

continuing to receive an unprecedented amount of attention from the State Board in the exercise of its coordinated authority over water rights and water quality. The southern Delta water quality objectives for EC referenced by the Regional Board were established in the State Board's 1995 Delta Plan. Although the ultimate solutions to southern Delta salinity problems have not yet been determined, previous actions establish that the State Board intended for permit effluent limitations to play a limited role with respect to achieving compliance with the EC water quality objectives in the southern Delta."

"...the existing record supports the conclusions that: (1) assuring compliance with the 700  $\mu\text{mhos/cm}$  EC limitation in the City's permit for April through August would probably require construction and operation of a reverse osmosis treatment plant for at least a portion of the City's effluent at a very large cost; and (2) because of the relatively high salinity of the receiving water and the relatively small portion of flow provided by the City's discharge, the City's use of reverse osmosis would have relatively little effect on the EC of water in the river. In addition, the State Board takes official notice [California Code of Regulations, Title 23 Section 648.2]; of the fact that operation of a large-scale reverse osmosis treatment plant would result in production of highly saline brine for which an acceptable method of disposal would have to be developed. Consequently, any decision that would require use of reverse osmosis to treat the City's municipal wastewater effluent on a large scale should involve thorough consideration of the expected environmental effects."

The facts regarding the need to construct reverse osmosis to meet the 700  $\mu\text{mhos/cm}$  EC standard have not changed. Since adoption of the Manteca Order the Discharger has replaced a portion of its groundwater supplies with lower salinity surface water from the South San Joaquin Irrigation District. Furthermore, the Discharger has removed the food processing wastewater from Eckhart Cold Storage from its waste-stream that is discharged to the San Joaquin River. As a result, salt reductions have been achieved in the effluent discharge. However, the Discharger is still unable to comply with the 700  $\mu\text{mhos/cm}$  EC standard required in the Bay-Delta Plan during the irrigation season.

Other facts supporting the State Water Board's conclusions have changed since adoption of the Manteca Order. The State Water Board updated the Bay-Delta Plan in 2006. The update re-affirmed the seasonal standards and updated the implementation program to include regulation of treated effluent discharges to the South Delta. Furthermore, the State Water Board held in Order WQ 2009-0003 for the City of Tracy that the Clean Water Act requires compliance with existing water quality objectives pending the development of long-term or interim regulatory solutions such as revisions to existing water quality standards, a TMDL, variances, site specific objectives, or an offset policy. (p. 10 and p. 17.) Therefore, to ensure compliance with the Bay-Delta Plan and to be consistent with the most recent State Water Board Order WQ 2009-003 (City of Tracy), this

Order contains seasonal effluent limits of 700  $\mu\text{hos/cm}$  from April through August and 1000  $\mu\text{hos/cm}$  from September through March.

- (d) **Plant Performance and Attainability.** Since adoption of previous Order No. R5-2004-0028, the Discharger replaced a portion of its groundwater supplies with lower salinity surface water from the South San Joaquin Irrigation District. As a result, salt reductions were achieved in the effluent discharge. Nevertheless, as shown in the following table, analysis of the effluent data shows that the post upgrade MEC of 783  $\mu\text{g/L}$  is greater than applicable WQBELs, and therefore, appear to put the Discharger in immediate non-compliance with the EC effluent limitation.

Parameter	Effluent					
	2006		2007		2008	
	Avg	Max	Avg	Max	Avg	Max
EC, $\mu\text{hos/cm}$	904	1107	809	917	732	827
TDS, mg/L	554	617	481	554	459	500
Chloride, mg/L	137	140	N/A <sup>1</sup>	136	N/A	109
Sulfate, mg/L	N/A	58	N/A <sup>1</sup>	52	N/A	43

Based on the data cited and subsequent analysis, a compliance time schedule for compliance with the effluent limitations is established in TSO No. R5-2009-0096 in accordance with CWC section 13300. The TSO also requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3.

#### ix. Temperature

- (a) **WQO.** The Thermal Plan requires that, "*The maximum temperature shall not exceed the natural receiving water temperature by more than 20°F.*"
- (b) **RPA Results.** The discharge of municipal wastewater is an elevated temperature waste and has reasonable potential to cause or contribute to an excursion above Thermal Plan requirements.
- (c) **WQBELs.** To ensure compliance with the Thermal Plan, an effluent limitation for temperature is included in this Order.
- (d) **Plant Performance and Attainability.** Analysis of the effluent and receiving water data indicates that the discharge can meet the Thermal Plan requirements at the current permitted capacity of 9.87 mgd. However, based on thermal modeling conducted by the Discharger (*City of Manteca Thermal Plan Exception Analysis Final Report, February 2006*) (Thermal Exception Report) the expanded discharge of 17.5 mgd may at times not meet the Thermal Plan requirements. The Thermal Exception Report assessed impacts of the discharge on fishery resources within the vicinity of the discharge, and based on modeling results, field investigations, and a migratory fish species impact assessment, the study

concludes that since the area in the receiving water in which the Thermal Plan objectives are not met is sufficiently small then there are no significant adverse effects to the most sensitive aquatic species. Thus the Discharger requested an exception to the Thermal Plan. However, the Regional Water Board defers to National Marine Fisheries Services (NMFS) expertise for determination of impacts to aquatic species; and therefore, Regional Board Staff submitted the Discharger's analysis and request to NMFS and copied the State Water Board requesting review and determination. This Order contains a reopener to allow modification of the temperature effluent (and receiving water) limitations should NMFS concur with the Thermal Exception Report and State Water Board approve an exception to the Thermal Plan exception(s).

#### 4. WQBEL Calculations

- a. This Order includes WQBELs for aluminum, ammonia, copper, methylene blue active substances, nitrate, total coliform organisms, and electrical conductivity. The general methodology for calculating WQBELs based on the different criteria/objectives is described in subsections IV.C.4.b through e, below. See Tables F-13 through F-15 below, for the WQBEL calculations.
- b. **Effluent Concentration Allowance.** For each water quality criterion/objective, the ECA is calculated using the following steady-state mass balance equation from Section 1.4 of the SIP:

$$ECA = C + D(C - B) \quad \text{where } C > B, \text{ and}$$
$$ECA = C \quad \text{where } C \leq B$$

where:

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

According to the SIP, the ambient background concentration (B) in the equation above shall be the observed maximum with the exception that an ECA calculated from a priority pollutant criterion/objective that is intended to protect human health from carcinogenic effects shall use the arithmetic mean concentration of the ambient background samples. For ECAs based on MCLs, which implement the Basin Plan's chemical constituents objective and are applied as annual averages, an arithmetic mean is also used for B due to the long-term basis of the criteria.

- c. **Basin Plan Objectives and MCLs.** For WQBELs based on site-specific numeric Basin Plan objectives or MCLs, the effluent limitations are applied directly as the ECA as either an MDEL, AMEL, or average annual effluent limitations, depending on the averaging period of the objective.

- d. **Aquatic Toxicity Criteria.** WQBELs based on acute and chronic aquatic toxicity criteria are calculated in accordance with Section 1.4 of the SIP. The ECAs are converted to equivalent long-term averages (i.e. LTA<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.
- e. **Human Health Criteria.** WQBELs based on human health criteria, are also calculated in accordance with Section 1.4 of the SIP. The ECAs are set equal to the AMEL and a statistical multiplier was used to calculate the MDEL.

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

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

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

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>

**Table F-13. WQBEL Calculations For Aluminum**

	Acute	Chronic
Criteria (µg/L) <sup>1</sup>	750	87
Dilution Credit	No Dilution	No Dilution
WER	--	22.7
ECA	750	1975
ECA Multiplier	0.49	0.69
LTA	368.37	1355.59
AMEL Multiplier (95 <sup>th</sup> %)	1.10	<sup>2</sup>
AMEL (µg/L)	407	
MDEL Multiplier (99 <sup>th</sup> %)	2.04	<sup>2</sup>
MDEL (µg/L)	750	

<sup>1</sup> USEPA Ambient Water Quality Criteria

<sup>2</sup> Limitations based on acute LTA (Acute LTA < Chronic LTA)

**Table F-14. WQBEL Calculations For Ammonia**

	Acute	30-day Chronic	4-day Chronic
Criteria (µg/L) <sup>1</sup>	5.62	1.05	2.62
Dilution Credit	0	0	0
ECA	5.62	1.05	2.62
ECA Multiplier	0.21	0.674 <sup>2</sup>	0.38
LTA	1.2	0.71	11.0
AMEL Multiplier (95 <sup>th</sup> %)	<sup>3</sup>	1.92	<sup>3</sup>
<b>AMEL (µg/L)</b>		<b>1.4</b>	
MDEL Multiplier (99 <sup>th</sup> %)	<sup>3</sup>	4.79	<sup>3</sup>
<b>MDEL (µg/L)</b>		<b>3.4</b>	

- <sup>1</sup> USEPA Ambient Water Quality Criteria
- <sup>2</sup> Calculated based on the TSD modification presented in the 22 December 1999 Federal Register notice where  $\sigma^2 = \ln(CV^2/30 + 1)$
- <sup>3</sup> ...Limitations based on 30-day chronic LTA (Acute LTA < Chronic LTA)

**Table F-15. WQBEL Calculations For Copper**

	Acute	Chronic
Hardness (mg/L as CaCO <sub>3</sub> )	82	82
Criteria (µg/L) <sup>1</sup>	11.1	7.6
Translator <sup>2</sup>	0.78--	0.70
Criteria (µg/L, total recoverable)	14.3	10.8
Dilution Credit	0.0	0.0
ECA <sup>3</sup>	14.3	10.8
ECA Multiplier <sup>4</sup>	0.68	0.82
LTA	9.8	8.9
AMEL Multiplier (95 <sup>th</sup> %) <sup>5</sup>	<sup>6</sup>	1.1
<b>AMEL (µg/L)</b>		<b>10.2</b>
MDEL Multiplier (99 <sup>th</sup> %)	<sup>6</sup>	1.5
<b>MDEL (µg/L)</b>		<b>13.0</b>

- <sup>1</sup> Metals are expressed as dissolved concentrations.
- <sup>2</sup> Site-specific Translators used.
- <sup>3</sup> ECA calculated per Section 1.4.B, Step 2 of the SIP. This allows for the consideration of dilution.
- <sup>4</sup> Acute and Chronic ECA Multiplier calculated at 99<sup>th</sup> percentile per Section 1.4.B, Step 3 of SIP or per Sections 5.4.1 and 5.5.4 of the TSD.
- <sup>5</sup> Assumes sampling frequency n = >4
- <sup>6</sup> Limitations based on 30-day chronic LTA (Acute LTA > Chronic LTA)

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

**Table F-16. Summary of Water Quality-Based Effluent Limitations**

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Aluminum, Total Recoverable	µg/L	407	200 <sup>1</sup>	750		
Ammonia, Total (as N)	mg/L	1.4		3.4		

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Copper, Total Recoverable	µg/L	10.2		13.0		
MBAS	µg/L	500				
Nitrate plus Nitrite (as N)	mg/L	10				
Total Coliform Organisms <sup>2</sup>	MPN/100ml					240
Electrical Conductivity (1 April to 31 August)	µmhos/cm	1000				
Electrical Conductivity (1 Sept to 31 March)	µmhos/cm	700				

<sup>1</sup> Annual Average

<sup>2</sup> Effluent total coliform also shall not exceed i.) 2.2 MPN/100ml, as a 7-day median; and ii). 23 MPN/100ml, 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 page III-8.00) The Basin Plan also states that, "...effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate...". USEPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc." Accordingly, effluent limitations for acute toxicity have been included in this Order as follows:

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

- Minimum for any one bioassay----- 70%
- Median for any three or more consecutive bioassays ----- 90%

The previous permit, Order No. R5-2004-0028, contained these same acute toxicity requirements. Based on the monthly acute toxicity test results conducted during April 2004 through August 2008, the Discharger demonstrated compliance with these acute toxicity requirements.

- b. **Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at page III-8.00.) Based on chronic WET testing performed by the Discharger from August 2007 through March 2009, the discharge has reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective.

No dilution has been granted for the chronic condition. Therefore, chronic toxicity testing results exceeding 1 chronic toxicity unit (TUc) demonstrates the discharge has a reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective. Therefore, in accordance with State Water Board Order WQO 2003-0012 for the Los Coyotes and Long Beach Wastewater Reclamation Plants and WQ 2008-0008 for the City of Davis Wastewater Treatment Plant, this Order includes a narrative effluent limitation for chronic whole effluent toxicity.

To ensure compliance with the Basin Plan's narrative toxicity objective, the Discharger is required to conduct chronic WET testing, as specified in the Monitoring and Reporting Program (Attachment E section V.). Furthermore, the Special Provision contained at VI.C.2.a. of this Order requires the Discharger to investigate the causes of, and identify and implement corrective actions to reduce or eliminate effluent toxicity. If the discharge demonstrates a pattern of toxicity exceeding the numeric toxicity monitoring trigger, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE) in accordance with an approved TRE workplan. The numeric toxicity monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to perform accelerated chronic toxicity monitoring, as well as, the threshold to initiate a TRE if a pattern of effluent toxicity has been demonstrated.

## D. Final Effluent Limitations

### 1. Mass-based Effluent Limitations

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

Mass-based effluent limitations were calculated based upon the permitted average daily discharge flow allowed in section IV.A.1.f and 2.f. of this Order.

## 2. Averaging Periods for Effluent Limitations

40 CFR 122.45 (d) requires average weekly and average monthly discharge limitations for publicly owned treatment works (POTWs) unless impracticable. However, for toxic pollutants and pollutant parameters in water quality permitting, USEPA recommends the use of a maximum daily effluent limitation in lieu of average weekly effluent limitations for two reasons. *"First, the basis for the 7-day average for POTWs derives from the secondary treatment requirements. This basis is not related to the need for assuring achievement of water quality standards. Second, a 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would be missed."* (TSD, pg. 96) This Order utilizes maximum daily effluent limitations in lieu of average weekly effluent limitations for aluminum and ammonia as recommended by the TSD for the achievement of water quality standards and for the protection of the beneficial uses of the receiving stream. Furthermore, for TSS, BOD<sub>5</sub>, pH, and total coliform, 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.

For effluent limitations based on Primary and Secondary MCLs, except nitrate and nitrite, this Order includes annual average effluent limitations. The Primary and Secondary MCLs are drinking water standards contained in Title 22 of the California Code of Regulations. Title 22 requires compliance with these standards on an annual average basis (except for nitrate and nitrite), when sampling at least quarterly. Since it is necessary to determine compliance on an annual average basis, it is impracticable to calculate average weekly and average monthly effluent limitations.

## 3. Satisfaction of Anti-Backsliding Requirements

The effluent limitations in this Order are at least as stringent as the effluent limitations in the existing Order, except as discussed below. Based on new information gathered over the term of Order No. R5-2004-0028, this Order does not carry forward the effluent limitations for 2,4,6-Trichlorophenol, arsenic, bis(2-ethylhexyl)phthalate, bromodichloromethane, chlorine residual, cyanide, dibromochloromethane, iron, manganese, oil and grease, and settleable solids, because the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream exceedance of the applicable water quality criteria/objective for these constituents as discussed in previous section IV.C.3.c. In addition, this Order contains less stringent effluent limitations for aluminum and changes the effluent limitations for turbidity, to operational specifications. This relaxation of effluent limitations is consistent with the anti-backsliding provisions, and the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16. Any impact on existing water quality will be

insignificant.

- a. **Aluminum.** Order No. R5-2004-0028 requires that the effluent comply with a maximum daily effluent limit of 140 µg/L and a monthly average effluent limit of 71 µg/L based on USEPA developed National Recommended Ambient Water Quality Criteria (NAWQC) for protection of freshwater aquatic life for aluminum. However, NAWQC based the chronic criterion on specific receiving water conditions where there is low pH (below 6.5) and low hardness levels (below 50 mg/L as CaCO<sub>3</sub>). Since the hardness values in the San Joaquin River are higher, which decreases the toxic effects to aquatic life, than the water hardness values in which the criterion was developed, USEPA advises that a water effects ratio (WER) might be appropriate to better reflect the actual toxicity of aluminum to aquatic organisms. The Discharger submitted its final Aluminum WER Study, *City of Manteca Aluminum Water-Effects Ratio (WER) Study* dated March 2007, which recommends a WER of 22.7 applicable to the chronic objectives. As allowed by Section 1.2 of the SIP, the Regional Water Board adjusted the chronic objectives by the Discharger's site-specific WER of 22.7. As a result, this Order contains a final MDEL for aluminum of 750 µg/L and a AMEL of 407 µg/L. The Regional Water Board finds that applying the site-specific WER of 22.7 to the chronic criterion for aluminum, which relaxes the effluent limitations, is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Any impact on existing water quality will be insignificant.
- b. **Turbidity.** Order No. R5-2004-0028 requires that the effluent comply with a daily average limit of 2 nephelometric turbidity units (NTU) and a daily maximum limit of 10 NTU for turbidity, and also prohibited the effluent from exceeding 5 NTU more than 5 percent of the time to implement Basin Plan's narrative objectives. Failure of the Discharger's 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, allowing immediate detection of filter failure and rapid corrective action. Coliform testing, by comparison, requires several hours, to days, to identify high coliform concentrations. The previous Order No. R5-2004-0028 required the Discharger to obtain a grab sample of the effluent to monitor turbidity once per day; since adoption of Order No. R5-2004-0028 the Facility was upgraded to monitor turbidity continuously. Moreover, the turbidity limitations in the previous Order No. R5-2004-0028 were solely an operational check to ensure the treatment system was functioning properly and could meet the limits for total coliform organisms. The effluent limitations were not intended to regulate turbidity in the receiving water. Rather, turbidity should be an operational parameter to determine proper system function and not a WQBEL. Therefore, to ensure compliance with the DPH recommended Title 22 disinfection criteria, this Order contains operational turbidity specifications (See Special Provisions VI.C.6.e Turbidity Operational Requirements in the Limitations and Discharge Requirements section of this Order) to be met prior to disinfection in lieu of effluent limitations. The Regional Water Board finds inclusion of turbidity specifications in lieu of effluent limits is consistent with the

antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Any impact on existing water quality will be insignificant.

#### 4. Satisfaction of Antidegradation Policy

This Order allows an increase discharge flow of 7.63 mgd (an increase in discharge from 9.87 mgd to 17.5 mgd) conditional upon compliance with permit limitations and completion of the Facility expansion project (See Provision VI.C.6.c of the Limitations and Discharge Requirements section of this Order). The Discharger released the *Draft Environmental Impact Report City of Manteca Wastewater Quality Control Facility and Collection System Master Plans Update Project July 2007* (prepared by EDWA) (The DEIR) for public review. The DEIR proposed Facility upgrades and expansions, and also summarized alternative treatment and disposal options to evaluate and determine the most viable means for expansion of the Facility. The Final Environmental Impact Report was released January 2008. The Discharger also developed and submitted to the Regional Water Board a report titled, *City of Manteca Antidegradation Analysis for Proposed Wastewater Quality Control Facility Discharge Modification, August 2008* (prepared by Larry Walker & Associates) (The Antidegradation Analysis) that provides a complete antidegradation analysis following the guidance provided by State Water Board APU 90-004. Pursuant to the guidelines, The Antidegradation Analysis evaluated whether changes in water quality resulting from the proposed capacity increase (17.5 mgd year-round tertiary treated discharge) 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.

a. **Surface Water.** The Discharger developed a report titled, *City of Manteca Antidegradation Analysis for Proposed Wastewater Quality Control Facility Discharge Modification, August 2008*, (Larry Walker Associates.), that provides a complete antidegradation analysis following the guidance provided by State Water Board APU 90-004. Pursuant to the guidelines, the Report evaluated whether changes in water quality resulting from the proposed capacity increase to the San Joaquin River within the Sacramento-San Joaquin Delta, (7.63 mgd 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. The Regional Water Board concurs with the Antidegradation Analysis.

i. **Water quality impacts of an increase in permitted capacity.** This Order does not adversely impact beneficial uses of the receiving water or downstream receiving waters. All beneficial uses will be maintained and protected. This Order provides for an increase in the volume and mass of pollutants discharged directly to the receiving water. Code of Federal

Regulations 40 CFR 131.12 defines the following tier designations to describe water quality in the receiving water body.

**Tier 1 Designation:** *Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.*  
(40 CFR 131.12)

**Tier 2 Designation:** *Where the quality of waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control. (40 CFR 131.12)*

The tier designation is assigned on a pollutant-by-pollutant basis. The following is the potential effect on water quality parameters regulated in this Order, and was assessed in the Antidegradation Analysis.

- The near-field and far-field water quality of the San Joaquin River within the Sacramento-San Joaquin Delta with respect to chemical constituents, and DO, would be minimally affected by the proposed increase in discharge, and that the water quality necessary to protect beneficial uses would be maintained.
- However, this is not the case for temperature. Effluent cooling facilities planned as part of the Phase IV expansion, will be designed to mitigate potential exceedances of The Thermal Plan objectives. The Discharger submitted a study assessing the thermal impact of its discharge in the San Joaquin River, titled *City of Manteca Wastewater Quality Control Facility Thermal Plan Exception Analysis Final Report, February 2006*, and is requesting an exception to The Thermal Plan. Fisheries experts from the National Marine Fisheries Service are to determine the validity of the assumptions used to develop the temperature model and the conclusion regarding impacts to fisheries sources in the study before the Regional Water Board will consider the Discharger's request. Therefore, this Order requires compliance with the Thermal Plan.
- The increased discharge would negligibly increase loading of bioaccumulative constituents. No beneficial uses of San Joaquin River are anticipated to be adversely affected by the planned action.

**ii. Scientific Rationale for Determining Potential Impairing of Water Quality.**

The rationale used in the Antidegradation Analysis is based on Code of Federal Regulation, Section 131.12 (40 CFR 131.12), State Water Board Resolution No. 68-16, an Administrative Procedures Update (APU 90-004) issued by the State Water Board to the Regional Water Quality Control Boards, the Basin Plan, the CTR, and the 303(d) Listings.

The scientific rationale used in the Antidegradation Analysis evaluates the near-field and far-field water quality impacts of increasing the discharge. The near-field effects on San Joaquin River water quality will occur between the point of discharge and approximately 1-mile downstream of the discharge where advanced treated effluent and ambient river water are well-mixed. Near-field water quality impacts are estimated using 1) projected tertiary-treated effluent quality, 2) ambient river concentrations calculated from dry/below normal water years, 3) current permitted and proposed effluent flowrates, and 4) average late summer/early fall San Joaquin River flows observed during historical critical and dry water years. The far-field effects on the San Joaquin River were assessed on specific Sacramento-San Joaquin Delta locations where surface water is diverted for eventual use as drinking water and also in the Stockton Deep Water Ship Channel. Far-field water quality impacts are estimated using 1) historic effluent quality, 2) projected effluent quality, 3) current permitted and proposed effluent flowrates, and 4) modeled percent contribution effluent at selected Sacramento-San Joaquin Delta locations under representative critical and dry/below normal water years. This approach is consistent with recent USEPA guidance and addresses a key objective of the Antidegradation Analysis, which is to "[c]ompare receiving water quality to the water quality objectives established to protect designated beneficial uses" (APU 90-004).

The Antidegradation Analysis analyzed pollutants that were based on one or more of the following conditions: 1) the Facility received an effluent limitation for a particular constituent, 2) the constituent was identified as a pollutant/stressor on the 303(d) list for selected Delta waterways, 3) an adopted TMDL exists downstream of the discharge, or 4) the constituent is a historic pollutant of concern in the Delta. The Antidegradation Analysis evaluated each selected pollutant detected in the effluent and receiving water to determine if the proposed discharge increase of 7.63 mgd authorized by this Order potentially allows significant increase of the amount of pollutants present in the upstream and downstream receiving water influenced by the proposed discharge. Pollutants that significantly increased concentration or mass downstream would have required an alternatives analysis to determine whether implementation of alternatives to the proposed action would be in the best socioeconomic interest of the people of the region, and be to the maximum benefit of the people of the State. Details on the scientific rationale are discussed in detail in the Antidegradation Analysis. This includes a detailed discussion on calculating near-field, and long-term water quality effects associated with a continuous discharge to a tidal estuary where the effluent and tidal flows provide the critical mixing and dilution.

The Regional Water Board concurs with this scientific approach.

**iii. Alternative Control Measures.** APU 90-004 requires the consideration of "feasible alternative control measures" as part of the procedures for a complete antidegradation analysis. The Discharger considered several alternatives that would reduce or eliminate the lowering of water quality resulting from the proposed 7.63 mgd discharge increase. The Antidegradation Analysis assessed maintaining existing water quality in the San Joaquin River and the Delta with an increase in discharge through evaluating 1) effluent-to-land disposal, 2) additional wastewater treatment by microfiltration and reverse osmosis (MF/RO), or 3) no increase in discharge capacity. These plant expansion alternatives are summarized below:

- The land application of secondary treated effluent would offset projected reductions in San Joaquin River water quality as a result of the proposed project; however, operational costs are estimated at \$28.5 million to construct and an additional \$300,000 per year to operate. The Antidegradation Analysis further states that an economic impacts model estimates that these costs would have adverse socioeconomic effects (e.g. job losses). In addition, land application may elevate salinity and boron levels found in the Central Valley groundwater.
- The implementation of MF/RO would also offset estimated reductions in San Joaquin River water quality; however, the treatment facility would cost an estimated \$93.5 million to construct and an additional \$4.9 million per year to operate. The economic impacts model also estimates job losses due to this project, and the Antidegradation Analysis presents issues regarding the brine and crystallized residuals disposal.
- No Project Alternative, which is not to increase the discharge capacity.

None of the alternatives evaluated would substantially reduce or eliminate significant water quality impacts of the proposed action, because the proposed action would not significantly degrade water quality. Some of the alternatives may result in water quality effects elsewhere, or other environmental impacts, that are worse than those identified for the proposed action

- iv. Socioeconomic Evaluation.** The objective of the socioeconomic analysis was to determine if the lowering of San Joaquin River water quality within the Sacramento-San Joaquin Delta is in the maximum interest of the people of the state. The socioeconomic evaluation within the Antidegradation Analysis provides an in-depth analysis of: 1) cost and benefits and 2) socio-economic impacts of alternatives for maintaining existing water quality, and 3) balance of environmental benefits and socio-economic considerations. The Antidegradation Analysis also provided results from modeling of the economic impacts on the community.

Given the current infrastructure, future development in the cities of Manteca and Lathrop and surrounding communities, would rely on the Discharger and its Facility for wastewater collection, treatment, and recycled water services. The plant expansion of 7.63 mgd and increase surface water discharge would accommodate planned and approved growth in these cities. Should the incremental changes in San Joaquin River water quality characterized herein be disallowed, such action would: (1) force future developments in the Discharger's service area to find alternative methods for disposing of wastewater; (2) require adding a reverse-osmosis treatment processes to a significant portion of flow, and possibly other plant upgrades, to eliminate the small water quality changes; or (3) prohibit planned and approved development within and adjacent to the Discharger's service area. On balance, allowing the minor degradation of water quality is in the best interest of the people of the area and the state, compared to these other options; and is necessary to accommodate important economic or social development in the area.

- v. Justification for Allowing Degradation.** Potential degradation identified in the Antidegradation Analysis and due to this Order is justified by the following considerations:

- The increase in permitted discharge capacity is necessary to accommodate important economic and social development in the City of Manteca and surrounding communities, and is consistent with the Discharger's General Plan. Failure to approve the increase, or alternatively requiring the Discharger to implement control measures that would maintain existing water quality and mass emissions in the San Joaquin River, would have significant adverse economic and social impacts on the City of Manteca and surrounding communities and their citizens and businesses.
- The Facility will discharge Title 22 tertiary treated effluent that will result in minimal water quality degradation, and meet or exceed the highest statutory and regulatory requirements which meets or exceeds best practical treatment or control (BPTC).
- The Order is fully protective of the beneficial uses of the San Joaquin River within the Sacramento-San Joaquin Delta. The anticipated water quality changes in the San Joaquin River will not reduce or impair its

designated beneficial uses and is consistent with State and federal antidegradation policies.

- The increased discharge, while causing slight increases in downstream water quality concentrations for some constituents, will produce slight decreases in downstream concentrations for others,
- The benefits of maintaining existing water quality and mass emissions for the constituents analyzed are not commensurate with the costs of additional treatment. Therefore, no feasible alternatives currently exist to reduce the impacts, and
- The Discharger has fully satisfied the requirements of the intergovernmental coordination and public participation provisions of the State's continuing planning process concurrent with the public participation period of this Order.

**b. Groundwater.** Order No. R5-2004-0028 permitted land application of municipal wastewater and biosolids to approximately 260 acres of agricultural fields that grow primarily corn and alfalfa used for fodder. The DEIR investigated additional reclamation uses of the increased discharge within the vicinity of the Facility, but the Discharger determined that it's impracticable to acquire additional agricultural fields for reclamation use of the increase discharge flow. Following completed construction and implementation of the upgraded Facility, the Department of Public Health approved the Discharger's Title 22 Engineering Report and the use of the tertiary-level treated recycled water for construction purposes (2 September 2008). As a result, the Discharger obtained coverage for use of the recycled wastewater under the Regional Water Board's waiver of WDRs (Resolution No. R5-2008-0182). The Discharger is also seeking additional uses of recycled water (City of Manteca Recycled Water Master Plan, 2007), and therefore, this Order also contains land discharge and reclamation specifications (See following sections IV.F and G of this Fact Sheet).

The Discharger's available groundwater monitoring data indicate that underlying groundwater concentration levels for some constituents (e.g. TDS and nitrate) are elevated in some areas within the Facility. The increase in the concentration of these constituents in groundwater must be consistent with Resolution No. 68-16. Any increase in pollutant concentrations in groundwater must be shown to be necessary to allow wastewater utility service necessary to accommodate housing and economic expansion in the area and must be consistent with maximum benefit to the people of the State of California. Some degradation of groundwater by the Discharger is consistent with Resolution No. 68-16 provided that:

- i. the degradation is limited in extent;
- ii. the degradation after effective source control, treatment, and control is limited to waste constituents typically encountered in municipal wastewater as specified in the groundwater limitations in this Order;

- iii. the Discharger minimizes the degradation by fully implementing, regularly maintaining, and optimally operating best practicable treatment and control (BPTC) measures; and
- iv. the degradation does not result in water quality less than that prescribed in the Basin Plan.

The Discharger ceased applying biosolids to land and instead since June 2003 hauls biosolids to an offsite landfill. The Discharger also supplemented its drinking water supply with surface water in August 2005, and added nitrification-denitrification facilities in July 2006 to its treatment system. These operational changes and Facility upgrades are considered appropriate BPTCs and protective of beneficial uses. Since implementation of these BPTCs, concentration levels in the groundwater have reduced (e.g. TDS and nitrate); however, groundwater monitoring results show concentration levels that still exceed water quality objectives and background groundwater quality.

In 2007, the Facility was also modified to fully separate the food-processing waste received from Eckert Cold Storage to discharge into the Facility's pond, which is terra lined, and then applied to agricultural land as needed. As approved by the Regional Water Board and USEPA, Eckert was removed from the Discharger's Pretreatment Program, and instead, is regulated through a local ordinance wastewater discharge permit. The local ordinance in part requires Eckert to submit reports, sample their discharge, and develop any plans (e.g. pollution prevention) that are deemed necessary. Eckert Cold Storage is a seasonal discharger that processes frozen vegetables, cabbage and a variety of peppers. The food processing wastewater is pretreated by screening, DAF system, and pH neutralization before discharging to the Facility.

The Discharger has not submitted recommended implementation of additional BPTCs to minimize further degradation of the underlying groundwater, or a report demonstrating that the Discharger's land applications are consistent with the requirements in Resolution No. 68-16. Therefore, this Order contains groundwater limitations, land discharge specifications, and reclamation specifications for the protection of the beneficial uses of groundwater. Further, the Monitoring and Reporting Program section of this Order requires the City to implement and submit a Nutrient Management Plan.

## 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>, TSS, and pH. The WQBELs consist of restrictions on pathogens, aluminum, nitrate plus nitrite, methylene blue active substances, ammonia, and electrical conductivity. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements

WQBELs have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives

have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant WQBELs were derived from the CTR, the CTR is the applicable standard pursuant to 40 CFR 131.38. The scientific procedures for calculating the individual WQBELs for priority pollutants are based on the CTR-SIP, which was approved by USEPA on 18 May 2000. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to 30 May 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to 30 May 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to 40 CFR 131.21(c)(1). 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 No. 001**

**Table F-17. Summary of Final Effluent Limitations (9.87 mgd)**

Parameter	Units	Effluent Limitations					Basis <sup>1</sup>
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Biochemical Oxygen Demand 5-day @ 20°C (BOD <sub>5</sub> ) <sup>4</sup>	mg/L	10	15	20			
	lbs/day <sup>1</sup>	820	1235	1647			
Total Suspended Solids <sup>4</sup>	mg/L	10	15	20			
	lbs/day <sup>1</sup>	820	1235	1647			
pH	standard units				6.5	8.0	
Total Coliform Organisms <sup>2</sup>	MPN/100 ml					240	
Aluminum, Total Recoverable	µg/L	407	200 <sup>5</sup>	750			
Copper, Total Recoverable	µg/L	10		13			
Nitrate plus Nitrite (as N)	mg/L	10					
Methylene blue active substances (MBAS)	µg/L	500					
Ammonia, Total (as N)	mg/L	1.4		3.4			
	lbs/day <sup>1</sup>	115		280			
Electrical Conductivity (1 April to 31 August)	µmhos/cm	700					
Electrical Conductivity (1 Sept to 31 March)	µmhos/cm	1000					

Parameter	Units	Effluent Limitations					Basis <sup>1</sup>
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Temperature	°F			<sup>3</sup>			
Flow	mgd			9.87 <sup>6</sup>			
Chronic Toxicity <sup>7</sup>	TU <sub>c</sub>						
Acute Toxicity <sup>8</sup>							

Mass-based effluent limitations are established using the following formula:

$$\text{Mass (lbs/day)} = \text{flow rate (mgd)} \times 8.34 \times \text{effluent limitation (mg/L)}$$

where: Mass = mass limitation for a pollutant (lbs/day)

Effluent limitation = concentration limit for a pollutant (mg/L)

Flow rate = average dry weather flow (9.87 mgd)

<sup>2</sup> Effluent total coliform also shall not exceed i.) 2.2 MPN/100ml, as a 7-day median; and ii). 23 MPN/100ml, more than once in any 30-day period.

<sup>3</sup> The maximum effluent temperature shall not exceed the natural receiving water temperature by more than 20°F.

<sup>4</sup> In addition to concentration-based effluent limitations, the arithmetic mean of TSS or CBOD<sub>5</sub> in effluent samples collected over a monthly period shall not exceed 15 percent of the arithmetic mean of the values for influent samples collected at approximately the same time during the same period (85 percent removal).

<sup>5</sup> Annual Average

<sup>6</sup> Average Dry Weather Flow

<sup>7</sup> There shall be no chronic toxicity in the effluent discharge

<sup>8</sup> 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.

**Table F-18. Summary of Final Effluent Limitations (17.5 mgd)**

Parameter	Units	Effluent Limitations					Basis <sup>1</sup>
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Biochemical Oxygen Demand 5-day @ 20°C (BOD <sub>5</sub> ) <sup>4</sup>	mg/L	10	15	20			
	lbs/day <sup>1</sup>	820	1235	1647			
Total Suspended Solids <sup>4</sup>	mg/L	10	15	20			
	lbs/day <sup>1</sup>	820	1235	1647			
pH	standard units				6.5	8.0	
Total Coliform Organisms <sup>2</sup>	MPN/100 ml					240	
Aluminum, Total Recoverable	µg/L	407	200 <sup>5</sup>	750			
Copper, Total Recoverable	µg/L	10		13			
Nitrate plus Nitrite (as N)	mg/L	10					
Methylene blue active substances (MBAS)	µg/L	500					
Ammonia, Total (as N)	mg/L	1.4		3.4			
	lbs/day <sup>1</sup>	115		280			

Parameter	Units	Effluent Limitations					Basis <sup>1</sup>
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Electrical Conductivity (1 Sept to 31 March)	µmhos/cm	1000					
Electrical Conductivity (1 April to 31 August)	µmhos/cm	700					
Temperature	°F			<sup>3</sup>			
Flow	mgd			17.5 <sup>6</sup>			
Chronic Toxicity <sup>7</sup>	TU <sub>c</sub>						
Acute Toxicity <sup>8</sup>							

<sup>1</sup> Mass-based effluent limitations are established using the following formula:

$$\text{Mass (lbs/day)} = \text{flow rate (mgd)} \times 8.34 \times \text{effluent limitation (mg/L)}$$

where: Mass = mass limitation for a pollutant (lbs/day)

Effluent limitation = concentration limit for a pollutant (mg/L)

Flow rate = average dry weather flow (17.5 mgd)

<sup>2</sup> Effluent total coliform also shall not exceed i.) 2.2 MPN/100ml, as a 7-day median; and ii.) 23 MPN/100ml, more than once in any 30-day period.

<sup>3</sup> The maximum effluent temperature shall not exceed the natural receiving water temperature by more than 20°F.

<sup>4</sup> In addition to concentration-based effluent limitations, the arithmetic mean of TSS or CBOD<sub>5</sub> in effluent samples collected over a monthly period shall not exceed 15 percent of the arithmetic mean of the values for influent samples collected at approximately the same time during the same period (85 percent removal).

<sup>5</sup> Annual Average

<sup>6</sup> Average Dry Weather Flow

<sup>7</sup> There shall be no chronic toxicity in the effluent discharge

<sup>8</sup> 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.

## E. Interim Effluent Limitations

1. **Mercury.** See Section IV.C.3.d.iv. for the rationale for the interim mass-based effluent limitation for mercury.

## F. Land Discharge Specifications

1. **Scope and Authority** Title 27 regulations conditionally exempt certain activities from its provisions. Several exemptions are relevant to the discharge of wastewater to land, and the operation of treatment and/or storage ponds, associated with the Facility only if 1) the discharge is regulated by Waste Discharge Requirements, 2) any groundwater degradation complies with the Basin Plan and Resolution No. 68-16 (Antidegradation Policy) (refer to section V.B of this Fact Sheet for further information), and 3) it does not need to be managed as a hazardous waste. (Title 27, section 20090, et. seq.)

2. **Applicable Technology-based and Receiving Water Limitations.** This Order contains domestic sewage treatment requirements to meet at least the minimum

federal technology-based requirements based on Secondary Treatment Standards at 40 CFR Part 133 (Refer to section IV.B.2. of this Fact Sheet) In addition, this Order contains technology equivalence requirements and receiving water limitations consistent with the Basin Plan to control domestic sewage to a degree that will not result in unreasonable degradation of groundwater. (Refer to section V.B. of this Fact Sheet).

**3. Applicable Waste Discharge Requirements.** This Order contains the following waste discharge requirements:

- a. Hydraulic, BOD<sub>5</sub>, and Nitrogen Loading.** Soils within the land application area provide a matrix for biodegradation of the organic components of wastewater, which is measured as biochemical oxygen demand (BOD). BOD is associated with both suspended solids and dissolved organic material. The BOD associated with suspended solids will remain close to the surface where the soil organisms have access to atmospheric oxygen to break the material down. The BOD in the dissolved organic material will percolate through the unsaturated zone of the soil and, under aerobic conditions, be removed during percolation. If the loading is too great, the soil will become anaerobic, and the crop and treatment process will fail.

The Discharger is required to obtain daily hydraulic and BOD<sub>5</sub> loading data and weekly total Nitrogen loading data per field when irrigation is occurring and to submit monthly reports. The Discharger's data indicates that the total monthly BOD<sub>5</sub> loading rates are low (e.g., <28 lbs/acre/day) and certifies that the loadings are at agronomic rates. However, the reports do not indicate the amount of loadings per field for each irrigation event.

*Small and Decentralized Wastewater Management Systems* by Crites and Tchobanoglous, states that land application is an effective process for BOD and pathogen removal. BOD loadings "on industrial rapid infiltration systems range from 100 to 600 lbs/acre/day." The authors recommend as a guideline for industrial wastewater discharges no more than 300 lbs/acre/day to avoid odor production. The municipal influent consists of residential and industrial users. Industrial users constitute less than one percent of the Facility's influent. Therefore, to ensure compliance with Discharge Prohibition III.E. and Groundwater Limitations V.B this Order contains a maximum BOD loading limit of 300 lbs/acre/day as a daily average based on this recommendation. Furthermore, because waste applications must be balanced to provide adequate plant nutrients and water while minimizing nuisance potential and percolation of waste constituents to the water table, this Order also requires hydraulic and Total Nitrogen loadings at reasonable agronomic rates.

- 4. Prohibition to Discharge Hazardous Waste:** Hazardous compounds are not usually associated with domestic or food processing wastewater and when present are reduced in the discharge to inconsequential concentrations through treatment or dilution. Still it is inappropriate to allow degradation of groundwater with such constituents, and therefore, this Order contains a prohibition to discharge waste

classified as "hazardous" under Title 23 CCR Chapter 15, Section 2521 (Section IV.A.5. of this Fact Sheet).

### G. Reclamation Specifications

Reclaimed water must meet the requirements of CCRs, Title 22, Division 4, Chapter 3. Water Recycling Criteria. To comply with these requirements, this Order retains the reclamation requirements contained in previous Order R5-2004-0028 for the secondary level effluent applied to the agricultural fields. Additionally, the Discharger supplies recycled water for construction purposes and dust control, and therefore, this Order also contains reclamation requirements for the Title 22 tertiary level treated water supplied to the Discharger's clients. These limitations are necessary to reduce public health concerns and comply with the requirements of Title 22. The Discharger submitted a Title 22 Engineering Report, dated March 2006, and Technical Report for use of recycled water, dated June 2008, which were reviewed and approved by DPH.

Treated wastewater discharged for reclamation purposes not specified in this Order must be approved by the Executive Officer, or regulated under separate waste discharge requirements, and must meet the requirements of CCR, Title 22.

### V. RATIONALE FOR RECEIVING WATER LIMITATIONS

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

#### A. Surface Water

1. CWA section 303(a-c), requires states to adopt water quality standards, including criteria where they are necessary to protect beneficial uses. The Regional Water Board adopted water quality criteria as water quality objectives in the Basin Plan. The Basin Plan states that "[t]he numerical and narrative water quality objectives define the least stringent standards that the Regional Water Board will apply to regional waters in order to protect the beneficial uses." The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains receiving surface water limitations based on the Basin Plan numerical and narrative water quality objectives for bacteria, biostimulatory

substances, 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.

## B. Groundwater

1. The beneficial uses of the underlying ground water are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.
2. Basin Plan water quality objectives include narrative objectives for chemical constituents, tastes and odors, and toxicity of groundwater. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective states groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use. The tastes and odors objective prohibits taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan also establishes numerical water quality objectives for chemical constituents, bacteria, and radioactivity in groundwaters designated as municipal supply. These include, at a minimum, compliance with MCLs in Title 22 of the CCR. The bacteria objective prohibits coliform organisms at or above 2.2 MPN/100 mL. The Basin Plan requires the application of the most stringent water quality objective necessary to ensure that the designated beneficial use is not adversely affected; however, as specified in the Basin Plan, the water quality "objectives do not require improvement over naturally occurring background concentrations." Therefore, this Order contains groundwater limitations for both natural background quality and water quality objectives that are necessary to protect the beneficial uses of the underlying groundwater. Thus, the water quality objectives define the least stringent limits that could apply as groundwater limitations except where natural background quality already exceeds the objective.
3. For natural background quality, the level of groundwater quality is dependant upon the background conditions. Historical data is not available to determine natural background conditions before any discharges from the Facility. Therefore, Regional Water Board staff rely on present-day sampling from upgradient monitoring locations to represent the range of water quality that otherwise would have been expected at the site before the Facility was operational. The Discharger conducted a groundwater characterization study of the City of Manteca and surrounding area, and submitted the findings on 26 September 2006, *Background Hydrogeologic Characterization Report*. This report states "One well, BG-1 [MW-AW] has been installed to evaluate background water quality upgradient of the facility. This well is located in the regionally upgradient direction of the Facility (southeast). This well appears to be near the transition area where background groundwater flow from the southeast and ground water flow from the mounded groundwater under the Facility meet, especially during the irrigations season. Water quality at this well is, however, believed to be dominated by recharge from the regionally upgradient groundwater and from seasonal rainfall." Historical regional water quality data obtained by Department of Water Resources, USEPA, and US Geological Survey from 23 monitoring wells located within a 33 square mile area is generally similar to

results obtained at the Discharger's background monitoring well MW-AW. Based on this information and findings contained in The Report, Regional Water Board concurs that MW-AW is appropriate to effectively and fully characterize the background groundwater quality conditions within the vicinity of the Facility and the Agricultural Fields.

**4. Rationale for Groundwater Limitations.** The Discharger's groundwater characterization study (*Background Hydrogeologic Characterization Study, 26 September 2006*, Condor Earth Technologies, Inc.) also summarized all groundwater data collected to date and concluded that "groundwater quality under beneath and down gradient of the facility appear to be of poorer quality than upgradient groundwater for total dissolved solids, nitrate, and several of the trace metals." However, since this report, the Discharger has implemented several management practices (e.g. nitrification-denitrification facilities, biosolids now sent off-site for disposal, etc.). Thus the Discharger cannot fully evaluate actual impacts on groundwater due to current land application practices without completion of additional studies. Nevertheless, this Order contains numeric and narrative land discharge specifications and reclamation specifications (Section IV), narrative and numeric groundwater limitations (Section V), Special Studies (Section VI.C), and monitoring and reporting requirements (Attachment E) to protect the quality of the underlying groundwater and the applicable uses. Additionally, this Order does not allow an increased volume of waste or an increase in wastewater discharge to land compared to the discharges allowed in Order No.R5-2004-0028. The following provides Regional Water Board's rationale for the groundwater limits contained in this Order:

- a. **Salinity.** Total dissolved solids, which were found to be present in the groundwater at an average concentration range from 443 mg/L to 893 mg/L, have the potential to degrade groundwater quality at this site because there is little ability for attenuation in the shallow permeable vadose zone beneath this Facility. According to Ayers and Westcot, dissolved solids can cause yield or vegetative growth reductions of sensitive crops if present in excess of 450 mg/L in irrigation water, thereby impairing agricultural use of the water resource. However, a site-specific study must be performed to determine the appropriate TDS level to protect the agricultural beneficial use in the vicinity of the Facility. The Discharger is required to conduct a site-specific salinity study in Section VI.C.2c. of this Order. Additionally, an updated independent scientific investigation of irrigation salinity needs in the southern Delta was recently completed, and the findings and conclusion are currently under review. If applicable water quality objective to protect the agricultural use from discharges of total dissolved solids and electrical conductivity are adopted, or should the site-specific study conclusively determine an appropriate TDS level to protect the agricultural beneficial use within the vicinity of the Facility, then, this Order will be reopened and a numerical groundwater limitation for TDS and EC will be applied.
- b. **Nitrate,** which was found to be present in the groundwater at an average concentration range from 0.04 mg/L to 24.9 mg/L as nitrogen, has the potential to degrade groundwater quality because there is little ability for attenuation in the shallow permeable vadose zone beneath the Facility. Furthermore, groundwater

monitoring data show nitrate concentrations above the primary MCL of 10 mg/L in monitoring wells MW-3 and MW-5. The Chemical Constituents objective prohibits concentrations of chemical constituents in excess of California MCLs in groundwater that is designated as municipal or domestic supply. The California primary MCL for nitrate is equivalent to 10 mg/L as nitrogen, and groundwater beneath the facility is designated as municipal or domestic supply. It is therefore appropriate to adopt a numerical groundwater limitation of 10 mg/L for nitrate as nitrogen to implement the Chemical Constituents objective to protect the municipal and domestic use of groundwater.

c. pH, which ranged from 6.7 to 7.4 standard units in the domestic wastewater and from 4.45 to 11.53 in the food processing wastewater, has the ability to degrade groundwater quality at this site because there is little potential for buffering in the shallow permeable vadose zone. According to Ayers and Westcot, pH less than 6.5 or greater than 8.4 can cause yield or vegetative growth reductions of sensitive crops if present in irrigation water, thereby impairing agricultural use of the water resource. The applicable water quality objective to protect the agricultural use from discharges of substances that affect pH is the narrative Chemical Constituents objective, which is applied following the "Policy of Application of Water Quality Objectives" in the Basin Plan. A numerical groundwater limitation range of 6.5 to 8.4 for pH, based on Ayers and Westcot, is relevant and appropriate to apply the narrative Chemical Constituents objective to protect unrestricted agricultural use of groundwater in the absence of information to support a less protective limit.

d. Ammonia has the potential to degrade groundwater quality because there is little ability for ammonia attenuation in the shallow permeable vadose zone at this site. According to Amooore and Hautala<sup>1</sup>, who evaluated odor of ammonia in water, the odor threshold for ammonia in water is 1.5 mg/L (as NH<sub>4</sub>). These authors studied the concentration of chemicals in air that caused adverse odors and then calculated the concentration in water that would be equivalent to that amount in air. Therefore, it is appropriate to use the data contained therein to apply the narrative Tastes and Odors water quality objective. Concentrations that exceed this value can impair the municipal or domestic use of the resource by causing adverse odors. The applicable water quality objective to protect the municipal and domestic use from discharges of odor producing substances is the narrative Tastes and Odors objective, which is applied following the "Policy of Application of Water Quality Objectives" in the Basin Plan. A numerical groundwater limitation of 1.5 mg/L for ammonia (as NH<sub>4</sub>), based on Amooore and Hautala, is relevant and appropriate to apply the narrative Tastes and Odors objective to protect the municipal and domestic use of groundwater.

5. Groundwater limitations are required to protect the beneficial uses of the underlying groundwater. Based on groundwater quality data provided by the Discharger, it appears that the Discharger cannot immediately comply with the groundwater

<sup>1</sup> Amooore, J.E. and E. Hautala, *Odor as an Aid to Chemical Safety: Odor Thresholds Compared with Threshold Limit Values and Volatilities for 214 Industrial Chemicals in Air and Water Dilution*, Journal of Applied Toxicology, Vol. 3, No. 6, (1983).

limitations. This Order allows a time schedule for the discharge to come into compliance with the groundwater limitations. In the interim, this Order requires the Discharger to conduct a BPTC Evaluation, which is a systematic and comprehensive technical evaluation of each component of the facilities' waste management system to determine best practicable treatment or control for each the waste constituents of concern. In addition, this Order requires interim reclamation specifications that limit the seasonal average concentrations of EC, TDS, and nitrate, discharged to the agricultural fields be maintained at current facility performance.

## VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

40 CFR 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorizes the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (Attachment E) of this Order, establishes monitoring and reporting requirements to implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the Monitoring and Reporting Program for the Facility.

### A. Influent Monitoring

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). The monitoring frequencies for BOD<sub>5</sub>, TSS, and flow (daily) have been retained from Order No. R5-2004-0028. Influent monitoring requirements for Electrical Conductivity and Total Dissolved Solids (monthly monitoring) have been included in this Order.

### B. Effluent Monitoring

1. Pursuant to the requirements of 40 CFR 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream and groundwater.
2. Effluent monitoring frequencies and sample types for temperature, pH, total Coliform Organisms, BOD<sub>5</sub>, total Suspended Solids, total Settleable Solids, total Dissolved Solids, total Chlorine Residual, Electrical Conductivity, total Aluminum, total Copper, Ammonia Nitrogen (as N), Nitrate (as N), Nitrite (as N), Bis(2-ethylhexyl)phthalate, Carbofuran, MBAS, and total mercury have been retained from Order No. R4-2004-0028 to determine compliance with effluent limitations, or reasonable potential for these parameters.
3. Monitoring data collected over the existing permit term for chlorine, total Arsenic, total Cyanide, total Iron, total Manganese, molybdenum, Trihalomethanes, and 2,4,6-Trichlorophenol did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, specific monitoring requirements for these parameters have not been retained from Order No. R4-2004-0028.

4. The SIP states that "... all reported detection limits of the pollutant in the effluent are greater than or equal to the C [water quality criterion or objective] value, the RWQCB [Regional Water Board] shall establish interim requirements... that require additional monitoring for the pollutant..." All reported detection limits are greater than or equal to corresponding applicable water quality criteria or objectives, or at the lowest minimum level published in Appendix 4 of the SIP. Monitoring for these constituents has been included in this Order in accordance with the SIP.
5. While no effluent limitations for hardness, methylmercury, or Persistent Chlorinated Hydrocarbon Pesticides are necessary at this time in this Order, these constituents are critical in the assessment of the need for, and the development of, effluent limitations. Therefore, this Order requires monitoring of the hardness value twice per month, and monthly monitoring of Persistent Chlorinated Hydrocarbon Pesticides and methylmercury concentrations in the effluent discharge.
6. Effluent monitoring frequencies and sample types for turbidity have been increased from once per day in Order No. R5-2004-0028 to continuous monitoring in this Order since the Facility was upgraded to meter turbidity continuously.

### C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Weekly 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 limitations for Bacteria and Pesticides are included in this Order to comply with Basin Plan objectives, and therefore, this Order requires monitoring of the number of Fecal Coliform Organisms and concentrations of Persistent Chlorinated Hydrocarbon Pesticides (biweekly and monthly monitoring, respectively) in the receiving water.

#### 2. Groundwater

- a. CWC section 13267 states, in part, "(a) A Regional Water Board, in establishing... waste discharge requirements... may investigate the quality of any waters of the state within its region" and "(b) (1) In conducting an investigation..., the Regional Water Board may require that any person who... discharges... waste... that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Regional Water 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." 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 Water Board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports. The Monitoring and Reporting Program is issued pursuant to CWC section 13267. The groundwater monitoring and reporting program required by this Order and the Monitoring and Reporting Program are necessary to assure compliance with these waste discharge requirements. The Discharger is responsible for the discharges of waste at the facility subject to this Order.

- b. Monitoring of the groundwater must be conducted to determine if the discharge has caused an increase in constituent concentrations, when compared to background. The monitoring must, at a minimum, require a complete assessment of groundwater impacts including the vertical and lateral extent of degradation, an assessment of all wastewater-related constituents which may have migrated to groundwater, an analysis of whether additional or different methods of treatment or control of the discharge are necessary to provide best practicable treatment or control to comply with Resolution No. 68-16. Economic analysis is only one of many factors considered in determining best practicable treatment or control. If monitoring indicates that the discharge has incrementally increased constituent concentrations in groundwater above background, this permit may be reopened and modified. Until groundwater monitoring is sufficient, this Order contains Groundwater Limitations that allow groundwater quality to be degraded for certain constituents when compared to background groundwater quality, but not to exceed water quality objectives. If groundwater quality has been degraded by the discharge, the incremental change in pollutant concentration (when compared with background) may not be increased. If groundwater quality has been or may be degraded by the discharge, this Order may be reopened and specific numeric limitations established consistent with Resolution No. 68-16 and the Basin Plan.
- c. This Order requires the Discharger to continue groundwater monitoring and includes a regular schedule of groundwater monitoring in the attached Monitoring and Reporting Program. The groundwater monitoring reports are necessary to evaluate impacts to waters of the State to assure protection of beneficial uses and compliance with Regional Water Board plans and policies, including Resolution No. 68-16. Evidence in the record includes effluent monitoring data that indicates the presence of constituents that may degrade groundwater and surface water.

## **E. Other Monitoring Requirements**

### **1. Biosolids Monitoring**

Biosolids monitoring is required to ensure compliance with the biosolids disposal requirements contained in the Special Provision contained in section VI.C.6.b-d. of

this Order. Biosolid disposal requirements are imposed pursuant to 40 CFR Part 503 to protect public health and prevent groundwater degradation.

## 2. Storage Pond Monitoring

Pond monitoring is required to ensure compliance with the pond operating requirements contained in the Special Provision, section VI.C.4.a, of this Order.

## 3. Ultraviolet (UV) Disinfection System Monitoring

UV System monitoring and reporting are required to ensure that adequate UV dosage is applied to wastewater to inactivate pathogens (e.g. viruses in the wastewater). UV Disinfection system monitoring is imposed pursuant to requirements established by the California Department of Public Health (DPH), and the National Water Research Institute (NWRI) and American Water Works Association Research Foundation's (AWWRF) guidelines (NWRI/AWWRF's *Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse*).

## 4. Water Supply Monitoring

Water supply monitoring is required to evaluate the source of constituents in the wastewater.

## 5. Effluent and Receiving Water Characterization Study.

An effluent and receiving water monitoring study is required to ensure adequate information is available for the next permit renewal. During the third year of this permit term, the Discharger is required to conduct monthly monitoring of the effluent at EFF-001 and of the receiving water at RSW-001 for all priority pollutants and other constituents of concern as described in Attachment H. Dioxin and furan sampling shall be performed once during the wet weather and once during the dry weather, as described in Attachment I.

# VII. RATIONALE FOR PROVISIONS

## A. Standard Provisions

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

40 CFR 122.41(a)(1) and (b) through (n) establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. 40 CFR 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 CFR 123.25, this Order omits federal conditions that address enforcement authority

specified in 40 CFR 122.41(j)(5) and (k)(2) because the enforcement authority under the CWC is more stringent. In lieu of these conditions, this Order incorporates by reference CWC section 13387(e).

## B. Special Provisions

### 1. Reopener Provisions

- a. **Mercury.** This provision allows the Regional Water Board to reopen this Order in the event mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted. In addition, this Order may be reopened if the Regional Water Board determines that a mercury offset program is feasible for dischargers subject to NPDES permits.
- b. **Pollution Prevention.** This Order requires the Discharger to update its pollution prevention plan for mercury in accordance with CWC section 13263.3(d)(3). This reopener provision allows the Regional Water Board to reopen this Order for addition and/or modification of effluent limitations and requirements for these constituents based on a review of the pollution prevention plan.
- 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 Toxicity Reduction Evaluation (TRE). This Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if a numeric chronic toxicity water quality objective is adopted by the State Water Board, this Order may be reopened to include a numeric chronic toxicity limitation based on that objective.
- d. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant inorganic constituents. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.
- e. **Thermal Plan Exception.** If the National Marine Fisheries Service determined that an exception to the Thermal Plan does not negatively impact aquatic life, then this Order may be reopened to modify the effluent and receiving water limitations for temperature.

### 2. Special Studies and Additional Monitoring Requirements

- a. **Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at page III-8.00) Based on whole effluent chronic toxicity testing performed by the Discharger from 1 October 2007 through 2 March 2009, the discharge has reasonable potential to

cause or contribute to an in-stream excursion above Basin Plan's narrative toxicity objective.

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

**Monitoring Trigger.** A numeric toxicity monitoring trigger of  $> 1$  TUc (where TUc =  $100/\text{NOEC}$ ) is applied in the provision, because this Order does not allow any dilution for the chronic condition. Therefore, a TRE is triggered when the effluent exhibits a pattern of toxicity at 100% effluent.

**Accelerated Monitoring.** The provision requires accelerated WET testing when a regular WET test result exceeds the monitoring trigger. The purpose of accelerated monitoring is to determine, in an expedient manner, whether there is a pattern of toxicity before requiring the implementation of a TRE. Due to possible seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete.

The provision requires accelerated monitoring consisting of four chronic toxicity tests in a six-week period (i.e., one test every two weeks) using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water Quality-based Toxics Control*, EPA/505/2-90-001, March 1991 (TSD). The TSD at page 118 states, "EPA recommends if toxicity is repeatedly or periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required." Therefore, four accelerated monitoring tests are required in this provision. If no toxicity is demonstrated in the four accelerated tests, then it demonstrates that toxicity is not present at levels above the monitoring trigger more than 20 percent of the time (only 1 of 5 tests are toxic, including the initial test). However, notwithstanding the accelerated monitoring results, if there is adequate evidence of a pattern of effluent toxicity (i.e. toxicity present exceeding the monitoring trigger more than 20 percent of the time), the Executive Officer may require that the Discharger initiate a TRE.

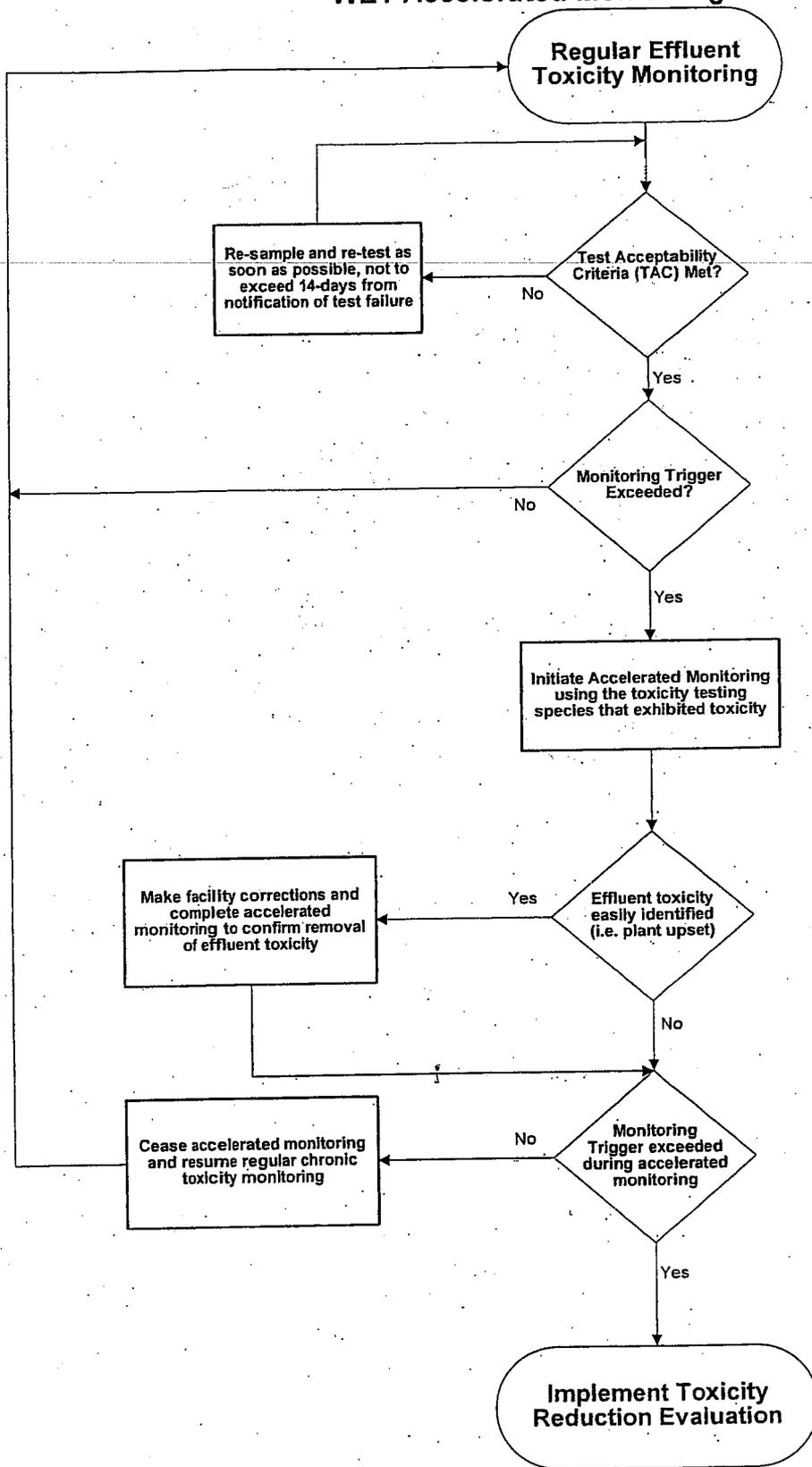
See the WET Accelerated Monitoring Flow Chart (Figure F-1), below, for further clarification of the accelerated monitoring requirements and for the decision points for determining the need for TRE initiation.

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

- Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants, EPA/833-B-99/002, August 1999.
- Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs), EPA/600/2-88/070, April 1989.

- **Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures, Second Edition, EPA 600/6-91/003, February 1991.**
- **Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I, EPA/600/6-91/005F, May 1992.**
- **Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA/600/R-92/080, September 1993.**
- **Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA 600/R-92/081, September 1993.**
- **Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, EPA-821-R-02-012, October 2002.**
- **Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA-821-R-02-013, October 2002.**
- **Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991.**

**Figure F-1  
WET Accelerated Monitoring Flow Chart**



- b. **Best Practical Treatment or Control (BPTC).** If the groundwater monitoring results show that the discharge of waste is threatening to cause or has caused groundwater to contain waste constituents in concentrations statistically greater than background water quality, the Discharger shall submit, within 48 months following the first year of monitoring that documents constituent concentrations increased beyond background water quality, a BPTC Evaluation Work Plan. This work plan shall set forth a scope and schedule for a systematic and comprehensive technical evaluation of each component of the Facility's waste management system to determine best practicable treatment or control for each of the waste constituents of concern. The work plan shall include a preliminary evaluation of each component of the waste management system and propose a time schedule for completing the comprehensive technical evaluation. The schedule to complete the evaluation shall be as short as practicable, and shall not exceed one year.

### 3. Best Management Practices and Pollution Prevention

- a. **CWC section 13263.3(d)(3) Pollution Prevention Plans.** An updated pollution prevention plan for mercury is required in this Order per CWC section 13263.3(d)(1)(C). The pollution prevention plan required in section VI.C.3.a. of this Order, shall, at a minimum, meet the requirements outlined in CWC section 13263.3(d)(3). The minimum requirements for the pollution prevention plans include the following:
- i. An estimate of all of the sources of a pollutant contributing, or potentially contributing, to the loadings of a pollutant in the treatment plant influent.
  - ii. An analysis of the methods that could be used to prevent the discharge of the pollutants into the Facility, including application of local limits to industrial or commercial dischargers regarding pollution prevention techniques; public education and outreach, or other innovative and alternative approaches to reduce discharges of the pollutant to the Facility. The analysis also shall identify sources, or potential sources, not within the ability or authority of the Discharger to control, such as pollutants in the potable water supply, airborne pollutants, pharmaceuticals, or pesticides, and estimate the magnitude of those sources, to the extent feasible.
  - iii. An estimate of load reductions that may be attained through the methods identified in subparagraph ii.
  - iv. A plan for monitoring the results of the pollution prevention program.
  - v. A description of the tasks, cost, and time required to investigate and implement various elements in the pollution prevention plan.
  - vi. A statement of the Discharger's pollution prevention goals and strategies, including priorities for short-term and long-term action, and a description of the Discharger's intended pollution prevention activities for the immediate future.

- vii. A description of the Discharger's existing pollution prevention programs.
- viii. An analysis, to the extent feasible, of any adverse environmental impacts, including cross-media impacts or substitute chemicals that may result from the implementation of the pollution prevention program.
- ix. An analysis, to the extent feasible, of the costs and benefits that may be incurred to implement the pollution prevention program.

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

- a. **Treatment Pond Operating Specifications.** Three treatment or storage ponds are utilized within the Facility: 1) the food processing wastewater storage and treatment pond, 2) the secondary-effluent equalization pond, and 3) the secondary-effluent storage pond. The food processing wastewater storage/treatment pond and the secondary-effluent equalization pond are lined, but the secondary-effluent storage pond is not lined and instead has rip/rap sidings and soil bottom. The operation and maintenance specifications for these ponds in this Order are necessary to protect the public and the beneficial uses of the groundwater, and to prevent nuisance conditions.
- b. **Ultraviolet (UV) Disinfection System Operating Specifications.** UV System specifications 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 system. Monitoring and reporting of these parameters is necessary to determine compliance with minimum dosage requirements established by the California Department of Public Health (DPH) and the National Water Research Institute (NWRI) and American Water Works Association Research Foundation NWRI/AWWRF's "*Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse*" first published in December 2000 and revised as a Second Edition dated May 2003. In addition, a Memorandum dated 1 November 2004 issued by DPH to Regional Board executive offices recommended that provisions be included in permits to water recycling treatment plants employing UV disinfection requiring Dischargers to establish fixed cleaning frequency of quartz sleeves as well as include provisions that specify minimum delivered UV dose that must be maintained (as recommended by the NWRI/AWWRF UV Disinfection Guidelines). Minimum UV dosage and operating criteria are necessary to ensure that adequate disinfection of wastewater is achieved to protect beneficial uses.

#### 5. Special Provisions for Municipal Facilities (POTWs Only)

- a. Pretreatment Requirements.
  - i. The federal CWA section 307(b), and federal regulations, 40 CFR Part 403, require publicly owned treatment works to develop an acceptable industrial pretreatment program. A pretreatment program is required to prevent the introduction of pollutants, which will interfere with treatment plant operations or sludge disposal, and prevent pass through of pollutants that exceed water

quality objectives, standards or permit limitations. Pretreatment requirements are imposed pursuant to 40 CFR Part 403.

- ii. The Discharger shall implement and enforce its approved pretreatment program and is an enforceable condition of this Order. If the Discharger fails to perform the pretreatment functions, the Regional Water Board, the State Water Board or USEPA may take enforcement actions against the Discharger as authorized by the CWA.

- b. **Biosolids (Special Provisions VI.C.5.b-d).** The use, disposal, or storage of biosolids is regulated under federal and state laws and regulations, including permitting requirements and technical standards included in 40 CFR Part 503. The Discharger is required to comply with the standards and time schedules contained in 40 CFR Part 503.

Title 27, CCR, Division 2, Subdivision 1, section 20005 establishes approved methods for the disposal of collected screenings, residual sludge, biosolids, and other solids removed from liquid wastes. This Order includes requirements to ensure the Discharger disposes of solids in compliance with State and federal regulations

- b. **Turbidity Operational Requirements.** Turbidity specifications have been included in this Order as a second indicator of the effectiveness of the treatment process and to assure compliance with the required level of treatment. 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, allowing immediate detection of filter failure and rapid corrective action. These operational turbidity specifications are necessary to assess compliance with the DPH recommended Title 22 disinfection criteria. For further information see previous section IV.C.3.d.vii of this Fact Sheet.

- c. **Collection System.** The State Water Board issued General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order No. 2006-0003-DWQ (General Order) on 2 May 2006. The General Order requires public agencies that own or operate sanitary sewer systems with greater than one 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 (SSMPs) and report all sanitary sewer overflows (SSOs), among other requirements and prohibitions.

Furthermore, the General Order contains requirements for operation and maintenance of collection systems and for reporting and mitigating sanitary sewer overflows. Inasmuch that the Discharger's collection system is part of the system that is subject to this Order, certain standard provisions are applicable as specified in Provisions, section VI.C.5. For instance, the 24-hour reporting requirements in this Order are not included in the General Order. The Discharger must comply with both the General Order and this Order. The Discharger and the City of Lathrop that are discharging wastewater into the