 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 prior notice, if possible, at least 10 days before the date of the bypass. The notice shall be sent to the Regional Water Board. As of December 21, 2020, a notice shall also be submitted electronically to the initial recipient defined in Standard Provisions – Reporting V.J below. Notices shall comply with 40 C.F.R. part 3, 40 C.F.R. section 122.22, and 40 C.F.R. part 127. (40 C.F.R. § 122.41(m)(3)(i).)

b. **Unanticipated bypass.** The Discharger shall submit a notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). The notice shall be sent to the Regional Water Board. As of December 21, 2020, a notice shall also be submitted electronically to the initial recipient defined in Standard Provisions – Reporting V.J below. Notices shall comply with 40 C.F.R. part 3, 40 C.F.R. section 122.22, and 40 C.F.R. part 127. (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 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. chapter 1, subchapter N. Monitoring must be conducted according to sufficiently sensitive test methods approved under 40 C.F.R. part 136 for the analysis of pollutants or pollutant parameters or required under 40 C.F.R. chapter 1, subchapter N. For the purposes of this paragraph, a method is sufficiently sensitive when:
 1. The method minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter, and either (a) the

method ML is at or below the level of the applicable water quality criterion for the measured pollutant or pollutant parameter, or (b) the method ML is above the applicable water quality criterion but the amount of the pollutant or pollutant parameter in a facility's discharge is high enough that the method detects and quantifies the level of the pollutant or pollutant parameter in the discharge; or

2. The method has the lowest ML of the analytical methods approved under 40 C.F.R. part 136 or required under 40 C.F.R. chapter 1, subchapter N for the measured pollutant or pollutant parameter.

In the case of pollutants or pollutant parameters for which there are no approved methods under 40 C.F.R. part 136 or otherwise required under 40 C.F.R. chapter 1, subchapter N, monitoring must be conducted according to a test procedure specified in this Order for such pollutants or pollutant parameters. (40 C.F.R. §§ 122.21(e)(3), 122.41(j)(4), 122.44(i)(1)(iv).)

IV. STANDARD PROVISIONS—RECORDS

- A. 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, V.B.5, and V.B.6 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).)
6. Any person providing the electronic signature for documents described in Standard Provisions – V.B.1, V.B.2, or V.B.3 that are submitted electronically shall meet all relevant requirements of Standard Provisions – Reporting V.B, and shall ensure that all relevant requirements of 40 C.F.R. part 3 (Cross-Media Electronic Reporting) and 40 C.F.R. part 127 (NPDES Electronic Reporting Requirements) are met for that submission. (40 C.F.R. § 122.22(e).)

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. § 122.41(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. As of December 21, 2016, all reports and forms must be submitted electronically to the initial recipient defined in Standard Provisions – Reporting V.J and comply with 40 C.F.R. part 3, 40 C.F.R. section 122.22, and 40 C.F.R. part 127. (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. chapter 1, 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 report shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The report 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.

For noncompliance related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (i.e., combined sewer overflow, sanitary sewer overflow, or bypass event), type of overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volume untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the event, and whether the noncompliance was related to wet weather.

As of December 21, 2020, all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events must be submitted to the Regional Water Board and must be submitted electronically to the initial recipient defined in Standard Provisions – Reporting V.J. The reports shall comply with 40 C.F.R. part 3, 40 C.F.R. section 122.22, and 40 C.F.R. part 127. The Regional Water Board may also require the Discharger to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section. (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).)

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. For noncompliance related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in Standard Provision – Reporting V.E and the applicable required data in appendix A to 40 C.F.R. part 127. The Regional Water Board may also require the Discharger to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section. (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).)

J. Initial Recipient for Electronic Reporting Data

The owner, operator, or duly authorized representative is required to electronically submit NPDES information specified in appendix A to 40 C.F.R. part 127 to the initial recipient defined in 40 C.F.R. section 127.2(b). U.S. EPA will identify and publish the list of initial recipients on its website and in the Federal Register, by state and by NPDES data group [see 40 C.F.R. § 127.2(c)]. U.S. EPA will update and maintain this list. (40 C.F.R. § 122.41(l)(9).)

VI. STANDARD PROVISIONS – ENFORCEMENT

- A. The Regional Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 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 (µg/L) (40 C.F.R. § 122.42(a)(1)(i));
 - b. 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 milligram per liter (mg/L) for antimony (40 C.F.R. § 122.42(a)(1)(ii));
 - c. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 C.F.R. § 122.42(a)(1)(iii)); or
 - d. The level established by the 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 (µg/L) (40 C.F.R. § 122.42(a)(2)(i));
 - b. 1 milligram per liter (mg/L) for antimony (40 C.F.R. § 122.42(a)(2)(ii));
 - c. Ten (10) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 C.F.R. § 122.42(a)(2)(iii)); or
 - d. The level established by the 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)

Contents

| | | |
|------|---|------|
| I. | General Monitoring Provisions..... | E-2 |
| II. | Monitoring Locations..... | E-2 |
| III. | Effluent Monitoring Requirements | E-3 |
| IV. | Toxicity Testing Requirements..... | E-6 |
| V. | Receiving Water Monitoring Requirements | E-9 |
| VI. | Reporting Requirements | E-10 |

Tables

| | | |
|------------|---|------|
| Table E-1. | Monitoring Locations..... | E-2 |
| Table E-2. | Effluent Monitoring – Discharge Point 001..... | E-4 |
| Table E-3. | Effluent Monitoring – Discharge Points 002 through 018..... | E-5 |
| Table E-4. | CIWQS Reporting..... | E-10 |
| Table E-5. | Monitoring Periods | E-11 |

ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

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) or “Stormwater Provisions, Monitoring, and Reporting Requirements” (Attachment S), 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 permit.
- C. The Discharger shall ensure that results of the Discharge Monitoring Report-Quality Assurance (DMR-QA) Study or most recent Water Pollution Performance Evaluation Study are submitted annually to the State Water Board at the following address:
- State Water Resources Control Board
Quality Assurance Program Officer
Office of Information Management and Analysis
1001 I Street, Sacramento, CA 95814
- D. The Discharger shall implement a Quality Assurance-Quality Control Program for any onsite field tests (e.g., turbidity, pH, temperature, dissolved oxygen, conductivity, disinfectant residual) analyzed by a noncertified laboratory. The Discharger shall keep a manual onsite containing the steps followed in this program and must demonstrate sufficient capability to adequately perform these field tests (e.g., qualified and trained employees, properly calibrated and maintained field instruments). The program shall conform to U.S. EPA guidelines or other approved procedures.

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 ^[1] | Any point in the pipeline that delivers only recycled water to the facility, upstream of any point of use |
| Raw Water Influent | INF-002 ^[2] | Any point in the pipeline that delivers only raw water to the facility, upstream of any point of use |

| Sampling Location Type | Monitoring Location Name | Monitoring Location Description |
|---|---------------------------------|---|
| 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 001 before contact with Suisun Bay |
| Stormwater | EFF-002 | Any point where all stormwater flow tributary to Discharge Point 002 is present |
| Stormwater | EFF-003 | Any point where all stormwater flow tributary to Discharge Point 003 is present |
| Stormwater | EFF-004 | Any point where all stormwater flow tributary to Discharge Point 004 is present |
| Stormwater | EFF-005 | Any point where all stormwater flow tributary to Discharge Point 005 is present |
| Stormwater | EFF-006 | Any point where all stormwater flow tributary to Discharge Point 006 is present |
| Stormwater | EFF-007 | Any point where all stormwater flow tributary to Discharge Point 007 is present |
| Stormwater | EFF-008 | Any point where all stormwater flow tributary to Discharge Point 008 is present |
| Stormwater | EFF-009 | Any point where all stormwater flow tributary to Discharge Point 009 is present |
| Stormwater | EFF-010 | Any point where all stormwater flow tributary to Discharge Point 010 is present |
| Stormwater | EFF-011 | Any point where all stormwater flow tributary to Discharge Point 011 is present |
| Stormwater | EFF-012 | Any point where all stormwater flow tributary to Discharge Point 012 is present |
| Stormwater | EFF-013 | Any point where all stormwater flow tributary to Discharge Point 013 is present |
| Stormwater | EFF-014 | Any point where all stormwater flow tributary to Discharge Point 014 is present |
| Stormwater | EFF-015 | Any point where all stormwater flow tributary to Discharge Point 015 is present |
| --- | EFF-016 | Monitoring is not required because there is no discharge from former Discharge Point 016; references within this Order to “Monitoring Locations EFF-002 through EFF-018” exclude Monitoring Location EFF-016. |
| Stormwater | EFF-017 | Any point where all stormwater flow tributary to Discharge Point 017 is present |
| Stormwater | EFF-018 | Any point where all stormwater flow tributary to Discharge Point 018 is present |
| Receiving Water | RSW-001 | Any point within Sulphur Springs Creek between Discharge Points 002 and 003 |
| Receiving Water | RSW-002 | Any point within Beaver Creek between Discharge Points 004 and 005 |
| Receiving Water | RSW-003 | Any point within Buffalo Wallow |

Footnote:

- ^[1] Sampling at Monitoring Locations INF-001 and INF-002 shall take place only if Valero uses recycled water in place of raw water and seeks effluent limit adjustments pursuant to Provision IV.A.3 of this Order.

III. EFFLUENT MONITORING REQUIREMENTS

A. Discharger Point 001

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

Table E-2. Effluent Monitoring – Discharge Point 001

| Parameter | Units | Sample Type | Minimum Sampling Frequency ^[1] |
|--|-----------------------|-------------|---|
| Flow ^[2] | MGD | Continuous | Continuous/D |
| BOD ₅ | mg/L, lbs/day | C-24 | 1/Month |
| COD | mg/L, lbs/day | C-24 | 1/Month |
| Oil and Grease ^[3] | mg/L | Grab, C-24 | 1/Week |
| Phenolic Compounds (4AAP) ^l | lbs/day | Grab, C-24 | 1/Month |
| Sulfide | mg/L, lbs/day | Grab | 1/Month |
| TSS | mg/L, lbs/day | C-24 | 1/Week |
| Ammonia, Total | mg/L as N, lbs/day | Grab | 1/Month |
| Total Chromium | lbs/day | C-24 | 1/Month |
| Chromium (VI) | µg/L, lbs/day | Grab | 1/Month |
| Acute Toxicity ^[4] | % survival | C-24 | 1/Week |
| Chronic Toxicity ^[5] | TU _c | C-24 | 1/Quarter |
| Copper, Total Recoverable | µg/L | C-24 | 1/Month |
| Nickel, Total Recoverable | µg/L | C-24 | 1/Month |
| Cyanide, Total ^[6] | µg/L | Grab | 1/Month |
| Dioxin-TEQ | µg/L | Grab | 2/Year |
| Selenium ^[7] | µg/L | C-24 | 1/Week |
| pH ^[8] | s.u. | Continuous | Continuous/D |
| Other Priority Pollutants ^[9] | µg/L | Grab | 2/Year |
| Standard Observations | - | - | 1/Day |

Unit Abbreviations:

MGD = million gallons per day
mg/L = milligrams per liter
mg/L as N = milligrams per liter as nitrogen
µg/L = micrograms per liter
lbs/day = pounds per day
% = percent
TU_c = chronic toxicity units
s.u. = standard units

Sampling Types and Frequencies:

C-24 = 24-hour composite
Grab = grab sample
Continuous = measured continuously
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 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 other priority pollutants, 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)
- Total monthly flow volume (MG)

^[3] Oil and grease sampling and analysis shall be conducted in accordance with U.S. EPA Method 1664A.

- [4] Acute toxicity tests shall be performed in accordance with MRP section IV.A.
- [5] Chronic toxicity tests shall be performed in accordance with MRP section IV.B.
- [6] The Discharger may, at its option, analyze for cyanide as weak acid-dissociable cyanide using protocols specified in Standard Method Part 4500-CN-I, U.S. EPA Method OI 1677, or an equivalent method in the latest edition.
- [7] The Discharger shall analyze selenium using U.S. EPA Method 200.8 or Standard Method Method 3144B or 3114C.
- [8] If pH is monitored continuously, the minimum and maximum pH for each day shall be reported in self-monitoring reports.
- [9] The Discharger shall monitor for the pollutants listed in Attachment G, Table B.

B. Discharge Points 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 during the term of this Order. Monitoring is not required at Monitoring Locations EFF-002 and EFF-008 if flow at those locations is insufficient for sampling. Monitoring is also not required at Monitoring Location EFF-002 if it is inaccessible due to flooding or if the direction of flow is reversed (i.e., flowing inland, away from Sulphur Spring Creek).

Table E-3. Effluent Monitoring – Discharge Points 002 through 018

| Parameter | Units | Sample Type | Minimum Sampling Frequency |
|--------------------------------------|-------|---------------------|-----------------------------------|
| Flow | MGD | Continuous | 1/Month ^[1] |
| Oil and Grease | mg/L | Grab ^[2] | 1/Quarter ^[3] |
| Total Organic Carbon (TOC) | mg/L | Grab ^[2] | 1/Quarter ^[3] |
| pH | s.u. | Grab ^[2] | 1/Quarter ^[3] |
| TSS | mg/L | Grab ^[2] | 1/Quarter ^[3, 4] |
| BOD ₅ | mg/L | Grab ^[2] | 1/Day during storm ^[4] |
| COD | mg/L | Grab ^[2] | 1/Day during storm ^[4] |
| Phenolic Compounds | mg/L | Grab ^[2] | 1/Day during storm ^[4] |
| Total Chromium | mg/L | Grab ^[2] | 1/Day during storm ^[4] |
| Chromium (VI) | mg/L | Grab ^[2] | 1/Day during storm ^[4] |
| Standard Observations ^[5] | --- | --- | 1/Day during storm |

Unit Abbreviations:

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

Sampling Types and Frequencies:

Continuous = measured continuously
Grab = grab sample
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 7 is exceeded. The Discharger shall also monitor the affected monitoring location at least once during the first daylight storm of the following wet season (commencing October 1).
- [4] Monitoring to determine compliance with Table 8 of this Order is required at a particular monitoring location if the TOC or oil and grease effluent limit in Table 7 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. TOXICITY TESTING REQUIREMENTS

A. Acute Toxicity

1. Compliance with the acute toxicity effluent limitations at Discharge Point 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 rainbow trout (*Onchorhynchus mykiss*). Alternatively, 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*, 5th Edition (EPA-821-R-02-012).

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 adjust the pH of acute toxicity samples prior to performing bioassays to minimize ammonia toxicity interference.

4. Bioassay 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. 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 testing as indicated below.

For toxicity tests requiring renewals, the Discharger shall collect 24-hour composite samples on consecutive or alternating days.

- b. Test Species.** The test species shall be red abalone (*Haliotis rufescens*) unless a more sensitive species is identified. If using this species proves unworkable, the Executive Officer may specify a different species in writing upon the Discharger's request with justification.

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. Upon completion of the chronic toxicity screening, the Discharger shall use the most sensitive species to conduct subsequent monitoring.

- c. Frequency.** Chronic toxicity monitoring shall be as specified below:

- i. The Discharger shall monitor routinely once per quarter.
- ii. The Discharger shall accelerate monitoring to monthly if it exceeds a single-sample maximum of 10 TU_c. Based on the TU_c results, the Executive Officer may specify a different frequency for accelerated monitoring to ensure that accelerated monitoring provides useful information.
- iii. The Discharger shall return to routine monitoring if accelerated monitoring does not exceed the chronic toxicity limit in ii, above.
- iv. If accelerated monitoring confirms consistent toxicity in excess of the chronic toxicity limit, the Discharger shall continue accelerated monitoring and initiate toxicity reduction evaluation (TRE) procedures in accordance with section IV.B.3, below.
- v. The Discharger shall return to routine monitoring after implementing appropriate elements of the TRE, and either the toxicity drops below the chronic toxicity limit, or, based on the TRE results, the Executive Officer determines that accelerated monitoring would no longer provide useful information.
- vi. Monitoring conducted pursuant to a TRE shall satisfy the requirements for routine and accelerated monitoring while the TRE is underway.

- d. Methodology.** Sample collection, handling, and preservation shall be in accordance with U.S. EPA protocols. 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 West Coast Marine and Estuarine Organisms*, currently 1st edition (EPA/600/R-95-136), *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms*, currently 3rd edition (EPA-821-R-02-014) and *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, currently 4th edition (EPA-821-R2-02-013). 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. The adjustment shall not remove the influence of other substances. Written acknowledgement that the Executive Officer concurs with the Discharger's demonstration must be obtained prior to any such adjustment.

- e. **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

The Discharger shall provide toxicity test results with self-monitoring reports and shall include the following, at a minimum, for each test:

- a. Sample date
- b. Test initiation date
- c. Test species
- d. End point values for each dilution (e.g., number of young, growth rate, percent survival)
- e. No Observable Effect Level (NOEL) values in percent effluent. The NOEL shall equal the IC₂₅ or EC₂₅ (see MRP Appendix E-1). If the IC₂₅ or EC₂₅ cannot be statistically determined, the NOEL shall equal 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.
- f. IC₁₅, IC₂₅, IC₄₀, and IC₅₀ values (or EC₁₅, EC₂₅, EC₄₀, and EC₅₀) as percent effluent
- g. TU_c values (100/NOEL and upper and lower confidence intervals)
- h. Mean percent mortality (±s.d.) after 96 hours in 100% effluent (if applicable)
- i. IC₅₀ or EC₅₀ values for reference toxicant tests
- j. 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, 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 Executive Officer comments.
- 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 evaluation of treatment process, including operational practices and in-plant process chemicals.
 - 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 follow-up 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.

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.B.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 (Attachments D, G, and S) related to monitoring, reporting, and recordkeeping.

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) website (waterboards.ca.gov/water_issues/programs/ciwqs). 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) 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.a (Effluent Characterization Study and Report) and VI.C.4.g (Average Annual Selenium Load) of this Order for requirements to submit reports with annual SMRs.

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 | Method of Reporting: Attached File |
|--|--|---------------------------------------|
| All parameters identified in influent, effluent, and receiving water monitoring tables (except Dissolved Oxygen and Temperature) | Required for all results | - |

| Parameter | Method of Reporting: EDF/CDF data upload or manual entry | Method of Reporting: Attached File |
|---|--|--|
| Dissolved Oxygen Temperature | Required for monthly maximum and minimum results only ^[1] | 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 ^[2] - |
| Analytical Method | Not required (Discharger may select "data unavailable") ^[1] | - |
| Collection Time Analysis Time | Not required (Discharger may select "0:00") ^[1] | - |

Footnotes:

- ^[1] 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.
- ^[2] 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 data to clearly illustrate whether the Facility is operating in compliance with effluent limitations. 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/D | Order effective date | All times |
| 1/Day | Order effective date | Any 24-hour period that reasonably represents a calendar day for sampling purposes (e.g., beginning at midnight and continuing through 11:59 p.m.) |
| 1/Week | First 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 |

| Sampling Frequency | Monitoring Period Begins On... | Monitoring Period |
|--------------------|--|--|
| 1/Quarter | Closest January 1, April 1, July 1, or October 1 before or after Order effective date ^[1] | January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31 |
| 2/Year | Closest May 1 or November 1 before or after Order effective date ^[1] | 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 | As soon as possible after the Discharger becomes aware of the event ^[2] | Anytime during the discharge event when sampling represents conditions during the discharge event |

Footnotes:

^[1] Monitoring performed during the previous order term may be used to satisfy monitoring required by this Order.

^[2] 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", or 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 limitations 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 limitations if the concentration of the pollutant in the monitoring sample is greater than the effluent limit and, if applicable, greater than or equal to the RL.

C. Discharge Monitoring Reports (DMRs)

DMRs are U.S. EPA reporting requirements. The Discharger shall electronically certify and submit DMRs together with SMRs using the Electronic Self-Monitoring Reports module eSMR 2.5 or the latest upgraded version. Electronic DMR submittal shall be in addition to electronic SMR submittal. Information about electronic DMR submittal is available at the DMR website at waterboards.ca.gov/water_issues/programs/discharge_monitoring.

**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 IC₂₅ or EC₂₅. If the IC₂₅ or EC₂₅ 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. EC₂₅ 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 IC₂₅ 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%, 12.5%, 6.25%, and 0.0%, 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, 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 |
| Silverside | <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 Ocean | Receiving Water Characteristics: Discharges to Marine/ Estuarine Waters ^[1] | Receiving Water Characteristics: Discharges to 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 ^[2] | 0 | 1 or 2 | 3 |
| Marine/Estuarine | 4 | 3 or 4 | 0 |
| Total number of tests | 4 | 5 | 3 |

Footnotes:

- ^[1] (a) Marine refers to receiving water salinities greater than 10 parts 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.
- ^[2] 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

Contents

| | | |
|-------|---|------|
| I. | Permit Information..... | F-3 |
| II. | Facility Description..... | F-4 |
| | A. Wastewater Treatment and Control..... | F-4 |
| | 1. Facility Overview | F-4 |
| | 2. Wastewater Treatment..... | F-4 |
| | 3. Stormwater Management | F-7 |
| | B. Discharge Point and Receiving Waters | F-8 |
| | C. Previous Requirements and Monitoring Data | F-8 |
| | D. Compliance Summary | F-10 |
| | E. Planned Changes | F-11 |
| III. | Applicable Plans, Policies, And Regulations..... | F-11 |
| IV. | Rationale For Effluent Limitations And Discharge Specifications | F-14 |
| | A. Discharge Prohibitions | F-14 |
| | B. Technology-Based Effluent Limitations | F-15 |
| | 1. Scope and Authority | F-15 |
| | 2. Discharge Point 001 | F-16 |
| | 3. Discharge Points 002 through 018 | F-16 |
| | C. Water Quality-Based Effluent Limitations (WQBELs)..... | F-17 |
| | 1. Scope and Authority | F-17 |
| | 2. Beneficial Uses and Water Quality Criteria and Objectives | F-17 |
| | 3. Need for WQBELs (Reasonable Potential Analysis)..... | F-21 |
| | 4. Water Quality-Based Effluent Limitations (WQBELs)..... | F-26 |
| | D. Discharge Requirement Considerations | F-31 |
| V. | Rationale For Receiving Water Limitations | F-32 |
| VI. | Rationale For Provisions..... | F-32 |
| | A. Standard Provisions..... | F-32 |
| | B. Monitoring and Reporting..... | F-33 |
| | C. Special Provisions | F-33 |
| | 1. Reopener Provisions..... | F-33 |
| | 2. Special Studies and Additional Monitoring | F-33 |
| | 3. Pollutant Minimization Program | F-34 |
| | 4. Other Special Provisions | F-34 |
| VII. | Rationale For Monitoring and Reporting Program (MRP)..... | F-36 |
| VIII. | Public Participation..... | F-38 |

Tables

| | |
|--|------|
| Table F-1. Facility Information..... | F-3 |
| Table F-2. Previous Effluent Limitations and Monitoring Data – Discharge Point 001 | F-8 |
| Table F-3. Previous Effluent Limitations – Discharge Points 002 through 017..... | F-9 |
| Table F-4. Previous Monitoring Data – Discharge Points 002 through 017 | F-10 |
| Table F-5. Compliance Summary | F-10 |
| Table F-6. Basin Plan Beneficial Uses | F-12 |
| Table F-7. Technology-Based Effluent Limitations | F-16 |
| Table F-8. Site-Specific Translators | F-21 |
| Table F-9. Reasonable Potential Analysis | F-22 |
| Table F-10. WQBEL Calculations..... | F-28 |
| Table F-11. Monitoring Requirements Summary | F-37 |

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 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

| | |
|---|--|
| WDID | 2 482004001 |
| CIWQS Place ID | 223950 |
| Discharger | Valero Refining Company-California |
| Facility Name | Valero Benicia Refinery |
| Facility Address | 3400 East Second Street, Benicia, CA 94510 Solano County |
| Facility Contact, Title, Phone | Marisol Pacheco-Mendez, Staff Environmental Engineer, (707) 745-7573 |
| Authorized Person to Sign and Submit Reports | Donald Cuffel, Director of Health, Safety, Environmental and Regulatory Affairs , (707) 745-7545 |
| Mailing Address | Same as Facility Address |
| Billing Address | Same as Facility Address |
| Facility Type | Petroleum Refinery |
| Major or Minor Facility | Major |
| Threat to Water Quality | 1 |
| Complexity | A |
| Pretreatment Program | N/A |
| Reclamation Requirements | N |
| Mercury and PCBs Requirements | NPDES Permit CA0038849 |
| Wastewater Treatment Plant Design Flow | 3.7 million gallons per day (MGD) |
| Permitted Flow | 4.1 MGD |
| Average Facility Flow (2018) | 2.4 MGD |
| Watershed | Suisun Basin |
| Receiving Water | Suisun Bay, Carquinez Strait |
| Receiving Water Type | 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 CA0005550. The Discharger was previously subject to Order R2-2015-0037 (previous order). The Discharger filed a Report of Waste Discharge and submitted an application for reissuance of its Waste Discharge Requirements (WDRs) and NPDES permit on December 13, 2019.

The Discharger is authorized to discharge subject to WDRs in this Order at the discharge locations described in Table 2 of this Order. Regulations in 40 C.F.R. section 122.46 limit the duration of NPDES permits to a fixed term not to exceed five years. Accordingly, Table 3 of this Order limits the effective period for the discharge authorization. Pursuant to California Code of Regulations, title 23, section 2235.4, the terms and conditions of an expired permit are automatically continued pending reissuance of the permit if the Discharger complies with all requirements for continuation of expired permits. (See 40 C.F.R § 122.6[d].)

- C. The discharge is also regulated under NPDES Permits CA0038849, which establish requirements on mercury and polychlorinated biphenyls (PCBs) from wastewater discharges to San Francisco Bay. This Order does not affect those permits.

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 147,600 bbls/d from 2015 to 2018. 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 (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 001). The Facility also discharges stormwater runoff as described in Fact Sheet section II.A.3, below.

The plant design flow is approximately 3.7 million gallons per day (MGD). The Facility's discharge can exceed the plant design flow when both treated wastewater and stormwater are discharged. To ensure the plant is not hydraulically overloaded, the Discharger will route a portion of uncontaminated stormwater directly to Discharge Point 001. During the last permit term, the Facility's maximum discharge rate through Discharge Point 001 was 3.96 MGD. The average flow rate for 2018 was 2.4 MGD.

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.

Oily wastewater and stripped sour water (see Fact Sheet sections II.A.2.a.i above, and II.A.2.a.iii, below) use about 300 and 400 gpm of this capacity. Therefore, during heavy storms, influent exceeding approximately 1,000 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 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. 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:

- ### c. Solids Handling

- F-6

- 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 2 of this Order). 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 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.(a):

- Lower Level Tank Farm (Discharge Points 003 and 018);
- Refinery Tank Farm and Crude Oil Storage Area (Discharge Points 006, 009, and 010); and
- Intermediate and Upper Level Tank Farms (Discharge Points 009 and 010).

Most of these outfalls are open ditches or culverts; however, discharge from the secondary containment areas is controlled by valves that are normally closed and can only be released manually, which facilitates monitoring prior to discharge. The Discharger samples and analyzes, and visually inspects, secondary-contained stormwater prior to discharge, and transfers stormwater not meeting this Order's effluent limitations (section IV.B) to the plant for treatment and discharge through Discharge Point 001 (see Fact Sheet §VI.C.4.c.i.(a)).

- b. Refinery Crude Pipeline Area.** Stormwater from areas under or near the crude pipeline, as described in Table 2, flows to Discharge Points 011 through 015. It collects in sumps controlled by valves that are normally closed and can only be released manually, which allows visual inspection prior to discharge. The Discharger visually inspects this stormwater prior to discharge, and transfers stormwater with visible oil or color via vacuum trucks to the plant for treatment and discharge through Discharge Point 001 (see Fact Sheet §VI.C.4.c.i.(b)).

- c. Diverted Stormwater.** The Discharger may divert stormwater to the Stormwater Retention Ponds and Crude Field Retention Ponds (see Fact Sheet § II.A.2.a.i) and discharge it at Discharge Point 001 or 006 without further treatment if it complies with Provision VI.C.4.c.ii of this Order. Otherwise, the Discharger sends stormwater from these ponds to the plant for treatment prior to discharge at Discharge Point 001 (see Fact Sheet § VI.C.4.c.ii). Provision VI.C.4.c.ii of this Order requires the Discharger to sample and analyze for total suspended solids (TSS), oil and grease, and pH prior to discharge to ensure compliance. Stormwater discharged from Discharge Point 001 is subject to all effluent limitations that apply to Discharge Point 001 (see this Order § IV.A).

Stormwater diverted to these ponds is usually relatively cold and typically contains relatively low pollutant concentrations. Treating large volumes of such stormwater can

significantly reduce the treatment efficiency of activated sludge treatment systems, such as the Biox system. Authorizing flexibility in handling large stormwater flows reduces the potential for bypasses and flooding.

This Order authorizes discharge of construction or development stormwater that drains to the Discharger's wastewater treatment plant. The Discharger must enroll under *NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities* (NPDES Permit CAS000002, currently Order 2009-0009-DWQ) prior to discharging such stormwater to Discharge Points 002 through 018.

B. Discharge Points and Receiving Waters

Treated wastewater is discharged to Suisun Bay through a submerged diffuser approximately 1,100 feet offshore (Discharge Point 001). Stormwater is discharged to Carquinez Strait and Sulfur Springs Creek (sometimes via Beaver Creek, Buffalo Wallow, or the City of Benicia storm drain system) (Discharge Points 002 through 018).

C. Previous Requirements and Monitoring Data

Effluent limitations and representative monitoring data from the previous order term are presented below for Discharge Point 001:

Table F-2. Previous Effluent Limitations and Monitoring Data – Discharge Point 001

| Parameter | Units | Average Monthly Limit | Maximum Daily Limit | Other Limitations | Highest Monthly Average (10/2015 – 12/2018) | Highest Daily Discharge (10/2015 – 12/2018) |
|--|-----------------|-----------------------|---------------------|-------------------|---|---|
| Biochemical Oxygen Demand (5-day @ 20°C) (BOD ₅) | lbs/day | 1,900 | 3,400 | — | 574 | 574 |
| Chemical Oxygen Demand (COD) | lbs/day | 13,000 | 24,000 | — | 3,234 | 6,383 |
| Oil and Grease | lbs/day | 550 | 1,000 | — | 34 | 53 |
| Phenolic Compounds (4AAP) | lbs/day | 12 | 25 | — | 5.0 | 19 |
| Sulfide | lbs/day | 10 | 21 | — | 0.74 | 1.0 |
| Total Suspended Solids (TSS) | lbs/day | 1,500 | 2,400 | — | 337 | 5,266 |
| Total Ammonia, as N | lbs/day | 1,000 | 2,000 | — | 73 | 73 |
| Total Ammonia, as N | mg/L | 5.7 | 20 | — | 4.1 | 4.1 |
| Total Chromium | lbs/day | 16 | 46 | — | 0.060 | 0.070 |
| Chromium (VI) | lbs/day | 1.3 | 2.9 | — | 0.30 | 0.30 |
| Chromium (VI) | µg/L | 36 | 72 | — | 17 | 17 |
| Bis(2-Ethylhexyl)Phthalate | µg/L | 53 | 110 | — | 2.5 | 2.5 |
| Acute Toxicity | % survival | — | — | [1] | [1] | [1] |
| Chronic Toxicity | TU _c | — | — | [2] | [2] | [2] |

| Parameter | Units | Average Monthly Limit | Maximum Daily Limit | Other Limitations | Highest Monthly Average (10/2015 – 12/2018) | Highest Daily Discharge (10/2015 – 12/2018) |
|-----------------------------|-------|-----------------------|----------------------|-------------------|---|---|
| Copper, Total Recoverable | µg/L | 58 | 120 | — | 9.2 | 9.2 |
| Cyanide, Total | µg/L | 19 | 42 | — | 19 | 31 |
| Dioxin-TEQ | µg/L | 1.4×10^{-8} | 2.8×10^{-8} | — | [3] | [3] |
| Selenium, Total Recoverable | µg/L | 42 | 50 | — | 43 | 110 |
| pH | s.u. | — | — | [4] | [4] | [4] |

Unit Abbreviations:

lbs/day = pounds per day
mg/L = milligrams per liter
µg/L = micrograms per liter
% = percent
TUc = chronic toxicity units
s.u. = standard units

Footnotes:

- [1] The limitations were an 11-sample median value of not less than 90 percent survival and 11-sample 90th percentile value of not less than 70 percent survival. The lowest survival rate for the 11-sample median was 100 percent and 75 percent for the 11-sample 90th percentile (August 2016).
- [2] The limit was 10 TUc for single sample maximum. The highest chronic toxicity was 4.2 TUc in August 2016.
- [3] Dioxin-TEQ was not detected in the effluent.
- [4] The pH limitations were instantaneous and ranged between 6.5 and 8.5. The minimum and maximum pH values were 6.8 and 8.3.

The previous order's effluent stormwater limitations for Discharge Points 002 through 017 are presented below. No data are provided for Discharge Point 016 because the outfall is no longer in service. No data are provided for Discharge Point 018 because the outfall has not yet been constructed.

Table F-3. Previous Effluent Limitations – Discharge Points 002 through 017

| Parameter | Units | Average Monthly | Maximum Daily | Other |
|-----------------------------------|-------|-----------------------|---------------|--------------------------|
| Total Organic Carbon (TOC) | mg/L | — | 110 | — |
| Oil and Grease | mg/L | 8.0 ^[1, 2] | 15 | — |
| pH | s.u. | — | — | 6.5 – 8.5 ^[3] |
| BOD ₅ ^[1] | mg/L | 26 ^[2] | 48 | — |
| TSS ^[1] | mg/L | 21 ^[2] | 33 | — |
| COD ^[1] | mg/L | 180 ^[2] | 360 | — |
| Phenolic Compounds ^[1] | mg/L | 0.17 ^[2] | 0.35 | — |
| Total Chromium ^[1] | mg/L | 0.21 ^[2] | 0.60 | — |
| Chromium (VI) ^[1] | mg/L | 0.028 ^[2] | 0.062 | — |

Unit Abbreviations:

mg/L = milligrams per liter
s.u. = standard units

Footnotes:

- [1] Supplemental limitations effective if oil and grease or TOC maximum daily limitations 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.
- [3] The pH limitation was an instantaneous range no less than 6.5 and no greater than 8.5.

Maximum and average monitoring data for Discharge Points 002 through 017 over the previous order term are presented in the tables below. Phenolic compounds, total chromium, BOD, and COD are omitted from these tables because no data were reported for them.

Table F-4. Previous Monitoring Data – Discharge Points 002 through 017

| Discharge Point | TOC Average (mg/L) | TOC Daily Maximum (mg/L) | Oil and Grease Average (mg/L) | Oil and Grease Daily Maximum (mg/L) | pH Minimum (s.u.) | pH Maximum (s.u.) | TSS Average (mg/L) | TSS Daily Maximum (mg/L) |
|-----------------|--------------------|--------------------------|-------------------------------|-------------------------------------|-------------------|-------------------|--------------------|--------------------------|
| 002 | 6.8 | 11 | < 5.0 | < 5.0 | 7.6 | 8.1 | 18 | 18 |
| 003 | 23 | 61 | < 5.0 | < 5.0 | 7.0 | 8.0 | 44 | 49 |
| 004 | 26 | 70 | < 5.0 | < 5.0 | 7.1 | 8.0 | 50 | 67 |
| 005 | 30 | 65 | < 5.0 | < 5.0 | 7.2 | 8.1 | 72 | 102 |
| 006 | 19 | 58 | < 5.0 | < 5.0 | 6.9 | 8.5 | 24 | 30 |
| 007 | 22 | 60 | 3.7 | 7.1 | 6.8 | 8.1 | 389 | 640 |
| 008 | 19 | 51 | < 5.0 | < 5.0 | 7.2 | 8.0 | 36 | 50 |
| 009 | 12 | 17 | < 5.0 | < 5.0 | 6.7 | 8.2 | 36 | 66 |
| 010 | 11 | 18 | < 5.0 | < 5.0 | 7.1 | 8.5 | 10 | 13 |
| 011 | 7.7 | 15 | < 5.0 | < 5.0 | 7.1 | 8.1 | 409 | 409 |
| 012 | 14 | 26 | < 5.0 | < 5.0 | 6.9 | 7.9 | 11 | 11 |
| 013 | 27 | 70 | < 5.0 | < 5.0 | 7.2 | 7.8 | 259 | 259 |
| 014 | 17 | 43 | < 5.0 | < 5.0 | 7.0 | 7.7 | 10 | 10 |
| 015 | 30 | 81 | < 5.0 | < 5.0 | 7.2 | 8.2 | < 9 | < 9 |
| 017 | 11 | 36 | 3.0 | 10 | 6.7 | 8.5 | 84 | 226 |

Unit Abbreviations:

mg/L = milligrams per liter
s.u. = standard units

Although the previous order had no TSS effluent limit for stormwater, TSS levels in stormwater often exceeded the benchmark value of 100 mg/L contained in U.S. EPA's *NPDES Stormwater Multi-Sector General permit for Industrial Activities* (Federal Register Volume 65, Number 210, October 30, 2000) at Discharge Points 007, 011, and 013. To address these exceedances, this Order requires the Discharger to implement improved best management practices.

D. Compliance Summary

During the previous order term, the Discharger violated the selenium and TSS effluent limitations at Discharge Point 001, as listed below:

Table F-5. Compliance Summary

| Violation Date | Parameter | Discharge Point | Effluent Limit | Reported Value |
|----------------|---------------------------------|-----------------|----------------|----------------|
| 1/18/2016 | TSS – Daily Maximum | 001 | 2,400 lbs/day | 5,266 lbs/day |
| 1/18/2016 | Selenium, Total – Daily Maximum | 001 | 50 µg/L | 110 µg/L |

| Violation Date | Parameter | Discharge Point | Effluent Limit | Reported Value |
|----------------|-----------------------------------|-----------------|----------------|----------------|
| 1/31/2016 | Selenium, Total – Monthly Average | 001 | 42 µg/L | 42.8 µg/L |

Unit Abbreviations:

lbs/day = pounds per day
µg/L = micrograms per liter

On April 17, 2017, the Regional Water Board issued Administrative Civil Liability Order R2-2017-1017 fining the Discharger \$179,000 for the January 18, 2016, discharge of partially treated wastewater that resulted in TSS and selenium effluent limit violations. Due to human error, the Discharger failed to reestablish the polymer feed in the iron co-precipitation unit that stabilizes the sludge bed in the reactor clarifier. Although the unit was returned to normal operation within 7 hours, 1.13 million gallons of partially treated wastewater was discharged. To correct the oversight, the Discharger installed an on-line turbidity meter that alerts operations personnel of potential TSS upsets in the iron co-precipitation unit.

E. Planned Changes

No significant changes are planned.

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) for discharges to waters of the State. 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 authorizing the Discharger to discharge into waters of the United States at the discharge location described in Table 2 subject to the WDRs in this Order.

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 (CEQA), 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 88-63, which established State policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply.

Discharge Point 001 flows to Suisun Bay. Discharge Points 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. Discharge Points 012 through 015

discharge to the City of Benicia storm drain system and ultimately to Carquinez Strait. Total dissolved solids 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 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-6. Basin Plan Beneficial Uses

| Discharge Point | 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) |
| 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 017, 018 | Sulphur Springs Creek | Freshwater Replenishment (FRSH) Warm Freshwater Habitat (WARM) Wildlife Habitat (WILD) Water Contact Recreation (REC1) Non-contact Water Recreation (REC2) |
| 012, 013, 014, 015 | Carquinez Strait | Industrial Service Supply (IND) Ocean, Commercial and Sporting 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) |

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. The State Water Board adopted amendments to the plan on June 5, 2018, that became effective on March 11, 2019. 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.
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. (See Fact Sheet § IV.E.2.)
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 limitations in a reissued permit be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed. (See Fact Sheet § IV.E.1.)
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 limitations, receiving water limitations, 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 on CWA 303(d) List

On April 6, 2018, 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 limitations on point sources. Where it has not done so already, the Regional Water Board plans to adopt total maximum daily loads (TMDLs) for pollutants on the 303(d) list. TMDLs establish wasteload allocations for point sources and load allocations for nonpoint sources and are established to achieve water quality standards.

Suisun Bay and Carquinez Strait are listed as impaired waterbodies for chlordane, DDT, dieldrin, dioxin and furan compounds, mercury, PCBs, dioxin-like PCBs, selenium, and invasive species. 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 CA0038849 implements the mercury and PCBs TMDLs with respect to dischargers covered by this Order. On August 23, 2016, U.S. EPA approved a selenium TMDL for North San Francisco Bay, including Carquinez Strait. This Order implements the selenium TMDL as it applies to the Discharger. This Order contains dioxin-TEQ effluent limitations to ensure dioxins and furans in effluent are kept below water quality objectives. This Order does not contain chlordane, DDT, or dieldrin effluent limitations because they are not present in Facility discharges, as shown in Fact Sheet Table F-9 below. Facility discharges are not a source of invasive species because the California State Lands Commission sets conditions for approving ballast water disposal, as discussed in Fact Sheet section VI.C.4.g below.

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 limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations: 40 C.F.R. section 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 C.F.R. section 122.44(d) requires that permits include water quality-based effluent limitations to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of 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 limitations reflecting available information regarding the instantaneous dilution achieved at Discharge Point 001. Therefore, this prohibition is necessary to ensure that the assumptions used to derive the dilution credit remain appropriate and the resulting limitations remain protective of water quality.
- 3. Discharge Prohibition III.C (No bypass):** 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).
- 4. Discharge Prohibition III.D (No discharge of construction or development stormwater):** The provision clarifies that discharge of construction or development stormwater to Discharge Points 002 through 018 are beyond the scope of this Order.

B. Basin Plan Discharge Prohibitions

Basin Plan Table 4-1, Discharge Prohibition 1, prohibits discharges not receiving a minimum initial dilution of 10:1 and discharges into shallow waters or dead-end sloughs. Stormwater Discharge Points 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 Discharge Prohibition 1 applies to 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.

C. 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 limitations necessary to meet water quality standards. The CWA requires that technology-based effluent limitations be established based on several levels of controls:

- Best practicable treatment control technology (BPT) represents the average of the best performance by plants within an industrial category or subcategory. BPT standards apply to toxic, conventional, and non-conventional pollutants.
- Best available technology economically achievable (BAT) represents the best existing performance of treatment technologies that are economically achievable within an industrial point source category. BAT standards apply to toxic and non-conventional pollutants.
- Best conventional pollutant control technology (BCT) represents the control from existing industrial point sources of conventional pollutants including 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 limitations 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 limitations 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 limitations 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 and have been used to develop this Order's limitations and requirements (see Attachment F-1).

2. Discharge Point 001

The effluent limitations guidelines established in 40 C.F.R section 419, subpart B, require that technology-based effluent limitations for Discharge Point 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 limitations).

The table below lists the previous order's limitations and the most stringent of the newly calculated BPT, BAT, and BCT limitations. (NSPS limitations do not apply because the Facility was constructed prior to October 18, 1982.) To avoid backsliding, this Order retains all the technology-based effluent limitations from the previous order because they are more stringent than the newly calculated limitations. The Discharger can readily comply with the previous order's limitations (see Table F-2 and Fact Sheet section II.D).

Table F-7. Technology-Based Effluent Limitations

| Parameter | Newly Calculated Maximum Daily ^[1] | Newly Calculated Average Monthly ^[1] | Previous Maximum Daily ^[1] | Previous Average Monthly ^[1] |
|---------------------------|---|---|---------------------------------------|---|
| BOD ₅ | 3,700 | 2,100 | 3,400 | 1,900 |
| TSS | 2,600 | 1,700 | 2,400 | 1,500 |
| COD | 28,000 | 14,000 | 24,000 | 13,000 |
| Oil and Grease | 1,100 | 600 | 1,000 | 550 |
| Phenolic Compounds (4AAP) | 28 | 14 | 25 | 12 |
| Total Ammonia, as N | 2,500 | 1,100 | 2,000 | 1,000 |
| Sulfide | 24 | 11 | 21 | 10 |
| Total Chromium | 47 | 16 | 46 | 16 |
| Chromium (VI) | 3.0 | 1.3 | 2.9 | 1.3 |
| pH | [2] | [2] | [2] | [2] |

Footnotes:

^[1] Pounds per day

^[2] The pH limitations are instantaneous and range from 6.0 through 9.0.

Because ballast water (i.e., cargo hold wash water) and contaminated runoff commingled with process wastewater may also be discharged through Discharge Point 001, Tables 5 and 6 of the Order provide additional allocations that may be applied to the mass-based effluent limitations above and in Table 4 of the Order. The additional contaminated runoff allocations are based on 40 C.F.R. sections 419.22(e), 419.23(f), and 419.24(e). The additional ballast water allocations are based on 40 C.F.R. sections 419.22(c), 419.23(d), and 419.24(c). Attachment F-1 explains these allocations.

3. Discharge Points 002 through 018

The technology-based effluent limitations for the stormwater outfalls are based on 40 C.F.R. section 419, subpart B (see the derivation in Attachment F-1). However, the pH limitations in this 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.

D. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

This Order contains WQBELs that protect beneficial uses. CWA section 301(b) and 40 C.F.R. section 122.44(d) require that permits include limitations 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 limitations 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.

2. Beneficial Uses and Water Quality Criteria and Objectives

Fact Sheet section III.C.1, above, identifies the beneficial uses of each of the receiving waters. Water quality criteria and objectives to protect these beneficial uses are described below.

- a. **Basin Plan Objectives.** The Basin Plan specifies numerous water quality objectives, including numeric objectives for 10 priority pollutants and un-ionized ammonia, and narrative objectives for bioaccumulation and toxicity.
 - 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.a 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:

$$pK = 9.245 + 0.116*(I) + 0.0324*(298-T) + 0.0415*(P)/T$$

$$I = \text{molal ionic strength of saltwater} = 19.9273 \cdot (S) / (1000 - 1.005109 \cdot S)$$

S = salinity (parts per thousand)
 T = temperature in Kelvin
 P = pressure (one atmosphere)

The median and 90th 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 4.6 mg/L as nitrogen.

- ii. **Dioxin-TEQ.** The narrative bioaccumulation objective (Basin Plan § 3.3.2) 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 for 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 water quality-based effluent limitations for dioxin or dioxin-like compounds should be included in NPDES permits and should be expressed using a TEQ scheme” (Fed. Reg. Vol. 65, No. 97, pages 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 2005, and a set of bioaccumulation equivalency factors (BEFs) U.S. EPA developed for the Great Lakes region (40 C.F.R. § 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 2005 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 1.4×10^{-8} µg/L for the protection of human health when aquatic organisms are

consumed. This 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.

- iii. Chronic Toxicity.** The narrative toxicity objective (Basin Plan § 3.3.18) 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... 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. Attainment of this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, or toxicity tests..., or other methods selected by the Water Board.”

For this Order, this narrative objective is translated into a numeric criterion of 1.0 chronic toxicity unit (TU_c). At 1.0 TU_c, there is no observable detrimental effect when the indicator organism is exposed to 100 percent effluent; therefore, 1.0 TU_c is a direct translation of the narrative objective into a number. Moreover, in U.S. EPA’s *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001; see section 3.3.3, “Step 3: Decision Criteria for Permit Limit Development”), U.S. EPA recommends that 1.0 TU_c be used as a criterion continuous concentration (typically a four-day average). This document applies here as guidance because it directly addresses effluent characterization for toxicity.

- 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 because it is not a source of drinking water.
- 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.
- d. Bacteria Water Quality Objectives.** The *Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California – Part 3, Bacteria Provisions and a Water Quality Standards Variance Policy* establishes enterococci bacteria water quality objectives to limit cases of gastrointestinal illness from water contact recreation. The enterococci bacteria objectives apply to marine and estuarine waters.
- e. Sediment Quality Objectives.** The *Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1, Sediment Quality* contains the following narrative water quality objectives:
- i.** “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.

- ii. “Pollutants shall not be present in sediments at levels that will bioaccumulate in aquatic life to levels that are harmful to human health in bays and estuaries of California.” This objective is to be implemented by a three-tiered procedure based on pollutant concentrations in sediment and fish tissue.
 - iii. “Pollutants shall not be present in sediment at levels that alone or in combination are toxic to wildlife and resident finfish by direct exposure or bioaccumulate in aquatic life at levels that are harmful to wildlife or resident finfish by indirect exposure in bays and estuaries of California.” This objective is to be implemented on a case-by-case basis, based upon an ecological risk assessment.
- f. 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. For discharges to water with salinities in between these two categories, or tidally-influenced freshwaters that support estuarine beneficial uses, the water quality objectives are the lower of the salt or freshwater criteria (the latter calculated based on ambient hardness) for each substance. Suisun Bay and Carquinez Strait are estuarine environments based on salinity data generated through the 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 13 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.
- g. Receiving Water Hardness.** Ambient hardness data were used to derive freshwater water quality objectives that are hardness dependent. Receiving water monitoring for hardness were conducted at RMP station BF10 from February 1995 through August 2001. Hardness ranged from 46 to 1,920 mg/L as CaCO₃. The data were censored to eliminate hardness values greater than 400 mg/L and samples taken when salinity was greater than 1 ppt. The adjusted geometric mean of the data is a hardness of 88 mg/L as CaCO₃, which was used to calculate the water quality objectives of this Order.
- h. Site-Specific Metals Translators.** Effluent limitations for metals must be expressed as total recoverable metal (40 C.F.R. § 122.45[c]). Since the water quality objectives 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, total 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.

This Order incorporates site-specific translators for copper from Basin Plant Table 7.2.1-2 and site-specific translators for nickel from North Dumbarton Bridge Copper and Nickel Development and Selection of Final Translators (Clean Estuary Partnership, March 2005). CTR default translators were used for all other metals.

Table F-8. Site-Specific Translators

| Pollutant | Acute | Chronic |
|-----------|-------|---------|
| Copper | 0.66 | 0.38 |
| Nickel | 0.57 | 0.27 |

3. Need for WQBELs (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.

- a. Available Information.** The reasonable potential analysis for this Order is based on effluent monitoring data the Discharger collected from October 2015 through December 2018. For ambient background data, this reasonable potential analysis relies on RMP data collected at the Yerba Buena Island RMP 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 reports contain monitoring results from 2002 and 2003 for priority pollutants the RMP did not monitor at the time.

SIP section 1.4.3 requires that background water quality data be representative of the ambient receiving water that will mix with the discharge. For the priority pollutants, the Yerba Buena Island station (BC10), relative to other RMP stations, best fits SIP guidance for establishing background conditions at Discharge Point 001.

This Order does not contain WQBELs for constituents that do not demonstrate reasonable potential; however, the Monitoring and Reporting Program (MRP) still requires monitoring for those pollutants. If concentrations are found to have increased significantly, Provision VI.C.2 of this Order requires the Discharger to investigate the causes of the increases and implement remedial measures if the increases pose a threat to receiving water quality.

b. Discharge Point 001

i. Priority Pollutants, Dioxin-TEQ, and Ammonia

- (a) Methodology.** SIP section 1.3 sets forth the methodology used for this Order for assessing whether a priority pollutant has reasonable potential to exceed a water quality objective. SIP section 1.3 applies to priority pollutants and is used here for dioxin-TEQ 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:

(1) **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).

(2) **Trigger 2** is activated if the ambient background concentration observed in the receiving water is greater than the lowest applicable water quality objective ($B >$ water quality objective) *and* the pollutant is detected in any effluent sample.

(3) **Trigger 3** is activated if a review of other information indicates that a WQBEL is needed to protect beneficial uses

(b) **Analysis.** The MECs, 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. Basin Plan sections 7.2.1.2 and 4.7.2.2 require copper and cyanide WQBELs for all individual NPDES permits for municipal and industrial wastewater treatment facilities.

Table F-9. Reasonable Potential Analysis

| CTR No. | Pollutants | C or Governing Criterion or Objective (µg/L) | MEC or Minimum DL (µg/L) ^{[1][2]} | B or Minimum DL (µg/L) ^{[1][2]} | RPA Results ^[3] |
|-----------|--------------------------------|--|--|--|----------------------------|
| 1 | Antimony | 4,300 | 0.9 | 1.8 | No |
| 2 | Arsenic | 36 | 3.9 | 2.5 | No |
| 3 | Beryllium | No Criteria | <0.50 | 0.22 | U |
| 4 | Cadmium | 1.0 | <0.050 | 0.13 | No |
| 5a | Chromium (III) ^[4] | 190 | 3.0 | 4.4 | No |
| 5b | Chromium (VI) | 11 | 17 | 4.4 | Yes |
| 6 | Copper | 14 | 9.2 | 2.5 | Yes ^[5] |
| 7 | Lead | 2.7 | <0.03 | 0.80 | No |
| 8 | Mercury ^[6] | - | - | - | - |
| 9 | Nickel | 30 | 49 | 3.7 | Yes |
| 10 | Selenium ^[6] | - | - | - | - |
| 11 | Silver | 2.2 | <0.020 | 0.052 | No |
| 12 | Thallium | 6.3 | <0.050 | 0.023 | No |
| 13 | Zinc | 86 | 28 | 5.1 | No |
| 14 | Cyanide | 2.9 | 31 | 0.52 | Yes ^[5] |
| 15 | Asbestos ^[7] | — | — | — | — |
| 16 | 2,3,7,8-TCDD | 1.4E-08 | <2.6E-7 | 2.7E-08 | No |
| | Dioxin TEQ | 1.4E-08 | <4.1E-6 | 4.1E-08 | Yes ^[8] |
| 17 | Acrolein | 780 | <0.50 | <0.50 | No |
| 18 | Acrylonitrile | 0.66 | <1.8 | 0.030 | No |

| CTR No. | Pollutants | C or Governing Criterion or Objective (µg/L) | MEC or Minimum DL (µg/L) ^{[1][2]} | B or Minimum DL (µg/L) ^{[1][2]} | RPA Results ^[3] |
|---------|-----------------------------|--|--|--|----------------------------|
| 19 | Benzene | 71 | <0.18 | <0.050 | No |
| 20 | Bromoform | 360 | <0.15 | <0.15 | No |
| 21 | Carbon Tetrachloride | 4.4 | <0.16 | 0.060 | No |
| 22 | Chlorobenzene | 21,000 | <0.18 | <0.18 | No |
| 23 | Chlorodibromomethane | 34 | <0.17 | 0.050 | No |
| 24 | Chloroethane | No Criteria | <0.38 | <0.38 | U |
| 25 | 2-Chloroethylvinyl ether | No Criteria | <0.28 | <0.28 | U |
| 26 | Chloroform | No Criteria | 0.86 | <0.19 | U |
| 27 | Dichlorobromomethane | 46 | <0.16 | <0.050 | No |
| 28 | 1,1-Dichloroethane | No Criteria | <0.19 | <0.050 | U |
| 29 | 1,2-Dichloroethane | 99 | <0.18 | 0.040 | No |
| 30 | 1,1-Dichloroethylene | 3.2 | <0.21 | <0.21 | No |
| 31 | 1,2-Dichloropropane | 39 | <0.18 | <0.050 | No |
| 32 | 1,3-Dichloropropylene | 1,700 | <0.16 | <0.16 | No |
| 33 | Ethylbenzene | 29,000 | <0.26 | <0.26 | No |
| 34 | Methyl Bromide | 4,000 | <0.30 | <0.30 | No |
| 35 | Methyl Chloride | No Criteria | <0.30 | <0.30 | U |
| 36 | Methylene Chloride | 1,600 | <0.40 | 22 | No |
| 37 | 1,1,2,2-Tetrachloroethane | 11 | <0.20 | <0.050 | No |
| 38 | Tetrachloroethylene | 8.9 | <0.19 | <0.050 | No |
| 39 | Toluene | 200,000 | <0.19 | <0.19 | No |
| 40 | 1,2-Trans-Dichloroethylene | 140,000 | <0.22 | <0.22 | No |
| 41 | 1,1,1-Trichloroethane | No Criteria | <0.19 | <0.19 | U |
| 42 | 1,1,2-Trichloroethane | 42 | <0.16 | <0.050 | No |
| 43 | Trichloroethylene | 81 | <0.20 | <0.20 | No |
| 44 | Vinyl Chloride | 525 | <0.25 | <0.25 | No |
| 45 | 2-Chlorophenol | 400 | <0.40 | <0.70 | No |
| 46 | 2,4-Dichlorophenol | 790 | <0.40 | <0.90 | No |
| 47 | 2,4-Dimethylphenol | 2,300 | <0.40 | <0.80 | No |
| 48 | 2-Methyl- 4,6-Dinitrophenol | 765 | <0.30 | <0.60 | No |
| 49 | 2,4-Dinitrophenol | 14,000 | <0.20 | <0.70 | No |
| 50 | 2-Nitrophenol | No Criteria | <0.40 | <0.80 | U |
| 51 | 4-Nitrophenol | No Criteria | <0.50 | <0.50 | U |
| 52 | 3-Methyl 4-Chlorophenol | No Criteria | <0.50 | <0.80 | U |
| 53 | Pentachlorophenol | 7.9 | <0.40 | <0.60 | No |
| 54 | Phenol | 4,600,000 | <0.30 | <0.50 | No |
| 55 | 2,4,6-Trichlorophenol | 6.5 | <0.50 | <0.97 | No |
| 56 | Acenaphthene | 2,700 | <0.020 | 0.0020 | No |
| 57 | Acenaphthylene | No Criteria | <0.020 | 0.0010 | U |
| 58 | Anthracene | 110,000 | <0.050 | 0.00040 | No |
| 59 | Benzidine | 0.00054 | <4.0 | <0.00030 | No |
| 60 | Benzo(a)Anthracene | 0.049 | <0.020 | 0.0050 | No |
| 61 | Benzo(a)Pyrene | 0.049 | <0.020 | 0.0020 | No |
| 62 | Benzo(b)Fluoranthene | 0.049 | <0.020 | 0.0050 | No |

| CTR No. | Pollutants | C or Governing Criterion or Objective (µg/L) | MEC or Minimum DL (µg/L) ^{[1][2]} | B or Minimum DL (µg/L) ^{[1][2]} | RPA Results ^[3] |
|---------|-----------------------------|--|--|--|----------------------------|
| 63 | Benzo(ghi)Perylene | No Criteria | <0.020 | 0.0030 | U |
| 64 | Benzo(k)Fluoranthene | 0.049 | <0.010 | 0.0020 | No |
| 65 | Bis(2-Chloroethoxy)Methane | No Criteria | <0.50 | <0.30 | U |
| 66 | Bis(2-Chloroethyl)Ether | 1.4 | <0.40 | <0.30 | No |
| 67 | Bis(2-Chloroisopropyl)Ether | 170,000 | <0.40 | <0.60 | No |
| 68 | Bis(2-Ethylhexyl)Phthalate | 5.9 | <0.50 | <0.50 | No |
| 69 | 4-Bromophenyl Phenyl Ether | No Criteria | <0.50 | <0.23 | U |
| 70 | Butylbenzyl Phthalate | 5,200 | <0.50 | <0.50 | No |
| 71 | 2-Chloronaphthalene | 4,300 | <0.40 | <0.30 | No |
| 72 | 4-Chlorophenyl Phenyl Ether | No Criteria | <0.50 | <0.30 | U |
| 73 | Chrysene | 0.049 | <0.020 | 0.0020 | No |
| 74 | Dibenzo(a,h)Anthracene | 0.049 | <0.020 | 0.0010 | No |
| 75 | 1,2-Dichlorobenzene | 17,000 | <0.27 | <0.27 | No |
| 76 | 1,3-Dichlorobenzene | 2,600 | <0.18 | <0.18 | No |
| 77 | 1,4-Dichlorobenzene | 2,600 | <0.18 | <0.18 | No |
| 78 | 3,3 Dichlorobenzidine | 0.077 | <5.0 | <0.00020 | No |
| 79 | Diethyl Phthalate | 120,000 | <0.50 | <0.20 | No |
| 80 | Dimethyl Phthalate | 2,900,000 | <0.50 | <0.20 | No |
| 81 | Di-n-Butyl Phthalate | 12,000 | <0.40 | <0.50 | No |
| 82 | 2,4-Dinitrotoluene | 9.1 | <0.40 | <0.27 | No |
| 83 | 2,6-Dinitrotoluene | No Criteria | <0.40 | <0.29 | U |
| 84 | Di-n-Octyl Phthalate | No Criteria | <0.40 | <0.38 | U |
| 85 | 1,2-Diphenylhydrazine | 0.54 | <0.50 | 0.0040 | No |
| 86 | Fluoranthene | 370 | <0.20 | 0.011 | No |
| 87 | Fluorene | 14,000 | <0.050 | 0.0020 | No |
| 88 | Hexachlorobenzene | 0.00077 | <0.40 | 0.000020 | No |
| 89 | Hexachlorobutadiene | 50 | <0.40 | <0.30 | No |
| 90 | Hexachlorocyclopentadiene | 17,000 | <0.30 | <0.30 | No |
| 91 | Hexachloroethane | 8.9 | <0.40 | <0.20 | No |
| 92 | Indeno(1,2,3-cd)Pyrene | 0.049 | <0.020 | 0.0040 | No |
| 93 | Isophorone | 600 | <0.50 | <0.30 | No |
| 94 | Naphthalene | No Criteria | <0.020 | 0.0090 | U |
| 95 | Nitrobenzene | 1,900 | <0.50 | <0.25 | No |
| 96 | N-Nitrosodimethylamine | 8.1 | <0.30 | <0.30 | No |
| 97 | N-Nitrosodi-n-Propylamine | 1.4 | <0.50 | <0.00020 | No |
| 98 | N-Nitrosodiphenylamine | 16 | <0.30 | <0.0010 | No |
| 99 | Phenanthrene | No Criteria | <0.020 | 0.0060 | U |
| 100 | Pyrene | 11,000 | <0.020 | 0.019 | No |
| 101 | 1,2,4-Trichlorobenzene | No Criteria | <0.40 | <0.30 | U |
| 102 | Aldrin | 0.00014 | <0.0020 | <0.000085 | No |
| 103 | Alpha-BHC | 0.013 | <0.0030 | 0.00050 | No |
| 104 | Beta-BHC | 0.046 | <0.0030 | 0.00040 | No |
| 105 | Gamma-BHC | 0.063 | <0.0030 | 0.0010 | No |
| 106 | Delta-BHC | No Criteria | <0.0030 | 0.00010 | U |

| CTR No. | Pollutants | C or Governing Criterion or Objective (µg/L) | MEC or Minimum DL (µg/L) ^{[1][2]} | B or Minimum DL (µg/L) ^{[1][2]} | RPA Results ^[3] |
|---------|----------------------------------|--|--|--|----------------------------|
| 107 | Chlordane | 0.00059 | <0.020 | 0.000140 | No |
| 108 | 4,4'-DDT | 0.00059 | <0.0030 | 0.00020 | No |
| 109 | 4,4'-DDE | 0.00059 | <0.0030 | 0.0010 | No |
| 110 | 4,4'-DDD | 0.00084 | <0.0040 | 0.00030 | No |
| 111 | Dieldrin | 0.00014 | <0.0040 | 0.00030 | No |
| 112 | Alpha-Endosulfan | 0.0087 | <0.0030 | 0.00010 | No |
| 113 | beta-Endosulfan | 0.0087 | <0.0030 | 0.00010 | No |
| 114 | Endosulfan Sulfate | 240 | <0.0050 | 0.00010 | No |
| 115 | Endrin | 0.0023 | <0.0050 | 0.000040 | No |
| 116 | Endrin Aldehyde | 0.81 | <0.0040 | <0.0050 | No |
| 117 | Heptachlor | 0.00021 | <0.0030 | 0.000020 | No |
| 118 | Heptachlor Epoxide | 0.00011 | <0.0030 | 0.00010 | No |
| 119-125 | PCBs sum ^[6] | - | - | - | - |
| 126 | Toxaphene | 0.0002 | <0.30 | <0.00000082 | No |
| | Total Ammonia (mg/L as N) | 1.4 | 4.1 | 0.20 | Yes |

Unit Abbreviations:

B = background concentration
C = water quality criterion or objective
DL = detection level
MEC = maximum effluent concentration
RPA = reasonable potential analysis
DNQ = detected, but not quantified
µg/L = micrograms per liter
mg/L = milligrams per liter

Footnotes:

- [1] The MEC and ambient background concentration are the actual detected concentrations unless preceded by a "<" sign, in which case the value shown is the minimum detection level (DL).
- [2] The MEC or ambient background concentration is "Unavailable" when there are no monitoring data for the constituent.
- [3] 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
= Unknown (U) if no criteria have been promulgated or data are insufficient.
- [4] The maximum effluent and ambient background concentrations are the total chromium concentration. The chromium (III) concentration is unknown but less than these values.
- [5] Reasonable potential is based in part on Basin Plan sections 7.2.1.2 and 4.7.2.2.
- [6] 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 by NPDES Permit CA0038849, which implements the San Francisco Bay Mercury and PCBs TMDLs. A TMDL has also been developed for selenium in North San Francisco Bay, which includes Suisun Bay. This Order implements the North San Francisco Bay Selenium TMDL by establishing mass-based selenium limitations.
- [7] Asbestos sampling is only required for discharges to waters with the municipal or domestic supply (MUN) beneficial use.
- [8] Reasonable potential is based on Trigger 3 because San Francisco Bay is 303(d)-listed for dioxin-TEQ and elevated levels of dioxin-TEQ are found in San Francisco Bay fish tissue.

ii. Acute and Chronic Toxicity. Due to the complexity of the discharge, there is reasonable potential for it to cause or contribute to exceedance of the narrative toxicity objectives in Basin Plan section 3.3.18, which states, "There shall be no acute toxicity objectives in ambient waters...."and "There shall be no chronic toxicity in ambient waters." Refinery discharges 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 WQBELs are needed to ensure that the toxicity objective is in Suisun Bay. In addition, Basin Plan Table 4-3 requires acute toxicity effluent limitations.

iii. Sediment Quality. Pollutants in some receiving water sediments may be present in quantities that alone or in combination are toxic to benthic communities. 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 routinely monitors San Francisco Bay sediment and seeks to identify stressors responsible for degraded sediment quality.

c. Discharge Points 002 through 018. Discharge Points 002 through 018 discharge stormwater from process, non-process, and storage tank secondary containment areas. Stormwater discharged from these areas has a reasonable potential to cause or contribute to an exceedance of the narrative water quality objectives for color (Basin Plan § 3.3.4), oil and grease (Basin Plan § 3.3.7), and pH (Basin Plan § 3.3.9) because it could come in contact with process waste. To ensure that stormwater discharged at these discharge points will not be contaminated with process waste, this Order includes effluent limitations for oil and grease and total organic carbon, as required by 40 C.F.R. section 419, subpart B (see Attachment F-1). This Order also includes effluent limitations for pH and visible oil and color.

4. Water Quality-Based Effluent Limitations (WQBELs)

WQBELs were developed for the pollutants determined to have reasonable potential to cause or contribute to exceedances of water quality objectives.

a. Discharge Point 001

- i. WQBEL Expression.** NPDES regulations at 40 C.F.R section 122.44(d) require that permit limitations for industrial dischargers be expressed as maximum daily and average monthly limitations, unless impracticable.
- ii. Dilution Credits.** SIP section 1.4.3 allows dilution credits under certain circumstances. The Discharger replaced the effluent pipeline and outfall (Discharge Point 001) with one of similar design in the same location in October 2020. The outfall 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 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 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) **Bioaccumulative Pollutants.** For certain bioaccumulative pollutants, dilution credit is 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 San Francisco Bay beneficial uses. The following factors suggest insufficient assimilative capacity in San Francisco 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 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.
- (b) **Ammonia.** For ammonia, a conservative estimate of actual initial dilution of 17:1 (D=16) was used to calculate the effluent limitations. This is justified because ammonia, a non-persistent pollutant, quickly disperses and degrades to a non-toxic state, and cumulative toxicity is unlikely.
- (c) **Other Non-Bioaccumulative Pollutants.** This Order grants a conservative dilution credit of 10:1 (D=9) for other non-bioaccumulative pollutants (excluding ammonia), including chronic toxicity. 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 freshwater outflows. Being heavier and colder than freshwater, ocean saltwater enters San Francisco Bay on a twice-daily tidal cycle, generally beneath the warmer freshwater 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.

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

Table F-10. WQBEL Calculations

| Pollutant | Chromium (VI) | Copper | Nickel | Cyanide | Dioxin TEQ | Total Ammonia (acute) | Total Ammonia (chronic) |
|--|-------------------------|------------------------------------|------------------------------------|------------------------------------|------------------|-------------------------|-------------------------|
| Units | µg/L | µg/L | µg/L | µg/L | µg/L | mg/L | mg/L |
| Basis and Criteria type | CTR Freshwater Criteria | Basin Plan Site-Specific Objective | Basin Plan Site-Specific Objective | Basin Plan Site-Specific Objective | CTR Human Health | Basin Plan Aquatic Life | Basin Plan Narrative |
| Criteria -Acute | 16 | — | — | — | — | 4.6 | — |
| Criteria - Chronic | 11 | — | — | — | — | — | 1.4 |
| Site-Specific Objective Criteria - Acute | — | 9.4 | 74 | 9.4 | — | — | — |
| Site-Specific Objective Criteria - Chronic | — | 6.0 | 8.2 | 2.9 | — | — | — |
| Water Effects Ratio (WER) | 1 | 2.4 | 1 | 1 | 1.0 | 1 | 1 |
| Lowest WQO | 11 | 6.0 | 8.2 | 2.9 | 1.4E-08 | 4.6 | 1.4 |
| Site Specific Translator - MDEL | — | 0.66 | 0.57 | — | — | — | — |
| Site Specific Translator - AMEL | — | 0.38 | 0.27 | — | — | — | — |
| Dilution Factor (D) | 9 | 9 | 9 | 9 | 0 | 16 | 16 |
| No. of samples per month | 4 | 4 | 4 | 4 | 4 | 4 | 30 |

| Pollutant | Chromium (VI) | Copper | Nickel | Cyanide | Dioxin TEQ | Total Ammonia (acute) | Total Ammonia (chronic) |
|---|---------------|--------|---------|---------|------------|-----------------------|-------------------------|
| Aquatic life criteria analysis required? (Y/N) | Y | Y | Y | Y | N | Y | Y |
| HH criteria analysis required? (Y/N) | N | N | Y | Y | Y | N | N |
| | | | | | | | |
| Applicable Acute WQO | 16 | 14 | 130 | 9.4 | — | 4.6 | — |
| Applicable Chronic WQO | 11 | 16 | 30 | 2.9 | — | — | 1.4 |
| HH Criteria | — | — | 4.6E+03 | 2.2E+05 | 1.4E-08 | — | — |
| Background (Maximum Conc. for Aquatic Life Calc.) | 4.4 | 2.5 | 3.7 | 0.52 | — | 2.7 | 7.5E-02 |
| Background (Average Conc. for Human Health Calc.) | — | — | 2.7 | 0.39 | 4.1E-08 | — | — |
| Is the pollutant on the 303d list and/or bioaccumulative (Y/N)? | N | N | N | N | Y | N | N |
| | | | | | | | |
| ECA Acute | 123 | 120 | 1.3E+02 | 89 | — | 35 | — |
| ECA Chronic | 75 | 135 | 270 | 24 | — | — | 22 |
| ECA HH | — | — | 4.6E+04 | 2.2E+06 | 1.4E-08 | — | — |
| | | | | | | | |
| No. of data points <10 or at least 80% of data reported non-detect? (Y/N) | Y | N | N | N | Y | N | N |
| Avg of effluent data points | 1.1 | 4.0 | 23 | 7.3 | — | 0.49 | 0.49 |
| Std Dev of effluent data points | 2.0 | 1.9 | 12 | 5.7 | — | 0.51 | 0.51 |
| CV Calculated | — | 0.48 | 0.51 | 0.8 | — | 1.0 | 1.0 |
| CV (Selected) - Final | 0.6 | 0.48 | 0.51 | 0.8 | 0.6 | 1.0 | 1.0 |
| | | | | | | | |
| ECA Acute Mult99 | 0.32 | 0.38 | 0.37 | 0.25 | — | 0.20 | — |

| Pollutant | Chromium (VI) | Copper | Nickel | Cyanide | Dioxin TEQ | Total Ammonia (acute) | Total Ammonia (chronic) |
|------------------------------------|-------------------------|-------------------------|------------|-------------------------|----------------|--------------------------|--------------------------|
| ECA Chronic Mult99 | 0.53 | 0.59 | 0.57 | 0.44 | — | — | 0.88 |
| LTA Acute | 40 | 46 | 463 | 23 | — | 7.0 | — |
| LTA Chronic | 39 | 80 | 155 | 11 | — | — | 20 |
| Minimum of LTAs | 39 | 46 | 155 | 11 | — | 7.0 | 20 |
| | | | | | | | |
| AMEL Mult95 | 1.6 | 1.4 | 1.5 | 1.7 | 1.6 | 2.0 | 1.3 |
| MDEL Mult99 | 3.1 | 2.6 | 2.7 | 4.0 | 3.1 | 5.1 | 5.1 |
| AMEL (Aquatic Life) | 61 | 66 | 230 | 19 | — | 14 | 26 |
| MDEL (Aquatic Life) | 120 | 120 | 430 | 43 | — | 35 | 100 |
| | | | | | | | |
| MDEL/AMEL Multiplier | 2.0 | 1.81 | 1.9 | 2.3 | 2.0 | 2.6 | 3.8 |
| AMEL (Human Health) | — | — | 4.6E+4 | 2.2E+06 | 1.4E-08 | — | — |
| MDEL (Human Health) | — | — | 8.6E+4 | 5.0E+06 | 2.8E-08 | — | — |
| | | | | | | | |
| Minimum of AMEL for Aq. Life vs HH | 61 | 66 | 230 | 19 | 1.4E-08 | 14 | 26 |
| Minimum of MDEL for Aq. Life vs HH | 123 | 120 | 430 | 43 | 2.8E-08 | 35 | 100 |
| | | | | | | | |
| Previous Order Limit - AMEL | 36 | 58 | — | 19 | 1.4E-08 | 5.7 | 5.7 |
| Previous Order Limit - MDEL | 72 | 120 | — | 42 | 2.8E-08 | 20 | 20 |
| | | | | | | | |
| Final Limit - AMEL | 36^[1] | 58^[1] | 230 | 19 | 1.4E-08 | 5.7^[1] | 5.7^[1] |
| Final Limit - MDEL | 72^[1] | 120 | 430 | 42^[1] | 2.8E-08 | 20^[1] | 20^[1] |

Footnote:

- ^[1] Consistent with anti-backsliding provisions, this Order retains previous order effluent limitations more stringent than the newly calculated effluent limitations.

- iv. Selenium Mass Emission Limitation.** A TMDL for selenium has been adopted for North San Francisco Bay, including a portion of the Sacramento/San Joaquin Delta, Suisun Bay, Carquinez Strait, San Pablo Bay, and Central San Francisco Bay. The TMDL establishes a wasteload allocation of 63 kilograms per year for the Discharger. Basin Plan section 7.2.4.5 allows the Discharger to discharge no more than its current load based on its selenium concentration and discharge volumes as reported from 2000 through 2012. Specifically, it says selenium WQBELs are to be calculated as

the 95th percentile daily load based on representative data reporting during 2000 through 2012 and are to be expressed in units of kilograms per day (kg/day). The 95th percentile daily load for this period was 0.34 kg/day. Therefore, this Order establishes a performance-based average monthly mass emission limit of 0.34 kg/day.

- v. **Acute Toxicity.** This Order includes acute toxicity effluent limitations based on Basin Plan Table 4-3. 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 limitations in this Order, then such toxicity does not constitute a violation of the effluent limitations for whole effluent acute toxicity.
 - vi. **Chronic Toxicity.** This Order includes a chronic toxicity limit based on Basin Plan section 4.5.5.3.2. The single-sample WQBEL of 10 TUC is based on the chronic toxicity criterion of 1.0 TUC and a dilution ratio of 10:1 (D=9). The test species specified in the MRP is red abalone (*Haliotis rufescens*), which was the most sensitive species identified in the Discharger's November 13, 2019, final chronic toxicity screening report.
- b. **Discharge Points 002 through 018.** For stormwater discharged from Discharge Points 002 through 018, this Order retains from the previous order the narrative WQBELs of no visible oil or color. For stormwater discharged from Discharge Points 002 through 018, this Order also imposes pH WQBELs based on Basin Plan section 3.3.9 because they are more stringent than the technology-based pH effluent limitations required by 40 C.F.R. section 419, subpart B.

E. Discharge Requirement 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 limitations 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, with two exceptions. This Order does not retain the previous order's bis(2-ethylhexyl) phthalate WQBELs because effluent data no longer indicate reasonable potential for bis(2-ethylhexyl) phthalate to exceed water quality objectives at Discharge Point 001. Elimination of these limitations is consistent with State Water Board Order WQ 2001-16. This Order includes less stringent effluent limit allocations for contaminated runoff and ballast water at Discharge Point 001 that were inadvertently excluded from the previous order. The addition of these allocations corrects a technical mistake.

Clean Water Act section 402(o) permits backsliding from water quality-based effluent limitations, provided such backsliding complies with Clean Water Act section 303(d)(4), which allows backsliding in impaired waters when the revised effluent limitation is based on a total maximum daily load (TMDL) and will ensure attainment of the water quality standard. Here, the previous order contained concentration-based selenium effluent limitations calculated according to SIP procedures and a mass-based effluent limitation based on a running average. It also stated that the Regional Water Board would amend the selenium effluent limitations to be consistent with TMDL wasteload allocations when a selenium TMDL was established. The North San Francisco Bay Selenium TMDL (Basin Plan § 7.2.4)

adopted on November 18, 2015, established a wasteload allocation for the Valero Refining Company at current loads. This Order implements the wasteload allocation and contains a mass-based selenium effluent limitation. Compliance with the revised selenium effluent limitation is consistent with the TMDL wasteload allocation and will help to ensure compliance with the water quality standard for selenium. Accordingly, the revised effluent limitation meets the exception to backsliding.

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 does not authorize lowering water quality as compared 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 an increased flow, a reduced level of treatment, or increased effluent limitations relative to the previous order. Although this Order includes less stringent effluent limitations for contaminated stormwater runoff and ballast water, water quality will not be adversely affected because treatment performance is expected to remain unchanged. The new selenium limitations, derived from the North San Francisco Basin Selenium TMDL (Basin Plan § 7.2.4), reflect the Facility's current loading and accordingly are designed to maintain existing water quality.
3. **Stringency of Requirements for Individual Pollutants.** This Order contains both technology-based and WQBELs for individual pollutants. The technology-based requirements implement minimum, applicable federal technology-based requirements. In addition, this Order contains more stringent effluent limitations 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 have been derived to 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 limitations in sections V.A and V.B of this Order are based on Basin Plan narrative and numeric water quality objectives. The receiving water limitation 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 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 the 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.

Attachment S contains stormwater provisions consistent with the State Water Board's General Permit for Stormwater Discharges Associated with Industrial Activities (NPDES CAS000001) (Industrial General Permit), including requirements for the Discharger to prepare a Stormwater Pollution Prevention Plan, to evaluate best management practices performance using stormwater action levels (stormwater action levels are not effluent limitations), and to submit an annual stormwater report. These requirements are necessary to minimize pollutant loads in stormwater discharges originating from secondary containment areas, process and non-process areas, and stormwater ponds at the Facility.

B. Monitoring and Reporting

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 MRP 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 limitations 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 limitations for priority pollutants that do not demonstrate reasonable potential, but this provision requires the Discharger to evaluate monitoring data to verify that the reasonable potential analysis conclusions of this Order remain valid. This requirement is authorized pursuant to 40 C.F.R. section 122.41(h) and Water Code section 13383 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. Demonstration of Compliance with Minimum-Required Dilution.** This provision provides added assurance that WQBELs for ammonia are protective even when discharge flows are higher than modeled, and allows the Discharger to repair or replace its existing outfall, diffuser, or both during the term of this Order so long as the new outfall achieves an equivalent or better level of dilution. 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.
- c. Maximize Treatment During Wet Weather.** In August 2016, the Discharger submitted its Treatment Capacity Report identifying opportunities to maximize treatment capacity utilization and minimize bypasses during wet weather, including discharging stormwater from the Crude Field Retention Ponds directly to Discharge Point 001, thereby increasing rapid recovery of storage capacity during wet weather. This report must be updated to reflect the implementation of the Discharger's request to discharge stormwater directly to Discharge Point 006, as approved in this Order, and identify any other pertinent opportunities to maximize treatment.

This Provision is authorized pursuant to Water Code section 13383 and is necessary to ensure that feasible steps to maximize treatment and minimize stormwater bypasses during wet weather are taken in a timely manner. According to Attachment D, section I.G.3, which is based on 40 C.F.R. section 122.41(m)(4)(i)(B), the Regional Water Board may take enforcement action against the Discharger for a prohibited bypass unless certain conditions are met, including that there be no feasible alternatives to the bypass.

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. This Order requires the Discharger to implement pretreatment, source control and pollution prevention for identified sources. Additional actions may be necessary depending on the three-year rolling mean copper concentration in Suisun Bay. Data the San Francisco Estuary Institute compiled for 2011-2015 indicate no degradation of San Francisco Bay water quality with respect to copper (sfei.org/pages/copper-site-specific-objective-3-year-rolling-averages-0).
- 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 limitations are based on the site-specific objectives.

c. Stormwater Requirements

i. Stormwater Management

(a) Secondary Containment Areas. Provision VI.C.4.c.i.(a) is included to prevent discharge of pollutants exceeding effluent limitations in stormwater discharged from the Intermediate and Upper Level Tank Farms, Lower Level Tank Farm, and Crude Oil Storage Area secondary containment areas (Discharge Points 003, 006, 009, 010, and 018). This provision is based on 40 C.F.R. section 122.44(i) and Water Code section 13383.

(b) Refinery Crude Pipeline Area. Provision VI.C.4.c.i.(b) is included to prevent discharge of pollutants exceeding effluent limitations in stormwater discharged from the Refinery Crude Pipeline Area (Discharge Points 011 through 015). This provision is based on 40 C.F.R. section 122.44(i) and Water Code section 13383.

(c) Process Area Diverted Stormwater. Provision VI.C.4.c.ii is included to prevent discharge of pollutants exceeding effluent limitations in stormwater diverted to the Stormwater Retention Ponds and Crude Field Retention Ponds, then discharged through Discharge Point 001 or 006. This provision is based on 40 C.F.R. section 122.44(i) and Water Code section 13383.

ii. 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 *NPDES General Permit for Storm Water Discharges Associated with Industrial Activities* (State Water Board Order 2014-0057-DWQ). These narrative requirements include implementation of best management practices, reporting of monitoring results, and discussion of permit compliance.

d. Conditions for Recycled Water Use Adjustments. 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. It protects beneficial uses by requiring the Discharger to ensure that recycled water use adjustments, if any are applied, will not cause effluent toxicity.

e. Treated Wastewater Recycling. This provision allows the Discharger to recycle its final effluent for landscape irrigation and use in its firewater system. This reuse is approved provided no irrigation water runs off the Facility and all water in the firewater system is captured and re-treated at the plant.

f. Acceptance of Ballast Water. This provision is necessary to ensure that ballast water discharges are not a pathway for invasive species to reach San Francisco Bay. It is consistent with California Code of Regulations, title 2, section 2284(a)(4), which requires approval by the California State Lands Commission to discharge ballast water to a facility. Such approval requires a treatment process adequate to ensure that the discharge of treated ballast water does not release invasive species.

- g. Average Annual Selenium Load.** This provision is based on Basin Plan section 7.2.4.5. The information will be used to confirm whether selenium loads are consistent with wasteload allocations and whether performance-based effluent limits established in this Order should be adjusted.

VII. RATIONALE FOR MONITORING AND REPORTING PROGRAM (MRP)

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) of this Order establishes monitoring, reporting, and recordkeeping requirements that implement State and federal requirements. The following provides the rationale for the MRP requirements:

A. Monitoring and Reporting Program Requirements Rationale

1. Effluent Monitoring

- a. Monitoring Location EFF-001.** Monitoring at Monitoring Location EFF-001 is necessary to evaluate compliance with this Order's discharge prohibitions and effluent limitations for Discharge Point 001.
- b. Monitoring Locations EFF-002 through EFF-018.** Monitoring is necessary at Monitoring Locations EFF-002 through EFF-0018 to evaluate compliance with this Order's discharge prohibitions and effluent limitations, and 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 limitations on visible oil and color.

The Discharger may use data collected at Monitoring Location EFF-010 to represent Discharge Points 009 and 010 because the two stormwater discharges are expected to have similar characteristics, and the flow from Discharge Point 009 is relatively small. Low flows at Discharge Points 002 and 008 may preclude collection of some samples as required by the relevant analytical methods (e.g., oil and grease); therefore, monitoring is not required at Monitoring Locations EFF-002 and EFF-008 if flow at those locations is insufficient for sampling. Monitoring is required for all parameters for which a sample can be obtained in accordance with the relevant analytical method.

- 2. Toxicity Testing.** Acute and chronic toxicity tests are necessary to evaluate compliance with the acute and chronic toxicity effluent limitations. Chronic toxicity tests are also necessary to evaluate whether chronic toxicity triggers the need for a Toxicity Reduction Evaluation.

The Discharger conducted a chronic toxicity screening phase study for this permit reissuance, submitted in November 2019. Red abalone (*Haliotis rufescens*) was found to be the most sensitive species. The MRP specifies that the red abalone is to be used for chronic toxicity testing unless a more sensitive species is identified.

3. Receiving Water Monitoring. The Discharger is required to continue participating in the Regional Monitoring Program, which involves collecting data on pollutants and toxicity in San Francisco Bay water, sediment, and biota. Additionally, standard observations of Sulphur Springs Creek, Buffalo Wallow, and Beaver Creek are necessary to ensure that the receiving water limitations in Provision V are met.

4. Other Monitoring Requirements. Pursuant to CWA section 308, U.S. EPA requires dischargers to participate in a Discharge Monitoring Report-Quality Assurance (DMR-QA) Study Program. The program annually evaluates the analytical abilities of laboratories that perform or support NPDES permit-required monitoring. The program applies to discharger laboratories and contract laboratories. There are two options to comply: (1) dischargers can obtain and analyze DMR-QA samples, or (2) pursuant to a waiver U.S. EPA issued to the State Water Board, dischargers can submit results from the most recent Water Pollution Performance Evaluation Study. Dischargers must submit results annually to the State Water Board, which then forwards the results to U.S. EPA.

B. Monitoring Requirements Summary. The table below summarizes routine monitoring requirements. The Discharger shall support the Regional Monitoring Program to collect data for receiving water. 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 ^[1] | Influent INF-001 ^[1] | Influent INF-002 ^[1] | 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 ₅ | 1/Month | 1/Year | 1/Month | 1/Day during storm ^[2] | — | — |
| COD | 1/Month | 1/Year | 1/Month | 1/Day during storm ^[2] | — | — |
| Oil and Grease | 1/Week | 1/Year | 1/Week | 1/Quarter ^[3] | — | — |
| Phenolic Compounds (4AAP) | 1/Month | 1/Year | 1/Month | 1/Day during storm ^[2] | — | — |
| Sulfide | 1/Month | 1/Year | 1/Month | — | — | — |
| TOC | — | — | — | 1/Quarter ^[3,4] | — | Support RMP |
| TSS | 1/Week | 1/Year | 1/Week | 1/Quarter ^[2,4] | — | — |
| Total Ammonia, as N | 1/Month | 1/Year | 1/Month | — | — | Support RMP |
| Total Chromium | 1/Month | 1/Year | 1/Month | 1/Day during storm ^[2] | — | Support RMP |
| Chromium (VI) | 1/Month | 1/Year | 1/Month | 1/Day during storm ^[2] | — | — |
| Nickel, Total Recoverable | 1/Month | 1/Year | 1/Month | — | — | Support RMP |
| Acute Toxicity | — | — | 1/Week | — | — | — |

| Parameter ^[1] | Influent INF-001 ^[1] | Influent INF-002 ^[1] | Effluent EFF-001 | Stormwater EFF-002 through EFF-018 | Receiving Waters RSW-001 through RSW-003 | Receiving Waters Suisun Bay and Carquinez Strait |
|---------------------------|------------------------------------|------------------------------------|---------------------|---|--|---|
| 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 |
| Priority Pollutants | — | — | 2/Year | — | — | Support RMP |
| Selenium | 1/Week | 1/Year | 1/Week | — | — | Support RMP |
| pH | — | — | Continuous /D | 1/Quarter ^[3,4] | — | Support RMP |
| Visible oil and color | — | — | — | [4] | — | — |
| Standard Observations | — | — | 1/Day | 1/Day during storm | 1/Month and once per storm | — |

Footnotes:

- [1] Sampling at INF-001 and INF-002 is required when the Discharger is using recycled water in place of raw water and for those constituents for which the Discharger wants to receive recycled water use credits.
- [2] Monitoring to determine compliance with Table 8 of this Order is required at a particular monitoring location if the TOC or oil and grease exceeds the effluent limit in Table 7 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).
- [3] 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 7 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).
- [4] 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 Points 003, 006, 009, 010, or 018, the Discharger must 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 must 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. The public had access to the agenda and any changes in dates and locations through the Regional Water Board's website at 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 to be submitted either in person, by e-mail, or by mail to the to the attention of Marcos De la Cruz.

Written comments were due at the Regional Water Board office by 5:00 p.m. on November 9, 2020.

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

Date: December 16, 2020

Time: 9:00 a.m.

Contact: Marcos De la Cruz, (510) 622-2365, marcos.delacruz@waterboards.ca.gov

Interested persons were provided notice of the hearing and information on how to participate. During the public hearing, the Regional Water Board heard testimony pertinent to the discharge and Order.

Dates and venues change. The Regional Water Board web address is waterboards.ca.gov/sanfranciscobay, where one can access the current agenda for changes.

- 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 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 8:00 a.m. and 5:00 p.m. (except noon to 1:00 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 Marcos De la Cruz, (510) 622-2365, marcos.delacruz@waterboards.ca.gov.

ATTACHMENT F-1

Derivation of Technology-Based Effluent Limitations 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 Source Category* (2006)
2. *Development Document for Effluent Limitation 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 CA0005550 (December 13, 2019)
5. Refinery Production Data, October 2015-December 2018, from *Application for Renewal, NPDES Permit CA0005550*. Attachment 2C-IIIC – Basis for Reporting Production Rates

Definitions

Process Wastewater 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)]

Ballast means the flow of waters, from a ship, that is treated along with refinery wastewaters in the main treatment system. [40 C.F.R. § 419.11(c)]

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

Background

According to the Effluent Limitation Guidelines (ELGs) for the Cracking Subcategory of the Petroleum Refining Point Source Category at 40 C.F.R. part 419, subpart B, technology-based effluent limitations are to be based in part on a discharger's production rate. The Discharger's current production rate is 147,600 barrels per day (bbls/d) (the highest annual average production rate from 2015 through 2018). The ELGs also take into account a discharger's specific refinery processes and configuration as explained below.

Process Wastewaters. The ELGs include limitations 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). The most stringent of the BPT, BAT, and

BCT limits apply. New Source Performance Standard limitations do not apply because the Facility was constructed prior to October 18, 1982.

The ELGs call for many limits to be calculated based on size factors and process factors. For the process wastewaters discharged at Discharge Point 001, the size factor and process factor are determined as follows:

Size Factor. Pursuant to 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, the size factor for a crude production rate of 147,600 bbls/d is 1.35.

Process Factor. The process factor is derived from the total process configuration. To calculate the total process configuration, the process feedstock rate for each crude, cracking and coking, lube, and asphalt process¹ is divided by the overall production rate (147,600 bbls/d). The resulting ratios (process feedstock divided by overall production) are then added together, and the result is multiplied by a weight factor specific to each process. Derivation of the Facility's total process configuration is shown in the following table. The Discharger does not have a lube process, so it is not shown.

Table F-1A. Process Configurations for Discharge Point 001

| Process | Process Feedstock Rate ^[1] | Production Rate ^[1] | Process Feedstock / Production Ratio | Weighting Factor | Process Configuration |
|---|---------------------------------------|--------------------------------|--------------------------------------|------------------|-----------------------|
| Crude | — | — | — | — | — |
| Atmospheric Distillation | 147,500 | 147,600 | 1.00 | — | — |
| Vacuum Crude Distillation | 73,500 | 147,600 | 0.50 | — | — |
| Desalting | 147,600 | 147,600 | 1.00 | — | — |
| Crude Total | 368,600 | — | 2.50 | 1 | 2.50 |
| Cracking | — | — | — | — | — |
| Fluid Catalytic Cracking | 68,300 | 147,600 | 0.46 | — | — |
| Fluid Coking | 29,900 | 147,600 | 0.20 | — | — |
| Hydrocracking | 30,400 | 147,600 | 0.21 | — | — |
| Hydrotreating | 174,800 | 147,600 | 1.18 | — | — |
| Cracking Total | 303,400 | — | 2.06 | 6 | 12.33 |
| Asphalt | 16,300 | 147,600 | 0.11 | 12 | 1.33 |
| Total Refinery Process Configuration | — | — | — | — | 16.16 |

Footnote:

^[1] barrels per day (bbls/d)

Pursuant to the ELGs at 40 C.F.R. section 419.22(b)(2) for BPT, 40 C.F.R. section 419.232(b)(2) for BAT, and 40 C.F.R. section 419.22(b)(2) for BCT, the process factor for a total process configuration of 16.16 is 1.89.

¹ The specific process groups are listed in the *Guide for the Application of Effluent Limitations Guidelines for the Petroleum Refining Industry* (page 19).

Contaminated Runoff. The ELGs include limits for contaminated runoff based on BPT, BAT, and BCT. These limits apply to all stormwater discharges, except stormwater treated and discharged with process wastewaters through Discharge Point 001. The ELGs at 40 C.F.R. section 419.22(e)(2) and 419.23(f)(2) establish limits for oil and grease and total organic carbon (TOC). They also establish additional limits for biochemical oxygen demand (BOD₅), chemical oxygen demand (COD), total suspended solids (TSS), phenolic compounds, pH, hexavalent chromium, and total chromium that apply if the limits for oil and grease or TOC are exceeded.

Determination of Process Wastewater Effluent Limitations at Discharge Point 001

BPT. The following table shows the derivation of process wastewater BPT limitations for the Facility based on the following equation:

Effluent Limitation =

(Maximum Daily or Average Monthly Factor) x (Size Factor) x (Process Factor) x (Feed Stock Rate)

Table F-1B. Process Wastewater BPT Limitations

| Pollutant | Maximum Daily Factor ^[1] | Average Monthly Factor ^[1] | Size Factor | Process Factor | Feedstock Rate ^[2] | Maximum Daily Limit ^[3] | Average Monthly Limit ^[3] |
|---------------------------|-------------------------------------|---------------------------------------|-------------|----------------|-------------------------------|------------------------------------|--------------------------------------|
| BOD ₅ | 9.9 | 5.5 | 1.35 | 1.89 | 147.6 | 3,728 | 2,071 |
| TSS | 6.9 | 4.4 | 1.35 | 1.89 | 147.6 | 2,599 | 1,657 |
| COD | 74.0 | 38.4 | 1.35 | 1.89 | 147.6 | 27,869 | 14,461 |
| Oil and Grease | 3.0 | 1.6 | 1.35 | 1.89 | 147.6 | 1,130 | 603 |
| Phenolic Compounds (4AAP) | 0.074 | 0.036 | 1.35 | 1.89 | 147.6 | 28 | 14 |
| Total Ammonia, as N | 6.6 | 3.0 | 1.35 | 1.89 | 147.6 | 2,486 | 1,130 |
| Sulfide | 0.065 | 0.029 | 1.35 | 1.89 | 147.6 | 24 | 11 |
| Total Chromium | 0.15 | 0.088 | 1.35 | 1.89 | 147.6 | 56 | 33 |
| Chromium (VI) | 0.012 | 0.0056 | 1.35 | 1.89 | 147.6 | 4.5 | 2.1 |
| pH | — | — | — | — | — | ^[4] | ^[4] |

Footnotes:

^[1] From 40 C.F.R. § 419.22(a), (pounds per 1,000 bbls of feedstock)

^[2] 1,000 bbls/d

^[3] Pounds per day

^[4] The pH limitations are instantaneous and range from 6.0 to 9.0.

BAT. The following table shows the derivation of the process wastewater BAT limitations for the Facility based on the following equation:

Effluent Limitation =

(Maximum Daily or Average Monthly Factor) x (Size Factor) x (Process Factor) x (Feed Stock Rate)

Table F-1C. Process Wastewater BAT Limitations

| Pollutant | Maximum Daily Factor ^[1] | Average Monthly Factor ^[1] | Size Factor | Process Factor | Feedstock Rate ^[2] | Maximum Daily Limit ^[3] | Average Monthly Limit ^[3] |
|---------------------|-------------------------------------|---------------------------------------|-------------|----------------|-------------------------------|------------------------------------|--------------------------------------|
| COD ^[4] | 74.0 | 38.4 | 1.35 | 1.89 | 147.6 | 27,869 | 14,461 |
| Total Ammonia, as N | 6.6 | 3.0 | 1.35 | 1.89 | 147.6 | 2,486 | 1,130 |
| Sulfide | 0.065 | 0.029 | 1.35 | 1.89 | 147.6 | 24 | 11 |

Footnotes:

- [1] From 40 C.F.R. § 419.23(a), (pounds per 1,000 bbls of feedstock)
- [2] 1,000 bbls/d
- [3] Pounds per day
- [4] 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 limitations must be based on effluent data correlating TOC to BOD₅.

To determine BAT limitations 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, asphalt, 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).

Table F-1D. Process Feedstock Rates

| Process | Feedstock Rate ^[1] |
|--|-------------------------------|
| Crude | — |
| Atmospheric Distillation | 147.5 |
| Vacuum Distillation | 73.5 |
| Desalter | 147.6 |
| Crude Total | 368.6 |
| Cracking and Coking | — |
| Fluid Cat Cracking | 68.3 |
| Fluid Coking | 29.9 |
| Hydrocracking | 30.4 |
| Hydrotreating | 174.8 |
| Cracking and Coking Total | 303.4 |
| Asphalt, Total | 16.3 |
| Reforming and Alkylation ^[2] | — |
| Reforming | 28.5 |
| Alkylation | 21.9 |
| Reforming and Alkylation Total | 50.4 |

Footnotes:

- [1] 1,000 bbls/d
- [2] For purposes of these calculations, the Dimersol process reported by the Discharger is not included because it is not considered a “Reforming and Alkylation” process.

Based on the total feedstock rates for each process shown above, the following table shows the derivation of BAT limitations for total and hexavalent chromium and phenolic compounds using the following equation:

$$\text{Effluent Limitation} = (\text{Maximum Daily or Average Monthly Factor}) \times (\text{Process Feedstock Rate})$$

Table F-1E. Process Wastewater BAT Limitations (Chromium and Phenolics)

| Pollutant | Maximum Daily Factor ^[1] | Average Monthly Factor ^[1] | Process Feedstock Rate ^[2] | Maximum Daily Limit ^[3] | Average Monthly Limit ^[3] |
|----------------------------|-------------------------------------|---------------------------------------|---------------------------------------|------------------------------------|--------------------------------------|
| Phenolic Compounds | — | — | — | — | — |
| Crude | 0.013 | 0.003 | 368.6 | 4.79 | 1.11 |
| Cracking and Coking | 0.147 | 0.036 | 303.4 | 44.60 | 10.92 |
| Asphalt | 0.079 | 0.019 | 16.3 | 1.29 | 0.31 |
| Reforming and Alkylation | 0.132 | 0.032 | 50.4 | 6.65 | 1.61 |
| Limit (Sum) | — | — | — | 57.33 | 13.95 |
| Total Chromium | — | — | — | — | — |
| Crude | 0.011 | 0.004 | 368.6 | 4.05 | 1.47 |
| Cracking and Coking | 0.119 | 0.041 | 303.4 | 36.10 | 12.44 |
| Asphalt | 0.064 | 0.022 | 16.3 | 1.04 | 0.36 |
| Reforming and Alkylation | 0.107 | 0.037 | 50.4 | 5.39 | 1.86 |
| Limit (Sum) | — | — | — | 46.60 | 16.14 |
| Hexavalent Chromium | — | — | — | — | — |
| Crude | 0.0007 | 0.0003 | 368.6 | 0.26 | 0.11 |
| Cracking and Coking | 0.0076 | 0.0034 | 303.4 | 2.31 | 1.03 |
| Asphalt | 0.0041 | 0.0019 | 16.3 | 0.07 | 0.03 |
| Reforming and Alkylation | 0.0069 | 0.0031 | 50.4 | 0.35 | 0.16 |
| Limit (Sum) | — | — | — | 2.98 | 1.33 |

Footnotes:

^[1] From 40 C.F.R. § 419.23(c), (pounds per 1,000 bbls of feedstock)

^[2] 1,000 bbls/d

^[3] Pounds per day

BCT. The following table shows the derivation of process wastewater BCT limitations for the Facility based on the following information:

Effluent Limitation =

(Maximum Daily or Average Monthly Factor) x (Size Factor) x (Process Factor) x (Feed Stock Rate)

Table F-1F. Process Wastewater BCT Limitations

| Pollutant | Maximum Daily Factor ^[1] | Average Monthly Factor ^[1] | Size Factor | Process Factor | Process Feedstock Rate ^[2] | Maximum Daily Limit ^[3] | Average Monthly Limit ^[3] |
|------------------|-------------------------------------|---------------------------------------|-------------|----------------|---------------------------------------|------------------------------------|--------------------------------------|
| BOD ₅ | 9.9 | 5.5 | 1.35 | 1.89 | 147.6 | 3,728 | 2,071 |
| TSS | 6.9 | 4.4 | 1.35 | 1.89 | 147.6 | 2,599 | 1,657 |
| Oil and Grease | 3.0 | 1.6 | 1.35 | 1.89 | 147.6 | 1,130 | 603 |
| pH | — | — | — | — | — | ^[4] | ^[4] |

Footnotes:

^[1] From 40 C.F.R. § 419.24(a) (pounds per 1,000 bbls of feedstock)

^[2] 1,000 bbls/d

^[3] Pounds per day

^[4] The pH limitations are instantaneous and range from 6.0 to 9.0.

Most Stringent Technology-Based Process Wastewater Effluent Limitations. The following table presents the technology-based effluent limits for process wastewater discharged from Discharge Point 001. These

limits are the most stringent of the BPT, BAT, and BCT limits calculated above. All are based on BPT, except for the chromium limits, which are based on BAT.

Table F-1G. Summary of Technology-Based Process Wastewater Effluent Limitations

| Pollutant | Maximum Daily ^[1] | Average Monthly ^[1] |
|---------------------------|------------------------------|--------------------------------|
| BOD ₅ | 3,700 | 2,100 |
| TSS | 2,600 | 1,700 |
| COD | 28,000 | 14,000 |
| Oil and Grease | 1,100 | 600 |
| Phenolic Compounds (4AAP) | 28 | 14 |
| Total Ammonia, as N | 2,500 | 1,100 |
| Sulfide | 24 | 11 |
| Total Chromium | 47 | 16 |
| Chromium (VI) | 3.0 | 1.3 |
| pH | [2] | [2] |

Footnotes:

^[1] Pounds per day

^[2] The pH limitations are instantaneous and range from 6.0 to 9.0.

Determination of Contaminated Runoff Effluent Limitations

The ELGs at 40 C.F.R. section 419.22(e)(2) and 419.23(f)(2) establish a limit of 15 mg/L for oil and grease and 110 mg/L for TOC. If contaminated stormwater discharges exceed the oil and grease limit (15 mg/L) or the TOC limit (110 mg/L), additional concentration-based limits for BOD₅, TSS, COD, phenolic compounds, total chromium, hexavalent chromium, and pH must become effective immediately. The effluent limits for these pollutants are derived from the most stringent of BAT and BPT effluent concentration-based limits provided in the ELGs, found at 40 C.F.R. section 419.22(e)(2) and 419.23(f)(2). Tables summarizing these additional effluent limits are shown below:

Table F-1H. Contaminated Runoff Effluent Limitations

| Pollutant | Maximum Daily ^[1] | Average Monthly ^[1] |
|---------------------------|------------------------------|--------------------------------|
| BOD ₅ | 48 | 26 |
| TSS | 33 | 21 |
| COD | 360 | 180 |
| Oil and Grease | 15 | 8.0 |
| Phenolic Compounds (4AAP) | 0.35 | 0.17 |
| Total Chromium | 0.60 | 0.21 |
| Chromium (VI) | 0.062 | 0.028 |
| pH | [3] | [3] |

Footnotes:

^[1] Milligrams per liter.

^[2] The pH limitations are instantaneous and range from 6.0 to 9.0.

Determination of Additional Effluent Limitation Allocations

If contaminated runoff or ballast water is comingled with process wastewater, additional mass-based effluent limitation allocations may be added to the mass-based process wastewater limits indicated in sections IV.A.2 and IV.A.3 of the Order. These additional effluent limitation allocations are derived from the most stringent concentration-based limits for contaminated runoff (see Table F-1H) or the table below for ballast water:

Table F-1I. Additional Ballast Water Effluent Limitation Allocations

| Pollutant | Maximum Daily ^[1] | Average Monthly ^[1] |
|------------------|-------------------------------------|---------------------------------------|
| BOD ₅ | 48 | 26 |
| TSS | 33 | 21 |
| COD | 470 | 240 |
| Oil and Grease | 15 | 8.0 |

Footnote:

^[1] From BPT-based effluent limits of 40 C.F.R. § 419.22(c) in units of milligrams per liter.

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

November 2017

Contents

| | |
|---|------------|
| I. STANDARD PROVISIONS – PERMIT COMPLIANCE..... | G-1 |
| A. Duty to Comply | G-1 |
| B. Need to Halt or Reduce Activity Not a Defense | G-1 |
| C. Duty to Mitigate | G-1 |
| 1. Contingency Plan | G-1 |
| 2. Spill Prevention Plan..... | G-2 |
| D. Proper Operation and Maintenance | G-2 |
| 1. Operation and Maintenance Manual | G-2 |
| 2. Wastewater Facilities Status Report | G-2 |
| 3. Proper Supervision and Operation of Publicly-Owned Treatment Works (POTWs) | G-2 |
| E. Property Rights..... | G-2 |
| F. Inspection and Entry..... | G-2 |
| G. Bypass | G-2 |
| H. Upset..... | G-2 |
| I. Other..... | G-3 |
| II. STANDARD PROVISIONS – PERMIT ACTION..... | G-3 |
| III. STANDARD PROVISIONS – MONITORING | G-3 |
| A. Sampling and Analyses | G-3 |
| 1. Certified Laboratories | G-3 |
| 2. Minimum Levels..... | G-3 |
| 3. Monitoring Frequency | G-3 |
| B. Standard Observations..... | G-5 |
| 1. Receiving Water Observations | G-5 |
| 2. Wastewater Effluent Observations | G-6 |
| 3. Beach and Shoreline Observations | G-6 |
| 4. Waste Treatment and/or Disposal Facility Periphery Observations | G-6 |
| IV. STANDARD PROVISIONS – RECORDS | G-6 |
| A. Records to be Maintained..... | G-6 |
| B. Records of Monitoring | G-6 |
| 1. Analytical Information..... | G-6 |
| 2. Disinfection Process..... | G-7 |
| 3. Wastewater Treatment Process Solids | G-7 |
| 4. Treatment Process Bypasses | G-7 |
| 5. Treatment Facility Overflows | G-7 |
| C. Claims of Confidentiality | G-7 |
| V. STANDARD PROVISIONS – REPORTING | G-8 |
| A. Duty to Provide Information | G-8 |
| B. Signatory and Certification Requirements | G-8 |
| C. Monitoring Reports | G-8 |
| 1. Self-Monitoring Reports | G-8 |
| D. Compliance Schedules | G-11 |
| E. Twenty-Four Hour Reporting..... | G-11 |
| 1. Oil or Other Hazardous Material Spills | G-11 |
| 2. Unauthorized Municipal Wastewater Treatment Plant Discharges | G-12 |
| F. Planned Changes | G-13 |
| G. Anticipated Noncompliance | G-13 |
| H. Other Noncompliance..... | G-13 |
| I. Other Information..... | G-13 |

| | |
|---|-------------|
| VI. STANDARD PROVISION – ENFORCEMENT | G-13 |
| VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS | G-13 |
| VIII. DEFINITIONS..... | G-13 |

REGIONAL STANDARD PROVISIONS, AND MONITORING AND REPORTING REQUIREMENTS

APPLICABILITY

This document supplements the requirements of Federal Standard Provisions (Attachment D). For clarity, these provisions are arranged using to the same headings as those used in 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 – Supplement to Attachment D, Provision I.C.

- 1. Contingency Plan.** The Discharger shall maintain a Contingency Plan as prudent in accordance with current 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 (see Provision I.C.2, below) into one document. In accordance with Regional Water Board Resolution 74-10, discharge in violation of the permit where the Discharger has failed to develop and implement a Contingency Plan as described below may 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, provide for the following:
 - a.** Sufficient personnel for continued facility operation and maintenance during employee strikes or strikes against contractors providing services;
 - b.** Maintenance of adequate chemicals or other supplies, and spare parts necessary for continued facility operations;
 - c.** Emergency standby power;
 - d.** Protection against vandalism;
 - e.** Expeditious action to repair failures of, or damage to, equipment, including any sewer lines;
 - f.** Reporting of spills and discharges of untreated or inadequately treated wastes, including measures taken to clean up the effects of such discharges; and
 - g.** Maintenance, replacement, and surveillance of physical condition of equipment and facilities, including any sewer lines.

- 2. Spill Prevention Plan.** The Discharger shall maintain a Spill Prevention Plan to prevent accidental discharges and to minimize the effects of any such discharges. The Spill Prevention Plan shall do the following:
 - a.** Identify the possible sources of accidental discharge, untreated or partially-treated waste bypass, and polluted drainage;
 - b.** State when current facilities and procedures became operational and evaluate their effectiveness; and
 - c.** Predict the effectiveness of any proposed facilities and procedures and provide an implementation schedule with interim and final dates when the proposed facilities and procedures will be constructed, implemented, or operational.

D. Proper Operation and Maintenance – Supplement to Attachment D, Provision I.D

- 1. Operation and Maintenance Manual.** The Discharger shall maintain an Operation and Maintenance 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 Operation and Maintenance Manual shall be kept updated to reflect significant changes in treatment facility equipment and operational practices. The Operation and Maintenance 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 maintain a Wastewater Facilities Status Report and regularly review, revise, or update it, as necessary. 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 Title 23, section 3680, 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 – Addition to 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. 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 shall continue in force and effect until the permit is reissued or the Regional Water Board rescinds the permit.

II. STANDARD PROVISIONS – PERMIT ACTION – Not Supplemented

III. STANDARD PROVISIONS – MONITORING

A. Sampling and Analyses – Supplement to Attachment D, Provisions III.A and III.B

1. **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. **Minimum Levels.** For the 126 priority pollutants, the Discharger should use the analytical methods listed in Table B unless the Monitoring and Reporting Program (MRP, Attachment E) requires a particular method or minimum level (ML). All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements.
3. **Monitoring Frequency.** The MRP specifies the minimum sampling and analysis schedule.
 - a. **Sample Collection Timing**
 - i. The Discharger shall collect influent samples on varying days selected at random and shall not include any plant recirculation or other sidestream wastes, unless otherwise stipulated in the MRP. The Executive Officer may approve an alternative influent sampling plan if it is representative of plant influent and complies with all other permit requirements.
 - ii. The Discharger shall collect effluent samples on days coincident with influent sampling, unless otherwise stipulated by the MRP. If influent sampling is not required, the Discharger shall collect effluent samples on varying days selected at random, unless otherwise stipulated in the MRP. The Executive Officer may approve an alternative effluent sampling plan if it is representative of plant discharge and in compliance with all other permit requirements.

- iii. The Discharger shall collect effluent grab samples during periods of daytime maximum peak flows (or peak flows through secondary treatment units for facilities that recycle effluent).
- iv. Effluent sampling for conventional pollutants shall occur on at least one day of any multiple-day bioassay the MRP requires. During the course of the bioassay, on at least one day, the Discharger shall collect and retain samples of the discharge. In the event that a bioassay result does not comply with effluent limitations, the Discharger shall analyze the retained samples for pollutants that could be toxic to aquatic life and for which it has effluent limitations.
 - (a) The Discharger shall perform bioassays on final effluent samples; when chlorine is used for disinfection, bioassays shall be performed on effluent after chlorination and dechlorination; and
 - (b) The Discharger shall analyze for total ammonia nitrogen and calculate the amount of un-ionized ammonia whenever test results fail to meet effluent limitations.

b. Conditions Triggering Accelerated Monitoring

- i. **Average Monthly Effluent Limitation Exceedance.** If the results from two consecutive samples of a constituent monitored in a particular month exceed the average monthly effluent limitation for any parameter (or if the required sampling frequency is once per month or less and the monthly sample exceeds the average monthly effluent limitation), 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 complies with the average monthly effluent limitation.
- ii. **Maximum Daily Effluent Limitation Exceedance.** If a sample result exceeds a maximum daily effluent limitation, the Discharger shall, within 24 hours after the result is received, increase its sampling frequency to daily until the results from two samples collected on consecutive days show compliance with the maximum daily effluent limitation.
- iii. **Acute Toxicity.** If final or intermediate results of an acute bioassay indicate a violation or threatened violation (e.g., the percentage of surviving test organisms of any single acute bioassay is less than 70 percent), the Discharger shall initiate a new test as soon as practical or as described in applicable State Water Board plan provisions that become effective after adoption of these Regional Standard Provisions. The Discharger shall investigate the cause of the mortalities and report its findings in the next self-monitoring report.
- iv. **Chlorine.** 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 limitation is achieved, unless the Discharger monitors chlorine residual continuously. In such cases, the Discharger shall continue to conduct continuous monitoring.

- v. **Bypass.** Except as indicated below, if a Discharger bypasses any portion of its treatment facility, it shall monitor flows and collect samples at affected discharge points and analyze samples for all constituents with effluent limitations on a daily basis for the duration of the bypass. The Discharger need not accelerate chronic toxicity monitoring. The Discharger also need not collect and analyze samples for mercury, dioxin-TEQ, and PCBs after the first day of the bypass. The Discharger may satisfy the accelerated acute toxicity monitoring requirement by conducting a flow-through test or static renewal test that captures the duration of the bypass (regardless of the method specified in the MRP). If bypassing disinfection units only, the Discharger shall only monitor bacteria indicators daily.
- (a) **Bypass for Essential Maintenance.** If a Discharger bypasses a treatment unit for essential maintenance pursuant to Attachment D section I.G.2, the Executive Officer may reduce the accelerated monitoring requirements above if the Discharger (i) monitors effluent at affected discharge points on the first day of the bypass for all constituents with effluent limitations, except chronic toxicity; and (ii) identifies and implements measures to ensure that the bypass will continue to comply with effluent limitations.
- (b) **Approved Wet Weather Bypasses.** If a Discharger bypasses a treatment unit or permitted outfall during wet weather with Executive Officer approval pursuant to Attachment D section I.G.4, the Discharger shall monitor flows and collect and retain samples for affected discharge points on a daily basis for the duration of the bypass. The Discharger shall analyze daily for 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 daily the retained samples for all other constituents with effluent limitations, except oil and grease, mercury, PCBs, dioxin-TEQ, and acute and chronic toxicity. Additionally, at least once each year, the Discharger shall analyze the retained samples for one approved bypass for all other constituents with effluent limitations, except oil and grease, mercury, PCBs, dioxin-TEQ, and acute and chronic toxicity. This monitoring shall be in addition to the minimum monitoring specified in the MRP.

B. Standard Observations – Addition to Attachment D

- 1. **Receiving Water Observations.** The following requirements only apply when the MRP requires standard observations of receiving waters. 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** — color, source, and size of affected area.
 - c. **Odor** — presence or absence, characterization, source, and distance of travel.
 - d. **Beneficial Water Use** — estimated number of water-associated waterfowl or wildlife, fisherpeople, and other recreational activities.

- e. **Hydrographic Condition** — time and height of high and low tides (corrected to nearest National Oceanic and Atmospheric Administration location for the sampling date and time).
 - f. **Weather Conditions** — wind direction, air temperature, and total precipitation during five days prior to observation.
- 2. **Wastewater Effluent Observations.** The following requirements only apply when the MRP requires standard observations of wastewater effluent. 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 following requirements only apply when the MRP requires standard observations of beaches or shorelines. 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 of number of people participating in recreational water contact, non-water contact, and fishing activities.
- 4. **Waste Treatment and/or Disposal Facility Periphery Observations.** The following requirements only apply when the MRP requires standard observations of the periphery of waste treatment or disposal facilities. 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** – Supplement to Attachment D, Provision IV.A

The Discharger shall maintain records in a manner and at a location (e.g., the wastewater treatment plant or the Discharger's offices) such that the records are accessible to Regional Water Board staff. The minimum retention period specified in Attachment D, Provision IV, shall be extended during the course of any unresolved litigation regarding permit-related discharges, or when requested by Regional Water Board or U.S. EPA, Region IX, staff.

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 – Supplement to Attachment D, Provision IV.B

Monitoring records shall include the following:

- 1. Analytical Information.** Records shall include analytical method detection limits, minimum levels, reporting levels, and related quantification parameters.
- 2. Disinfection Process.** For the disinfection process, records shall include the following:
 - a.** For bacteriological analyses:
 - i.** Wastewater flow rate at the time of sample collection; and
 - ii.** Required statistical parameters for cumulative bacterial values (e.g., moving median or geometric mean for the number of samples or sampling period identified in the MRP).
 - b.** For the chlorination process (when chlorine is used for disinfection), at least daily average values for the following:
 - i.** Chlorine residual of treated wastewater as it enters the chlorine contact basin (mg/L);
 - ii.** Chlorine dosage (kg/day); and
 - iii.** Dechlorination chemical dosage (kg/day).
- 3. Wastewater Treatment Process Solids.** For each treatment unit process that involves solids removal from the wastewater stream, records shall include the following:
 - a.** 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
 - b.** Final disposition of such solids (e.g., landfill, other subsequent treatment unit).
- 4. Treatment Process Bypasses.** For all treatment process bypasses, including wet weather blending, records shall include the following:
 - a.** Chronological log of treatment process bypasses;
 - b.** Identification of treatment processes bypassed;
 - c.** Beginning and ending dates and times of bypasses;
 - d.** Bypass durations;
 - e.** Estimated bypass volumes; and
 - f.** Description of, or reference to other reports describing, the bypasses, their cause, the corrective actions taken (except for wet weather blending explicitly approved within the permit and in compliance with any related permit conditions), and any additional monitoring conducted.

- 5. Treatment Plant Overflows.** The Discharger shall retain a chronological log of overflows at the treatment plant, including the headworks and all units and appurtenances downstream, and records supporting the information provided in accordance with Provision V.E.2, below.

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 – Supplement to Attachment D, Provision V.C

- 1. Self-Monitoring Reports.** For each reporting period established in the MRP, the Discharger shall submit a self-monitoring report to the Regional Water Board in accordance with the requirements listed in the MRP and below:

- a. Transmittal Letter.** Each self-monitoring report shall be submitted with a transmittal letter that includes the following:

- i.** Identification of all violations of effluent limitations or other waste discharge requirements found during the reporting period;
 - ii.** Details regarding the violations, such as parameters, magnitude, test results, frequency, and dates;
 - iii.** Causes of the violations;
 - iv.** Corrective actions taken or planned to resolve violations and prevent recurrences, and dates or time schedules for implementation (the Discharger may refer to previously submitted reports that address the corrective actions);
 - v.** Explanation for any data invalidation. Data should not be submitted in a self-monitoring report if it does not meet quality assurance/quality control standards. However, if the Discharger wishes to invalidate a measurement after submitting it in a self-monitoring report, the Discharger 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. The formal 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), and a discussion of the corrective actions taken or planned (with a time schedule for completion) to prevent recurrence of the sampling or measurement problem;

- vi. Description of blending, if any. If the Discharger blends, it shall describe the duration of blending events and certify whether the blending complied with all conditions for blending;
 - vii. Description of other bypasses, if any. If the Discharger bypasses any treatment units (other than blending), it shall describe the duration of the bypasses and effluent quality during those times; and
 - viii. Signature. The transmittal letter shall be signed in accordance with Attachment D, Provision V.B.
- b. Compliance Evaluation Summary.** Each self-monitoring report shall include a compliance evaluation summary that addresses 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 the effluent limitations.
- c. More Frequent Monitoring.** If the Discharger monitors any pollutant more frequently than required by the MRP, the Discharger shall include the results of such monitoring in the calculation and reporting of the data submitted in the self-monitoring report.
- d. Analysis Results**
- i. **Tabulation.** Each self-monitoring report shall include tabulations of all required analyses and observations, including parameters, dates, times, sample stations, types of samples, test results, method detection limits, method minimum levels, and method reporting levels (if applicable), signed by the laboratory director or other responsible official.
 - ii. **Multiple Samples.** Unless the MRP specifies otherwise, when determining compliance with effluent limitations (other than instantaneous effluent limitations) and more than one sample result is available, the Discharger shall compute the arithmetic mean. If the data set contains one or more results that are “Detected, but Not Quantified (DNQ)” or “Not Detected” (ND), the Discharger shall instead compute the median in accordance with the following procedure:
 - (a) The data set shall be ranked from low to high, reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.
 - (b) The median of the data set shall be determined. If the data set has an odd number of data points, the median is the middle value. If the data set has an even number of data points, the median is the average of the two values around the middle, unless one or both of these values is ND or DNQ, in which case the median shall be the lower of the two results (where DNQ is lower than a quantified value and ND is lower than DNQ).
 - iii. **Duplicate Samples.** The Discharger shall report the average of duplicate sample analyses when reporting for a single sample result (or the median if one or more of the duplicates is DNQ or ND [see Provision V.C.1.c.ii, above]). For bacteria

indicators, the Discharger shall report the geometric mean of the duplicate analyses.

- iv. Dioxin-TEQ.** The Discharger shall report for each dioxin and furan congener the analytical results of effluent monitoring, including the 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 (MLs) to zero. The Discharger shall calculate and report dioxin-TEQ using the following formula, where the MLs, toxicity equivalency factors (TEFs), and bioaccumulation equivalency factors (BEFs) are as provided in Table A:

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

where: C_x = measured or estimated concentration of congener x
 TEF_x = toxicity equivalency factor for congener x
 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) | 2005 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 | 0.0003 | 0.01 |
| 2,3,7,8-TCDF | 10 | 0.1 | 0.8 |
| 1,2,3,7,8-PeCDF | 50 | 0.03 | 0.2 |
| 2,3,4,7,8-PeCDF | 50 | 0.3 | 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 | 0.0003 | 0.02 |

- e. 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 may require additional time to complete analytical processes and report results. In these cases, the Discharger shall describe the circumstances in the self-monitoring report and include the data for these parameters and relevant discussions of any violations in the next self-monitoring report due after the results are available.

- f. Annual Self-Monitoring Reports.** By the date specified in the MRP, the Discharger shall submit an annual self-monitoring report covering the previous calendar year. The report shall contain the following:
- i.** Comprehensive discussion of treatment plant performance, including documentation of any blending or other bypass events, 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 the performance and reliability of wastewater collection, treatment, or disposal practices;
 - ii.** List of approved analyses, including the following:
 - (a)** List of analyses for which the Discharger is certified;
 - (b)** List of analyses performed for the Discharger by a separate certified laboratory (copies of reports signed by the laboratory director of that laboratory need not be submitted but shall be retained onsite); and
 - (c)** List of “waived” analyses, as approved;
 - iii.** Plan view drawing or map showing the Discharger’s facility, flow routing, and sampling and observation station locations; and
 - iv.** Results of facility report reviews. The Discharger shall regularly review, revise, and update, as necessary, the Operation and Maintenance Manual, Contingency Plan, Spill Prevention Plan, and Wastewater Facilities Status Report so these documents remain useful and relevant to current practices. At a minimum, reviews shall be conducted annually. The Discharger shall describe or summarize its review and evaluation procedures, recommended or planned actions, and estimated time schedule for implementing these actions. The Discharger shall complete changes to these documents to ensure that they remain up-to-date.

D. Compliance Schedules – Not supplemented

E. Twenty-Four Hour Reporting – Supplement to Attachment D, Provision V.E

1. Oil or Other Hazardous Material Spills

- a.** Within 24 hours of becoming aware of a spill of oil or other hazardous material not contained onsite and completely cleaned up, the Discharger shall report as follows:
 - i.** If the spill exceeds reportable quantities for hazardous materials listed in 40 C.F.R. part 302. The Discharger shall call the California Office of Emergency Services (800-852-7550).
 - ii.** If the spill does not exceed reportable quantities for hazardous materials listed in 40 C.F.R., part 302, the Discharger shall call the Regional Water Board (510-622-2369).

- b. The Discharger shall submit a written report to the Regional Water Board within five working days following either of the above telephone notifications unless directed otherwise by Regional Water Board staff. A report submitted electronically is acceptable. The written report shall include the following:
 - i. Date and time of spill, and duration if known;
 - ii. Location of spill (street address or description of location);
 - iii. Nature of material spilled;
 - iv. Quantity of material spilled;
 - v. Receiving water body affected, if any;
 - vi. Cause of spill;
 - vii. Estimated size of affected area;
 - viii. Observed impacts to receiving waters (e.g., oil sheen, fish kill, water discoloration);
 - ix. Corrective actions taken to contain, minimize, or clean up the spill;
 - x. Future corrective actions planned to prevent recurrence, and implementation schedule; and
 - xi. Persons or agencies notified.

2. Unauthorized Municipal Wastewater Treatment Plant Discharges¹

- a. **Two-Hour Notification.** For any unauthorized discharge that enters a drainage channel or surface water, the Discharger shall, as soon as possible, but not later than two hours after becoming aware of the discharge, notify the California Office of Emergency Services (800-852-7550) and the local health officer or director of environmental health with jurisdiction over the affected water body. Notification shall include the following:
 - i. Incident description and cause;
 - ii. Location of threatened or involved waterways or storm drains;
 - iii. Date and time that the unauthorized discharge started;
 - iv. Estimated quantity and duration of the unauthorized discharge (to the extent known), and estimated amount recovered;

¹ 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.

- v. Level of treatment prior to discharge (e.g., raw wastewater, primary-treated wastewater, or undisinfected secondary-treated wastewater); and
 - vi. Identity of person reporting the unauthorized discharge.
- b. Five-Day Written Report.** Within five business days following the two-hour notification, the Discharger shall submit a written report that includes, in addition to the information listed in Provision V.E.2.a, above, the following:
- i. Methods used to delineate the geographical extent of the unauthorized discharge within receiving waters;
 - ii. Efforts implemented to minimize public exposure to the unauthorized discharge;
 - iii. Visual observations of the impacts (if any) noted in the receiving waters (e.g., fish kill, discoloration of receiving water) and extent of sampling if conducted;
 - iv. Corrective measures taken to minimize the impact of the unauthorized discharge;
 - v. Measures to be taken to minimize the potential for a similar unauthorized discharge in the future;
 - vi. Summary of Spill Prevention Plan or Operation and Maintenance Manual modifications to be made, if necessary, to minimize the potential for future unauthorized discharges; and
 - vii. Quantity and duration of the unauthorized discharge, and the amount recovered.

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 – Addition to Attachment D

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

A. Arithmetic Calculations –

- 1. Geometric Mean.** 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

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

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

- 2. Mass Emission Rate.** The rate of discharge expressed in mass. The 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_i” and “C_i” 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_i” is the concentration measured in the composite sample and “Q_i” 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_t” is the total flow rate of the combined waste streams.

- 3. Removal Efficiency.** 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):

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

- B. Blending** – the practice of bypassing biological treatment units and recombining the bypass wastewater with biologically-treated wastewater.
- C. Composite Sample** – 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 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 protocol.
- D. Duplicate Sample** – a second sample taken from the same source and at the same time as an initial sample (such samples are typically analyzed identically to measure analytical variability).
- E. Grab Sample** – an individual sample collected during a short period not exceeding 15 minutes. Grab samples represent only the condition that exists at the time the sample is collected.
- F. Overflow** – the intentional or unintentional spilling or forcing out of untreated or partially-treated waste from a transport system (e.g., through manholes, at pump stations, or at collection points) upstream of the treatment plant headworks or from any part of a treatment plant.
- G. Priority Pollutants** – those constituents referred to in 40 C.F.R. part 122 as promulgated in the Federal Register, Vol. 65, No. 97, Thursday, May 18, 2000, also known as the California Toxics Rule.
- H. Untreated waste** – raw wastewater.

Table B
List of Monitoring Parameters, Analytical Methods, and Minimum Levels (µg/L)²

| CTR No. | Pollutant/Parameter | Analytical Method ³ | GC | GC MS | LC | Color | FAA | GFAA | ICP | ICP MS | SPGFAA | HYD RIDE | CVA A | DCP |
|---------|---|--------------------------------|-----|-------|----|-------|-----|------|-----|--------|--------|----------|-------|--------|
| 1 | Antimony | 204.2 | - | - | - | - | 10 | 5 | 50 | 0.5 | 5 | 0.5 | - | 1000 |
| 2 | Arsenic | 206.3 | - | - | - | 20 | - | 2 | 10 | 2 | 2 | 1 | - | 1000 |
| 3 | Beryllium | - | - | - | - | - | 20 | 0.5 | 2 | 0.5 | 1 | - | - | 1000 |
| 4 | Cadmium | 200 or 213 | - | - | - | - | 10 | 0.5 | 10 | 0.25 | 0.5 | - | - | 1000 |
| 5a | Chromium (III) | SM 3500 | - | - | - | - | - | - | - | - | - | - | - | - |
| 5b | Chromium (VI) | SM 3500 | - | - | - | 10 | 5 | - | - | - | - | - | - | 1000 |
| | Chromium (total) ⁴ | SM 3500 | - | - | - | - | 50 | 2 | 10 | 0.5 | 1 | - | - | 1000 |
| 6 | Copper | 200.9 | - | - | - | - | 25 | 5 | 10 | 0.5 | 2 | - | - | 1000 |
| 7 | Lead | 200.9 | - | - | - | - | 20 | 5 | 5 | 0.5 | 2 | - | - | 10,000 |
| 8 | Mercury | 1631 (note) ⁵ | - | - | - | - | - | - | - | - | - | - | - | - |
| 9 | Nickel | 249.2 | - | - | - | - | 50 | 5 | 20 | 1 | 5 | - | - | 1000 |
| 10 | Selenium | 200.8 or SM 3114B or C | - | - | - | - | - | 5 | 10 | 2 | 5 | 1 | - | 1000 |
| 11 | Silver | 272.2 | - | - | - | - | 10 | 1 | 10 | 0.25 | 2 | - | - | 1000 |
| 12 | Thallium | 279.2 | - | - | - | - | 10 | 2 | 10 | 1 | 5 | - | - | 1000 |
| 13 | Zinc | 200 or 289 | - | - | - | - | 20 | - | 20 | 1 | 10 | - | - | - |
| 14 | Cyanide | SM 4500 CN ⁻ C or I | - | - | - | 5 | - | - | - | - | - | - | - | - |
| 15 | Asbestos (only required for dischargers to MUN waters) ⁶ | 0100.2 ⁷ | - | - | - | - | - | - | - | - | - | - | - | - |
| 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 | - | - | - | - | - | - | - | - | - | - |

² 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; CVA = Cold Vapor Atomic Absorption; DCP = Direct Current Plasma.

³ 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.

⁴ 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).

⁵ 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).

⁶ MUN = Municipal and Domestic Supply. This designation, if applicable, is in the Findings of the permit.

⁷ 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 ³ | GC | GC MS | LC | Color | FAA | GFAA | ICP | ICP MS | SPGF AA | HYD RIDE | CVA A | DCP |
|---------|--|--------------------------------|-----|-------|----|-------|-----|------|-----|--------|---------|----------|-------|-----|
| 22 | Chlorobenzene | 601 | 0.5 | 2 | - | - | - | - | - | - | - | - | - | - |
| 23 | Chlorodibromomethane | 601 | 0.5 | 2 | - | - | - | - | - | - | - | - | - | - |
| 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 | 604 | 10 | 5 | - | - | - | - | - | - | - | - | - | - |

| CTR No. | Pollutant/Parameter | Analytical Method ³ | GC | GC MS | LC | Color | FAA | GFAA | ICP | ICP MS | SPGF AA | HYD RIDE | CVA A | DCP |
|---------|---|--------------------------------|----|-------|------|-------|-----|------|-----|--------|---------|----------|-------|-----|
| | Dinitro-2-methylphenol | | | | | | | | | | | | | |
| 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 Benzofluoranthene | 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 | - | - | - | - | - | - | - | - | - |
| 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 | - | - | - | - | - | - | - | - | - | - |

| CTR No. | Pollutant/Parameter | Analytical Method ³ | GC | GC MS | LC | Color | FAA | GFAA | ICP | ICP MS | SPGF AA | HYD RIDE | CVA A | DCP |
|---------|---|--------------------------------|-------|-------|------|-------|-----|------|-----|--------|---------|----------|-------|-----|
| 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) ⁸ | 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 | - | - | - | - | - | - | - | - | - | - | - |
| 115 | Endrin | 608 | 0.01 | - | - | - | - | - | - | - | - | - | - | - |
| 116 | Endrin Aldehyde | 608 | 0.01 | - | - | - | - | - | - | - | - | - | - | - |
| 117 | Heptachlor | 608 | 0.01 | - | - | - | - | - | - | - | - | - | - | - |
| 118 | Heptachlor Epoxide | 608 | 0.01 | - | - | - | - | - | - | - | - | - | - | - |

⁸ Measurement for 1,2-Diphenylhydrazine may use azobenzene as a screen: if azobenzene is measured at >1 ug/l, then the Discharger shall analyze for 1,2-Diphenylhydrazine.

| CTR No. | Pollutant/ Parameter | Analytical Method ³ | GC | GC MS | LC | Color | FAA | GFAA | ICP | ICP MS | SPGF AA | HYD RIDE | CVA A | DCP |
|---------|---|-----------------------------------|-----|-------|----|-------|-----|------|-----|--------|---------|----------|-------|-----|
| 119-125 | PCBs: Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260 | 608 | 0.5 | - | - | - | - | - | - | - | - | - | - | - |
| 126 | Toxaphene | 608 | 0.5 | - | - | - | - | - | - | - | - | - | - | - |

ATTACHMENT S

STORMWATER PROVISIONS, MONITORING, AND REPORTING REQUIREMENTS

November 2017

Contents

| | |
|--|------------|
| I. STANDARD PROVISIONS – PERMIT COMPLIANCE | S-1 |
| A. Stormwater Pollution Prevention Plan (SWPPP) | S-1 |
| B. Site Map | S-1 |
| C. List of Industrial Materials | S-2 |
| D. Potential Pollutant Sources | S-2 |
| E. Assessment of Potential Pollutant Sources | S-3 |
| F. Minimum Best Management Practices (BMPs) | S-4 |
| G. Action Levels and Advanced BMPs | S-5 |
| H. BMP Descriptions | S-6 |
| I. Annual Comprehensive Facility Compliance Evaluation | S-6 |
| II. STANDARD PROVISIONS – MONITORING | S-7 |
| A. Visual Observations | S-7 |
| 1. Monthly Visual Observations | S-7 |
| 2. Sampling Event Visual Observations | S-7 |
| 3. Visual Observation Records | S-8 |
| 4. SWPPP Revisions | S-8 |
| B. Sampling and Analysis | S-8 |
| III. STANDARD PROVISIONS – REPORTING | S-8 |
| A. Annual Stormwater Report | S-8 |
| IV. DEFINITIONS | S-9 |

STORMWATER PROVISIONS

APPLICABILITY

These stormwater provisions only apply to facilities that do not direct all stormwater flows from process areas to a wastewater treatment plant's headworks or do not enroll in NPDES Permit CAS000001 (General Permit for Stormwater Discharges Associated with Industrial Activities).

I. STANDARD PROVISIONS - PERMIT COMPLIANCE

J. Stormwater Pollution Prevention Plan (SWPPP). The Discharger shall prepare a SWPPP that includes the following elements:

1. Facility name and contact information;
2. Site map;
3. List of industrial materials;
4. Description of potential pollution sources;
5. Assessment of potential pollutant sources;
6. Minimum Best Management Practices (BMPs);
7. Advanced BMPs, if applicable;
8. Monitoring implementation plan;
9. Annual comprehensive facility compliance evaluation; and
10. Date SWPPP initially prepared and dates of each SWPPP amendment.

The SWPPP shall be designed in accordance with good engineering practices to achieve the following objectives:

- Identify and evaluate all pollutant sources that may affect stormwater discharge quality;
- Identify, assign, and implement control measures and management practices to reduce or prevent pollutants in stormwater discharges; and
- Identify and describe conditions or circumstances that may require revisions to the SWPPP.

The SWPPP shall be retained onsite, revised whenever necessary, and made available upon request of any Regional Water Board representative. The SWPPP may be combined with the Spill Prevention Plan (see Attachment G Provision I.C.2).

- K. Site Map.** The Discharger shall prepare one or more site maps that include notes, legends, a north arrow, and other data as appropriate to ensure the map is clear, legible and understandable, including the following:
1. The facility boundary, stormwater drainage areas within the facility boundary, and portions of any drainage area impacted by discharges from surrounding areas (the maps shall include the flow direction of each drainage area, on-facility surface water bodies, areas of soil erosion, and locations of nearby water bodies [e.g., rivers, lakes, wetlands] or municipal storm drain inlets that may receive the facility's industrial stormwater discharges and authorized non-stormwater discharges);
 2. Locations of stormwater collection and conveyance systems, associated discharge locations, and direction of flow (the maps shall include sample locations if different than the discharge locations);
 3. Locations and descriptions of structural control measures (e.g., catch basins, berms, detention ponds, secondary containment, oil/water separators, diversion barriers) that affect industrial stormwater discharges, authorized non-stormwater discharges, and run-on;
 4. Identification of all impervious areas, including paved areas, buildings, covered storage areas, or other roofed structures;
 5. Locations where materials are directly exposed to precipitation and the locations where identified significant spills or leaks have occurred; and
 6. Areas of industrial activity (the maps shall identify all industrial storage areas and storage tanks, shipping and receiving areas, fueling areas, vehicle and equipment storage and maintenance areas, material handling and processing areas, waste treatment and disposal areas, dust or particulate generating areas, cleaning and material reuse areas, and other areas of industrial activity that may have potential pollutant sources).
- L. List of Industrial Materials.** The SWPPP shall contain a list of industrial materials handled at the facility and the locations where each material is stored, received, shipped, and handled, as well as the typical quantities and handling frequency.
- M. Potential Pollutant Sources.** The Discharger shall describe and assess potential stormwater pollutant sources, including the following:
1. **Industrial Processes.** Industrial processes may include manufacturing, cleaning, maintenance, recycling, and disposal. The SWPPP shall describe the type, characteristics, and approximate quantity of industrial materials used and areas protected by containment structures and the corresponding containment capacity.
 2. **Material Handling and Storage Areas.** The SWPPP shall describe the type, characteristics, and quantity of industrial materials handled or stored; shipping, receiving, and loading

procedures; spill and leak prevention and response procedures; and areas protected by containment structures and the corresponding containment capacity.

3. **Dust and Particulate Generating Activities.** The SWPPP shall describe the discharge locations, source type, and characteristics of the dust or particulate pollutant.
 4. **Significant Spills and Leaks.** The Discharger shall evaluate the facility for areas where spills and leaks can occur. The SWPPP shall list any industrial materials spilled or leaked in significant quantities and discharged from the facility's stormwater conveyance system within the previous five years, including but not limited to any chemicals identified in 40 C.F.R. section 302 as reported on U.S. EPA Form R and any oil and hazardous substances discharged in excess of reportable quantities (40 C.F.R. §§ 110, 117, and 302). The SWPPP shall also list any industrial materials spilled or leaked in significant quantities that had the potential to be discharged from the facility's stormwater conveyance system within the previous five years. For each listed industrial material spill and leak, the SWPPP shall include the location, characteristics, and approximate quantity of the material spilled or leaked; the approximate quantity of the material discharged; the cleanup or remedial actions taken or planned; the approximate quantity of remaining material that could be discharged; and the preventive measures taken to ensure that spills or leaks do not reoccur.
 5. **Non-Stormwater Discharges.** The SWPPP shall describe all non-stormwater discharges, including the source, quantity, frequency, characteristics, and associated drainage area, and indicate whether these discharges are authorized or unauthorized.
 6. **Erodible Surfaces.** The SWPPP shall describe any facility locations where soil erosion may be caused by industrial activity, contact with stormwater, authorized and unauthorized non-stormwater discharges, or run-on from areas surrounding the facility.
- N. **Assessment of Potential Pollutant Sources.** The SWPPP shall include a narrative assessment of all areas of industrial activity with potential industrial pollutant sources, including, at a minimum, the following:
1. Facility areas with likely sources of pollutants;
 2. Pollutants likely to be present in industrial stormwater discharges;
 3. Approximate quantity, physical characteristics (e.g., liquid, powder, solid), and locations of each industrial material handled, produced, stored, recycled, or disposed;
 4. Degree to which the pollutants associated with such materials may be exposed to, and mobilized by, contact with stormwater;
 5. Direct and indirect pathways by which pollutants may be exposed to stormwater;
 6. Sampling, visual observation, and inspection records;
 7. Effectiveness of existing BMPs to reduce or prevent pollutants in industrial stormwater discharges; and

8. Estimated effectiveness of implementing, to the extent feasible, minimum BMPs to reduce or prevent pollutants in industrial stormwater discharges.

Based upon the assessment, the SWPPP shall identify facility areas where the minimum BMPs described in Provision I.F, below, will not adequately reduce or prevent pollutants in stormwater discharges and any necessary advanced BMPs, as described in Provision I.G, below, for those areas.

O. Minimum Best Management Practices (BMPs). The Discharger shall, to the extent feasible, implement and maintain the following BMPs:

1. Good Housekeeping. The Discharger shall do the following:

- a. Observe all outdoor areas associated with industrial activity, including stormwater discharge locations, drainage areas, conveyance systems, waste handling and disposal areas, and perimeter areas affected by off-facility materials or stormwater run-on to determine housekeeping needs. Any identified debris, waste, spills, tracked materials, or leaked materials shall be cleaned and disposed of properly;
- b. Minimize or prevent material tracking;
- c. Minimize dust generated from industrial materials or activities;
- d. Ensure that all facility areas impacted by rinse or wash waters are cleaned as soon as possible;
- e. Cover all stored industrial materials that can be readily mobilized by contact with stormwater;
- f. Contain all stored non-solid industrial materials or wastes (e.g., particulates, powders, shredded paper) that can be transported or dispersed by the wind or contact with stormwater;
- g. Prevent disposal of any rinse or wash waters or industrial materials into the stormwater conveyance system;
- h. Minimize stormwater discharges from non-industrial areas (e.g., stormwater flows from employee parking areas) that contact industrial areas of the facility; and,
- i. Minimize authorized non-stormwater discharges from non-industrial areas (e.g., potable water, fire hydrant testing) that contact areas of the sanitary or industrial facility.

2. **Preventative Maintenance.** The Discharger shall (1) identify all equipment and systems used outdoors that may spill or leak pollutants, (2) observe the identified equipment and systems to detect leaks or identify conditions that may result in the development of leaks, (3) establish an appropriate schedule for maintenance of identified equipment and systems, and (4) establish procedures for prompt maintenance and repair of equipment and maintenance of systems when conditions exist that may result in the development of spills or leaks.

- 2. Spill and Leak Prevention and Response.** The Discharger shall (1) establish procedures and controls to minimize spills and leaks; (2) develop and implement spill and leak response procedures to prevent industrial materials from discharging through the stormwater conveyance system (spilled or leaked industrial materials shall be cleaned promptly and disposed of properly); (3) identify and describe all necessary and appropriate spill and leak response equipment, locations of spill and leak response equipment, and spill or leak response equipment maintenance procedures; and (4) identify and train appropriate spill and leak response personnel.
- 3. Material Handling and Waste Management.** The Discharger shall do the following:

 - a. Prevent or minimize handling of industrial materials or wastes that can be readily mobilized by contact with stormwater during a storm;
 - b. Contain all stored non-solid industrial materials or wastes (e.g., particulates, powers, shredded paper) that can be transported or dispersed by the wind or contact with stormwater;
 - c. Cover industrial waste disposal containers and industrial material storage containers that contain industrial materials when not in use;
 - d. Divert run-on and stormwater generated from within the facility away from all stockpiled materials;
 - e. Clean all spills of industrial materials or wastes that occur during handling in accordance with spill response procedures; and,
 - f. Observe and clean, as appropriate, any outdoor material or waste handling equipment or containers that can be contaminated by contact with industrial materials or wastes.
- 4. Erosion and Sediment Control.** The Discharger shall (1) implement effective wind erosion controls; (2) provide effective stabilization for inactive areas, finished slopes, and other erodible areas prior to a forecasted storms; (3) maintain effective perimeter controls and stabilize site entrances and exits to sufficiently control discharges of erodible materials; and (4) divert run-on and stormwater generated from within the facility away from erodible materials.
- 5. Employee Training.** The Discharger shall ensure that all personnel implementing the SWPPP are properly trained with respect to BMP implementation, BMP effectiveness evaluations, visual observations, and monitoring activities. The Discharger shall identify which personnel need to be trained, their responsibilities, and the type of training they are to receive and maintain documentation of completed training and the personnel that received the training with the SWPPP.
- 6. Quality Assurance and Record Keeping.** The Discharger shall (1) develop and implement management procedures to ensure that appropriate personnel implement all SWPPP elements; (2) develop methods of tracking and recording BMP implementation; and (3)

maintain BMP implementation records, training records, and records related to any spills and clean-up related response activities for a minimum of five years.

- P. Action Levels and Advanced BMPs.** If the Discharger samples total suspended solids (TSS), oil and grease, or pH in excess of an action level in Table A, the Discharger shall review the SWPPP to identify appropriate modifications to existing BMPs or additional BMPs as necessary to reduce pollutant discharge concentrations to levels below the action level. The Discharger shall revise the SWPPP accordingly before the next storm, if possible, or as soon as practical, and in no event later than three months following the exceedance.

Table A
Stormwater Action Levels

| Parameter | Unit | Instantaneous Action Level | Annual Action Level |
|------------------------|----------------|----------------------------|---------------------|
| Total Suspended Solids | mg/L | 400 | 100 |
| Oil & Grease | mg/L | 25 | 15 |
| pH | standard units | 6.0-9.0 ^[1] | --- |

Footnote:

^[1] Values below or above this range require action.

If, upon subsequent monitoring, the pollutants measured in Table A continue to exceed their respective action levels, the Discharger shall further evaluate its BMPs and update its SWPPP accordingly to include advanced BMPs in addition to the minimum BMPs described in Provision I.F, above. The Discharger shall, to the extent feasible, implement and maintain any advanced BMPs identified pursuant to Provision I.E.8, above, as necessary to reduce or prevent discharges of pollutants in stormwater discharges in a manner that reflects best industry practice considering technological availability and economic practicability and achievability. Advanced BMPs may include one or more of the following:

1. Exposure Minimization BMPs. These include storm resistant shelters (either permanent or temporary) that prevent the contact of stormwater with identified industrial materials.
2. Stormwater Containment and Discharge Reduction BMPs. These include BMPs that divert, infiltrate, reuse, contain, retain, or reduce the volume of stormwater runoff.
3. Treatment Control BMPs. These include mechanical, chemical, biologic, or any other treatment technology that will meet the treatment design standard.

- Q. BMP Descriptions.** The SWPPP shall identify each BMP being implemented at the facility, including the following:

1. The pollutants the BMP is designed to reduce or prevent;
2. The frequency, times of day, or conditions when the BMP is scheduled for implementation;
3. The locations within each area of industrial activity or industrial pollutant source where the BMP shall be implemented;
4. The individual responsible for implementing the BMP;

5. The procedures, including maintenance procedures, and instructions to implement the BMP effectively; and
6. The equipment and tools necessary to implement the BMP effectively.

R. Annual Comprehensive Facility Compliance Evaluation. The Discharger shall conduct one annual facility evaluation for each reporting year (July 1 to June 30). If the Discharger conducts an annual evaluation fewer than 8 months, or more than 16 months, after it conducts the previous annual evaluation, it shall document the justification for doing so. The Discharger shall revise the SWPPP, as appropriate, and implement the revisions within 90 days of the annual evaluation. At a minimum, the annual evaluations shall consist of the following:

1. A review of all sampling, visual observation, and inspection records conducted during the previous reporting year;
2. An inspection of all areas of industrial activity and associated potential pollutant sources for evidence of, or the potential for, pollutants entering the stormwater conveyance system;
3. An inspection of all drainage areas previously identified as having no exposure to industrial activities and materials;
4. An inspection of equipment needed to implement the BMPs; and
5. An assessment of any other factors needed to comply with the requirements of the Annual Stormwater Report (see Provision III.A, below).

II. STANDARD PROVISIONS – MONITORING

A. Visual Observations

1. Monthly Visual Observations

- a. At least once per month, the Discharger shall visually observe each drainage area for the following:
 - i. The presence or indication of prior, current, or potential unauthorized non-stormwater discharges and their sources;
 - ii. Authorized non-stormwater discharges, sources, and associated BMPs; and
 - iii. Outdoor industrial equipment and storage areas, outdoor industrial activities areas, BMPs, and all other potential sources of industrial pollutants.
- b. The monthly visual observations shall be conducted during daylight hours of scheduled facility operating hours and on days without precipitation.
- c. The Discharger shall provide an explanation in the Annual Stormwater Report for uncompleted monthly visual observations (see Provision III.A, below).

- 2. Sampling Event Visual Observations.** Sampling event visual observations shall be conducted at the same time sampling occurs at a discharge location. At each discharge location where a sample is obtained, the Discharger shall observe the discharge of stormwater associated with industrial activity.
 - a. The Discharger shall ensure that visual observations of stormwater discharged from containment sources (e.g., secondary containment or storage ponds) are conducted at the time that the discharge is sampled.
 - b. If the Discharger employs volume-based or flow-based treatment BMPs, it shall sample any bypass that occurs while the visual observations and sampling of stormwater discharges are conducted.
 - c. The Discharger shall visually observe and record the presence or absence of floating and suspended materials, oil and grease, discolorations, turbidity, odors, trash/debris, and sources of any discharged pollutants.
 - d. If a discharge location is not visually observed during the sampling event, the Discharger shall record which discharge locations were not observed during sampling or that there was no discharge from the discharge location.
 - e. The Discharger shall provide an explanation in the Annual Stormwater Report for uncompleted sampling event visual observations (see Provision III.A, below).
- 3. Visual Observation Records.** The Discharger shall maintain records of all visual observations. Records shall include the date, approximate time, locations observed, presence and probable source of any observed pollutants, name of persons who conducted the observations, and any response actions and/or additional SWPPP revisions necessary in response to the visual observations.
- 4. SWPPP Revisions.** The Discharger shall revise its BMPs as necessary when the visual observations indicate pollutant sources have not been adequately addressed.

B. Sampling and Analysis

1. The Discharger shall collect and analyze stormwater samples as specified in the MRP.
2. Samples shall be (i) representative of stormwater associated with industrial activities and any commingled authorized non-stormwater dischargers; or (ii) associated with the discharge of contained stormwater.
3. On a facility-specific basis, the Discharger shall also analyze additional parameters that serve as indicators of the presence of all industrial pollutants identified in the pollutant source assessment. These additional parameters may be modified (added or removed) in accordance with any updated SWPPP pollutant source assessment.

III. STANDARD PROVISIONS – REPORTING

S. Annual Stormwater Report. The results of the Discharger's Annual Comprehensive Facility Compliance Evaluation shall be reported in the Annual Stormwater Report to the Regional Water Board no later than July 30. The Discharger shall include in the Annual Stormwater Report the following:

1. A compliance checklist that indicates whether the Discharger has complied with or addressed all applicable requirements of the SWPPP;
2. An explanation for any non-compliance requirements within the reporting year, as indicated in the compliance checklist;
3. An identification, including page numbers and sections, of all revisions made to the SWPPP within the reporting year; and
4. The date(s) of the annual evaluation.

IV. DEFINITIONS

A. Authorized Non-Stormwater Discharges – non-stormwater discharges are authorized if they meet the following conditions:

1. Fire-hydrant and fire prevention or response system flushing;
2. Potable water sources, including potable water related to the operation, maintenance, or testing of potable water systems;
3. Drinking fountain water and atmospheric condensate, including refrigeration, air conditioning, and compressor condensate;
4. Irrigation drainage and landscape watering, provided that all pesticides, herbicides, and fertilizers have been applied in accordance with manufacturer's labels;
5. Uncontaminated natural springs, groundwater, foundation drainage, footing drainage;
6. Seawater infiltration where the seawater is discharged back into the source; or,
7. Incidental windblown mist from cooling towers that collects on rooftops or adjacent portions of the facility, but not intentional discharges from cooling towers (e.g., "piped" cooling tower blowdown or drains).

B. Stormwater – stormwater runoff, snow melt runoff, and surface runoff and drainage, excluding infiltration and runoff from agricultural land.