

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION**

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**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) CA0085316  
ORDER R5-2022-00XX**

**WASTE DISCHARGE REQUIREMENTS  
FOR THE CITY OF TURLOCK REGIONAL WATER QUALITY CONTROL FACILITY AND THE  
CITY OF MODESTO WATER QUALITY CONTROL FACILITY  
STANISLAUS COUNTY**

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

**Table 1. Discharger Information**

Discharger:	City of Turlock	City of Modesto
Name of Facility:	Regional Water Quality Control Facility	Water Quality Control Facility
Facility Street Address:	901 S. Walnut Road	1221 Sutter Avenue
Facility City, State, Zip:	Turlock, CA 95380	Modesto, CA 95351
Facility County:	Stanislaus	Stanislaus

**Table 2. Discharge Location**

Discharge Point	Effluent Description	Discharge Point Latitude (North)	Discharge Point Longitude (West)	Receiving Water
002	Treated Municipal Wastewater	37° 29' 37" N	121° 11' 40" W	Delta-Mendota Canal

**Table 3. Administrative Information**

This Order was Adopted on:	<b>10 June 2022</b>
This Order shall become effective on:	<b>1 August 2022</b>
This Order shall expire on:	<b>31 July 2027</b>
The Discharger shall file a Report of Waste Discharge (ROWD) as an application for reissuance of WDRs in accordance with title 23, California Code of Regulations, and an application for reissuance of a NPDES permit no later than:	<b>31 July 2026</b>
The United States Environmental Protection Agency (U.S. EPA) and the California Regional Water Quality Control Board, Central Valley Region have classified this discharge as follows:	<b>Major discharge</b>

I, Patrick Pulupa, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of the Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on **10 June 2022**.

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**PATRICK PULUPA**, Executive Officer

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## I. FACILITY INFORMATION

Information describing the City of Turlock Regional Water Quality Control Facility (City of Turlock RWQCF) and the City of Modesto Water Quality Control Facility (City of Modesto WQCF) is summarized in Table 1 and in sections I and II of the Fact Sheet (Attachment F). Section I of the Fact Sheet also includes information regarding the Facility's permit application.

## II. FINDINGS

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

**A. Legal Authorities.** This Order serves as waste discharge requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the California Water Code (commencing with section 13260). This Order is also issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. EPA and chapter 5.5, division 7 of the Water Code (commencing with section 13370). It shall serve as a National Pollutant Discharge Elimination System (NPDES) permit authorizing the Discharger to discharge into waters of the United States at the discharge location described in Table 2 subject to the WDR's in this Order. This Order only regulates the surface water discharge from the City of Turlock RWQCF and City of Modesto WQCF to the Delta-Mendota Canal via the North Valley Regional Recycled Water Program Joint Outfall (Joint Outfall).

The City of Turlock owns and operates the City of Turlock RWQCF, a Publicly Owned Treatment Works (POTW). The City of Modesto owns and operates the City of Modesto WQCF, a POTW. Together, the City of Turlock and the City of Modesto are hereinafter referred to as the Discharger and the City of Turlock RWQCF and the City of Modesto WQCF are hereinafter referred to collectively as the Facilities.

The City of Turlock RWQCF is also regulated by Order R5-2021-0005 (NPDES Permit CA0078948), which regulates the City of Turlock RWQCF's discharge to the San Joaquin River and also includes recycling specifications, groundwater limitations, emergency storage basin operating requirements, pretreatment requirements, and sludge/biosolids treatment or discharge specifications.

The City of Modesto is also regulated by Order R5-2017-0064 (NPDES Permit CA0079103), WDR Order 94-030, and WDR Order 99-112. Order R5-2017-0064 regulates the City of Modesto WQCF's discharge to the San Joaquin River and also includes pretreatment requirements. WDR Order 94-030 regulates the application of stabilized sludge as a soil amendment on the City of Modesto's 2,526-acre ranch. WDR Order 99-112 regulates the land application of cannery and secondary wastewaters to the ranch land. Order R5-2017-0064 is set to be renewed in 2022. This Order does not affect the above-mentioned permits.

**B. California Environmental Quality Act (CEQA).** Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of CEQA, (commencing with section 21100) of Division 13 of Public Resources Code.

- C. Background and Rationale for Requirements.** The Central Valley Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and other available information. The Fact Sheet (Attachment F), which contains background information and rationale for the requirements in this Order, is hereby incorporated into and constitutes Findings for this Order. Attachments A through H are also incorporated into this Order.
- D. Provisions and Requirements Implementing State Law.** The provisions/requirements in subsections **IV.B, IV.C, and V.B** are included to implement state law only. These provisions/requirements are not required or authorized under the federal CWA; consequently, violations of these provisions/requirements are not subject to the enforcement remedies that are available for NPDES violations.
- E. Monitoring and Reporting.** 40 C.F.R. section 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code section 13383 authorizes the Central Valley Water Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. The Monitoring and Reporting Program establishes requirements to implement federal and State requirements. The Monitoring and Reporting Program is provided in Attachment E. The need for these requirements is discussed in the Fact Sheet.

The technical and monitoring reports in this Order are required in accordance with Water Code section 13267, which states the following in subsection (b)(1), “In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports and shall identify the evidence that supports requiring that person to provide the reports.”

The Discharger owns and operates the Facilities subject to this Order. The monitoring reports required by this Order are necessary to determine compliance with this Order. The need for the monitoring reports is discussed in the Fact Sheet.

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

**G. Consideration of Public Comment.** The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the Public Hearing are provided in the Fact Sheet.

THEREFORE, IT IS HEREBY ORDERED that Order R5-2016-0010 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order. This action in no way prevents the Central Valley Water Board from taking enforcement action for violations of the previous Order.

**III. DISCHARGE PROHIBITIONS**

- A.** Discharge of wastewater from the Facilities, as specifically described in the Fact Sheet in section II.B, in a manner different from that described in this Order is prohibited.
- B.** The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by Federal Standard Provisions I.G. and I.H. (Attachment D).
- C.** Neither the discharge nor its treatment shall create a nuisance as defined in section 13050 of the Water Code.
- D.** Discharge of waste classified as ‘hazardous’, as defined in the California Code of Regulations, title 22, section 66261.1 et seq., is prohibited.
- E. Average Dry Weather Flow.** Discharges exceeding an average dry weather flow of 14.2 million gallons per day (MGD) for the City of Turlock RWQCF and 14.9 MGD for the City of Modesto WQCF, are prohibited.

**IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS**

**A. Effluent Limitations – Discharge Point 002**

**1. Final Effluent Limitations – City of Turlock RWQCF**

When discharging to the Joint Outfall (Discharge Point 002), the City of Turlock RWQCF shall maintain compliance with the following effluent limitations with compliance measured at Monitoring Location EFF-001A as described in the Monitoring and Reporting Program, Attachment E. Compliance with the total coliform organisms effluent limitations shall be measured immediately after disinfection at Monitoring Location TCO-001:

- a. The City of Turlock shall maintain compliance with the effluent limitations specified in Table 4:

**Table 4. Effluent Limitations – City of Turlock RWQCF**

Parameters	Units	Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand, 5-day @ 20°Celcius (BOD <sub>5</sub> )	milligrams per liter (mg/L)	10	15	--
Total Suspended Solids (TSS)	mg/L	10	15	--

Parameters	Units	Average Monthly	Average Weekly	Maximum Daily
Chlorodibromomethane	micrograms per liter (µg/L)	19	--	32
Dichlorobromomethane	µg/L	52	--	85
Ammonia (Total as Nitrogen) (1 April – 30 September)	mg/L	1.6	2.8	--
Ammonia (Total as Nitrogen) (1 October – 31 March)	mg/L	2.4	4.1	--
Nitrate plus Nitrite (Total as Nitrogen)	mg/L	10	19	--

- b. **pH:**
  - i. 6.5 Standard Units (SU) as an instantaneous minimum.
  - ii. 8.5 SU as an instantaneous maximum.
- c. **Percent Removal:** The average monthly percent removal of 5-day biochemical oxygen demand (BOD<sub>5</sub>) and total suspended solids (TSS) shall not be less than 85 percent.
- d. **Acute Whole Effluent Toxicity.** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:
  - i. 70%, minimum for any one bioassay; and
  - ii. 90%, median for any three consecutive bioassays.
- e. **Total Residual Chlorine.** Effluent total residual chlorine shall not exceed:
  - i. 0.011 mg/L, as a 4-day average; and
  - ii. 0.019 mg/L, as a 1-hour average.
- f. **Diazinon and Chlorpyrifos.** Effluent diazinon and chlorpyrifos concentrations shall not exceed the sum of one (1.0) as identified below:
  - i. **Average Monthly Effluent Limitation (AMEL)**  

$$S_{AMEL} = C_D M\text{-avg}/0.079 + C_C M\text{-avg}/0.012 \leq 1.0$$

$C_D M\text{-AVG}$  = average monthly diazinon effluent concentration in µg/L.  
 $C_C M\text{-AVG}$  = average monthly chlorpyrifos effluent concentration in µg/L.
  - ii. **Average Weekly Effluent Limitation (AWEL)**  

$$S_{AWEL} = C_D W\text{-avg}/0.14 + C_C W\text{-avg}/0.021 \leq 1.0$$

$C_D W\text{-AVG}$  = average weekly diazinon effluent concentration in µg/L.  
 $C_C W\text{-AVG}$  = average weekly chlorpyrifos effluent concentration in µg/L.
- g. **Total Coliform Organisms.** Effluent total coliform organisms shall not exceed the following with compliance measured at Monitoring Location TCO-001 as described in the MRP, Attachment E:

- i. 2.2 most probable number per 100 milliliter (MPN/100 mL), as a 7-day median.
- ii. 23 MPN/100 mL, more than once in any 30-day period; and
- iii. 240 MPN/100 mL, at any time.

**2. Final Effluent Limitations – City of Modesto WQCF**

When discharging to the Joint Outfall (Discharge Point 002), the City of Modesto WQCF shall maintain compliance with the following effluent limitations with compliance measured at Monitoring Location EFF-001B as described in the Monitoring and Reporting Program, Attachment E. Compliance with the total coliform organisms effluent limitations shall be measured immediately after disinfection (i.e., at UVS-001A and UVS-002A):

- a. The City of Modesto shall maintain compliance with the effluent limitations specified in Table 5:

**Table 5. Effluent Limitations – City of Modesto WQCF**

Parameters	Units	Average Monthly	Average Weekly	Maximum Daily
BOD <sub>5</sub>	mg/L	10	15	--
TSS	mg/L	10	15	--
Ammonia (Total as Nitrogen) (1 April – 30 September)	mg/L	3.4	4.1	--
Ammonia (Total as Nitrogen) (1 October – 31 March)	mg/L	2.6	5.9	--
Nitrate plus Nitrite (Total as Nitrogen)	mg/L	10	13	--

- b. **pH:**
  - i. 6.5 Standard Units (SU) as an instantaneous minimum.
  - ii. 8.5 SU as an instantaneous maximum.
- c. **Percent Removal:** The average monthly percent removal of 5-day biochemical oxygen demand (BOD<sub>5</sub>) and total suspended solids (TSS) shall not be less than 85 percent.
- d. **Acute Whole Effluent Toxicity.** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:
  - i. 70%, minimum for any one bioassay; and
  - ii. 90%, median for any three consecutive bioassays.
- e. **Diazinon and Chlorpyrifos.** Effluent diazinon and chlorpyrifos concentrations shall not exceed the sum of one (1.0) as identified below:
  - i. **Average Monthly Effluent Limitation (AMEL)**  

$$S_{AMEL} = C_D M_{-avg}/0.079 + C_C M_{-avg}/0.012 \leq 1.0$$

$$C_D M_{-AVG} = \text{average monthly diazinon effluent concentration in } \mu\text{g/L.}$$

CC M-AVG = average monthly chlorpyrifos effluent concentration in  $\mu\text{g/L}$ .

ii. **Average Weekly Effluent Limitation (AWEL)**

$$\text{SAWEL} = \text{CD W-avg}/0.14 + \text{CC W-avg}/0.021 \leq 1.0$$

CD W-AVG = average weekly diazinon effluent concentration in  $\mu\text{g/L}$ .

CC W-AVG = average weekly chlorpyrifos effluent concentration in  $\mu\text{g/L}$ .

- f. **Total Coliform Organisms.** Effluent total coliform organisms shall not exceed:
- i. 2.2 most probable number per 100 milliliter (MPN/100 mL), as a 7-day median.
  - ii. 23 MPN/100 mL, more than once in any 30-day period; and
  - iii. 240 MPN/100 mL, at any time.

**B. Land Discharge Specifications – Not Applicable**

**C. Recycling Specifications – Not Applicable**

**V. RECEIVING WATER LIMITATIONS**

**A. Surface Water Limitations**

Discharges from the Joint Outfall (Discharge Point 002) shall not cause the following in the Delta-Mendota Canal:

1. **Biostimulatory Substances.** Water to contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.
2. **Chemical Constituents.** Chemical constituents to be present in concentrations that adversely affect beneficial uses.
3. **Color.** Discoloration that causes nuisance or adversely affects beneficial uses.
4. **Dissolved Oxygen:**
  - a. The monthly median of the mean daily dissolved oxygen concentration to fall below 85 percent of saturation in the main water mass;
  - b. The 95-percentile dissolved oxygen concentration to fall below 75 percent of saturation; nor
  - c. The dissolved oxygen concentration to be reduced below 5.0 mg/L at any time.
5. **Floating Material.** Floating material to be present in amounts that cause nuisance or adversely affect beneficial uses.
6. **Oil and Grease.** Oils, greases, waxes, or other materials to be present in concentrations that cause nuisance, result in a visible film or coating on the



surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.

7. **pH.** The pH to be depressed below 6.5 nor raised above 8.5.
8. **Pesticides:**
  - a. Pesticides to be present, individually or in combination, in concentrations that adversely affect beneficial uses;
  - b. Pesticides to be present in bottom sediments or aquatic life in concentrations that adversely affect beneficial uses;
  - c. Total identifiable persistent chlorinated hydrocarbon pesticides to be present in the water column at concentrations detectable within the accuracy of analytical methods approved by U.S. EPA or the Executive Officer;
  - d. Pesticide concentrations to exceed those allowable by applicable antidegradation policies (see State Water Resources Control Board [State Water Board] Board Resolution No. 68-16 and 40 CFR section 131.12.);
  - e. Pesticide concentrations to exceed the lowest levels technically and economically achievable;
  - f. Pesticides to be present in concentration in excess of the maximum contaminant levels (MCL's) set forth in CCR, Title 22, division 4, chapter 15; nor
  - g. Thiobencarb to be present in excess of 1.0 µg/L.
9. **Radioactivity:**
  - a. Radionuclides to be present in concentrations that are harmful to human, plant, animal, or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.
  - b. Radionuclides to be present in excess of the MCL's specified in Table 64442 of section 64442 and Table 64443 of section 64443 of Title 22 of the California Code of Regulations.
10. **Suspended Sediments.** The suspended sediment load and suspended sediment discharge rate of surface waters to be altered in such a manner as to cause nuisance or adversely affect beneficial uses.
11. **Settleable Substances.** Substances to be present in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.
12. **Suspended Material.** Suspended material to be present in concentrations that cause nuisance or adversely affect beneficial uses.
13. **Taste and Odors.** Taste- or odor-producing substances to be present in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.

14. **Temperature.** The natural temperature to be increased by more than 5° Fahrenheit. Compliance to be determined based on the difference in temperature at Monitoring Locations DMC-001 and DMC-002.
15. **Toxicity.** Toxic substances to be present, individually or in combination, in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.
16. **Turbidity.**
  - a. Shall not exceed 2 Nephelometric Turbidity Units (NTU) where natural turbidity is less than 1 NTU;
  - b. Shall not increase more than 1 NTU where natural turbidity is between 1 and 5 NTUs;
  - c. Shall not increase more than 20 percent where natural turbidity is between 5 and 50 NTUs;
  - d. Shall not increase more than 10 NTU where natural turbidity is between 50 and 100 NTUs; nor
  - e. Shall not increase more than 10 percent where natural turbidity is greater than 100 NTUs.

**B. Groundwater Limitations - Not Applicable**

**VI. PROVISIONS**

**A. Standard Provisions**

1. The Discharger shall comply with all Standard Provisions included in Attachment D.
2. The Discharger shall comply with the following provisions. In the event that there is any conflict, duplication, or overlap between provisions specified by this Order, the more stringent provision shall apply:
  - a. If the Discharger's wastewater treatment plant is publicly owned or subject to regulation by California Public Utilities Commission, it shall be supervised and operated by persons possessing certificates of appropriate grade according to Title 23, CCR, division 3, chapter 26.
  - b. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:
    - i. violation of any term or condition contained in this Order;
    - ii. obtaining this Order by misrepresentation or by failing to disclose fully all relevant facts;
    - iii. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; and
    - iv. a material change in the character, location, or volume of discharge.

**The causes for modification include:**

- i. *New regulations.* New regulations have been promulgated under section 405(d) of the CWA, or the standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued.
- ii. *Land application plans.* When required by a permit condition to incorporate a land application plan for beneficial reuse of sewage sludge, to revise an existing land application plan, or to add a land application plan.
- iii. *Change in sludge use or disposal practice.* Under 40 CFR section 122.62(a)(1), a change in the Discharger's sludge use or disposal practice is a cause for modification of the permit. It is cause for revocation and reissuance if the Discharger requests or agrees.

The Central Valley Water Board may review and revise this Order at any time upon application of any affected person or the Central Valley Water Board's own motion.

- c. If a toxic effluent standard or prohibition (including any scheduled compliance specified in such effluent standard or prohibition) is established under section 307(a) of the CWA, or amendments thereto, for a toxic pollutant that is present in the discharge authorized herein, and such standard or prohibition is more stringent than any limitation upon such pollutant in this Order, the Central Valley Water Board will revise or modify this Order in accordance with such toxic effluent standard or prohibition.

The Discharger shall comply with effluent standards and prohibitions within the time provided in the regulations that establish those standards or prohibitions, even if this Order has not yet been modified.

- d. This Order shall be modified, or alternately revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:
  - i. Contains different conditions or is otherwise more stringent than any effluent limitation in the Order; or
  - ii. Controls any pollutant limited in the Order.

The Order, as modified or reissued under this paragraph, shall also contain any other requirements of the CWA then applicable.

- e. The provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order shall not be affected.
- f. The Discharger shall take all reasonable steps to minimize any adverse effects to waters of the State or users of those waters resulting from any discharge or sludge use or disposal in violation of this Order. Reasonable steps shall include such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge or sludge use or disposal.

- g. The Discharger shall ensure compliance with any existing or future pretreatment standard promulgated by U.S. EPA under section 307 of the CWA, or amendment thereto, for any discharge to the municipal system.
- h. A copy of this Order shall be maintained at the discharge facilities and be available at all times to operating personnel. Key operating personnel shall be familiar with its content.
- i. Safeguard to electric power failure:
  - i. The Discharger shall provide safeguards to assure that, should there be reduction, loss, or failure of electric power, the discharge shall comply with the terms and conditions of this Order.
  - ii. Upon written request by the Central Valley Water Board, the Discharger shall submit a written description of safeguards. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means. A description of the safeguards provided shall include an analysis of the frequency, duration, and impact of power failures experienced over the past 5 years on effluent quality and on the capability of the Discharger to comply with the terms and conditions of the Order. The adequacy of the safeguards is subject to the approval of the Central Valley Water Board.
  - iii. Should the treatment works not include safeguards against reduction, loss, or failure of electric power, or should the Central Valley Water Board not approve the existing safeguards, the Discharger shall, within 90 days of having been advised in writing by the Central Valley Water Board that the existing safeguards are inadequate, provide to the Central Valley Water Board and U.S. EPA a schedule of compliance for providing safeguards such that in the event of reduction, loss, or failure of electric power, the Discharger shall comply with the terms and conditions of this Order. The schedule of compliance shall, upon approval of the Central Valley Water Board, become a condition of this Order.
- j. The Discharger, upon written request of the Central Valley Water Board, shall file with the Board a technical report on its preventive (failsafe) and contingency (cleanup) plans for controlling accidental discharges, and for minimizing the effect of such events. This report may be combined with that required under the Central Valley Water Board Standard Provision contained in section VI.A.2.i of this Order.

**The technical report shall:**

- i. Identify the possible sources of spills, leaks, untreated waste by-pass, and contaminated drainage. Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered.
- ii. Evaluate the effectiveness of present facilities and procedures and state when they became operational.

- iii. Predict the effectiveness of the proposed facilities and procedures and provide an implementation schedule containing interim and final dates when they will be constructed, implemented, or operational.

The Central Valley Water Board, after review of the technical report, may establish conditions which it deems necessary to control accidental discharges and to minimize the effects of such events. Such conditions shall be incorporated as part of this Order, upon notice to the Discharger.

- k. A publicly owned treatment works whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment and disposal facilities. The projections shall be made in January, based on the last 3 years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in 4 years, the Discharger shall notify the Central Valley Water Board by 31 January. A copy of the notification shall be sent to appropriate local elected officials, local permitting agencies and the press. Within 120 days of the notification, the Discharger shall submit a technical report showing how it will prevent flow volumes from exceeding capacity or how it will increase capacity to handle the larger flows. The Central Valley Water Board may extend the time for submitting the report.
- l. The Discharger shall submit technical reports as directed by the Executive Officer. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
- m. The Central Valley Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.
- n. For publicly owned treatment works, prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a permanent decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Board, Division of Water Rights, and receive approval for such a change. (Water Code section 1211).
- o. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by

letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.

- p. This Order may be reopened to transfer ownership of control of this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, address and telephone number of the persons responsible for contact with the Central Valley Water Board and a statement. The statement shall comply with the signatory and certification requirements in the federal Standard Provisions (Attachment D, section V.B) and state that the new owner or operator assumes full responsibility for compliance with this Order.
- q. 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.
- r. Failure to comply with provisions or requirements of this Order, or violation of other applicable laws or regulations governing discharges from the facilities, may subject the Discharger to administrative or civil liabilities, criminal penalties, and/or other enforcement remedies to ensure compliance. Additionally, certain violations may subject the Discharger to civil or criminal enforcement from appropriate local, state, or federal law enforcement entities.
- s. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, effluent limitation, or receiving water limitation of this Order, the Discharger shall notify the Central Valley Water Board by telephone (916) 464-3291 within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within five days, unless the Central Valley Water Board waives confirmation. The written notification shall state the nature, time, duration, and cause of noncompliance, and shall describe the measures being taken to remedy the current noncompliance and prevent recurrence including, where applicable, a schedule of implementation. Other noncompliance requires written notification as above at the time of the normal monitoring report.

**B. Monitoring and Reporting Program (MRP) Requirements**

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

**C. Special Provisions**

**1. Reopener Provisions**

- a. Conditions that necessitate a major modification of a permit are described in 40 CFR section 122.62, including, but not limited to:
  - i. If new or amended applicable water quality standards are promulgated or approved pursuant to section 303 of the CWA, or amendments thereto, this permit may be reopened and modified in accordance with the new or amended standards.

- ii. When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance.
- b. This Order may be reopened for modification, or revocation and reissuance, as a result of the detection of a reportable priority pollutant generated by special conditions included in this Order. These special conditions may be, but are not limited to, fish tissue sampling, whole effluent toxicity, monitoring requirements on internal waste stream(s), and monitoring for surrogate parameters. Additional requirements may be included in this Order as a result of the special condition monitoring data.
- c. **Mercury.** If mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted, this Order shall be reopened, and the mass effluent limitation modified (higher or - lower) or an effluent concentration limitation imposed. If the Central Valley Water Board determines that a mercury offset program is feasible for Dischargers subject to a NPDES permit, then this Order may be reopened to reevaluate the mercury mass loading limitation(s) and the need for a mercury offset program for the Discharger.
- d. **Whole Effluent Toxicity.** As a result of a Toxicity Reduction Evaluation (TRE), this Order may be reopened to include a new chronic toxicity effluent limitation, a revised acute toxicity effluent limitation, and/or an effluent limitation for a specific toxicant identified in a TRE. Additionally, if the State Water Board revises the SIP's toxicity control provisions, this Order may be reopened to implement the new provisions.
- e. **Water Effects Ratios (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating criteria for applicable inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total when developing effluent limitations for hardness dependent metals. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.
- f. **Ultraviolet (UV) Disinfection Operating Specifications.** The UV operating specifications in this Order for the City of Modesto's WQCF are based on the UV guidelines developed by the National Water Research Institute and American Water Works Association Research Foundation titled, "Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse." If the Discharger conducts a site-specific UV engineering study that identifies site-specific UV operating specifications that will achieve the virus inactivation equivalent to Title 22 disinfected tertiary recycled water, this Order may be reopened to modify the UV operating specifications.
- g. **Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS).** On 17 January 2020, certain Basin Plan Amendments to

incorporate new strategies for addressing ongoing salt and nitrate accumulation in the Central Valley became effective. Other provisions subject to U.S. EPA approval became effective on 2 November 2020, when approved by U.S. EPA. As the Central Valley Water Board moves forward to implement those provisions that are now in effect, this Order may be amended or modified to incorporate new or modified requirements necessary for implementation of the Basin Plan Amendments. More information regarding these Amendments can be found on the [Central Valley Salinity Alternatives for Long-Term Sustainability \(CV-SALTS\) web page](https://www.waterboards.ca.gov/centralvalley/water_issues/salinity/):  
([https://www.waterboards.ca.gov/centralvalley/water\\_issues/salinity/](https://www.waterboards.ca.gov/centralvalley/water_issues/salinity/))

- h. **City of Turlock RWQCF Flow Increase.** Upon completion of upgrades and expansions to the City of Turlock RWQCF, this Order may be reopened to increase the effluent flow prohibition for the City of Turlock RWQCF to 25.4 MGD. Additionally, if the City of Turlock submits information demonstrating that the discharge from the City of Turlock RWQCF can achieve compliance with all final effluent limitations at effluent flows greater than 14.2 MGD, this Order may be reopened to increase the effluent flow prohibition up to the design capacity and revise effluent limitations based on updated dilution credits.
- i. **City of Modesto WQCF Flow Increase.** Upon completion of the phased upgrades and expansions to the City of Modesto WQCF, this Order may be reopened to increase the effluent flow prohibition for the City of Modesto WQCF to 27.3 MGD.
- j. **Dilution Credits.** If the City of Turlock or City of Modesto request dilution credits for additional parameters and provides information supporting dilution credits, including demonstration that assimilative capacity is available and that the dilution credits are consistent with the requirements and guidance in Basin Plan, SIP (for CTR constituents), and U.S. EPA guidance, this Order may be reopened to modify the effluent limitations for the additional parameters.
- k. **Surface Water Augmentation Project.** On 30 March 2022, the State Water Board, Division of Drinking Water (DDW) staff provided a letter of recommendations regarding the North Valley Regional Recycled Water Program (March 2022 DDW Letter). In the March 2022 DDW Letter, DDW staff found that the North Valley Regional Recycled Water Program (NVRWP) does not fall under the definition of Surface Water Source Augmentation Project and is therefore not subject to the applicable regulations. The March 2022 DDW Letter also recommended a provision to reopen this Order should the monitoring data indicate a revision to DDW's determination is appropriate. Therefore, this Order shall be reopened should the monitoring data indicate DDW's determination that this is not a surface water augmentation project is no longer appropriate or if DDW determines that this project is applicable under either current



Indirect Potable Reuse or future Direct Potable Reuse raw water augmentation regulations.

## 2. **Special Studies, Technical Reports, and Additional Monitoring Requirements**

- a. **Toxicity Reduction Evaluation Requirements.** This Provision requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate, effluent toxicity from their specific discharge. If the respective discharge exceeds the chronic toxicity thresholds defined in this Provision, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE) in accordance with an approved TRE Workplan and take actions to mitigate the impact of their discharge and prevent recurrence of toxicity. A TRE is a site-specific study conducted in a stepwise process to identify the source(s) of toxicity and the effective control measures for effluent toxicity. A TRE is designed to identify the causative agents and sources of whole effluent toxicity, evaluate the effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity. Alternatively, under certain conditions as described in this provision below, the Discharger may participate in an approved Toxicity Evaluation Study (TES) in lieu of conducting a site-specific TRE.
  - i. **Numeric Toxicity Monitoring Trigger.** The numeric Toxicity Unit (TUc) monitoring trigger is 1 TUc (where  $TUc = 100/NOEC$ ). The monitoring trigger is not an effluent limitation; it is the toxicity threshold above which the Discharger is required to initiate additional actions to evaluate effluent toxicity as specified in subsection ii, below.
  - ii. **Chronic Toxicity Monitoring Trigger Exceeded.** When a chronic whole effluent toxicity result during routine monitoring exceeds the chronic toxicity monitoring trigger, the City of Turlock and/or City of Modesto shall proceed as follows:
    - (a) **Initial Toxicity Check.** If the result is less than or equal to 1.3 TUc (as  $100/EC_{25}$ ) AND/OR the percent effect is less than 25 percent at 100 percent effluent, check for any operation or sample collection issues and return to routine chronic toxicity monitoring. Otherwise, proceed to step (b).
    - (b) **Evaluate 6-week Median.** The City of Turlock and/or City of Modesto may take two additional samples within 6 weeks of the initial routine sampling event exceeding the chronic toxicity monitoring trigger to evaluate compliance using a 6-week median. If the 6-week median is greater than 1.3 TUc (as  $100/EC_{25}$ ) and the percent effect is greater than 25 percent at 100 percent effluent, proceed with subsection (c). Otherwise, the City of Turlock and/or City of Modesto shall check for any operation or sample collection issues and return to routine chronic toxicity monitoring. See Compliance Determination Section VII.F for procedures for calculating 6-week median.

- (c) **Toxicity Source Easily Identified.** If the source(s) of the toxicity is easily identified (e.g., temporary plant upset), the City of Turlock and/or City of Modesto shall make necessary corrections to the facility or facilities and shall resume routine chronic toxicity monitoring; If the source of toxicity is not easily identified the City of Turlock and/or City of Modesto shall conduct a site-specific TRE or participate in an approved TES as described in the following subsections.
- (d) **Toxicity Evaluation Study.** If the percent effect is  $\leq 50$  percent at 100 percent effluent, as the median of up to three consecutive chronic toxicity tests within a 6-week period, the City of Turlock and/or City of Modesto may participate in an approved TES in lieu of a site-specific TRE. The TES may be conducted individually or as part of a coordinated group effort with other similar dischargers. If the City of Turlock and/or City of Modesto chooses not to participate in an approved TES, a site-specific TRE shall be initiated in accordance with subsection (e)(1), below. Nevertheless, the City of Turlock and/or City of Modesto may participate in an approved TES instead of a TRE if the Discharger has conducted a site-specific TRE within the past 12 months and has been unsuccessful in identifying the toxicant.
- (e) **Toxicity Reduction Evaluation.** If the percent effect is  $> 50$  percent at 100 percent effluent, as the median of three consecutive chronic toxicity tests within a 6-week period, the City of Turlock and/or City of Modesto shall initiate a site-specific TRE as follows:
- (i) **Within thirty (30) days** of exceeding the chronic toxicity numeric trigger, the City of Turlock and/or City of Modesto shall submit a TRE Action Plan to the Central Valley Water Board including, at minimum:
- Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including a TRE WET monitoring schedule; and
  - Specific actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity.
- b. **Far-Field Dilution Study.**
- The Discharger shall conduct a far-field dilution study to estimate the monthly average effluent fractions at O'Neill Forebay and San Luis Reservoir. The Far-Field Dilution Study shall be conducted using the appropriate critical design flow based on the appropriate time period that captures expected reasonable-worst case flow conditions for the Delta-Mendota Canal to evaluate the far-field impacts to protect the MUN

beneficial use. The evaluation shall be conducted for the current combined permitted average dry weather flow of 29.1 MGD and the full build-out combined design average dry weather flow of 52.7 MGD. The modeling shall also consider diversions by the Del Puerto Water District and other users from the Delta-Mendota Canal upstream and downstream of the discharge, as well as pump-ins to the Delta-Mendota Canal upstream and downstream of the discharge, as appropriate.

The Discharger shall develop a workplan in consultation with staff from the Central Valley Water Board and State Water Board Division of Drinking Water. The workplan and Far-Field Dilution Study shall be submitted by the due dates in the Technical Reports Table (Attachment E, Section X.D, Table E-11).

c. **Constituents of Emerging Concern (CEC) Study.**

The Discharger shall conduct a CEC study due to concerns of impacts to downstream drinking water facilities. The Discharger shall develop a monitoring plan for collecting and analyzing effluent and receiving water samples for CECs that have health concerns (e.g., Perfluorooctanoic Acid, Perfluorooctanesulfonic acid, N-Nitroso-dimethylamine, N-Nitrosomorpholine, 1,4-dioxane, total trihalomethanes), that do not readily biodegrade and generally occur in relatively high concentrations (e.g., Sucralose, Carbamazepine, and Iohexol), and pathogen indicators (e.g., *Clostridium perfringens* and *Escherichia coli*). The Discharger shall develop the monitoring plan in consultation with staff from the Central Valley Water Board, State Water Contractors, and DDW, that at a minimum determines a specific list of CECs to be analyzed, sampling locations, and sampling frequency. The monitoring plan and final CEC Study shall be submitted by the due dates in the Technical Reports Table (Attachment E, Section X.D, Table E-11).

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

- a. **Salinity Source Control Programs.** The City of Turlock and City of Modesto shall separately continue to implement their Salinity Source Control Programs and shall update them as necessary. Both the City of Turlock and City of Modesto shall separately provide an evaluation of the effectiveness of the Salinity Source Control Program with the Report of Waste Discharge.

The Discharger submitted a Notice of Intent to comply with the Salt Control Program and selected the Alternative Permitting Approach. Accordingly, the Discharger shall participate in the CV-SALTS Prioritization and Optimization (P&O) Study. Furthermore, an evaluation of the effectiveness of the respective Salinity Evaluation and Minimization Plan shall be submitted with the ROWD. The evaluation shall include, at minimum, the calendar annual average concentrations of effluent electrical conductivity during the term of the Order. If the average electrical conductivity concentration for any calendar year exceeds a performance-

based trigger of 1,250  $\mu\text{mhos/cm}$ , the Dischargers shall evaluate possible sources of salinity contributing to the exceedance of the trigger and update their respective Salinity Evaluation and Minimization Plans to include a plan of action to control salinity.

#### 4. Construction, Operation and Maintenance Specifications

- a. **Filtration System Operating Specifications for the City of Turlock RWQCF.** To ensure the filtration system is operating properly to provide adequate disinfection of the wastewater, the turbidity of the filter effluent measured at EFF-001A shall not exceed:
  - i. 2 NTU as a daily average;
  - ii. 5 NTU more than 5 percent of the time within a 24-hour period; and
  - iii. 10 NTU, at any time.
- b. **Filtration System Operating Specifications for the City of Modesto WQCF.** To ensure the filtration system is operating properly to provide adequate disinfection of the wastewater, the turbidity of the filter effluent measured at UVS-001 and UVS-002 shall not exceed:
  - i. 0.2 NTU more than 5 percent of the time within a 24-hour period;
  - ii. 0.5 NTU at any time.
- c. **Ultraviolet (UV) Disinfection System Operating Specifications for the City of Modesto WQCF.** The UV disinfection system must be operated in accordance with an operations and maintenance program that assures adequate disinfection, and shall meet the following minimum specifications to provide virus inactivation equivalent to Title 22 Disinfected Tertiary Recycled Water:
  - i. **UV Dose.** The minimum hourly average UV dose in the UV reactor shall be 80 millijoules per square centimeter ( $\text{mJ/cm}^2$ ).
  - ii. **UV Transmittance.** The minimum hourly average UV transmittance (at 254 nanometers) in the wastewater measured at UVS-001A shall not fall below 65 percent.
  - iii. The lamp sleeves and cleaning system components must be visually inspected per the manufacturer's operations manual for physical wear (scoring, solarization, seal leaks, cleaning fluid levels, etc.) and to check the efficacy of the cleaning system.
  - iv. The lamp sleeves must be cleaned periodically as necessary to meet the UV dose requirements.
  - v. Lamps must be replaced per the manufacturer's operations manual, or sooner, if there are indications the lamps are failing to provide adequate disinfection. Lamp age and lamp replacement records must be maintained.

**5. Special Provisions for Publicly-Owned Treatment Works (POTWs) – Not Applicable**

**6. Other Special Provisions**

- a. **Disinfection Requirements.** Wastewater shall be oxidized, coagulated, filtered, and adequately disinfected consistent with the DDW reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22), or equivalent.

**7. Compliance Schedules – Not Applicable**

**VII. COMPLIANCE DETERMINATION**

- A. BOD<sub>5</sub> and TSS Effluent Limitations (Sections IV.A.1.a, IV.A.1.c, IV.A.2.a, and IV.A.2.c).** Compliance with the final effluent limitations for BOD<sub>5</sub> and TSS required in Waste Discharge Requirements section IV.A.1.a and Section IV.A.2.a shall be ascertained by 24-hour composite samples. Compliance with effluent limitations required in Waste Discharge Requirements section IV.A.1.c and Section IV.A.2.c for percent removal shall be calculated using the arithmetic mean of BOD<sub>5</sub> and TSS in effluent samples collected over a monthly period as a percentage of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period.
- B. Average Dry Weather Flow Prohibition (Section III.E).** The average dry weather discharge flow represents the daily average flow when groundwater is at or near normal and runoff is not occurring. Compliance with the average dry weather flow discharge prohibition will be determined annually based on the average daily flow over three consecutive dry weather months (e.g., July, August, and September).
- C. Total Coliform Organisms Effluent Limitations (Sections IV.A.1.h and IV.A.2.g).** For each day that an effluent sample is collected and analyzed for total coliform organisms, the 7-day median shall be determined by calculating the median concentration of total coliform bacteria in the effluent utilizing the bacteriological results of the last 7 days. For example, if a sample is collected on a Wednesday, the result from that sampling event and all results from the previous 6 days (i.e., Tuesday, Monday, Sunday, Saturday, Friday, and Thursday) are used to calculate the 7-day median. If the 7-day median of total coliform organisms exceeds a most probable number (MPN) of 2.2 per 100 milliliters, the Discharger will be considered out of compliance.
- D. Total Residual Chlorine Effluent Limitations (Section IV.A.1.e).** Continuous monitoring analyzers for chlorine residual or for dechlorination agent residual in the effluent are appropriate methods for compliance determination. A positive residual dechlorination agent in the effluent indicates that chlorine is not present in the discharge, which demonstrates compliance with the effluent limitations. This type of monitoring can also be used to prove that some chlorine residual exceedances are false positives. Continuous monitoring data showing either a positive dechlorination agent residual or a chlorine residual at or below the prescribed limit are sufficient to show compliance with the total residual chlorine effluent limitations, as long as the instruments are maintained and calibrated in accordance with the manufacturer's recommendations.

Any excursion above the 1-hour average or 4-day average total residual chlorine effluent limitations is a violation. If the Discharger conducts continuous monitoring and the Discharger can demonstrate, through data collected from a back-up monitoring system, that a chlorine spike recorded by the continuous monitor was not actually due to chlorine, then any excursion resulting from the recorded spike will not be considered an exceedance, but rather reported as a false positive. Records supporting validation of false positives shall be maintained in accordance with Section IV Standard Provisions (Attachment D).

- E. Effluent Limitations.** Compliance with effluent limitations shall be determined in accordance with section 2.4.5 of the SIP, as follows:
1. Dischargers shall be deemed out of compliance with an effluent limitation, if the concentration in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).
  2. Dischargers shall be required to conduct a Pollutant Minimization Program (PMP) in accordance with section 2.4.5.1 of the SIP when there is evidence that the priority pollutant is present in the effluent above an effluent limitation and either:
    - a. sample result is reported as detected, but not quantified (DNQ) and the effluent limitation is less than the RL; or
    - b. sample result is reported as non-detect (ND) and the effluent limitation is less than the method detection limit (MDL).
  3. When determining compliance with an AMEL and AWEL and more than one sample result is available in the respective month or week, the discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of DNQ or ND. In those cases, the discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:
    - a. The data set shall be ranked from low to high, reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.
    - b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.
  4. If a sample result, or the arithmetic mean or median of multiple sample results, is below the RL, and there is evidence that the priority pollutant is present in the effluent above an effluent limitation and the discharger conducts a PMP (as described in section 2.4.5.1), the discharger shall **not** be deemed out of compliance.
- F. Chronic Whole Effluent Toxicity Effluent Trigger.** To determine an exceedance of the chronic whole effluent toxicity effluent trigger for the Facilities, the median

chronic toxicity units (TUc) shall be the median of up to three consecutive chronic toxicity bioassays during a six-week period. This includes a routine chronic toxicity monitoring event and two subsequent optional monitoring events. If additional monitoring events are not conducted, the median is equal to the result for the routine chronic toxicity monitoring event. If only one additional monitoring event is conducted, the median will be established as the arithmetic mean of the routine monitoring event and compliance monitoring event.

Where the median chronic toxicity units exceed 1 TUc (as 100/NOEC) for any end point, the Facilities will be deemed to have exceeded their respective chronic toxicity effluent trigger if the median chronic toxicity units for any endpoint also exceeds a reporting level of 1.3 TUc (as 100/EC<sub>25</sub>) AND the percent effect at 100 percent effluent exceeds 25 percent. The percent effect used to evaluate an exceedance of the chronic toxicity effluent trigger for the Facilities shall be based on the chronic toxicity bioassay result(s) from the sample(s) used to establish the median TUc result. If the median TUc is based on two equal chronic toxicity bioassay results, the percent effect of the sample with the greatest percent effect shall be used to evaluate the exceedance of the chronic toxicity effluent trigger for the Facilities.

## ATTACHMENT A – DEFINITIONS

The lowest one-day flow with an average reoccurrence frequency of once in ten years.

### **7Q10**

The lowest average seven consecutive day flow with an average reoccurrence frequency of once in ten years

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

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

$$\text{Arithmetic mean} = \mu = \Sigma x / n$$

where:  $\Sigma x$  is the sum of the measured ambient water concentrations, and  $n$  is the number of samples.

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

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

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

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

### **Bioaccumulative**

Those substances taken up by an organism from its surrounding medium through gill membranes, epithelial tissue, or from food and subsequently concentrated and retained in the body of the organism.

### **Carcinogenic**

Pollutants are substances that are known to cause cancer in living organisms.

### **Coefficient of Variation (CV)**

CV is a measure of the data variability and is calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.

### **Daily Discharge**

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

The daily discharge may be determined by the analytical results of a composite sample taken



over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

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

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

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

### **Dilution Credit**

Dilution Credit is the amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

### **Effect Concentration (EC)**

A point estimate of the toxicant concentration that would cause an observable adverse effect (e.g. death, immobilization, or serious incapacitation) in a given percent of the test organisms, calculated from a continuous model (e.g. Probit Model). EC<sub>25</sub> is a point estimate of the toxicant concentration that would cause an observable adverse effect in 25 percent of the test organisms.

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

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

### **Enclosed Bays**

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

### **Endpoint**

An effect that is measured in a toxicity study. Endpoints in toxicity tests may include, but are not limited to survival, reproduction, and growth.

### **Estimated Chemical Concentration**

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

### **Estuaries**

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

### **Inhibition Concentration**

Inhibition Concentration (IC) is a point estimate of the toxicant concentration that would cause a given percent reduction in a non-lethal biological measurement (e.g., reproduction or growth), calculated from a continuous model (i.e., Interpolation Method). IC25 is a point estimate of the toxic concentration that would cause a 25-percent reduction in a non-lethal biological measurement.

### **Inland Surface Waters**

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

### **Instantaneous Maximum Effluent Limitation**

The highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

### **Instantaneous Minimum Effluent Limitation**

The lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

### **Maximum Daily Effluent Limitation (MDEL)**

The highest allowable daily discharge of a pollutant, over a calendar day (or 24-hour period). For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the arithmetic mean measurement of the pollutant over the day.

### **Median**

The middle measurement in a set of data. The median of a set of data is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of measurements ( $n$ ) is odd, then the median =  $X_{(n+1)/2}$ . If  $n$  is even, then the median =  $(X_{n/2} + X_{(n/2)+1})/2$  (i.e., the midpoint between the  $n/2$  and  $n/2+1$ ).

**Method Detection Limit (MDL)**

MDL is the minimum measured 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 in 40 C.F.R. Part 136, Attachment B.

**Minimum Level (ML)**

ML is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

**Mixing Zone**

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

**No-Observed-Effect-Concentration (NOEC)**

The highest concentration of toxicant to which organisms are exposed in a full life-cycle or partial life-cycle (short-term) test, that causes no observable adverse effects on the test organisms (i.e., the highest concentration of toxicant in which the values for the observed responses are not statistically significantly different from the controls).

**Not Detected (ND)**

Sample results which are less than the laboratory's MDL.

**Ocean Waters**

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

**Percent Effect**

The percent effect at the instream waste concentration (IWC) shall be calculated using untransformed data and the following equation:

$$\text{Percent Effect of the Sample} = \frac{\text{Mean Control Response} - \text{Mean Sample Response}}{\text{Mean Control Response}} \cdot 100$$

**Persistent Pollutants**

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

**Pollutant Minimization Program (PMP)**

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

including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The Central Valley Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

### **Pollution Prevention**

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

### **Satellite Collection System**

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

### **Source of Drinking Water**

Any water designated as municipal or domestic supply (MUN) in a Central Valley Water Board Basin Plan.

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

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

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

where:

- x is the observed value;
- $\mu$  is the arithmetic mean of the observed values; and
- n is the number of samples.

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

TRE is a study conducted in a stepwise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These

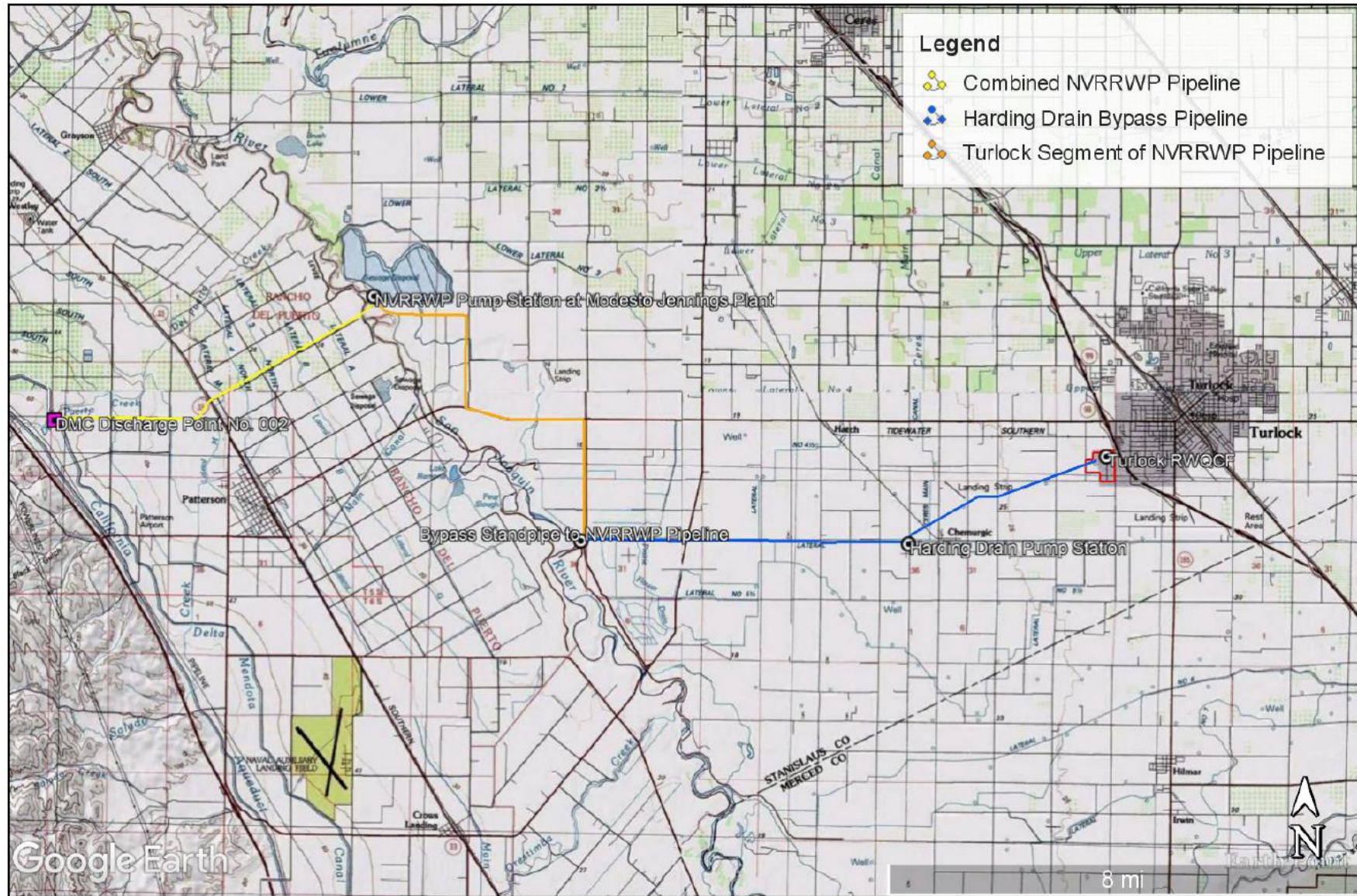
City of Turlock Regional Water Quality Control Facility  
City of Modesto Water Quality Control Facility

ORDER R5-2022-XXXX  
NPDES CA0085316

procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)



ATTACHMENT B – MAP



**ATTACHMENT C – FLOW SCHEMATIC**

Figure C-1: City of Turlock Regional Water Quality Control Facility Flow Schematic

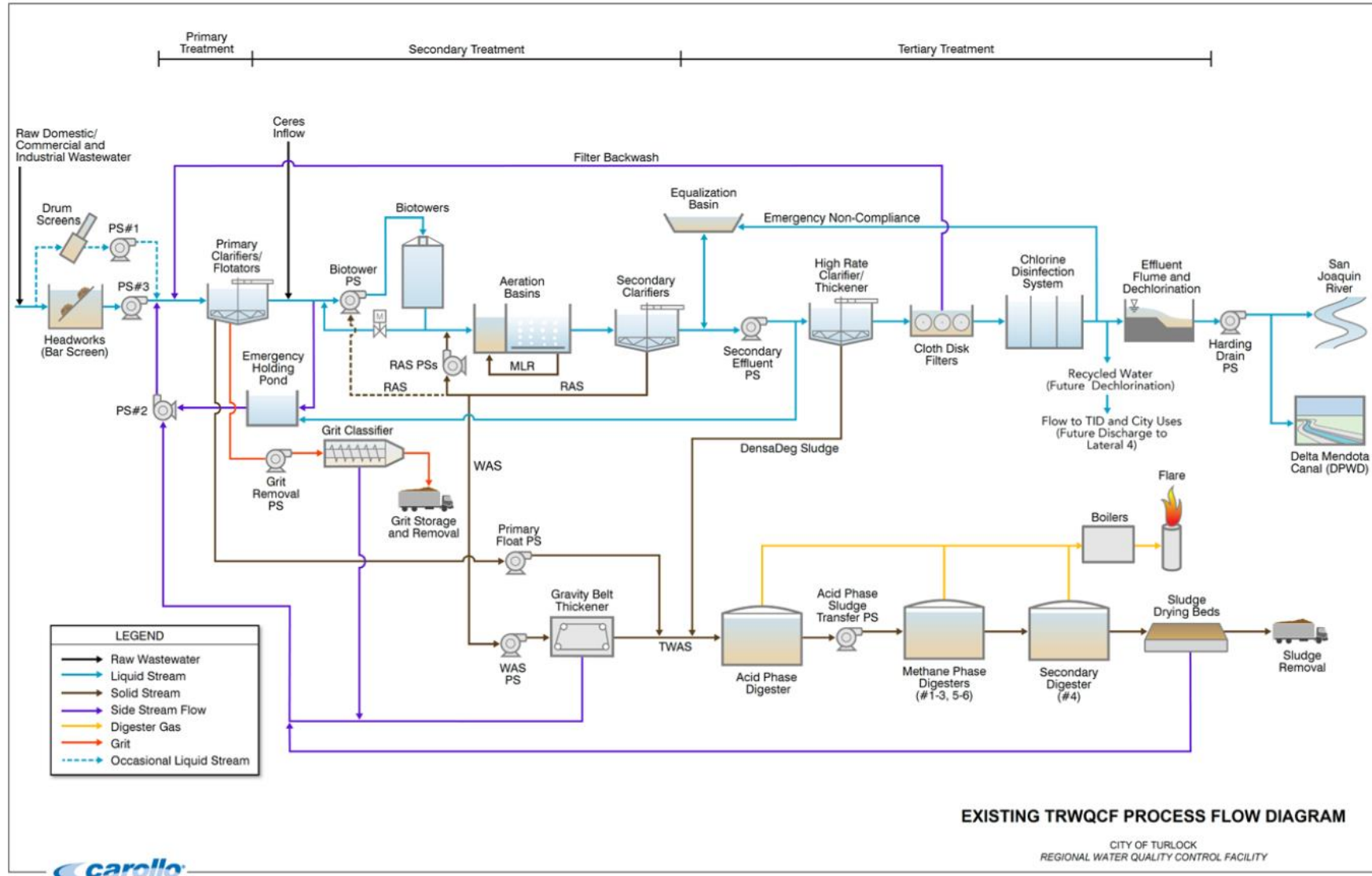
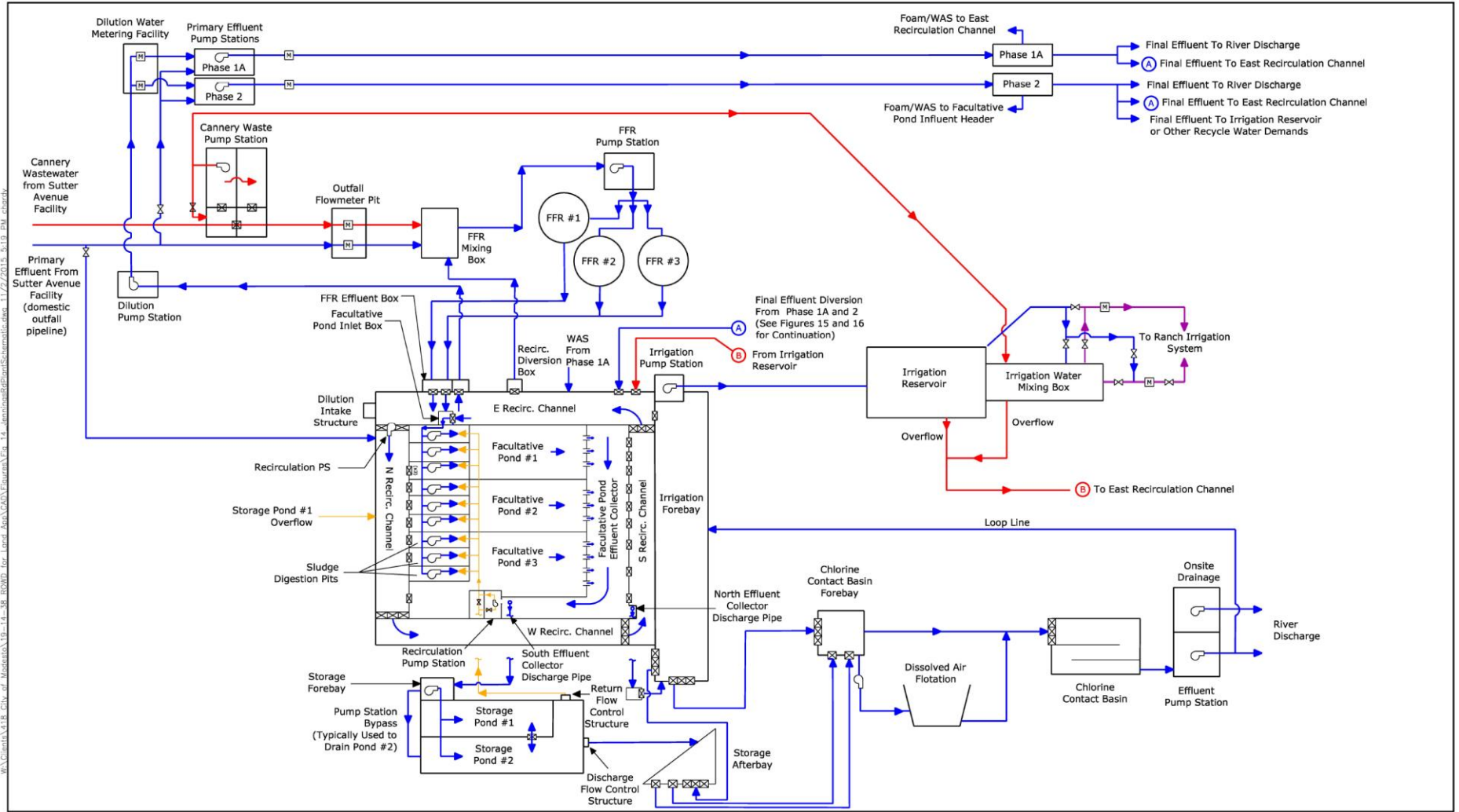




Figure C-2: City of Modesto Water Quality Control Facility, Jennings Plant Flow Schematic



**LEGEND**

Existing Domestic Wastewater Conveyances	Valve
Existing Cannery Process Water Conveyances	Pump
Existing Domestic Recirculation	Gate
Existing Domestic Wastewater or Mixed Domestic and Cannery Process Water Conveyances	Flow Meter
	Weir

Note:  
 See Figure 15 for Flow Schematic of Phase 1A Process and Figure 16 for Flow Schematic of Phase 2 Process.

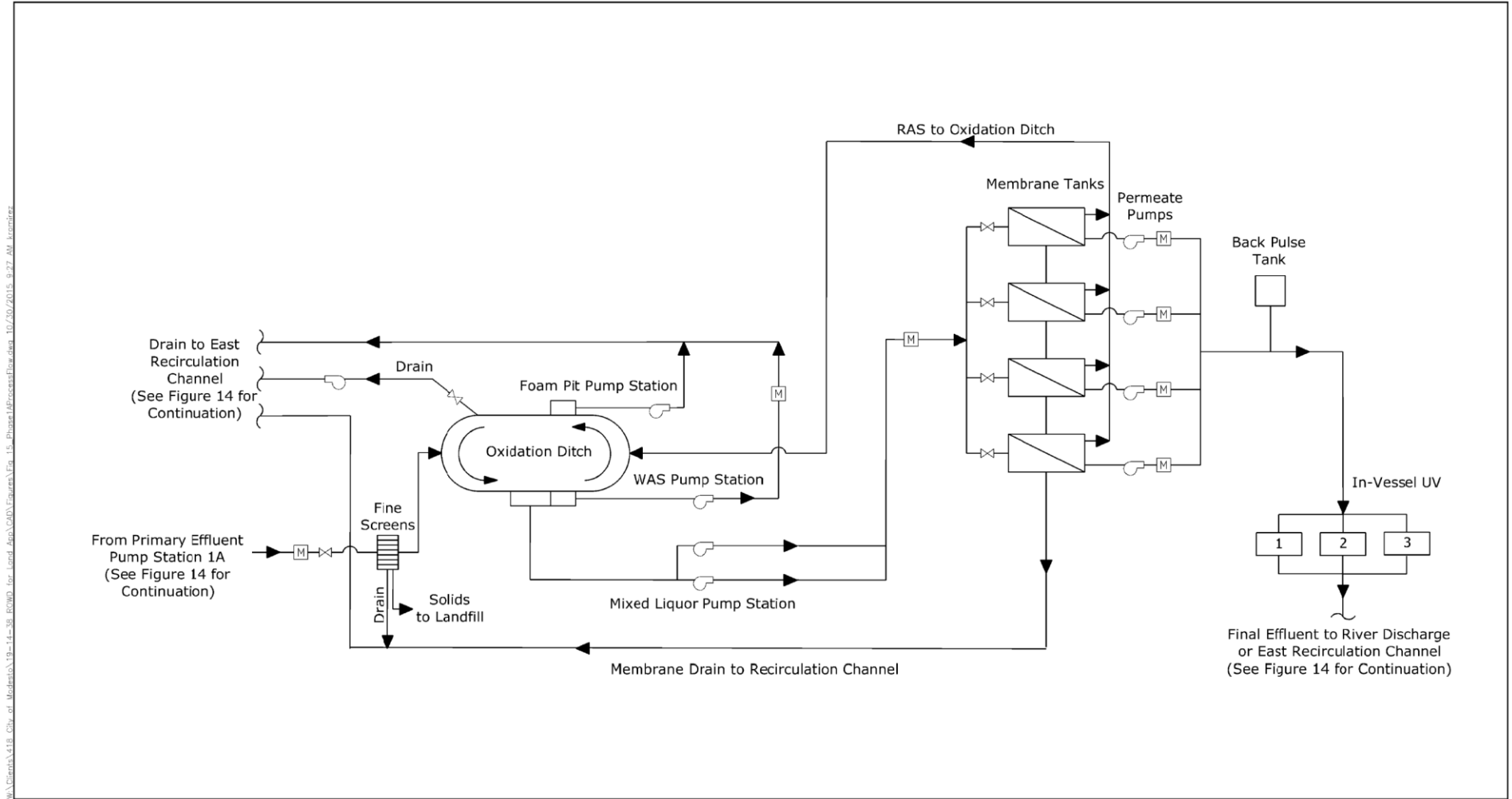


**Figure 14**  
**Jennings Plant**  
**Flow Schematic**

City of Modesto WQCF  
 Report of Waste Discharge  
 and Antidegradation Analysis



Figure C-3: City of Modesto Water Quality Control Facility, Jennings Plant Phase 1A Biological Nutrient Reactor Flow Schematic



**LEGEND**

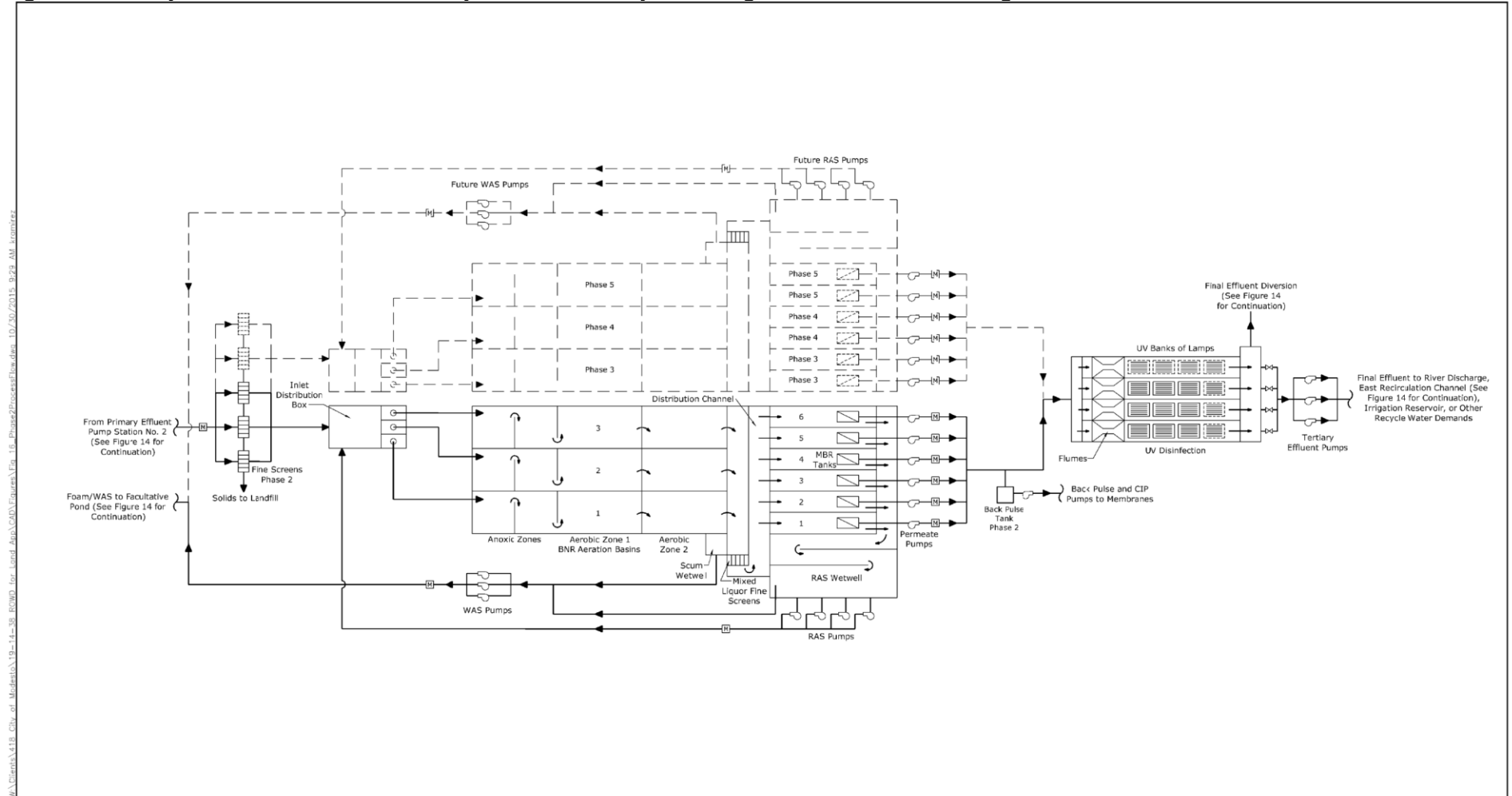
	Wastewater Conveyances
	Valve
	Pump
	Gate
	Flow Meter
	Weir



**Figure 15**  
**Jennings Plant Phase BNR/1A**  
**Tertiary Treatment Effluent**  
**System Flow Schematic**

City of Modesto WQCF  
 Report of Waste Discharge  
 and Antidegradation Analysis

Figure C-4: City of Modesto Water Quality Control Facility, Jennings Plant Phase 2 Biological Nutrient Reactor Flow Schematic



**LEGEND**  
 ∞ Valve  
 Ⓚ Pump  
 [M] Flow Meter



**Figure 16**  
**Jennings Plant Phase 2 BNR**  
**Tertiary Treatment Effluent**  
**System Flow Schematic**

City of Modesto WQCF  
 Report of Waste Discharge  
 and Antidegradation Analysis

## **ATTACHMENT D – STANDARD PROVISIONS**

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

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

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

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

The Discharger shall take all reasonable steps to minimize or prevent any discharge in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 C.F.R. section 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 having 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. section 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. section 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. section 122.5(c).)

**F. Inspection and Entry**

The Discharger shall allow the Central Valley Water Board, State Water Board, U.S. EPA, and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (33 U.S.C. section 1318(a)(4)(B); 40 C.F.R. section 122.41(i); Wat. Code, section 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 section 1318(a)(4)(B)(ii); 40 C.F.R. section 122.41(i)(1); Wat. Code, sections 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. section 1318(a)(4)(B)(ii); 40 C.F.R. section 122.41(i)(2); Wat. Code, sections 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 section 1318(a)(4)(B)(ii); 40 C.F.R. section 122.41(i)(3); Wat. Code, section 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 section 1318(a)(4)(B); 40 C.F.R. section 122.41(i)(4); Wat. Code, sections 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. section 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. section 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. section 122.41(m)(2).)
3. Prohibition of bypass. Bypass is prohibited, and the Central Valley Water Board may take enforcement action against a Discharger for bypass, unless (40 C.F.R. section 122.41(m)(4)(i)):
  - a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 C.F.R. section 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. section 122.41(m)(4)(i)(B)); and
    - c. The Discharger submitted notice to the Central Valley Water Board as required under Standard Provisions – Permit Compliance I.G.5 below. (40 C.F.R. section 122.41(m)(4)(i)(C).)
  4. The Central Valley Water Board may approve an anticipated bypass, after considering its adverse effects, if the Central Valley Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 C.F.R. section 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 Central Valley Water Board. As of 21 December 2023, all notices shall be submitted electronically to the initial recipient (State Water Board's [California Integrated Water Quality System \(CIWQS\) Program website](http://www.waterboards.ca.gov/water_issues/programs/ciwqs/) ([http://www.waterboards.ca.gov/water\\_issues/programs/ciwqs/](http://www.waterboards.ca.gov/water_issues/programs/ciwqs/)), defined in Standard Provisions – Reporting V.J below. Notices shall comply with 40 C.F.R. Part 3, section 122.22, and 40 C.F.R. Part 127. (40 C.F.R. section 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 Central Valley Water Board. As of 21 December 2023, all notices shall be submitted electronically to the initial recipient (State Water Board's [California Integrated Water Quality System \(CIWQS\) Program website](http://www.waterboards.ca.gov/water_issues/programs/ciwqs/) ([http://www.waterboards.ca.gov/water\\_issues/programs/ciwqs/](http://www.waterboards.ca.gov/water_issues/programs/ciwqs/)), defined in Standard Provisions – Reporting V.J below. Notices shall comply with 40 C.F.R. Part 3, section 122.22, and 40 C.F.R. Part 127. (40 C.F.R. section 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. section 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. section 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. section 122.41(n)(3)):
    - a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 C.F.R. section 122.41(n)(3)(i));
    - b. The permitted facility was, at the time, being properly operated (40 C.F.R. section 122.41(n)(3)(ii));
    - c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.1 below (24-hour notice) (40 C.F.R. section 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. section 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. section 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. section 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. section 122.41(b).)

### **C. Transfers**

This Order is not transferable to any person except after notice to the Central Valley Water Board. The Central Valley Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 C.F.R. section 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. section 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. subchapters N or O. 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 as required under 40 C.F.R. chapter 1, subchapter N or O. For the purposes of this paragraph, a method is sufficiently sensitive when 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 or O for the measured pollutant or pollutant parameter, or when:

1. The method minimum level (ML) is at or below the level of the most stringent effluent limitation established in the permit for the measured pollutant or pollutant parameter, and:
  - a. The method ML is at or below the level of the most stringent 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 the facility's discharge is high enough that the method detects and quantifies the level of the pollutant or pollutant parameter in the discharge;

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, subchapters N or O, monitoring must be conducted according to a test procedure specified in this Order for such pollutants or pollutant parameters. (40 C.F.R. sections 122.21(e)(3), 122.41(j)(4); 122.44(i)(1)(iv).)

#### **IV. STANDARD PROVISIONS – RECORDS**

**A.** Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 C.F.R. part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Central Valley Water Board Executive Officer at any time. (40 C.F.R. section 122.41(j)(2).)

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

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

6. The results of such analyses. (40 C.F.R. section 122.41(j)(3)(vi).)

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

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

## **V. STANDARD PROVISIONS – REPORTING**

### **A. Duty to Provide Information**

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

### **B. Signatory and Certification Requirements**

1. All applications, reports, or information submitted to the Central Valley Water Board, State Water Board, and/or U.S. EPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, V.B.5, and V.B.6 below. (40 C.F.R. section 122.41(k).)
2. 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 Central Valley Water Board, State Water Board, or U.S. EPA shall be signed by a person described in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:
  - a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above (40 C.F.R. section 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. section 122.22(b)(2)); and

- c. The written authorization is submitted to the Central Valley Water Board and State Water Board. (40 C.F.R. section 122.22(b)(3).)
4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the Central Valley Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 C.F.R. section 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. section 122.22(d).)
6. Any person providing the electronic signature for such documents described in Standard Provision – 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 of the 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 section 122.22(e).)

### **C. Monitoring Reports**

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 C.F.R. section 122.41(l)(4).)
2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Central Valley Water Board or State Water Board for reporting the results of monitoring, sludge use, or disposal practices. As of 21 December 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, section 122.22, and 40 C.F.R. part 127. (40 C.F.R. section 122.41(l)(4)(i).)
3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 C.F.R. part 136, or another method required for an industry-specific waste stream under 40 C.F.R. subchapters N or O, the results of such monitoring shall be included in the

calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Central Valley Water Board. (40 C.F.R. section 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. section 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. section 122.41(l)(5).)

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

1. The Discharger shall report any noncompliance which 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 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 events 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 (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather.

As of 21 December 2020 all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events must be submitted electronically to the initial recipient (State Water Board) defined in Standard Provisions – Reporting V.J. The reports shall comply with 40 C.F.R. part 3. They 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. section 122.41(l)(6)(i).)

#### **F. Planned Changes**

The Discharger shall give notice to the Central Valley Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when (40 C.F.R. section 122.41(l)(1)):

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in section 122.29(b) (40 C.F.R. section 122.41(l)(1)(i)); or
2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this Order. (40 C.F.R. section 122.41(l)(1)(ii).)
3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 C.F.R. section 122.41(l)(1)(iii).)

**G. Anticipated Noncompliance**

The Discharger shall give advance notice to the Central Valley 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. section 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 events 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 Central Valley 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. section 122.41(l)(7).)

**I. Other Information**

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

**J. Initial Recipient for Electronic Reporting Data**

The owner, operator, or the duly authorized representative is required to electronically submit NPDES information specified in appendix A to 40 C.F.R. part 127 to the appropriate initial recipient, as determined by U.S. EPA, and as 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. section 127.2(c)]. U.S. EPA will update and maintain this listing. (40 C.F.R. section 122.41(l)(9).)

**VI. STANDARD PROVISIONS – ENFORCEMENT**

- A. The Central Valley Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.

**VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS**

**A. Publicly-Owned Treatment Works (POTW's)**

All POTW's shall provide adequate notice to the Central Valley Water Board of the following (40 C.F.R. section 122.42(b)):

1. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to sections 301 or 306 of the CWA if it were directly discharging those pollutants (40 C.F.R. section 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 the Order. (40 C.F.R. section 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. section 122.42(b)(3).)

## ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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

The Code of Federal Regulations (40 C.F.R. section 122.48) requires that all NPDES permits specify monitoring and reporting requirements. Water Code section 13383 authorizes the Central Valley Water Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. This MRP establishes monitoring and reporting requirements that implement federal and California requirements.

### **I. GENERAL MONITORING PROVISIONS**

- A.** Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring locations specified below and, unless otherwise specified, before the monitored flow joins or is diluted by any other waste stream, body of water, or substance. Monitoring locations shall not be changed without notification to and the approval of the Central Valley Water Board.
- B.** Final effluent samples shall be taken downstream of the last addition of wastes to the treatment or discharge works where a representative sample may be obtained prior to mixing with the receiving waters. Samples shall be collected at such a point and in such a manner to ensure a representative sample of the discharge.
- C.** Chemical, bacteriological, and bioassay analyses of any material required by this Order shall be conducted by a laboratory accredited for such analyses by the State Water Resources Control Board (State Water Board), Division of Drinking Water (DDW), in accordance with the provision of Water Code section 13176. Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the Central Valley Water Board. In the event an accredited laboratory is not available to the Discharger for any onsite field measurements such as pH, dissolved oxygen (DO), turbidity, temperature, electrical conductivity, and residual chlorine, such analyses performed by a non-accredited laboratory will be accepted provided a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program for any onsite field measurements such as pH, DO, turbidity, temperature, electrical conductivity, and residual chlorine must be kept onsite in the treatment facility laboratory and shall be available for inspection by Central Valley Water Board staff. The Discharger must demonstrate sufficient capability (qualified and trained employees, properly calibrated and maintained field instruments, etc.) to adequately perform these field measurements. The Quality Assurance-Quality Control Program must conform to U.S. EPA guidelines or to procedures approved by the Central Valley Water Board.
- D.** Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary, at least yearly, to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year to ensure continued accuracy of the devices.
- E.** Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this Monitoring and Reporting Program.

- F.** Laboratory analytical methods shall be sufficiently sensitive in accordance with the Sufficiently Sensitive Methods Rule (SSM Rule) specified under 40 C.F.R. 122.21(e)(3) and 122.44(i)(1)(iv). A U.S. EPA-approved analytical method is sufficiently sensitive for a pollutant/parameter where:
  1. The method minimum level (ML) is at or below the applicable water quality objective for the receiving water, or;
  2. The method ML is above the applicable water quality objective for the receiving water but the amount of the pollutant/parameter in the discharge is high enough that the method detects and quantifies the level of the pollutant/parameter, or;
  3. the method ML is above the applicable water quality objective for the receiving water, but the ML is the lowest of the 40 C.F.R. 136 U.S. EPA-approved analytical methods for the pollutant/parameter.
  
- G.** The Discharger shall ensure that the results of the Discharge Monitoring Report-Quality Assurance (DMR-QA) Study or the most recent Water Pollution Performance Evaluation Study are submitted annually to the State Water Resources Control Board at the following address or electronically via email to the DMR-QA Coordinator:
  - State Water Resources Control Board
  - Quality Assurance Program Officer
  - Office of Information Management and Analysis
  - 1001 I Street, Sacramento, CA 95814
  
- H.** The Discharger shall file with the Central Valley Water Board technical reports on self-monitoring performed according to the detailed specifications contained in this Monitoring and Reporting Program.
  
- I.** The results of all monitoring required by this Order shall be reported to the Central Valley Water Board, and shall be submitted in such a format as to allow direct comparison with the limitations and requirements of this Order.

**II. MONITORING LOCATIONS**

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

**Table E-1. Monitoring Station Locations**

<b>Discharge Point Name</b>	<b>Monitoring Location Name</b>	<b>Monitoring Location Description</b>
--	INF-001A	A location where a representative sample of the influent into the City of Turlock RWQCF can be collected.
--	INF-001B	A location where a representative sample of the influent into the City of Modesto WQCF can be collected.
002	EFF-001A	A location where a representative sample of the effluent from the City of Turlock RWQCF can be collected after all treatment processes prior to discharge to the North Valley Regional Recycled Water Program Joint Outfall.
002	EFF-001B	A location where a representative sample of the effluent from the City of Modesto WQCF can be collected after all

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
		treatment processes prior to discharge to the North Valley Regional Recycled Water Program Joint Outfall.
002	EFF-002	A location where a representative sample of the effluent from the North Valley Regional Recycled Water Program Joint Outfall can be collected immediately prior to discharge to the Delta-Mendota Canal
--	DMC-001	In the Delta-Mendota Canal, upstream of Discharge Point 002 at the at the farm bridge located at 37°30'00.32" N, 121°11'45.91" W.
--	DMC-002	In the Delta-Mendota Canal, downstream of Discharge Point 002 at the farm bridge located at 37°28'56.83" N, 121°11'17.81" W.
--	TCO-001	For the City of Turlock RWQCF, a point immediately downstream of the chlorine disinfection system prior to dechlorination.
--	UVS-001	Monitoring of the City of Modesto WQCF filter effluent from the Phase 1A treatment train to be measured immediately downstream of the filters and prior to the ultraviolet light (UV) disinfection system.
--	UVS-002	Monitoring of the City of Modesto WQCF filter effluent from the Phase 2 treatment train to be measured immediately downstream of the filters and prior to the UV disinfection system.
--	UVS-001A	A location where a representative sample of wastewater from the Phase 1A treatment train at the City of Modesto WQCF can be collected immediately downstream of the UV disinfection system.
--	UVS-002A	A location where a representative sample of wastewater from the Phase 2 treatment train at the City of Modesto WQCF can be collected immediately downstream of the UV disinfection system.

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

**III. INFLUENT MONITORING REQUIREMENTS**

**A. Monitoring Location INF-001A and INF-001B**

1. The City of Turlock shall monitor influent to the City of Turlock RWQCF at Monitoring Location INF-001A and the City of Modesto shall monitor influent to the City of Modesto WQCF at Monitoring Location INF-001B in accordance with Table E-2 and the testing requirements described in section III.A.2 below:



**Table E-2. Influent Monitoring**

Parameter	Units	Sample Type	City of Turlock RWQCF Minimum Sampling Frequency	City of Modesto WQCF Minimum Sampling Frequency
Flow	Million Gallons per Day (MGD)	Meter	Continuous	Continuous
pH	Standard Units	Grab	1/Day	1/Week
Biochemical Oxygen Demand 5-day at 20 Degrees Celsius (BOD <sub>5</sub> )	Milligrams per Liter (mg/L)	24-hour Composite	3/Week	1/Week
Total Suspended Solids (TSS)	mg/L	24-hour Composite	3/Week	1/Week
Electrical Conductivity at 25°Celcius (Electrical Conductivity)	micromhos per centimeter (µmhos/cm)	Grab	1/Week	1/Week

2. **Table E-2 Testing Requirements.** The Discharger shall comply with the following testing requirements when monitoring for the parameters described in Table E-2:
  - a. **Applicable to all parameters.** Parameters shall be analyzed using the analytical methods described in 40 CFR part 136; or by methods approved by the Central Valley Water Board or the State Water Board. In addition, if requested by the Discharger, the sample type may be modified by the Executive Officer to another 40 CFR part 136 allowed sample type.
  - b. **Grab Samples.** All grab samples shall not be collected at the same time each day to get a complete representation of variations in the influent.
  - c. **24-Hour Composite Samples.** All composite samples shall be collected from a 24-hour flow proportional composite.
  - d. **Handheld Field Meter.** A handheld field meter may be used for **pH and electrical conductivity** provided the meter utilizes a U.S. EPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facilities.

**IV. EFFLUENT MONITORING REQUIREMENTS**

**A. Monitoring Location EFF-001A (City of Turlock RWQCF)**

1. When discharging to the Joint Outfall the City of Turlock shall monitor treated effluent from the City of Turlock RWQCF at Monitoring Location EFF-001A in accordance with Table E-3 and the testing requirements described in section IV.A.2 below:

**Table E-3. Effluent Monitoring – Monitoring Location EFF-001A**

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow	MGD	Meter	Continuous
BOD <sub>5</sub>	mg/L	24-hour Composite	3/Week
BOD <sub>5</sub>	Percent Removal	Calculate	1/Month
TSS	mg/L	24-hour Composite	3/Week
TSS	Percent Removal	Calculate	1/Month
pH	Standard Units	Meter	Continuous
Dissolved Oxygen	mg/L	Grab	1/Week
Dissolved Organic Carbon	mg/L	Grab	1/Quarter
Chlorodibromomethane	µg/L	Grab	1/Month
Dichlorobromomethane	µg/L	Grab	1/Month
Ammonia Nitrogen, Total as Nitrogen	mg/L	Grab	1/Week
Chlorine, Total Residual	mg/L	Meter	Continuous
Dechlorination Agent Residual	mg/L	Meter	Continuous
Chlorpyrifos	µg/L	Grab	1/Year
Diazinon	µg/L	Grab	1/Year
Electrical Conductivity	µmhos/cm	Grab	1/Week
Hardness, Total (as CaCO <sub>3</sub> )	mg/L	24-hour Composite	1/Quarter
Nitrate plus Nitrite, as Nitrogen	mg/L	24-hour Composite	2/Month
Phosphorus, Total	mg/L	Grab	2/Month
Temperature	°F	Grab	1/Week
Total Coliform Organisms	Most Probable Number per 100 Milliliter (MPN/100 mL)	Grab	1/Day

2. **Table E-3 Testing Requirements.** The City of Turlock shall comply with the following testing requirements when monitoring for the parameters described in Table E-3:
  - a. All sampling shall be conducted at monitoring location EFF-001A and reported at the monitoring location representing the respective Discharge Location as defined in Table E-1.
  - b. **Applicable to all parameters.** Parameters shall be analyzed using the analytical methods described in 40 CFR part 136 or by methods approved by the Central Valley Water Board or the State Water Board. In addition, if

requested by the City of Turlock, the sample type may be modified by the Executive Officer to another 40 CFR part 136 allowed sample type.

- c. **24-Hour Composite Samples.** All composite samples shall be collected from a 24-hour flow proportional composite.
- d. **Handheld Field Meter.** A handheld field meter may be used for **pH, dissolved oxygen, electrical conductivity, and temperature** provided the meter utilizes a U.S. EPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.
- e. **Temperature and pH.** Shall be recorded at the time of ammonia sample collection.
- f. **Total Residual Chlorine.** Shall be monitored using an analytical method that is sufficiently sensitive to measure at the permitted level of 0.01 mg/L.
- g. **Total Coliform Organisms.** Samples for total coliform organisms shall be collected at Monitoring Location TCO-001, a sample point immediately following chlorine disinfection.
- h. **Priority Pollutants.** For all priority pollutant constituents listed in Table E-3 (Chlorodibromomethane and Dichlorobromomethane) the reporting level shall be consistent with sections 2.4.2 and 2.4.3 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Policy or SIP) and the SSM Rule specified under 40 C.F.R. sections 122.21(e)(3) and 122.4(i)(1)(iv).
- i. **Chlorpyrifos and Diazinon.** Shall be sampled using U.S. EPA Method 625M, Method 8141, or equivalent GC/MS method with a lower Reporting Limit than the Basin Plan Water Quality Objectives of 0.015 µg/L and 0.1 µg/L for chlorpyrifos and diazinon, respectively.

**B. Monitoring Location EFF-001B (City of Modesto WQCF)**

- 1. When discharging to the Joint Outfall the City of Modesto shall monitor treated effluent from the City of Modesto WQCF at Monitoring Location EFF-001B in accordance with Table E-4 and the testing requirements described in section IV.B.2 below:

**Table E-4. Effluent Monitoring – Monitoring Location EFF-001B**

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow	MGD	Meter	Continuous
BOD <sub>5</sub>	mg/L	24-hour Composite	3/Week
BOD <sub>5</sub>	Percent Removal	Calculate	1/Month

Parameter	Units	Sample Type	Minimum Sampling Frequency
TSS	mg/L	24-hour Composite	3/Week
TSS	Percent Removal	Calculate	1/Month
pH	Standard Units	Grab	1/Day
Ammonia Nitrogen, Total as Nitrogen	mg/L	Grab	1/Week
Nitrate plus Nitrite, as Nitrogen	mg/L	24-hour Composite	2/Month
Phosphorus, Total	mg/L	Grab	2/Month
Electrical Conductivity	µmhos/cm	24-hour Composite	1/Week
Chlorpyrifos	µg/L	Grab	1/Year
Diazinon	µg/L	Grab	1/Year
Dissolved Oxygen	mg/L	Grab	1/Week
Dissolved Organic Carbon	mg/L	24-hour Composite	1/Quarter
Hardness, total (as CaCO <sub>3</sub> )	mg/L	24-hour Composite	1/Quarter
Temperature	°C	Grab	1/Week

2. Table E-4 Testing Requirements. The City of Modesto shall comply with the following testing requirements when monitoring for the parameters described in Table E-4:
  - a. **Composite Sample.** All composite samples shall be collected from a 24-hour flow proportional composite.
  - b. **Applicable to all parameters.** Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.
  - c. **Grab Sample.** A grab sample is defined as an individual discrete sample collected over a period of time not exceeding 15 minutes. It can be taken manually, using a pump, scoop, vacuum, or other suitable device.
  - d. **Ammonia.** Samples for pH and temperature shall be recorded at the time of ammonia sample collection.
  - e. **Field Meter.** A handheld field meter may be used for **dissolved oxygen, electrical conductivity, temperature, and pH**, provided the meter utilizes a U.S. EPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.
  - f. **Dissolved Organic Carbon.** Hardness, total (as CaCO<sub>3</sub>) and pH samples shall be taken concurrent with dissolved organic carbon samples.
  - g. **Chlorpyrifos and Diazinon.** Chlorpyrifos and diazinon shall be sampled using U.S. EPA Method 625M, Method 8141, or equivalent GC/MS method

with a lower Reporting Limit than the Basin Plan Water Quality Objectives of 0.015 µg/L and 0.1 µg/L for chlorpyrifos and diazinon, respectively.

**C. Monitoring Location EFF-002 (Joint Outfall)**

1. When discharging to the Joint Outfall the Discharger shall monitor treated effluent at Monitoring Location EFF-002 in accordance with Table E-5 and the testing requirements described in section IV.C.2 below:

**Table E-5. Effluent Monitoring – Monitoring Location EFF-002**

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow	MGD	Meter	Continuous
pH	Standard Units	Grab	1/Week
Dissolved Oxygen	mg/L	Grab	1/Week
Temperature	°C	Grab	1/Week
Turbidity	Nephelometric Turbidity Units (NTU)	Grab	1/Week
Phosphorus, Total	mg/L	Grab	2/Month

2. **Table E-5 Testing Requirements.** The Discharger shall comply with the following testing requirements when monitoring for the parameters described in Table E-5:
  - a. **Applicable to all parameters.** Parameters shall be analyzed using the analytical methods described in 40 CFR part 136 or by methods approved by the Central Valley Water Board or the State Water Board. In addition, if requested by the Discharger, the sample type may be modified by the Executive Officer to another 40 CFR part 136 allowed sample type.
  - b. **Handheld Field Meter.** A handheld field meter may be used for **pH, dissolved oxygen, temperature, and turbidity** provided the meter utilizes a U.S. EPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.
  - c. **Concurrent Sampling.** Effluent sampling shall be performed at approximately the same time, on the same date, as receiving water sampling required in Table E-6 at Monitoring Locations DMC-001 and DMC-002.
  - d. **Flow.** The total daily flow and the monthly arithmetic mean flow discharged to the Delta-Mendota Canal shall be included in the monthly SMR.

## V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

**A. Acute Toxicity Testing.** When discharging to the Joint Outfall the City of Turlock RWQCF and City of Modesto WQCF shall separately conduct acute toxicity testing to determine whether the effluent is contributing acute toxicity to the receiving water. The Discharger shall meet the acute toxicity testing requirement:

1. **Monitoring Frequency** – The Discharger shall perform **quarterly** acute toxicity testing, concurrent with effluent ammonia sampling.
2. **Sample Types** – Flow-through or static renewal testing may be used. For static renewal testing, the samples shall be grab samples and shall be representative of the volume and quality of the discharge.
  - a. The effluent samples from the City of Turlock RWQCF shall be taken at Monitoring Location EFF-001A.
  - b. The effluent samples from the City of Modesto WQCF shall be taken at Monitoring Location EFF-001B.
3. **Test Species** – Test species shall be **fathead minnows** (*Pimephales promelas*).
4. **Methods** – The acute toxicity testing samples shall be analyzed using EPA-821-R-02-012, Fifth Edition. Temperature, total residual chlorine, and pH shall be recorded at the time of sample collection. No pH adjustment may be made unless approved by the Executive Officer.
5. **Test Failure** – If an acute toxicity test does not meet all test acceptability criteria, as specified in the test method, the Discharger must re-sample and re-test as soon as possible, not to exceed 7 days following notification of test failure.

**B. Chronic Toxicity Testing.** When discharging to the Joint Outfall the City of Turlock RWQCF and City of Modesto WQCF shall separately conduct chronic toxicity testing in accordance with the following chronic toxicity testing requirements:

1. **Monitoring Frequency** – The Discharger shall perform routine **quarterly** chronic toxicity testing of their respective effluent. If the result of the routine chronic toxicity testing event exhibits toxicity, demonstrated by a result greater than 1.3 TU<sub>c</sub> (as 100/EC<sub>25</sub>) AND a percent effect greater than 25 percent at 100 percent effluent, the Discharger has the option of conducting two additional compliance monitoring events and perform chronic toxicity testing using the species that exhibited toxicity in order to calculate a median. The optional compliance monitoring events shall occur at least one week apart, and the final monitoring event shall be initiated no later than 6 weeks from the routine monitoring event that exhibited toxicity. See Compliance Determination section VII.F for procedures for calculating 6-week median.

Chronic toxicity testing performed by the Discharger in accordance with the City of Modesto WQCF and City of Turlock RWQCF Waste Discharge Requirements for discharge to the San Joaquin River (Orders R5-2017-0064 and R5-2021-0005 for City of Modesto WQCF and Turlock RWQCF, respectively, and any revisions to or reissued Waste Discharge Requirements), may be used to meet this monitoring requirement. In the event that effluent samples for monitoring for the San Joaquin River discharges were not collected on the same day(s) that

discharge to the Delta-Mendota Canal occurred, this data can be used by the Discharger to meet the chronic toxicity monitoring requirement if the effluent samples were collected within the same monitoring period (e.g., within the same quarter).

2. **Sample Types** – Effluent samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge.
  - a. The effluent samples from the City of Turlock RWQCF shall be taken at Monitoring Location EFF-001A.
  - b. The effluent samples from the City of Modesto WQCF shall be taken at Monitoring Location EFF-001B.
  - c. A receiving water control or laboratory water control may be used as the diluent. The receiving water control shall be a grab sample obtained from Monitoring Location DMC-001.
3. **Sample Volumes** – Adequate sample volumes shall be collected to provide renewal water to complete the test in the event that the discharge is intermittent.
4. **Test Species** – Chronic toxicity testing measures sublethal (e.g., reduced growth, reproduction) and/or lethal effects to test organisms exposed to an effluent compared to that of the control organisms.
  - i. **City of Turlock RWQCF.** The testing shall be conducted using the most sensitive species. The City of Turlock RWQCF shall conduct chronic toxicity tests with the **cladoceran, water flea, *Ceriodaphnia dubia***.
  - ii. **City of Modesto WQCF.** The testing shall be conducted using the most sensitive species. The City of Modesto shall conduct chronic toxicity tests with the **cladoceran, water flea, *Ceriodaphnia dubia***.
5. **Methods** – The presence of chronic toxicity shall be estimated as specified in Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002.
6. **Reference Toxicant** – As required by the SIP, all chronic toxicity tests shall be conducted with concurrent testing with a reference toxicant and shall be reported with the chronic toxicity test results.
7. **Dilutions** – For routine and compliance chronic toxicity monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-6, below. For TRE monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-6, below, unless an alternative dilution series is detailed in the submitted TRE Action Plan. A receiving water control or laboratory water control may be used as the diluent.

**Table E-6. Chronic Toxicity Testing Dilution Series**

<b>Sample</b>	<b>Dilution</b>	<b>Dilution</b>	<b>Dilution</b>	<b>Dilution</b>	<b>Dilution</b>	<b>Dilution</b>
Effluent	100%	75%	50%	25%	12.5%	0%
Control Water	0%	25%	50%	75%	87.5%	100%

8. **Test Failure** – The Discharger must re-sample and re-test as soon as possible, but no later than fourteen (14) days after receiving notification of a test failure. A test failure is defined as follows:
  - a. The reference toxicant test or the effluent test does not meet all test acceptability criteria as specified in the Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002 (Method Manual), and its subsequent amendments or revisions; or
  - b. The percent minimum significant difference (PMSD) measured for the test exceeds the upper PMSD bound variability criterion in the Method Manual.
- C. **WET Testing Notification Requirements.** The Discharger shall notify the Central Valley Water Board within 24-hours after the receipt of test results exceeding the chronic toxicity monitoring limitation, or an exceedance of the acute toxicity effluent limitation.
- D. **WET Testing Reporting Requirements.** All toxicity test reports shall include the contracting laboratory's complete report provided to the Discharger and shall be in accordance with the appropriate "Report Preparation and Test Review" sections of the method manuals. At a minimum, whole effluent toxicity monitoring shall be reported as follows:
  1. **Test of Significance Toxicity (TST).** For both acute and chronic toxicity testing, the toxicity monitoring results shall be reported to the Central Valley Water Board with the quarterly self-monitoring report, and shall contain, at minimum:
    - a. The valid toxicity test results for the Test of Significance Toxicity (TST) statistical approach, reported as "Pass" or "Fail" and "Percent Effect" at the Instream Waste Concentration (IWC) for the discharge at 100% effluent.
    - b. The statistical analysis used in *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document* (EPA 833-R-10-003, 2010) Appendix A, Figure A-1 and Table A-1, and Appendix B, Table B-1.
    - c. Statistical program (e.g., TST calculator, CETIS, etc.) output results, including graphical plots, for each toxicity test.
  2. **Chronic WET Reporting.** Routine and compliance chronic toxicity monitoring results shall be reported to the Central Valley Water Board with the quarterly self-monitoring report, and shall contain, at minimum:
    - a. The results expressed in TUC, measured as 100/NOEC, and also measured as 100/LC50, 100/EC25, 100/IC25, and 100/IC50, as appropriate;
    - b. The percent effect for each endpoint at the IWC;
    - c. The statistical methods used to calculate endpoints;
    - d. The statistical output page, which includes the calculation of the percent minimum significant difference (PMSD);
    - e. The dates of sample collection and initiation of each toxicity test; and
    - f. The results compared to the numeric toxicity monitoring limitation.
    - g. The progress on any ongoing TRE investigation, if applicable.



Additionally, the quarterly self-monitoring reports shall contain an updated chronology of chronic toxicity test results expressed in TUC, and organized by test species, type of test (survival, growth or reproduction), and monitoring type, i.e., routine, compliance, TES, or TRE monitoring.

3. **Acute WET Reporting.** Acute toxicity test results shall be submitted with the quarterly discharger self-monitoring reports and reported as percent survival and at minimum:
  - a. The percent effect for each endpoint at the IWC.
  - b. The dates of sample collection and initiation of each toxicity test; and
  - c. The results compared to the numeric percent survival effluent limitation.
4. **TRE Reporting.** Reports for TREs shall be submitted in accordance with the schedule contained in the Discharger's approved TRE Workplan, or as amended by the Discharger's TRE Action Plan.
5. **Quality Assurance (QA).** The Discharger must provide the following information for QA purposes:
  - a. Results of the applicable reference toxicant data with the statistical output page giving the species, NOEC, LOEC, type of toxicant, dilution water used, concentrations used, PMSD, and dates tested.
  - b. The reference toxicant control charts for each endpoint, which include summaries of reference toxicant tests performed by the contracting laboratory.
  - c. Any information on deviations or problems encountered and how they were dealt with.

**E. Most Sensitive Species Screening.**

The Discharger shall perform a rescreening to re-evaluate the most sensitive species if there is a significant change in the nature of the discharge.

**1. Determination of Most Sensitive Species.**

- a. If a single test in the species sensitivity screening testing exceeds 1 TUC (as 100/NOEC), then the species used in that test shall be established as the most sensitive species, or
- b. If there is more than a single test that exceeds 1 TUC (as 100/NOEC), then of the species exceeding 1 TUC (as 100/NOEC) that exhibits the highest percent effect shall be established as the most sensitive species, or
- c. If a single test exhibits toxicity, demonstrated by a result greater than 1 TUC (as 100/EC25) AND a percent effect greater than 25 percent effect at 100 percent effluent, then the species used in that test shall be established as the most sensitive species.

**VI. LAND DISCHARGE MONITORING REQUIREMENTS – NOT APPLICABLE**

**VII. RECYCLING MONITORING REQUIREMENTS – NOT APPLICABLE**

**VIII. RECEIVING WATER MONITORING REQUIREMENTS**

**A. Monitoring Location DMC-001 and DMC-002**

1. When discharging to the Joint Outfall the Discharger shall monitor the Delta-Mendota Canal at Monitoring Locations DMC-001 and DMC-002 as follows. The Dischargers shall conduct the receiving water monitoring, when possible, during periods when the groundwater pump-in discharges located between the discharge point and the upstream (DMC-001) and downstream (DMC-002) receiving water monitoring locations are not operating:

**Table E-7. Receiving Water Monitoring Requirements**

Parameter	Units	Sample Type	Minimum Sampling Frequency
pH	Standard Units	Grab	1/Week
Total Phosphorus	mg/L	Grab	2/Month
Dissolved Oxygen	mg/L	Grab	1/Week
Dissolved Organic Carbon	mg/L	Grab	1/Quarter
Electrical Conductivity	µmhos/cm	Grab	1/Week
Hardness, total (as CaCO <sub>3</sub> )	mg/L	Grab	1/Quarter
Temperature	°C	Grab	1/Week
Turbidity	NTU	Grab	1/Week

2. **Table E-7 Testing Requirements.** The Discharger shall comply with the following testing requirements when monitoring for the parameters described in Table E-7:
  - a. **Applicable to all parameters.** Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.
  - b. **Grab Sample.** A grab sample is defined as an individual discrete sample collected over a period of time not exceeding 15 minutes. It can be taken manually, using a pump, scoop, vacuum, or other suitable device.
  - c. **Field Meter.** A handheld field meter may be used for **dissolved oxygen, electrical conductivity, temperature, pH, and turbidity**, provided the meter utilizes a U.S. EPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facilities.
  - d. **Dissolved Organic Carbon.** Hardness, total (as CaCO<sub>3</sub>) and pH samples shall be taken concurrent with dissolved organic carbon samples.

- e. **Concurrent Sampling.** Receiving water sampling shall be performed at approximately the same time, on the same date, as effluent monitoring required in Table E-5 at Monitoring Location EFF-002.
3. In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by DMC-001 and DMC-002 when discharging to the Delta-Mendota Canal. Attention shall be given to the presence of:
- a. Floating or suspended matter;
  - b. Discoloration;
  - c. Bottom deposits;
  - d. Aquatic life;
  - e. Visible films, sheens, or coatings;
  - f. Fungi, slimes, or objectionable growths; and
  - g. Potential nuisance conditions.

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

**IX. OTHER MONITORING REQUIREMENTS**

**A. City of Modesto WQCF Filtration System and Ultraviolet Light (UV) Disinfection System**

1. **Monitoring Locations UVS-001, UVS-002, UVS-001A, and UVS-002A.** When discharging to the Joint Outfall the City of Modesto shall monitor the filtration systems at Monitoring Locations UVS-001 and UVS-002 and the UV disinfection systems at Monitoring Locations UVS-001A and UVS-002A in accordance with Table E-8 and the testing requirements described in section IX.A.2 below:

**Table E-8. Filtration System and UV Disinfection System Monitoring Requirements for the City of Modesto WQCF**

Parameter	Units	Sample Type	Monitoring Location	Sampling Frequency
Flow	MGD	Meter	UVS-001A, UVS-002A	Continuous
Turbidity	NTU	Meter	UVS-001, UVS-002	Continuous
Number of UV Banks in Operation	Number	Observation	--	Continuous
UV Transmittance	Percent	Meter	UVS-001A, UVS-002A	Continuous
UV Dose	mJ/cm <sup>2</sup>	Calculate	--	Continuous
Total Coliform Organisms	MPN/100 mL	Grab	UVS-001A, UVS-002A	1/Day

2. **Table E-8 Testing Requirements.** The City of Modesto shall comply with the following testing requirements when monitoring for the parameters described in Table E-8:

- a. **Applicable to all parameters.** Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. part 136 or by methods that have been approved by the Central Valley Water Board or the State Water Board.
- b. **For continuous analyzers.** The City of Modesto shall report documented routine meter maintenance activities including date, time of day, and duration, in which the analyzer(s) is not in operation and no turbidity measurements are available to report for the duration the meter is out of service. If analyzer(s) fail to provide continuous monitoring for more than two hours and influent and/or effluent from the disinfection process is not diverted for retreatment, the City of Modesto shall obtain and report hourly manual and/or grab sample results.
- c. **Turbidity.** Report daily average and maximum turbidity.
- d. **Continuous Analyzers.** The City of Modesto shall not decrease power settings or reduce the number of UV lamp banks in operation while the continuous analyzers are out of service and water is being disinfected.
- e. **UV Banks.** Report daily minimum number of UV banks in operation.
- f. **Report daily minimum hourly average UV transmittance.** The minimum hourly average transmittance shall consist of lowest average transmittance recorded over an hour of a day when flow is being discharged. If the system does not operate for an entire hour interval on a given day or if effluent flow is not discharged for an entire hour, the transmittance will be averaged based on the actual operation time when discharges are occurring.
- g. **Report daily minimum hourly average UV dose.** The minimum hourly average dose shall consist of lowest hourly average dose provided in any channel that had at least one bank of lamps operating during the hour interval. For channels that did not operate for the entire hour interval or when effluent flow is not discharged for the entire hour, the dose will be averaged based on the actual operation time when discharges occurred.

## **B. Effluent and Receiving Water Characterization**

### **1. Monitoring Frequency**

#### **a. Effluent Sampling.**

##### City of Turlock RWQCF:

Samples shall be collected from the City of Turlock RWQCF effluent (Monitoring Location EFF-001A) **every two (2) months (6 sampling events)** between **1 January 2023 and 31 December 2023**.

Effluent characterization monitoring performed by the City of Turlock with their Waste Discharge Requirements for the discharge to the Delta-Mendota Canal may be used to meet the monitoring requirements for the City of Turlock RWQCF Order R5-2021-0005 (NPDES Permit CA0078948 (and any revisions to or reissued Waste Discharge Requirements)). Similarly, when discharging to the San Joaquin River, effluent characterization monitoring performed by

the City of Turlock for compliance with their Waste Discharge Requirements for the discharge to the San Joaquin River may be used to meet the effluent characterization monitoring requirements in this Order for the City of Turlock RWQCF.

City of Modesto WQCF:

Samples shall be collected from the City of Modesto WQCF effluent (Monitoring Location EFF-001B) **every two (2) months (6 sampling events) between 1 January 2023 and 31 December 2023.**

Effluent characterization monitoring performed by the City of Modesto for compliance with their Waste Discharge Requirements for the discharge to the Delta-Mendota Canal may be used to meet the monitoring requirements for the City of Modesto WQCF Order R5-2017-0064 (and any revisions to or reissued Waste Discharge Requirements). Similarly, when discharging to the San Joaquin River, effluent characterization monitoring performed by the City of Modesto for compliance with their Waste Discharge Requirements for the discharge to the San Joaquin River may be used to meet the effluent characterization monitoring requirements in this Order for the City of Modesto WQCF.

- b. **Receiving Water Sampling.** Samples shall be collected from the upstream receiving water (Monitoring Location DMC-001) **every two (2) months (6 sampling events) between 1 January 2023 and 31 December 2023.**

Constituents shall be collected and analyzed consistent with the Discharger’s Analytical Methods Report (MRP, X.D.1) using sufficiently sensitive analytical methods and Reporting Levels (RLs) per the SSM Rule specified in 40 C.F.R. 122.21(e)(3) and 122.44(i)(1)(iv). The “Reporting Level” is synonymous with the “Method Minimum Level” described in the SSM Rule. The results of the monitoring shall be submitted to the Central Valley Water Board with the quarterly self-monitoring reports. Each individual monitoring event shall provide representative sample results for the effluent and upstream receiving water.

- 2. The Discharger shall conduct effluent and receiving water characterization monitoring in accordance with Table E-9 and the testing requirements described in section IX.B.3 below.

**Table E-9. Effluent and Receiving Water Characterization Monitoring**

CTR Number	Parameter	CAS Number	Units	Effluent Sample Type	Parameter Type
41	1,1,1-Trichloroethane	71-55-6	µg/L	Grab	Volatile Organics
37	1,1,2,2-Tetrachloroethane	79-34-5	µg/L	Grab	Volatile Organics
42	1,1,2-Trichloroethane	79-00-5	µg/L	Grab	Volatile Organics

CTR Number	Parameter	CAS Number	Units	Effluent Sample Type	Parameter Type
28	1,1-Dichloroethane	75-34-3	µg/L	Grab	Volatile Organics
30	1,1-Dichloroethylene (DCE)	75-35-4	µg/L	Grab	Volatile Organics
101	1,2,4-Trichlorobenzene	120-82-1	µg/L	Grab	Volatile Organics
75	1,2-Dichlorobenzene	95-50-1	µg/L	Grab	Volatile Organics
29	1,2-Dichloroethane	107-06-2	µg/L	Grab	Volatile Organics
31	1,2-Dichloropropane	78-87-5	µg/L	Grab	Volatile Organics
76	1,3-Dichlorobenzene	541-73-1	µg/L	Grab	Volatile Organics
32	1,3-Dichloropropylene	542-75-6	µg/L	Grab	Volatile Organics
77	1,4-Dichlorobenzene	106-46-7	µg/L	Grab	Volatile Organics
25	2-Chloroethyl vinyl Ether	110-75-8	µg/L	Grab	Volatile Organics
17	Acrolein	107-02-8	µg/L	Grab	Volatile Organics
18	Acrylonitrile	107-13-1	µg/L	Grab	Volatile Organics
19	Benzene	71-43-2	µg/L	Grab	Volatile Organics
20	Bromoform	75-25-2	µg/L	Grab	Volatile Organics
21	Carbon Tetrachloride	56-23-5	µg/L	Grab	Volatile Organics
22	Chlorobenzene	108-90-7	µg/L	Grab	Volatile Organics
24	Chloroethane	75-00-3	µg/L	Grab	Volatile Organics
26	Chloroform	67-66-3	µg/L	Grab	Volatile Organics
23	Dibromochloromethane	124-48-1	µg/L	Grab	Volatile Organics
27	Dichlorobromomethane	75-27-4	µg/L	Grab	Volatile Organics
33	Ethylbenzene	100-41-4	µg/L	Grab	Volatile Organics

CTR Number	Parameter	CAS Number	Units	Effluent Sample Type	Parameter Type
89	Hexachlorobutadiene	87-68-3	µg/L	Grab	Volatile Organics
34	Methyl Bromide (Bromomethane)	74-83-9	µg/L	Grab	Volatile Organics
35	Methyl Chloride	74-87-3	µg/L	Grab	Volatile Organics
36	Methylene Chloride	75-09-2	µg/L	Grab	Volatile Organics
--	Methyl-tert-butyl ether (MTBE)	1634-04-4	µg/L	Grab	Volatile Organics
94	Naphthalene	91-20-3	µg/L	Grab	Volatile Organics
38	Tetrachloroethylene (PCE)	127-18-4	µg/L	Grab	Volatile Organics
39	Toluene	108-88-3	µg/L	Grab	Volatile Organics
40	trans-1,2-Dichloroethylene	156-60-5	µg/L	Grab	Volatile Organics
43	Trichloroethylene (TCE)	79-01-6	µg/L	Grab	Volatile Organics
44	Vinyl Chloride	75-01-4	µg/L	Grab	Volatile Organics
85	1,2-Diphenylhydrazine	122-66-7	µg/L	Grab	Semi-Volatile Organics
55	2,4,6-Trichlorophenol	88-06-2	µg/L	Grab	Semi-Volatile Organics
46	2,4-Dichlorophenol	120-83-2	µg/L	Grab	Semi-Volatile Organics
47	2,4-Dimethylphenol	105-67-9	µg/L	Grab	Semi-Volatile Organics
49	2,4-Dinitrophenol	51-28-5	µg/L	Grab	Semi-Volatile Organics
82	2,4-Dinitrotoluene	121-14-2	µg/L	Grab	Semi-Volatile Organics
83	2,6-Dinitrotoluene	606-20-2	µg/L	Grab	Semi-Volatile Organics
71	2-Chloronaphthalene	91-58-7	µg/L	Grab	Semi-Volatile Organics
45	2-Chlorophenol	95-57-8	µg/L	Grab	Semi-Volatile Organics
48	2-Methyl-4,6-Dinitrophenol	534-52-1	µg/L	Grab	Semi-Volatile Organics

CTR Number	Parameter	CAS Number	Units	Effluent Sample Type	Parameter Type
50	2-Nitrophenol	88-75-5	µg/L	Grab	Semi-Volatile Organics
78	3,3-Dichlorobenzidine	91-94-1	µg/L	Grab	Semi-Volatile Organics
69	4-Bromophenyl Phenyl Ether	101-55-3	µg/L	Grab	Semi-Volatile Organics
52	4-Chloro-3-methylphenol	59-50-7	µg/L	Grab	Semi-Volatile Organics
72	4-Chlorophenyl Phenyl Ether	7005-72-3	µg/L	Grab	Semi-Volatile Organics
51	4-Nitrophenol	100-02-7	µg/L	Grab	Semi-Volatile Organics
56	Acenaphthene	83-32-9	µg/L	Grab	Semi-Volatile Organics
57	Acenaphthylene	208-96-8	µg/L	Grab	Semi-Volatile Organics
58	Anthracene	120-12-7	µg/L	Grab	Semi-Volatile Organics
59	Benzidine	92-87-5	µg/L	Grab	Semi-Volatile Organics
60	Benzo(a)Anthracene	56-55-3	µg/L	Grab	Semi-Volatile Organics
61	Benzo(a)Pyrene	50-32-8	µg/L	Grab	Semi-Volatile Organics
62	Benzo(b)Fluoranthene	205-99-2	µg/L	Grab	Semi-Volatile Organics
63	Benzo(ghi)Perylene	191-24-2	µg/L	Grab	Semi-Volatile Organics
64	Benzo(k)Fluoranthene	207-08-9	µg/L	Grab	Semi-Volatile Organics
65	Bis (2-Chloroethoxy) Methane	111-91-1	µg/L	Grab	Semi-Volatile Organics
66	Bis (2-Chloroethyl) Ether	111-44-4	µg/L	Grab	Semi-Volatile Organics
67	Bis (2-Chloroisopropyl) Ether	108-60-1	µg/L	Grab	Semi-Volatile Organics
68	Bis(2-Ethylhexyl) Phthalate	117-81-7	µg/L	Grab	Semi-Volatile Organics
70	Butylbenzyl Phthalate	85-68-7	µg/L	Grab	Semi-Volatile Organics
73	Chrysene	218-01-9	µg/L	Grab	Semi-Volatile Organics



CTR Number	Parameter	CAS Number	Units	Effluent Sample Type	Parameter Type
74	Dibenzo(a,h)anthracene	53-70-3	µg/L	Grab	Semi-Volatile Organics
79	Diethyl Phthalate	84-66-2	µg/L	Grab	Semi-Volatile Organics
80	Dimethyl Phthalate	131-11-3	µg/L	Grab	Semi-Volatile Organics
81	Di-n-butyl Phthalate	84-74-2	µg/L	Grab	Semi-Volatile Organics
84	Di-n-Octyl Phthalate	117-84-0	µg/L	Grab	Semi-Volatile Organics
86	Fluoranthene	206-44-0	µg/L	Grab	Semi-Volatile Organics
87	Fluorene	86-73-7	µg/L	Grab	Semi-Volatile Organics
88	Hexachlorobenzene	118-74-1	µg/L	Grab	Semi-Volatile Organics
90	Hexachlorocyclopentadiene	77-47-4	µg/L	Grab	Semi-Volatile Organics
91	Hexachloroethane	67-72-1	µg/L	Grab	Semi-Volatile Organics
92	Indeno(1,2,3-cd) Pyrene	193-39-5	µg/L	Grab	Semi-Volatile Organics
93	Isophorone	78-59-1	µg/L	Grab	Semi-Volatile Organics
95	Nitrobenzene	98-95-3	µg/L	Grab	Semi-Volatile Organics
96	N-Nitrosodimethylamine	62-75-9	µg/L	Grab	Semi-Volatile Organics
97	N-Nitrosodi-n-Propylamine	621-64-7	µg/L	Grab	Semi-Volatile Organics
98	N-Nitrosodiphenylamine	86-30-6	µg/L	Grab	Semi-Volatile Organics
53	Pentachlorophenol (PCP)	87-86-5	µg/L	Grab	Semi-Volatile Organics
99	Phenanthrene	85-01-8	µg/L	Grab	Semi-Volatile Organics
54	Phenol	108-95-2	µg/L	Grab	Semi-Volatile Organics
100	Pyrene	129-00-0	µg/L	Grab	Semi-Volatile Organics
--	Aluminum	7429-90-5	µg/L	24-hour Composite	Inorganics

CTR Number	Parameter	CAS Number	Units	Effluent Sample Type	Parameter Type
1	Antimony, Total	7440-36-0	µg/L	24-hour Composite	Inorganics
2	Arsenic, Total	7440-38-2	µg/L	24-hour Composite	Inorganics
15	Asbestos	1332-21-4	µg/L	24-hour Composite	Inorganics
3	Beryllium, Total	7440-41-7	µg/L	24-hour Composite	Inorganics
4	Cadmium, Total	7440-43-9	µg/L	24-hour Composite	Inorganics
5	Chromium, Total	7440-47-3	µg/L	24-hour Composite	Inorganics
6	Copper, Total	7440-50-8	µg/L	24-hour Composite	Inorganics
--	Iron, Total	7439-89-6	µg/L	24-hour Composite	Inorganics
7	Lead, Total	7439-92-1	µg/L	24-hour Composite	Inorganics
--	Manganese, Total	7439-96-5	µg/L	24-hour Composite	Inorganics
--	Mercury, Methyl	22967-92-6	µg/L	Grab	Inorganics
8	Mercury, Total	7439-97-6	µg/L	Grab	Inorganics
9	Nickel, Total	7440-02-0	µg/L	24-hour Composite	Inorganics
10	Selenium, Total	7782-49-2	µg/L	24-hour Composite	Inorganics
11	Silver, Total	7440-22-4	µg/L	24-hour Composite	Inorganics
12	Thallium, Total	7440-28-0	µg/L	24-hour Composite	Inorganics
13	Zinc, Total	7440-66-6	µg/L	24-hour Composite	Inorganics
--	Boron	7440-42-8	µg/L	24-hour Composite	Non-Metals/Minerals
--	Chloride	16887-00-6	mg/L	24-hour Composite	Non-Metals/Minerals
14	Cyanide, Total (as CN)	57-12-5	µg/L	Grab	Non-Metals/Minerals
--	Phosphorus, Total (as P)	7723-14-0	mg/L	Grab or 24-hour Composite	Non-Metals/Minerals
--	Sulfate	14808-79-8	mg/L	24-hour Composite	Non-Metals/Minerals

CTR Number	Parameter	CAS Number	Units	Effluent Sample Type	Parameter Type
--	Sulfide (as S)	5651-88-7	mg/L	24-hour Composite	Non-Metals/Minerals
16	2,3,7,8-TCDD (Dioxin)	1746-01-6	mg/L	24-hour Composite	Pesticides/PCBs /Dioxins
110	4,4-DDD	72-54-8	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
109	4,4-DDE	72-55-9	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
108	4,4-DDT	50-29-3	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
102	Aldrin	309-00-2	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
103	alpha-BHC (Benzene hexachloride)	319-84-6	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
112	alpha-Endosulfan	959-98-8	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
104	beta-BHC (Benzene hexachloride)	319-85-7	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
113	beta-Endosulfan	33213-65-9	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
107	Chlordane	57-74-9	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
106	delta-BHC (Benzene hexachloride)	319-86-8	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
111	Dieldrin	60-57-1	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
114	Endosulfan Sulfate	1031-07-8	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
115	Endrin	72-20-8	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
116	Endrin Aldehyde	7421-93-4	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
105	gamma-BHC (Benzene hexachloride or Lindane)	58-89-9	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
117	Heptachlor	76-44-8	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
118	Heptachlor Epoxide	1024-57-3	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
--	Polychlorinated Biphenyl (PCB) 1016	12674-11-2	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
--	PCB 1221	11104-28-2	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins

CTR Number	Parameter	CAS Number	Units	Effluent Sample Type	Parameter Type
--	PCB 1232	11141-16-5	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
--	PCB 1242	53469-21-9	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
--	PCB 1248	12672-29-6	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
--	PCB 1254	11097-69-1	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
--	PCB 1260	11096-82-5	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
126	Toxaphene	8001-35-2	µg/L	24-hour Composite	Pesticides/PCBs /Dioxins
--	pH	--	SU	Grab	Conventional Parameters
--	Temperature	--	°F	Grab	Conventional Parameters
--	Specific Conductance (Electrical Conductivity or EC)	--	µmhos/cm	Grab	Non-Conventional Parameters
--	Dissolved Organic Carbon (DOC)	DOC	mg/L	Grab or 24-hour Composite	Non-Conventional Parameters
--	Foaming Agents (MBAS)	MBAS	mg/L	24-hour Composite	Non-Conventional Parameters
--	Hardness (as CaCO <sub>3</sub> )	471-34-1	mg/L	24-hour Composite	Non-Conventional Parameters
--	Total Dissolved Solids (TDS)	TDS	mg/L	24-hour Composite	Non-Conventional Parameters
--	Ammonia (as N)	7664-41-7	mg/L	Grab or 24-hour Composite	Nutrients
--	Nitrate (as N)	14797-55-8	mg/L	Grab or 24-hour Composite	Nutrients
--	Nitrite (as N)	14797-65-0	mg/L	Grab or 24-hour Composite	Nutrients
--	1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	µg/L	Grab	Other Constituents Of Concern (CoC)

CTR Number	Parameter	CAS Number	Units	Effluent Sample Type	Parameter Type
--	1,2,3-Trichloropropane (TCP)	96-18-4	ug/L	Grab	Other CoC
--	1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	µg/L	24-hour Composite	Other CoC
--	2,4,5-TP (Silvex)	93-72-1	µg/L	24-hour Composite	Other CoC
--	2,4-D	94-75-7	µg/L	24-hour Composite	Other CoC
--	Alachlor	15972-60-8	µg/L	24-hour Composite	Other CoC
--	Atrazine	1912-24-9	µg/L	24-hour Composite	Other CoC
--	Barium	7440-39-3	µg/L	24-hour Composite	Other CoC
--	Bentazon	25057-89-0	µg/L	24-hour Composite	Other CoC
--	Carbofuran	1563-66-2	µg/L	Grab or 24-hour Composite	Other CoC
--	Chlorpyrifos	2921-88-2	µg/L	Grab or 24-hour Composite	Other CoC
--	Dalapon	75-99-0	µg/L	24-hour Composite	Other CoC
--	Di(2-ethylhexyl)adipate	103-23-1	µg/L	24-hour Composite	Other CoC
--	Diazinon	333-41-5	µg/L	Grab or 24-hour Composite	Other CoC
--	Dinoseb	88-85-7	µg/L	24-hour Composite	Other CoC
--	Diquat	85-00-7	µg/L	24-hour Composite	Other CoC
--	Endothal	145-73-3	µg/L	24-hour Composite	Other CoC
--	Ethylene Dibromide (EDB)	106-93-4	µg/L	24-hour Composite	Other CoC
--	Fluoride	16984-48-8	mg/L	24-hour Composite	Other CoC
--	Methoxychlor	72-43-5	µg/L	24-hour Composite	Other CoC
--	Molinate (Ordram)	2212-67-1	µg/L	24-hour Composite	Other CoC

CTR Number	Parameter	CAS Number	Units	Effluent Sample Type	Parameter Type
--	Molybdenum	7439-98-7	µg/L	24-hour Composite	Other CoC
--	Oxamyl	23135-22-0	µg/L	24-hour Composite	Other CoC
--	Picloram	6607	µg/L	24-hour Composite	Other CoC
--	Simazine (Princep)	122-34-9	µg/L	24-hour Composite	Other CoC
--	Styrene	100-42-5	µg/L	Grab	Other CoC
--	Thiobencarb	28249-77-6	µg/L	24-hour Composite	Other CoC
--	Tributyltin	688-73-3	µg/L	24-hour Composite	Other CoC
--	Trichlorofluoromethane	75-69-4	µg/L	Grab	Other CoC
--	Xylenes	1330-20-7	µg/L	Grab	Other CoC

3. **Table E-9 Testing Requirements.** The Discharger shall comply with the following testing requirements when monitoring for the parameters described in Table E-9:
- a. **Applicable to All Parameters.** Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.
  - b. **Grab Samples.** A grab sample is defined as an individual discrete sample collected over a period of time not exceeding 15 minutes. It can be taken manually, using a pump, scoop, vacuum, or other suitable device.
  - c. **24-hour Composite Samples.** All 24-hour composite samples shall be collected from a 24-hour flow proportional composite.
  - d. **Redundant Sampling.** The Discharger is not required to conduct effluent monitoring for constituents that have already been sampled in a given quarter, as required in Table E-3, Table E-4, and Table E-5.
  - e. **Concurrent Sampling.** Effluent and receiving water sampling shall be performed at approximately the same time, on the same date.
  - f. **Sample Type.** All receiving water samples shall be taken as grab samples. Effluent samples shall be taken as described in Table E-9.
  - g. **Bis (2-ethylhexyl) phthalate.** In order to verify if bis (2-ethylhexyl) phthalate is truly present, the Discharger shall take steps to assure that sample containers, sampling apparatus, and analytical equipment are not sources of the detected contaminant.

## X. REPORTING REQUIREMENTS

### A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.
2. Upon written request of the Central Valley Water Board, the Discharger shall submit a summary monitoring report. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year(s).
3. **Compliance Time Schedules.** For compliance time schedules included in the Order, the Discharger shall submit to the Central Valley Water Board, on or before each compliance due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board by letter when it returns to compliance with the compliance time schedule.
4. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act" of 1986.

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

1. The Discharger shall electronically submit SMRs using the State Water Board's [California Integrated Water Quality System \(CIWQS\) Program website](http://www.waterboards.ca.gov/water_issues/programs/ciwqs/) ([http://www.waterboards.ca.gov/water\\_issues/programs/ciwqs/](http://www.waterboards.ca.gov/water_issues/programs/ciwqs/)). The CIWQS website will provide additional information for SMR submittal in the event there will be a planned service interruption for electronic submittal.
2. The Discharger shall report in the SMR the results for all monitoring specified in this MRP under sections III through IX. The Discharger shall submit monthly, quarterly, and annual SMRs including the results of all required monitoring using U.S. EPA-approved test methods or other test methods specified in this Order. SMRs are to include all new monitoring results obtained since the last SMR was submitted. If the Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR. Monthly SMRs are required even if there is no discharge. If no discharge occurs during the month, the monitoring report must be submitted stating that there has been no discharge.
3. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

**Table E-10. Monitoring Periods and Reporting Schedule**

<b>Sampling Frequency</b>	<b>Monitoring Period Begins On</b>	<b>Monitoring Period</b>	<b>SMR Due Date</b>
Continuous	Permit effective date	All	Submit with monthly SMR
1/Day	Permit effective date	Midnight through 11:59 PM or any 24-hour period that reasonably represents a calendar day for purposes of sampling.	Submit with monthly SMR
1/Week, 2/Week, 3/Week	Permit effective date	Sunday through Saturday	Submit with monthly SMR
1/Month	Permit effective date	1st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
2/Month	Permit effective date	1st day of calendar month through 15th day of calendar month and 16th day of calendar month through last day of calendar month	Submit with monthly SMR
1/Quarter	Permit effective date	1 January through 31 March 1 April through 30 June 1 July through 30 September 1 October through 31 December	1 May 1 August 1 November 1 February of following year
1/Year	Permit effective date	1 January through 31 December	1 February of following year

4. **Reporting Protocols.** The Discharger shall report with each sample result the applicable Reporting Level (RL) and the current laboratory’s Method Detection Limit (MDL), as determined by the procedure in 40 C.F.R. part 136.
- The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:
- a. Sample results greater than or equal to the RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
  - b. Sample results less than the RL, but greater than or equal to the laboratory’s MDL, shall be reported as “Detected, but Not Quantified,” or DNQ. The estimated chemical concentration of the sample shall also be reported.
- For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ. The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy ( $\pm$  a percentage of



the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

- c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.
  - d. Dischargers are to instruct laboratories to establish calibration standards so that the Minimum Level (ML) value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.
5. **Multiple Sample Data.** When determining compliance with an AMEL, AWEL, or MDEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of "Detected, but Not Quantified" (DNQ) or "Not Detected" (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:
- a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.
  - b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.
6. **The Discharger shall submit SMRs** in accordance with the following requirements:
- a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.
  - b. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the waste discharge requirements; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.
  - c. The Discharger shall attach all final laboratory reports from all contracted commercial laboratories, including quality assurance/quality control information, with all its SMRs for which sample analyses were performed.

7. The Discharger shall submit in the SMRs calculations and reports in accordance with the following requirements:
  - a. **Calendar Annual Average Trigger.** For constituents with triggers specified as “calendar annual average” (electrical conductivity) the Discharger shall report the calendar annual average in the December SMR. The annual average shall be calculated as the average of the samples gathered for the calendar year.
  - b. **Removal Efficiency (BOD<sub>5</sub> and TSS).** The Discharger shall calculate and report the percent removal of BOD<sub>5</sub> and TSS in the SMRs. The percent removal shall be calculated as specified in section VII.A. of the Limitations and Discharge Requirements.
  - c. **Total Coliform Organisms Effluent Limitations.** The Discharger shall calculate and report the 7-day median of total coliform organisms for the effluent. The 7-day median of total coliform organisms shall be calculated as specified in Section VII.C of the Waste Discharge Requirements.
  - d. **Dissolved Oxygen Receiving Water Limitations.** The Discharger shall report monthly in the self-monitoring report the dissolved oxygen concentrations in the effluent (EFF-002) and the receiving water (DMC-001 and DMC-002).
  - e. **Turbidity Receiving Water Limitations.** The Discharger shall calculate and report the turbidity increase in the receiving water applicable to the natural turbidity condition specified in section V.A.16.a-e. of the Waste Discharge Requirements.
  - f. **Temperature Receiving Water Limitations.** The Discharger shall calculate and report the temperature increase in the receiving water based on the difference in temperature at Monitoring Locations DMC-001 and DMC-002.

**C. Discharge Monitoring Reports (DMR’s)**

1. DMRs are U.S. EPA reporting requirements. The Discharger shall electronically certify and submit DMR’s together with SMR’s using Electronic Self-Monitoring Reports module eSMR 2.5 or any upgraded version. Electronic DMR submittal will be in addition to electronic SMR submittal. [Information about electronic DMR submittal](http://www.waterboards.ca.gov/water_issues/programs/discharge_monitoring/) ([http://www.waterboards.ca.gov/water\\_issues/programs/discharge\\_monitoring/](http://www.waterboards.ca.gov/water_issues/programs/discharge_monitoring/)) is available on the Internet.

**D. Other Reports**

1. **Analytical Methods Report.** The Discharger shall complete and submit an Analytical Methods Report, electronically via CIWQS submittal, by the due date shown in the Technical Reports Table. The Analytical Methods Report shall include the following for each constituent to be monitored in accordance with this Order: 1) applicable water quality objective, 2) reporting level (RL), 3) method detection limit (MDL), and 4) analytical method. The analytical methods shall be sufficiently sensitive with RLs consistent with the SSM Rule per 40 C.F.R. 122.21(e)(3) and 122.44(i)(1)(iv), and with the Minimum Levels (MLs) in the SIP, Appendix 4. The “Reporting Level or RL” is synonymous with the “Method Minimum Level” described in the SSM Rule. If an RL is not less than or equal to

the applicable water quality objective for a constituent, the Discharger shall explain how the proposed analytical method complies with the SSM Rule as outlined above in Attachment E, Section I.F. Central Valley Water Board staff will provide a tool with the permit's Notice of Adoption to assist the Discharger in completing this requirement. The tool will include the constituents and associated applicable water quality objectives to be included in the Analytical Methods Report.

2. **Annual Operations Report.** The Discharger shall submit a written report to the Central Valley Water Board, electronically via CIWQS submittal, containing the following by the due date in the Technical Reports Table:
  - a. The names, certificate grades, and general responsibilities of all persons employed at the Facility.
  - b. The names and telephone numbers of persons to contact regarding the plant for emergency and routine situations.
  - c. A statement certifying when the flow meter(s) and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration.
  - d. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the wastewater treatment plant as currently constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.
  - e. The Discharger may also be requested to submit an annual report to the Central Valley Water Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.
3. **Report of Waste Discharge (ROWD).** For the 5-year permit renewal, the Discharger shall submit a written report to the Central Valley Water Board, electronically via CIWQS submittal, containing, at minimum, the following by the due date in the Technical Reports Table:
  - a. Report of Waste Discharge (Form 200);
  - b. NPDES Form 1 (not needed if submitting Form 2A)
  - c. NPDES Form 2A;
  - d. NPDES Form 2S;
  - e. Far-Field Dilution Study;
  - f. Constituents of Emerging Concern Study;
  - g. Salinity Evaluation and Minimization Plan Evaluation; and
  - h. **Mixing Zone Requests.** A mixing zone analysis for constituents the Discharger is requesting the continuation of dilution credits and mixing zones in the calculation of water quality-based effluent limits (e.g., DCBM and CDBM for City of Turlock). If flow conditions in the receiving water

and effluent discharge have not changed since the last near-field mixing zone dilution study was conducted, the ROWD can include a request for continuation of dilution credits based on the last mixing zone dilution study. However, the mixing zone analysis shall include updated background receiving water monitoring data demonstrating assimilative capacity is available and updated effluent data to determine Facility performance and demonstrate the need for allowance of a mixing zone for each constituent. In addition, any source control measures that have been implemented or are proposed to be implemented, if applicable, shall be discussed in the mixing zone request.

4. **Del Puerto Water District Diversions Annual Report.** The Discharger shall submit an annual report documenting water diversions by the Del Puerto Water District from the Delta-Mendota Canal upstream and downstream of the Joint Outfall. The annual report shall be submitted by the due date in the Technical Reports Table and provide, at minimum, the following:
  - a. A map showing diversion points used by the Del Puerto Water District during the calendar year;
  - b. The total volume of water diverted by Del Puerto Water District, downstream of the Joint Outfall, on a monthly basis; and
  - c. The total volume of effluent discharged by the Facilities from the Joint Outfall on a monthly basis.
5. **Technical Report Submittals.** This Order includes requirements to submit a Report of Waste Discharge (ROWD), special study technical reports, progress reports, and other reports identified in the MRP (hereafter referred to collectively as “technical reports”). The Technical Reports Table and subsequent table notes below summarize all technical reports required by this Order and the due dates for submittal. All technical reports shall be submitted electronically via CIWQS submittal. Technical reports should be uploaded as a PDF, Microsoft Word, or Microsoft Excel file attachment.

**Table E-11. Technical Reports**

Report Number	Technical Report	Due Date	CIWQS Report Name
1	Report of Waste Discharge	31 July 2026	ROWD
2	Analytical Methods Report	1 September 2022	MRP X.D.1
3	Annual Operations Report	1 February 2023	MRP X.D.2
4	Annual Operations Report	1 February 2024	MRP X.D.2
5	Annual Operations Report	1 February 2025	MRP X.D.2
6	Annual Operations Report	1 February 2026	MRP X.D.2
7	Annual Operations Report	1 February 2027	MRP X.D.2
8	Far-Field Dilution Study Workplan	1 August 2024	WDR VI.C.2.b
9	Far-Field Dilution Study	31 July 2026	ROWD

<b>Report Number</b>	<b>Technical Report</b>	<b>Due Date</b>	<b>CIWQS Report Name</b>
10	Constituents of Emerging Concern Study Workplan	1 August 2024	WDR VI.C.2.c
11	Constituents of Emerging Concern Study	31 July 2026	ROWD
12	Del Puerto Water District Diversions Annual Report	1 March 2023	MRP X.D.4
13	Del Puerto Water District Diversions Annual Report	1 March 2024	MRP X.D.4
14	Del Puerto Water District Diversions Annual Report	1 March 2025	MRP X.D.4
15	Del Puerto Water District Diversions Annual Report	1 March 2026	MRP X.D.4
16	Del Puerto Water District Diversions Annual Report	1 March 2027	MRP X.D.4

## ATTACHMENT F – FACT SHEET

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**ATTACHMENT F – FACT SHEET**

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

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for Dischargers in California. Only those sections or subsections of this Order that are specifically identified as “not applicable” have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as “not applicable” are fully applicable to this Discharger.

**I. PERMIT INFORMATION**

The following table summarizes administrative information related to the Facilities.

**Table F-1. Facilities Information**

<b>Discharger</b>	<b>City of Turlock</b>	<b>City of Modesto</b>
<b>Name of Facility:</b>	Regional Water Quality Control Facility	Water Quality Control Facility
<b>WDID</b>	5C500108001	5C500102001
<b>CIWQS Facility Place ID</b>	266737	241146 (Sutter Avenue Primary Treatment Facility) 273037 (Jennings Road Secondary/Tertiary Facility)
<b>Facility Address:</b>	901 S. Walnut Road	1221 Sutter Avenue (Primary Facility) 7007 Jennings Road (Secondary/Tertiary Facility)
<b>Facility City, State Zip:</b>	Turlock, CA 95380	Modesto, CA 95351
<b>Facility County:</b>	Stanislaus County	Stanislaus County
<b>Facility Contact, Title and Phone Number:</b>	David Huff, Water Quality Division Manager, (209) 668-5451	Ben Koehler, Water Quality Control Superintendent/Chief Plant Operator (209) 652-7782
<b>Authorized Person to Sign and Submit Reports</b>	Same as Contact Above	Same as Contact Above
<b>Mailing Address</b>	156 South Broadway Avenue, Suite 270, Turlock, CA 95380	Same as Primary Facility Address
<b>Billing Address</b>	Same as Mailing Address	Same as Primary Facility Address
<b>Type of Facility</b>	Publicly Owned Treatment Plant (POTW)	POTW
<b>Major or Minor Facility</b>	Major	Major



<b>Discharger</b>	<b>City of Turlock</b>	<b>City of Modesto</b>
<b>Threat to Water Quality</b>	1	1
<b>Complexity</b>	A	A
<b>Pretreatment Program</b>	Yes	Yes
<b>Recycling Requirements</b>	Producer	Not applicable
<b>Facility Permitted Flow</b>	14.2 million gallons per day (MGD), average dry weather flow	14.9 MGD average dry weather flow
<b>Facility Design Flow</b>	20 MGD, average dry weather flow	14.9 MGD average dry weather flow
<b>Watershed</b>	Middle San Joaquin – Lower Merced – Lower Stanislaus	Middle San Joaquin – Lower Merced– Lower Stanislaus
<b>Receiving Water</b>	Delta-Mendota Canal	Delta-Mendota Canal
<b>Receiving Water Type</b>	Inland Surface Water	Inland Surface Water

- A.** The City of Turlock owns and operates the City of Turlock, Regional Water Quality Control Facility (RWQCF), a POTW. The City of Modesto owns and operates the City of Modesto, Water Quality Control Facility (WQCF), a POTW. Together, the City of Turlock and the City of Modesto are hereinafter referred to as the Discharger and the City of Turlock RWQCF and the City of Modesto WQCF are hereinafter referred to as the Facilities.

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 City of Turlock and the City of Modesto discharge treated wastewater from a common outfall to the Delta-Mendota Canal, a water of the United States, within the Middle San Joaquin – Lower Merced – Lower Stanislaus watershed. The discharge to the Delta-Mendota Canal was previously regulated by Order R5-2016-0010, National Pollutant Discharge Elimination System (NPDES) Permit CA0085316 adopted on 19 February 2016 and expired on 31 March 2021. Attachment B provides a map of the area around the Facilities. Attachment C provides flow schematics of the Facilities.

Prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Board, Division of Water Rights, and receive approval for such a change. The State Water Board retains the jurisdictional authority to enforce such requirements under Water Code section 1211. The State Water Board approved the Water Code Section 1211 wastewater change petition to divert discharges from the San Joaquin River to the Delta-Mendota Canal for the City of Modesto on 18 November 2015 and the City of Turlock on 4 January 2017.

- C. When applicable, state law requires dischargers to file a petition with the State Water Board, Division of Water Rights and receive approval for any change in the point of discharge, place of use, or purpose of use of treated wastewater that decreases the flow in any portion of a watercourse. The State Water Board retains separate jurisdictional authority to enforce any applicable requirements under Water Code section 1211. This is not an NPDES permit requirement.
- D. The Discharger filed a report of waste discharge (ROWD) and submitted an application for reissuance of its waste discharge requirements (WDR's) and NPDES permit on 30 September 2020 and 17 September 2020 respectively.
- E. Regulations at 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 duration of the discharge authorization. Under 40 C.F.R. section 122.6(d), States authorized to administer the NPDES program may administratively continue State-issued permits beyond their expiration dates until the effective date of the new permits, if State law allows it. 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 federal NPDES requirements for continuation of expired permits.

## II. FACILITIES DESCRIPTION

The City of Turlock provides sewerage service for the City of Turlock and the community service districts of Denair and Keyes, and receives up to 2 MGD of primary treated effluent from the City of Ceres. The Facility serves a population of approximately 91,000. The design daily average flow capacity of the Facility is 20 million gallons per day (MGD). The City of Modesto provides sewerage service for a population of approximately 272,000 for the City of Modesto, the community of Empire, and a portion of the City of Ceres. The Facility consists of separate primary and tertiary treatment facilities. The Facility consists of two different treatment facilities; a primary treatment facility and a secondary/tertiary treatment facility located approximately 6.5 miles to the southwest of the primary treatment facility.

### A. Description of Wastewater and Biosolids Treatment and Controls

1. **NVRRWP Facilities.** The purpose of the NVRRWP project is to address water supply shortages within the DPWD service area on the west side of the San Joaquin River in San Joaquin, Stanislaus and Merced Counties, south of the Sacramento-San Joaquin River Delta, and south of Delta (SOD) Central Valley Project Improvement Act (CVPIA)-designated Refuges. The NVRRWP facilities consist of a pipeline from the City of Turlock RWQCF conveying recycled water to the City of Modesto WQCF, and transmission facilities, and all necessary transmission pipelines to discharge combined treated municipal wastewater from the City of Turlock RWQCF and the City of Modesto WQCF to a combined outfall to the Delta-Mendota Canal. See section II.E of this Fact Sheet for additional information.
2. **City of Turlock RWQCF.** The treatment system at the City of Turlock RWQCF consists of screening, grit removal, primary flotation, secondary treatment (activated sludge) for biochemical oxygen demand reduction and

nitrification/denitrification, secondary clarification, high-rate clarification with chemical addition, tertiary treatment via cloth disk filters, chlorine disinfection and sodium bisulfite dechlorination. The City of Turlock RWQCF also includes a 37.2 million-gallon clay-lined emergency storage basin, which allows for the diversion and storage of primary effluent if necessary.

Solids handling consists of gravity belt thickener, anaerobic digestion, sludge drying beds and beneficial reuse of biosolids via land application to farmland.

The City of Turlock currently provides up to 2 MGD of recycled water for cooling purposes to the Walnut Energy Center, a 250-megawatt power plant owned and operated by the Turlock Irrigation District (TID). The City of Turlock also provides an average of 100,000 gallons per day for irrigation purposes at the Pedretti Sports Complex. Order R5-2021-0005 regulates the use of recycled water.

- 3. City of Modesto WQCF.** The treatment system at the City of Modesto WQCF consists of two separate primary and secondary treatment facilities. The primary treatment plant consists of screening, grit removal, and primary clarification. Sludge from the clarifiers is transferred to thickeners, then processed and stabilized through anaerobic digesters. Digested sludge is transferred to holding tanks where it is periodically drawn to unlined drying beds, with supernatant flows routed to the septage disposal station for blending with influent wastewater. The City of Modesto applies the stabilized sludge as a soil amendment on their 2,526-acre ranch, which is regulated by separate WDR Order 94-030.

After clarification, primary effluent is directed to the Jennings Road secondary/tertiary treatment facility where the wastewater receives secondary treatment for irrigation of pastureland (regulated by Order 99-112) or receives tertiary filtration and ultraviolet light disinfection for discharge to the San Joaquin River (regulated by Order R5-2017-0064) or discharge to the Delta-Mendota Canal regulated by this Order. For the secondary treatment system, approximately half of the primary effluent receives treatment with fixed film reactors and then is combined with primary effluent in an aerated recirculation channel. Flow in the recirculation channel is then distributed to three parallel facultative ponds for further treatment, and then transferred to one of two storage ponds before being applied to the City of Modesto's 2,526-acre ranch at agronomic rates.

The City of Modesto WQCF's tertiary treatment facility consists of two parallel two-step membrane bioreactor (MBR) facilities. The Phase 1A facility consists of an oxidation ditch that provides activated sludge biological treatment, reducing biochemical oxygen demand and providing nitrogen removal (i.e., nitrification/denitrification). The oxidation ditch is followed by membrane filtration and ultraviolet light (UV) radiation that disinfects the filtered wastewater prior to storage or discharge. Phase 1A construction of the tertiary treatment facilities (2.3 MGD) was completed on 1 July 2010. The Phase 2 facility consists of aeration basins for activated sludge biological treatment followed by membrane filtration and UV disinfection. The Phase 2 facility provides a tertiary treatment capacity of 12.6 MGD, and was completed in the spring of 2017. The current total tertiary filtration average dry weather flow capacity is 14.9 MGD. The tertiary

treated wastewater may be reused on the City of Modesto’s 2,526-acre ranch, discharged to the San Joaquin River, or discharged to the Delta-Mendota Canal. The City of Modesto’s separates cannery wastes from the domestic wastewater. A separate 60-inch outfall transports cannery wastewaters to the ranch land located next to the secondary-level treatment facility. The cannery wastewater is applied directly to the ranch land at agronomic rates during the canning season (July – September). Land application of cannery and secondary wastewaters to the ranch land is regulated by separate Order 99-112.

**B. Discharge Points and Receiving Waters**

1. The City of Turlock RWQCF is located in Section 21, T5S, R10E, Mount Diablo Base and Meridian (MDB&M), as shown in Attachment B, a part of this Order.
2. The City of Modesto WQCF is located in Section 4, T5S, R8E, MDB&M, as shown in Attachment B, a part of this Order.
3. Treated municipal wastewater from the City of Turlock RWQCF and the City of Modesto WQCF is discharged at Discharge Point 002 to the Delta-Mendota Canal, a water of the United States, at a point latitude 37° 29’ 37” N and longitude 121° 11’ 40” W.

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

Effluent limitations contained in Order R5-2016-0010 for discharges from discharge location 002 (Monitoring Location EFF-002) and representative monitoring data from the term of Order R5-2016-0010 are as follows:

1. **City of Turlock RWQCF.** Effluent limitations contained in Order R5-2016-0010 for discharges from discharge location 002 (Monitoring Location EFF-001A) and representative monitoring data from the term of Order R5-2016-0010 are as follows:

**Table F-2. Historic Effluent Limitations – City of Turlock RWQCF**

Parameter	Units	Historic Effluent Limitations	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Biochemical Oxygen Demand, 5-day @ 20°Celsius (BOD5)	mg/L	AMEL 10 AWEL 15 MDEL 20	4.0	4.6	13
BOD5	Pounds per Day (lbs/day, see table note 1 below)	AMEL 1,200 AWEL 1,800 MDEL 2,400	330	410	1410
Total Suspended Solids (TSS)	mg/L	AMEL 10 AWEL 15 MDEL 20	8.2	9.9	12

Parameter	Units	Historic Effluent Limitations	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
TSS	lbs/day (see table note 1)	AMEL 1,200 AWEL 1,800 MDEL 2,400	758	860	1301
pH	Standard Units	Instantaneous Max 8.5 Instantaneous Min 6.5	--	--	Instantaneous Max 8.1 Instantaneous Min 6.6
Bis (2-ethylhexyl) Phthalate	µg/L	AMEL 10 MDEL 30	1.2	1.6	1.6
Chlorodibromomethane	µg/L	AMEL 19 MDEL 30	14	16	16
Dichlorobromomethane	µg/L	AMEL 52 MDEL 79	42	42	42
Ammonia Nitrogen, Total (as N) (1 April – 30 September)	mg/L	AMEL 0.85 AWEL 1.5	ND	ND	ND
Ammonia Nitrogen, Total (as N) (1 April – 30 September)	lbs/day (see table note 1)	AMEL 100 AWEL 180	50	53	53
Ammonia Nitrogen, Total (as N) (1 October – 31 March)	mg/L	AMEL 1.6 AWEL 2.8	0.5	0.9	1.8
Ammonia Nitrogen, Total (as N) (1 October – 31 March)	lbs/day (see table note 1)	AMEL 190 AWEL 330	66	107	164
Aluminum, Total Recoverable	µg/L	AMEL 330 AWEL 710	276	595	595
Nitrate plus Nitrite, Total as Nitrogen	mg/L	AMEL 10 AWEL 12	27	27	27
Chlorine, Total Residual	mg/L	4-day avg. 0.011 1-hr avg. 0.019	ND	ND	ND
Electrical Conductivity	µmhos/cm	Calendar year annual average 1,250	1,280	1,340	1,340

Parameter	Units	Historic Effluent Limitations	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Total Coliform Organisms	MPN/100 mL	7-day median 2.2 Once in 30-day period 23 At any time 240	2.4	3.5	12.6
Diazinon	µg/L	(see table note 3 below)	ND	ND	ND
Chlorpyrifos	µg/L	(see table note 3 below)	ND	ND	ND
Mercury, Total	lbs/year	Calendar year annual average 0.82	0.043 (Calendar Year Annual Average)	--	--
Acute Whole Effluent Toxicity	% survival	70 % minimum for any one bioassay 90% median for any three bioassays	--	--	--
Chronic Whole Effluent Toxicity	TUc	1	8	--	--

**Table F-2 Notes:**

1. Based on a design flow of 20 MGD.
2. Not detected.
3. **Diazinon and Chlorpyrifos.** Effluent diazinon and chlorpyrifos concentrations shall not exceed the sum of one (1.0) as identified below:
  - i. Average Monthly Effluent Limitation (AMEL)*  
 $SAMEL = CD_{M-avg}/0.079 + CC_{M-avg}/0.012 \leq 1.0$   
 CD M-AVG = average monthly diazinon effluent concentration in µg/L.  
 CC M-AVG = average monthly chlorpyrifos effluent concentration in µg/L.
  - ii. Average Weekly Effluent Limitation (AWEL)*  
 $SAWEL = CD_{W-avg}/0.14 + CC_{W-avg}/0.021 \leq 1.0$   
 CD W-AVG = average weekly diazinon effluent concentration in µg/L.  
 CC W-AVG = average weekly chlorpyrifos effluent concentration in µg/L.
4. Maximum annual average.

5. Applied as a numeric toxicity monitoring limitation.

2. **City of Modesto WQCF.** Effluent limitations contained in Order R5-2016-0010 for discharges from discharge location 002 (Monitoring Location EFF-001B) and representative monitoring data from the term of Order R5-2016-0010 are as follows:

**Table F-3. Historic Effluent Limitations – City of Modesto WQCF**

Parameter	Units	Historic Effluent Limitations	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
BOD <sub>5</sub>	mg/L	AMEL 10 AWEL 15 MDEL 20	5.5	7.0	15
BOD <sub>5</sub>	Pounds per Day (lbs/day, see table note 1 below)	AMEL 1,200 AWEL 1,900 MDEL 2,500	560	730	1,400
pH	Standard Units	Instantaneous Max 8.5 Instantaneous Min 6.5	--	--	6.5-7.2
TSS	mg/L	AMEL 10 AWEL 15 MDEL 20	3.0	7.0	39
TSS	lbs/day (see table note 1)	AMEL 1,200 AWEL 1,900 MDEL 2,500	400	730	3,200
Ammonia Nitrogen, Total (as N) (1 April – 30 September)	mg/L	AMEL 0.85 AWEL 1.5	2.7	2.7	2.7
Ammonia Nitrogen, Total (as N) (1 April – 30 September)	lbs/day (see table note 1)	AMEL 100 AWEL 190	112	112	112
Ammonia Nitrogen, Total (as N) (1 October – 31 March)	mg/L	AMEL 1.6 AWEL 2.8	0.57	0.57	0.57
Ammonia Nitrogen, Total (as N) (1 October – 31 March)	lbs/day (see table note 1)	AMEL 200 AWEL 350	57	57	57

Parameter	Units	Historic Effluent Limitations	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Nitrate plus Nitrite, Total as Nitrogen	mg/L	AMEL 10 AWEL 19	7.5	7.5	7.5
Electrical Conductivity	µmhos/cm	Calendar year annual average 1,250	1,115	1,200	1,200
Total Coliform Organisms	MPN/100 mL	7-day median 2.2 Once in 30-day period 23 At any time 240	920 (Once in 30-day period)	4.5 (7-Day Median)	1,600
Diazinon	µg/L	(see table note 3 below)	ND	ND	ND
Chlorpyrifos	µg/L	(see table note 3 below)	ND	ND	ND
Mercury, Total	lbs/year	Calendar year annual average 1.162	--	--	0.006 (Annual Average)
Acute Whole Effluent Toxicity	% Survival	70 % minimum for any one bioassay 90% median for any three bioassays	--	--	--

**Table F-3 Notes:**

1. Based on a design flow of 14.9 MGD.
2. Not detected.
3. **Diazinon and Chlorpyrifos.** Effluent diazinon and chlorpyrifos concentrations shall not exceed the sum of one (1.0) as identified below:
  - i. Average Monthly Effluent Limitation (AMEL)*  

$$S_{AMEL} = C_D M\text{-avg}/0.079 + C_C M\text{-avg}/0.012 \leq 1.0$$
 C<sub>D</sub> M-AVG = average monthly diazinon effluent concentration in µg/L.  
 C<sub>C</sub> M-AVG = average monthly chlorpyrifos effluent concentration in µg/L.
  - ii. Average Weekly Effluent Limitation (AWEL)*  

$$S_{AWEL} = C_D W\text{-avg}/0.14 + C_C W\text{-avg}/0.021 \leq 1.0$$
 C<sub>D</sub> W-AVG = average weekly diazinon effluent concentration in µg/L.



CC W-AVG = average weekly chlorpyrifos effluent concentration in  $\mu\text{g/L}$ .

#### **D. Compliance Summary**

The Discharger was issued Expedited Payment Program Letter (EPL) R5-2021-0528 on 1 November 2021 for violations occurring 1 September 2020 through 31 July 2021. The EPL was issued for one Group I serious violation subject to minimum mandatory penalties (MMPs), two Group II serious violations, and six non-serious violations subject to MMPs. The EPL administered a mandatory minimum penalty of \$27,000 for the effluent limitation violations.

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

**1. City of Turlock RWQCF.** The City of Turlock expects flows to the Facility to increase to 25.4 MGD due to growth by 2045. Therefore, the City of Turlock is planning to expand the treatment capacity of the RWQCF as needed to accommodate growth in the service area. However, current average flows are approximately 10.3 MGD and an expansion is not expected to be necessary during the term of this Order.

The City of Turlock plans to construct an outfall for discharge to the Turlock Irrigation District (TID) Upper Lateral 4, which is authorized by Order R5-2021-0005. The purpose of the new discharge to the TID Upper Lateral 4 is to supply recycled water to augment irrigation supplies when there is demand within the TID service area from agricultural users within TID's canal system during the irrigation season (1 March through 31 October) and is limited to a maximum of 2,033 acre-feet annually. The City of Turlock will also modify its recycled water supply infrastructure to provide dechlorinated recycled water to TID Upper Lateral 4. Prior to initiating discharge, the outfall to TID's Upper Lateral 4 must also be constructed.

**2. City of Modesto WQCF.** The City of Modesto previously conducted an antidegradation analysis for the full Phase 3 build-out discharge of 19.1 MGD. With adoption of Order R5-2017-0064 the Central Valley Water Board authorized the discharge up to 19.1 MGD, contingent upon the Discharger constructing the necessary facility upgrades. Phases 4 and 5 are planned for the future with a full build-out tertiary treatment capacity of 27.3 MGD. The City of Modesto does not anticipate expanding capacity during the term of this Order.

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

The requirements contained in this Order are based on the requirements and authorities described in this section.

#### **A. Legal Authorities**

This Order serves as WDRs pursuant to article 4, chapter 4, division 7 of the California Water Code (commencing with section 13260). This Order is also issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. EPA and chapter 5.5, division 7 of the Water Code (commencing with section 13370). It shall serve as an NPDES permit for point source discharges from these Facilities to surface waters.

**B. California Environmental Quality Act (CEQA)**

Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of CEQA, (commencing with section 21100) of Division 13 of the Public Resources Code.

**C. State and Federal Laws, Regulations, Policies, and Plans**

1. **Water Quality Control Plan.** Requirements of this Order specifically implement the applicable Water Quality Control Plans.
  - a. **Basin Plan.** The Central Valley Water Board adopted a Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fifth Edition, May 2018 (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Requirements in this Order implement the Basin Plan. In addition, the Basin Plan implements State Water Board Resolution 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Beneficial uses applicable to Delta-Mendota Canal are as follows:

**Table F-4 Basin Plan Beneficial Uses**

Discharge Point	Receiving Water Name	Beneficial Use(s)
002	Delta-Mendota Canal	Municipal and domestic water supply (MUN); Agricultural Supply, including irrigation and stock watering (AGR); Water Contact Recreation (REC-1); Non-Contact Water Recreation (REC-2); Warm Freshwater Habitat (WARM); and Wildlife Habitat (WILD).

2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** U.S. EPA adopted the NTR on 22 December 1992, and later amended it on 4 May 1995 and 9 November 1999. About forty criteria in the NTR applied in California. On 18 May 2000, U.S. EPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on 13 February 2001. These rules contain federal water quality criteria for priority pollutants.
3. **State Implementation Policy.** On 2 March 2000, the State Water Board adopted the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Policy or SIP). The SIP became effective on 28 April 2000, with respect to the priority pollutant criteria promulgated for California by the U.S. EPA through the NTR and to the priority pollutant objectives established by the Central Valley Water Board in the Basin Plan. The SIP became effective on 18 May 2000, with respect to the priority pollutant criteria promulgated by the U.S. EPA through the CTR. The State Water Board adopted amendments to the SIP on 24 February 2005, that became effective on 13 July 2005. The SIP establishes implementation

provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

4. **Antidegradation Policy.** Federal regulation 40 C.F.R. section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16 ("Statement of Policy with Respect to Maintaining High Quality of Waters in California") (State Anti-Degradation Policy). The State Anti-Degradation Policy is deemed to incorporate the federal antidegradation policy where the federal policy applies under federal law. The State Anti-Degradation Policy requires that existing water quality be maintained unless degradation is justified based on specific findings. The Central Valley Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. The permitted discharge must be consistent with the antidegradation provision of 40 C.F.R. section 131.12 and the State Anti-Degradation Policy. The Board finds this order is consistent with the Federal and State Water Board antidegradation regulations and policy.
5. **Anti-Backsliding Requirements.** Sections 402(o) and 303(d)(4) of the CWA and federal regulations at 40 C.F.R. section 122.44(l) restrict backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed.
6. **Domestic Water Quality.** In compliance with Water Code section 106.3, it is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This Order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.
7. **Endangered Species Act Requirements.** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code, sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.
8. **Emergency Planning and Community Right to Know Act.** Section 13263.6(a) of the Water Code, requires that "the Regional Water Board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW for all substances that the most recent toxic chemical release data reported to the state emergency response commission pursuant to section 313 of the Emergency Planning and Community Right to Know Act of 1986 (42 U.S.C. Sec. 11023) (EPCRA) indicate as discharged into the POTW, for which the State Water Board or the Regional Water Board has established numeric water quality objectives,

and has determined that the discharge is or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to, an excursion above any numeric water quality objective”.

The most recent toxic chemical data report does not indicate any reportable off-site releases or discharges to the collection system for these Facilities. Therefore, a reasonable potential analysis based on information from EPCRA cannot be conducted. Based on information from EPCRA, there is no reasonable potential to cause or contribute to an excursion above any numeric water quality objectives included within the Basin Plan or in any State Water Board plan, so no effluent limitations are included in this permit pursuant to Water Code section 13263.6(a).

However, as detailed elsewhere in this Order, available effluent data indicate that there are constituents present in the effluent that have a reasonable potential to cause or contribute to exceedances of water quality standards and require inclusion of effluent limitations based on federal and state laws and regulations.

9. **Storm Water Requirements.** U.S. EPA promulgated federal regulations for storm water on 16 November 1990 in 40 C.F.R. parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates storm water discharges from wastewater treatment facilities. Wastewater treatment plants are applicable industries under the storm water program and are obligated to comply with the federal regulations. The City of Turlock RWQCF and City of Modesto WQCF capture and treat all storm water that falls on-site, therefore, coverage under the General Storm Water Permit is not required.
10. **Statewide General Waste Discharge Requirements for Sanitary Sewer Systems.** The State Water Board issued General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order 2006-0003-DWQ (General Order) on 2 May 2006. The State Water Board amended the MRP for the General Order through Order WQ 2013-0058-EXEC on 6 August 2013. The General Order requires public agencies that own or operate sanitary sewer systems with greater than 1 mile of pipes or sewer lines to enroll for coverage under the General Order. The General Order requires agencies to develop sanitary sewer management plans (SSMP's) and report all sanitary sewer overflows (SSO's), among other requirements and prohibitions.

The Discharger is subject to the requirements of, and must comply with, State Water Board Order 2006-0003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, as amended by State Water Board Order WQ 2013-0058-EXEC and any subsequent order.

11. **Sewage Sludge and Biosolids.** This Order does not authorize any act that results in violation of requirements administered by U.S. EPA to implement 40 C.F.R. Part 503, Standards for the Use or Disposal of Sewage Sludge. These standards regulate the final use or disposal of sewage sludge that is generated during the treatment of domestic sewage in a municipal wastewater treatment facility. The Discharger is responsible for meeting all applicable requirements of 40 C.F.R. Part 503 that are under U.S. EPA's enforcement authority.

**12. Surface Water Augmentation.** The State Water Board adopted Resolution No. 2018-0014, Adopting the Proposed Regulations for Surface Water Augmentation Using Recycled Water, on 6 March 2018. The Surface Water Augmentation Regulations were incorporated into Title 22 of the California Code of Regulations (CCR) and became effective 1 October 2018. Due to concerns about recycled water entering nearby downstream drinking water conveyance and storage facilities, Central Valley Water Board staff consulted with State Water Board Division of Drinking Water (DDW) staff regarding the applicability of the Surface Water Augmentation Regulations. DDW staff provided its evaluation in a memo dated 30 March 2022, as follows:

“DDW staff considered the information provided and the definition of Surface Water Source Augmentation Project in Title 22. Section 60301.851 in Title 22, CCR defines what constitutes a Surface Water Source Augmentation Project. Specifically, it states that the project involves the planned placement of recycled water for the purpose of supplementing the source of domestic drinking water supply. Given that the purpose of the NVRWP is not for supplementing the source of domestic drinking water supply, as well as taking into consideration the modeling information provided by the NVRWP for wastewater contributions to O’Neill Forebay and San Luis Reservoir, DDW determined that the NVRWP is not a surface water augmentation project. DDW staff recommends collecting additional information as part of the NPDES permit requirements to ensure the determination remains appropriate during the next NPDES permit renewal.”

This Order implements the recommendations by DDW staff to collect additional information for the next permit renewal. In addition, a reopener provision is included to reopen and revise this Order, as needed, should DDW’s determination regarding the applicability of the Surface Water Augmentation Regulations changes based on new information.

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

1. Under section 303(d) of the 1972 CWA, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 6 April 2018 U.S. EPA gave final approval to California's 2014 – 2016 section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of Water Quality Limited Segments (WQLSs), which are defined as “...those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 C.F.R. part 130, et seq.).” The Basin Plan also states, “Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment.” The Delta-Mendota Canal is not listed as an impaired waterbody on the 2012 303(d) list. O’Neill Forebay and the San Luis Reservoir, to which the Delta-Mendota Canal is tributary, are listed as impaired for mercury on the 2012 303(d) list. The Mendota

Pool, located at the terminus of the Delta-Mendota Canal, is listed as impaired for mercury and selenium on the 2012 303(d) list.

2. **Total Maximum Daily Loads (TMDLs).** The Delta-Mendota Canal, O’Neill Forebay, San Luis Reservoir, and Mendota Pool are not listed as impaired on the 303(d) list for diazinon and chlorpyrifos. However, Central Valley Water Board completed a TMDL for diazinon and chlorpyrifos for the Sacramento River and San Joaquin River Basins that is applicable to this discharge. Table F-5, below, identifies the 303(d) listings and any applicable TMDLs. This Order includes water quality-based effluent limitations (WQBELs) that are consistent with the assumptions and considerations of the applicable waste load allocations (WLAs) in the 2014 TMDL for diazinon and chlorpyrifos.

**Table F-5. 303(d) Listings and TMDLs for Delta-Mendota Canal, O’Neill Forebay, San Luis Reservoir, and Mendota Pool**

Waterbody	Pollutant	Potential Sources	Expected TMDL Completion
O’Neill Forebay	Mercury	Source Unknown	Unknown
O’Neill Forebay	Mercury	PCBs (Polychlorinated biphenyls)	Unknown
San Luis Reservoir	Mercury	Source Unknown	2027
San Luis Reservoir	Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD)	Source Unknown	2027
San Luis Reservoir	PCBs (Polychlorinated biphenyls)	Source Unknown	2027
San Luis Reservoir	Chlordane	Source Unknown	2027
Mendota Pool	Mercury	Source Unknown	2027
Mendota Pool	Selenium	Source Unknown	2027
Delta-Mendota Canal	Chlorpyrifos and Diazinon	--	Adopted 28 March 2014 and Effective 16 August 2017

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

**E. Other Plans, Policies and Regulations – Not Applicable**

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

Effluent limitations and toxic and pretreatment effluent standards established pursuant to sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the CWA and amendments thereto are applicable to the discharge.

The CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law

[33 U.S.C., section 1311(b)(1)(C); 40 C.F.R. section 122.44(d)(1)]. NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to criteria specifying maximum amounts of particular pollutants. Pursuant to federal regulations, 40 C.F.R. section 122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that “are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality.” Federal regulations, 40 C.F.R. section 122.44(d)(1)(vi), further provide that “[w]here a state has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits.”

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: 40 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 WQBEL’s to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Basin Plan at page 4-27, contains an implementation policy, “Policy for Application of Water Quality Objectives”, that specifies that the Central Valley Water Board “will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives.” This Policy complies with 40 C.F.R. section 122.44(d)(1). With respect to narrative objectives, the Central Valley Water Board must establish effluent limitations using one or more of three specified sources, including: (1) U.S. EPA’s published water quality criteria, (2) a proposed state criterion (i.e., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (i.e., the Central Valley Water Board’s “Policy for Application of Water Quality Objectives”)(40 C.F.R. section 122.44(d)(1)(vi)(A), (B) or (C)), or (3) an indicator parameter.

The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, discoloration, radionuclides, and tastes and odors. The narrative toxicity objective states: “All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.” (Basin Plan at section 3.1.20) The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The narrative chemical constituents’ objective states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, “...water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs)” in Title 22 of CCR. The Basin Plan further states that, to protect all beneficial uses, the Central Valley Water Board may apply limits more stringent than MCLs. The narrative tastes and odors objective states: “Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable

tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.”

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

1. **Prohibition III.A (No discharge or application of waste other than that described in this Order).** This prohibition is based on Water Code section 13260 that requires filing of a ROWD before discharges can occur. The Discharger submitted a ROWD for the discharges described in this Order; therefore, discharges not described in this Order are prohibited.
2. **Prohibition III.B (No bypasses or overflow of untreated wastewater, except under the conditions at CFR section 122.41(m)(4)).** As stated in section I.G of Attachment D, Standard Provisions, this Order prohibits bypass from any portion of the treatment facilities. Federal regulations, 40 C.F.R. section 122.41(m), define “bypass” as the intentional diversion of waste streams from any portion of a treatment facility. This section of the federal regulations, 40 C.F.R. section 122.41(m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Regional Water Board’s prohibition of bypasses, the State Water Board adopted a precedential decision, Order No. WQO 2002-0015, which cites the federal regulations, 40 C.F.R. section 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation.
3. **Prohibition III.C (No controllable condition shall create a nuisance).** This prohibition is based on Water Code section 13050 that requires water quality objectives established for the prevention of nuisance within a specific area. The Basin Plan prohibits conditions that create a nuisance.
4. **Prohibition III.D (No discharge of hazardous waste).** This prohibition is based on California Code of Regulations, title 22, section 66261.1 et seq, that prohibits discharge of hazardous waste.
5. **Prohibition III.E (Average Dry Weather Flow).** This prohibition is based on the design average dry weather flow treatment capacity rating for both the City of Turlock RWQCF and City of Modesto WQCF and ensures that both the City of Turlock RWQCF and City of Modesto WQCF are operated within their treatment capacity. Previous Order R5-2016-0010 included flow as an effluent limit based on the City of Modesto WQCF design flow and the City of Turlock’s request flow limitation less than the current design flow for the City of Turlock RWQCF discharge to the Delta-Mendota Canal. Flow is not a pollutant and therefore has been changed from an effluent limit to a discharge prohibition in this Order, which is an equivalent level of regulation. This Order is not less stringent because compliance with flow as a discharge prohibition will be calculated the same way as the previous Order.

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

1. **Scope and Authority**  
Section 301(b) of the CWA and implementing U.S. EPA permit regulations at 40 C.F.R. section 122.44 require that permits include conditions meeting



applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Secondary Treatment Standards at 40 C.F.R. part 133.

Regulations promulgated in 40 C.F.R. section 125.3(a)(1) require technology-based effluent limitations for municipal Dischargers to be placed in NPDES permits based on Secondary Treatment Standards or Equivalent to Secondary Treatment Standards.

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) established the minimum performance requirements for POTW's [defined in section 304(d)(1)]. Section 301(b)(1)(B) of that Act requires that such treatment works must, as a minimum, meet effluent limitations based on secondary treatment as defined by the U.S. EPA Administrator.

Based on this statutory requirement, U.S. EPA developed secondary treatment regulations, which are specified in 40 C.F.R. part 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of biochemical oxygen demand (BOD<sub>5</sub>), total suspended solids (TSS), and pH.

## 2. **Applicable Technology-Based Effluent Limitations**

- a. **BOD<sub>5</sub> and TSS.** Federal regulations at 40 C.F.R. part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD<sub>5</sub> and TSS. A daily maximum effluent limitation for BOD<sub>5</sub> and TSS is also included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities. In addition, 40 C.F.R. section 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent. This Order contains a limitation requiring an average of 85 percent removal of BOD<sub>5</sub> and TSS over each calendar month. This Order requires Water Quality Based Effluent Limitations (WQBELs) that are equal to or more stringent than the secondary technology-based treatment described in 40 CFR part 133 (See section IV.C.3.d of the Fact Sheet for a discussion on Pathogens which includes WQBELs for BOD<sub>5</sub> and TSS.)
- b. **pH.** The secondary treatment regulations at 40 C.F.R. part 133 also require that pH be maintained between 6.0 and 9.0 standard units. This Order, however, requires more stringent WQBEL's for pH to comply with the Basin Plan's water quality objectives for pH.

**Summary of Technology-based Effluent Limitations  
 Discharge Point 002**

**Table F-6. Summary of Technology-based Effluent Limitations**

Parameter	Units	Effluent Limitations
BOD <sub>5</sub>	mg/L	AMEL 30 AWEL 45
Total Suspended Solids	mg/L	AMEL 30 AWEL 45
pH	Standard units	Instantaneous Max 9.0 Instantaneous Min 6.0

**Table F-6 Notes:**

- Note that more stringent WQBELs for BOD<sub>5</sub>, pH, and TSS are applicable and are established as final effluent limitations in this Order (see section IV.C.3.c of this Fact Sheet).

**C. Water Quality-Based Effluent Limitations (WQBELs)**

**1. Scope and Authority**

CWA section 301(b) and 40 C.F.R. section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. This Order contains requirements, expressed as a technology equivalence requirement, more stringent than secondary treatment requirements that are necessary to meet applicable water quality standards. The rationale for these requirements, which consist of tertiary treatment, is discussed in section IV.C.3 of this Fact Sheet

Section 122.44(d)(1)(i) of 40 C.F.R. requires that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBEL's must be established using: (1) U.S. EPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in section 122.44(d)(1)(vi).

The process for determining reasonable potential and calculating WQBEL's when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the CTR and NTR.

Finally, 40 C.F.R. section 122(d)(1)(vii) requires effluent limits to be developed consistent with any available waste load allocations developed and approved for the discharge.

**2. Applicable Beneficial Uses and Water Quality Criteria and Objectives**

The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Board Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply.

The Basin Plan on page 2-1 states: “Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning...” and with respect to disposal of wastewaters states that “...disposal of wastewaters is [not] a prohibited use of waters of the State; it is merely a use which cannot be satisfied to the detriment of beneficial uses.”

The federal CWA section 101(a)(2), states: “it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water be achieved by July 1, 1983.” Federal Regulations, developed to implement the requirements of the CWA, create a rebuttable presumption that all waters be designated as fishable and swimmable. Federal Regulations, 40 CFR sections 131.2 and 131.10, require that all waters of the State regulated to protect the beneficial uses of public water supply, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation. 40 C.F.R. section 131.3(e) defines existing beneficial uses as those uses actually attained after 28 November 1975, whether or not they are included in the water quality standards. Federal Regulation, 40 C.F.R. section 131.10 requires that uses be obtained by implementing effluent limitations, requires that all downstream uses be protected and states that in no case shall a state adopt waste transport or waste assimilation as a beneficial use for any waters of the United States.

- a. **Receiving Water and Beneficial Uses.** Refer to III.C.1. above for a complete description of the receiving water and beneficial uses.
- b. **Effluent and Ambient Background Data.** The reasonable potential analysis (RPA), as described in section IV.C.3 of this Fact Sheet, was based on data from 1 January 2017 through 31 December 2017 for the City of Turlock RWQCF and 1 June 2019 through 31 May 2020 for the Modesto WQCF, which includes effluent and ambient background data submitted in SMRs.

Additionally, the City of Modesto provided monthly bis(2-ethylhexyl) phthalate data from 1 August 2021 through 31 December 2021 because the bis(2-ethylhexyl) phthalate data submitted with the effluent characterization was insufficient to perform a reasonable potential analysis.

c. **Assimilative Capacity/Mixing Zone.**

The City of Turlock has requested mixing zones and dilution credits for compliance with human health water quality criteria. As discussed below, this Order allows mixing zones and dilution credits for the City of Turlock.

The City of Modesto has not requested a mixing zone or dilution credits; therefore, this Order establishes end-of-pipe effluent limitations with no allowance for dilution within the receiving water for the City of Modesto WQCF.

- i. The Central Valley Water Board has the discretion to accept or deny mixing zones and dilution credits. The CWA directs the states to adopt water quality standards to protect the quality of its waters. U.S. EPA's current water quality standards regulation authorizes states to adopt general policies, such as mixing zones, to implement state water quality standards (40 CFR parts 122.44 and 122.45). The U.S. EPA allows states to have broad flexibility in designing its mixing zone policies. Primary policy and guidance on determining mixing zone and dilution credits is provided by the SIP and the Basin Plan. If no procedure applies in the SIP or the Basin Plan, then the Central Valley Water Board may use the U.S. EPA Technical Support Document for Water Quality-Based Toxics Control (EPA/505/2-90-001) (TSD).

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

For Priority Pollutants, the SIP supersedes the Basin Plan mixing zone provisions. Section 1.4.2 of the SIP states, in part, "...with the exception of effluent limitations derived from TMDLs, in establishing and determining compliance with effluent limitations for applicable human health, acute aquatic life, or chronic aquatic life priority pollutant criteria/objectives or the toxicity objective for aquatic life protection in a basin plan, the Regional Board may grant mixing zones and dilution

credits to dischargers...The applicable priority pollutant criteria and objectives are to be met through a water body except within any mixing zone granted by the Regional Board. ***The allowance of mixing zones is discretionary and shall be determined on a discharge-by-discharge basis.*** The Regional Board may consider allowing mixing zones and dilution credits only for discharges with a physically identifiable point of discharge that is regulated through an NPDES permit issued by the Regional Board.” [emphasis added]

For incompletely mixed discharges, the Discharger must complete an independent mixing zone study to demonstrate to the Central Valley Water Board that a dilution credit is appropriate. In granting a mixing zone, section 1.4.2.2 of the SIP requires the following to be met:

***“A mixing zone shall be as small as practicable. The following conditions must be met in allowing a mixing zone:***

A mixing zone shall not:

1. *compromise the integrity of the entire water body;*
2. *cause acutely toxic conditions to aquatic life passing thorough the mixing zone;*
3. *restrict the passage of aquatic life;*
4. *adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws;*
5. *produce undesirable or nuisance aquatic life;*
6. *result in floating debris, oil, or scum;*
7. *produce objectionable color, odor, taste, or turbidity;*
8. *cause objectionable bottom deposits;*
9. *cause nuisance;*
10. *dominate the receiving water body or overlap a mixing zone from different outfalls; or*
11. *be allowed at or near any drinking water intake. A mixing zone is not a source of drinking water. To the extent of any conflict between this determination and the Sources of Drinking Water Policy (Resolution No. 88-63), this SIP supersedes the provisions of that policy.”*

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

***“The dilution credit, D, is a numerical value associated with the mixing zone that accounts for the receiving water entrained into the discharge. The dilution credit is a value used in the calculation of effluent***

*limitations (described in section 1.4). **Dilution credits may be limited or denied on a pollutant-by-pollutant basis, which may result in a dilution credit for all, some, or no priority pollutants in the discharge.***

- ii. **Receiving Water Characteristics.** The City of Turlock RWQCF and the City of Modesto WQCF discharge to the Delta-Mendota Canal via a joint outfall. The Delta-Mendota Canal conveys water southeasterly from the Jones Pumping Plant to the Mendota Pool. The canal is located along the west side of the San Joaquin Valley and is 116.5 miles long. The flows in the Delta-Mendota Canal are managed by the USBR. Based on flow data at Jones Pumping Plant from the years 1994 through 2013, the harmonic mean flow of the Delta-Mendota Canal was 2,153 cubic feet per second (cfs).

The joint outfall is located adjacent to the east bank of the Delta-Mendota Canal. The footprint of the joint outfall is approximately 30 feet by 50 feet. The structure consists of a reinforced concrete, open-ended rectangular box, situated below and above grade. The box contains a fixed-point, sharp-crested weir for hydraulic stability. Downstream of the weir, the water flows over a concrete slab and into the Delta-Mendota Canal, and the outfall structure is designed so as to require little to no modification or alteration of the existing Delta-Mendota Canal concrete lining. The Delta-Mendota Canal is a trapezoidal structure with an estimated top base width of 99 feet and an estimated bottom base width of 48 feet. Because water movement and elevation in the Delta-Mendota Canal are controlled by a series of gates along its length, water height (or depth) does not vary much throughout the year. Per San Luis & Delta-Mendota Water Authority staff, a water height of 17 feet is representative of the canal across all water year types.

- iii. **Dilution/Mixing Zone Study Results.** The City of Turlock provided a 20 October 2015 North Valley Regional Recycled Water Project: Delta-Mendota Canal Mixing Zone Study (2015 Mixing Zone Study) providing the results of an initial dilution/mixing zone study. Using the Cornell Mixing Zone Expert System (CORMIX) model, the point of complete mixing downstream of the outfall to the Delta-Mendota Canal was estimated. A summary of the primary data inputs to the CORMIX model are provided below:

- (a) A channel width of 75 feet;
- (b) A channel depth of 17 feet;
- (c) A surface discharge configuration with a local depth at discharge location of 2 feet and a slope angle between local depth at discharge location and average ambient depth of 34°;
- (d) An estimated outfall cross-section of 15 feet wide by 1 foot deep.

Two primary model scenarios were run, using a harmonic mean flow of the Delta-Mendota Canal of 2,153 cubic feet per second (cfs) (1,392

MGD), for use in evaluating potential dilution for human carcinogens consistent with the SIP:

- 1) An effluent flow of 14.2 MGD which represents the highest effluent discharge rate from the City of Turlock RWQCF resulting in compliance with all WQBEL's (see subsection v, below), and
- 2) An effluent flow of 52.7 MGD which represents the total flow at build-out from the City of Turlock RWQCF (25.4 MGD) and the City of Modesto WQCF (27.3 MGD).

For each scenario, the model estimated the distance downstream to achieve complete mix and the dilution available. According to the report, initial mixing at the point of discharge is due to momentum and buoyancy; complete mixing is then achieved more slowly through dispersion as the narrow plume "hugs" the eastern bank of the canal. For human carcinogens, the results of the study indicate that the edge of the mixing zone where complete mixing occurs in the Delta-Mendota Canal is 2,554 meters (1.59 miles) at an effluent flow of 14.2 MGD and 1,994 meters (1.24 miles) at an effluent flow of 52.7 MGD.

For human carcinogen criteria, the SIP recommends using the harmonic mean receiving water flow and the long-term arithmetic mean effluent flow to calculate a dilution credit (SIP at section 1.4.2.1).

Based on the harmonic mean flow of 2,153 cfs (1,392 MGD) of the Delta-Mendota Canal and effluent discharge flows of 14.2 MGD and 52.7 MGD, the applicable dilution credits are 97 and 25, respectively.

Order R5-2016-0010 required the City of Turlock to conduct a mixing zone validation study after initiation of the discharge to the Delta-Mendota Canal. The City of Turlock provided a Mixing Zone Validation Study Report in accordance with the Special Provision, section VI.C.2.b, of Order R5-2016-0010. The Mixing Zone Validation Study used an average flow from the combined outfall of 23 MGD and results from a dye tracer study. Results from the dye tracer study indicated that full mixing of the NVRWP discharge in the Delta-Mendota Canal was achieved at a distance downstream no further than a check dam, approximately 2,200 meters (7,200 feet) downstream of the outfall, and was likely achieved upstream of the check dam.

iv. **Evaluation of Available Dilution for Human Carcinogen Criteria.**

Section 1.4.2.2 of the SIP, provides that mixing zones should not be allowed at or near drinking water intakes. Furthermore, regarding the application of a mixing zone for protection of human health, the TSD states that, "...the presence of mixing zones should not result in significant health risks, when evaluated using reasonable assumptions about exposure pathways. Thus, where drinking water contaminants are a concern, mixing zones should not encroach on drinking water intakes." There are no drinking water intakes in the human carcinogen mixing zone.

The SIP requires a mixing zone must be as small as practicable and comply with eleven (11) mixing zone prohibitions under section 1.4.2.2.A. Based on Central Valley Water Board staff evaluation of the results from the dye tracer study indicated that full mixing of the NVRWP discharge in the Delta-Mendota Canal was achieved at a distance downstream no further than a check dam, approximately 2,200 meters (7,200 feet) downstream of the outfall, and was likely achieved upstream of the check dam. A maximum available dilution credit of 48 and 97 for chlorodibromomethane and dichlorobromomethane respectively meet the eleven prohibitions of the SIP as follows::

- (a) *Shall not compromise the integrity of the entire waterbody.* The TSD states that, "If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats." The human health mixing zone is not applicable to aquatic life criteria. The proposed human health mixing zone is approximately 1.59 miles long, constituting a small fraction of the total canal reach. The human health mixing zone does not compromise the integrity of the entire waterbody.
- (b) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone.* The human health mixing zone is not applicable to aquatic life criteria. Therefore, acutely toxic conditions will not occur in the mixing zone.
- (c) *Shall not restrict the passage of aquatic life.* The human health mixing zone is not applicable to aquatic life criteria, and the narrow plume hugs the eastern bank of the Delta-Mendota Canal. Therefore, the mixing zone will not restrict the passage of aquatic life.
- (d) *Shall not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws.* The human health mixing zone is not applicable to aquatic life criteria. The mixing zone will not impact biologically sensitive or critical habitats.
- (e) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance.* The allowance of a human health mixing zone will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance. This Order requires end-of-pipe effluent limitations (e.g., for BOD<sub>5</sub> and TSS) and discharge prohibitions to prevent these conditions from occurring.



- (f) *Shall not dominate the receiving water body or overlap a mixing zone from different outfalls.* The human health mixing zone is small relative to the water body, so it will not dominate the water body. Furthermore, the mixing zone does not overlap mixing zones as there are no other outfalls or mixing zones in the vicinity of the discharge.
- (g) *Shall not be allowed at or near any drinking water intake.* There are no drinking water intakes within the human health mixing zone. The human carcinogen mixing zone therefore complies with the SIP. The mixing zone also complies with the Basin Plan, which requires that the mixing zone not adversely impact beneficial uses. Beneficial uses will not be adversely affected for the same reasons discussed above. In determining the size of the mixing zone, the Central Valley Water Board considered the procedures and guidelines in the EPA’s Water Quality Standards Handbook, 2d Edition (updated July 2007), Section 5.1, and Section 2.2.2 of the TSD. The SIP incorporates the same guidelines.

v. **Evaluation of Available Dilution for Specific Constituents (Pollutant-by-Pollutant Evaluation).** Dilution credits allowed for in this Order are in accordance with section 1.4.2.2 of the SIP. The allowance of a mixing zone and dilution credits are a discretionary act by the Central Valley Water Board. The Central Valley Water Board has determined that the maximum dilution credit on a constituent-by-constituent basis needed for this discharge are shown in the following table (also discussed further in section IV.C.3.c).

In the table below the dilution credits are calculated using the steady-state mass balance equation rearranged to solve for the dilution credit, as follows:

$$D = (ECA - C) / (C - B).$$

The ECA is equivalent to the performance-based AMEL or annual average effluent limitation.

**Table F-7. Dilution Credits for the City of Turlock RWQCF.**

Pollutant	Units	ECA	Criterion	Background	Dilution Credit
Chlorodibromomethane	µg/L	18.7	0.41	0.03	48
Dichlorobromomethane	µg/L	52.0	0.56	0.03	97

When determining to allow dilution credits for a specific pollutant, several factors must be considered, such as available assimilative capacity, facility performance, and best practicable treatment or control (BPTC). A pollutant-by-pollutant evaluation of dilution is discussed below:

- (a) **Dichlorobromomethane.** The receiving water contains assimilative capacity for dichlorobromomethane and a human

health mixing zone for dichlorobromomethane meets the mixing zone requirements of the SIP. Section 1.4.2.2 of the SIP requires that, “A mixing zone shall be as small as practicable.”, and Section 1.4.2.2.B requires, “The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements.” The City of Modesto WQCF does not use chlorine for disinfection and thus is not expected to create or discharge disinfection by-products, such as dichlorobromomethane, to the Delta-Mendota Canal. Therefore, all of the assimilative capacity for dichlorobromomethane in the receiving water has been allocated to the City of Turlock RWQCF.

The maximum effluent concentration (MEC) for dichlorobromomethane from the City of Turlock RWQCF was 53.6 µg/L. As discussed in the 2015 Mixing Zone Study, a dilution ratio of 98:1 (dilution credit of 97), which corresponds to an effluent flow of 14.2 MGD, is necessary to achieve compliance with WQBEL’s for dichlorobromomethane. Consequently, this Order contains an average dry weather flow prohibition 14.2 MGD. The City of Turlock RWQCF is currently treating an average flow of 10.2 MGD and flows are not expected to exceed 14.2 MGD during this permit term. Therefore, this Order includes effluent limitations for dichlorobromomethane calculated using a dilution credit of 97. The mixing zone for dichlorobromomethane is considered as small as practicable, and fully meets the requirements of the SIP.

- (b) **Chlorodibromomethane.** The receiving water contains assimilative capacity for chlorodibromomethane and a human health mixing zone for this constituent meets the mixing zone requirements of the SIP. Section 1.4.2.2 of the SIP requires that, “A mixing zone shall be as small as practicable.”, and Section 1.4.2.2.B requires, “The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements.” The City of Modesto WQCF does not use chlorine for disinfection and thus is not expected to create or discharge disinfection by-products, such as chlorodibromomethane, to the Delta-Mendota Canal. Therefore, all of the assimilative capacity for chlorodibromomethane in the receiving water has been allocated to the City of Turlock RWQCF. Based on a full buildout flow of 25.4 MGD for the City of Turlock the maximum dilution credit is 54 and based on the current design capacity flow of 14.2 MGD the maximum dilution credit is 97. However, as discussed in the 2015 Mixing Zone Study, a dilution credit of only 48, is necessary to achieve compliance with WQBEL’s for chlorodibromomethane. The complete antidegradation analysis submitted by the Discharger dated 20 October 2015 was based on existing Facility performance,

therefore, a dilution credit of 48 has been allowed for chlorodibromomethane in this Order.

- vi. **Regulatory Compliance for Dilution Credits and Mixing Zones.** To fully comply with all applicable laws, regulations and policies of the State, Central Valley Water Board approved a mixing zone and the associated dilution credits shown in Table F-7 based on the following:
- (a) Mixing zones are allowed under the SIP provided all elements contained in section 1.4.2.2 are met. Based on the mixing zone study conducted by the Discharger the Central Valley Water Board has determined that these factors are met.
  - (b) section 1.4.2.2. of the SIP requires mixing zones to be as small as practicable. Based on the mixing zone study conducted by the Discharger the Central Valley Water Board has determined the mixing zone is as small as practicable.
  - (c) In accordance with section 1.4.2.2 of the SIP, the Board has determined the mixing zone is as small as practicable, will not compromise the integrity of the entire water body, restrict the passage of aquatic life, dominate the waterbody or overlap existing mixing zones from different outfalls. The mixing zone is small (approximately 7,200 feet downstream of the discharge) relative to the large size of the receiving water (approximately 116.5 miles), is not at or near a drinking water intake, and does not overlap a mixing zone from a different outfall.
  - (d) The Central Valley Water Board is allowing a mixing zone for human health constituents only and has determined allowing such mixing zone will not cause acutely toxic conditions to aquatic life passing through the mixing zone.
  - (e) The Central Valley Water Board has determined the discharge will not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under the federal or State endangered species laws, because the mixing zone is for human health criteria only, is relatively small, and acutely toxic conditions will not occur in the mixing zone. The discharge will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum, produce objectionable odor, taste, or turbidity, cause objectionable bottom deposits, or cause nuisance, because the proposed Order establishes end-of-pipe effluent limitations (e.g., for BOD<sub>5</sub> and TSS) and discharge prohibitions to prevent these conditions from occurring.
  - (f) As required by the SIP, in determining the extent of or whether to allow a mixing zone and dilution credit, the Central Valley Water Board has considered the presence of pollutants in the discharge that are carcinogenic, mutagenic, teratogenic, persistent, bioaccumulative, or attractive to aquatic organisms, and concluded

that the allowance of the mixing zone and dilution credit is adequately protective of the beneficial uses of the receiving water.

- (g) The Central Valley Water Board has determined mixing zone complies with the SIP for priority pollutants.
- (h) The mixing zone study indicates the maximum allowed dilution factor to be 97 for human health constituents. section 1.4.2.2B of the SIP, in part states, "The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements." The Central Valley Water Board has determined a dilution factor of 97 is not needed or necessary for the Discharger to achieve compliance with this Order.
- (i) The Central Valley Water Board has determined the mixing zone complies with the Basin Plan for non-priority pollutants. The Basin Plan requires a mixing zone not adversely impact beneficial uses. Beneficial uses will not be adversely affected for the same reasons discussed above. In determining the size of the mixing zone, the Central Valley Water Board has considered the procedures and guidelines in section 5.1 of U.S. EPA's Water Quality Standards Handbook, 2nd Edition (updated July 2007) and section 2.2.2 of the TSD. The SIP incorporates the same guidelines.
- (j) The Central Valley Water Board has determined that allowing dilution factors that exceed those proposed by this Order would not comply with the State Anti-degradation Policy for receiving waters outside the allowable mixing zone for dichlorobromomethane and chlorodibromomethane. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16 (State Anti-Degradation Policy). The State Anti-Degradation Policy incorporates the federal antidegradation policy and requires that existing quality of waters be maintained unless degradation is justified based on specific findings. Item 2 of the State Anti-Degradation Policy states:

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

The effluent limitations established in the Order for dichlorobromomethane and chlorodibromomethane that have been adjusted for dilution credits provided in Table F-7 were developed based on performance of the Discharger's current wastewater

treatment capabilities. Therefore, the Central Valley Water Board determined the effluent limitations required by this Order will result in the Discharger implementing best practicable treatment or control of the discharge necessary to assure that pollution or nuisance will not occur and the highest water quality consistent with maximum benefit to the people of the State will be maintained. The Central Valley Water Board also determined the Discharger will be in immediate compliance with the effluent limitations.

The Central Valley Water Board also determined establishing effluent limitations for dichlorobromomethane and chlorodibromomethane that have been adjusted for dilution credits provided in Table F-7 is consistent with section 1.4.2.2B of the SIP that requires the Central Valley Water Board to shall deny or significantly limit a mixing zone and dilution credits as necessary to comply with other regulatory requirements.

Therefore, the Central Valley Water Board has determined the effluent limitations established in the Order for dichlorobromomethane and chlorodibromomethane that have been adjusted for dilution credits provided in Table F-7 are appropriate and necessary to comply with the Basin Plan, SIP, Federal anti-degradation regulations and the State Anti-Degradation Policy.

- d. **Conversion Factors.** The CTR contains aquatic life criteria for arsenic, cadmium, chromium III, chromium VI, copper, lead, nickel, silver, and zinc which are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The default U.S. EPA conversion factors contained in Appendix 3 of the SIP were used to convert the applicable dissolved criteria to total criteria.
- e. **Hardness-Dependent CTR Metals Criteria.** The CTR and the NTR contain water quality criteria for seven metals that vary as a function of hardness. The lower the hardness the lower the water quality criteria. The metals with hardness-dependent criteria include cadmium, copper, chromium III, lead, nickel, silver, and zinc.

This Order has established the criteria for hardness-dependent metals based on the hardness of the receiving water (actual ambient hardness) as required by the SIP and the CTR. The SIP does not address how to determine the hardness for application to the equations for the protection of aquatic life when using hardness-dependent metals criteria. It simply states, in section 1.2, that the criteria shall be properly adjusted for hardness using the hardness of the receiving water. The CTR requires that, for waters with a hardness of 400 mg/L (as CaCO<sub>3</sub>), or less, the actual ambient hardness of the surface water must be used (40 C.F.R. section 131.38(c)(4)). The CTR requires that the hardness values used shall be consistent with the design discharge conditions for design flows and mixing zones (40 C.F.R. section 131.3(c)(4)(ii)). Where design flows for aquatic life criteria include the lowest one-day flow with an average

reoccurrence frequency of once in ten years (1Q10) and the lowest average seven consecutive day flow with an average reoccurrence frequency of once in ten years (7Q10) (40 C.F.R. section 131.38(c)(2)(iii) Table 4). This section of the CTR also indicates that the design conditions should be established such that the appropriate criteria are not exceeded more than once in a three year period on average (40 C.F.R. section 131.38(c)(2)(iii) Table 4, notes 1 and 2). The CTR requires that when mixing zones are allowed the CTR criteria apply at the edge of the mixing zone, otherwise the criteria apply throughout the water body including at the point of discharge (40 C.F.R. section 131.38(c)(2)(i)). The CTR does not define the term “ambient,” as applied in the regulations. Therefore, the Central Valley Water Board has considerable discretion to consider upstream and downstream ambient conditions when establishing the appropriate water quality criteria that fully complies with the CTR and SIP.

### **Summary findings**

The ambient hardness for the Delta-Mendota Canal is represented by the data in Figure F-1, below, which shows ambient hardness ranging from 46 mg/L to 198 mg/L based on collected ambient data from December 2017 through November 2021. Given the high variability in ambient hardness values, there is no single hardness value that describes the ambient receiving water for all possible scenarios (e.g., minimum, maximum). Because of this variability, staff has determined that based on the ambient hardness concentrations measured in the receiving water, the Central Valley Water Board has discretion to select ambient hardness values within the range of 46 mg/L (minimum) up to 198 mg/L (maximum). Staff recommends that the Board use the ambient hardness values shown in Table F-7 for the following reasons.

- i. Using the ambient receiving water hardness values shown in Table F-8 will result in criteria and effluent limitations that ensure protection of beneficial uses under all ambient receiving water conditions.
- ii. The Water Code mandates that the Central Valley Water Board establish permit terms that will ensure the reasonable protection of beneficial uses. In this case, using the lowest measured ambient hardness to calculate effluent limitations is not required to protect beneficial uses. Calculating effluent limitations based on the lowest measured ambient hardness is not required by the CTR or SIP and is not reasonable as it would result in overly conservative limits that will impart substantial costs to the Discharger and ratepayers without providing any additional protection of beneficial uses. In compliance with applicable state and federal regulatory requirements, after considering the entire range of ambient hardness values, Board staff has used the ambient hardness values shown in Table F-8 to calculate the proposed effluent limitations for hardness-dependent metals. The proposed effluent limitations are protective of beneficial uses under all flow conditions.

- iii. Using an ambient hardness that is higher than the minimum of 46 mg/L will result in limits that may allow increased metals to be discharged to the river, but such discharge is allowed under the State Antidegradation Policy (State Water Board Resolution 68-16). The Central Valley Water Board finds that this degradation is consistent with the antidegradation policy (see antidegradation findings in section IV.D.4 of the Fact Sheet). The Antidegradation policy requires the Discharger to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that: a) a pollution or nuisance will not occur, and b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.
- iv. Using the ambient hardness values shown in Tables F-8 and F-9 are consistent with the CTR and SIP's requirements for developing metals criteria.

**Table F-8. City of Turlock Summary of CTR Criteria for Hardness-Dependent Metals**

CTR Metals	Ambient Hardness (mg/L)	CTR Criteria (µg/L, total) (Acute)	CTR Criteria (µg/L, total) (Chronic)
Copper	82	11.6	7.9
Chromium III	82	1,480	176
Cadmium	78 (acute) 82 (chronic)	3.4	2.1
Lead	78	60	2.3
Nickel	82	397	44
Silver	75	2.5	--
Zinc	82	101	101

**Table F-8 Notes:**

- 1. **CTR Criteria (ug/L total).** Acute and chronic numbers were rounded to two significant figures in accordance with the CTR (40 C.F.R. section 131.38(b)(2)).
- 2. **Ambient hardness (mg/L).** Values in Table F-8 represent actual observed receiving water hardness measurements from the dataset shown in Figure F-1.

**Table F-9. City of Modesto Summary of CTR Criteria for Hardness-Dependent Metals**

CTR Metals	Ambient Hardness (mg/L)	CTR Criteria (µg/L, total) (Acute)	CTR Criteria (µg/L, total) (Chronic)
Copper	190	26	16.1
Chromium III	190	350	180
Cadmium	168 (acute) 190 (chronic)	8.1	4.1
Lead	159	147	5.7
Nickel	190	808	350
Silver	133	6.6	--
Zinc	190	206	206

**Table F-9 Notes:**

1. **CTR Criteria (ug/L total).** Acute and chronic numbers were rounded to two significant figures in accordance with the CTR (40 C.F.R. section 131.38(b)(2)).
2. **Ambient hardness (mg/L).** Values in Table F-9 represent actual observed receiving water hardness measurements from the dataset shown in Figure F-1.
3. **The CTR's hardness dependent metals criteria** equations vary differently depending on the metal, which results in differences in the range of ambient hardness values that may be used to develop effluent limitations that are protective of beneficial uses and comply with CTR criteria for all ambient flow conditions.

**Background**

The State Water Board provided direction regarding the selection of hardness in two precedential water quality orders; WQO 2008-0008 for the City of Davis Wastewater Treatment Plant (Davis Order) and WQO 2004-0013 for the Yuba City Wastewater Treatment Plant (Yuba City Order). The State Water Board recognized that the SIP and the CTR do not discuss the manner in which hardness is to be ascertained, thus regional water boards have considerable discretion in determining ambient hardness so long as the selected value is protective of water quality criteria under the given flow conditions. (Davis Order, p.10). The State Water Board explained that it is necessary that, "The [hardness] value selected should provide protection for all times of discharge under varying hardness conditions." (Yuba City Order, p. 8). The Davis Order also provides that, "Regardless of the hardness used, the resulting limits must always be protective of water quality criteria under all flow conditions." (Davis Order, p. 11).

For this discussion, all hardness values are expressed in mg/L as CaCO<sub>3</sub>. The equation describing the total regulatory criterion, as established in the CTR, is as follows:

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

Where:

H = ambient hardness (as CaCO<sub>3</sub>)

WER = water-effect ratio

m, b = metal- and criterion-specific constants

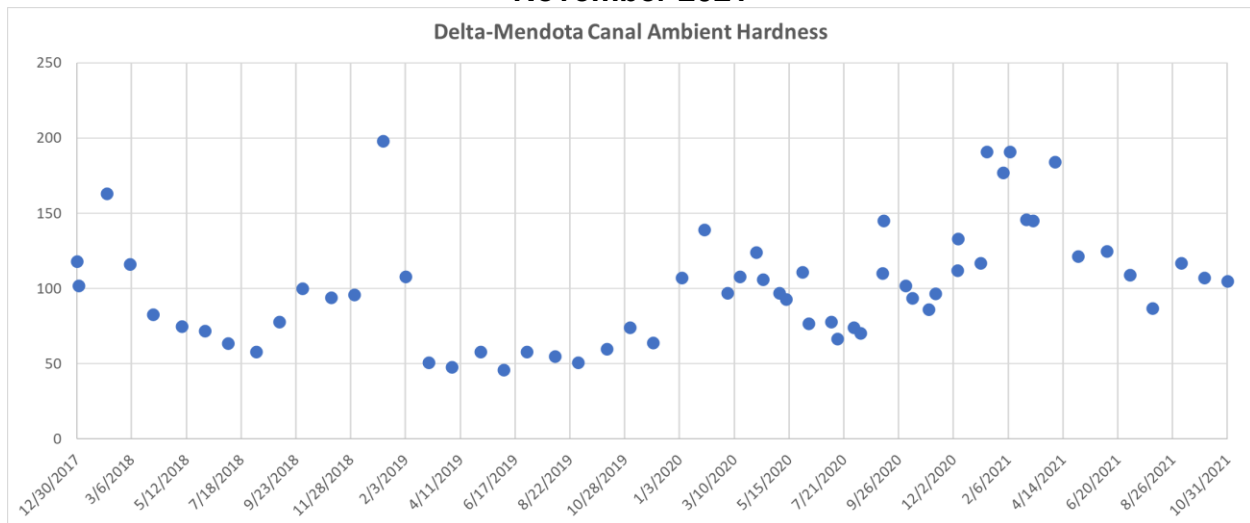
The direction in the CTR regarding hardness selection is that it must be based on ambient hardness and consistent with design discharge conditions for design flows and mixing zones. Consistent with design discharge conditions and design flows means that the selected "design" hardness must result in effluent limitations under design discharge conditions that do not result in more than one exceedance of the applicable criteria in a three year period (40 C.F.R. section 131.38(c)(2)(iii) Table 4, notes 1 and 2). Where design flows for aquatic life criteria include



the lowest one-day flow with an average reoccurrence frequency of once in ten years (1Q10) and the lowest average seven consecutive day flow with an average reoccurrence frequency of once in ten years (7Q10). The 1Q10 and 7Q10 Delta-Mendota Canal flows are 49 MGD and 257 MGD, respectively.

**Ambient conditions.** The ambient receiving water hardness varied from 46 mg/L to 198 mg/L, based on 61 samples from December 2017 through November 2021 (see Figure F-1).

**Figure F-1. Observed Ambient Hardness Concentrations December 2017 through November 2021**



In this analysis, the entire range of ambient hardness concentrations shown in Figure F-1 were considered to determine the appropriate ambient hardness to calculate the CTR criteria and effluent limitations that are protective under all discharge conditions.

**Approach to derivation of criteria**

As shown above, ambient hardness varies substantially. Because of the variation, there is no single hardness value that describes the ambient receiving water for all possible scenarios (e.g., minimum, maximum, mid-point). While the hardness selected must be hardness of the ambient receiving water, selection of an ambient receiving water hardness that is too high would result in effluent limitations that do not protect beneficial uses. Also, the use of minimum ambient hardness would result in criteria that are protective of beneficial uses, but such criteria may not be representative considering the wide range of ambient conditions.

**Reasonable worst-case ambient conditions.** To determine whether a selected ambient hardness value results in effluent limitations that are fully protective while complying with federal regulations and state policy, staff have conducted an analysis considering varying ambient hardness and flow conditions. To do this, the Central Valley Water Board has ensured that the receiving water hardness and criteria selected for effluent limitations are protective under “reasonable-worst case ambient

conditions.” These conditions represent the receiving water conditions under which derived effluent limitations would ensure protection of beneficial uses under all ambient flow and hardness conditions.

Reasonable worst-case ambient conditions:

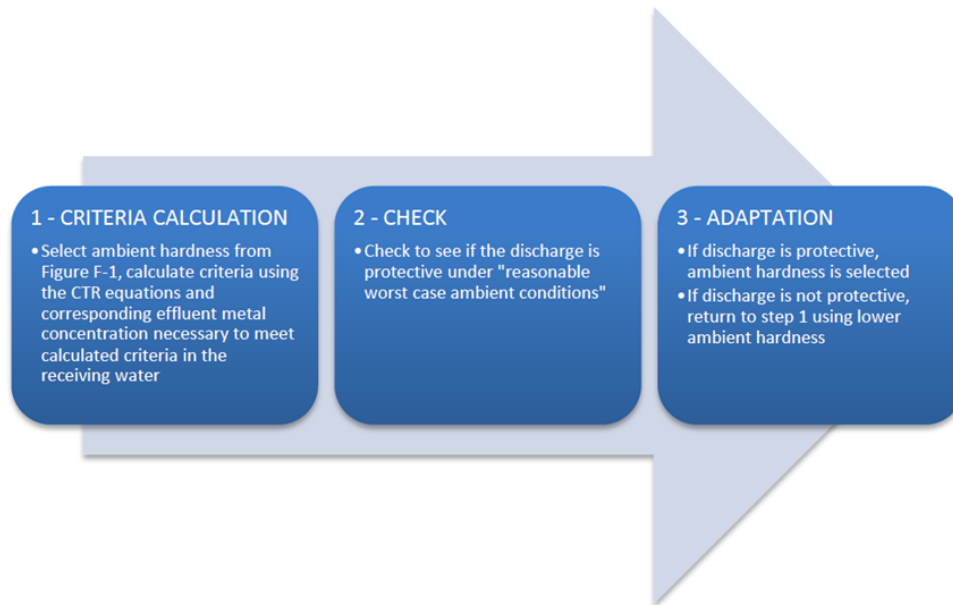
- **“Low receiving water flow.”** CTR design discharge conditions (1Q10 and 7Q10) have been selected to represent reasonable worst-case receiving water flow conditions.
- **“High receiving water flow (maximum receiving water flow).”** This additional flow condition has been selected consistent with the Davis Order, which required that the hardness selected be protective of water quality criteria under all flow conditions.
- **“Low receiving water hardness.”** The minimum receiving water hardness condition of 46 mg/L was selected to represent the reasonable worst-case receiving water hardness.
- **“Background ambient metal concentration at criteria.”** This condition assumes that the metal concentration in the background receiving water is equal to CTR criteria (upstream of the facility’s discharge). Based on data in the record, this is a design condition that has not occurred in the receiving water and is used in this analysis to ensure that limits are protective of beneficial uses even in the situation where there is no assimilative capacity.

**Iterative approach.**

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

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

**Figure F-2. Criteria Calculation CTR**



1. **CRITERIA CALCULATION.** CTR criteria are calculated using the CTR equations based on actual measured ambient hardness sample results, starting with the maximum observed ambient hardness of 198 mg/L. Effluent metal concentrations necessary to meet the above calculated CTR criteria in the receiving water are calculated in accordance with section 1.4.B, Step 2, of the SIP, which provides direction for calculating the Effluent Concentration Allowance. This should not be confused with an effluent limit. Rather, it is the Effluent Concentration Allowance (ECA), which is synonymous with the wasteload allocation defined by U.S. EPA on page 96 of the TSD as “a definition of effluent water quality that is necessary to meet the water quality standards in the receiving water.” If effluent limits are found to be needed, the limits are calculated to enforce the ECA considering effluent variability and the probability basis of the limit.
2. **CHECK.** U.S. EPA’s simple mass balance equation, as found in the “U.S. EPA NPDES Permit Writers’ Handbook” (EPA 833-K-10-001 September 2010, pg. 6-24), is used to evaluate if discharge at the computed ECA is protective. Resultant downstream metal concentrations are compared with downstream calculated CTR criteria under reasonable worst-case ambient conditions.
3. **ADAPT.** If step 2 results in:
  - (A) receiving water metal concentration that complies with CTR criteria under reasonable worst-case ambient conditions, then the hardness value is selected.
  - (B) receiving water metal concentration greater than CTR criteria, then return to bullet 1, selecting a lower ambient hardness value.

The CTR’s hardness dependent metals criteria equations contain metal-specific constants, so the criteria vary depending on the metal. Therefore, steps 1 through 3 above must be repeated separately for each metal until ambient hardness values are determined that will result in criteria and effluent limitations that comply with the CTR and protect beneficial uses for all metals.

**Results of iterative analysis**

The iterative analysis for each CTR hardness-dependent metal results in the selected ambient hardness values are shown in Table F-8, above. Using these actual receiving water sample hardness values to calculate criteria will result in effluent limitations that are protective under all ambient flow conditions. Ambient hardness values are used in the CTR equations to derive criteria and effluent limitations. As an example of the three-step iterative process, Tables F-10 and F-12 below summarize the numeric results for copper based on an ambient hardness of 82 mg/L and 190 mg/L and a calculated ECA of 7.9 µg/L 16.1 µg/L for the City of Turlock RWQCF and Modesto WQCF respectively. Tables F-11 and F-13 below summarize the numeric results for silver based on an ambient hardness of 82 mg/L and 190 mg/L and a calculated ECA 2.5 µg/L and 6.6 µg/L for the City of Turlock RWQCF and Modesto WQCF respectively. The analysis evaluated all flow conditions, and the numeric values for the critical flow conditions are summarized in Tables F-10, F-11, F-12, and F-13 below. Ambient concentrations for copper and silver are calculated using the worst-case downstream ambient conditions, which allows for a conservative assumption that will ensure the receiving water complies with CTR criteria. Under the “check” step, worst-case ambient receiving water conditions are used to test whether the effluent discharge results in compliance with CTR criteria and protection of beneficial uses.

The results of the iterative analyses show that the ambient hardness values selected using the three-step iterative process results in protective effluent limitations that achieve CTR criteria under all flow conditions. Tables F-10, F-11, F-12, and F-13 below, summarize the critical flow conditions. There are no effluent limitations for copper or silver as they demonstrate no reasonable potential.

**Table F-10. City of Turlock RWQCF Verification of CTR Compliance for Copper**  
 Downstream Worst-Case Ambient Receiving Water Conditions

Critical Flow Conditions	Hardness (mg/L)	CTR Criteria (µg/L)	Ambient Copper Concentration (µg/L)	Complies with CTR?
1Q10	82	7.9	7.9	Yes
7Q10	49	5.0	5.0	Yes
Max receiving water flow	46	4.8	4.8	Yes

**Table F-11. City of Turlock RWQCF Verification of CTR Compliance for Silver**  
 Downstream Worst-Case Ambient Receiving Water Conditions

Critical Flow Conditions	Hardness (mg/L)	CTR Criteria (µg/L)	Ambient Copper Concentration (µg/L)	Complies with CTR?
1Q10	82	2.9	2.5	Yes
7Q10	49	1.2	1.2	Yes
Max receiving water flow	46	1.1	1.1	Yes

**Table F-12. City of Modesto WQCF Verification of CTR Compliance for Copper**  
 Downstream Worst-Case Ambient Receiving Water Conditions

Critical Flow Conditions	Hardness (mg/L)	CTR Criteria (µg/L)	Ambient Copper Concentration (µg/L)	Complies with CTR?
1Q10	190	16.1	16.1	Yes
7Q10	57	5.8	5.7	Yes
Max receiving water flow	46.4	4.8	4.8	Yes

**Table F-13. City of Modesto Verification of CTR Compliance for Silver**  
 Downstream Worst-Case Ambient Receiving Water Conditions

Critical Flow Conditions	Hardness (mg/L)	CTR Criteria (µg/L)	Ambient Copper Concentration (µg/L)	Complies with CTR?
1Q10	190	12.2	6.6	Yes
7Q10	57	1.5	1.5	Yes
Max receiving water flow	46.4	1.1	1.1	Yes

**3. Determining the Need for WQBELs**

Clean Water Act section 301(b)(1)(C) requires effluent limitations necessary to meet water quality standards, and 40 C.F.R. section 122.44(d) requires NPDES permits to include conditions that are necessary to achieve water quality standards established under section 303 of the CWA, including State narrative criteria for water quality. Federal regulations at 40 C.F.R 122.44(d)(1)(i) state, "Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality." Additionally, 40 C.F.R. section 122(d)(1)(vii) requires effluent limits to be developed consistent with any available wasteload allocations developed and approved for the discharge. The process to determine whether a WQBEL is required as described in 40 C.F.R. section 122.44(d)(1)(i) is referred to as a reasonable potential analysis or RPA. Central Valley Water Board staff conducted RPA's for nearly 200 constituents, including the 126 U.S. EPA priority toxic pollutants. This section includes details of the RPA's for constituents of concern for the Facilities. The entire RPA is included in the administrative record and a summary of the constituents of concern is provided in Attachment G. For priority pollutants, the SIP dictates the procedures for conducting the RPA. For non-priority pollutants the Central Valley Water Board

is not restricted to one particular RPA method, therefore, the RPA's have been conducted based on EPA guidance considering multiple lines of evidence and the site-specific conditions of the discharge.

- a. **Constituents with No Reasonable Potential.** Central Valley Water Board staff conducted reasonable potential analyses for nearly 200 constituents, including the 126 U.S. EPA priority toxic pollutants. All reasonable potential analyses are included in the administrative record and a summary of the constituents of concern is provided in Attachment G. WQBELs are not included in this Order for constituents that do not demonstrate reasonable potential to cause or contribute to an instream excursion of an applicable water quality objective; however, monitoring for those pollutants is established in this Order as required by the SIP. If the results of effluent monitoring demonstrate reasonable potential, this Order may be reopened and modified by adding an appropriate effluent limitation.

Most constituents with no reasonable potential are not discussed in this Order. This section only provides the rationale for the reasonable potential analyses for the following constituents of concern that were found to have no reasonable potential after assessment of the data:

- i. **Aluminum**

- (a) **WQO.** The State Water Board Division of Drinking Water (DDW) has established Secondary Maximum Contaminant Levels (MCLs) to assist public drinking water systems in managing their drinking water for public welfare considerations, such as taste, color, and odor. The Secondary MCL for aluminum is 200 µg/L for protection of the MUN beneficial use. Title 22 requires compliance with Secondary MCLs on an annual average basis.

Aluminum is the third most abundant element in the earth's crust and is ubiquitous in both soils and aquatic sediments. When mobilized in surface waters, aluminum has been shown to be toxic to various fish species. However, the potential for aluminum toxicity in surface waters is directly related to the chemical form of aluminum present, and the chemical form is highly dependent on water quality characteristics that ultimately determine the mechanism of aluminum toxicity. Surface water characteristics, including pH, temperature, colloidal material, fluoride and sulfate concentrations, and dissolved organic carbon, all influence aluminum speciation and its subsequent bioavailability to aquatic life.

The 2018 U.S. EPA NAWQC for protection of freshwater aquatic life for aluminum recommends acute (1-hour average; criteria maximum concentration or CMC) and chronic (4-day average; criteria continuous concentration or CCC) standards based upon Multiple Linear Regression (MLR) models for vertebrate and invertebrate species that use pH, dissolved

organic carbon (DOC), and total hardness to quantify the effects of these water chemistry parameters on the bioavailability and resultant toxicity of aluminum to aquatic organisms. The 2018 Aluminum NAWQC document provides look up tables or a Microsoft Excel spreadsheet to calculate the criteria based on pH, DOC, and total hardness. The U.S. EPA aluminum criteria have been used to implement the Basin Plan's narrative toxicity objective.

City of Turlock RWQCF:

A site-specific CCC of 640 µg/L and CMC of 590 µg/L were calculated considering pH, hardness, and DOC representative of effluent conditions. Effluent sampling results for pH and hardness from March 2018 to February 2021 were used in the evaluation. In the absence of DOC data, the criteria were calculated considering a conservative assumption of DOC for the effluent of 5 mg/L.

City of Modesto WQCF:

A site-specific CCC of 646 µg/L and CMC of 788 µg/L were calculated considering pH, hardness, and DOC representative of effluent conditions. Effluent sampling results for pH and hardness from March 2018 to February 2021 were used in the evaluation. In the absence of DOC data, the criteria were calculated considering a conservative assumption of DOC for the effluent of 5 mg/L.

- (b) **RPA Results.** For priority pollutants, the SIP dictates the procedures for conducting the RPA. Aluminum is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent. The Secondary MCL is derived from human welfare considerations (e.g., taste, odor, laundry staining), not for toxicity. Secondary MCL's are drinking water standards contained in Title 22 of the California Code of Regulations and requires compliance with these standards on an annual average basis, when sampling at least quarterly. To be consistent with how compliance with the standards is determined, for the Secondary MCL the RPA was conducted based on the calendar annual average effluent aluminum concentrations. Calculating a maximum annual average concentration considers variability in the data, per 40 C.F.R. § 122.44(d)(1)(ii).

City of Turlock RWQCF:

For the 2018 U.S. EPA NAWQC the RPA was conducted considering the maximum effluent concentration (MEC) for

aluminum, which was 595 µg/L based on 63 samples collected between March 2018 through February 2021. Effluent aluminum is consistently below the NAWQC. The discharge does not have reasonable potential to cause or contribute to an exceedance of the narrative toxicity objective in the receiving water and the Facility is adequately controlling the discharge of aluminum.

City of Modesto WQCF:

For the 2018 U.S. EPA NAWQC the RPA was conducted considering the maximum effluent concentration (MEC) for aluminum, which was 22 µg/L based on 12 collected between June 2019 and May 2020. Effluent aluminum is consistently below the NAWQC. The discharge does not have reasonable potential to cause or contribute to an exceedance of the narrative toxicity objective in the receiving water and the Facility is adequately controlling the discharge of aluminum.

ii. **Bis (2-ethylhexyl) Phthalate**

(a) **WQO.** The CTR includes a criterion of 1.8 µg/L for bis (2-ethylhexyl) phthalate for the protection of human health for waters from which both water and organisms are consumed.

(b) **RPA Results.**

City of Turlock RWQCF:

The MEC for bis (2-ethylhexyl) phthalate in the City of Turlock RWQCF effluent was 1.6 µg/L and non-detect in the ambient background receiving water. Therefore, bis (2-ethylhexyl) phthalate in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria of 1.8 µg/L.

City of Modesto WQCF:

Based on 14 samples collected between June 2019 and May 2020, the bis (2-ethylhexyl) phthalate maximum detection was 320 µg/L, all other samples were non-detect. Four (4) of the non-detect samples had laboratory method detection limitations and reporting limitations greater than those in the approved Analytical Methods Report, 3 µg/L and 5 µg/L respectively, approved on 15 September 2017. Central Valley Board Staff could not determine reasonable potential and, in July 2021, communicated with the City of Modesto to take monthly bis (2-ethylhexyl) phthalate samples. The City of Modesto provided additional monthly bis (2-ethylhexyl) phthalate samples from August 2021 through December 2021 because of inconsistent method detection limits for bis (2-ethylhexyl) phthalate samples collected during the effluent characterization monitoring. The additional bis (2-ethylhexyl) phthalate samples were all non-detect with a method detection limit of 0.10 µg/L. Therefore, bis (2-ethylhexyl) phthalate in the discharge does not demonstrate



reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria of 1.8 µg/L, and the WQBEL's for bis (2-ethylhexyl) phthalate have not been retained in this Order. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

iii. **Mercury**

- (a) **WQO.** The current NAWQC for protection of freshwater aquatic life, continuous concentration, for mercury is 0.77 µg/L (30-day average, chronic criteria). The CTR contains a human health criterion (based on a threshold dose level causing neurological effects in infants) of 0.050 µg/L for waters from which both water and aquatic organisms are consumed. Both values are controversial and subject to change. In 40 C.F.R. Part 131, U.S. EPA acknowledges that the human health criteria may not be protective of some aquatic or endangered species and that "...more stringent mercury limits may be determined and implemented through use of the State's narrative criterion." In the CTR, U.S. EPA reserved the mercury criteria for freshwater and aquatic life and may adopt new criteria at a later date.

The State Water Board adopted Resolution 2017-0027 on 2 May 2017, which approved Part 2 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California, Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions (Statewide Mercury Provisions). The Statewide Mercury Provisions establish a Sport Fish Water Quality Objective of an average 0.2 mg/kg methylmercury fish tissue concentration within a calendar year for waters with the beneficial uses of commercial and sport fishing (COMM), tribal tradition and culture (CUL), wildlife habitat (WILD), and marine habitat (MAR). This fish tissue objective corresponds to a water column concentration of 12 ng/L of total mercury for flowing water bodies. As shown in Table F-3, the beneficial uses of the Delta-Mendota Canal include AGR, REC-1, REC-2, WARM, WILD, and MUN; therefore, the Sport Fish Water Quality Objective is applicable and is the most stringent objective.

- (b) **RPA Results.** The Statewide Mercury Provisions specify that the RPA shall be conducted using the maximum annual average effluent and background mercury concentrations for comparison with the Sport Fish Water Quality Objective.

City of Turlock RWQCF:

The MEC for mercury was 8.4 ng/L, with a maximum annual average of 2.0 ng/L based on 29 samples collected between March 2018 through December 2020. The maximum annual average background concentration for mercury in the Delta-

Mendota Canal was 6.2 ng/L based on 12 samples collected between June 2019 and May 2020.

Therefore, the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Sport Fish Water Quality Objective in the receiving water. However, the O'Neill Forebay, San Luis Reservoir, and the Mendota Pool are listed as an impaired water body pursuant to CWA section 303(d) for mercury, therefore, the discharge must not cause or contribute to increased mercury levels.

City of Modesto WQCF:

The MEC for mercury was 1.6 ng/L, with a maximum annual average of 0.64 ng/L based on 51 samples collected between March 2018 and February 2021. The maximum annual average background concentration for mercury in the Delta-Mendota Canal was 6.2 ng/L based on 12 samples collected between June 2019 and May 2020.

Therefore, the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Sport Fish Water Quality Objective in the receiving water.

(c) **WQBELs.**

City of Turlock RWQCF:

Order R5-2016-0010 contained a performance-based effluent limitation for mercury of 0.82 lbs/year, this Order does not retain this effluent limitation. As mentioned above, the City of Turlock RWQCF does not exhibit reasonable potential to cause or contribute to an exceedance of the respective water quality objective and the receiving water is not CWA section 303(d) listed as impaired.

City of Modesto WQCF :

Order R5-2016-0010 contained a performance-based effluent limitations for mercury of 1.162 lbs/year, this Order does not retain this effluent limitation as a final limitation. As mentioned above, the City of Modesto WQCF does not exhibit reasonable potential to cause or contribute to an exceedance of the respective water quality objective and the receiving water is not CWA section 303(d) listed as impaired.

iv. **Salinity**

- (a) **WQO.** The Basin Plan contains a chemical constituent objective that incorporates state MCLs, contains a narrative objective, and contains numeric water quality objectives for certain specified water bodies for electrical conductivity, total dissolved solids, sulfate, and chloride. The U.S. EPA Ambient Water Quality Criteria for Chloride recommends acute and chronic criteria for the protection of aquatic life. There are no U.S. EPA water quality criteria for the protection of aquatic life for

electrical conductivity, total dissolved solids, and sulfate. The Bay-Delta Plan includes numeric water quality criteria for the protection of agricultural and MUN beneficial uses. Table F-14, below, contains various recommended levels for EC or TDS, sulfate, and chloride.

**Table F-14 Salinity Water Quality Criteria/Objectives**

Parameter	Secondary MCL.	U.S. EPA NAWQC
EC (µmhos/cm) or TDS (mg/L)	EC 900, 1,600, 2,200 TDS 500, 1,000, 1,500	N/A
Sulfate (mg/L)	250, 500, 600	N/A
Chloride (mg/L)	250, 500, 600	860 1-hour / 230 4-day

**Table F-14 Notes:**

1. **Secondary MCLs.** Secondary MCLs are for protection of public welfare and are stated as a recommended level, upper level, and a short-term maximum level.

- (1) **Chloride.** The National Ambient Water Quality Criteria for chloride is 230 mg/L. The Secondary MCL for chloride is 250 mg/L, as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum.
- (2) **Electrical Conductivity or Total Dissolved Solids.** The Secondary MCL for EC is 900 µmhos/cm as a recommended level, 1,600 µmhos/cm as an upper level, and 2,200 µmhos/cm as a short-term maximum, or when expressed as TDS is 500 mg/L as a recommended level, 1,000 mg/L as an upper level, and 1,500 mg/L as a short-term maximum.
- (3) **Sulfate.** The Secondary MCL for sulfate is 250 mg/L as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum.

(b) **RPA Results.**

City of Turlock RWQCF.

- (1) Chloride. Chloride concentrations in the effluent ranged from 95 mg/L to 124 mg/L, with an average of 113 mg/L. These levels do not exceed the Secondary MCL. Background concentrations in the Delta-Mendota Canal ranged from 11 mg/L to 110 mg/L, with an average of 47 mg/L, for 12 samples collected by the Discharger from June 2019 through May 2020.
- (2) Electrical Conductivity or Total Dissolved Solids. A review of the City of Turlock’s monitoring reports, both from the San Joaquin River discharge and the Delta-Mendota Canal

discharge, shows an EC maximum annual average 1,130  $\mu\text{mhos/cm}$ , with a range from 810  $\mu\text{mhos/cm}$  to 1,340  $\mu\text{mhos/cm}$ . These levels exceed the Secondary MCL recommended level but not the upper level. 173 samples for electrical conductivity taken at the upstream receiving water between March 2018 and February 2021 averaged 425  $\mu\text{mhos/cm}$ .

Order R5-2016-0010 did not require routine TDS monitoring of the effluent, therefore TDS data from the time the City of Turlock RWQCF discharged to the San Joaquin River was used in the reasonable potential analysis. The maximum annual average TDS effluent concentration was 690 mg/L with concentrations ranging from 460 mg/L to 810 mg/L. These levels exceed the Secondary MCL recommended level but did not exceed the upper level. The background receiving water TDS ranged from 17 mg/L to 450 mg/L, with an average of 240 mg/L.

- (3) Sulfate. Sulfate concentrations in the effluent ranged from 80 mg/L to 125 mg/L, with an average of 110 mg/L. These levels do not exceed the Secondary MCL. Background concentrations in the Delta-Mendota Canal ranged from 16 mg/L to 620 mg/L, with an average of 91 mg/L.

City of Modesto WQCF.

- (1) Chloride. Chloride concentrations in the effluent ranged from 140 mg/L to 240 mg/L, with an average of 202 mg/L. These levels do not exceed the Secondary MCL. Background concentrations in the Delta-Mendota Canal ranged from 11 mg/L to 110 mg/L, with an average of 47 mg/L, for 12 samples collected by the Discharger from June 2019 through May 2020.

- (2) Electrical Conductivity or Total Dissolved Solids. A review of the City of Modesto's monitoring reports shows a maximum annual average effluent EC of 920  $\mu\text{mhos/cm}$ , with a range of 690  $\mu\text{mhos/cm}$  to 1,300  $\mu\text{mhos/cm}$ . These levels exceed the Secondary MCL recommended level but not the upper level. 173 samples for electrical conductivity taken at the upstream receiving water between March 2018 and February 2021 averaged 425  $\mu\text{mhos/cm}$ .

Order R5-2016-0010 did not require routine TDS monitoring of the effluent, therefore only monthly samples from the effluent and receiving water characterization taken from June 2019 through May 2020 were used in the reasonable potential analysis. These levels exceed the Secondary MCL recommended level but did not exceed the upper level. The background receiving water TDS

ranged from 17 mg/L to 450 mg/L, with an average of 240 mg/L.

- (3) Sulfate. Sulfate concentrations in the effluent ranged from 32 mg/L to 54 mg/L, with an average of 38 mg/L. These levels do not exceed the Secondary MCL. Background concentrations in the Delta-Mendota Canal ranged from 16 mg/L to 620 mg/L, with an average of 91 mg/L.

c) **WQBELs.**

As discussed above, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion of water quality objectives for salinity. On 17 January 2020, certain amendments to the Basin Plan incorporating a Program to Control and Permit Salt Discharges to Surface and Groundwater (Salt Control Program) became effective. Other amendments became effective on 2 November 2020 when approved by the U.S. EPA. The Salt Control Program is a three-phased program, with each phase lasting 10 to 15 years. The Basin Plan requires all salt dischargers to comply with the provisions of the program. Two compliance pathways are available for salt dischargers during Phase 1.

The Phase 1 Compliance pathways are: 1) Conservative Salinity Permitting Approach, which utilizes the existing regulatory structure and focuses on source control, conservative salinity limits on the discharge, and limits the use of assimilative capacity and compliance time schedules; and, 2) Alternative Salinity Permitting Approach, which is an alternative approach to compliance through implementation of specific requirements such as participating in the Salinity Prioritization and Optimization Study (P&O) rather than the application of conservative discharge limits

The Discharger submitted a Notice of Intent for the Salinity Control Program indicating its intent to meet the Alternative Salinity Permitting Approach. This Order requires implementation of a Salinity Evaluation and Minimization Plan, participation in the Salinity P&O Study, and includes a performance-based trigger for EC consistent with the Alternative Salinity Permitting Approach.

- b. **Constituents with Reasonable Potential.** The Central Valley Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for ammonia, chlorine residual, chlorodibromomethane, dichlorobromomethane, diazinon, chlorpyrifos, nitrate plus nitrite, pathogens, and pH. WQBEL's for these constituents are included in this Order. A summary of the RPA is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

i. **Ammonia**

- (a) **WQO.** The 2013 U.S. EPA National Ambient Water Quality Criteria (NAWQC) for the protection of freshwater aquatic life for total ammonia (2013 Criteria), recommends acute (1-hour average; criteria maximum concentration or CMC) and chronic (30-day average; criteria continuous concentration or CCC) standards based on pH and temperature. U.S. EPA also recommends that no 4-day average concentration should exceed 2.5 times the 30-day CCC.

The 2013 Criteria reflects the latest scientific knowledge on the toxicity of ammonia to certain freshwater aquatic life, including toxicity data on sensitive freshwater unionid mussels, non-pulmonary snails, and other freshwater organisms. The inclusion of new toxicity data for unionid mussels resulted in substantially more stringent criteria. In many cases, current wastewater treatment technologies are not capable of complying with effluent limitations based on the more stringent criteria.

The Central Valley Clean Water Association (CVCWA) organized a coordinated effort for POTWs within the Central Valley Region, the Freshwater Mussel Collaborative Study for Wastewater Treatment Plants, to determine how the latest scientific knowledge on the toxicity of ammonia reflected in the 2013 Criteria could be implemented in the Central Valley Region. Phase I, completed in June 2015, included a State of Knowledge Report developed by a consultant team consisting of Robertson-Bryan, Inc., Larry Walker Associates, and Pacific EcoRisk. The collaborative study involved policy and permitting discussions among representatives from the Central Valley Water Board, U.S. EPA, United States Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and regional mussel experts regarding the implementation of the 2013 Criteria in POTW NPDES permits. The discussions evaluated permitting approaches that provide reasonable protection of aquatic life beneficial uses, including protection of freshwater mussels.

The State of Knowledge Report explained that the species of freshwater mussels in waters within the Central Valley Region are different than what U.S. EPA used in the toxicity dataset for development of the 2013 Criteria. The State of Knowledge Report indicated that one resident freshwater mussel species was shown to not be as sensitive as the eastern mussel species used to derive the 2013 Criteria. However, the sensitivity of the other Central Valley Region mussel species was unknown.

Initial work under this project indicated the need to understand whether freshwater mussels are present or absent in POTW receiving waters in order to properly permit the discharge of ammonia in NPDES permits. Hence, a Phase II of the CVCWA study was conducted that developed and validated an effective environmental DNA (eDNA) method for determining the presence/absence of the three freshwater mussel genera in water bodies of the Central Valley. A Phase IIb of the study involved further study and application of the eDNA methodology.

CVCWA submitted the Phase IIc Freshwater Mussel Collaborative Study for Wastewater Treatment Plants: Ammonia Criteria Recalculation Final Report, dated January 2020 (Criteria Recalculation Report) developed by the same consultant team. The Criteria Recalculation Report provides toxicity studies demonstrating all freshwater mussel species present in Central Valley Region waters are less sensitive than the eastern species used to develop the 2013 Criteria.

U.S. EPA developed the Guidelines for Deriving Numerical Aquatic Site-Specific Water Quality Criteria by Modifying National Criteria (EPA-600/S3-84-099 December 1984) that provides a Recalculation Procedure. U.S. EPA also developed the Revised Deletion Process for the Site-Specific Recalculation Procedure for Aquatic Life Criteria (EPA-823-R-13-001, April 2013) to guide the development of a site-specific toxicity dataset that is appropriate for deriving a site-specific aquatic life criterion, by modifying the national toxicity dataset for the pollutant of concern through correcting, adding, and/or deleting test results.

The Criteria Recalculation Report implemented U.S. EPA's Recalculation Procedure utilizing toxicity bioassays conducted on resident mussel species to replace the toxicity data for the eastern mussel species in the national dataset to develop site-specific ammonia criteria for waters within the Central Valley Region, including all surface waters in the Sacramento River, San Joaquin River, and Tulare Lake Basin Plans.

A draft Criteria Recalculation Report was provided to the Central Valley Water Board, U.S. EPA Region 9, U.S. EPA Office of Science and Technology, USFWS, and the Nature Conservancy. Comments were provided by Central Valley Water Board staff and U.S. EPA Office of Science and Technology. U.S. EPA agreed with the recalculation procedure for developing site-specific acute criterion. However, U.S. EPA recommended a more conservative approach for utilizing the acute-to-chronic ratio procedure for developing the site-specific chronic criterion. The final Criteria Recalculation Report

addressed the comments and provided revised equations for the chronic criterion in Appendix D.

The Basin Plans' Policy for Application of Water Quality Objectives requires the Central Valley Water Board to consider, "...on a case-by-case basis, direct evidence of beneficial use impacts, all material and relevant information submitted by the discharger and other interested parties, and relevant numerical criteria and guidelines developed and/or published by other agencies and organizations...In considering such criteria, the Board evaluates whether the specific numerical criteria which are available through these sources and through other information supplied to the Board, are relevant and appropriate to the situation at hand and, therefore, should be used in determining compliance with the narrative objective."

The Central Valley Water Board finds that the site-specific ammonia criteria provided in the January 2020 Criteria Recalculation Report implement the Basin Plan's narrative toxicity objective to protect aquatic life beneficial uses of the receiving water. This Order implements the site-specific acute and chronic criteria for ammonia provided by the January 2020 Criteria Recalculation Report, with the adjustments to the chronic criteria recommended by U.S. EPA.

**Site-specific Criteria for the Delta-Mendota Canal.** Similar to the U.S. EPA 2013 Criteria, the recalculated site-specific criteria developed in the Criteria Recalculation Report for the acute and chronic criteria are presented based on equations that vary according to pH and temperature. The pH and temperature speciation relationships developed by U.S. EPA were utilized without modification. Equations were developed for situations where freshwater mussels are present and where they are absent. In this case, for the Delta-Mendota Canal freshwater mussels have been assumed to be absent. In addition, the recalculated criteria include equations that provide enhanced protection for important salmonid species in the genus *Oncorhynchus*, that can be implemented for receiving waters where salmonid species are present. Because the Delta-Mendota Canal does not have the beneficial use of COLD, freshwater habitat and the environmental conditions do not support the presence of salmonids, the criteria equations for waters where salmonids are absent were used.

City of Turlock RWQCF

The acute (1-hour average) criterion, or CMC, for the summer season (April through September) was calculated using paired effluent pH and temperature data, collected during the period from April 2018 and September 2020. The most stringent CMC of 3.2. mg/L (ammonia as N) calculated using the paired effluent



pH and temperature data has been implemented in this Order. The CMC for the winter season (October through March) was calculated using paired effluent pH and temperature data, collected during the period from October 2018 and March 2021. The most stringent CMC of 4.8 mg/L (ammonia as N) calculated using the paired effluent pH and temperature data has been implemented in this Order.

The chronic (30-day average) criterion or CCC for the summer season was calculated using paired downstream receiving water pH and temperature data, collected during the period from April 2018 and October 2020. The most stringent 30-day rolling average CCC of 3.5 mg/L (ammonia as N) has been implemented in this Order. The CCC for the winter season was calculated using paired downstream receiving water pH and temperature data, collected during the period from November 2018 and March 2021. The most stringent 30-day rolling average CCC of 2.8 mg/L (ammonia as N) has been implemented in this Order.

The chronic (4-day average) concentration is derived in accordance with the U.S. EPA criterion as 2.5 times the 30-day CCC. Based on the 30-day CCC of 3.5 mg/L (ammonia as N) for the summer season, the 4-day average concentration that should not be exceeded is 8.7 mg/L (ammonia as N). Based on the 30-day CCC of 2.8 mg/L (ammonia as N) for the winter season, the 4-day average concentration that should not be exceeded is 7.0 mg/L (ammonia as N).

#### City of Modesto WQCF

The acute (1-hour average) criterion, or CMC, for the summer season (April through September) was calculated using paired effluent pH and temperature data, collected during the period from April 2018 and September 2020. The most stringent CMC of 9.5 mg/L (ammonia as N) calculated using the paired effluent pH and temperature data has been implemented in this Order. The CMC for the winter season (October through March) was calculated using paired effluent pH and temperature data, collected during the period from October 2018 and March 2021. The most stringent CMC of 13.8 mg/L (ammonia as N) calculated using the paired effluent pH and temperature data has been implemented in this Order.

The chronic (30-day average) criterion or CCC for the summer season was calculated using paired downstream receiving water pH and temperature data, collected during the period from April 2018 and October 2020. The most stringent 30-day rolling average CCC of 3.5 mg/L (ammonia as N) has been

implemented in this Order. The CCC for the winter season was calculated using paired downstream receiving water pH and temperature data, collected during the period from October 2018 and March 2021. The most stringent 30-day rolling average CCC of 2.8 mg/L (ammonia as N) has been implemented in this Order.

The chronic (4-day average) concentration is derived in accordance with the U.S. EPA criterion as 2.5 times the 30-day CCC. Based on the 30-day CCC of 3.5 mg/L (ammonia as N) for the summer season, the 4-day average concentration that should not be exceeded is 8.7 mg/L (ammonia as N). Based on the 30-day CCC of 2.8 mg/L (ammonia as N) for the winter season, the 4-day average concentration that should not be exceeded is 7.0 mg/L (ammonia as N).

- (b) **RPA Results.** The Facilities are POTWs that treat domestic wastewater. Untreated domestic wastewater contains ammonia in concentrations that is harmful to aquatic life and exceed the Basin Plan narrative toxicity objective. Federal regulations at 40 C.F.R. section 122.44(d)(1)(i) requires that, "Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality." For priority pollutants, the SIP dictates the procedures for conducting the RPA. Ammonia is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

U.S. EPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available...A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTW's discharging to contact recreational waters)." U.S. EPA's TSD also recommends that factors other than effluent data should be considered in the RPA, "When determining whether or not a discharge causes, has the reasonable potential

to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data.” With regard to POTW’s, U.S. EPA recommends that, “POTW’s should also be characterized for the possibility of chlorine and ammonia problems.” (TSD, p. 50)

Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. Both the City of Turlock RWQCF and City of Modesto WQCF use nitrification to remove ammonia from their respective waste streams. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. Ammonia is known to cause toxicity to aquatic organisms in surface waters. Discharges of ammonia in concentrations that produce detrimental physiological responses to human, plant, animal, or aquatic life would violate the Basin Plan’s narrative toxicity objective. Although the Discharger nitrifies the discharge, inadequate or incomplete nitrification creates the potential for ammonia to be discharged and provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the site-specific acute and chronic criteria for ammonia provided by the January 2020 Criteria Recalculation Report. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for ammonia and WQBELs are required.

- (c) **WQBELs.** The Central Valley Water Board calculates WQBELs in accordance with SIP procedures for non-CTR constituents, and ammonia is a non-CTR constituent. The SIP procedure assumes a 4-day averaging period for calculating the long-term average discharge condition (LTA). However, U.S. EPA recommends modifying the procedure for calculating permit limits for ammonia using a 30-day averaging period for the calculation of the LTA corresponding to the 30-day CCC. Therefore, while the LTAs corresponding to the acute and 4-day chronic criteria were calculated according to SIP procedures, the LTA corresponding to the 30-day CCC was calculated assuming a 30-day averaging period. The lowest LTA representing the acute, 4-day CCC, and 30-day CCC is then selected for deriving the average monthly effluent limitation (AMEL) and the average weekly effluent limitation (AWEL). The

remainder of the WQBEL calculation for ammonia was performed according to the SIP procedures.

- (d) **Plant Performance and Attainability.** Both the City of Turlock RWQCF and City of Modesto WQCF are designed to provide tertiary treatment and fully nitrify the wastewater. Therefore, the Central Valley Water Board finds that immediate compliance with the ammonia limitations is feasible.

ii. **Chlorine Residual**

- (a) **WQO.** U.S. EPA developed NAWQC for protection of freshwater aquatic life for chlorine residual. The recommended 4-day average (chronic) and 1-hour average (acute) criteria for chlorine residual are 0.011 mg/L and 0.019 mg/L, respectively. These criteria are protective of the Basin Plan’s narrative toxicity objective.
- (b) **RPA Results.** The concentrations of chlorine used to disinfect wastewater are high enough to harm aquatic life and violate the Basin Plan narrative toxicity objective if discharged to the receiving water. Reasonable potential therefore does exist and effluent limits are required.

40 C.F.R. section 122.44(d)(1)(i) requires that, “Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.” For priority pollutants, the SIP dictates the procedures for conducting the RPA. Chlorine is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used its judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

U.S. EPA’s September 2010 NPDES Permit Writer’s Manual, page 6-30, states, “State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available...A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTW’s discharging to contact recreational waters).” U.S. EPA’s TSD also recommends that factors other than effluent

data should be considered in the RPA, “When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data.” With regard to POTW’s, U.S. EPA recommends that, “POTW’s should also be characterized for the possibility of chlorine and ammonia problems.” (TSD, p. 50).

City of Turlock RWQCF:

The City of Turlock RWQCF uses chlorine for disinfection, which is extremely toxic to aquatic organisms. Although the City of Turlock uses a sodium bisulfite process to dechlorinate the effluent prior to discharge to Delta-Mendota Canal, the existing chlorine use and the potential for chlorine to be discharged provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the NAWQC.

City of Modesto WQCF:

The City of Modesto WQCF uses UV disinfection and does not use chlorine in the treatment system. Therefore, the City of Modesto WQCF does not have reasonable potential to cause or contribute to an in-stream excursion above the NAWQC for chlorine.

(c) **WQBELs.**

City of Turlock RWQCF:

The U.S. EPA’s TSD for Water Quality-Based Toxics Control [EPA/505/2-90-001] contains statistical methods for converting chronic (4-day) and acute (1-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. However, because chlorine is an acutely toxic constituent that can and will be monitored continuously, an average 1-hour limitation is considered more appropriate than an average daily limitation. This Order contains a 4-day average effluent limitation and 1-hour average effluent limitation for chlorine residual of 0.011 mg/L and 0.019 mg/L, respectively, based on U.S. EPA’s NAWQC, which implements the Basin Plan’s narrative toxicity objective for protection of aquatic life for the City of Turlock RWQCF (Monitoring location EFF-001A).

City of Modesto WQCF:

This Order does not include effluent limitations for chlorine residual for the City of Modesto WQCF.

- (d) **Plant Performance and Attainability.** Based on 1,064 samples obtained between September 2016 and July 2019 (Discharge to the San Joaquin River), chlorine residual was not detected in the City of Turlock RWQCF effluent with a method detection limit of 0.01 mg/L. Thus, the Central Valley Water Board concludes that immediate compliance with these effluent limitations is feasible. This Order does not include effluent limitations for chlorine residual for the City of Modesto WQCF.

iii. **Chlorodibromomethane**

- (a) **WQO.** The CTR includes a criterion of 0.41 µg/L for chlorodibromomethane for the protection of human health for waters from which both water and organisms are consumed.

- (b) **RPA Results.**

City of Turlock RWQCF:

The MEC for chlorodibromomethane was 16 µg/L based on 90 samples collected from March 2018 through February 2021. Chlorodibromomethane was not detected in the upstream receiving water based on 12 samples collected from June 2019 through May 2020. Therefore, chlorodibromomethane in the City of Turlock RWQCF discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health.

City of Modesto WQCF:

Chlorodibromomethane was non detect (Method detection limit of 0.4 µg/L) based on 12 samples collected from June 2019 through May 2020. Chlorodibromomethane was not detected in the upstream receiving water based on 12 samples collected from June 2019 through May 2020. Therefore, chlorodibromomethane in the City of Modesto discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health.

- (c) **WQBELs.**

City of Turlock RWQCF:

The receiving water contains assimilative capacity for chlorodibromomethane; therefore, as discussed in section IV.C.2.c of the Fact Sheet, a human health dilution credit of 48:1 was allowed in the development of WQBEL's for chlorodibromomethane. Based on the allowable dilution credit, this Order contains an AMEL of 19 µg/L and an MDEL of 32

µg/L for chlorodibromomethane based on the CTR criterion for the protection of human health.

City of Modesto WQCF:

This Order does not include effluent limitations for chlorodibromomethane for the City of Modesto WQCF.

- (d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 16 µg/L for the City of Turlock RWQCF is less than the applicable WQBELs. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible. This Order does not include effluent limitations for chlorodibromomethane for the City of Modesto WQCF.

iv. **Dichlorobromomethane**

- (a) **WQO.** The CTR includes a criterion of 0.56 µg/L for dichlorobromomethane for the protection of human health for waters from which both water and organisms are consumed.

- (b) **RPA Results.**

City of Turlock RWQCF:

The MEC for dichlorobromomethane was 54 µg/L based on 91 samples collected from March 2018 through February 2021. Dichlorobromomethane was not detected in the upstream receiving water based on 12 samples collected from January 2017 through December 2017. Therefore, dichlorobromomethane in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health.

City of Modesto WQCF:

Dichlorobromomethane was non detect (Method detection limit of 0.4 µg/L) based on 12 samples collected from June 2019 through May 2020. Dichlorobromomethane was not detected in the upstream receiving water based on 12 samples collected from June 2019 through May 2020. Therefore, dichlorobromomethane in the City of Modesto discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health.

- (c) **WQBELs.**

City of Turlock RWQCF:

The receiving water contains assimilative capacity for dichlorobromomethane; therefore, as discussed in section IV.C.2.c of the Fact Sheet, a human health dilution credit of 97:1 was allowed in the development of WQBEL's for dichlorobromomethane. Based on the allowable dilution credit,

this Order contains an AMEL of 52 µg/L and an MDEL of 85 µg/L for dichlorobromomethane based on the CTR criterion for the protection of human health.

City of Modesto WQCF:

This Order does not include effluent limitations for chlorodibromomethane for the City of Modesto WQCF.

- (d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 54 µg/L for the City of Turlock RWQCF is over the AMEL but the average month average value for that period was 42 µg/L, which is under the AMEL. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible. This Order does not include effluent limitations for dichlorobromomethane for the City of Modesto WQCF.

v. **Diazinon and Chlorpyrifos**

- (a) **WQO.** The Central Valley Water Board completed a TMDL for diazinon and chlorpyrifos for the Sacramento River and San Joaquin River Basins and amended the Basin Plan to include diazinon and chlorpyrifos waste load allocations and water quality objectives. The Basin Plan Amendment for the Sacramento River and San Joaquin River Basins for Control of Diazinon and Chlorpyrifos Discharges was adopted by the Central Valley Water Board on 28 March 2014 and became effective on 16 August 2017.

The amendment modified Basin Plan Chapter 3 (Water Quality Objectives) to establish site-specific numeric objectives for diazinon and chlorpyrifos for waters with COLD and/or WARM beneficial uses below major dams and identified the requirements to meet the additive formula already in Basin Plan Chapter 4 (Implementation) for the additive toxicity of diazinon and chlorpyrifos.

The amendment states that the waste load allocations for all NPDES-permitted dischargers shall not exceed the sum (S) of one (1) as defined below.

$$S = C_d/WQO_d + C_c/WQO_c \leq 1.0$$

Where:

$C_d$  = diazinon concentration in µg/L of point source discharge

$C_c$  = chlorpyrifos concentration in µg/L of point source discharge

$WQO_d$  = acute or chronic diazinon water quality objective in µg/L



$WQO_c$  = acute or chronic chlorpyrifos water quality objective  
in  $\mu\text{g/L}$

Available samples collected within the applicable averaging period for the water quality objective will be used to determine compliance with the allocations and loading capacity. For purposes of calculating the sum (S) above, analytical results that are reported as 'non-detectable' concentrations are considered to be zero."

The water quality objectives for chlorpyrifos are 0.025  $\mu\text{g/L}$  as a 1-hour average (acute) and 0.015  $\mu\text{g/L}$  as a 4-day average (chronic), not to be exceeded more than once in a 3-year period. The water quality objectives for diazinon are 0.16  $\mu\text{g/L}$  as a 1-hour average (acute) and 0.10  $\mu\text{g/L}$  as a 4-day average (chronic), not to be exceeded more than once in a 3-year period.

(b) **RPA Results.**

City of Turlock RWQCF.:

Chlorpyrifos and diazinon effluent samples were not available for the City of Turlock RWQCF discharge to the Delta-Mendota Canal but chlorpyrifos and diazinon effluent samples are available for the City of Turlock RWQCF discharge to the San Joaquin River. Chlorpyrifos and diazinon were not detected in the effluent during 15 sampling events conducted between September 2016 and September 2018. However, since these pesticides have been banned for public use, they are not expected to be present in the effluent. The discharge does not have reasonable potential, however due to the TMDL for diazinon and chlorpyrifos in the San Joaquin River, WQBELs for these constituents are required. The TMDL WLA applies to all NPDES dischargers to the Lower San Joaquin River and its tributaries and will serve as the basis for WQBELs.

City of Modesto WQCF:

Chlorpyrifos and diazinon were not detected in the effluent during 4 sampling events conducted between February 2017 and December 2017. However, since these pesticides have been banned for public use, they are not expected to be present in the effluent. The discharge does not have reasonable potential, however due to the TMDL for diazinon and chlorpyrifos in the San Joaquin River, WQBELs for these constituents are required. The TMDL WLA applies to all NPDES dischargers to the Lower San Joaquin River and its tributaries and will serve as the basis for WQBELs.

- (c) **WQBELs.** WQBELs for diazinon and chlorpyrifos are required based on the TMDL for diazinon and chlorpyrifos in the San Joaquin River. Therefore, this Order includes effluent limits

calculated based on the waste load allocations contained in the TMDL, as follows:

(1). **Average Monthly Effluent Limitation (AMEL)**

$$S_{AMEL} = CD_{M-avg}/0.079 + CC_{M-avg}/0.012 \leq 1.0$$

CD M-AVG = average monthly diazinon effluent concentration in µg/L.

CC M-AVG = average monthly chlorpyrifos effluent concentration in µg/L

(2). **Average Weekly Effluent Limitation (AWEL)**

$$S_{AWEL} = CD_{W-avg}/0.14 + CC_{W-avg}/0.021 \leq 1.0$$

CD W-AVG = average weekly diazinon effluent concentration in µg/L.

CC W-AVG = average weekly chlorpyrifos effluent concentration in µg/L.

(d) **Plant Performance and Attainability.**

City of Turlock RWQCF:

Chlorpyrifos and diazinon were not detected in the 16 effluent sampling events conducted between December 2017 through April 2020. Furthermore, since these pesticides have been banned for public use, they are not expected to be present in the influent to the Facility. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

City of Modesto WQCF:

Chlorpyrifos and diazinon were not detected in the 14 effluent sampling events conducted between January 2019 through May 2020. Furthermore, since these pesticides have been banned for public use, they are not expected to be present in the influent to the Facility. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

vi. **Nitrate Plus Nitrite**

- (a) **WQO.** DDW has adopted Primary MCLs for the protection of human health for nitrite and nitrate that are equal to 1 mg/L and 10 mg/L (measured as nitrogen), respectively. DDW has also adopted a Primary MCL of 10 mg/L for the sum of nitrate and nitrite, measured as nitrogen.

U.S. EPA has developed a primary MCL and an MCL goal of 1 mg/L for nitrite (as nitrogen). For nitrate, U.S. EPA has developed Drinking Water Standards (10 mg/L as Primary MCL) and NAWQC for protection of human health (10 mg/L for non-cancer health effects).

- (b) **RPA Results.** The City of Turlock RWQCF and the City of Modesto WQCF are POTWs that treat domestic wastewater. Untreated domestic wastewater contains ammonia in concentrations that is harmful to aquatic life and exceed the Basin Plan’s narrative toxicity objective. This Order, therefore, requires removal of ammonia (i.e., nitrification). Nitrification is a biological process that converts ammonia to nitrate and nitrite, and will result in effluent nitrate concentrations above the Primary MCL for nitrate plus nitrite. Nitrate concentrations in a drinking water supply above the Primary MCL threatens the health of human fetuses and newborn babies by reducing the oxygen-carrying capacity of the blood (methemoglobinemia).

40 C.F.R. section 122.44(d)(1)(i) requires that, “Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.” For priority pollutants, the SIP dictates the procedures for conducting the RPA. Nitrate and nitrite are not priority pollutants. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

U.S. EPA’s September 2010 NPDES Permit Writer’s Manual, page 6-30, states, “State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available...A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTW’s discharging to contact recreational waters).” U.S. EPA’s TSD also recommends that factors other than effluent data should be considered in the RPA, “When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data.” With regard to POTW’S,

U.S. EPA recommends that, "POTW's should also be characterized for the possibility of chlorine and ammonia problems." (TSD, p. 50)

The concentration of nitrogen in raw domestic wastewater is sufficiently high that the resultant treated wastewater has a reasonable potential to exceed or threat to exceed the Primary MCL for nitrate plus nitrite unless the wastewater is treated for nitrogen removal, and therefore an effluent limit for nitrate plus nitrite is required. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. Both the City of Turlock RWQCF and City of Modesto WQCF currently use nitrification/denitrification to remove ammonia, nitrite, and nitrate from the waste stream. Inadequate or incomplete denitrification may result in the discharge of nitrate and/or nitrite to the receiving stream. Discharges of nitrate plus nitrite in concentrations that exceed the Primary MCL would violate the Basin Plan's narrative chemical constituents' objective. Although both the City of Turlock RWQCF and City of Modesto WQCF denitrify the discharge, inadequate or incomplete denitrification creates the potential for nitrate and nitrite to be discharged and provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the Primary MCL. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for nitrate plus nitrite and WQBEL's are required.

(c) **WQBELs.**

City of Turlock RWQCF:

Due to no assimilative capacity, dilution credits are not allowed for development of the WQBELs for nitrate plus nitrite as nitrogen. This Order contains an AMEL and AWEL for nitrate plus nitrite of 10 µg/L and 19 µg/L, respectively, based on the Basin Plan's narrative chemical constituents objective for protection of the MUN beneficial use. These effluent limitations are included in this Order to assure the treatment process adequately nitrifies and denitrifies the waste stream to protect the beneficial use of municipal and domestic supply.

City of Modesto WQCF:

Due to no assimilative capacity, dilution credits are not allowed for development of the WQBELs for nitrate plus nitrite as nitrogen. This Order contains an AMEL and AWEL for nitrate plus nitrite of 10 µg/L and 13 µg/L, respectively, based on the Basin Plan's narrative chemical constituents objective for protection of the MUN beneficial use. These effluent limitations are included in this Order to assure the treatment process

adequately nitrifies and denitrifies the waste stream to protect the beneficial use of municipal and domestic supply.

- (d) **Plant Performance and Attainability.** Both the City of Turlock RWQCF and City of Modesto WQCF are designed to provide tertiary treatment and fully nitrify and denitrify the wastewater. Therefore, the Central Valley Water Board finds that immediate compliance with the ammonia limitations are feasible.

vii. **Pathogens**

- a) **WQO.** The State Water Board Division of Drinking Water (DDW) has developed reclamation criteria, CCR, Division 4, Chapter 3 (Title 22), for the reuse of wastewater. Title 22 requires that for spray irrigation of food crops, parks, playgrounds, schoolyards, and other areas of similar public access, wastewater be adequately disinfected, oxidized, coagulated, clarified, and filtered, and that the effluent total coliform levels not exceed 2.2 MPN/100 mL as a 7-day median; 23 MPN/100 mL, not to be exceeded more than once in a 30-day period; and 240 MPN/100 mL, at any time.

Title 22 also requires that recycled water used as a source of water supply for non-restricted recreational impoundments be disinfected tertiary recycled water that has been subjected to conventional treatment. A non-restricted recreational impoundment is defined as “...an impoundment of recycled water, in which no limitations are imposed on body-contact water recreational activities.” Title 22 is not directly applicable to surface waters; however, the Central Valley Water Board finds that it is appropriate to apply an equivalent level of treatment to that required by the DDW’s reclamation criteria because the receiving water is used for irrigation of agricultural land and the Basin Plan has designated the beneficial uses of contact and non-contact water recreation (REC-1 and REC-2). The stringent disinfection criteria of Title 22 are appropriate since the undiluted effluent may be used for the irrigation of food crops and/or for the protection of the water recreation beneficial uses. Coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing other pathogens.

The Delta-Mendota Canal is a manmade conveyance facility operated by the United States Bureau of Reclamation (USBR) in coordination with other agencies and downstream water users. The Delta-Mendota Canal transports Delta water pumped near the City of Tracy at the Jones Pumping Plant to agricultural users in the North Valley and to south of Delta wildlife refuges. Approximately 33 miles downstream of the discharge point, water from the Delta-Mendota Canal is diverted to O’Neil

Forebay and comingles with water from the California Aqueduct, which is operated by the California Department of Water Resources and is stored in San Luis Reservoir. The California Aqueduct and San Luis Reservoir are drinking water facilities that provide municipal drinking water to Southern California and the Bay Area. Based on the Dischargers Antidegradation Analysis, 10 June 2015 report titled, "North Valley Regional Recycled Water Program Antidegradation Analysis for Proposed Recycled Water Discharge to the Delta-Mendota Canal" developed by Larry Walker and Associates (2015 Antideg Analysis), the reasonable-worse case modeled long-term average effluent fraction of the NVERRWP flow at full buildout (52.7 MGD) in San Luis Reservoir was estimated to range from 1.01% - 1.78% as a monthly average. While effluent fractions at the current permitted capacity (29.1 MGD) ranged from 0.57% - 1.00% as a monthly average. The 2015 Antideg Analysis suggests these are likely overestimated because it was assumed that the Del Puerto Water District would make no diversions during the non-irrigation season.

Since the NVERRWP is a recycled water project and due to concerns about treated municipal wastewater entering drinking water conveyance and storage facilities, Central Valley Water Board staff consulted with State Water Board DDW staff regarding the appropriate permit requirements to protect public health and the applicability of the Surface Water Augmentation Regulations. In a memorandum dated 30 March 2022, DDW staff concluded that the Surface Water Augmentation regulations were not applicable and maintained their recommendation for tertiary filtered wastewater to protect the municipal domestic water supply, agricultural water supply, and water contact recreation beneficial uses for discharges to surface water when there is less than 20:1 dilution. DDW supported the permitting approach in this Order, which requires disinfection equivalent to Title 22 tertiary recycled water. Furthermore, DDW staff recommended additional information be collected during the permit term for the next permit renewal and a reopener provision included to reopen and revise this Order, as needed, should DDW's determination regarding the applicability of the Surface Water Augmentation regulations changes based on new information.

- (b) **RPA Results.** Raw domestic wastewater inherently contains human pathogens that threaten human health and life, and constitute a threatened pollution and nuisance under CWC Section 13050 if discharged untreated to the receiving water. Reasonable potential for pathogens therefore exists and WQBELs are required.

40 C.F.R. section 122.44(d)(1)(i) requires that, "Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality." For priority pollutants, the SIP dictates the procedures for conducting the RPA. Pathogens are not priority pollutants. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

U.S. EPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available...A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters)." U.S. EPA's TSD also recommends that factors other than effluent data should be considered in the RPA, "When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data." (TSD, p. 50). The beneficial uses of the Delta-Mendota Canal include municipal and domestic supply, water contact recreation, and agricultural irrigation supply, and there is, at times, less than 20:1 dilution. To protect these beneficial uses, the Central Valley Water Board finds that the wastewater must be disinfected and adequately treated to prevent disease. Although the Discharger provides disinfection, inadequate or incomplete disinfection creates the potential for pathogens to be discharged. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for pathogens and WQBELs are required.

- (c) **WQBELs.** Consistent with the requirements of Title 22, this Order includes effluent limitations for total coliform organisms of 2.2 MPN/100 mL as a 7-day median; 23 MPN/100 mL, not to be

exceeded more than once in a 30-day period; and 240 MPN/100 mL as an instantaneous maximum. Failure of the filtration system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance. Coliform testing, by comparison, is not conducted continuously and requires several hours, to days, to identify high coliform concentrations. Therefore, to ensure compliance with the DDW recommended Title 22 disinfection criteria, weekly average specifications are impracticable for turbidity.

City of Turlock RWQCF:

The tertiary treatment process at the City of Turlock RWQCF is capable of reliably treating wastewater to a turbidity level of 2 nephelometric turbidity units (NTU) as a daily average. This Order includes operational specifications for turbidity of 2 NTU as a daily average; 5 NTU, not to be exceeded more than 5 percent of the time within a 24-hour period; and 10 NTU as an instantaneous maximum.

City of Modesto WQCF:

The City of Modesto WQCF uses a membrane filtration system, which is capable of reliably meeting a turbidity of 0.2 NTU as a daily average. This Order includes operational specifications for turbidity of 0.2 NTU not to be exceeded more than 5 percent of the time within a 24-hour period and 0.2 NTU as an instantaneous maximum.

This Order contains effluent limitations for BOD<sub>5</sub>, total coliform organisms, and TSS and requires a tertiary level of treatment, or equivalent, necessary to protect the beneficial uses of the receiving water. The Central Valley Water Board has previously considered the factors in Water Code section 13241 in establishing these requirements. Final WQBELs for BOD<sub>5</sub> and TSS are based on the technical capability of the tertiary process, which is necessary to protect the beneficial uses of the receiving water. BOD<sub>5</sub> is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The tertiary treatment standards for BOD<sub>5</sub> and TSS are indicators of the effectiveness of the tertiary treatment process. The principal design parameter for wastewater treatment plants is the daily BOD<sub>5</sub> and TSS loading rates and the corresponding removal rate of the system. The application of tertiary treatment processes results in the ability to achieve lower levels for BOD<sub>5</sub> and TSS than the secondary standards currently prescribed. Therefore, this Order requires AMELs for BOD<sub>5</sub> and TSS of 10 mg/L, which is technically based on the capability of a tertiary



system. In addition to the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for BOD<sub>5</sub> and TSS is included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities.

(d) **Plant Performance and Attainability**

City of Turlock RWQCF:

The City of Turlock RWQCF provides tertiary treatment and utilizes a chlorine disinfection system which was designed to achieve Title 22 criteria. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

City of Modesto WQCF:

The City of Modesto WQCF provides tertiary treatment and utilizes UV disinfection that was designed to achieve Title 22 criteria. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

viii. **pH**

(a) **WQO.** The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the “pH shall not be depressed below 6.5 nor raised above 8.5.”

(b) **RPA Results.** Raw domestic wastewater inherently has variable pH. Additionally, some wastewater treatment processes can increase or decrease wastewater pH which if not properly controlled, would violate the Basin Plan’s numeric objective for pH in the receiving water. Therefore, reasonable potential exists for pH and WQBEL’s are required.

40 C.F.R. section 122.44(d)(1)(i) requires that, “Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.” For priority pollutants, the SIP dictates the procedures for conducting the RPA. pH is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

U.S. EPA’s September 2010 NPDES Permit Writer’s Manual,

page 6-30, states, “State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available...A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters).” U.S. EPA’s TSD also recommends that factors other than effluent data should be considered in the RPA, “When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data.” (TSD, p. 50)

The City of Turlock RWQCF and the City of Modesto WQCF are POTWs that treat domestic wastewater. For the City of Turlock RWQCF, the effluent pH ranged from 6.6 to 8.1. For the City of Modesto WQCF, the effluent pH ranged from 5.9 to 8.2.

Although the Discharger’s have proper pH controls in place, the pH for the influent varies due to the nature of municipal sewage, which provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan’s numeric objective for pH in the receiving water. Therefore, WQBEL’s for pH are required in this Order.

- (c) **WQBELs.** Effluent limitations for pH of 6.5 as an instantaneous minimum and 8.5 as an instantaneous maximum are included in this Order based on protection of the Basin Plan objectives for pH.
- (d) **Plant Performance and Attainability.** Analysis of effluent pH data shows that immediate compliance with the WQBEL’s is feasible for both facilities.

#### 4. **WQBEL Calculations.**

The general methodology for calculating WQBELs based on the different criteria/objectives is described in subsections IV.C.4.c through f, below. See Attachment H for the WQBEL calculations.

##### a. **City of Turlock RWQCF:**

This Order includes WQBELs for ammonia, chlorine residual, chlorodibromomethane, dichlorobromomethane, diazinon, chlorpyrifos, nitrate plus nitrite, pathogens, and pH.

- b. **City of Modesto WQCF:**  
This Order includes WQBELs for ammonia, diazinon, chlorpyrifos, nitrate plus nitrite, pathogens, and pH.
- c. **Effluent Concentration Allowance.** For each water quality criterion/objective, the ECA is calculated using the following steady-state mass balance equation from section 1.4 of the SIP:

$$\begin{aligned} \text{ECA} &= \text{C} + \text{D}(\text{C} - \text{B}) \text{ where } \text{C} > \text{B}, \text{ and} \\ \text{ECA} &= \text{C} \text{ where } \text{C} \leq \text{B} \end{aligned}$$

where:

ECA = effluent concentration allowance  
D = dilution credit  
C = the priority pollutant criterion/objective  
B = the ambient background concentration.

According to the SIP, the ambient background concentration (B) in the equation above shall be the observed maximum with the exception that an ECA calculated from a priority pollutant criterion/objective that is intended to protect human health from carcinogenic effects shall use the arithmetic mean concentration of the ambient background samples.

- d. **Primary and Secondary MCLs.** For non-priority pollutants with primary MCL's to protect human health (e.g., nitrate plus nitrite), the AMEL is set equal to the primary MCL and the AWEL is calculated using the AWEL/AMEL multiplier, where the AWEL multiplier is based on a 98<sup>th</sup> percentile occurrence probability and the AMEL multiplier is from Table 2 of the SIP.

For non-priority pollutants with secondary MCLs that protect public welfare (e.g., taste, odor, and staining), WQBEL's were calculated by setting the LTA equal to the secondary MCL and using the AMEL multiplier to set the AMEL. The AWEL was calculated using the MDEL/AMEL multiplier from Table 2 of the SIP.

- e. **Aquatic Toxicity Criteria.** For priority pollutants with acute and chronic aquatic toxicity criteria, the WQBELs are calculated in accordance with section 1.4 of the SIP. The ECAs are converted to equivalent long-term averages (i.e. LTA<sub>acute</sub> and LTA<sub>chronic</sub>) using statistical multipliers and the lowest LTA is used to calculate the AMEL and MDEL using additional statistical multipliers. For non-priority pollutants, WQBEL's are calculated using similar procedures, except that an AWEL is determined utilizing multipliers based on a 98<sup>th</sup> percentile occurrence probability.
- f. **Human Health Criteria.** For priority pollutants with human health criteria, the WQBEL's are calculated in accordance with section 1.4 of the SIP. The AMEL is set equal to the ECA and the MDEL is calculated using the MDEL/AMEL multiplier from Table 2 of the SIP. For non-priority pollutants with human health criteria, WQBEL's are calculated using similar

procedures, except that an AWEL is established using the MDEL/AMEL multiplier from Table 2 of the SIP.

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

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

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

where:

- mult<sub>AMEL</sub> = statistical multiplier converting minimum LTA to AMEL
- mult<sub>MDEL</sub> = statistical multiplier converting minimum LTA to MDEL
- M<sub>A</sub> = statistical multiplier converting acute ECA to LTA<sub>acute</sub>
- M<sub>C</sub> = statistical multiplier converting chronic ECA to LTA<sub>chronic</sub>

**Summary of Water Quality-Based Effluent Limitations  
 Discharge Point 002**

**Table F-15. Summary of Water Quality-Based Effluent Limitations – City of Turlock  
 RWQCF**

Parameter	Units	Average Monthly	Average Weekly	Maximum Daily
Ammonia (Total as Nitrogen) (1 April – 30 September)	mg/L	1.6	2.8	--
Ammonia (Total as Nitrogen) (1 October – 31 March)	mg/L	2.4	4.1	--
Chlorpyrifos	µg/L	--	See table note 1	See table note 1
Diazinon	µg/L	--	See table note 1	See table note 1
Chlorodibromomethane	µg/L	19	--	32
Dichlorobromomethane	µg/L	52	--	85
Nitrate plus Nitrite (Total as Nitrogen)	mg/L	10	19	--
pH	Standard Units	--	--	Minimum 6.5 Maximum 8.5
Total Chlorine Residual	mg/L	--	0.011 mg/L, as a 4-day average	0.019 mg/L, as a 1-hour average

Parameter	Units	Average Monthly	Average Weekly	Maximum Daily
Total Coliform Organisms	MPN/100 mL	--	2.2, See table note 2	MDEL 23, see table note 3 Instantaneous Max 240

**Table F-15 Notes:**

1. **Diazinon and Chlorpyrifos.** Effluent diazinon and chlorpyrifos concentrations shall not exceed the sum of one (1.0) as identified below:
  - a. **Average Monthly Effluent Limitation (AMEL)**  
 $SAMEL = CD\ M\text{-avg}/0.079 + CC\ M\text{-avg}/0.012 \leq 1.0$   
 CD M-AVG = average monthly diazinon effluent concentration in µg/L.  
 CC M-AVG = average monthly chlorpyrifos effluent concentration in µg/L
  - b. **Average Weekly Effluent Limitation (AWEL)**  
 $SAWEL = CD\ W\text{-avg}/0.14 + CC\ W\text{-avg}/0.021 \leq 1.0$   
 CD W-AVG = average weekly diazinon effluent concentration in µg/L.  
 CC W-AVG = average weekly chlorpyrifos effluent concentration in µg/L.
2. Applied as a 7-day median effluent limitation.
3. Not to be exceeded more than once in any 30-day period.

**Summary of Water Quality-Based Effluent Limitations  
 Discharge Point 002**

**Table F-16. Summary of Water Quality-Based Effluent Limitations – City of Modesto WQCF**

Parameter	Units	Average Monthly	Average Weekly	Maximum Daily
Ammonia (Total as Nitrogen) (1 April – 30 September)	mg/L	3.4	4.1	--
Ammonia (Total as Nitrogen) (1 October – 31 March)	mg/L	2.6	5.9	--
Chlorpyrifos	µg/L	--	See table note 1	See table note 1
Diazinon	µg/L	--	See table note 1	See table note 1
Nitrate plus Nitrite (Total as Nitrogen)	mg/L	10	13	--

Parameter	Units	Average Monthly	Average Weekly	Maximum Daily
pH	Standard Units	--	--	Minimum 6.5 Maximum 8.5
Total Coliform Organisms	MPN/100 mL	--	2.2, See table note 2	MDEL 23, see table note 3 Instantaneous Max 240

**Table F-16 Notes:**

1. **Diazinon and Chlorpyrifos.** Effluent diazinon and chlorpyrifos concentrations shall not exceed the sum of one (1.0) as identified below:

a. **Average Monthly Effluent Limitation (AMEL)**

$$S_{AMEL} = C_D M\text{-avg}/0.079 + C_C M\text{-avg}/0.012 \leq 1.0$$

$C_D M\text{-AVG}$  = average monthly diazinon effluent concentration in  $\mu\text{g/L}$ .

$C_C M\text{-AVG}$  = average monthly chlorpyrifos effluent concentration in  $\mu\text{g/L}$

b. **Average Weekly Effluent Limitation (AWEL)**

$$S_{AWEL} = C_D W\text{-avg}/0.14 + C_C W\text{-avg}/0.021 \leq 1.0$$

$C_D W\text{-AVG}$  = average weekly diazinon effluent concentration in  $\mu\text{g/L}$ .

$C_C W\text{-AVG}$  = average weekly chlorpyrifos effluent concentration in  $\mu\text{g/L}$ .

2. Applied as a 7-day median effluent limitation.

3. Not to be exceeded more than once in any 30-day period.

5. **Whole Effluent Toxicity (WET)**

For compliance with the Basin Plan’s narrative toxicity objective, this Order requires the Discharger to conduct whole effluent toxicity testing for acute and chronic toxicity, as specified in the Monitoring and Reporting Program (Attachment E section V.). This Order also contains effluent limitations for acute and chronic toxicity and requires the Discharger to implement best management practices to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity.

a. **Acute Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, “All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.” (Basin Plan at section 3.1.20) The Basin Plan also states that, “...effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate...”.

For priority pollutants, the SIP dictates the procedures for conducting the RPA. Acute toxicity is not a priority pollutant. Therefore, the Central Valley

Water Board is not restricted to one particular RPA method. Acute whole effluent toxicity is not a priority pollutant. Therefore, due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA. U.S. EPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available...A permitting authority might also determine that WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters)." Although the discharge has been consistently in compliance with the acute effluent limitations, the Facilities are POTWs that treat domestic wastewater containing ammonia and other acutely toxic pollutants. Acute toxicity effluent limits are required to ensure compliance with the Basin Plan's narrative toxicity objective.

U.S. EPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc." Accordingly, effluent limitations for acute toxicity have been included in this Order as follows:

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

- 70%, minimum for any one bioassay; and
- 90%, median for any three consecutive bioassays.

b. **Chronic Aquatic Toxicity.**

- i. City of Turlock RWQCF. The Basin Plan contains a narrative toxicity objective that states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at page section 3.1.20.) The table below is chronic WET testing performed by the Discharger from March 2020 through December 2021. This data was used to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective.

(1) **RPA.** No dilution has been granted for chronic whole effluent toxicity. Chronic toxicity testing results exceeding 1.3 chronic toxicity units (TUc) (as 100/NOEC) and a percent effect at 100 percent effluent exceeding 25 percent demonstrates the discharge has a reasonable potential to cause or contribute to an exceedance of the Basin Plan’s narrative toxicity objective. Based on chronic toxicity testing conducted between March 2020 through December 2021 the maximum chronic toxicity result was 8 TUc on 3 August 2021 with a percent effect (receiving water control) of 40 percent for the water flea, *ceriodaphnia dubia*, reproduction. The City of Turlock’s first quarter 2022 Self-monitoring Report identified the operational upset that caused the toxicity observed 3 August 2021 and 20 September 2021, and the corrective actions implemented. Because the toxicity observed was caused by issues that are not reflective of normal plant operations, these test results are not representative of current effluent quality. Moreover, the 20 September 2021 test only exhibited a 19 percent effect.

Eight additional samples were collected between 4 January 2022 and 12 April 2022. Three of the 2022 tests were invalid. The 1 March 2022 test exceeded 8 TUc with a percent effect of 20 percent, but the TUc result is a result of an anomalous dose response because the 100 percent effluent dilution was not statistically significantly different from the control. This is indicative of pathogen interference. Antibiotic was introduced to mitigate the pathogen interference after the 1 March 2022 test. The next three tests did not exceed 1 TUc. In total, four of the additional tests in 2022 did not exceed 1 TUc. Toxicity data for the City of Turlock RWQCF effluent obtained during periods of normal plant operations did not exceed of the Basin Plan’s narrative toxicity objective, nor the definition of the RPA cited above. Consequently, the City of Turlock RWQCF discharge does not have reasonable potential to cause or contribute to an instream exceedance of the Basin Plan’s narrative toxicity objective.

**Table F-17. Whole Effluent Chronic Toxicity Testing Results – City of Turlock RWQCF**

Date	Fathead Minnow Pimephales promelas Survival (TUc)	Fathead Minnow Pimephales promelas Growth (TUc)	Water Flea Ceriodaphnia dubia Survival (TUc)	Water Flea Ceriodaphnia dubia Reproduction (TUc)	Green Algae Pseudokirchneriella subcapitata Growth (TUc)
3/9/2020	1	1	1	1	>1
4/20/2020	--	--	--	--	1
5/4/2020	--	--	--	--	>1
5/18/2020	--	--	--	--	>1
6/2/2020	1	1	1	1	--



Date	Fathead Minnow Pimephales promelas Survival (TUc)	Fathead Minnow Pimephales promelas Growth (TUc)	Water Flea Ceriodaphnia dubia Survival (TUc)	Water Flea Ceriodaphnia dubia Reproduction (TUc)	Green Algae Pseudokirchneriella subcapitata Growth (TUc)
6/4/2020	--	--	--	--	>1
8/17/2020	1	1	1	1	--
9/14/2020	--	--	--	--	1.3
11/4/2020	1	1	1	1	--
11/17/2020	--	--	--	--	1
12/8/2020	--	--	--	--	1
3/8/2021	--	--	--	--	1
3/10/2021	1	1	1	1	--
5/18/2021	1	1	1	1	1.3
7/22/2021	--	--	--	--	1
8/3/2021	1	1	1	8	--
9/21/2021	--	--	1	4	--
11/30/2021	1	1	--	--	--
12/8/2021	--	--	--	--	1.3
1/4/2022	--	--	Invalid	Invalid	1.3
1/18/2022	--	--	Invalid	Invalid	1.3
2/1/2022	--	--	Invalid	Invalid	1
2/15/2022	--	--	1	1	1
3/1/2022	--	--	1	>8, See Discussion above	--
3/8/2022	1	1	--	--	--
3/15/2022	--	--	1	1	1
3/29/2022	--	--	1	1	--
4/12/2022	--	--	1	1	--

ii. City of Modesto WQCF. The Basin Plan contains a narrative toxicity objective that states, “All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.” (Basin Plan at page section 3.1.20.) The table below is chronic WET testing performed by the Discharger from February 2019 through December 2021. This data was used to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan’s narrative toxicity objective.

(1) **RPA**. No dilution has been granted for chronic whole effluent toxicity. Chronic toxicity testing results exceeding 1.3 chronic toxicity units (TUc) (as 100/NOEC) and a percent effect at 100

percent effluent exceeding 25 percent demonstrates the discharge has a reasonable potential to cause or contribute to an exceedance of the Basin Plan’s narrative toxicity objective. Based on chronic toxicity testing conducted between October 2018 through October 2021 the maximum chronic toxicity result was >1 TUc on multiple occasions, with a percent effect of 28 percent. Reasonable potential to cause or contribute to an instream exceedance of the Basin Plan’s narrative toxicity objective could not be determined because a dilution series was not conducted to confirm if the chronic testing results exceeded 1.3 TUc or not.

**Table F-18. Whole Effluent Chronic Toxicity Testing Results – City of Modesto WQCF**

Date	Fathead Minnow Pimephales promelas Survival (TUc)	Fathead Minnow Pimephales promelas Growth (TUc)	Water Flea Ceriodaphnia dubia Survival (TUc)	Water Flea Ceriodaphnia dubia Reproduction (TUc)	Green Algae Pseudokirchneriella subcapitata Growth (TUc)
2/25/2019	--	--	1	1	--
4/29/2019	1	1	1	1	1
8/5/2019	1	1	1	>1	>1
8/26/2019	--	--	1	>1	1
10/14/2019	--	--	1	1	--
10/28/2019	--	--	1	1	--
11/11/2019	--	--	1	1	--
11/27/2019	--	--	1	1	--
12/11/2019	1	1	1	1	1
3/3/2020	1	1	1	1	1
4/20/2020	1	1	1	1	1
7/7/2020	1	1	1	1	1
10/7/2020	1	1	1	1	1
2/24/2021	1	1	1	1	1
5/19/2021	1	1	--	--	1
6/14/2021	--	--	1	>1	--
6/28/2021	--	--	>1	>1	--
7/21/2021	1	1	1	1	1
10/11/2021	1	1	1	1	1

**D. Final Effluent Limitation Considerations**

**1. Mass-based Effluent Limitations**

40 C.F.R section 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 C.F.R. section 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order includes effluent limitations expressed in terms of mass and concentration. In addition, pursuant to the exceptions to

mass limitations provided in 40 C.F.R. section 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in terms of concentration (e.g., CTR criteria and MCL's) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

Mass-based effluent limitations were calculated based upon the design flow (Average Dry Weather Flow) permitted in sections IV.A.1.i and IV.A.2.h of this Order.

## 2. **Averaging Periods for Effluent Limitations**

40 C.F.R. section 122.45 (d) requires average weekly and average monthly discharge limitations for POTWs unless impracticable. For chlorodibromomethane and dichlorobromomethane, average weekly effluent limitations have been replaced with maximum daily effluent limitations in accordance with section 1.4 of the SIP. Furthermore, for BOD<sub>5</sub>, chlorine residual, pH, and TSS, weekly average effluent limitations have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. The rationale for using shorter averaging periods for these constituents is discussed in section IV.C.3 of this Fact Sheet.

## 3. **Satisfaction of Anti-Backsliding Requirements**

The CWA specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in CWA sections 402(o) or 303(d)(4), or, where applicable, 40 C.F.R. section 122.44(l).

For the City of Turlock RWQCF, the effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order with the exception of effluent limitations for bis (2-ethylhexyl) phthalate, electrical conductivity, aluminum, ammonia nitrogen, total (as N), total mercury, BOD, and TSS. The effluent limitations for these parameters are less stringent than those in Order R5-2016-0010. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

For the City of Modesto WQCF, the effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order with the exception of effluent limitations for ammonia nitrogen, total (as N), electrical conductivity, total mercury, BOD, and TSS. The effluent limitations for these parameters are less stringent than those in Order R5-2016-0010. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

- a. **CWA section 402(o)(1) and 303(d)(4).** CWA section 402(o)(1) prohibits the establishment of less stringent water quality-based effluent limits "except in compliance with Section 303(d)(4)." CWA section 303(d)(4) has two parts: paragraph (A) which applies to nonattainment waters and paragraph (B) which applies to attainment waters.

- i. For waters where standards are not attained, CWA section 303(d)(4)(A) specifies that any effluent limit based on a TMDL or other WLA may be revised only if the cumulative effect of all such revised effluent limits based on such TMDLs or WLAs will assure the attainment of such water quality standards.
- ii. For attainment waters, CWA section 303(d)(4)(B) specifies that a limitation based on a water quality standard may be relaxed where the action is consistent with the antidegradation policy.

The Delta-Mendota Canal is considered an attainment water for bis (2-ethylhexyl) phthalate, aluminum, electrical conductivity, total mercury, ammonia nitrogen, total (as N), BOD, and TSS, because the receiving water is not listed as impaired on the 303(d) list for this constituent. The exceptions in section 303(d)(4) address both waters in attainment with water quality standards and those not in attainment, i.e., waters on the section 303(d) impaired waters list. As discussed in section IV.D.4, below, removal of the effluent limits complies with federal and state antidegradation requirements. Thus, removal or reduction of the effluent limitations for bis (2-ethylhexyl) phthalate, aluminum, electrical conductivity, total mercury, ammonia nitrogen, total (as N), BOD and TSS from Order R5-2016-0010 meets the exception in CWA section 303(d)(4)(B).

- b. **CWA section 402(o)(2).** CWA section 402(o)(2) provides several exceptions to the anti-backsliding regulations. CWA 402(o)(2)(B)(i) allows a renewed, reissued, or modified permit to contain a less stringent effluent limitation for a pollutant if information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.

As described further in section IV.C.3.b of this Fact Sheet, updated information that was not available at the time Order R5-2016-0010 was issued indicates that bis (2-ethylhexyl) phthalate, electrical conductivity, total mercury, and aluminum do not exhibit reasonable potential to cause or contribute to an exceedance of water quality objectives in the receiving water. Additionally, updated information that was not available at the time Order R5-2010-2016 was issued indicates that less stringent effluent limitations for ammonia are required, which satisfies requirements in CWA section 402(o)(2). The updated information that supports the relaxation of effluent limitations for these constituents includes the following:

- i. **Aluminum.** Effluent and receiving water monitoring data collected between March 2018 through February 2021 for the City of Turlock RWQCF for aluminum indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the 2018 U.S. EPA NAWQC criteria.
- ii. **Ammonia.** Effluent pH and temperature monitoring data collected between April 2018 and September 2020 for both the City of Turlock

RWQCF and the City of Modesto WQCF results in less stringent effluent limitations for ammonia.

- iii. **Bis (2-ethylhexyl) Phthalate.** Effluent and receiving water monitoring data collected between March 2018 through February 2021 for the City of Turlock RWQCF for bis (2-ethylhexyl) phthalate indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the CTR human health criteria.
- iv. **Total Mercury.** Total mercury monitoring data collected during the term of the permit for the City of Turlock RWQCF and for the City of Modesto WQCF indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Statewide Mercury Objectives.
- v. **Electrical Conductivity.** Effluent and receiving water monitoring data collected during the term of the permit for the City of Turlock RWQCF and City of Modesto WQCF for electrical conductivity indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Secondary MCL.

Thus, removal or relaxation of the effluent limitations for bis (2-ethylhexyl) phthalate; aluminum, total mercury, ammonia nitrogen, total (as N), and electrical conductivity from Order R5-2016-0010 is in accordance with CWA section 402(o)(2)(B)(i), which allows for the relaxation of effluent limitations based on information that was not available at the time of permit issuance.

#### 4. **Antidegradation Policies**

The City of Turlock and the City of Modesto requested authorization to discharge up to an average dry weather flow of 52.7 MGD at project build-out (25.4 MGD from the City of Turlock RWQCF and 27.3 MGD from the City of Modesto WQCF) as part of the NVRWP. The NVRWP developed a June 2015 Antidegradation Analysis for Proposed Recycled Water Discharge to the Delta-Mendota Canal (Larry Walker Associates), that provides an antidegradation analysis following the guidance provided by State Water Board APU 90-004. The NVRWP submitted an October 2015 Addendum No. 1 to Antidegradation Analysis for Proposed Recycled Water Discharge to the Delta-Mendota Canal: Socioeconomic Impact Assessment of UV Disinfection Implementation at City of Turlock Regional Water Quality Control Facility (Larry Walker Associates) and a November 2015 Addendum No. 2 to Antidegradation Analysis for Proposed Recycled Water Discharge to the Delta-Mendota Canal: Updated Estimate of Far-Field Nitrate Plus Nitrite Water Quality Impacts (Larry Walker Associates).

Although this Order limits the average dry weather flow for the combined discharge based on the current design capacity of 29.1 MGD, the Antidegradation Analysis was conducted based on full build-out of 52.7 MGD for the combined discharge. Pursuant to the guidelines, the Antidegradation Analysis evaluated whether changes in water quality resulting from the discharge to the Delta-Mendota Canal of up to 52.7 MGD of tertiary treated

wastewater are consistent with the maximum benefit to the people of the State, will not unreasonably affect beneficial uses, will not cause water quality to be less than water quality objectives, and that the discharge provides protection for existing in-stream uses and water quality necessary to protect those uses. In previous Order R5-2016-0010 the Central Valley Water Board included findings that the new permitted discharge was consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and the State Anti-Degradation Policy, Resolution 68-16, and the waste discharge requirements result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

This Order does not allow for an increase in flow or mass of pollutants to the receiving water. Therefore, a complete antidegradation analysis is not necessary. The Order requires compliance with applicable federal technology-based standards and with WQBELs where the discharge could have the reasonable potential to cause or contribute to an exceedance of water quality standards. The permitted discharge is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and the State Anti-Degradation Policy, Resolution 68-16. Compliance with these requirements will result in the use of BPTC of the discharge. The impact on existing water quality will be insignificant.

For the City of Turlock RWQCF, this Order removes effluent limitations for bis (2-ethylhexyl) phthalate, electrical conductivity, aluminum, and total mercury based on updated monitoring data demonstrating that the effluent does not cause or contribute to an exceedance of the applicable water quality criteria or objectives in the receiving water. For the City of Modesto WQCF, this Order removes effluent limitations for electrical conductivity and total mercury based on updated monitoring data demonstrating that the effluent does not cause or contribute to an exceedance of the applicable water quality criteria or objectives in the receiving water.

For the City of Turlock RWQCF and City of Modesto WQCF, this Order also removes MDELs and mass-based effluent limitations for BOD5 and TSS, and the mass-based effluent limitation for ammonia based on 40 CFR parts 122.45 (d) and (f). The removal of the MDELs and mass-based effluent limits for BOD and TSS, and the mass-based effluent limit for ammonia will not result in a decrease in the level of treatment or control or a reduction in water quality.

Furthermore, both concentration-based AMELs and AWELs remain for ammonia, BOD and TSS, as well as an average dry weather flow prohibition that limits the amount of flow that can be discharged to the receiving water during dry weather months. The combination of concentration-based effluent limits and a flow prohibition in this Order are equivalent to mass-based effluent limitations, which were redundant limits contained in previous Orders by multiplying the concentration-based effluent limits and permitted average dry weather flow by a conversion factor to determine the mass-based effluent limitations. The Central Valley Water Board finds that the removal of the

MDELs and mass-based effluent limits for BOD and TSS, and the mass-based effluent limit for ammonia does not result in an allowed increase in pollutants or any additional degradation of the receiving water. Thus, the removal of the MDELs and mass-based effluent limits for BOD and TSS, and the mass-based limit for ammonia is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and the State Antidegradation Policy.

**5. Stringency of Requirements for Individual Pollutants**

This Order contains both technology-based effluent limitations and WQBELs for individual pollutants. The technology-based effluent limitations consist of restrictions on BOD<sub>5</sub> and TSS. Restrictions on these pollutants are discussed in section IV.B.2 of this Fact Sheet. This Order’s technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. In addition, this Order contains effluent limitations more stringent than the minimum, federal technology-based requirements that are necessary to meet water quality standards.

WQBELs have been derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant 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 the individual water quality-based effluent limitations for priority pollutants are based on the CTR implemented by the SIP, which was approved by U.S. EPA on 18 May 2000. Collectively, this Order’s restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

**Summary of Final Effluent Limitations  
 Discharge Point 002**

**Table F-19. Summary of Final Effluent Limitations for the City of Turlock RWQCF**

Parameter	Units	Effluent Limitations	Basis
BOD <sub>5</sub>	mg/L	<b>AMEL 10</b> <b>AWEL 15</b>	TTC
BOD <sub>5</sub>	Percent Removal	<b>AMEL 85</b>	CFR
Total Suspended Solids	mg/L	<b>AMEL 10</b> <b>AWEL 15</b>	TTC
Total Suspended Solids	Percent Removal	<b>AMEL 85</b>	CFR
pH	Standard Units	<b>Instantaneous Max 8.5</b> <b>Instantaneous Min 6.5</b>	BP
Ammonia Nitrogen, Total (as N) (1 April – 30 September)	mg/L	<b>AMEL 1.6</b> <b>AWEL 2.8</b>	NAWQC
Ammonia Nitrogen, Total (as N) (1 October – 31 March)	mg/L	<b>AMEL 2.4</b> <b>AWEL 4.1</b>	NAWQC
Chlorpyrifos	µg/L	see table note 2	TMDL

Parameter	Units	Effluent Limitations	Basis
Diazinon	µg/L	see table note 2	TMDL
Nitrate plus Nitrite	mg/L	<b>AMEL</b> 10 <b>AWEL</b> 19	MCL
Chlorodibromomethane	µg/L	<b>AMEL</b> 19 <b>MDEL</b> 32	CTR
Dichlorobromomethane	µg/L	<b>AMEL</b> 52 <b>MDEL</b> 85	CTR
Total Coliform Organisms	MPN/100mL	<b>AWEL</b> 2.2 (see table note 3. below) <b>MDEL</b> 23 (see table note 4. below) <b>Instantaneous Max</b> 240	Title 22
Acute Toxicity	Percent Survival	<b>MDEL</b> 70/90 (see table notes 5 and 6 below)	BP

**Table F-19 Notes:**

1. **Acronyms**

- **DC** – Based on the design capacity of the Facility.
- **TTC** – Based on tertiary treatment capability. These effluent limitations reflect the capability of a properly operated tertiary treatment plant.
- **CFR** – Based on secondary treatment standards contained in 40 CFR part 133.
- **BP** – Based on water quality objectives contained in the Basin Plan.
- **CTR** – Based on water quality criteria contained in the California Toxics Rule and applied as specified in the SIP.
- **NAWQC** – Based on U.S. EPA’s National Ambient Water Quality Criteria for the protection of freshwater aquatic life.
- **SEC MCL** – Based on the Secondary Maximum Contaminant Level.
- **TMDL** – Based on the TMDL for salinity and boron in the lower San Joaquin River.
- **MCL** – Based on the Primary Maximum Contaminant Level.
- **Title 22** – Based on State Water Board Division of Drinking Water Reclamation Criteria, CCR, Division 4, Chapter 3 (Title 22).

2. **Diazinon and Chlorpyrifos.** Effluent diazinon and chlorpyrifos concentrations shall not exceed the sum of one (1.0) as identified below:

i. **Average Monthly Effluent Limitation (AMEL)**

$$S_{AMEL} = CD_{M-avg}/0.079 + CC_{M-avg}/0.012 \leq 1.0$$

CD M-AVG = average monthly diazinon effluent concentration in µg/L.



CC M-AVG = average monthly chlorpyrifos effluent concentration in µg/L

ii. **Average Weekly Effluent Limitation (AWEL)**

$$SAWEL = CD\ W\text{-avg}/0.14 + CC\ W\text{-avg}/0.021 \leq 1.0$$

CD W-AVG = average weekly diazinon effluent concentration in µg/L.

CC W-AVG = average weekly chlorpyrifos effluent concentration in µg/L.

3. Applied as a 7-day median effluent limitation.
4. Not to be exceeded more than once in any 30-day period.
5. 70 percent minimum of any one bioassay.
6. 90 percent median for any three consecutive bioassays.

**Summary of Final Effluent Limitations  
 Discharge Point 002**

**Table F-20. Summary of Final Effluent Limitations for the City of Modesto WQCF**

Parameter	Units	Effluent Limitations	Basis
BOD <sub>5</sub>	mg/L	<b>AMEL 10</b> <b>AWEL 15</b>	TTC
BOD <sub>5</sub>	Percent Removal	<b>AMEL 85</b>	CFR
Total Suspended Solids	mg/L	<b>AMEL 10</b> <b>AWEL 15</b>	TTC
Total Suspended Solids	Percent Removal	<b>AMEL 85</b>	CFR
pH	Standard Units	<b>Instantaneous Max 8.5</b> <b>Instantaneous Min 6.5</b>	BP
Ammonia Nitrogen, Total (as N) (1 April – 30 September)	mg/L	<b>AMEL 3.4</b> <b>AWEL 4.1</b>	NAWQC
Ammonia Nitrogen, Total (as N) (1 October – 31 March)	mg/L	<b>AMEL 2.6</b> <b>AWEL 5.9</b>	NAWQC
Chlorpyrifos	µg/L	see table note 2	TMDL
Diazinon	µg/L	see table note 2	TMDL
Nitrate plus Nitrite	mg/L	<b>AMEL 10</b> <b>AWEL 13</b>	MCL
Total Coliform Organisms	MPN/100mL	<b>AWEL 2.2</b> (see table note 3. below) <b>MDEL 23</b> (see table note 4. below) <b>Instantaneous Max 240</b>	Title 22
Acute Toxicity	% Survival	<b>MDEL 70/90</b> (see table notes 5 and 6 below)	BP

**Table F-20 Notes:**

1. **Acronyms**

- **DC** – Based on the design capacity of the Facility.
- **TTC** – Based on tertiary treatment capability. These effluent limitations reflect the capability of a properly operated tertiary treatment plant.
- **CFR** – Based on secondary treatment standards contained in 40 CFR part 133.
- **BP** – Based on water quality objectives contained in the Basin Plan.
- **CTR** – Based on water quality criteria contained in the California Toxics Rule and applied as specified in the SIP.
- **NAWQC** – Based on U.S. EPA’s National Ambient Water Quality Criteria for the protection of freshwater aquatic life.
- **SEC MCL** – Based on the Secondary Maximum Contaminant Level.
- **TMDL** – Based on the TMDL for salinity and boron in the lower San Joaquin River.
- **MCL** – Based on the Primary Maximum Contaminant Level.
- **Title 22** – Based on State Water Board Division of Drinking Water Reclamation Criteria, CCR, Division 4, Chapter 3 (Title 22).

2. **Diazinon and Chlorpyrifos.** Effluent diazinon and chlorpyrifos concentrations shall not exceed the sum of one (1.0) as identified below:

i. **Average Monthly Effluent Limitation (AMEL)**

$$\text{SAMEL} = \text{CD M-avg}/0.079 + \text{CC M-avg}/0.012 \leq 1.0$$

CD M-AVG = average monthly diazinon effluent concentration in µg/L.

CC M-AVG = average monthly chlorpyrifos effluent concentration in µg/L

ii. **Average Weekly Effluent Limitation (AWEL)**

$$\text{SAWEL} = \text{CD W-avg}/0.14 + \text{CC W-avg}/0.021 \leq 1.0$$

CD W-AVG = average weekly diazinon effluent concentration in µg/L.

CC W-AVG = average weekly chlorpyrifos effluent concentration in µg/L.

3. Applied as a 7-day median effluent limitation.
4. Not to be exceeded more than once in any 30-day period.
5. 70 percent minimum of any one bioassay.
6. 90 percent median for any three consecutive bioassays.

- E. Interim Effluent Limitations - Not Applicable**
- F. Land Discharge Specifications - Not Applicable**
- G. Recycling Specifications - Not Applicable**

## **V. RATIONALE FOR RECEIVING WATER LIMITATIONS**

### **A. Surface Water**

1. CWA section 303(a-c), requires states to adopt water quality standards, including criteria where they are necessary to protect beneficial uses. The Central Valley Water Board adopted water quality criteria as water quality objectives in the Basin Plan. The Basin Plan states that “[t]he numerical and narrative water quality objectives define the least stringent standards that the Regional Water Board will apply to regional waters in order to protect the beneficial uses.” The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains receiving surface water limitations based on the Basin Plan numerical and narrative water quality objectives for biostimulatory substances, color, chemical constituents, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, suspended sediment, settleable substances, suspended material, tastes and odors, temperature, toxicity, and turbidity.

- a. **Bacteria.** On 7 August 2018 the State Water Board adopted Resolution No. 2018-0038 establishing Bacteria Provisions, which are specifically titled “Part 3 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California—Bacteria Provisions and a Water Quality Standards Variance Policy” and “Amendment to the Water Quality Control Plan for Ocean Waters of California—Bacteria Provisions and a Water Quality Standards Variance Policy.” The Bacteria Water Quality Objectives established in the Bacteria Provisions supersede any numeric water quality objective for bacteria for the REC-1 beneficial use contained in a water quality control plan before the effective date of the Bacteria Provisions. The Bacteria Water Quality Objectives correspond with the risk protection level of 32 illnesses per 1,000 recreators and use *E. coli* as the indicator of pathogens in freshwaters and enterococci as the indicator of pathogens in estuarine waters and ocean waters.

The Bacteria Provisions provide that where a permit, waste discharge requirement (WDR), or waiver of WDR includes an effluent limitation or discharge requirement that is derived from a water quality objective or other guidance to control bacteria (for any beneficial use) that is more stringent than the Bacteria Water Quality Objective, the Bacteria Water Quality Objective would not be implemented in the permit, WDR, or waiver of WDR. This Order includes effluent limitations and discharge requirements equivalent to the DDW Title 22 disinfected tertiary reclamation criteria that are more stringent than the Statewide Bacteria Objectives. Therefore, the Statewide Bacteria Objectives have not been implemented in this Order.

**B. Groundwater - Not Applicable**

**VI. RATIONALE FOR PROVISIONS**

**A. Standard Provisions**

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

Sections 122.41(a)(1) and (b) through (n) of 40 C.F.R. establish conditions that apply to all state issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) of 40 C.F.R. allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 C.F.R. section 123.25, this Order omits federal conditions that address enforcement authority specified in 40 C.F.R. sections 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

**B. Special Provisions**

**1. Reopener Provisions**

- a. **Mercury.** This provision allows the Central Valley Water Board to reopen this Order in the event mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted. In addition, this Order may be reopened if the Central Valley Water Board determines that a mercury offset program is feasible for dischargers subject to NPDES permits.
- b. **Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS).** On 17 January 2020, certain Basin Plan Amendments to incorporate new strategies for addressing ongoing salt and nitrate accumulation in the Central Valley became effective. Other provisions subject to U.S. EPA approval became effective on 2 November 2020, when approved by U.S. EPA. As the Central Valley Water Board moves forward to implement those provisions that are now in effect, this Order may be amended or modified to incorporate new or modified requirements necessary for implementation of the Basin Plan Amendments. More information regarding these Amendments can be found on the [Central Valley Salinity Alternatives for Long-Term Sustainability \(CV-SALTS\) web page](https://www.waterboards.ca.gov/centralvalley/water_issues/salinity/):(https://www.waterboards.ca.gov/centralvalley/water\_issues/salinity/)
- c. **Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate, effluent toxicity through a site-specific Toxicity Reduction Evaluation (TRE). This Order may be reopened to include a new chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE.

- d. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating criteria for applicable inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total when developing effluent limitations for hardness dependent metals. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.
- e. **Ultraviolet Light (UV) Disinfection Operating Specifications.** UV system operating specifications are required to ensure that the UV system is operated to achieve the required pathogen removal. UV disinfection system specifications and monitoring and reporting requirements are required to ensure that adequate UV dosage is applied to the wastewater to inactivate pathogens (e.g., viruses) in the wastewater. UV dosage is dependent on several factors such as UV transmittance, UV power setting, wastewater turbidity, and wastewater flow through the UV disinfection system. The UV specifications in this Order are based on the National Water Research Institute (NWRI) and American Water Works Association Research Foundation (AWWRF) "Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse" first published in December 2000 and revised as a Third Edition dated August 2012 (NWRI guidelines). If the Discharger conducts a site-specific UV engineering study that identifies site-specific UV operating specifications that will achieve the virus inactivation required by Title 22 for disinfected tertiary recycled water, this Order may be reopened to modify the UV specifications, in accordance with Reopener Provision VI.C.1.f.
- f. **City of Turlock RWQCF Flow Increase.** Upon completion of upgrades and expansions to the City of Turlock RWQCF, this Order may be reopened to increase the effluent flow prohibition for the City of Turlock RWQCF to 25.4 MGD. Additionally, if the City of Turlock submits information demonstrating that the discharge from the City of Turlock RWQCF can achieve compliance with all final effluent limitations at effluent flows greater than 14.2 MGD, this Order may be reopened to increase the effluent flow prohibition up to the design capacity and revise effluent limitations based on updated dilution credits.
- g. **City of Modesto WQCF Flow Increase.** Upon completion of the phased upgrades and expansions to the City of Modesto WQCF, this Order may be reopened to increase the effluent flow prohibition for the City of Modesto WQCF to 27.3 MGD.
- h. **Dilution Credits.** As discussed in section IV.C.2.c of this Fact Sheet, the Mixing Zone Study demonstrated that a mixing zone and dilution credits are available for human health constituents. The City of Modesto did not request dilution credits for any parameters; therefore, the effluent limitations for the City of Modesto WQCF must be achieved at the point of discharge. This Order allows for dilution credits for chlorodibromomethane and dichlorobromomethane for the discharge from the City of Turlock

RWQCF. If the City of Turlock or City of Modesto request dilution credits for additional human health parameters and provides information supporting dilution credits, including demonstration that assimilative capacity is available and that the dilution credits are consistent with the requirements and guidance in Basin Plan, SIP (for CTR constituents), and U.S. EPA guidance, this Order may be reopened to modify the effluent limitations for the additional parameters.

i. **Surface Water Augmentation Project.**

In the 30 March 2022 DDW Letter, DDW staff found that the NVRWP does not fall under the definition of Surface Water Source Augmentation Project and is therefore not subject to the applicable regulations. The 30 March 2022 DDW Letter also recommended a provision to reopen this Order should the monitoring data indicate DDW's determination is no longer appropriate. Therefore, this Order may be reopened should the Far-Field Dilution Study, CEC Study, or other monitoring data indicate DDW's determination that this is not a surface water augmentation project is no longer appropriate or this project is applicable under either current Indirect Potable Reuse or future Direct Potable Reuse raw water augmentation regulations.

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

- a. **Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at section 3.1.20.) Based on whole effluent chronic toxicity testing performed by the Discharger from March 2020 through December 2021 for the Turlock RWQCF, the City of Turlock RWQCF has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective. Based on whole effluent chronic toxicity testing performed by the Discharger from October 2018 through October 2021 for the City of Modesto WQCF, it could not be determined that the discharge from the City of Modesto WQCF has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

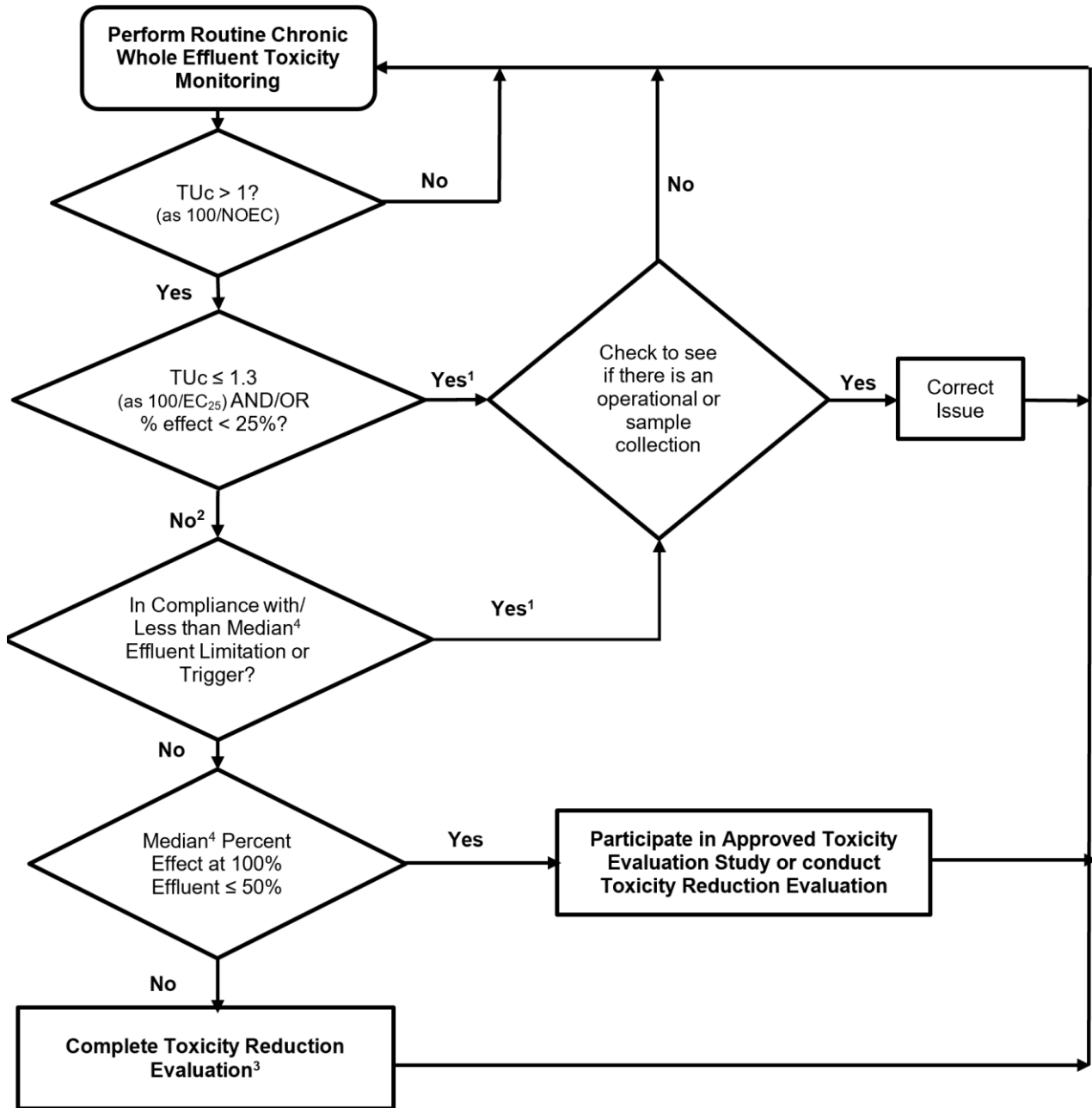
The Monitoring and Reporting Program of this Order requires chronic WET monitoring to demonstrate compliance with the Basin Plan's narrative toxicity objective. If the discharge exceeds the chronic toxicity monitoring limitation this provision requires the Discharger either participate in an approved Toxicity Evaluation Study (TES) or conduct a site-specific Toxicity Reduction Evaluation (TRE).

A TES may be conducted in lieu of a TRE if the percent effect at 100 percent effluent is less than or equal to 50 percent. Determining the cause of toxicity can be challenging when the toxicity signal is low. Several Central Valley facilities with similar treatment systems have been experiencing intermittent low-level toxicity. The dischargers have not been

successful identifying the cause of the toxicity because of the low toxicity signal and the intermittent nature of the toxicity. Due to these challenges, the Central Valley Clean Water Association (CVCWA), in collaboration with staff from the Central Valley Water Board, has initiated a Special Study to Investigate Low Level Toxicity Indications (Group Toxicity Study). This Order allows the Discharger to participate in an approved TES, which may be conducted individually or as part of a coordinated group effort with other similar dischargers that are exhibiting toxicity. Although the current CVCWA Group Toxicity Study is related to low-level toxicity, participation in an approved TES is not limited to only low-level toxicity issues.

See the WET Monitoring Flow Chart (Figure F-3), below, for further clarification of the decision points for determining the need for TES/TRE initiation.

**Figure F-3: WET Accelerated Monitoring Flow Chart**



**Figure F-3 Notes:**

1. The Discharger may participate in an approved TES if the discharge has exceeded the chronic toxicity monitoring trigger (City of Modesto WQCF) or limitation (City of Turlock RWQCF) twice or more in the past 12-month period and the cause is not identified and/or addressed.
2. The Discharger may elect to take additional samples to determine the 3-sample median. The samples shall be collected at least one week apart and the final sample shall be within 6 weeks of the initial sample exhibiting toxicity.



3. The Discharger may participate in an approved TES instead of a TRE if the Discharger has conducted a TRE within the past 12 months and has been unsuccessful in identifying the toxicant.
4. See Compliance Determination section VII.F for procedures for calculating 6-week median.

b. **Far-Field Dilution Study.**

On 26 June 2015, the Dischargers provided a Report of Waste Discharge requesting a new discharge to the Delta-Mendota Canal, which included a 10 June 2015 report titled, "North Valley Regional Recycled Water Program Antidegradation Analysis for Proposed Recycled Water Discharge to the Delta-Mendota Canal" developed by Larry Walker and Associates (2015 Antideg Analysis). The 2015 Antideg Analysis evaluated near-field and far-field impacts of the proposed discharge. The purpose of the far-field water quality evaluation was to estimate potential effects of the proposed discharge at San Luis Reservoir and O'Neill Forebay, which are drinking water facilities approximately 33 miles downstream of the discharge. The far-field analysis estimated that the reasonable-worse case long-term average effluent fraction of the discharge at current permitted flow (29.1 MGD) in San Luis Reservoir was estimated to be 1.28% as an annual average. While in O'Neill Forebay the maximum annual average effluent fraction was 1.09%. At full buildout (52.7 MGD) the maximum annual average effluent fraction in San Luis Reservoir was estimated to be 2.27% and in O'Neill Forebay the maximum annual average effluent fraction was 1.95%.

There are multiple concerns with treated municipal wastewater entering drinking water conveyance and storage facilities, such as pathogens and constituents of emerging concern that may impact human health. Also, increased nutrients can cause excessive algal growth, which can increase total organic carbon, reduce water treatment plant efficiency, result in harmful algal blooms, and cause taste and odor issues. At the current permitted flow, the estimated annual average effluent fractions are at a level that may not cause serious concern; however, there is an increase in concern at the full buildout flows expected to occur over the next 20 to 30 years. Due to these far-field concerns, Central Valley Water Board staff consulted with State Water Board DDW staff regarding the appropriate permit requirements to protect public health and the applicability of the Surface Water Augmentation Regulations in California Code of Regulations Title 22, Section 60301.851 that were adopted after the issuance of the 2016 NPDES permit. In a memorandum dated 30 March 2022, DDW staff concluded that the Surface Water Augmentation regulations were not applicable. However, DDW staff recommended additional information be collected during the permit term for the next permit renewal, including an updated far-field dilution study to ensure the discharge is not adversely impacting the drinking water facilities.

This Order requires the Discharger conduct an updated far-field dilution study to estimate the monthly average effluent fractions at O'Neill Forebay and San Luis Reservoir. The water dynamics in San Luis Joint-Use Complex are complex and several assumptions were made in the Discharger's 2015 far-field dilution study to simplify the dilution evaluation. Although the assumptions were expected to be conservative and result in an over estimation of the impacts, considering the potential adverse impacts to drinking water facilities, a more precise dilution evaluation is appropriate in this case. The Far-Field Dilution Study shall be conducted using the appropriate critical design flow based on the appropriate time period that captures expected reasonable-worst case flow conditions for the Delta-Mendota Canal to evaluate the far-field impacts for the protection of the MUN beneficial use. The evaluation shall be conducted for the current combined permitted average dry weather flow of 29.1 MGD and the full build-out combined design average dry weather flow of 52.7 MGD. The modeling shall also consider diversions from the Del Puerto Water District and other users made from the Delta-Mendota Canal upstream and downstream of the discharge, as well as, pump ins to the Delta-Mendota Canal upstream and downstream of the discharge, as appropriate.

The Discharger shall develop a workplan in consultation with staff from the Central Valley Water Board and the State Water Board Division of Drinking Water prior to conducting the far-field dilution study.

**c. Constituents of Emerging Concern (CEC) Study.**

The 30 March 2022 DDW Letter recommended collecting additional information in this Order to ensure the determination that the NVRWP is not a surface water augmentation project remains appropriate. The 30 March 2022 DDW Letter specifically recommended the Discharger prepare a monitoring plan for collecting and analyzing effluent samples and downstream receiving water samples, quarterly, for constituents of emerging concern that present health concerns (Perfluorooctanoic Acid, Perfluorooctanesulfonic acid, N-Nitroso-dimethylamine, N-Nitrosomorpholine, 1,4-dioxane, total trihalomethanes), constituents of emerging concern that do not readily biodegrade and generally occur in relatively high concentrations (Sucralose, Carbamazepine, Iohexol), and pathogen indicators such as *Clostridium perfringens* because water from the Delta-Mendota Canal is used for drinking water.

This Order requires the Discharger to conduct a CEC study due to concerns of impacts to downstream drinking water facilities. The Discharger shall develop a monitoring plan for collecting and analyzing effluent and receiving water samples for CECs that have health concerns (e.g., PFOA, PFOS, NDMA, NMOR, 1,4-dioxane, and TTHMs), that do not readily biodegrade and generally occur in relatively high concentrations (e.g., Sucralose, Carbamazepine, and Iohexol), and pathogen indicators (e.g., *Clostridium perfringens* and *Escherichia coli*). The Discharger shall develop the monitoring plan in consultation with staff from the Central

Valley Water Board, the State Water Contractors, and DDW, that at a minimum determines a specific list of CECs, sampling locations, and sampling frequency. The Dischargers should consider CEC information from the Delta Regional Monitoring Program's CEC study, the CEC Synthesis Report developed by the Aquatic Resource Center (March 2022 Final report, titled "CECs in California's Ambient Ecosystems: Occurrence and Risk Screening of Key Classes"), or other studies, as appropriate.

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

- a. **Salinity Source Control Programs.** The Discharger shall separately continue to implement their Salinity Source Control Programs and shall update them as necessary. Both the City of Turlock and City of Modesto shall separately provide annual reports demonstrating reasonable progress in the reduction of salinity in its discharge to the Delta-Mendota Canal. The annual reports shall be submitted in accordance with the Monitoring and Reporting Program.

**4. Construction, Operation, and Maintenance Specifications**

- a. **Filtration System Operating Specifications for the City of Turlock RWQCF.** Turbidity is included as an operational specification as an indicator of the effectiveness of the filtration system for providing adequate disinfection. The tertiary treatment process utilized at the City of Turlock RWQCF is capable of reliably meeting a turbidity limitation of 2 NTU as a daily average. Failure of the treatment system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. The operational specification requires that turbidity prior to disinfection shall not exceed 2 NTU as a daily average; 5 NTU, more than 5 percent of the time within a 24-hour period, and an instantaneous maximum of 10 NTU.
- b. **Filtration System Operating Specifications for the City of Modesto WQCF.** Turbidity is included as an operational specification as an indicator of the effectiveness of the filtration system for providing adequate disinfection. The membrane filtration process utilized at the City of Modesto WQCF is capable of reliably meeting a turbidity of 0.2 nephelometric turbidity units (NTU) at least 95 percent of the time. Failure of the treatment system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. The operational specification requires that turbidity prior to disinfection shall not exceed; 0.2 NTU, more than 5 percent of the time within a 24-hour period, and an instantaneous maximum of 0.5 NTU.
- c. **Ultraviolet (UV) Disinfection System Operating Specifications for the City of Modesto WQCF.** This Order requires that wastewater shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to the

DDW reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22), or equivalent. To ensure that the UV disinfection system is operated to achieve the required pathogen removal, this Order includes effluent limits for total coliform organisms, filtration system operating specifications, and UV disinfection system operating specifications. Compliance with total coliform effluent limits alone does not ensure that pathogens in the municipal wastewater have been deactivated by the UV disinfection system. Compliance with the effluent limits and the filtration system and UV disinfection operating specifications demonstrates compliance with the equivalency to Title 22 disinfection requirement.

The NWRI guidelines include UV operating specifications for compliance with Title 22. For water recycling in accordance with Title 22, the UV system shall be an approved system included in the Treatment Technology Report for Recycled Water, December 2009 (or a later version, as applicable) published by the DDW. The UV system shall also conform to all requirements and operating specifications of the NWRI guidelines. A memorandum dated 1 November 2004 issued by DDW to Regional Water Board executive officers recommended that provisions be included in permits for water recycling treatment plants employing UV disinfection requiring dischargers to establish fixed cleaning frequency of lamp sleeves, as well as, include provisions that specify minimum delivered UV dose that must be maintained (per the NWRI Guidelines).

For membrane filtration, the NWRI Guidelines recommend a minimum hourly average UV dose of 80 mJ/cm<sup>2</sup>. Therefore, this Order includes UV operating specifications requiring a minimum hourly average UV dose of 80 mJ/cm<sup>2</sup> and a minimum hourly average UV transmittance of 65%, per the NWRI Guidelines. If the City of Modesto conducts a site-specific UV engineering study that demonstrates a lower UV dose meets a Title 22 equivalent virus removal, this Order may be reopened to revise the UV operating specifications accordingly.

5. **Special Provisions for Publicly-Owned Treatment Works (POTWs) – Not Applicable**
6. **Other Special Provisions**
  - a. **Title 22, or Equivalent, Disinfection Requirements.** This Order requires for both the City of Turlock RWQCF and City of Modesto WQCF, wastewater shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to DDW reclamation criteria, CCR, Title 22, division 4, chapter 3 (Title 22), or equivalent. Title 22 is not directly applicable to surface waters; however, the Central Valley Water Board finds that it is appropriate to apply an equivalent level of treatment to that required by the DDW's reclamation criteria because the undiluted effluent may be used for the irrigation of food crops and/or for body-contact water recreation.

## 7. Compliance Schedules – Not Applicable

### VII. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

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

#### A. Influent Monitoring

1. Influent monitoring is required to collect data on the characteristics of the wastewater and to assess compliance with effluent limitations (e.g., BOD<sub>5</sub> and TSS reduction requirements).

##### City of Turlock RWQCF:

The monitoring frequency for flow (continuous) has been retained from Order R5-2016-0010. Monitoring frequencies for BOD<sub>5</sub> (three per week) and TSS (three per week) have been revised from Order R5-2016-0010.

##### City of Modesto WQCF:

The monitoring frequencies for flow (continuous) BOD<sub>5</sub> (once per day), and total suspended solids (once per day) have been retained from Order R5-2016-0010.

#### B. Effluent Monitoring

##### 1. General Effluent Monitoring Rationale

- a. Pursuant to the requirements of 40 C.F.R. section 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream and groundwater.
- b. Water Code section 13176, subdivision (a), states: "The analysis of any material required by [Water Code sections 13000-16104] shall be performed by a laboratory that has accreditation or certification pursuant to Article 3 (commencing with section 100825) of Chapter 4 of Part 1 of Division 101 of the Health and Safety Code." The DDW accredits laboratories through its Environmental Laboratory Accreditation Program (ELAP).
- c. Section 13176 cannot be interpreted in a manner that would violate federal holding time requirements that apply to NPDES permits pursuant to the CWA. (Wat. Code sections 13370, subd. (c), 13372, 13377.). Section 13176 is inapplicable to NPDES permits to the extent it is inconsistent with CWA requirements. (Wat. Code section 13372, subd. (a).) Lab accreditation is not required for field tests such as tests for color, odor, turbidity, pH, temperature, dissolved oxygen, electrical conductivity, and disinfectant residual. The holding time requirements are 15 minutes for (40 C.F.R. section 136.3(e), Table II) The City of Turlock RWQCF and the City of Modesto WQCF

maintain ELAP-certified laboratories on-site and conduct analysis for chlorine residual, dissolved oxygen, and pH within the required 15-minute hold times.

- d. As discussed in Section IV.D of this Fact Sheet, the mass-based effluent limitations for ammonia, BOD<sub>5</sub>, and TSS and maximum daily effluent imitations for BOD<sub>5</sub> and TSS have not been retained from Order R5-2016-0010.
- e. Calculations for the percent reduction between the influent and effluent for BOD<sub>5</sub> and TSS shall be calculated once per month.

## **2. Monitoring Location EFF-002**

- a. Effluent monitoring frequencies and sample types for flow (continuous), pH (once per week), dissolved oxygen (once per week), temperature (once per week), and turbidity (once per week) have been retained from Order R5-2016-0010. These frequencies are sufficient to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream.

## **3. City of Turlock RWQCF Monitoring Location EFF-001A**

- a. Effluent monitoring frequencies and sample types for flow (continuous), pH (continuous), ammonia nitrogen total (as N) (once per week), electrical conductivity (once per week), chlorpyrifos (once per year), diazinon (once per year), chlorine, total residual (continuous), dechlorination agent residual (continuous), dissolved oxygen (once per week), chlorodibromomethane (once per month), dichlorobromomethane (once per month), temperature (once per week), total coliform organisms (once per day) have been retained from Order R5-2016-0010 to determine compliance with applicable effluent limitations for these parameters.
- b. Effluent monitoring frequencies and sample types for BOD<sub>5</sub> (three per week), total suspended solids (three per week) and hardness total (as CaCO<sub>3</sub>) (once per quarter) have been reduced from Order R5-2016-0010.
- c. The effluent monitoring frequency and sample type for nitrate plus nitrite have been increased to twice per month from Order R5-2016-0010.
- d. Monitoring data collected over the previous permit term for bis (2-ethylhexyl) phthalate (once per month), selenium total recoverable (once per month), methyl mercury (once per month), total mercury (once per month), and aluminum total recoverable (once per month) did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, specific monitoring requirements for these parameters have not been retained from Order R5-2016-0010.
- e. Order R5-2016-0010 did not require regular effluent monitoring for dissolved organic carbon. This Order includes quarterly effluent monitoring for dissolved organic carbon to calculate site-specific freshwater aluminum criteria in accordance with the 2018 U.S. EPA NAWQC for aluminum in freshwater for the next permit renewal.
- f. There are concerns of increased nutrients in the downstream drinking water conveyance, storage, and treatment facilities that may be impacted by the

discharge. This Order requires monitoring of the effluent for total phosphorus twice per month to determine potential impacts from the City of Turlock RWQCF effluent.

**4. City of Modesto WQCF Monitoring Location EFF-001B**

- a. Effluent monitoring frequencies and sample types for flow (continuous), ammonia nitrogen total (as N) (once per week), electrical conductivity (once per week), chlorpyrifos (once per year), diazinon (once per year), dissolved oxygen (once per week), temperature (once per day), total coliform organisms (once per day) have been retained from Order R5-2016-0010 to determine compliance with applicable effluent limitations for these parameters.
- b. Effluent monitoring frequencies and sample types for hardness total (as CaCO<sub>3</sub>) (once per quarter) have been reduced from Order R5-2016-0010.
- c. The effluent monitoring frequency and sample type for nitrate plus nitrite has been increased to twice per month from Order R5-2016-0010.
- d. Monitoring data collected over the previous permit term for methyl mercury (once per month), total mercury (once per month), and selenium total recoverable (once per month) did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, specific monitoring requirements for these parameters have not been retained from Order R5-2016-0010.
- e. Order R5-2016-0010 did not require regular effluent monitoring for dissolved organic carbon. This Order includes quarterly effluent monitoring for dissolved organic carbon to calculate site-specific freshwater aluminum criteria in accordance with the 2018 U.S. EPA NAWQC for aluminum in freshwater for the next permit renewal.
- f. There are concerns of increased nutrients in the downstream drinking water conveyance, storage, and treatment facilities that may be impacted by the discharge. This Order requires monitoring of the effluent for total phosphorus twice per month to determine potential impacts from the City of Modesto WQCF effluent.
- g. Effluent monitoring frequencies and sample types for BOD<sub>5</sub> (three per week), total suspended solids (three per week) and pH (once per day) have been reduced from Order R5-2016-0010.

**C. Whole Effluent Toxicity Testing Requirements**

1. **Acute Toxicity.** Quarterly 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity.
2. **Chronic Toxicity.** Quarterly chronic whole effluent toxicity testing is required in order to demonstrate compliance with the Basin Plan's narrative toxicity objective.

**D. Receiving Water Monitoring**

**1. Surface Water**

- a. Receiving water monitoring is necessary to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream.
- b. Receiving water monitoring frequencies and sample types for pH (once per week), ammonia nitrogen total (as N) (once per month), electrical conductivity (once per week), dissolved oxygen (once per week), temperature (once per week), and turbidity (once per week) have been retained from Order R5-2016-0010.
- c. The receiving water monitoring frequency and sample type for hardness total (as CaCO<sub>3</sub>) (once per quarter) is reduced from Order R5-2016-0010.
- d. Order R5-2016-0010 did not require regular monitoring of the receiving water for dissolved organic carbon or phosphorus. This Order includes quarterly effluent monitoring for dissolved organic carbon to calculate site-specific freshwater aluminum criteria in accordance with the 2018 U.S. EPA NAWQC for aluminum in freshwater for the next permit renewal. This Order includes monitoring of the receiving water for phosphorus twice per month.
- e. Order R5-2016-0010 did not require regular monitoring of the receiving water for dissolved organic carbon. This Order includes quarterly effluent monitoring for dissolved organic carbon to calculate site-specific freshwater aluminum criteria in accordance with the 2018 U.S. EPA NAWQC for aluminum in freshwater for the next permit renewal.
- f. There are concerns of increased nutrients in the downstream drinking water conveyance, storage, and treatment facilities that may be impacted by the discharge. This Order requires monitoring of the receiving water for total phosphorus twice per month to determine potential impacts from the discharges.

**2. Groundwater – Not Applicable**

**E. Other Monitoring Requirements**

**1. UV Disinfection System Monitoring for the City of Modesto WQCF**

UV system monitoring and reporting are required to ensure that the UV system is operated to adequately inactivate pathogens in the wastewater. UV disinfection system monitoring is imposed to achieve equivalency to requirements established by the DDW), and the NWRI, Guidelines.

**2. Discharge Monitoring Report-Quality Assurance (DMR-QA) Study Program**

Under the authority of section 308 of the CWA (33 U.S.C. section 1318), U.S. EPA requires all dischargers under the NPDES Program to participate in the annual DMR-QA Study Program. The DMR-QA Study evaluates the analytical ability of laboratories that routinely perform or support self-monitoring analyses required by NPDES permits. There are two options to satisfy the requirements



of the DMR-QA Study Program: (1) The Discharger can obtain and analyze a DMR-QA sample as part of the DMR-QA Study; or (2) Per the waiver issued by U.S.EPA to the State Water Board, the Discharger can submit the results of the most recent Water Pollution Performance Evaluation Study from their own laboratories or their contract laboratories. A Water Pollution Performance Evaluation Study is similar to the DMR-QA Study. Thus, it also evaluates a laboratory's ability to analyze wastewater samples to produce quality data that ensure the integrity of the NPDES Program. The Discharger shall submit annually the results of the DMR-QA Study or the results of the most recent Water Pollution Performance Evaluation Study to the State Water Board. The State Water Board's Quality Assurance Program Officer will send the DMR-QA Study results or the results of the most recent Water Pollution Performance Evaluation Study to U.S. EPA's DMR-QA Coordinator and Quality Assurance Manager.

## **F. Reporting Requirements**

### **Del Puerto Water District Diversions Annual Report**

The NVRWP discharge to the Delta-Mendota Canal is a unique surface water discharge because it is intended solely for the purpose of providing recycled water to downstream agricultural users in the Del Puerto Water District. The Dischargers have NPDES permits authorizing discharge to the San Joaquin River for the disposal of the tertiary treated municipal wastewater. Presumably the recycled wastewater will be diverted by users immediately downstream of the outfall, which results in minimal recycled wastewater traveling downstream to the drinking water facilities. The 30 March 2022 DDW Letter recommended collecting additional information in this Order to ensure the determination that the NVRWP is not a surface water augmentation project remains appropriate. The 30 March 2022 DDW Letter recommended the Discharger report the volume diverted by Del Puerto Water District downstream of the outfall. This reporting is necessary to evaluate impacts of the discharge and may be used to aid in determining the percentage of effluent entering O'Neill Forebay from the Delta-Mendota Canal in reasonable worst-case scenarios.

This Order requires an annual report that includes a map showing diversion points used by the Del Puerto Water District during the calendar year, the total volume of water diverted by Del Puerto Water District (upstream and downstream of the Joint Outfall) on a monthly basis, and the total volume of effluent discharged by the Facilities from the Joint Outfall on a monthly basis.

## **VIII. PUBLIC PARTICIPATION**

The Central Valley Water Board has considered the issuance of WDR's that will serve as an NPDES permit for City of Turlock RWQCF and City of Modesto WQCF for a joint discharge to the Delta-Mendota Canal. As a step in the WDR adoption process, the Central Valley Water Board staff has developed tentative WDR's and has encouraged public participation in the WDR adoption process.

**A. Notification of Interested Persons**

The Central Valley Water Board notified the Discharger and interested agencies and persons of its intent to prescribe WDR's for the discharge and provided an opportunity to submit written comments and recommendations. Notification was provided through the posting of the Notice of Public Hearing concerning the WDRs at the Turlock City Hall (government center) on 13 April 2022, Modesto City Hall (government center) on 14 April 2022, United States Post Office in the City of Turlock on 13 April 2022, United States Post Office in the City of Modesto on 14 April 2022, the City of Turlock RWQCF on 12 April 2022, and the City of Modesto WQCF on 14 April 2022. The Notice of Public Hearing was also published on 5 April 2022 on the Central Valley Water Board's Website.

The public had access to the agenda and any changes in dates and locations through the [Central Valley Water Board's website](http://www.waterboards.ca.gov/centralvalley/board_info/meetings/) ([http://www.waterboards.ca.gov/centralvalley/board\\_info/meetings/](http://www.waterboards.ca.gov/centralvalley/board_info/meetings/))

**B. Written Comments**

Interested persons were invited to submit written comments concerning tentative WDR's as provided through the notification process. Comments were due either in person or by mail to the Executive Office at the Central Valley Water Board at the address on the cover page of this Order.

To be fully responded to by staff and considered by the Central Valley Water Board, the written comments were due at the Central Valley Water Board office by 5:00 p.m. on 5 May 2022.

**C. Public Hearing**

The Central Valley Water Board held a public hearing on the tentative WDR's during its regular Board meeting on the following date and time and at the following location:

Date: **10 June 2022**

Time: **10:30 a.m.**

Location: Online

**AND**

Regional Water Quality Control Board, Central Valley Region  
11020 Sun Center Dr., Suite #200  
Rancho Cordova, CA 95670

Interested persons were invited to attend. At the public hearing, the Central Valley Water Board heard testimony pertinent to the discharge, WDR's, and permit. For accuracy of the record, important testimony was requested in writing.

**D. Reconsideration of Waste Discharge Requirements**

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., within 30 calendar days of the date of adoption of this Order at the following address, except that if the thirtieth

day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day:

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

Or by email at [waterqualitypetitions@waterboards.ca.gov](mailto:waterqualitypetitions@waterboards.ca.gov)

[Instructions on how to file a petition for review](http://www.waterboards.ca.gov/public_notices/petitions/water_quality/wqpetition_instructions.shtml)

([http://www.waterboards.ca.gov/public\\_notices/petitions/water\\_quality/wqpetition\\_instructions.shtml](http://www.waterboards.ca.gov/public_notices/petitions/water_quality/wqpetition_instructions.shtml)) are available on the Internet.

**E. Information and Copying**

The Report of Waste Discharge, other supporting documents, and comments received are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Central Valley Water Board by calling (916) 464-3291.

**F. Register of Interested Persons**

Any person interested in being placed on the mailing list for information regarding the WDR's and NPDES permit should contact the Central Valley Water Board, reference these facilities, and provide a name, address, and phone number.

**G. Additional Information**

Requests for additional information or questions regarding this order should be directed to Armando Martinez at (916) 464-4617, or email at [Armando.Martinez@waterboards.ca.gov](mailto:Armando.Martinez@waterboards.ca.gov) .

**ATTACHMENT G – SUMMARY OF REASONABLE POTENTIAL ANALYSIS**

**Table G-1 - Summary of Reasonable Potential Analysis for the City of Turlock RWQCF**

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	RP
Ammonia Nitrogen, Total (as N) (1 April – 30 September)	mg/L	2.5	0.12	0.6	3.2, Table Note 1	3.5, Note 2	--	--	--	--	Yes, Table Note 3
Ammonia Nitrogen, Total (as N) (1 October – 31 March)	mg/L	1.8	0.6	0.6	4.8	2.8, Note 2	--	--	--	--	Yes, Table Note 3
Chlorodibromomethane	µg/L	16	ND	0.41	--	--	0.41	34	--		Yes
Dichlorobromomethane	µg/L	54	ND	0.56	--	--	0.56	46	--		Yes
Aluminum	µg/L	595	20	640	788	640	--	--	--	200	No
Bis (2-ethylhexyl) Phthalate	µg/L	1.6	ND	1.8	--	--	1.8	5.9	--	4	No
Electrical Conductivity	µmhos/cm	1,100, Table Note 3	800, Table Note 3	1,600	--	--	--	--	--	1,600	Table Note 3
Mercury, Total	ng/L	2.2	7.2 See Table Note 4	12	--	--	--	--	--	12 Table Note 6	No, Table Note 7
Nitrate plus Nitrite, Total (as N)	mg/L	27.4	1.3	10	--	--	--	--	--	10	Yes, Table Note 3

General Note: All inorganic concentrations are given as a total concentration.

**Abbreviations used in this table:**

MEC = Maximum Effluent Concentration

B = Maximum Receiving Water Concentration or lowest detection level, if non-detect

- C = Criterion used for Reasonable Potential Analysis
- CMC = Criterion Maximum Concentration (CTR or NTR)
- CCC = Criterion Continuous Concentration (CTR or NTR)
- Water & Org = Human Health Criterion for Consumption of Water & Organisms (CTR or NTR)
- Org Only = Human Health Criterion for Consumption of Organisms Only (CTR or NTR)
- Basin Plan = Numeric Site-Specific Basin Plan Water Quality Objective
- MCL = Drinking Water Standards Maximum Contaminant Level
- NA = Not Available
- ND = Non-detect
- RP= Reasonable Potential

**Table Notes:**

1. U.S. EPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 1 hour average.
2. U.S. EPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 30 day average.
3. See section IV.C.3 of the Fact Sheet for a discussion of the RPA results.
4. Represents the maximum observed annual average concentration for comparison with the Secondary MCL or Sport Fish Water Quality Objective for mercury, where applicable.
5. Reasonable potential at the receiving water, lead was also detected in the effluent.
6. State Water Board Sport Fish Water Quality Objective for mercury.
7. Constituents with a Total Maximum Daily Load (TMDL).

**Table G-2 - Summary of Reasonable Potential Analysis for the City of Modesto WQCF**

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	RP
Ammonia Nitrogen, Total (as N) (1 April – 30 September)	mg/L	2.7	0.12	3.5	9.5, Table Note 1	3.5, Note 2	--	--	--	--	Yes, Table Note 3
Ammonia Nitrogen, Total (as N) (1 October – 31 March)	mg/L	0.57	0.6	2.8	13.8, Table Note 1	2.8, Note 2	--	--	--	--	Yes, Table Note 3

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	RP
Electrical Conductivity	µmhos/cm	950, Table Note 3	800, Table Note 3	1,600	--	--	--	--	--	1,600	Table Note 3
Mercury, Total	ng/L	1.6	7.2 See Table Note 4	12	--	--	--	--	--	12 Table Note 6	No, Table Note 7
Nitrate plus Nitrite, Total (as N)	mg/L	7.5	1.3	10	--	--	--	--	--	10	Yes, Table Note 3

General Note: All inorganic concentrations are given as a total concentration.

**Abbreviations used in this table:**

- MEC = Maximum Effluent Concentration
- B = Maximum Receiving Water Concentration or lowest detection level, if non-detect
- C = Criterion used for Reasonable Potential Analysis
- CMC = Criterion Maximum Concentration (CTR or NTR)
- CCC = Criterion Continuous Concentration (CTR or NTR)
- Water & Org = Human Health Criterion for Consumption of Water & Organisms (CTR or NTR)
- Org Only = Human Health Criterion for Consumption of Organisms Only (CTR or NTR)
- Basin Plan = Numeric Site-Specific Basin Plan Water Quality Objective
- MCL = Drinking Water Standards Maximum Contaminant Level
- NA = Not Available
- ND = Non-detect
- RP= Reasonable Potential

**Table Notes:**

1. U.S. EPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 1 hour average.
2. U.S. EPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 30 day average.
3. See section IV.C.3 of the Fact Sheet for a discussion of the RPA results.

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City of Modesto Water Quality Control Facility

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4. Represents the maximum observed annual average concentration for comparison with the Secondary MCL or Sport Fish Water Quality Objective for mercury, where applicable.
5. Reasonable potential at the receiving water, lead was also detected in the effluent.
6. State Water Board Sport Fish Water Quality Objective for mercury.
7. Constituents with a Total Maximum Daily Load (TMDL).

**ATTACHMENT H – CALCULATION OF WQBEL’S**

**Table H-1: Human Health WQBEL’s Calculations for the City of Turlock RWQCF**

Parameter	Units	Criteria	Mean Background Concentration	Effluent CV	Dilution Factor	MDEL/AMEL Multiplier	AMEL Multiplier	AMEL	MDEL	AWEL
Chlorodibromomethane	µg/L	0.41	0.03	0.42	48	1.7	1.4	19	32	--
Dichlorobromomethane	µg/L	0.56	0.03	0.4	97	1.7	1.4	52	85	--
Nitrate plus Nitrite, Total (as N)	mg/L	10	0.34	0.75	0	2.2	3.2	10	--	19

**Table H-2: Human Health WQBEL’s Calculations for the City of Modesto WQCF**

Parameter	Units	Criteria	Mean Background Concentration	Effluent CV	Dilution Factor	MDEL/AMEL Multiplier	AMEL Multiplier	AMEL	MDEL	AWEL
Nitrate plus Nitrite, Total (as N)	mg/L	10	0.34	0.2	--	1.3	1.2	10	--	13

**Abbreviations used in this table:**

- CV = Coefficient of Variation
- MDEL = Maximum Daily Effluent Limitation
- AMEL = Average Monthly Effluent Limitation
- MDEL = Maximum Daily Effluent Limitation
- AWEL = Average Weekly Effluent Limitation

**Tables H-1 and H-2 Notes:**

1. CV was established in accordance with section 1.4 of the SIP.
2. Maximum background concentration used for background nitrate plus nitrite.



**Table H-3: Aquatic Life QBEL'S Calculations for the City of Turlock RWQCF**

Parameter	Units	CMC Criteria	CCC Criteria	B	Effluent CV	CMC Dilution Factor	CCC Dilution Factor	ECA Multiplier <sup>acute</sup>	LTA <sup>acute</sup>	ECA Multiplier <sup>chronic</sup>	LTA <sup>chronic</sup>	AMEL Multiplier <sup>95</sup>	AWEL Multiplier	MDEL Multiplier <sup>99</sup>	AMEL	AWEL	MDEL
Ammonia Nitrogen, Total (as N) (1 April – 30 September)	mg/L	3.2	3.5	0.1	0.6	--	--	0.3	1.0	0.8	2.7	1.6	2.7	3.1	1.6	2.8	--
Ammonia Nitrogen, Total (as N) (1 October – 31 March)	mg/L	4.8	2.8	0.6	0.6	--	--	0.3	1.5	0.8	2.2	1.6	2.7	3.1	2.4	4.1	--
Chlorpyrifos	µg/L	0.03	0.02	--	--	0.32	0.01	0.53	0.01	1.55	2.7	Note 5	Note 5	--	Note 5	Note 5	--
Diazinon	µg/L	0.16	0.10	--	--	0.32	0.05	0.53	0.05	1.55	2.7	Note 5	Note 5	--	Note 5	Note 5	--

**Table H-4: Aquatic Life WQBEL'S Calculations for the City of Modesto WQCF**

Parameter	Units	CMC Criteria	CCC Criteria	B	Effluent CV	CMC Dilution Factor	CCC Dilution Factor	ECA Multiplier <sup>acute</sup>	LTA <sup>acute</sup>	ECA Multiplier <sup>chronic</sup>	LTA <sup>chronic</sup>	AMEL Multiplier <sup>95</sup>	AWEL Multiplier	MDEL Multiplier <sup>99</sup>	AMEL	AWEL	MDEL
Ammonia Nitrogen, Total (as N) (1 April – 30 September)	mg/L	9.5	3.5	0.1	0.1	--	--	0.8	7.7	0.96	3.3	1.0	1.2	1.3	3.4	4.1	--
Ammonia Nitrogen, Total (as N) (1 October – 31 March)	mg/L	13.8	2.8	0.6	1.5	--	--	0.32	4.4	0.78	2.2	1.2	2.7	3.1	2.6	5.9	--
Chlorpyrifos	µg/L	0.03	0.02	--	--	0.32	0.01	0.53	0.01	1.55	2.7	Note 5	Note 5	--	Note 5	Note 5	--
Diazinon	µg/L	0.16	0.10	--	--	0.32	0.05	0.53	0.05	1.55	2.7	Note 5	Note 5	--	Note 5	Note 5	--

**Abbreviations used in this table:**

- B = Maximum Receiving Water Concentration or lowest detection level, if non-detect
- CMC = Criterion Maximum Concentration (CTR or NTR)
- CCC = Criterion Continuous Concentration (CTR or NTR)
- CV = Coefficient of Variation (established in accordance with section 1.4 of the SIP)
- ECA = Effluent Concentration Allowance
- LTA = Aquatic Life Calculations – Long-Term Average
- MDEL = Maximum Daily Effluent Limitation
- AMEL = Average Monthly Effluent Limitation
- MDEL = Maximum Daily Effluent Limitation
- AWEL = Average Weekly Effluent Limitation

**Table Notes:**

1. Coefficient of Variation (CV) was established in accordance with section 1.4 of the SIP.
2. AMELs are calculated according to section 1.4 of the SIP using a 95th percentile occurrence probability.
3. AWELs are calculated according to section 1.4 of the SIP using a 98th percentile occurrence probability.
4. MDELs are calculated according to section 1.4 of the SIP using a 99th percentile occurrence probability.
5. See Fact Sheet section IV.C.3.a.i.(c) for a discussion of the calculation of these effluent limitations.

**Abbreviations used in this table:**

B =	Maximum Receiving Water Concentration or lowest detection level, if non-detect
CMC =	Criterion Maximum Concentration (CTR or NTR)
CCC =	Criterion Continuous Concentration (CTR or NTR)
CV =	Coefficient of Variation (established in accordance with section 1.4 of the SIP)
ECA	Effluent Concentration Allowance
LTA	Aquatic Life Calculations – Long-Term Average
MDEL =	Maximum Daily Effluent Limitation
AMEL =	Average Monthly Effluent Limitation
MDEL =	Maximum Daily Effluent Limitation
AWEL =	Average Weekly Effluent Limitation