

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2016-0028-01

WASTE DISCHARGE REQUIREMENTS
AND
MASTER RECYCLING PERMIT

FOR

CITY OF LATHROP
LATHROP CONSOLIDATED TREATMENT FACILITY
SAN JOAQUIN COUNTY

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

1. On 12 June 2015, the City of Lathrop (City) submitted a Report of Waste Discharge (RWD) for its Consolidated Treatment Facility. The City currently operates two adjacent wastewater treatment facilities under separate WDRs: Consolidated Treatment Facility (CTF) and Crossroads Wastewater Treatment Facility (WWTF). The CTF receives primarily domestic wastewater from a large portion of the City. The Crossroads WWTF receives high strength process wastewater from the Crossroads Industrial Park. The City currently diverts all wastewater from the Crossroads Industrial Park to the CTF and is in the process of decommissioning the Crossroads WWTF. An addendum to the RWD was submitted on 17 December 2015. Additional information was submitted on 22 and 25 January 2016.
2. The City of Lathrop (hereafter "Discharger") owns and operates the CTF and is responsible for compliance with these Waste Discharge Requirements (WDRs). These WDRs include a Master Recycling Permit pursuant to Water Code section 13523.1(b)(1).
3. The CTF is located at 18800 Christopher Way in Lathrop in Section 35, TS1S, R6E, and Section 2, TS2S, R6E, MDB&M, as shown on Attachment A, which is attached hereto and made part of this Order by reference. The San Joaquin County Assessor's Parcel Numbers for the CTF and the Crossroad WWTF including associated effluent and emergency storage ponds are summarized below.

Description	Assessor's Parcel Number
Consolidated Treatment Facility (including Ponds S4 and S5)	198-130-35, 198-130-36, 198-130-45, 198-130-46, 198-130-47, 198-130-48
Pond S1	191-190-32
Pond S2	191-190-33
Pond S3	198-130-035
Pond S6	198-060-16, 198-060-17
Pond S16 (under construction)	213-290-02

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Description	Assessor's Parcel Number
Crossroads WWTF	198-130-21, 198-130-22
Ponds A, B, and C	198-130-19, 198-130-20
LAS-3 (percolation ponds, under construction)	198-130-32

4. Order R5-2015-0006 which includes a Master Recycling Permit was adopted by the Central Valley Water Board on 5 February 2015 and prescribes requirements for the CTF. Order R5-2015-0006 allows an average dry weather flow of up to 0.75 million gallons per day (mgd) and an increase in increments of no less than 0.25 mgd up to a maximum allowable flow rate of 6.0 mgd upon approval by the Executive Officer. Due to the Crossroads WWTF closure and the diversion of its wastewater to the CTF, Order R5-2015-0006 will be rescinded and replaced with this Order.

Existing Facility and Discharge

5. The CTF was built in early 2004. The CTF treats primarily domestic wastewater from three existing and planned development areas within the City of Lathrop: Central Lathrop Specific Plan (CLSP), Mossdale, and River Islands. The development areas comprise approximately 8,400 acres of residential and commercial development, with a small number of commercial facilities discharging to the CTF.
6. The Crossroads WWTF, built in 1994, treats and disposes of commercial/industrial and domestic wastewater from the Crossroads Industrial Park. Tenants at the industrial park include manufacturing, food processing, distribution facilities, restaurants, and trucking companies. The wastewater is relatively high strength commercial/industrial wastewater with less than 10 percent of domestic wastewater. The average daily flow rate from the industrial park is approximately 0.15 mgd.
7. The City adopted an Industrial Sewer Use Ordinance (Ordinance) in December 2005. The Ordinance establishes pretreatment standards prior to discharging wastewater to the City's treatment facility. The Ordinance includes numerical limits for TDS as 700 mg/L, BOD as 400 mg/L, and nitrate as nitrogen as 250 mg/L (without mass limits).
8. The City established an Industrial Pretreatment Program that includes:
 - a. Identifying commercial users;
 - b. Routine and non-routine monitoring of commercial users, including sampling of their wastewater and identifying pollutants in their waste stream;
 - c. Issuing industrial wastewater discharge permits if required by the Ordinance;
 - d. Identifying non-compliant commercial users and issuing Notice of Violations as necessary; and
 - e. Advising commercial users on better business practice to comply with the Ordinance.

9. Three out of 27 Crossroads Industrial Park tenants have been issued an Industrial Wastewater Discharge Permit (permit) by the City. A permit was issued to a food processor that manufactures sausage, whose saline wastewater represented about 10 to 20 percent of the total influent flow to the Crossroad WWTF and approximately 25 to 35 percent of the overall WWTF's TDS load. The manufacturer's wastewater has an average TDS concentration approximately 3,600 mg/L. The permit sets TDS best management practice goals that the tenant can reasonably comply with: a maximum daily concentration of 4,700 mg/L and a monthly average concentration of 4,000 mg/L for TDS.
10. From 2007 to 2015, the sausage manufacturer has implemented the following salinity control measures and reduction efforts:
 - a. Elimination of the plant's meatball specialty line (2007 – 2008), a high salinity stream source;
 - b. Modification of operations to capture and separately dispose of the discharge from its water softener and broth from its crumbles production line (2007 – 2008);
 - c. Reduction in the use of caustic chemicals for cleaning (2007 – 2008);
 - d. Extension of the production shift on the crumbles specialty line to reduce the number of cleaning cycles by 40 percent (2007 – 2008);
 - e. Installation of various clean-in-place systems and chemical metering systems to ensure efficient use of cleaning chemicals (2008 - 2010);
 - f. Modifications to the crumbles production line to improve sanitation efforts (2009);
 - g. Modifications to the plant's pH monitoring system to allow for more efficient use of acid and caustic in the wastewater pre-treatment system (2009);
 - h. Installation of additional TDS meters to more closely monitor TDS concentrations in the plant's discharge (2011);
 - i. Increased vigilance on housekeeping measures including dry sweeping of materials in lieu of wet cleaning (2012);
 - j. Elimination of the plant's crumbles production line (2014 – 2015), a high TDS mass source; and
 - k. Implementation of various water conservation measures (2014 – 2015).
11. On 25 August 2015, the City began diverting wastewater from the Crossroads Industrial Park to the CTF based on the acknowledgment in the Central Valley Water Board letter entitled *Meeting Summary and Water Code 13267 Order for Technical Report, City of Lathrop Consolidated Wastewater Treatment Facility*, dated 6 August 2015. Components of the existing Crossroads WWTF planned for demolition are anticipated to occur between Spring of 2016 and Fall of 2017, with the exception of the solids handling facilities and effluent storage ponds that will be retained and incorporated into the CTF.

12. Wastewater treatment processes at the CTF include secondary treatment, tertiary filtration, and disinfection prior to storage and reuse for irrigation of agricultural and landscape Use Areas.
 - a. Raw wastewater undergoes screening and grit removal prior to entering the influent pump station.
 - b. A 950,000 gallon steel tank provides diurnal flow equalization and short-term emergency storage. Wastewater in the tank is automatically returned to the influent pump station as treatment capacity becomes available.
 - c. Additional short-term emergency storage of influent is available in Pond S4 which is lined and has a storage capacity of approximately 11 million gallons (mgal). Wastewater in Pond S4 is returned to the headworks (rotary drum screens) when treatment capacity is available.
 - d. From the influent pump station, wastewater is distributed evenly to two Membrane Bioreactor (MBR) treatment trains for a combined treatment capacity of 1.0 mgd as an average dry weather flow (ADWF). Each MBR train includes an anoxic basin, recirculation mixers, an aeration basin, anoxic pumps, aeration and membrane blowers and diffusers, membrane modules, a membrane tank, mixed liquor recycle pumps (RAS pumps), and filtrate pumps.
 - e. Tertiary treated effluent is then conveyed to the disinfection system. Previously, Disinfection is disinfection was accomplished using sodium hypochlorite solution in a chlorine contact tank that provides more than 90 minutes of modal contact time. To meet the requirements of Title 22, section 60301.230(a), the disinfection process provides a minimum free chlorine residual contact time (FCRCT) of 60 mg-min/L at all times with a minimum free chlorine modal contact time of 32 minutes. If disinfection fails, the effluent is rerouted back to the emergency storage basin and retreated. ~~The City is in the process of seeking approval from the State Water Resources Control Board Division of Drinking Water (DDW) regarding the alternative criteria for disinfected tertiary recycled water as defined by California Code of Regulations, title 22 (Title 22) section 60301.230(a)(2).~~
13. Disinfected tertiary treated effluent is discharged into Pond S5 for immediate storage, and is then transferred to off-site storage ponds, Ponds S1, S2, S3, and S6. Off-site storage pond S16 is under construction to accommodate the plant expansion to 1.0 mgd. The Crossroads WWTF Effluent Storage Ponds A, B, and C will be available for off-site storage of CTF disinfected tertiary treated effluent once the initial pond sludge has been removed. The ponds are lined with at least 40-mil high-density polyethylene liner or concrete lined. A summary of the currently available storage ponds is provided below and their locations are shown on Attachments B and C, which are attached hereto and made part of this Order by reference.

Pond Number	Storage Capacity ¹ (mgal)	Pond Location
S1	41	Mosssdale
S2	15	Mosssdale
S3	21	Mosssdale
S5	28	CTF
S6	34	McKinley Avenue
S16 (under construction)	55 <u>101</u> ²	River Islands
A (former Crossroads WWTF effluent pond)	13.7	West of CTF
B (former Crossroads WWTF effluent pond)	10.8	West of CTF
C (former Crossroads WWTF effluent pond)	7.4	West of CTF
Total Storage Capacity:	226 <u>272</u>	

¹ Capacity at 2-feet of freeboard.

² ~~Pond S16 will be constructed in two phases. The initial phase will provide approximately 55 mgal of storage capacity. The second phase will expand the pond an additional 23 mgal for a total volume of 78 mgal.~~

14. Additional information on existing and planned recycled water storage ponds is presented in the Information Sheet, which is attached hereto and made part of this Order by reference. An overview of the existing and planned storage ponds is shown on Attachment C.
15. Recycled water is pumped from the storage ponds as needed and conveyed to Use Areas for agricultural irrigation. For the purpose of this Order, 'Use Area(s)' as used herein means an area with defined boundaries where recycled water is used or discharged, as defined by California Code of Regulations, title 22 (Title 22) section 60301.920. Agricultural Use Areas are agricultural fields and are designated with an "A" followed by an identification number. Alfalfa and rye grass will be the primary crops grown. Use Areas A35, A35a, ~~and A35b~~, and A35c will be made available to accommodate the plant expansion to 1.0 mgd. A summary of the current agricultural Use Areas is identified in the table below.

Development Area	Agricultural Irrigation	
	Designation	Area (acres)
Mosssdale	A23	12
River Islands	A28	31
	A30	35
	A31	95
	A35	<u>2221</u>
	A35a	<u>2524</u>
	A35b	<u>2215</u>
	<u>A35c</u>	<u>15</u>
Total Acres:		<u>242248</u>

16. There are approximately 200 acres of Use Areas available for public area landscape irrigation and over 2,100 acres of Use Areas available for agricultural irrigation located within the four development areas of Northern Lathrop, CLSP, Mosssdale, and River Islands. Public area landscape consists of roadway medians, parks, pond berms, and open spaces. Landscape Use Areas are designated with an "L" followed by an identification number. Landscape Use Areas will consist of trees, shrubs, and grass. Additional information on existing and planned Use Areas is presented in the Information Sheet. An overview of the existing and planned Use Areas is shown on Attachment D, which is attached hereto and made part of this Order by reference.
17. Waste activated sludge (WAS) generated from the CTF is pumped to the solids handling facility located at the adjacent Crossroads WWTF. The solids handling facility includes a 190,000 gallon aerobic sludge storage tank, two belt filter presses, and a concrete drying bed used for supplemental air drying of dewatered sludge when conditions permit. Only sludge from the CTF is sent to the solids storage tank. Dewatered cake from the filter press is then transferred either to a sludge haul truck or to the drying bed for supplemental drying when conditions permit. Air-dried sludge is temporarily stored on the drying bed until a sufficient volume has accumulated to warrant transporting the material to the City of Merced for land application.
18. The CTF is equipped with an electronic management and control system that provides remote monitoring, alarms, and notifications to prevent bypass or failure of the treatment processes. The alarms have backup power provided by a standby generator and an uninterruptable power supply.
19. A summary of the CTF influent flows from 2011 through 2015 is provided below.

Month	Average CTF Influent Flow (mgd)				
	2011	2012	2013	2014	2015 ¹
October	0.26	0.27	0.28	0.30	0.37
November	0.27	0.28	0.29	0.32	0.38

Month	Average CTF Influent Flow (mgd)				
	2011	2012	2013	2014	2015 ¹
December	0.27	0.28	0.30	0.35	0.41
January	0.28	0.28	0.31	0.31	0.32
February	0.27	0.27	0.30	0.30	0.32
March	0.29	0.27	0.29	0.31	0.33
April	0.30	0.29	0.30	0.31	0.33
May	0.29	0.23	0.28	0.30	0.33
June	0.27	0.27	0.29	0.30	0.33
July	0.28	0.28	0.30	0.31	0.33
August	0.28	0.28	0.32	0.30	0.35
September	0.28	0.28	0.32	0.32	0.34
Annual Total (mgal)	102	100	109	113	126

NA denotes not available or not provided.

¹ Since 25 August 2015, all wastewater from the Crossroads Industrial Park is diverted to the CTF.

20. The average tertiary effluent quality from January 2011 through September 2013 is presented below for select constituents. Wastewater quality since diversion of all Crossroads' wastewater to the CTF is shown below.

Constituent	Average Effluent Quality, mg/L unless specified	
	Jan 2011 – Sep 2013	Aug 2015 – Nov 2015
BOD	< 2.3	< 2.0
TDS	688	720 ¹
Nitrate	7.0	NA
TKN	1.0	NA
Total Nitrogen	8.0	6.3
Chloride	194	NA
Sodium	181	NA
Sulfate	49.5	NA
Boron	0.4	NA
Iron	< 0.06	NA
Total Coliform Organisms, MPN/100 mL	< 2.0	< 1.8

NA denotes data not available or provided. RL denotes laboratory reporting limit and can vary between testing events.

¹ Flow-weighted average based on data from August 2015 through November 2015.

Planned Facility and Discharge

21. The City proposes the following Crossroads WWTF components to be retained and incorporated in the CTF.
 - a. Influent pump station, piping, and associated Motor Control Centers.
 - b. Former chlorine contact basin.
 - c. Recycled water pump station.
 - d. Effluent Storage Ponds A, B, and C: Each pond is lined with high-density polyethylene and is approximately 12 feet deep. The total combined capacity of the storage ponds is approximately 97.7 acre-feet with two feet of freeboard. It is anticipated that the storage ponds will be pumped of all effluent, removed of all solids, and ready to accept CTF effluent for storage by September 2016.
 - e. Land application site LAS-3: LAS-3 is approximately 19.5 acres and will be converted into a future percolation pond(s) with an expected completion date by August 2016.
 - f. Sludge handling facility consisting of a sludge storage tank, two belt filter presses, and a 75-foot by 175-foot concrete drying bed.
 - g. Generator building.
 - h. Maintenance garage.

The wastewater treatment and disposal process is shown schematically on Attachment E, which is attached hereto and made part of this Order by reference.

22. Land application sites LAS-1 and LAS-2 at the Crossroads WWTF has been sold and plans are in place to develop the sites for industrial use. Wells KMW-1 and KMW-3 that once monitored groundwater quality near the two land application sites have been abandoned to accommodate future land development. Based on elevated salinity concentrations in the groundwater near LAS-2, the City was required to investigate and mitigate any impacts from its wastewater disposal operations. Two replacement wells (KMW-10 and KMW-11) were installed along the western edge of LAS-2. KMW-11 and KMW-10, installed on 9 and 10 December 2015, respectively, will monitor the effectiveness of the City's corrective action plan regarding the salinity impacts from past application of Crossroads WWTF effluent.
23. As needed to reduce impacts on the CTF's capacity, a portion of the CTF influent flow may be rerouted to the City of Manteca's wastewater collection system using the existing Mossdale interties. This rerouting is not strictly needed, but may be performed as needed to improve system efficiency and cost effectiveness.
24. The City has submitted the *Expansion Completion Report* dated 25 August 2015 confirming the completion of the 1.0 mgd facility expansion project. However, the City has not submitted the *Recycled Water Storage and Conveyance System Improvements Completion Report* and the *Recycled Water User Report* as required

by Provisions H.1.e and H.1.f. of Order R5-2015-0006 to confirm the available storage and disposal capacity needed for a flow increase of 1.0 mgd.

The City anticipates the next CTF expansion to increase capacity from 1.0 to 1.5 mgd (CTF Phase 2 Expansion Project) with an expected completion date by March 2018. The 1.5 mgd expansion may consist of a new coarse and fine screening and grit removal headworks system; a new odor control system for the new headworks; a new influent, basin drain, mixed liquor suspended solids (MLSS) process and membrane filtration process structure; a new activated sludge treatment process, including associated valves, gates, mixers, pumps and process air diffuser; new aeration blowers; new membrane filtration units; new membrane scouring blowers; new waste activated sludge pumps; new emergency standby generator equipment; new motor control center equipment; upgraded central PLC and SCADA system; a new administration, lab, and maintenance building; a new equipment building; and miscellaneous site grading and storm water retention facilities. Additional recycled water storage capacity and Use Areas will be added as needed.

25. The 19 September 2014 water balance submitted for preparation of Order R5-2015-0006 determined the minimum recycled water storage volume and Use Areas needed for an average dry weather flow of 0.75 mgd, 1.0 mgd, and the long range projection at 6.0 mgd. The water balance showed recycled water storage ponds are typically used during the winter months and then drawn down for irrigation purposes during the spring through fall.
26. The City relies entirely on water recycling for the disposal of treated effluent. Therefore, effluent storage and Use Areas must increase to accommodate increases in influent flows to the CTF. Based on the water balance, the required storage volume and Use Areas for the three influent flow scenarios is summarized below.

Storage Volume and Use Area Requirements	0.75 mgd		1.0 mgd		6.0 mgd
	Required	Available	Required	Available	Required
Storage Volume (acre-feet)	345	429	502	595	2,677
Storage Volume (mgal)	112	139	164	194 240 ¹	872
Use Areas (acres)	165	172	207	242 248 ²	1,381

¹ Based on total volume including Ponds S1, S2, S3, S5, S6, and ~~Phase 1 of~~ S16.

² Based on total acreage including Use Area A23, A28, A30, A31, A35, A35a, ~~and~~ A35b, and A35c.

27. The immediately applicable flow limitation in this Order is based on the current treatment, storage, and disposal capacity. Under the conditions of the Master Recycling Permit, the Discharger may add new Use Areas and construct additional recycled water storage ponds defined as “planned” in the Findings and Information Sheet of this Order with Executive Officer approval of the technical reports submitted pursuant to the Provisions of this Order ¹. The flow limits can be incrementally

¹ Use Areas and recycle water storage ponds defined as “future” will also require certification of an environmental review pursuant to the California Environmental Quality Act (CEQA).

increased up to a future treatment capacity of 6.0 mgd pending certification of an environmental review pursuant to CEQA and Executive Officer approval of each CTF expansion phase technical report submitted pursuant to the Provisions of this Order.

28. The City has adopted a Recycled Water Ordinance to establish its authority to enforce rules and/or regulations for Users governing the design and construction of recycled water use facilities and the use of recycled water. Therefore, the Discharger may issue water recycling permits to Users of WWTF effluent.
29. Lathrop Municipal Code Title 13, Chapter 13.09 establishes the authority to enforce rules and/or regulations for Users governing the design and construction of recycled water use facilities and the use of recycled water. As such, the Discharger may issue water recycling permits to Users of treated effluent from the CTF. Future Use Areas not identified in the Findings and Information Sheet as “existing” will require Executive Officer approval of certain reports described in the Provisions of this Order to satisfy Water Code section 13264.

Site-Specific Conditions

30. The City's water supply comes from six deep municipal wells that extract groundwater from approximately 160 to 270 feet below ground surface (bgs). Water is drawn from a 150-foot upper water-bearing interval overlying a 75 to 1,000 feet thick lower water-bearing zone in the Laguna Formation.
31. The City's potable water supply is supplemented with surface water from the Woodward Reservoir, which is distributed by the South San Joaquin Irrigation District as part of the South County Water Supply Program. Municipal supply water is treated prior to distribution to the community. A summary of the City's 2013 Drinking Water Consumer Confidence Report is presented below for select constituents.

Constituent	Potable Water Quality	
	Units	Concentration
Specific Conductivity	µmhos/cm	444 - 970
Total Dissolved Solids	mg/L	283 - 573
Nitrate as NO3	mg/L	8.3 – 28.7
Chloride	mg/L	32 - 108
Sodium	mg/L	41 - 75
Iron	mg/L	< 0.3
Manganese	mg/L	< 0.05 – 0.04
Hardness	mg/L	157 - 201
Total Coliform Organisms	MPN/100mL	< RL
Trihalomethanes	µg/L	9.8 – 31.8

RL denotes laboratory reporting limit and can vary between testing events.

32. Local topography at the CTF and existing and planned Use Areas is generally level and gently slopes toward the San Joaquin River and other tributaries. Ground surface elevation at the CTF is approximately 10 feet above mean sea level (MSL).
33. The CTF and Use Areas lie within the San Joaquin Delta Hydrologic Unit Area No. 544.00, as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986. Surface drainage is to the San Joaquin River, which flows north along the western boundary of CLSP and Mossdale. Other nearby surface water courses that drain into the San Joaquin River include Paradise Cut that borders River Islands to the southwest, and Old River, which divides Mossdale and River Islands.
34. According to Federal Emergency Management Agency (FEMA) flood zone mapping, areas immediately east of the San Joaquin River (i.e., the CTF, Northern Lathrop, CLSP, and Mossdale) are in Flood Zone X, which is outside of the currently-defined 100-year flood zone. A developed portion of River Islands bordered by Stewart Road on the west and south and the San Joaquin River on the east is also identified as within Flood Zone X. These areas are protected from the 100-year flood by levees, dikes, or other structures that may be subject to possible failure or overtopping during larger flood events. A portion of the western half of River Islands is in Zone AE, which is within the 100-year floodplain. None of the current recycled water ponds are located within the 100-year floodplain. Any future recycled water storage ponds located within the 100-year floodplain will be designed such that the elevations of the tops of the berms of future recycled water storage ponds are at least 3 feet above the 100-year floodplain. As mandated by Senate Bill 5, the cities of Lathrop and Manteca are pursuing improvement of Reclamation District 17's (RD 17) levees to provide the new central valley standard of 200-year Urban Level of Flood Protection. This requires improvement of the entire 20 miles of RD 17 levees, including sections within the cities of Lathrop, Manteca, Stockton, and unincorporated San Joaquin County. Work will be started by July 2016, and will be completed by 2025.
35. The Lathrop area is underlain by alluvial deposits consisting of fine grained sand, silt, and clay. According to United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) data, near-surface soils in the CTF and Use Areas are classified primarily as Egbert, Merrit, Columbia, and Veritas series soils, among others. These soils are generally characterized as moderate to poorly drained floodplain deposits with low permeability rates. Based on the NRCS soil survey, the soils in the proposed Use Areas are sandy to silty clay loams. Published infiltration rates for the soils range from 0.06 to 6.0 in/hr.
36. Based on climate data from the California Irrigation Management Information System (CIMIS), the average annual precipitation for the nearby area (Manteca Station) is approximately 13 inches. The 100-year, 365-day precipitation event is approximately 22 inches, and the average reference evapotranspiration (ET_o) rate is approximately 52 inches per year.

37. Land uses surrounding the CTF include the Crossroads WWTF immediately to the south, the Crossroads Industrial Park to the north, and other commercial development to the east and south. Interstate highway 5 separates the Northern Lathrop, CLSP, Mosssdale and River Islands development areas from the rest of the City. Surrounding land uses in these areas are primarily agricultural, but some areas have recently transitioned to residential, commercial, and industrial land uses.

Groundwater Conditions

38. Lathrop is located within the San Joaquin River Groundwater Basin, San Joaquin River Hydrologic Region. The CTF, Northern Lathrop, CLSP, and Mosssdale developments are located within the western portion of the Eastern San Joaquin Subbasin, while River Islands is in the Tracy Subbasin. Water-bearing units of the two subbasins include undifferentiated deposits of alluvium and flood basin deposits of the Laguna Formation. The Plio-Pleistocene Laguna Formation consists of discontinuous lenses of fluvial sand and silt with lesser amounts of clay and gravel.
39. Shallow groundwater in the Lathrop area occurs within the alluvial flood plain deposits at depths of less than 15 feet bgs. The depth to groundwater is as little as a few feet below ground surface in some areas, especially near surface water bodies, including agricultural drainage ditches that divide portions of River Islands.
40. Shallow groundwater depth and flow conditions can vary depending on location, season, land use, nearby pumping (i.e. construction dewatering, agricultural irrigation, etc.), and the proximity and flow stage of nearby surface water bodies. As a result, changes in agricultural land use, irrigation practices, and regional pumping have likely altered the groundwater flow regime. In the Northern Lathrop, CLSP, Mosssdale, and River Islands areas, shallow groundwater generally flows laterally away from the San Joaquin River, Old River, and Paradise Cut, whereas the groundwater flow direction east of Interstate 5 is generally to the north-northwest, towards the river.
41. There are over 70 known existing groundwater monitoring wells near the CTF and the Northern Lathrop, CLSP, Mosssdale, and River Islands Use Areas. General groundwater quality was previously evaluated at each of the four development areas in preparation of Order R5-2015-0006. Due to the extreme spatial variability of TDS concentrations in shallow groundwater across the Lathrop development areas, the local variability in groundwater flow, and the characteristics of recycled water, the anti-degradation analysis focused on specific Use Areas that illustrate typical groundwater conditions within each development area that has or will have Use Areas. An intra-well analysis of selected compliance wells was identified in Order R5-2015-0006 for compliance with the groundwater limitations. The monitoring well network as identified in Order R5-2015-0006 including location and function is shown below. Monitoring wells KMW-10 and KMW-11, which monitor the underlying groundwater near former LAS-2, is included in the table below; as is monitoring wells KMW-4, KMW-6, KMW-8, and KMW-9, which monitoring groundwater near LAS-3. Well locations are shown on Attachments B, F, G, H, and I, which is attached hereto and made part of this Order by reference.

Land Development Area	Attachment	Water Level Monitoring	Water Quality Monitoring Compliance Wells
CTF Facility	B	MBRMW-1, MBRMW-2, MBRMW-3, MBRMW-4	---
Formerly LAS-2	B	KMW-10, KMW-11	KMW-10, KMW-11
LAS-3	B	KMW-2, KMW-4, KMW-6, KMW-8, KMW-9	KMW-2, KMW-4, KMW-6, KMW-8, KMW-9
Mossdale	F	MWM-1, MWM-2, MWM-3, MWM-4, MWM-5, MWM-6, MWM-7, MWM-8 ¹ , MWM-9, MWM-11, MWM-12, MWM-13, MWM-15, MWM-17, MWM-19, MWM-20, MWM-21, MWM-22, MWM-23, MWM-24, MWM-25, MWM-27	MWM-12
River Islands	G	MWR-3, MWR-4, MWR-5, MWR-6 ² , MWR-7, MWR-8, MWR-9, MWR-10, MWR-11, MWR-12, MWR-23, MWR-24, MWR-25, MWR-26, MWR-27, MWR-28, MWR-29, MWR-30, MWR-31, MWR-32	MWR-24, MWR-28, MWR-32
Northern Lathrop	H	MW-N1, MW-N3, MW-N4, MW-N5 ¹ , MW-N6 ¹	---
Central Lathrop Specific Plan	H	CLSP-1, CLSP-2 ² , CLSP-3, CLSP-4 ³ , CLSP-8, CLSP-9, CLSP-10 ²	CLSP-1
Pond S6	I	RMW-1, RMW-2, RMW-3, RMW-4, RMW-5	---

¹ Well located on private property. City has no access to well. Abandon and replace well in accordance with Provision H.1.j as appropriate.

² Damaged well, City proposes to abandon. Replace well in accordance with Provision H.1.j as appropriate.

³ City proposes to abandon well. Replace well in accordance with Provision H.1.j as appropriate.

A well inventory was performed in October 2015 to identify existing well conditions. Based on the *Groundwater Monitoring Well Condition Survey Report and Destruction Plan* dated 27 January 2016, several wells were identified as damaged, missing, or abandoned. Wells MWM-8, MW-N5, and MW-N6 are located on private property and the City was unable to access these wells to determine current well conditions. The investigation confirmed wells CLSP-2, CLSP-10, and MWR-6 were damaged and the City has requested these wells be abandoned. Additionally, the City has requested that well CLSP-4 also be abandoned and not replaced due to close proximity to existing well MWM-19. In order to evaluate the pre-discharge groundwater conditions within any new Use Areas in accordance with Provision H.1.f, replacement wells may be required for wells identified as future compliance wells and proposed for abandonment.

42. Approximately 2,000 to 3,500 feet northeast and upgradient of LAS-2 was a former agricultural chemical production facility that consisted of unlined gypsum and wastewater ponds. The City has stated that the source of dissolved constituents including TDS, sulfate, and nitrate in groundwater within the vicinity of LAS-2 was likely caused by the unlined ponds at the former chemical production facility.

43. For the purpose of evaluating potential future groundwater degradation at a new discharge location, groundwater quality was evaluated at LAS-3. Well KMW-4 is located within LAS-3. Well KMW-6 is located near the east edge of LAS-3. Groundwater quality prior to discharge operations is based on samples collected on 29 January 2001 and 11 October 2002. Discharges of Crossroad’s undisinfected secondary effluent to LAS-3 began in 2003.
44. Based on historical quarterly monitoring reports, KMW-6 was determined the background well. However, in January 2015, the City stated that the groundwater elevations were calculated based on a different datum and needed to be revised. In February 2015, the City conducted a well survey and submitted revised groundwater historical elevation data. Based on revised groundwater contour maps for eight quarters between 2013 through 2014, KMW-4 has slightly higher groundwater elevations than KMW-6. Although higher groundwater elevations were observed in KMW-4, it is not appropriate to use KMW-4 as a background well because of its location within LAS-3 and likely influences from future wastewater discharges. In addition, the conversion of LAS-3 to percolation ponds(s) will likely cause localized groundwater mounding that will result in detectable wastewater constituents in KMW-6.
45. In anticipation of percolation pond(s) at LAS-3, the City installed wells KMW-8 and KMW-9 on 13 November 2014 to obtain groundwater data prior to discharge. KMW-8 is located immediately outside of the LAS-3 northwest boundary. KMW-9 is located east of LAS-3 and is expected to be an upgradient well. Based on the first data set collected on 18 November 2014, the groundwater elevation in KMW-9 was lower than the elevations in nearby wells KMW-4 and KMW-6, indicating flow is to the north-northwest and away from KMW-4. The City stated that northeastward groundwater flow near KMW-4 and KMW-9 is likely due to groundwater pumping northeast of KMW-9.
46. Groundwater quality near LAS-3 is presented below for select constituents.

Constituent	Potential WQO	Average Groundwater Quality ⁵ , mg/L					
		KMW-4		KMW-6		Pre-Discharge KMW-8 ⁹	Pre-Discharge KMW-9 ⁹
		Pre-Discharge ⁶	Current ⁷	Pre-Discharge ⁸	Current ⁷		
TDS	450 ¹ - 1,000 ₄	3,840	2,430	NA	1,000	2,180	580
Nitrate as N	10 ²	80	50	20	20	20	9.7
TKN	none	0.9	0.5	60	30	<1	60
Chloride	106 ¹ – 500 ⁴	260	340	90	170	610	130
Sodium	69 ¹	400	450	70	140	350	90
Sulfate	250 ³ - 500 ⁴	1,450	750	210	290	300	100
Boron	0.7 ¹	1.4	1.3	0.3	0.4	0.8	0.3

Constituent	Potential WQO	Average Groundwater Quality ⁵ , mg/L					
		KMW-4		KMW-6		Pre-Discharge KMW-8 ⁹	Pre-Discharge KMW-9 ⁹
		Pre-Discharge ⁶	Current ⁷	Pre-Discharge ⁸	Current ⁷		
Iron, dissolved	0.3 ³	0.01	0.19	0.01	0.07	0.11	0.04
Manganese, dissolved	0.05 ³	4	0.8	0.75	0.4	0.28	<0.01

WQO denotes Water Quality Objective. NA denotes not available or not provided.

¹ Lowest Agricultural Water Quality Goal.

² Primary Maximum Contaminant Level.

³ Secondary Maximum Contaminant Recommended Level.

⁴ Secondary Maximum Contaminant Upper Level.

⁵ For non-detect values, ½ of the laboratory detection limit was used to determine average.

⁶ TDS based on 29 January 2001 sample; boron, iron, and manganese based on 11 October 2002 sample; all other constituents, average based on 29 January 2001 and 11 October 2002 samples.

⁷ Average data collected quarterly from January 2007 through August 2014.

⁸ Based on 11 October 2002 sample.

⁹ Single monitoring event on 18 November 2014.

- a. In general, the underlying groundwater is high in salinity and nitrate. Pre-discharge data from KMW-4 show a TDS concentration that exceeds the secondary maximum recommended limit (MCL) of 1,000 mg/L and data following discharge operations show some improvement in groundwater quality. Chloride concentrations in KMW-4 and KMW-6 have increased since discharge operations began. Increasing sodium concentrations were observed in KMW-6 since 2013. The single sample from KMW-8 contained a high concentration of nitrate as expected, because high concentrations of nitrate were found in KMW-4 and KMW-6. The nitrate and TDS concentration in KMW-9 was much less than the average concentration in KMW-6, which historically has been considered the background well.
- b. Groundwater data for KMW-4 and KMW-6 show iron concentrations have increased since discharge operations began. However, concentrations do not exceed 0.3 mg/L, the water quality objective for iron. The iron concentration in KMW-8 is similar to the average iron concentrations in KMW-4 and KMW-6. The iron concentration in KMW-9 was much less than the average concentration in KMW-6.
- c. Prior to discharge operations, the manganese concentration in KMW-4 and KMW-6 exceeded the secondary MCL of 0.05 mg/L. Groundwater data show improvements in groundwater quality post discharge operations. KMW-8 contained a high manganese concentration, as expected, because high manganese concentrations were found in KMW-4 and KMW-6. The manganese concentration in KMW-9 was much less than the average concentration in KMW-6 and does not exceed the water quality objective.

d. The spatial variability in the wells warrants an intra-well analysis of compliance wells to determine if the discharge has caused groundwater degradation. Due to proximity of KMW-4 and KMW-6 to impending percolation pond(s) at LAS-3, KMW-4 and KMW-6 would serve as compliance wells, along with newly installed wells KMW-8 and KMW-9.

47. As stated in Finding 22, wells KMW-10 and KMW-11 were installed to monitor the effectiveness of the City’s corrective action plan regarding the salinity impacts (particularly near LAS-2) from past application of Crossroads WWTF effluent. Analytical data for groundwater samples obtained on 15 December 2015 are shown below for select constituents.

Constituent	Potential WQO	Groundwater Data for New Wells (mg/L unless specified)		
		KMW-10	KMW-11	KMW-11 (D)
TDS	450 ¹ - 1,000 ⁴	4,100	2,750	2,890
Nitrate as N	10 ²	22	0.1	< 0.1
TKN	none	< 0.5	< 0.5	< 0.5
Chloride	106 ¹ – 500 ⁴	920	600	630
Sodium	69 ¹	750	590	640
Sulfate	250 ³ -500 ⁴	1,040	750	760
Boron	0.7 ¹	1.2	1.1	1.2
Iron, dissolved	0.3 ³	0.1	6.0	7.3
Manganese, dissolved	0.05 ³	2.4	4.1	4.1

WQO denotes Water Quality Objective. D denotes duplicate sample.

- ¹ Lowest Agricultural Water Quality Goal.
- ² Primary Maximum Contaminant Level.
- ³ Secondary Maximum Contaminant Recommended Level.
- ⁴ Secondary Maximum Contaminant Upper Level.

Basin Plan, Beneficial Uses, and Regulatory Considerations

48. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins*, Fourth Edition (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Board. Pursuant to California Water Code section 13263(a), waste discharge requirements must implement the Basin Plan.

49. Local drainage is to the San Joaquin River. The beneficial uses of the San Joaquin River, as stated in the Basin Plan, are municipal and domestic supply; agricultural supply; industrial service supply; industrial process supply; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat;

migration of aquatic organisms; spawning, reproduction, and/or early development; wildlife habitat; and navigation.

50. The beneficial uses of underlying groundwater as set forth in the Basin Plan are municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply.
51. The Basin Plan establishes narrative water quality objectives for chemical constituents, tastes and odors, and toxicity in groundwater. It also sets forth a numeric objective for total coliform organisms.
52. The Basin Plan's numeric water quality objective for bacteria requires that the most probable number (MPN) of coliform organisms over any seven-day period shall be less than 2.2 per 100 mL in MUN groundwater.
53. The Basin Plan's narrative water quality objectives for chemical constituents, at a minimum, require waters designated as domestic or municipal supply to meet the MCLs specified in Title 22 of the California Code of Regulations (hereafter Title 22). The Basin Plan recognizes that the Central Valley Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.
54. The narrative toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, animal, plant, or aquatic life associated with designated beneficial uses.
55. Quantifying a narrative water quality objective requires a site-specific evaluation of those constituents that have the potential to impact water quality and beneficial uses. The Basin Plan states that when compliance with a narrative objective is required to protect specific beneficial uses, the Central Valley Water Board will, on a case-by-case basis, adopt numerical limitations in order to implement the narrative objective.
56. In the absence of specific numerical water quality limits, the Basin Plan methodology is to consider any relevant published criteria. General salt tolerance guidelines, such as *Water Quality for Agriculture* by Ayers and Westcot and similar references indicate that yield reductions in nearly all crops are not evident when irrigation water has an EC less than 700 $\mu\text{mhos/cm}$. There is, however, an eight- to ten-fold range in salt tolerance for agricultural crops and the appropriate salinity values to protect agriculture in the Central Valley are considered on a case-by-case basis. It is possible to achieve full yield potential with waters having EC up to 3,000 $\mu\text{mhos/cm}$ if the proper leaching fraction is provided to maintain soil salinity within the tolerance of the crop.

Antidegradation Analysis

57. State Water Resources Control Board Resolution 68-16 (“Policy with Respect to Maintaining High Quality Waters of the State”) (hereafter Resolution 68-16) prohibits degradation of groundwater unless it has been shown that:
 - a. The degradation is consistent with the maximum benefit to the people of the state.
 - b. The degradation will not unreasonably affect present and anticipated future beneficial uses.
 - c. The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives, and
 - d. The discharger employs best practicable treatment or control (BPTC) to minimize degradation.
58. Degradation of groundwater by some of the typical waste constituents associated with discharges from a municipal wastewater utility, after effective source control, treatment, and control measures are implemented, is consistent with the maximum benefit to the people of the state. The technology, energy, water recycling, and waste management advantages of municipal utility service far exceed any benefits derived from reliance on numerous, concentrated individual wastewater systems, and the impact on water quality will be substantially less. The economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, and provides sufficient justification for allowing the limited groundwater degradation that may occur pursuant to this Order.
59. The Discharger has been monitoring groundwater quality at the CTF and near several of the Use Areas since 1999. Although some limited groundwater quality data that date back to 1945 is available, the hydrologic dynamics of such a large geographic area combined with a long history of both irrigated agriculture and land discharges of wastewater, it is not possible to determine pre-1968 groundwater quality. Therefore, determination of compliance with Resolution 68-16 for this discharge must be based on available local groundwater quality data.
60. As discussed in Finding 41, the anti-degradation analysis in Order R5-2015-0006 focused on specific Use Areas that illustrate typical groundwater conditions within each development areas that has or will have recycled water Use Areas. Information regarding the anti-degradation analysis for specific Use Areas can be found in the Information Sheet. For the purpose of evaluating potential future groundwater degradation at a new discharge location, this anti-degradation analysis focuses on LAS-3, the location of future percolation pond(s).
61. Constituents of concern from the treated effluent that have the potential to degrade groundwater include salts (primarily TDS, sodium and chloride). For the purpose of this evaluation, TDS is representative of overall salinity. Based on effluent quality and pre-discharge groundwater quality, elevated concentrations of nitrate in the

groundwater are likely due to historical agricultural practices and not the result of wastewater discharges. In addition, elevated sulfate, boron, and manganese concentrations in the groundwater are likely naturally occurring and not the result of wastewater discharges. TDS and total nitrogen effluent quality is representative of the combined wastewater as a flow-weighted average based on data from August through November 2015. All other constituents are representative of the CTF effluent or Crossroads effluent.

Constituent	Potential WQO	Average Groundwater Quality ⁵ , mg/L				Effluent Quality, mg/L
		KMW-4		KMW-6		
		Pre-Discharge ⁶	Current ⁷	Pre-Discharge ⁸	Current ⁷	
TDS	450 ¹ - 1,000 ⁴	3,840	2,430	NA	1,000	720
Nitrate as N	10 ²	80	50	20	20	NA
TKN	none	0.9	0.5	60	30	NA
Total Nitrogen	none	73	NA	82	NA	6.3
Chloride	106 ¹ – 500 ⁴	260	340	90	170	NA
Sodium	69 ¹	400	450	70	140	NA
Sulfate	250 ³ -500 ⁴	1,450	750	210	290	NA
Boron	0.7 ¹	1.4	1.3	0.3	0.4	50 ⁹ / 190 ¹⁰
Iron, dissolved	0.3 ³	0.01	0.19	0.01	0.07	0.4 ⁹ / NA
Manganese, dissolved	0.05 ³	4	0.8	0.75	0.4	ND ⁹ / 0.01 ¹¹

WQO denotes Water Quality Objective. NA denotes not available or not provided. ND denotes non-detect.

- ¹ Lowest Agricultural Water Quality Goal.
- ² Primary Maximum Contaminant Level.
- ³ Secondary Maximum Contaminant Recommended Level.
- ⁴ Secondary Maximum Contaminant Upper Level.
- ⁵ For non-detect values, ½ of the laboratory detection limit was used to determine average.
- ⁶ TDS based on 29 January 2001 sample; total nitrogen, boron, iron, and manganese based on 11 October 2002 sample; all other constituents, average based on 29 January 2001 and 11 October 2002 samples.
- ⁷ Average data collected quarterly from January 2007 through August 2014.
- ⁸ Based on 11 October 2002 sample.
- ⁹ CTF effluent, average based on data collected from January 2011 through September 2013.
- ¹⁰ Crossroads effluent, average based on data collected from February 2007 through August 2014.
- ¹¹ Crossroads effluent, average based on 4 weekly samples from September through October 2014.

a. **Total Dissolved Solids.** Prior to wastewater discharge, the TDS concentration in KMW-4 was 3,840 mg/L. In general, the analytical data show an overall decreasing trend in KMW-4. However, the current TDS concentration continues to exceed the water quality objective. KMW-6 located within LAS-3, has historically been the background well with an average TDS concentration of 1,000 mg/L. The TDS concentrations in KMW-6 have ranged from 600 to 2,500 mg/L. Since 2010, TDS concentrations have increased in KMW-6. Based on data from January 2011 through September 2013, the TDS effluent concentration varied from 500 to 840 mg/L with an average of 690 mg/L.

For the purpose of this analysis, the water quality objective for TDS is 1,000 mg/L. The Basin Plan's Controllable Factors Policy is applicable because the pre-discharge groundwater quality exceeds the water quality objective. The Controllable Factors Policy does not allow further degradation of water quality in instances where other factors have already resulted in water quality objectives being exceeded.

The RWD states that the current Crossroads and CTF effluent when combined would result in a TDS effluent concentration ranging from 800 to 900 mg/L. Since rerouting all wastewater to the CTF in August 2015, TDS effluent concentrations during the months of August through November 2015 have ranged from 580 to 800 mg/L with a flow-weighted average of 720 mg/L. The City implements an Industrial Pretreatment Program (IPP) to prevent the introduction of pollutants into their sewer system. Through the City's IPP, significant industrial users were identified and have taken reasonable salinity source control measures to reduce the salinity concentrations in their waste stream.

This Order prohibits any further degradation of groundwater quality. A performance-based TDS effluent limit will restrict effluent salinity to ensure compliance with the Controllable Factors Policy. The effluent limit will allow flexibility for increases due to water conservations as the community grows. The groundwater limitations of this Order prohibit statistically significant increases in TDS concentrations in the groundwater compliance wells associated with LAS-3.

- b. **Nitrate.** For nutrients such as nitrate, the potential for degradation depends not only on the quality of the treated effluent, but the ability of the vadose zone below the percolation pond(s) to provide an environment conducive to nitrification and denitrification to convert the effluent nitrogen to nitrate and the nitrate to nitrogen gas before it reaches the water table. Pre-discharge nitrate concentration in KMW-4 was 80 mg/L. The current average nitrate concentration is 50 mg/L. In general, nitrate data from KMW-4 show a decreasing trend. Pre-discharge nitrate concentration in KMW-6 was 20 mg/L. The current average nitrate concentration in KMW-6 is approximately 20 mg/L and concentrations ranged from 9 to 40 mg/L. In general, nitrate data from KMW-6 show a decreasing trend.

For the purpose of this analysis, the Basin Plan's Controllable Factors Policy is applicable because the pre-discharge groundwater quality exceeds 10 mg/L, the water quality objective for nitrate. The Controllable Factors Policy does not allow further degradation of water quality in instances where other factors have already resulted in water quality objectives being exceeded.

Since rerouting the Crossroads wastewater to the CTF, the flow-weighted average total nitrogen effluent concentration is approximately 6.3 mg/L (based on four months of data in 2015). The average total nitrogen concentration when wastewater was predominately domestic from the Lathrop development areas was approximately 8.0 mg/L. Although conversion to a percolation pond will result in no nitrogen uptake from plants, the discharge is unlikely to cause nitrate pollution due to the low nitrate concentration in the effluent. To ensure compliance with the

Controllable Factors Policy, the Order prescribes a total nitrogen effluent limit of 10 mg/L as a flow-weighted annual average. The groundwater limitations of this Order prohibit statistically significant increases in nitrate concentrations in the groundwater compliance wells associated with LAS-3.

- c. **Boron.** Pre-discharge groundwater quality in KMW-4 exceeds 0.7 mg/L the water quality objective for boron. Since adoption of the Order R5-2015-0006, the CTF effluent has not been analyzed for boron. However, based on monitoring data from January 2011 through September 2013, the average effluent boron concentration is approximately 0.4 mg/L. Historically, the Crossroads' effluent has not been analyzed for boron.

For the purpose of this analysis, the Basin Plan's Controllable Factors Policy is applicable because the pre-discharge groundwater quality exceeds the water quality objective for boron. The Controllable Factors Policy does not allow further degradation of water quality in instances where other factors have already resulted in water quality objectives being exceeded.

Although wastewater from the Crossroads Industrial Park is now routed to the CTF, in consideration of the combined wastewater quality and groundwater conditions, the discharge is not likely to degrade groundwater with respect to boron. To ensure compliance with the Controllable Factors Policy, the Order requires groundwater monitoring for boron to verify that the discharge has not caused groundwater quality to get any worse.

- d. **Sulfate.** Pre-discharge groundwater quality in KMW-4 exceeds 500 mg/L, the water quality objective for sulfate. The average sulfate concentration in the CTF effluent based on monitoring data from January 2011 through September 2013 is approximately 50 mg/L. Order R5-2015-0006 does not require the CTF effluent to be analyzed for sulfate. The average sulfate concentration in the Crossroads' effluent is approximately 190 mg/L based on monitoring data from February 2007 through August 2014.

For the purpose of this analysis, the Basin Plan's Controllable Factors Policy is applicable because the pre-discharge groundwater quality exceeds the water quality objective for sulfate. The Controllable Factors Policy does not allow further degradation of water quality in instances where other factors have already resulted in water quality objectives being exceeded.

In consideration of the combined wastewater quality and groundwater conditions, the discharge is not likely to degrade groundwater with respect to sulfate. To ensure compliance with the Controllable Factors Policy, the Order requires groundwater monitoring for sulfate to verify that the discharge has not caused groundwater quality to get any worse.

- e. **Manganese.** Pre-discharge groundwater quality in KMW-4 and KMW-6 exceeds 0.7 mg/L, the water quality objective for manganese. Manganese has been non-

detect in the CTF effluent based on monitoring data from January 2011 through September 2013. Order R5-2015-0006 does not require the CTF effluent to be analyzed for manganese. The average manganese concentration in the Crossroads' effluent is approximately 0.01 mg/L based on four weekly sampling events from September to October 2014.

For the purpose of this analysis, the Basin Plan's Controllable Factors Policy is applicable because the pre-discharge groundwater quality exceeds the water quality objective for manganese. The Controllable Factors Policy does not allow further degradation of water quality in instances where other factors have already resulted in water quality objectives being exceeded.

In consideration of the combined wastewater quality and groundwater conditions, the discharge is not likely to degrade groundwater with respect to manganese. To ensure compliance with the Controllable Factors Policy, the Order requires groundwater monitoring for manganese to verify that the discharge has not caused groundwater quality to get any worse.

62. This Order establishes effluent and groundwater limitations for the CTF that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan.

For TDS, nitrate, boron, sulfate and manganese, groundwater monitoring data show that groundwater is not high quality water and both pre-discharge and background groundwater quality exceeds the respective water quality objective. Where pre-discharge and background groundwater quality exceed the water quality objective, the Basin Plan's Controllable Factors Policy is applicable, which does not allow further degradation.

63. The Discharger provides treatment and control of the discharge that incorporates:
- a. City-wide Industrial Pretreatment program;
 - b. Tertiary treatment and disinfection;
 - c. Completely enclosed wastewater treatment systems;
 - d. Lined wastewater and emergency storage ponds;
 - e. Automatic alarms and backup power systems;
 - f. Certified wastewater treatment operators; and
 - g. Use of effluent to irrigate crops and landscaped areas using water and nutrient application rates consistent with plant needs.

The Central Valley Water Board considers these treatment and control practices to be BPTC for the waste discharges regulated by this Order.

64. This Order is consistent with Resolution 68-16 since it is unlikely that discharges regulated by this Order will result in any degradation over baseline conditions. In addition, the Board herein finds that this Order will ensure that discharges from the facility will not unreasonably affect present and anticipated beneficial uses or result in water quality less than water quality objectives, that the Discharger is implementing BPTC to minimize degradation, and that any limited degradation that may occur will be consistent with the maximum benefit to the people of the State.

Water Recycling Regulatory Considerations

65. Undisinfected domestic wastewater contains human pathogens that are typically measured using total or fecal coliform organism as indicator organisms. The State Water Resources Control Board Division of Drinking Water (formerly the California Department of Public Health Drinking Water Program), which has primary statewide responsibility for protecting water quality and the public health, has established statewide criteria in Title 22, section 60301 et seq. for the use of recycled water.
66. A 1998 Memorandum of Agreement (MOA) between DPH and the State Water Board on the use of recycled water establishes basic principles relative to the agencies and the regional water boards. In addition, the MOA allocates primary areas of responsibility and authority between these agencies, and provides for methods and mechanisms necessary to assure ongoing, continuous future coordination of activities relative to the use of recycled water in California. This Order implements the applicable portions of the Title 22 water recycling regulation in accordance with the MOA.
67. On 3 February 2009, the State Water Board adopted Resolution 2009-0011, *Adoption of a Policy for Water Quality Control for Recycled Water* (Recycled Water Policy). The Recycled Water Policy promotes the use of recycled water to achieve sustainable local water supplies and reduce greenhouse gases.
68. On 23 April 2009, the Central Valley Water Board adopted Resolution R5-2009-0028, *In Support of Regionalization, Reclamation, Recycling and Conservation for Wastewater Treatment Plant*. Resolution R5-2009-0028 encourages water recycling, water conservation, and regionalization of wastewater treatment facilities. It requires the municipal wastewater treatment agencies to document:
- a. Efforts to promote new or expanded wastewater recycling opportunities and programs;
 - b. Water conservation measures; and
 - c. Regional wastewater management opportunities and solutions (e.g., regionalization).

The distribution of disinfected tertiary recycled water by the Discharger is consistent with the intent of State Board Resolution 2009-0011 and Central Valley Water Board Resolution R5-2009-0028.

69. The Discharger submitted a *Title 22 Engineering Report* on 24 April 2014 to the Central Valley Water Board and the Division of Drinking Water pursuant to Title 22 for water recycling of disinfected tertiary recycled water as defined by Title 22, section 60301.230. The Title 22 Report stated that tertiary treated water will be applied to landscaped and agricultural areas located within “Mossdale Village, Stewart Tract, Paradise Cut, the CLSP area, and the agricultural lands located north of CLSP.” DDW recommended in a letter to the Regional Water Quality Control Board dated 7 October 2014, that the Discharger be required to submit a Recycled Water Operations Plan to assure that the recycled water is produced, distributed, and used in conformance with the provisions of the DDW’s Title 22 Water Recycling criteria. DDW’s recommendations included the following:

- a. Sections of the overall Recycled Water Operation Plan should specifically address recycled water Use Areas and the City’s cross-connection program.
- b. The Recycled Water Operation Plan must include detailed and specific procedures for various aspects of the City’s recycled water Use Area operations, which include conducting and documenting inspections, specific frequencies for inspections, when not to irrigate, emergency procedures, etc.
- c. The Recycled Water Operation Plan provide guidance to address unusual occurrences or emergencies, having clear and detailed operating procedures for field personnel to follow to ensure rapid problem recognition and resolution.

A Recycled Water Operation Plan was submitted to DDW on 20 August 2015. DDW reviewed and deemed the Plan complete in an email to the Regional Water Board on 28 January 2016.

70. Recycled water projects are limited to areas for which DDW has approved a Title 22 engineering report and for which prerequisites to discharge listed in Water Code section 13264(a) have been met. The Department of Public Health issued a letter on 3 August 2012 approving the Title 22 engineering reports for all the recycled water projects identified as “existing”, “planned,” and “future” in the Findings and Information Sheet of this Order.

Other Regulatory Considerations

71. In compliance with Water Code section 106.3, it is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.

72. Based on the threat and complexity of the discharge, the facility is determined to be classified as 2A as defined below:
- a. Category 2 threat to water quality: “Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance.”
 - b. Category A complexity, defined as: “Any discharge of toxic wastes; any small volume discharge containing toxic waste; any facility having numerous discharge points and groundwater monitoring; or any Class 1 waste management unit.”
73. Title 27 of the California Code of Regulations (hereafter Title 27) contains regulatory requirements for the treatment, storage, processing, and disposal of solid waste. However, Title 27 exempts certain activities from its provisions. Discharges regulated by this Order are exempt from Title 27 pursuant to provisions that exempt domestic sewage, wastewater, and reuse. Title 27, section 20090 states in part:
- The following activities shall be exempt from the SWRCB-promulgated provisions of this subdivision, so long as the activity meets, and continues to meet, all preconditions listed:
- (a) Sewage - Discharges of domestic sewage or treated effluent which are regulated by WDRs issued pursuant to Chapter 9, Division 3, Title 23 of this code, or for which WDRs have been waived, and which are consistent with applicable water quality objectives, and treatment or storage facilities associated with municipal wastewater treatment plants, provided that residual sludges or solid waste from wastewater treatment facilities shall be discharged only in accordance with the applicable SWRCB-promulgated provisions of this division.
 - (b) Wastewater - Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leachfields if the following conditions are met:
 - (1) the applicable RWQCB has issued WDRs, reclamation requirements, or waived such issuance;
 - (2) the discharge is in compliance with the applicable water quality control plan; and
 - (3) the wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste.(...)
74. The discharge authorized herein (except for the discharge of residual sludge and solid waste), and the treatment and storage facilities associated with the discharge, are exempt from the requirements of Title 27 as follows:

- a. The MBR system; sludge handling facility; and Ponds S1, S2, S3, S4, S5, S6, S16, A, B and C are exempt pursuant to Title 27, section 20090(a) because they are treatment and storage facilities associated with a municipal domestic wastewater treatment plant.
- b. The recycled water Use Areas are exempt pursuant to Title 27, section 20090(b) because they are land discharge areas and:
 - i. The Central Valley Water Board is issuing WDRs.
 - ii. The discharge is in compliance with the Basin Plan, and;
 - iii. The treated effluent discharged to the ponds does not need to be managed as hazardous waste.

75. The U.S. EPA published *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (hereafter "Unified Guidance") in 2009. As stated in the Unified Guidance, the document:

...is tailored to the context of the RCRA groundwater monitoring regulations ... [however, t]here are enough commonalities with other regulatory groundwater monitoring programs ... to allow for more general use of the tests and methods in the Unified Guidance... Groundwater detection monitoring involves either a comparison between different monitoring stations ... or a contrast between past and present data within a given station... The Unified Guidance also details methods to compare background data against measurements from regulatory compliance points ... [as well as] techniques for comparing datasets against fixed numerical standards ... [such as those] encountered in many regulatory programs.

The statistical data analysis methods in the Unified Guidance are appropriate for determining whether the discharge complies with Groundwater Limitations of this Order.

76. The State Water Board adopted Order 2014-0057-DWQ (NPDES General Permit CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities, and requiring submittal of a Notice of Intent by all affected industrial dischargers. The CTF has a design capacity of more than 1.0 MGD, but all storm water from the CTF is collected and disposed of onsite. The Discharger is therefore not required to obtain coverage under NPDES General Permit CAS000001.
77. On 2 May 2006, the State Water Board adopted Statewide General Waste Discharge Requirements for Sanitary Sewer Systems General Order 2006-0003-DWQ (the General Order). The General Order requires all public agencies that own or operate sanitary sewer systems greater than one mile in length to comply with the Order. The Discharger's collection system exceeds one mile in length and the Discharger is enrolled under the General Order.

78. Water Code section 13267(b)(1) states:

In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region ... shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

The technical reports required by this Order and the attached Monitoring and Reporting Program ~~R5-_____~~-R5-2016-0028 are necessary to ensure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

79. The California Department of Water Resources sets standards for the construction and destruction of groundwater wells (hereafter DWR Well Standards), as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 74-81* (December 1981). These standards, and any more stringent standards adopted by the state or county pursuant to Water Code section 13801, apply to all monitoring wells used to monitor the impacts of wastewater storage or disposal governed by this Order.
80. The City of Lathrop is the lead agency for purposes of implementing CEQA. The City has prepared a number of Environmental Impact Reports (EIRs) and addenda to EIRs for land development projects that include recycled water use within its jurisdiction that have been adopted in accordance with CEQA.

The Central Valley Water Board has considered the CEQA documents and has included requirements in this Order, including monitoring and reporting requirements to protect water quality and prevent nuisance. The proposed modifications to the CTF and recycled water disposal system expansion are consistent with the projects analyzed in the various CEQA documents. A list of CEQA documentation for each previously approved project that includes one or more Use Areas is included along with tables of existing and planned recycled water Use Area Parcel numbers in the Information Sheet. Compliance with this Order will mitigate or avoid significant impacts to water quality.

Future development projects involving recycled water Use Areas that are identified in this Order, but for which a CEQA environmental review has not yet been completed, are subject to CEQA review and Executive Officer approval prior to the first use of recycled water in any of those Use Areas. This includes future expansion of CTF capacity above 1.0 mgd. In all cases, compliance with this Order will mitigate or avoid significant impacts to water quality.

81. A Notice of Determination was issued on 7 July 2015 for the City of Lathrop Crossroads Decommissioning Project. The project involves decommissioning the Crossroads Wastewater Treatment Facility (WWTF) and rerouting all wastewater to the City's Consolidated Treatment Facility (CTF). The combined wastewater will be discharged to existing storage ponds, land application areas, or approved percolation ponds associated with the Crossroads WWTF and the CTF.
82. The United States Environmental Protection Agency (EPA) has promulgated biosolids reuse regulations in 40 CFR 503, Standard for the Use or Disposal of Sewage Sludge, which establishes management criteria for protection of ground and surface waters, sets application rates for heavy metals, and establishes stabilization and disinfection criteria.
83. The Central Valley Water Board is using the Standards in 40 CFR 503 as guidelines in establishing this Order, but the Central Valley Water Board is not the implementing agency for 40 CFR 503 regulations. The Discharger may have separate and/or additional compliance, reporting, and permitting responsibilities to the EPA.
84. Pursuant to Water Code section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

Public Notice

85. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge.
86. The Discharger and interested agencies and persons have been notified of the Central Valley Water Board's intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity to submit written comments and an opportunity for a public hearing.
87. All comments pertaining to the discharge were heard and considered in a public hearing.

IT IS HEREBY ORDERED that Order R5-2015-0006 and Order 5-01-251 are rescinded and, pursuant to Water Code sections 13263 and 13267, the City of Lathrop, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and regulations adopted thereunder, shall comply with the following:

A. Discharge Prohibitions

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.
2. Discharge of waste classified as 'hazardous', as defined in the California Code of Regulations, title 23, section 2510 et seq., is prohibited.

3. Treatment system bypass of untreated or partially treated waste is prohibited, except as allowed by Standard Provision E.2 of the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*. Temporary diversion of wastewater to emergency storage Pond S4 does not constitute a bypass provided that the wastewater is rerouted to the treatment system as soon as practical.
4. Discharge of waste at a location or in a manner different from that described in the Findings is prohibited.
5. The Discharger shall not allow toxic substances to be discharged into the wastewater treatment system such that biological treatment mechanisms are disrupted.

B. Flow Limitations

1. Effective immediately, influent flows to the CTF shall not exceed the following limits:

Influent Flow Measurement	Flow Limit
Total Annual Flow ¹	276 mgal
Average Dry Weather Flow ²	0.75 mgd

¹ As determined by the total flow for the calendar year.

² As determined by the total flow for the months of July through September, inclusive, divided by the number of days in those months.

2. **Effective on the date of the Executive Officer's approval** of each successive *CTF Expansion Completion Report* submitted pursuant to Provision H.1.h, influent flow limits greater than 0.75 mgd average dry weather flow and 276 mgal total annual flow will be allowed. Approval is subject to the following conditions:

- a. The maximum allowable dry weather flow rate is 6.0 mgd.
- b. Any expansion beyond 1.0 mgd average dry weather flow requires documentation of compliance with CEQA as appropriate.
- c. Capacity expansion requests shall be made in increments ~~of 0.25 mgd increments or greater~~ as follows:
 - i. For capacity expansion requests associated with an expansion in treatment plant capacity, requests shall be made in increments of 0.25 mgd or greater.
 - ii. For capacity expansion requests associated only with an expansion in recycled water storage and/or disposal capacity, requests shall be made in increments of 0.075 mgd or greater.

e.d. The Discharger shall demonstrate through a water balance capacity analysis that sufficient effluent storage and disposal capacity is available at the proposed flow limit to ensure compliance with this Order.

C. Effluent Limitations and Mass Loading Limitations

1. **Effective immediately**, treated effluent discharged to the recycled water storage ponds shall not exceed the following limits:

Constituent	Limit	Basis of Compliance Determination
BOD ₅ ¹	10 mg/L	Monthly average
Total dissolved solids	950 mg/L	Flow-weighted annual average
Total nitrogen	10 mg/L	Flow-weighted annual average

¹ 5-day biochemical oxygen demand at 20°C.

2. The turbidity of the filtered effluent prior to disinfection shall not exceed ~~2.0 NTU as a daily average; shall not exceed 5 NTU more than 5 percent of the time during a 24-hour period; and shall never exceed 10 NTU.~~ any of the following:

- a. 0.2 NTU more than 5 percent of the time within a 24-hour period; and
- 2.b. 0.5 NTU at any time.

3. Prior to discharge to the recycled water storage ponds, disinfected tertiary effluent shall not exceed the following limits for total coliform organisms:

- a. The 7-day median concentration of total coliform bacteria measured in the disinfected effluent shall not exceed a most probable number (MPN) of 2.2 per 100 milliliters. Compliance with this requirement will be determined using the median result of the seven most recent sampling events.
- b. The number of total coliform bacteria shall not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30-day period.
- c. The number of total coliform bacteria shall not exceed an MPN of 240 per 100 milliliters at any time.

Compliance with this requirement shall be determined based on samples obtained at the sampling locations listed in the Monitoring and Reporting Program and shown on Attachment E.

4. The total nitrogen mass loading to the agricultural Use Areas shall not exceed the agronomic rate for the crop grown. Compliance with this requirement shall be determined using published nitrogen uptake rates for the vegetation/crops grown as specified in the Monitoring and Reporting Program.

4.5. The free chlorine residual contact time (CT) shall not be less than 60-mg-min/L and a minimum free chlorine modal contact time of 32 minutes shall be maintained at all times. CT is the product of free chlorine residual concentration in mg/L and the free chlorine modal contact time in minutes.

D. Discharge Specifications

1. No waste constituent shall be released, discharged, or placed where it will cause a violation of the Groundwater Limitations of this Order.
2. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050.
3. The discharge shall remain within the permitted waste treatment/containment structures and recycled water Use Areas at all times except as specified in Water Recycling Specification F.5.
4. The Discharger shall operate all systems and equipment to optimize the quality of the discharge.
5. All treatment, storage and disposal systems shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
6. Public contact with wastewater at the CTF shall be prevented through such means as fences, signs, or acceptable alternatives.
7. Objectionable odors shall not be perceivable beyond the limits of the CTF property at an intensity that creates or threatens to create nuisance conditions.
8. As a means of discerning compliance with Discharge Specification D.7, the dissolved oxygen (DO) content in the upper one foot of any wastewater treatment or storage pond shall not be less than 1.0 mg/L for three consecutive sampling events. If the DO in any single pond is below 1.0 mg/L for three consecutive sampling events, the Discharger shall report the findings to the Regional Water Board in writing within 10 days and shall include a specific plan to resolve the low DO results within 30 days.
9. The Discharger shall operate and maintain all ponds sufficiently to protect the integrity of containment dams and berms and prevent overtopping and/or structural failure. Unless a California-registered civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard in any pond shall never be less than two feet (measured vertically from the lowest possible point of overflow). As a means of management and to discern compliance with this requirement, the Discharger shall install and maintain in each pond a permanent staff gauge with

calibration marks that clearly show the water level at design capacity and enable determination of available operational freeboard.

10. Wastewater treatment, storage, and disposal ponds or structures shall have sufficient capacity to accommodate allowable wastewater flow, design seasonal precipitation, and ancillary inflow and infiltration during the winter while ensuring compliance with all requirements of this Order. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.
11. On or about **1 October** of each year, available capacity shall at least equal the volume necessary to comply with Discharge Specifications D.9 and D.10.
12. All ponds and open containment structures shall be managed to prevent breeding of mosquitoes. Specifically:
 - a. An erosion control program shall be implemented to ensure that small coves and irregularities are not created around the perimeter of the water surface.
 - b. Weeds shall be minimized through control of water depth, harvesting, or herbicides.
 - c. Dead algae, vegetation, and debris shall not accumulate on the water surface.
 - d. The Discharger shall consult and coordinate with the local Mosquito Abatement District to minimize the potential for mosquito breeding as needed to supplement the above measures.
13. Newly constructed or rehabilitated berms or levees (excluding internal berms that separate ponds or control the flow of water within a pond) shall be designed and constructed under the supervision of a California Registered Civil Engineer.
14. Wastewater contained in any unlined pond shall not have a pH less than 6.0 or greater than 9.0.

E. Groundwater Limitations

Release of waste constituents from any portion of the CTF shall not cause groundwater to:

1. Contain any of the specified constituents in a concentration statistically greater than the maximum allowable concentration tabulated below. The wells to which these requirements apply are specified in the Monitoring and Reporting Program.

Constituent	Use Area Location	Maximum Allowable Concentration
TDS	Mossdale, River Island	Current Groundwater Quality ¹
TDS	CLSP	1,000 mg/L
TDS	LAS-2, LAS-3	Current Groundwater Quality ¹
Nitrate as N	Mossdale, River Island, LAS-2	10 mg/L
Nitrate as N	CLSP ²	10 mg/L, Current Groundwater Quality ¹
Nitrate as N	Northern Lathrop, LAS-3	Current Groundwater Quality ¹
Boron	LAS-3	Current Groundwater Quality ¹
Sulfate	LAS-3	Current Groundwater Quality ¹
Manganese	LAS-3	Current Groundwater Quality ¹

¹ "Current Groundwater Quality" means the quality of groundwater as evidenced by monitoring completed as of 31 March 2016 and as determined in the report described in Provision H.1.b for each of the specified compliance monitoring wells listed in the Monitoring and Reporting Program.

² Nitrate as N concentrations are spatially variable within the CLSP area. The compliance wells to which the maximum allowable concentration applies to are specified in the Monitoring and Reporting Program.

2. Exceed a total coliform organism level of 2.2 MPN/100 mL over any seven-day period.
3. Except as specified in E.1 above, contain constituents in concentrations that exceed either the Primary or Secondary MCLs established in Title 22 of the California Code of Regulations.
4. Except as specified in E.1 above, contain taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.

Compliance with these limitations shall be determined as specified in the Monitoring and Reporting Program using approved statistical methods.

F. Water Recycling Specifications

1. For the purpose of this Order, "Use Area" means an area with defined boundaries where recycled water is used or discharged.
2. Notwithstanding the following requirements, the production, distribution, and use of recycled water shall conform to an Engineering Report prepared pursuant to Title 22, section 60323 and approved by the Division of Drinking Water.
3. The recycled water shall be at least disinfected tertiary 2.2 recycled water as defined in Title 22, section 60301.

4. Recycled water shall be used in compliance with Title 22, section 60304. Specifically, uses of recycled water shall be limited to those set forth in Title 22, section(s) 60304(a), 60304(b), 60304(c), and 60304(d).
5. Tailwater runoff and spray of recycled water shall not be discharged outside of the Use Areas except in minor, incidental amounts that cannot reasonably be eliminated by implementation and good maintenance of best management practices.
6. Application rates of recycled water to the Use Area shall be reasonable and shall consider soil, climate, and plant demand. In addition, application of recycled water and use of fertilizers shall be at a rate that takes into consideration nutrient levels in recycled water and nutrient demand by plants. As a means of discerning compliance with this requirement:
 - a. Crops or landscape vegetation shall be grown on the Use Areas, and cropping activities shall be sufficient to take up the nitrogen applied, including any fertilizers and manure.
 - b. Hydraulic loading of recycled water and supplemental irrigation water (if any) shall be managed to:
 - i. Provide water only when water is needed and in amounts consistent with that need;
 - ii. Maximize crop nutrient uptake;
 - iii. Maximize breakdown of organic waste constituents in the root zone; and
 - iv. Minimize the percolation of waste constituents below the root zone.

The Central Valley Water Board recognizes that some leaching of salts is necessary to manage salt in the root zone of crops for production. Leaching shall be managed to minimize degradation of groundwater, maintain compliance with the groundwater limitations of this Order, and prevent pollution.

7. The Discharger shall conduct periodic inspections of the recycled water Use Areas to determine compliance with the requirements of this Order. If an inspection reveals noncompliance or threat of noncompliance with this Order, the Discharger shall temporarily stop recycled water use immediately and implement corrective actions to ensure compliance with this Order.
8. Use Areas where public access is allowed shall be managed to avoid public contact with recycled water.
9. Discharge to the Use Areas shall not be performed during rainfall or when the ground is saturated.

10. Discharge of storm water runoff from the Use Areas to off-site land or surface water drainage courses is allowed if the Discharger complies with Water Recycling Specification F.9 above.
11. The irrigation with recycled water shall be managed to minimize erosion within the Use Areas.
12. The Use Areas shall be managed to prevent breeding of mosquitoes or other vectors.
13. Use Areas and recycled water impoundments shall be designed, maintained, and operated to comply with the following setback requirements:

Setback Definition	Minimum Irrigation Setback (feet)	Title 22 Reference Section
Edge of agricultural Use Area to manmade or natural surface water drainage course (does not apply to public landscaped Use Area)	25	Tertiary-2.2
Edge of Use Area to domestic water supply well	50 ¹	Tertiary-2.2 [ref: 22 CCR Section 60310(a)]
Toe of recycled water impoundment berm to domestic water supply well	100	Secondary-2.2 and Secondary-23 [ref: 22 CCR Section 60310(c)]
Edge of Use Area to residence	none	Tertiary-2.2 [ref: 22 CCR Section 60310(f)]
Edge of Use Area using spray irrigation to public park, playground, school yard, or similar place of potential public exposure	none	Tertiary-2.2 [ref: 22 CCR Section 60310(f)]

¹ Except as allowed pursuant to Water Recycling Specification F.14 below.

14. Irrigation with disinfected tertiary recycled water shall not take place within 50 feet of any domestic water supply well unless all of the following conditions have been met and DDW has approved a variance pursuant to Title 22, section 60310(a):
 - a. A geological investigation demonstrates that an aquitard exists at the well between the uppermost aquifer being drawn from the ground and the surface.
 - b. The well contains an annular seal that extends from the surface into the aquitard.
 - c. The well is housed to prevent any recycled water spray from coming into contact with the wellhead facilities.

- d. The ground surface immediately around the wellhead is contoured to allow surface water to drain away from the well.
 - e. The owner of the well approves of the elimination of the buffer zone requirement.
15. Spray irrigation with recycled water is prohibited when wind speed (including gusts) exceeds 30 mph.
 16. Spray, mist, or runoff shall not enter dwellings, designated outdoor eating areas, or food handling facilities.
 17. Drinking water fountains shall be protected against contact with recycled water spray, mist, or runoff.
 18. Public contact with recycled water shall be controlled using fences, signs, and other appropriate means.
 19. Use areas that are accessible to the public shall be posted with signs that are visible to the public and no less than four inches high by eight inches wide. Signs shall be placed at all areas of public access and around the perimeter of all Use Areas and at above-ground portions of recycled water conveyances to alert the public of the use of recycled water. All signs shall display an international symbol similar to that shown in Attachment J, which is attached and forms part of this Order, and shall include the following wording:

“RECYCLED WATER – DO NOT DRINK”
“AGUA DE DESPERDICIO RECLAMADA – NO TOME”

Alternative language will be considered by the Executive Officer if approved by DDW.

20. All recycling equipment, pumps, piping, valves, and outlets shall be marked to differentiate them from potable water facilities. Quick couplers, if used, shall be different than those used in potable water systems.
21. Recycled water controllers, valves, and similar appurtenances shall be equipped with removable handles or locking mechanisms to prevent public access or tampering.
22. Hose bibs and unlocked valves, if used, shall not be accessible to the public.
23. No physical connection shall exist between recycled water piping and any potable water supply system (including domestic wells), or between recycled water piping and any irrigation well that does not have an approved air gap or reduced pressure principle device.

24. Horizontal and vertical separation between pipelines transporting recycled water and those transporting potable water shall comply with Title 22, section 64572, except to the extent that DDW has specifically approved a variance.
25. No physical connection shall be made or allowed to exist between any recycled water system and any separate system conveying potable water or auxiliary water source system.
26. A public water supply shall not be used as backup or supplemental source of water for a recycled water system unless the connection between the two systems is protected by an air gap separation which complies with the requirements of California Code of Regulations, title 17, sections 7602(a) and 7603(a).
27. All recycled water piping and appurtenances in new installations and appurtenances in retrofit installations shall be colored purple or distinctively wrapped with purple tape in accordance with California Health and Safety Code section 116815.
28. Any backflow prevention device installed to protect a public water system shall be inspected and maintained in accordance with Title 17, section 7605.

G. Solids Disposal Specifications

Sludge, as used in this document, means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screenings generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the CTF. Biosolids refers to sludge that has been treated and tested and shown to be capable of being beneficially used as a soil amendment for agriculture, silviculture, horticulture, and land reclamation activities pursuant to federal and state regulations.

1. Sludge and solid waste shall be removed from screens, sumps, ponds, and clarifiers as needed to ensure optimal plant operation.
2. Any handling and storage of residual sludge, solid waste, and biosolids at the CTF shall be temporary (i.e., no longer than six months) and controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate the groundwater limitations of this Order.
3. Residual sludge, biosolids, and solid waste shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27, division 2. Removal for further treatment, disposal, or reuse at disposal sites (i.e., landfills, CTF, composting sites, soil amendment sites) operated in accordance with valid waste discharge requirements issued by a Regional Water Board will satisfy this specification.

4. Use of biosolids as a soil amendment shall comply with valid waste discharge requirements issued by a regional water board or the State Water Board except in cases where a local (e.g., county) program has been authorized by a regional water board. In most cases, this will mean the General Biosolids Order (State Water Resources Control Board Water Quality Order 2004-12-DWQ, "General Waste Discharge Requirements for the Discharge of Biosolids to Land for Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities"). For a biosolids use project to be covered by Order 2004-12-DWQ, the Discharger must file a complete Notice of Intent and receive a Notice of Applicability for each project.
5. Use and disposal of biosolids shall comply with the self-implementing federal regulations of 40 Code of Federal Regulations part 503, which are subject to enforcement by the U.S. EPA, not the Central Valley Water Board. If during the life of this Order, the State accepts primacy for implementation of part 503, the Central Valley Water Board may also initiate enforcement where appropriate.
6. Any proposed change in sludge use or disposal practice shall be reported in writing to the Executive Officer at least 90 days in advance of the change.

H. Provisions

1. The following reports shall be submitted pursuant to Water Code section 13267 and shall be prepared as described in Provision H.3:
 - a. **By 1 July 2016**, the Discharger shall submit documentation from the State Water Resources Control Board Division of Drinking Water regarding conditional approval under the alternative criteria for disinfected tertiary recycled water as defined by California Code of Regulations, title 22 (Title 22) section 60301.230(a)(2).
 - b. **By 1 August 2016**, the Discharger shall submit a *Revised Groundwater Limitations Compliance Assessment Plan*. The plan shall describe and justify the statistical methods that are proposed to determine compliance with the Groundwater Limitations of this Order for any compliance well listed in the Monitoring and Reporting Program. As described in the MRP, Compliance shall be determined annually based on intra-well statistical analysis that evaluates temporal trends based on all historic data collected at each well that uses methods prescribed in Title 27, section 20415(e)(7) and (8).
 - c. **By 1 December 2016**, a *Well Destruction Report* shall be submitted to the Central Valley Water Board that describes in detail the methods used to abandon monitoring wells CLSP-2, CLSP-4, CLSP-10, and MWR-6 in accordance with the approved *Groundwater Monitoring Well Condition Survey Report and Destruction Plan* and includes copies of the well abandonment permits issued by the San Joaquin County Environmental Health Department.

- d. **By 1 October 2017**, the Discharger shall submit a report that certifies completion of the pond sludge removal from Effluent Storage Ponds A, B, and C. The report shall describe the sludge removal and sludge drying operations, provide the total volume of sludge removed and sludge disposal location, and certify that the ponds are fully functional and ready to receive treated wastewater. The report shall include a description of the liner condition after sludge removal including visual inspection of any material damage such as holes or tears, and any repairs and or testing performed prior to pond use.
- e. **At least 60 days** prior to operational use of any expansion of the recycled water system, including but not limited to new recycled water storage ponds, recycled water distribution system, and recycled water infrastructure improvements to deliver recycled water to new or expanded Use Areas, whether defined as “planned”, “future” or undefined in this Order, the Discharger shall submit a *Recycled Water Storage and Conveyance System Improvements Completion Report*. The report shall document the construction of the improvements and certify that they are fully functional and ready to receive treated wastewater in compliance with the requirements of this Order. The report shall include design parameters, final dimensions and volumetric capacity (for ponds), and as-built drawings.

For each recycled water storage pond or Use Area not defined as “existing” or “planned” in the Findings and Information Sheet of this Order, the report shall include a copy of the certified CEQA document for the expansion project.

- f. **At least 60 days prior** to conveying recycled water to any new Use Area, whether defined as “planned”, “future” or undefined in this Order, the Discharger shall submit a *Recycled Water User Report* to the Central Valley Water Board and Division of Drinking Water. The report shall include the following:
 - i. The site location including a map showing the specific boundaries of the use site and the County Assessor’s Parcel Number(s) (if appropriate, if Parcel Number(s) are not appropriate to accurately describe the site location, the Discharger shall provide the Central Valley Water Board with enough information for the Central Valley Water Board to accurately determine the location of the proposed reclamation activities);
 - ii. The name of the Use Area property owner and contact information;
 - iii. The name of the User and contact information;
 - iv. The specific use to be made of the recycled water, the Use Area acreage, the type of vegetation/crops to which the recycled water will be applied, and the anticipated volume of recycled water to be used;

- v. Identification of the on-site supervisor who is responsible for operation of the recycled water system;
- vi. Description of the recycled water management facilities and operations plan;
- vii. Plans and specifications that include the following:
 - 1) Pipe locations of the recycled, potable, and auxiliary non-potable water systems;
 - 2) Type and location of the outlets and plumbing fixtures that will be accessible to the public;
 - 3) The methods and devices to be used to prevent backflow of recycled water into the public water system; and
 - 4) Plan notes relating to recycled water specific installation and use requirements.
- viii. Certification that the new Use Area conforms to the Discharger's rules and regulations;
- ix. An assessment of whether groundwater monitoring is appropriate based on pre-discharge groundwater quality; the size of the proposed recycled water Use Area, and volume of recycled water to be received by the Use Area annually. For each new Use Area in the Northern Lathrop or CLSP development areas, the report shall also include a re-evaluation of pre-discharge groundwater conditions based on at least three quarterly groundwater monitoring events using the monitoring wells identified in the MRP, or other locations approved by the Central Valley Water Board. Parameters monitored shall be as specified in the MRP;
- x. A copy of the signed User Agreement; and
- xi. The results of the cross-connection control test performed in accordance with the American Water Works Association and the Drinking Water Program (Title 17, section 7605). The results shall include a certification that the Drinking Water Program was notified of the initial cross-connection control test and was provided an opportunity to be present.

A copy of the User agreement and the Discharger's rules and regulations governing the distribution and use of recycled water shall be maintained at the User's facilities and be available at all times for inspection by Regional Water Board staff, the Discharger, and Division of Drinking Water staff.

If, in the opinion of the Executive Officer, reclamation at a proposed new Use Area cannot be adequately regulated under the Master Recycling Permit, a

Report of Waste Discharge may be requested and individual Water Recycling Requirements may be required.

- g. **At least 180 days** prior to any planned increase in influent flow to the CTF, the Discharger shall submit a *CTF Expansion Final Design Report* that documents the design of facility improvements and provides technical justification for the proposed flow limit increases. Incremental flow rate increases associated with a treatment plant expansion shall be no less than 0.25 mgd. Incremental flow rate increases associated only with an expansion in recycled water storage and/or disposal capacity shall be no less than 0.075 mgd. The report shall include a water balance that demonstrates the treatment, storage and disposal capacity of the CTF and completed recycled water Use Areas. The water balance shall provide the following treatment and hydraulic capacity information:

- i. Design average dry weather flow for the months of July through September, inclusive;
- ii. Design wet weather flows based on a reasonable allowance for sewer system inflow and infiltration (I/I) during the 100 year, 365-day precipitation event, and
- iii. Total annual flow volume.

The water balance shall include documentation of, and technical support for, all data inputs used and shall consider at least the following.

- i. The as-built geometry of all new recycled water ponds and Use Areas;
- ii. A minimum of two feet of freeboard in each pond at all times;
- iii. Historical local pan evaporation data (monthly average values) used to estimate pond evaporation rates;
- iv. Local precipitation data (for the 100-year 365-day event distributed in accordance with mean monthly precipitation patterns) applied as direct precipitation onto all ponds and effluent recycling areas;
- v. Proposed wastewater generation rates based on historical flows and new development to be served by the expansion distributed equally by month;
- vi. Estimated I/I flows for the 100-year 365-day event based on historical flows, new development, and age and type of sewer pipes; and
- vii. Use Area crop evapotranspiration rates, including consideration of the required setbacks.

that capacity of any part of the facilities may be exceeded in four years, the discharger shall notify the Central Valley Water Board by **31 January**.

3. In accordance with California Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans for investigations and studies, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall bear the professional's signature and stamp.
4. The Discharger shall submit the technical reports and work plans required by this Order for consideration by the Executive Officer, and incorporate comments the Executive Officer may have in a timely manner, as appropriate. Unless expressly stated otherwise in this Order, the Discharger shall proceed with all work required by the foregoing provisions by the due dates specified.
5. The Discharger shall comply with Monitoring and Reporting Program R5-2016-0028, which is part of this Order, and any revisions thereto as ordered by the Executive Officer. The submittal dates of Discharger self-monitoring reports shall be no later than the submittal date specified in the MRP.
6. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated 1 March 1991, which are attached hereto and made part of this Order by reference. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."
7. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports. On or before each report due date, the Discharger shall submit the specified document to the Central Valley Water Board or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, then the Discharger shall state the reasons for such noncompliance and provide an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board in writing when it returns to compliance with the time schedule. Violations may result in enforcement action, including Central Valley Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.
8. The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and

appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by the Discharger when the operation is necessary to achieve compliance with the conditions of this Order.

9. The Discharger shall use the best practicable cost-effective control technique(s) including proper operation and maintenance, to comply with this Order.
10. The Discharger shall provide certified wastewater treatment plant operators in accordance with Title 23, division 3, chapter 26.
11. As described in the Standard Provisions, the Discharger shall report promptly to the Central Valley Water Board any material change or proposed change in the character, location, or volume of the discharge.
12. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986."
13. The Discharger shall comply with the requirements of the Statewide General Waste Discharge Requirements (General WDRs) for Sanitary Sewer Systems (Water Quality Order 2006-0003), the Revised General WDRs Monitoring and Reporting Program (Water Quality Order 2008-0002-EXEC), and any subsequent revisions thereto. Water Quality Order 2006-0003 and Order 2008-0002-EXEC require the Discharger to notify the Central Valley Water Board and take remedial action upon the reduction, loss, or failure of the sanitary sewer system resulting in a sanitary sewer overflow.
14. The Discharger shall not allow pollutant-free wastewater to be discharged into the wastewater collection, treatment, and disposal systems in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.
15. At least **90 days** prior to termination or expiration of any lease, contract, or agreement involving disposal or recycling areas or off-site reuse of effluent, used to justify the capacity authorized herein and assure compliance with this Order, the Discharger shall notify the Central Valley Water Board in writing of the situation and of what measures have been taken or are being taken to assure full compliance with this Order.
16. In the event of any change in control or ownership of the CTF, the Discharger must notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.

17. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. If approved by the Executive Officer, the transfer request will be submitted to the Central Valley Water Board for its consideration of transferring the ownership of this Order at one of its regularly scheduled meetings.
18. A copy of this Order including the MRP, Information Sheet, Attachments, and Standard Provisions, shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.
19. The Central Valley Water Board will review this Order periodically and will revise requirements when necessary.

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order may result in the assessment of Administrative Civil Liability of up to \$10,000 per violation, per day, depending on the violation, pursuant to the Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

http://www.waterboards.ca.gov/public_notices/petitions/water_quality

or will be provided upon request.

WASTE DISCHARGE REQUIREMENTS R5-2016-0028-01
CITY OF LATHROP
LATHROP CONSOLIDATED TREATMENT FACILITY
SAN JOAQUIN COUNTY

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I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full true, and correct copy of an Order adopted by the California Regional Water Quality Control Board on 21 April 2016 and amended on DATE.

PAMELA C. CREEDON, Executive Officer

Amended by Order R5-xxxx-xxxx
LLA: 0329161117011718