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**[TENTATIVE] WASTE DISCHARGE REQUIREMENTS ORDER
R5-2022-XXXX**



ORDER INFORMATION

Order Type(s):	Waste Discharge Requirements (WDRs)
Status:	Tentative
Program:	Non-15 Discharges to Land
Region 5 Office:	Fresno
Discharger(s):	City of Madera
Facility:	Madera Wastewater Treatment Facility
Address:	13048 Road 21 ½, Madera, CA 93637
County:	Madera County
Prior Order(s):	95-046, 89-051, 72-272

CERTIFICATION

I, PATRICK PULUPA, Executive Officer, hereby certify that the following is a full, true, and correct copy of the order adopted by the California Regional Water Quality Control Board, Central Valley Region, on XX December 2022.

PATRICK PULUPA,
Executive Officer

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GLOSSARY

Antidegradation Policy.....	Statement of Policy with Respect to Maintaining High Quality Waters in California, State Water Board Resolution 68-16
Basin Plan	Water Quality Control Plan for the Sacramento and San Joaquin River Basins
Bgs	Below Ground Surface
BOD[5]	[Five-Day] Biochemical Oxygen Demand at 20° Celsius
BPTC.....	Best Practicable Treatment and Control
CEQA	California Environmental Quality Act, Public Resources Code section 21000 et seq.
CEQA Guidelines	California Code of Regulations, Title 14, section 15000 et seq.
C.F.R.....	Code of Federal Regulations
COC[s]	Constituent[s] of Concern
DO.....	Dissolved Oxygen
DTSC	California Department of Toxic Substances Control
DWR.....	California Department of Water Resources
EC	Electrical Conductivity
EIR	Environmental Impact Report
FDS	Fixed Dissolved Solids
FEMA	Federal Emergency Management Agency
IPP	Industrial Pretreatment Program
LAA	Land Application Area
lbs/ac/yr.....	Pounds per Acre per Year
µg/L.....	Micrograms per Liter

GLOSSARY

µmhos/cm.....	Micromhos per Centimeter
MG[D].....	Million Gallons [per Day]
mg/L	Milligrams per Liter
msl.....	Mean Sea Level
MRP	Monitoring and Reporting Program
MW.....	Monitoring Well
MCL.....	Maximum Contaminant Level per Title 22
mJ/cm ²	Millijoules per Square Centimeter
ORP	Oxygen Reduction Potential
N.....	Nitrogen
ND.....	Non-Detect
NE	Not Established
NM.....	Not Monitored
Recycled Water Policy	<i>Policy for Water Quality Control for Recycled Water, State Water Board Resolution 2009-0011, as amended per Resolutions 2013-0003 and 2018-0057</i>
R[O]WD.....	Report of Waste Discharge
RCRA.....	Resource Conservation and Recovery Act
SPRRs	Standard Provisions and Reporting Requirements
SERC	State Emergency Response Commission
TDS.....	Total Dissolved Solids
Title 22	California Code of Regulations, Title 22
Title 23	California Code of Regulations, Title 23
Title 27	California Code of Regulations, Title 27

GLOSSARY

TKN Total Kjeldahl Nitrogen

Unified Guidance Statistical Analysis of Groundwater Monitoring Data at
RCRA Facilities, Unified Guidance (USEPA, 2009)

USEPA United States Environmental Protection Agency

VOC[s] Volatile Organic Compound[s]

WDRs Waste Discharge Requirements

WQO[s] Water Quality Objective[s]

FINDINGS

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) hereby finds as follows:

Introduction

1. City of Madera (Discharger or City) owns and operates the Madera Wastewater Treatment Facility (WWTF or Facility), which is located approximately 5.4 miles southwest of Madera in Madera County, Section 30, Township 11S, Range 17E, and Section 25, Township 11S, Range 16E, Mount Diablo Base and Meridian (MDB&M). The Facility's location is depicted on the Site Location Map in **Attachment A**.
2. The Facility is comprised of the following Madera County Assessor Parcel Numbers (APNs):
 - APN 045-121-004
 - APN 045-112-006
 - APN 045-112-005
 - APN 045-112-022
3. As the owner and operator of the WWTF, the Discharger is responsible for compliance with the Waste Discharge Requirements (WDRs) prescribed in this Order.
4. The following materials are attached and incorporated as part of this Order:
 - a. Attachment A – Site Location Map
 - b. Attachment B – Facility Map
 - c. Attachment C – Flow Schematic
 - d. Attachment D – Requirements for Monitoring Well Installation Work Plans and Monitoring Well Installation Reports
 - e. Standard Provisions & Reporting Requirements dated 1 March 1991 (SPRRs)
 - f. Information Sheet
5. Also attached is **Monitoring and Reporting Program R5-2022-XXX** (MRP), which requires monitoring and reporting for discharges regulated under these WDRs. The Discharger shall comply with the MRP and subsequent revisions thereto as ordered by the Executive Officer.

Regulatory History

6. WDRs Order 95-046 was adopted by the Central Valley Water Board on 24 February 1995. WDRs Order 95-046 currently regulates the Madera WWTF and authorizes a monthly average daily dry weather discharge flow of up to 7.0 mgd of undisinfected secondary wastewater to fifteen evaporation/percolation ponds across 280 acres. WDRs Order 95-046 stated the WWTF consisted of two primary clarifiers (operated in parallel), one back-up clarifier, two media trickling filters (in parallel), two secondary clarifiers (in parallel), and two anaerobic sludge digesters (in parallel), and four sludge drying beds.
7. On 8 November 2001, the Executive Officer issued Cleanup and Abatement Order (CAO) 5-01-727 for improper sludge and solids discharge practices at the WWTF. Staff inspections in 1998 and 2001 revealed that Facility operators had been diluting digested and undigested sludge with effluent, conveying the effluent-sludge slurry through a common pipeline, and discharging it directly to disposal ponds, even while the disposal ponds were in active service. Operators at the Facility had also been discharging undigested sludge directly to disposal ponds and burying screenings and grit onsite.
8. The CAO required the City to cleanup sludge accumulations in disposal ponds and to provide a technical report that included a work plan to describe immediate actions to cleanup accumulations of wet sludge in active disposal ponds and dried sludge in inactive disposal ponds. In addition, the City was also tasked with identifying and characterizing the extent of contaminated soils caused by improper sludge and grit disposal practices and determine waste constituent concentrations in contaminated soils.
9. To abate the improper sludge and solids disposal practices, the City discontinued the onsite disposal of screenings, grit, and sludge to the Facility's sludge drying beds and disposal ponds; cleanup of solids that had been discharged to an unlined pit near the treatment works and backfill of the pit with native soil; repaired the sludge digesters; and completed soil investigation work required by the CAO. In February 2004, the City replaced the sludge drying beds with a skid-mounted centrifuge, a second centrifuge was added between 2005 and 2007. While the City completed the activities required by the CAO, historical disposal activities could have resulted in potential impacts to underlying groundwater.
10. On 3 April 2003, the Discharger submitted a Report of Waste Discharge (RWD) for a Facility expansion and requested a flow increase from 7.0 mgd to 10.1 mgd. The expansion of the Facility was completed in 2008 and utilizes an activated sludge technology with biological nutrient removal. The expansion included the

addition of the Biological Nutrient Removal (BNR) process, which was introduced to lower the amount of nitrogen in the effluent to below drinking water standards. The WWTF expansion also included the addition of a septage receiving station, added two new grit chambers, added four secondary clarifiers, a third anaerobic sludge digester, two centrifuges, and a cogeneration facility to generate electricity to help offset facility electrical energy requirements. However, the April 2003 RWD did not discuss a proposed effluent disposal method to justify the flow increase.

11. On 20 May 2010, the City submitted an addendum to the 2003 RWD, which provided an evaluation of the following two effluent disposal methods to justify the flow increase to 10.1 mgd: (1) construction of a groundwater extraction well network and conveyance pipeline to a Madera Irrigation District canal or (2) purchasing additional land to practice reclamation in the form of agricultural irrigation. The 2010 ROWD addendum proposed moving forward with the groundwater extraction well network disposal method. During subsequent meetings with Central Valley Water Board staff, it was determined that the Madera Irrigation District canals that the City proposed to discharge effluent to may be Waters of the United States and, therefore, any discharge of pollutants to the canals would potentially require a National Pollutant Discharge Elimination System (NPDES) permit. In response, the City did not pursue the canal discharge option.
12. On 4 October 2018, Central Valley Water Board staff issued the City a 13260 letter requiring the City to submit a RWD to update the WWTF's WDRs. The City submitted a RWD on 23 May 2019 requesting to rescind the City's previous request for a flow increase to 10.1 mgd for the time being. Staff responded to the RWD in a 19 August 2019 letter and memo expressing concern that the City's speculative growth could eventually result in the City exceeding a flow limitation of 7.0 mgd. Therefore, the August 2019 letter asked the City to either provide a report projecting the City's 20-year growth and corresponding WWTF flows or sufficient demonstration that the WWTF has disposal capacity for flow increase to 10.1 mgd.
13. In response to the August 2019 letter, the City acknowledged that the City's planned future growth may result in the WWTF's exceeding 7.0 mgd in the next 20 years if speculative projects move forward. The City requested additional time to install groundwater monitoring wells and evaluate groundwater conditions to submit the necessary information to be permitted to up to 10.1 mgd (i.e., wastewater treatment capacity assessment, updated water balance, and antidegradation evaluation). This Order retains the 7.0 mgd flow limitation but includes a time schedule requiring the Discharger to collect the necessary information to justify increasing the Facility flow limitation above 7.0 mgd. To

increase the WWTF flow limit above 7 mgd, the Discharger will need to submit a Report of Waste Discharge proposing the flow limit increase and satisfy CEQA.

14. Water Board staff inspected the City of Madera WWTF on 17 April 2020 after receiving an anonymous complaint of an open well in the bottom of pond 9S. Staff conducted an inspection of the pond and discovered a partially destroyed well with a diameter of approximately 14 inches which was 20 to 25 feet deep. In a 1 May 2020 letter, staff required the City of Madera to properly destroy the well per California Department of Water Resources and Madera County regulations by 30 June 2020. According to the well destruction report, the well was destroyed on 30 June 2020 by Madera Pumps Inc.
15. The WDRs for the City's WWTF are being updated to ensure the discharge is consistent with water quality plans and policies. WDRs Order 95-046 will be rescinded and replaced with this Order.

Facility and Discharges

Existing Facility and Discharges

16. The City's WWTF serves the City of Madera. The WWTF receives wastewater from residential, commercial, and industrial sources. The City currently has a pretreatment program in conformance with Code of Federal Regulations (CFR), Title 40, Part 403. The program was approved on 23 September 1983.
17. Based on 2021 Census data, the City of Madera serves an estimated population of about 68,000 people. The City is a disadvantaged community with a median household income (in 2020) of \$49,335, according to the United States Census Bureau.
18. The WWTF is a fully enclosed facility (e.g., tanks, concrete-lined facilities of limited areal extent), which consists of an influent lift station and headworks, three primary clarifiers, three oxidation ditches, four secondary clarifiers, two primary digesters, one secondary digester, two centrifuges, and 15 evaporation/percolation ponds. In the past, the Facility utilized 14 evaporation/percolation ponds for effluent disposal. Since the adoption of Order 95-046, Pond 9S was constructed, bringing the total disposal pond acreage to 320 acres. Influent is treated between three parallel primary clarifiers where primary effluent is mixed with return activated sludge and pumped to the oxidation ditch structure. The oxidation ditches operate in parallel and provide biological treatment where aerobic and anoxic zones provide nitrification and denitrification for nitrogen removal. A Facility Map is included in **Attachment B** and a Flow Schematic is included in **Attachment C**.

Google Earth images shows five evaporation/percolation ponds are typically in use at a time, and currently there are no plans to expand the current disposal area. In addition, the Facility includes an unlined emergency disposal pond across a surface area of five acres. According to City staff, the emergency holding pond can be used to hold raw wastewater and/or primary effluent in the event of an emergency, if maintenance is required, or if the primary effluent pumps fail. Raw wastewater is pumped back into the headworks once operators have corrected the operational issue. Recent conversations with City staff indicate that the City is interested in pursuing reclamation options if possible.

19. According to the 2019 RWD, current sludge handling operations at the WWTF consist of transferring sludge from the two primary digesters to a secondary anaerobic digester. Centrate from the digester is returned to the headworks of the treatment plant. Treated sludge is then dewatered using two skid mounted centrifuges, after which the dewatered cake is deposited into trailers which are hauled off by Synagro for composting.
20. WWTF monthly influent flows for 2017 through 2021 are shown in **Table 1** below.

Table 1 - Influent Flow (mgd)

Year	Minimum Monthly Flow	Maximum Monthly Flow	Annual Average Flow
2017	4.71	5.02	4.87
2018	4.64	5.01	4.84
2019	4.83	5.98	5.20
2020	4.93	5.20	5.09
2021	4.84	5.62	5.22

21. Monitoring data collected from 2017 through 2021, shown in **Table 2**, indicates the WWTF provides, on average, 93 percent reduction for BOD and 95 percent reduction for TSS.

Table 2 – BOD and TSS Data

Year	BOD Influent (mg/L)	BOD Effluent (mg/L)	BOD Removal (%)	TSS Influent (mg/L)	TSS Effluent (mg/L)	TSS Removal (%)
2017	253	10.6	96	239	7.5	97
2018	266	17.1	94	239	12.2	95

Year	BOD Influent (mg/L)	BOD Effluent (mg/L)	BOD Removal (%)	TSS Influent (mg/L)	TSS Effluent (mg/L)	TSS Removal (%)
2019	266	17.3	93	289	11.7	96
2020	213	17.9	92	189	15.3	92
2021	215	18.2	92	192	12.7	93

22. The 23 May 2019 RWD states that the oxidation ditches are designed to achieve an effluent total nitrogen of 10 mg/L or less; however, monitoring data for 2021 and first quarter of 2022 shows that the Facility’s nitrogen removal capacity was reduced. City staff attributed the reduce nitrogen removal to bacteria issues within the oxidation ditches. To correct the issue, City staff reseeded the oxidation ditches with sludge from the Fresno-Clovis Regional Wastewater Treatment Facility in February 2022. The 2022 second quarterly sample result indicates that the reseeded has appeared to correct the WWTF’s nitrogen removal issues. This Order includes a total nitrogen effluent limit of 10 mg/L to ensure that the Discharger operates the Facility in a manner protective of underlying groundwater. **Table 3** below summarizes the WWTF’s effluent total nitrogen data since 2017.

Table 3 – Effluent Total Nitrogen Data (2017 - Q2 2022)

Constituent	Units	2017	2018	2019	2020	2021	Q1 2022	Q2 2022
Total Nitrogen	mg/L	2.5	9.7	16.7	7.5	18.7	37.0	2.8

23. Effluent annual averages for select salinity constituents from 2017 through 2021 are shown in **Table 4** below.

Table 4 – Salinity Data (2017 – 2021)

Constituent	Units	2017	2018	2019	2020	2021
TDS	mg/L	367	353	357	373	365
EC	µmhos/cm	642	690	731	649	734

Constituent	Units	2017	2018	2019	2020	2021
Chloride	mg/L	70	72	70	68	75
Sodium	mg/L	77	75	75	71	71
Sulfate	mg/L	29	30	28	25	31

Industrial Pretreatment Considerations

24. Certain industrial wastes, when discharged to wastewater treatment facilities without adequate controls, may cause one or more of the following problems:
 - a. **Interference or Upset.** Discharges of high volumes or concentrations of certain waste constituents can inhibit or interfere with proper operations, thereby impairing the WWTF’s ability to treat wastewater—and potentially preventing compliance with WDRs.
 - b. **Sludge Management.** Industrial wastes, particularly metals and other toxic constituents, can limit available sludge management alternatives, thereby increasing the cost of sludge management and disposal. Contaminated biosolids may also be unsuitable as a soil amendment.
 - c. **Pass-Through.** Some industrial wastes may not receive adequate treatment and pass through the treatment system in concentrations that can could unreasonably degrade groundwater quality and/or prevent recycling of domestic wastewater.
 - d. **Other Hazards.** Additionally, the discharge of explosive, reactive, or corrosive wastes can cause damage to the wastewater collection system or the treatment works, as well as threaten the safety of workers and/or the general public.

25. The Discharger has an Industrial Pretreatment Program to regulate the discharge of industrial wastes into the collection system or treatment works, so as to prevent damage to the sewer system or treatment works, inhibit or disrupt the treatment process, or cause violation of the Effluent Limitations or Groundwater Limitations in this Order.

26. The Dischargers' current Industrial Pretreatment Program consists of seven industrial users (IUs), which discharge to the WWTF. The IUs are classified as non-categorical. Current issued permits are valid until 31 December 2025. The Central Valley Water Board finds that this program is adequate to meet the Facility’s needs, and to prevent the various issues described above. Under this

Order, the Discharger is therefore required to continue implementing their current program.

Site-Specific Conditions

Topography, Climate and Land Use

27. The topography at the Madera WWTF slopes generally to the west, with elevations ranging from 225 to 230 feet above mean sea level. The pond area topography also slopes to the west with elevations ranging from 210 to 224 feet above mean sea level.
28. The soils below the WWTF are primarily Traver loam and Pachappa fine sandy loam, according to the Web Soil Survey published by the United States Department of Agriculture, Natural Resources Conservation Service. Traver loam and Pachappa fine sandy loam have irrigated land capabilities of two. Class 2 soils have moderate limitations that reduce the choice of plants or require moderate conservation practices.
29. The Madera WWTF is in a semi-arid climate characterized by hot dry summers and cool winters. The rainy season generally extends from October through April. Based on data from the nearest California Irrigation Management Information System (CIMIS) station (Station 80), the Facility has an annual average precipitation of 12.8 inches, and a mean pan evaporation of 61.1 inches per year. According to National Oceanic and Atmospheric Administration (NOAA) Precipitation Frequency Atlas 14, Vol. 6 (rev. 2014), 100-year and 1,000-year, 24-hour rainfall events are estimated to result in 3.2 and 5.0 inches of precipitation, respectively.¹
30. According to the [Federal Emergency Management Agency's \(FEMA\) Flood Insurance Rate Map](#) (Number 06039C1150E) (<https://msc.fema.gov/portal>), the Madera WWTF is located in Zone X, an area of minimal flood hazard.
31. Land uses in the vicinity primarily include agricultural, rural residential, light industrial and open space. According to the California Department of Water Resources Land Use Viewer, typical crops grown in the area include deciduous fruits and grapes.

¹ Source: [NOAA Precipitation Frequency Data Server](https://hdsc.nws.noaa.gov/hdsc/pfds)
(<https://hdsc.nws.noaa.gov/hdsc/pfds>)

Groundwater and Subsurface Conditions

32. The City obtains its source water from multiple groundwater supply wells. Average source water quality data from the City’s 2017-2020 water quality reports is presented in **Table 5** below.

Table 5 – Source Water Quality

Constituent	Units	2017	2018	2019	2020
EC	µmhos/cm	273.3	272.8	215.8	142.7
TDS	mg/L	207.2	207.8	189.5	122.9
Nitrate (as N)	mg/L	1.72	0.45	0.28	1.63
Iron	µg/L	0.00	0.00	0.01	24.68
Sulfate	mg/L	6.76	6.59	5.25	3.67
Chloride	mg/L	21.2	21.1	18.7	13.15

33. According to the Sustainable Groundwater Management Data Viewer published by California Department of Water Resources (DWR), Spring 2021 groundwater depth contours indicate groundwater in the area is found between 200 and 210 feet below ground surface (bgs) and flows south to southeast.
34. The Facility has a network of eight monitoring wells that monitor shallow groundwater in and around the WWTFs surrounding area. MW-02 was damaged due to farming operations and can no longer be located by the Discharger. Well construction data and depth to groundwater from the first quarter of 2021 are shown below in **Table 6**.

Table 6 – Onsite Groundwater Monitoring Network Information

Monitoring Well	Year Constructed	Well Depth (feet bgs)	Screen Interval (feet bgs)	1 st Quarter 2021 Depth to Water (feet bgs)	2 nd Quarter 2022 Depth to Water (feet bgs)
MW-01	1998	153	95-125	123.0	121.9
MW-02	1998	150	85-115	N/A	N/A
MW-03	1998	152	95-125	133.0	132.8

Monitoring Well	Year Constructed	Well Depth (feet bgs)	Screen Interval (feet bgs)	1 st Quarter 2021 Depth to Water (feet bgs)	2 nd Quarter 2022 Depth to Water (feet bgs)
MW-04	1998	170	125-155	161.2	160.8
MW-5A	2003	140	80-110	Dry	Dry
MW-06	2003	140	95-125	120.9	124.2
MW-07	2003	140	95-125	101.1	91.8
MW-08	2003	140	95-125	119.5	98.5

35. Due to receding groundwater levels, the Discharger has not been able to consistently sample most of the monitoring wells the past few years. For example, during the period of 2017-2020, only MW-01 could be routinely sampled. However, the Discharger was able to collect samples from Monitoring Wells MW-01, MW-6, MW-07, and MW-08 for all four quarters of 2021. Monitoring wells MW-01, MW-06, and MW-08 are located along the south side of the percolation ponds. MW-07 is located between ponds 3N and 3S. **Attachment A** shows the locations of the monitoring wells. The available monitoring data for 2021 is summarized in **Table 7** below.

Table 7 – Onsite Groundwater Monitoring Network Data

Constituent	Units	MW-01	MW-06	MW-07	MW-08	MCL
Chloride	mg/L	85	82	67	82	250-500
EC	µmhos/cm	945	985	1,050	934	900-1,600
Nitrate as N	mg/L	6.9	15.0	14.5	14.4	10
TKN	mg/L	ND	1.2	1.2	ND	---
TDS	mg/L	593	708	694	610	500-1,000
Sodium	mg/L	128	98	88	92	---
Sulfate	mg/L	44	53	42	36	250-500
Iron (Dissolved)	mg/L	ND	0.02	ND	ND	0.3
Manganese (Dissolved)	mg/L	ND	0.13	0.07	ND	0.05
Arsenic	µg/L	7.9	4.1	5.8	4.0	10

36. Groundwater total coliform monitoring data from 2021 is shown below in **Table 8** below.

Table 8 – Total Coliform Groundwater Monitoring Data (2021)

Month	MW-01	MW-06	MW-07	MW-08
January	4.5	>1,600	6.1	540
February	<1.8	1,600	13	<1.8
March	<1.8	110	350	130
April	<1.8	79	>1,600	6.8
May	23	350	170	33
June	4.5	>1,600	>1,600	130
July	2	350	240	6.1
August	7.8	540	>1,600	33
September	<1.8	<1.8	2	4.5
October	<1.8	2	70	170
November	<1.8	2	4	6.1
December	<1.8	2	350	4.5

37. The downgradient monitoring data shows elevated concentrations for salinity (i.e., TDS and EC) as well as nitrate. However, as discussed in more detail in the subsequent Finding, the Facility’s current groundwater monitoring network does not have an active monitoring well that monitors upgradient groundwater quality. Therefore, it is unclear if the elevated nitrate and salinity contributions are the result of the Facility’s discharge or surrounding activities (e.g., farming).
38. The WWTF’s current groundwater monitoring network does not characterize upgradient groundwater conditions. To justify an increase in flow capacity, the Discharger proposed to construct new groundwater monitoring wells to monitor groundwater as part of the City’s effort to prepare an engineering evaluation of the Facility’s disposal capacity. The Discharger issued a contract to install new monitoring wells 20 to 30 feet from existing monitoring wells 4, 5A, 7, 8, as well as a new upgradient monitoring well (MW-09) which will be constructed on Road 20 between Avenue 13 1/2 and Avenue 14. The City submitted a groundwater monitoring well installation workplan on 23 March 2021. Monitoring wells were initially slated to be completed around September to December 2021; however, City staff later proposed an updated completion date of November 2022.
39. Groundwater data obtained from the [State Water Board Groundwater Ambient Monitoring and Assessment Program \(GAMA\) website](https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/) (<https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/>) for four nearby wells (B1: 365434120120001, B2: 365408120091901, B3:

365759120074001, and B4: 365752120102702) are shown in **Table 9** below. Wells B1 and B2 are located approximately 2.8 and 3.1 miles downgradient of the Facility. Wells B3 and B4 are located 1.7 and 2.6 miles upgradient of the Facility.

Table 9 – Historic Groundwater Quality

Constituent/Parameter	B1 (April 1966)	B2 (July 1961)	B3 (March 1966)	B4 (May 1966)
Well Depth (ft)	144	268	178	136
EC (µmhos/cm)	191	524	126	555
Nitrate (as N) (mg/L)	1.81	1.58	0.20	8.58
Sodium (mg/L)	19	37	10	28
Chloride (mg/L)	16	32	8.6	27
TDS (mg/L)	177	373.5	86.5	371

40. Based on the available historical data, groundwater quality was generally of good quality with regards to salinity and nitrate.

Statutory Authority

41. This Order is adopted pursuant to Water Code section 13263, subdivision (a), which provides in pertinent part as follows:

The regional board, after any necessary hearing, shall prescribe requirements as to the nature of any proposed discharge, existing discharge, or material change in an existing discharge..., with relation to the conditions existing in the disposal area or receiving waters upon, or into which, the discharge is made or proposed.

42. Compliance with section 13263, subdivision (a), including implementation of applicable water quality control plans, is discussed in the findings below.
43. The ability to discharge waste is a privilege, not a right, and adoption of this Order shall not be construed as creating a vested right to continue discharging waste. (Wat. Code, § 13263, subd. (g).)
44. This Order and its associated Monitoring and Reporting Program (MRP) are also adopted pursuant to Water Code section 13267, subdivision (b)(1), which provides as follows:

[T]he 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 ... shall furnish, under penalty of perjury,

technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

45. The reports required under this Order, as well as under the separately issued MRP, are necessary to verify and ensure compliance with WDRs. The burden associated with such reports is reasonable relative to the need for their submission.

Basin Plan Implementation

46. Pursuant to Water Code section 13263, subdivision (a), WDRs must “implement any relevant water quality control plans..., and shall take into consideration the beneficial uses to be protected, the water quality objectives reasonably required for that purpose, other waste discharges, the need to prevent nuisance, and the provisions of Section 13241.”

Beneficial Uses of Water

47. This Order implements the Central Valley Water Board’s Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin (Basin Plan), which designates beneficial uses for surface water and groundwater and establishes water quality objectives (WQOs) necessary to preserve such beneficial uses. (See Wat. Code, § 13241 et seq.)
48. Local drainage is to Cottonwood Creek, a tributary to the San Joaquin River between Friant Dam to Mendota Pool, the beneficial uses of which (per the Basin Plan) include: municipal and beneficial use (MUN); agricultural supply (AGR); industrial process supply (PRO); water contact recreation (REC-1); non-water contact recreation (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD); wildlife habitat (WILD); migration of aquatic organisms (MIGR); and spawning, reproduction and/or early development (SPAWN).
49. Per the Basin Plan, beneficial uses of underlying groundwater at the Facility are: municipal and domestic supply (MUN); agricultural supply (AGR); industrial service supply (IND); and industrial process supply (PRO).

Water Quality Objectives

50. The numeric WQO for bacteria is expressed as the most probable number (MPN) of coliform organisms per 100 mL of water. For MUN-designated groundwater, the objective is an MPN of 2.2 organisms over any seven-day period.
51. The narrative WQO for chemical constituents in groundwater generally provides that groundwater shall not contain constituents in concentrations adversely affecting beneficial uses. For MUN-designated waters, the Basin Plan further provides that water, at a minimum, meet the primary and secondary maximum contaminant levels (MCLs) specified in California Code of Regulations, title 22 (Title 22).² (See Title 22, §§ 64431, 64444, 64449.)
52. The narrative WQO for toxicity provides that groundwater shall be maintained free of toxic substances in concentrations producing detrimental physiological responses in human, animal, plant or aquatic life associated with designated beneficial uses.
53. To the extent necessary, narrative WQOs are quantified, on a site-specific basis, as numeric limits for constituents with potential to adversely impacted designated uses. In determining a site-specific numeric limit, the Central Valley Water Board considers relevant published criteria.
54. In determining a numeric limit for salinity protective of agricultural supply (AGR), the Central Valley Water Board is relying on general salt tolerance guidelines, which indicate that although yield reductions in nearly all crops are not evident when irrigation water has an electrical conductivity (EC) of less than 700 µmhos/cm, there is an eight- to ten-fold range in salt tolerance for agricultural crops. (See, e.g., Ayers & Westcot, *Water Quality for Agriculture* (1985), § 2.3.) For this reason, appropriate salinity values are considered on a case-by-case basis. It is possible to achieve full yield potential with groundwater EC up to 3,000 µmhos/cm, if the proper leaching fraction is provided to maintain soil salinity within the tolerance of the crop.

² 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.

Salt and Nitrate Control Programs

55. The Central Valley Water Board adopted Basin Plan amendments incorporating new programs for addressing ongoing salt and nitrate accumulation in the Central Valley at its 31 May 2018 Board Meeting (Salt and Nitrate Control Programs). The Basin Plan amendments were conditionally approved by the State Water Board on 16 October 2019 (Resolution 2019-0057), approved by the Office of Administrative Law on 15 January 2020 (OAL Matter No. 2019-1203-03), and became effective on 17 January 2020.
56. For the Salt Control Program, dischargers that are unable to comply with stringent salinity requirements will instead need to meet performance-based requirements and participate in a basin-wide effort known as the Prioritization and Optimization Study (P&O Study) to develop a long-term salinity strategy for the Central Valley. The Discharger was issued a Notice to Comply for the Salt Control Program on 5 January 2021 (**CV-SALTS ID: 2672**). On 8 August 2022, the Central Valley Water Board received a Notice of Intent for the Facility. The Discharger elected to participate in the P&O Study. In the interim, to maintain existing salt discharges and minimize salinity impacts, this Order does the following:
 - a. Requires the discharger to continue efforts to control salinity in its discharge to the extent feasible; and
 - b. Sets a Salinity Action Level of 500 mg/L for TDS for the discharge of wastewater to the evaporation/percolation ponds.
57. For the Nitrate Control Program, dischargers that are unable to comply with stringent nitrate requirements will be required to take on alternate compliance approaches that involve providing replacement drinking water to persons whose drinking water is affected by nitrates. Dischargers may comply with the new nitrate program either individually (Pathway A) or collectively with other dischargers (Pathway B). The Facility is within Groundwater Basin 5-022.06 (San Joaquin Valley – Madera), which is a Priority 2 Basin. Notices to Comply for Dischargers in Priority 2 Basins will be sent sometime between 2022 and 2024.
58. As these strategies are implemented, the Central Valley Water Board may find it necessary to modify the requirements of these WDRs. As such, this Order may be amended or modified to incorporate any newly applicable requirements to ensure that the goals of the Salt and Nitrate Control Programs are met.

Antidegradation Policy

59. The *Statement of Policy with Respect to Maintaining High Quality Waters in California*, State Water Board Resolution 68-16 (Antidegradation Policy), which is incorporated as part of the Basin Plan, prohibits the Central Valley Water Board from authorizing degradation of “high quality waters” unless it is shown that such degradation: (1) will be consistent with the maximum benefit to the people of California; (2) will not unreasonably affect beneficial uses, or otherwise result in water quality less than as prescribed in applicable policies; and (3) is minimized through the discharger’s best practicable treatment or control (BPTC).
60. Given the availability of pre-1968 water quality information in the area, compliance with the Antidegradation Policy will determined based on pre-1968 water quality (Antidegradation Baseline).
61. Constituents of concern (COCs) that have the potential to degrade groundwater include salt, nitrate, and total coliform, as discussed below and in **Table 10**.

Table 10 – Constituents with Potential for Degradation

Constituent	Units	Effluent (See 1 below)	Historic GW Quality (See 2 below)	Down- gradient (See 3 below)	WQOs
TDS	mg/L	365	252	651.2	500-1,000
EC	µmhos/cm	734	349	978.5	700
Nitrate (as N)	mg/L	<1.0	3.0	12.7	10
Total Nitrogen	mg/L	18.7	---	11.2	---
Total Coliform	MPN/100 mL	Not Sampled	Unavailable	See 4 below	2.2

1. Average effluent data based on samples collected from January through December 2021.
2. Historic groundwater quality data based on samples collected between July 1961 to May 1966 (see Table 9 – Historic Groundwater Quality).
3. Downgradient quality based on quarterly samples collected in 2021 from onsite monitoring wells MW-01, MW-06, MW-07, and MW-08 (see Table 7 – Onsite Groundwater Monitoring Network Data).
4. See **Table 8** for a summary of total coliform groundwater monitoring data.
 - a. **Salinity (EC and TDS):** The Facility’s annual average EC was 731 µmhos/cm in 2019, 649 µmhos/cm in 2020, and 734 µmhos/cm in 2021. These concentrations are around or above the 700 µmhos/cm numeric value protective of the AGR beneficial use. Based on available source water EC, the net increase (source water vs effluent) in EC in the WWTF’s discharge is around 500 µmhos/cm. The Discharger selected to participate

in the Prioritization and Optimization (P&O) Study for the Salt Control Program. To help ensure that the Discharger continues to implement salinity reduction measures, this Order includes a Salinity Action Level of 500 mg/L for TDS. Furthermore, this Order requires the Discharger to comply with the new Salinity Control Program (i.e., to participate in the P&O Study).

- b. **Nitrate.** The WWTF is designed to treat total nitrogen levels to below 10 mg/L. However, as noted in the Findings above, the past few years the WWTF's total nitrogen levels exceeded 10 mg/L. However, recent improvements (i.e., reseeded) appear to have improved the WWTF's nitrogen removal ability (i.e., the 2nd Quarter 2022 was 2.8 mg/L). Since the WWTF is designed to provide nitrification/denitrification and to ensure that the Discharger operates the WWTF in a manner protective of underlying groundwater, this Order includes a total nitrogen effluent limit of 10 mg/L. The MRP also requires the Discharger to conduct more routine effluent nitrogen monitoring (i.e., weekly monitoring). Furthermore, this Order requires the Discharger to comply with the new Nitrate Control Program once the Discharger is issued a Notice to Comply.
 - c. **Total Coliform.** The Facility does not provide disinfection as part of the treatment process. Monitoring data for 2021 shows total coliform detections in Monitoring Wells MW-01, MW-06, MW-07, and MW-08; however, total coliform was not consistently detected in all wells. Groundwater is typically found between 100 and 120 feet bgs. Prior to effluent reaching groundwater, effluent percolates through at least 100 feet of fine grain soils, which is expected to be sufficient to filter out coliform organism and to prevent groundwater degradation. Therefore, it does not appear the Facility's discharge should have a significant impact on underlying groundwater with respect to total coliform. Nevertheless, this Order requires the Discharger to submit a Groundwater Monitoring Disinfection Workplan to disinfect the monitoring wells and submit a Sampling and Analysis Plan that proposes wastewater and groundwater sampling techniques designed to minimize cross-contamination of the wastewater and monitoring wells samples. Lastly, the MRP requires the Discharger to continue to monitor groundwater for total coliform to evaluate any potential impacts to groundwater related to the Facility's discharge.
62. This Order establishes terms and conditions to ensure that the authorized discharge from the Facility will not excessively degrade groundwater quality, contribute to existing pollution, or unreasonably affect present and anticipated future beneficial uses.

63. Generally, limited degradation of groundwater by some of the typical constituents of concern (e.g., EC and nitrate) released with the discharge from a municipal wastewater utility after effective source control, and treatment is consistent with 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 a community otherwise reliant on numerous concentrated individual wastewater systems, and the impacts on water quality will be substantially less. The degradation will not unreasonably affect present and anticipated beneficial uses of groundwater or result in water quality less than water quality objectives.
64. The Discharger implements, or will implement, as required by this Order the following BPTC measures, which will minimize the extent of water quality degradation resulting from the Facility's continued operation:
- a. Provide secondary treatment of wastewater, including nitrification and denitrification for total nitrogen;
 - b. Compliance with flow, BOD, and TSS effluent limitations;
 - c. Expanding the groundwater monitoring to monitor the potential impact of the Facility's discharge on underlying groundwater;
 - d. Compliance with the Salt and Nitrate Control Programs;
 - e. Continued implementation of a pretreatment program that includes effective salinity source control;
 - f. Compliance with a Salinity Action Level of 500 mg/L for TDS;
 - g. Compliance with an effluent limit of 10 mg/L for total nitrogen;
 - h. Sludge/biosolids transported offsite for disposal; and
 - i. Use of certified operators to ensure proper operation and maintenance of the WWTF.
65. Based on the foregoing, the adoption of this Order is consistent with the State Water Board's Antidegradation Policy.

California Environmental Quality Act

66. In accordance with the California Environmental Quality Act (CEQA), Public Resources Code section 21000 et seq., on 2 August 2005, the City of Madera filed a Negative Declaration (SCH#2005081013) to expand the WWTF from a

permitted treatment capacity of 7.0 MGD to 10.1 MGD. The expansion was in conformance to the 1994 update to the WWTF Master Plan, which proposed to expand the Facility to accommodate the City's projected growth for the next 20 years.

Other Regulatory Considerations

Human Right to Water

67. Pursuant to Water Code section 106.3, subdivision (a), it is “the established policy of the state that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes.” Although this Order is not subject to Water Code section 106.3, as it does not revise, adopt or establish a policy, regulation or grant criterion, (see §106.3, subd. (b)), it nevertheless promotes the policy by requiring discharges to meet maximum contaminant levels (MCLs) for drinking water, which are designed to protect human health and ensure that water is safe for domestic use.

Threat-Complexity Rating

68. For the purposes of California Code of Regulations, title 23 (Title 23), section 2200, the Facility has a threat-complexity rating of **2-B**.
- a. Threat Category “2” reflects waste discharges that can impair receiving water beneficial uses, cause short-term water quality objective violations, cause secondary drinking water standard violations, and cause nuisances.
 - b. Complexity Category “B” reflects any discharger not included in Category A, with either (1) physical, chemical or biological treatment systems (except for septic systems with subsurface disposal), or (2) any Class II or Class III WMUs.

Title 27 Exemption

69. This Order, which prescribes WDRs for discharges of domestic sewage or treated effluent from a municipal treatment plant, is exempt from the prescriptive requirements of California Code of Regulations, title 27 (Title 27), section 20005 et seq. (See Cal. Code Regs., tit. 27, § 20090, subd. (a) - (b).)

Stormwater

70. This Order does not cover stormwater and other discharges that are subject to the Clean Water Act's National Pollutant Discharge Elimination System (NPDES). Because all storm water at the WWTF is collected and disposed of

onsite, the Discharger is not required to obtain coverage under *State General Permit for Storm Water Discharges Associated with Industrial Activities*, State Water Board Order 2014-0057 DWQ, NPDES General Permit CAS000001 (Industrial General Permit) at this time since stormwater at the Facility is contained on-site, no storm water is discharged offsite. According to City staff, storm water is collected onsite and sent directly to the emergency disposal pond.

Sanitary Sewer Overflows

71. The City of Madera wastewater collection system consists of approximately 913,440 linear feet of collection pipes. Wastewater flows to the WWTF by gravity and force mains. There is a total of five lift or pump stations in the City of Madera service area.
72. Sanitary Sewer Overflows³ (SSO), which typically consist of a mixture of domestic and commercial wastewater, often contain pathogenic organisms, toxic pollutants, nutrients, oxygen demanding organic compounds, oil and grease, suspended solids and other pollutants. When an SSO results in a discharge to surface water, it can cause temporary exceedances of water quality objectives, pose a threat to public health, adversely affect aquatic life, and impair recreational use and aesthetic enjoyment of surface waters in the area. The most common causes are grease blockages, root blockages, debris blockages, sewer line flood damage, manhole structure failures, vandalism, pump station mechanical failures, power outages, storm or groundwater inflow/infiltration, lack of capacity, and/or contractor-caused blockages.
73. On 2 May 2006, the State Water Board adopted *Statewide General Waste Discharge Requirements for Sanitary Sewer Systems*, State Water Board Order 2006-0003-DWQ (SSO General Order), which requires that all public agencies owning or operating sanitary sewer systems with total system lengths in excess of one mile enroll under the SSO General Order. The City of Madera's collection system exceeds one mile in length and the City of Madera is enrolled under the General Order.

³ For the purposes of this Order, a “**Sanitary Sewer Overflow**” is a discharge to ground or surface water from the sanitary sewer system at any point upstream of the treatment facility. Temporary storage and conveyance facilities (e.g., wet wells, regulated impoundments, tanks, highlines, etc.) may be part of a sanitary sewer system and discharges to these facilities are not considered SSOs, provided that the waste is fully contained within these temporary storage/conveyance facilities.

Biosolids

74. The United States Environmental Protection Agency (US EPA) has promulgated biosolids reuse regulations in Code of Federal Regulations (CFR), title 40, part 503, *Standards for the Use of Disposal of Sewage Sludge (Part 503)*, which establishes management criteria for protection of ground and surface waters, sets limits and application rates for heavy metals, and establishes stabilization and disinfection criteria. The Central Valley Water Board is not the implementing Agency for Part 503 regulations. The Discharger may have separate and/or additional compliance, reporting, and permitting responsibilities to the US EPA.

Groundwater Wells

75. Existing DWR standards for the construction and destruction of groundwater wells, as well as any more stringent standards that are subsequently adopted, shall apply to all monitoring wells used to monitor impacts of wastewater storage or disposal governed by this Order. (see *Cal. Well Stds. Bulletin 74-90* [DWR, June 1991]; *Water Wells Stds. Bulletin 74-81* [DWR, Dec. 1981].)
76. Statistical data analysis methods outlined in the US EPA's *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (Unified Guidance) are appropriate for determining compliance with the Groundwater Limitations of this Order. Depending on the circumstances, other methods may also be appropriate.

Scope of Order

77. This Order is strictly limited in scope to those waste discharges, activities and processes described and expressly authorized herein.
78. Pursuant to Water Code section 13264, subdivision (a), the Discharger is prohibited from initiating the discharge of new wastes (i.e., other than those described herein), or making material changes to the character, volume and timing of waste discharges authorized herein, without filing a new Report of Waste Discharge (ROWD) per Water Code section 13260.
79. Failure to file a new ROWD before initiating material changes to the character, volume or timing of discharges authorized herein, shall constitute an independent violation of these WDRs.
80. This Order is also strictly limited in applicability to those individuals and/or entities specifically designated herein as "Discharger," subject only to the discretion to designate or substitute new parties in accordance with this Order.

Procedural Matters

81. All of the above information, as well as the information contained in the attached Information Sheet (incorporated herein), was considered by the Central Valley Water Board in prescribing the WDRs set forth below.
82. The Discharger, interested agencies and other interested persons were notified of the Central Valley Water Board's intent to prescribe the WDRs in this Order, and provided an opportunity to submit their written views and recommendations at a public hearing. (See Wat. Code, § 13167.5.)
83. At a public meeting, the Central Valley Water Board heard and considered all comments pertaining to the discharges regulated under this Order.
84. The Central Valley Water Board will review and revise the WDRs in this Order as necessary.

REQUIREMENTS

IT IS HEREBY ORDERED, pursuant to Water Code sections 13263 and 13267: that WDRs Order No. 95-046 is rescinded (except for enforcement purposes); and that the Discharger and their agents, employees and successors shall comply with the following.

A. Standard Provisions

Except as expressly provided herein, the Discharger shall comply with the Standard Provisions and Reporting Requirements dated 1 March 1991 (SPRRs), which are incorporated herein.

B. Discharge Prohibitions

1. Waste classified as "hazardous" (per Cal. Code Regs., tit. 22, §66261.1 et seq.), shall not be discharged at the Facility under any circumstance.
2. Waste constituents shall not be discharged or otherwise released from the Facility (including during treatment and storage activities) in a manner that results in:
 - a. Violations of the Groundwater Limitations of this Order; or
 - b. Conditions of "nuisance" or "pollution," as defined per Water Code section 13050.

3. Except as otherwise expressly authorized in this Order, sewage and other waste shall not be discharged to surface waters or surface water drainage courses.
4. Except as provided in Section E.2 of the SPRRs, incorporated herein, untreated wastes and partially treated wastes shall not bypass the treatment system (including treatment ponds).
5. Waste shall not be discharged from the Facility in a manner other than as described in this Order.
6. Discharge of treated effluent to any site other than the evaporation/storage ponds as described in this Order is prohibited.
7. Toxic substances shall not be discharged into the wastewater treatment system such that biological treatment mechanisms are substantially disrupted.

C. Flow Limitation

1. Influent monitored at INF-001 (as defined in the MRP), shall not exceed a monthly average daily dry weather flow of 7.0 million gallons per day (mgd).

D. Effluent Limitations

1. Effluent discharged to the evaporation/percolation ponds monitored at EFF-001 (as defined in the MRP), shall not exceed the limits specified in **Table 11** below.

Table 11 – Effluent Limits

Constituent	Monthly Average	Daily Maximum	Monthly Limit
BOD ₅	40 mg/L	80 mg/L	---
TSS	40 mg/L	80 mg/L	---
Total Nitrogen	---	---	10 mg/L

E. Salinity Action Level

1. To comply with the Salt Control Program, the Discharger selected the Alternative Salinity Permitting Approach (i.e., participate in the Prioritization and Optimization [P&O] Study). Therefore, as discussed in Finding 56 these WDRs establish a Salinity Action Level of 500 mg/L as

an annual average for TDS. As part of the Annual Monitoring report required per the MRP, the Discharger shall evaluate the Facility's annual average effluent TDS concentration (monitored at EFF-001) to the Salinity Action Level. If the Facility's discharge exceeds the Salinity Action Level, the Discharger shall submit a **Salinity Action Level Report by 1 March** of the year following the exceedance of the Salinity Action Level. The Salinity Action Level Report shall, at a minimum, include the following:

- a. An evaluation of the Facility's salinity effluent levels. This evaluation shall discuss any changes to the source water for the area served by the WWTF, any new industrial dischargers discharging to the WWTF, any increased conservation efforts implemented within the WWTF service area (with flow data demonstrating decreased flows to the WWTF), and any other changes to the WWTF's collection or treatment system that could have contributed to the increased salinity concentrations.
- b. If additional time is needed to investigate the source(s) of the salinity in the Facility's discharge, the Salinity Action Level Report shall include a detailed work plan describing what actions the Discharger will conduct (with completion dates) to investigate the source(s) of salinity and report its findings to the Central Valley Water Board. The findings from the investigations shall be submitted to the Central Valley Water Board **no later than October 1st** of the year following the exceedance of the Salinity Action Level.
- c. The Salinity Action Level Report shall evaluate the potential impact the increased salinity concentrations could have on underlying groundwater and downgradient users. If additional time is needed for this evaluation, the Salinity Action Level Report shall propose a submittal date (no later than October 1st of the year following exceedance of the Salinity Action Level).

F. 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. The Discharger shall operate all systems and equipment to optimize the quality of the discharge.

3. Wastewater contained in any unlined pond shall not have a pH less than 6.0 or greater than 10.0.
4. The discharge shall remain within the permitted wastewater ponds and conveyance structure at all times.
5. All conveyance, 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 Facility shall be prevented through such means as fences, signs, or acceptable alternatives.
7. Objectionable odors shall not be perceivable beyond the limits of the Facility property at an intensity that creates or threatens to create nuisance conditions.
8. As a means of ensuring compliance with Discharge Specification F.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. Notwithstanding the DO monitoring frequency specified in the monitoring and reporting program, if the DO in any single pond is below 1.0 mg/L for any single sampling event, the Discharger shall implement daily DO monitoring of that pond until the minimum DO concentration is achieved for at least three consecutive days. If the DO in any single pond is below 1.0 mg/L for three consecutive days, the Discharger shall report the findings to the Central Valley Water Board in accordance with **Section B.1** of the SPRRs. The written notification shall include a specific plan to resolve the low DO results within 30 days of the first date of violation.
9. The Discharger shall design, construct, operate, and maintain all ponds sufficiently to protect the integrity of containment dams and berms and prevent overtopping and/or structural failure. 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 F.9 and F.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. The Discharger shall monitor sludge accumulation in the wastewater treatment/storage ponds at least every five years and shall periodically remove sludge as necessary to maintain adequate storage capacity. Specifically, if the estimated volume of sludge in the reservoir exceeds five percent of the permitted reservoir capacity, the Discharger shall complete sludge cleanout within 12 months after the date of the estimate.

G. Groundwater Limitations

Release of waste constituents from any treatment, reclamation, or storage component associated with the WWTF shall not cause or contribute to groundwater containing constituent concentrations in excess of the

concentrations specified below or in excess of natural background quality, whichever is greater:

1. Nitrate (as N) of 10 mg/L.
2. Total coliform organism level of 2.2 MPN/100 mL over any seven-day period.
3. Constituents in concentrations that exceed either the Primary or Secondary MCLs established in Title 22 of the California Code of Regulations, excluding salinity.
4. 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 annually as specified in the Monitoring and Reporting Program using approved statistical methods.

H. Solids Disposal Specifications

1. Sludge⁴ and Solid Waste⁵ shall be removed from screens, sumps, ponds, and clarifiers as needed to ensure optimal plant operation.
2. Onsite handling and storage of Residual Sludge,⁶ Solid Waste, and Biosolids⁷ shall be temporary (two years or less); and controlled and contained in a manner that minimizes leachate formation and precludes

⁴ For the purposes of this section, “**sludge**” means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes.

⁵ For the purposes of this section, “**solid waste**” includes grit and screenings generated during preliminary treatment at the Facility.

⁶ For the purposes of this section, “**residual sludge**” means sludge that will not be subject to further treatment at the Facility.

⁷ For the purposes of this section, “**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.

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, WWTFs, 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.

I. Pretreatment Provisions

1. The Discharger shall implement the necessary legal authorities, programs, and controls to ensure that the following wastes are not introduced to the treatment system:
 - a. Wastes which create a fire or explosion hazard in the wastewater collection system or treatment works;
 - b. Wastes which will cause corrosive structural damage to the treatment works;

- c. Solid or viscous wastes in amounts which cause obstruction to flow in sewers, or which cause other interference with proper operation or treatment works;
 - d. Any waste, including oxygen demanding pollutants (BOD, etc.), released in such volume or strength as to cause inhibition or disruption in the treatment works, and subsequent treatment process upset and/or loss of treatment efficiency;
 - e. Heat in amounts that inhibit or disrupt biological activity in the treatment works is designed to accommodate such heat;
 - f. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through; and
 - g. Any trucked or hauled wastewater or septage, except at points predesignated by the Discharger and subject to above conditions.
2. The Discharger shall implement the legal authorities, programs, and control necessary to ensure that industrial dischargers do not introduce pollutants into the sewerage system that, either alone or in conjunction with a discharge or discharges from other sources:
 - a. Flow through the system to the receiving water in quantities or concentrations that cause a violation of this Order, or
 - b. Inhibit or disrupt treatment process or treatment system operations and either cause a violation of this Order or prevent water recycling, biosolids reuse, or sludge disposal.
3. The Discharger shall provide the requisite funding and personnel to implement the pretreatment program, conduct inspections and sampling and analysis of industrial discharges as needed, and use any available legal means to ensure compliance with the pretreatment program.
4. The Discharger shall periodically review the pretreatment program and make any changes that are needed to ensure compliance with this Order. Any update to the Discharger's pretreatment program shall be submitted for approval by the Executive Officer. Until any revised pretreatment program is approved, the Discharger shall implement the existing pretreatment program.

5. The Discharger's approved pretreatment program (as described in **Findings 24 through 26**) and its components, such as city ordinances, local limits, and control mechanisms, among others, are hereby made enforceable condition of this Order until such time as they are revised.

J. Provisions

1. The reports/submittals required in this section shall be submitted pursuant to Water Code section 13267 and shall be prepared as described in Provisions J.9 and J.11:
2. By **15 February 2023**, the Discharger shall submit a ***Groundwater Monitoring Well Installation Report*** for the new groundwater monitoring wells constructed discussed in Finding 38. The report shall be prepared in accordance with, and include the items listed in, the second section of **Attachment D**. The report shall describe the installation and development of all new monitoring wells and explain any deviation from the approved workplan.
3. **By 1 March 2023**, the Discharger shall submit a **Groundwater Monitoring Well Disinfection Workplan and Sampling and Analysis Plan**. The disinfection workplan shall provide detailed procedures for well disinfection and include a schedule to complete the work by **1 June 2023**. The Sampling and Analysis Plan shall propose effluent and groundwater sampling techniques designed to minimize cross-contamination of the monitoring wells and water samples and shall include a written description of standard operation procedures for the following:
 - i. Equipment to be used during sampling;
 - ii. Equipment decontamination procedures;
 - iii. Water level measurement procedures;
 - iv. Well purging;
 - v. Purge water disposal;
 - vi. Analytical methods and required reporting limits;
 - vii. Sample containers and preservatives;
 - viii. Sampling techniques, including general sampling techniques, record keeping during sampling, and QA/QC samples;

- ix. Chain of Custody; and
 - x. Sample handling and transport.
4. **By 1 August 2023**, the Discharger shall submit a report documenting completion of monitoring well disinfection in accordance with the approved Disinfection Workplan and implementation of the approved Sampling and Analysis Plan.
5. **By 2 January 2025**, the Discharger shall submit a **Groundwater Quality Study Report**. For each groundwater monitoring parameter/constituent identified in the MRP, the report shall present a summary of monitoring data and calculation of the concentration in the monitoring well. Determination of background quality shall be made using appropriate statistical methods that have been selected based on site-specific information and the U.S. EPA Unified Guidance document cited in Finding 73 of this Order. The report shall explain and justify the selection of the appropriate statistical methods.
6. If the Groundwater Quality Study shows that the discharge of waste is causing groundwater to contain waste constituents in concentrations statistically greater than background water quality then, by **2 June 2025**, the Discharger shall submit a **Treatment Evaluation Workplan** that sets forth the scope and schedule for a systematic and comprehensive technical evaluation of each component of the Facility's waste treatment and disposal system. The workplan shall contain a preliminary evaluation of each component of the WWTF and effluent disposal system and propose a time schedule for completing the comprehensive technical evaluation. The schedule to complete the evaluation shall be as short as practicable and shall not exceed one year after receipt of comments/approval on the workplan.
7. The Discharger shall conduct a **Facility Disposal Assessment** in accordance with the following schedule:

<u>Task</u>	<u>Description</u>	<u>Due Date</u>
i.	Facility Disposal Assessment Work Plan Submit a work plan to conduct a Facility disposal assessment evaluating options for the City to discharge/reclaim treated wastewater above 7 mgd.	1 March 2023

<u>Task</u>	<u>Description</u>	<u>Due Date</u>
	<p>The workplan shall include, at a minimum, an implementation schedule with specific milestones for:</p> <ol style="list-style-type: none"> 1) Obtaining the necessary information to evaluate the City’s disposal/reclamation options. This should include, at a minimum, collecting groundwater monitoring data, researching potential disposal alternatives (e.g., reclamation), and evaluating upgrading the WWTF’s treatment system. 2) Submitting the Final Disposal Assessment Report proposing how the City intends to discharge/reclaim wastewater above 7 mgd (described in more detail in section ii. below) in the future. 	
ii.	<p>Facility Disposal Assessment Report</p> <p>The report shall, at a minimum, discuss what options were evaluated for discharging/reclaiming wastewater from the WWTF and what the City’s preferred disposal alternative is, with sufficient information justifying the City’s proposed disposal alternative. The Report should also include an evaluation of when the City expects the WWTF will have flows above 7 mgd. If the Report determines that the City needs to increase the flow limitation within the next five years (i.e., by 2030), the Report shall include a timeline for submitting a RWD requesting revised WDRs as well as satisfying CEQA.</p>	2 January 2025

8. 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.
9. 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.

10. The Discharger shall comply with **Monitoring and Reporting Program R5-2022-XXXX**, 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.
11. 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.
12. The Discharger shall provide certified operators for the WWTF in accordance with Title 23, division 3, chapter 26.
13. 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.
14. A discharger whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment, collection, and disposal facilities. The projections shall be made in January, based on the last three years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in four years, the discharger shall notify the Central Valley Water Board by 31 January.
15. The Discharger shall use the best practicable cost-effective control technique(s) including proper operation and maintenance, to comply with this Order.

16. The Discharger shall comply with the Basin Plan amendments adopted in Resolution R5-2018-0034 incorporating new programs (Salt and Nitrate Control Program) for addressing ongoing salt and nitrate accumulation in the Central Valley developed as part of the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative.
17. 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.
18. In the event that the Discharger reports toxic chemical release data to the State Emergency Response Commission (SERC) pursuant to section 313 of the Emergency Planning and Community Right to Know Act (42 U.S.C. section 11023), the Discharger shall also report the same information to the Central Valley Water Board within 15 days of the report to SERC.
19. 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.
20. 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 ensure 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 ensure full compliance with this Order.
21. In the event of any change in control or ownership of the WWTF, 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.
22. 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.

23. 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.

ENFORCEMENT

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.

ADMINISTRATIVE REVIEW

Any person aggrieved by this Central Valley Water Board action may petition the State Water Board for review in accordance with Water Code section 13320 and California Code of Regulations, title 23, section 2050 et seq. The State Water Board must receive the petition by 5:00 p.m. on the 30th day after the date of this Order; if the 30th day 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](#) are available on the Internet (at the address below) and will be provided upon request.

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

ATTACHMENTS

- Attachment A – Site Location Map
- Attachment B – Facility map
- Attachment C – Flow Schematic
- Attachment D – Requirements for Monitoring Well Installation Work Plans and Monitoring Well Installation Reports

Standard Provisions & Reporting Requirements (SPRRs), dated 1 March 1991

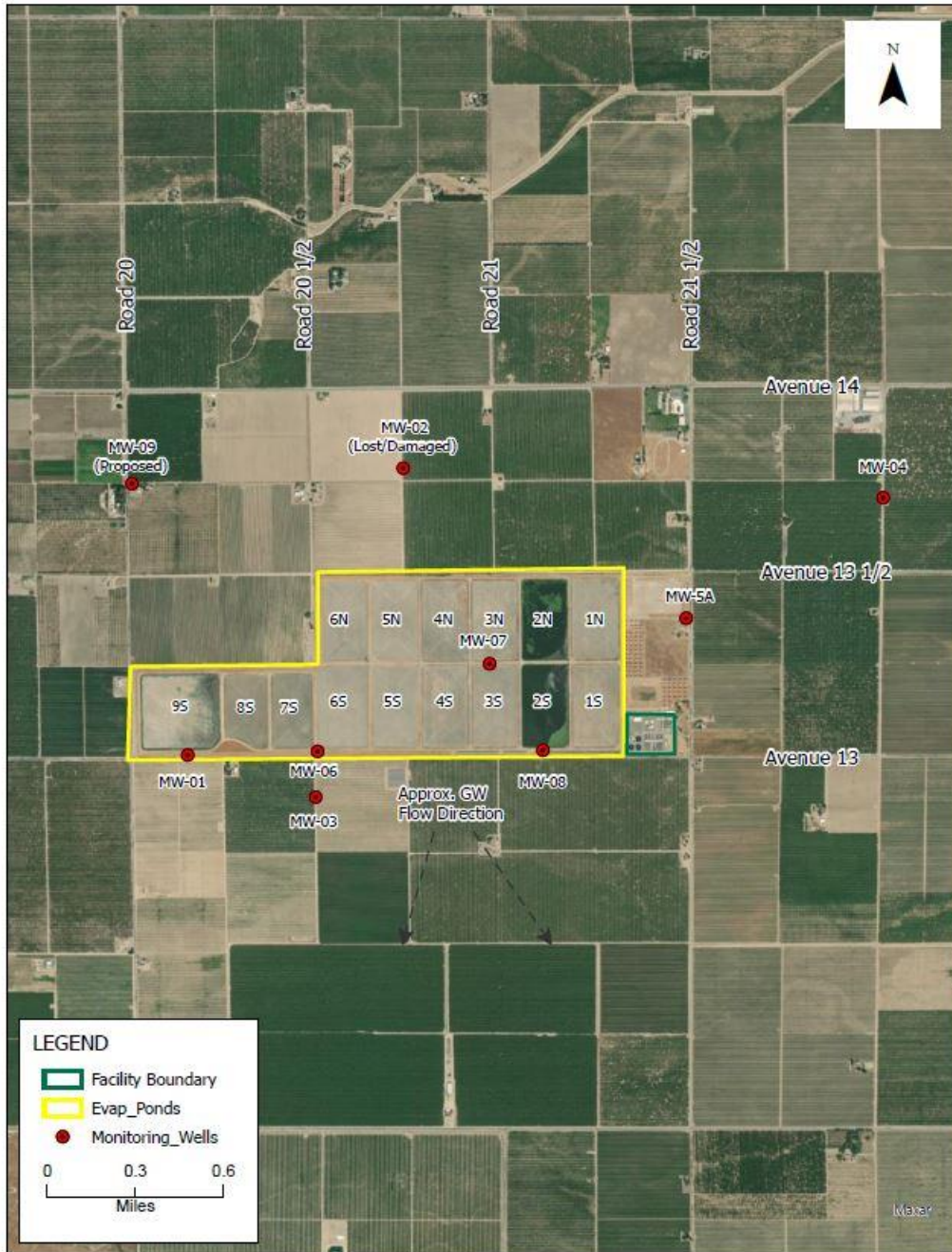
[TENTATIVE] WASTE DISCHARGE REQUIREMENTS ORDER R5-2022-XXXX
CITY OF MADERA
MADERA WASTEWATER TREATMENT FACILITY
MADERA COUNTY

36

Information Sheet

Monitoring and Reporting Program R5-2022-XXXX

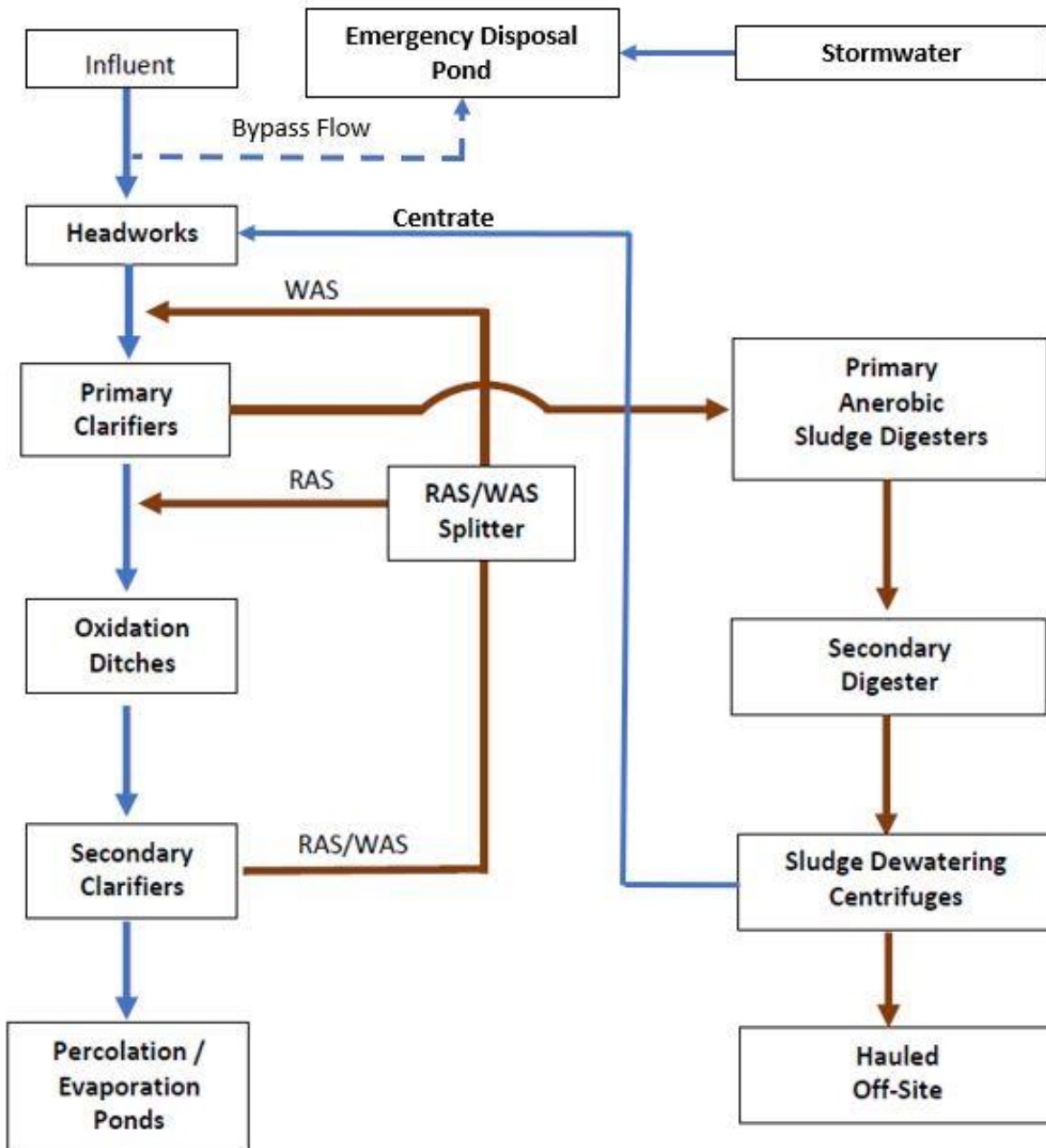
ATTACHMENT A—SITE LOCATION MAP



ATTACHMENT B—FACILITY MAP



ATTACHMENT C—FLOW SCHEMATIC



ATTACHMENT D—
**REQUIREMENTS FOR MONITORING WELL INSTALLATION WORK PLANS
AND MONITORING WELL INSTALLATION REPORTS**

Prior to installation of groundwater monitoring wells, the Discharger shall submit a work plan containing, at a minimum, the information listed in Section 1, below. Wells may be installed after staff approve the work plan. Upon installation, the Discharger shall submit a well installation report that includes the information contained in Section 2, below. All work plans and reports must be prepared under the direction of, and certified by, a California registered geologist or civil engineer.

**SECTION 1 – Monitoring Well Installation Work Plan and Groundwater
Sampling and Analysis Plan**

The monitoring well installation work plan shall contain, at a minimum, the following information:

A. General Information:

- Purpose of the well installation project
- Brief Description of local geologic and hydrogeologic conditions
- Proposed monitoring well locations and rationale for well locations
- Topographic map showing facility location, roads, and surface water bodies
- Large-scaled site map showing all existing on-site wells, proposed wells, surface water bodies and drainage courses, buildings, waste handling facilities, utilities, and major physical and man-made features

B. Drilling Details:

- On-site supervision of drilling and well installation services
- Description of drilling equipment and techniques
- Equipment decontamination procedures
- Cutting disposal methods

- Soil sampling intervals (if appropriate); logging methods; number and location of soil samples and rationale; and sample collections, preservation, and analytical methods

C. Monitoring Well Design (in graphic form with rationale provided in narrative form):

- Diagram of proposed well construction details
 - o Borehole Diameter
 - o Casing and screen material, diameter, and centralizer spacing (if needed)
 - o Type of well caps (bottom cap either screw on or secured with stainless steel screws)
 - o Anticipated depth of well, length of well casing, and length and position of perforated interval
 - o Thickness, position and composition of surface seal, sanitary seal, and sand pack
 - o Anticipated screen slot size and filter pack

D. Well Development (not to be performed until at least 48 hours after sanitary seal placement):

- Method of development to be used (i.e., surge, bail, pump, etc.)
- Parameters to be monitored during the development and record keeping technique
- Method of determining when development is complete
- Disposal of development water

E. Well Survey (precision of vertical survey data shall be at least 0.01 foot):

- Identify the Licensed Land Surveyor or Civil Engineer that will perform the survey
- Datum for survey measurements
- List well features to be surveyed (i.e., top of casing, horizontal and vertical coordinates, etc.)

F. Schedule for Completion of Work

G. Appendix: Groundwater Sampling and Analysis Plan (SAP)

The Groundwater SAP shall be included as an appendix to the workplan, and shall be utilized as a guidance document that is referred to by individuals responsible for conducting groundwater monitoring and sampling activities.

Provide a detailed written description of standard operating procedures for the following:

- Equipment to be used during sampling
- Equipment decontamination procedures
- Water level measurement procedures
- Well purging (include a discussion of procedures to follow if three casing volumes cannot be purged)
- Monitoring and record keeping during water level measurement and well purging (include copies of record keeping logs to be used)
- Purge water disposal
- Analytical methods and required reporting limits
- Sample containers and preservatives
- Sampling
 - o General sampling techniques
 - o Record keeping during sampling (include copies of record keeping logs to be used)
 - o QA/QC samples
- Chain of Custody
- Sample handling and transport

SECTION 2 – Monitoring Well Installation Report

The monitoring well installation report must provide the information listed below. In addition, the report must also clearly identify, describe, and justify any deviations from the approved work plan.

A. General Information:

- Purpose of the well installation project
- Number of monitoring wells installed and identifying label(s) for each
- Brief description of geologic and hydrogeologic conditions encountered during well installation
- Topographic map showing facility location, roads, and surface water bodies
- Large-scaled site map showing all previously existing wells, newly installed wells, surface water bodies and drainage courses, buildings, waste handling facilities, utilities, and other major physical and man-made features

B. Drilling Details (in narrative and/or graphic form):

- On-site supervision of drilling and well installation services
- Drilling contractor and driller's name
- Description of drilling equipment and techniques
- Equipment decontamination procedures
- Well boring log (provide for each well)
 - o Well boring number and date drilled
 - o Borehole diameter and total depth
 - o Total depth of open hole (i.e., total depth drilled if no caving or back-grouting occurs)
 - o Depth to first encountered groundwater and stabilized groundwater depth
 - o Detailed description of soils encountered, using the Unified Soil Classification System

C. Monitoring Well Construction Details (provide for each well):

- Well construction diagram including:
 - Monitoring well number and date constructed
 - Casing and screen material, diameter, and centralizer spacing (if needed)
 - Length of well casing
 - Length and position of slotted casing and size of perforations
 - Thickness, position and composition of surface seal, sanitary seal, and sand pack
 - Type of well caps (bottom cap either screw on or secured with stainless steel screws)

D. Well Development (provide for each well):

- Date(s) and method of development
- How well development completion was determined
- Volume of water purged and from well and method of development water disposal

E. Well Survey (provide for each well):

- Reference elevation at the top rim of the well casing with the cap removed (feet above mean sea level to within 0.01 foot)
- Ground surface elevation (feet above mean sea level to within 0.01 foot)
- Horizontal geodetic location, where the point of beginning shall be described by the California State Plane Coordinate System, 1983 datum, or acceptable alternative (provide rationale)
- Present the well survey report data in a table

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

WASTE DISCHARGE REQUIREMENTS FOR ORDER R5-2022-XXXX
FOR
CITY OF MADERA
MADERA WASTEWATER TREATMENT FACILITY
MADERA COUNTY

INFORMATION SHEET (IS)

BACKGROUND

Waste Discharge Requirements (WDRs) Order 95-046 authorizes a discharge of up to 7.0 million gallons per day (mgd) of undisinfected secondary wastewater from the City of Madera (City or Discharger) Wastewater Treatment Facility (WWTF) to fifteen evaporation/percolation ponds across 320 acres. The Discharger submitted a Report of Waste Discharge (RWD) on 3 April 2003 to expand the Facility and increase the flow from 7.0 MGD to 10.1 MGD. The facility expansion was completed in 2008 to include a Biological Nutrient Removal (BNR) process technology utilizing activated sludge.

Historically, digested sludge was dried in the WWTF's sludge drying beds and applied to the disposal ponds prior to crop planting. During staff inspections in 1998 and 2001 it was revealed that WWTF staff operators had been diluting digested sludge and undigested sludge with effluent, conveyed the effluent-sludge slurry mixture through a common pipeline, and discharged directly to the disposal ponds, even while in use. Operators at the Facility had also been burying screenings and grit onsite. Improper disposal practices resulted in issuance of Cleanup and Abatement Order 5-01-727 (CAO). To comply with the CAO, the City performed soil investigation work and effectively abated the threat of pollution caused by the improper onsite disposal of sludge, screenings, and grit.

Currently, waste activated sludge (WAS) is conveyed to the primary clarifiers. Settled sludge from the primary clarifiers is pumped to two primary anaerobic digesters, which are operated in parallel. The sludge from the primary digesters is conveyed to a secondary anaerobic digester. Treated sludge is dewatered using two skid mounted centrifuges. Dewatered cake is deposited directly into trailers which are disposed and are reused by Synagro.

On 5 July 2012 Alfonso Manrique (RCE 63673) sent a letter to Central Valley Water Board staff regarding the City of Madera's proposed Groundwater Extraction System (GWES), which evaluated groundwater monitoring data from the Facility's monitoring wells as well as installed extraction groundwater wells to nearby property owners' wells. The nearby groundwater monitoring wells were sampled on 12 June 2012 and the following table shows the results of groundwater collected for select constituents.

Well Group	Chloride (mg/L)	EC (µmhos/cm)	TDS (mg/L)	Nitrate (as N) (mg/L)	Sulfate (mg/L as SO ₄)
Onsite Extraction Wells	75-78	890-920	540-560	4-7.5	25-32
Onsite Monitoring Wells	69-81	560-940	370-610	1-21	14-38
Nearby Wells	4.2-120	140-1,100	140-670	2.5-10.1	3.6-31

Central Valley Water Board staff issued the City a 13260 letter on 4 October 2018 requiring the City to submit a RWD to update its WDRs. City staff responded by submitting a RWD on 23 May 2019, which rescinded the City's request to increase the Facility's flow limitation to 10.1 mgd for the time being. In a 19 August 2019 letter, Water Board staff expressed concerns that the City's projected 20-year growth could result in WWTF flows exceeding the current flow limit of seven mgd. The City acknowledged the corresponding flows associated with the 20-year population growth could result in the WWTF flows exceeding 7 mgd and requested additional time to demonstrate the Facility has the disposal capacity to increase the flow to 10.1 mgd.

These WDRs authorize a discharge of up to 7 mgd and require the City to conduct a Facility disposal assessment report and submit a report on its findings. As part of the City's effort to evaluate potential disposal options for flows above 7 mgd, the City submitted a groundwater monitoring installation workplan on 23 March 2021, which stated the monitoring wells were estimated to be completed around September 2021 to December 2021. However, City staff later proposed an updated completion date of November 2022. City council approved a contract to construct the wells in April 2022, and a Notice to Proceed was issued to Maggiora Brothers to install the monitoring wells.

WASTEWATER GENERATION AND DISPOSAL

The WWTF features three oxidation ditches which provide biological treatment, including nitrogen removal (i.e., nitrification and denitrifications). Effluent flows through four secondary clarifiers, which operate in parallel. Activated sludge is returned and mixed with primary effluent prior to the oxidation ditches, when necessary, activated sludge is wasted into the sludge treatment facilities. Secondary effluent is discharged to the 15 evaporation/percolation ponds as described in the findings. According to City staff, Pond 9S at the southwest end of the disposal area is the final pond to receive discharge once the other ponds are full.

From 2017 to 2021, the total dissolved solids (TDS) average concentration ranged from approximately 300 mg/L to 400 mg/L. The following graph compares the Facility's effluent TDS concentrations to the Salinity Action Level of 500 mg/L.



Figure 1 – Effluent TDS (2017-2022)

Effluent electrical conductivity (EC) from 2017 to 2021 ranged from 600 $\mu\text{mhos/cm}$ to 900 $\mu\text{mhos/cm}$. The Facility's effluent EC has occasionally exceeded the agricultural water quality objective of 700 $\mu\text{mhos/cm}$. The following graph compares the Facility's effluent EC to the agricultural water quality objective of 700 $\mu\text{mhos/cm}$.

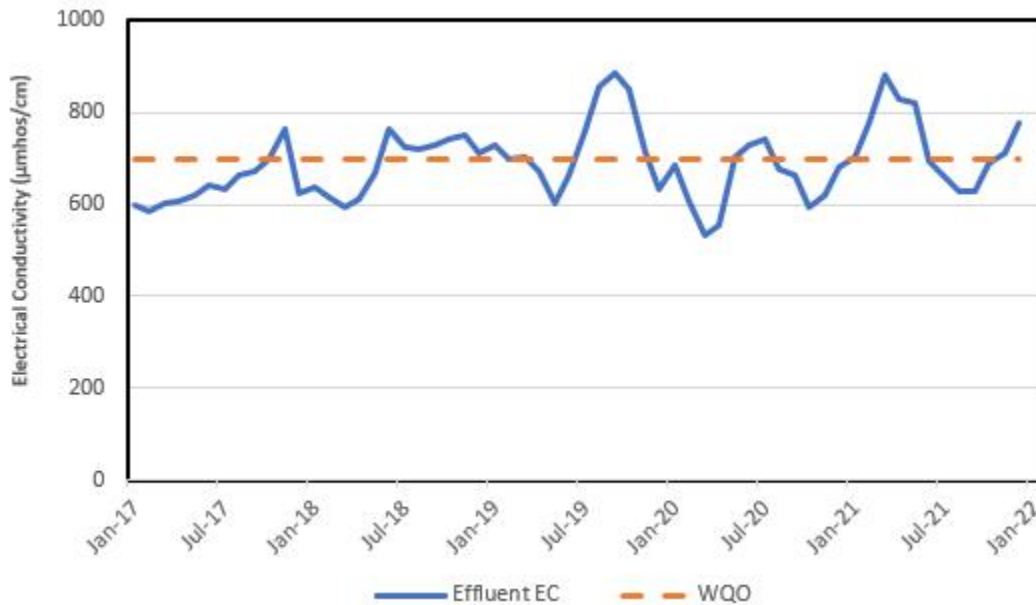


Figure 2 – Effluent Electrical Conductivity (2017-2022)

From 2017 to 2022, the effluent total nitrogen ranged from 0.5 mg/L to 37 mg/L. As discussed more in the WDR Findings, the effluent total nitrogen has increased the past few years. To improve the WWTF’s total nitrogen removal, the Discharger re-seeded the oxidation ditches with 60,000 gallons of sludge with fresh bacteria on February 7th, 9th, and 15th after determining the mass of bacteria in the oxidation ditches was low.

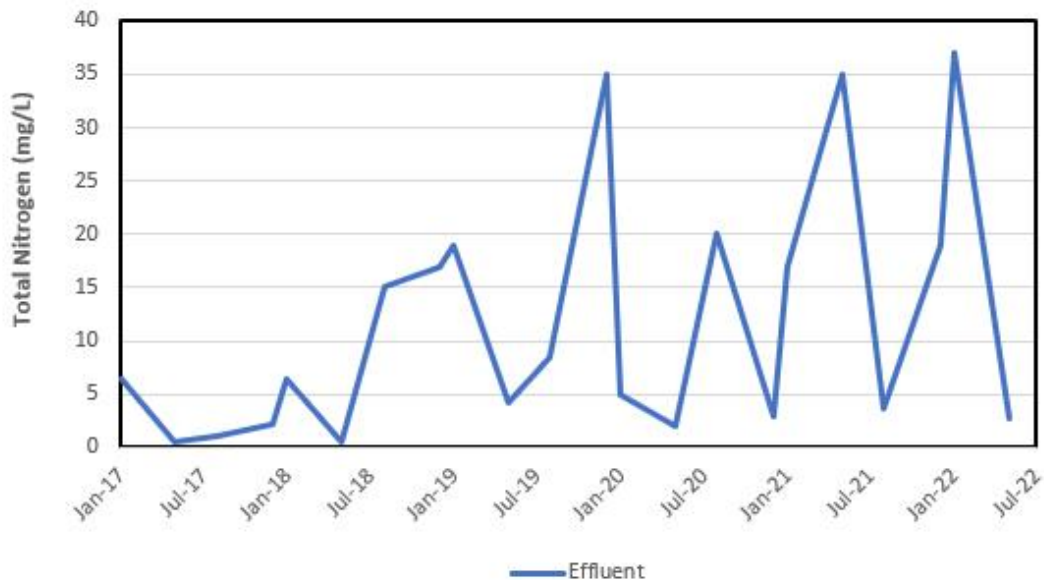


Figure 3 – Effluent Total Nitrogen (2017-2022)

GROUNDWATER CONSIDERATIONS

Groundwater conditions are discussed in Findings 32 through 40 of the Order. The Discharger installed additional groundwater monitoring wells in 2003. However, due to current dry conditions, the Discharger is in the process of installing new monitoring wells to replace Monitoring Wells MW-04, MW-5A, MW-07, MW-08 and add Monitoring Well MW-09.

Historical data collected under the current order indicates, barium, chromium, lead, mercury, nickel, and selenium were non-detect or well below the maximum contaminant level, therefore, the constituents were removed from the list of groundwater monitoring in the tentative order.

The 2021 semi-annual monitoring results for the trace metals required in the current order's MRP are included below. Sample 1 (S1) was taken on 7 January 2021 and Sample 2 (S2) was taken on 14 July 2021.

Constituent	MW-01 (S1)	MW-01 (S2)	MW-06 (S1)	MW-06 (S2)	MW-07 (S1)	MW-07 (S2)	MW-08 (S1)	MW-08 (S2)
Aluminum (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (µg/L)	3.7	12	4.8	3.3	6.1	5.4	4.4	3.6
Barium (µg/L)	240	234	210	144	240	226	280	270
Cadmium (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND
Chromium (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND
Copper (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND
Lead (µg/L)	ND	ND	ND	0.024	ND	ND	ND	0.026
Manganese (µg/L)	ND	ND	ND	0.48	0.022	0.04	ND	ND
Mercury (µg/L)	ND	ND	ND	0.044	ND	ND	ND	0.028
Nickel (µg/L)	ND	ND	ND	ND	ND	10.1	ND	ND
Selenium (µg/L)	ND	0.41	ND	ND	ND	0.4	ND	ND
Silver (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND
Zinc (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND

The City was only able to collect groundwater samples consistently (i.e., every quarter) from Monitoring Well MW-01 during the period from 2017 to 2021. Data from MW-01 suggest that total nitrogen is trending upward despite the Facility historically providing good quality effluent for total nitrogen. In 2017, the annual average for total nitrogen was approximately 0.9 mg/L, while 6.8 mg/L in 2021. In 2022, Q1 and Q2 samples for total nitrogen were both approximately 8.3 mg/L and 10.7 mg/L. The following graph shows total nitrogen samples collected from Monitoring Well MW-01.

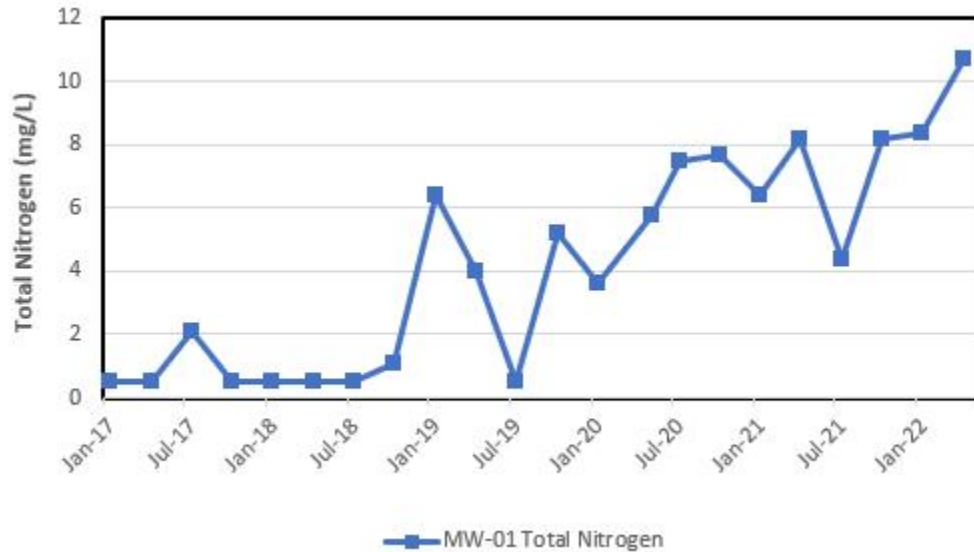


Figure 4 – MW-01 Total Nitrogen (2017-2022)

Data from Monitoring Well MW-01 also demonstrates an increased trend in TDS over the five-year period. The average quarterly concentration of TDS during the 1st quarter of 2017 through the 2nd quarter of 2022 was between 400 mg/L to 700 mg/L. Since Q1 2019 the concentration of TDS has exceeded the secondary drinking water standards recommended range; however, the samples are well below the upper range. The following graph compares the secondary drinking water standards recommended and upper range for TDS to Monitoring Well MW-01's TDS from 2017 to 2022.

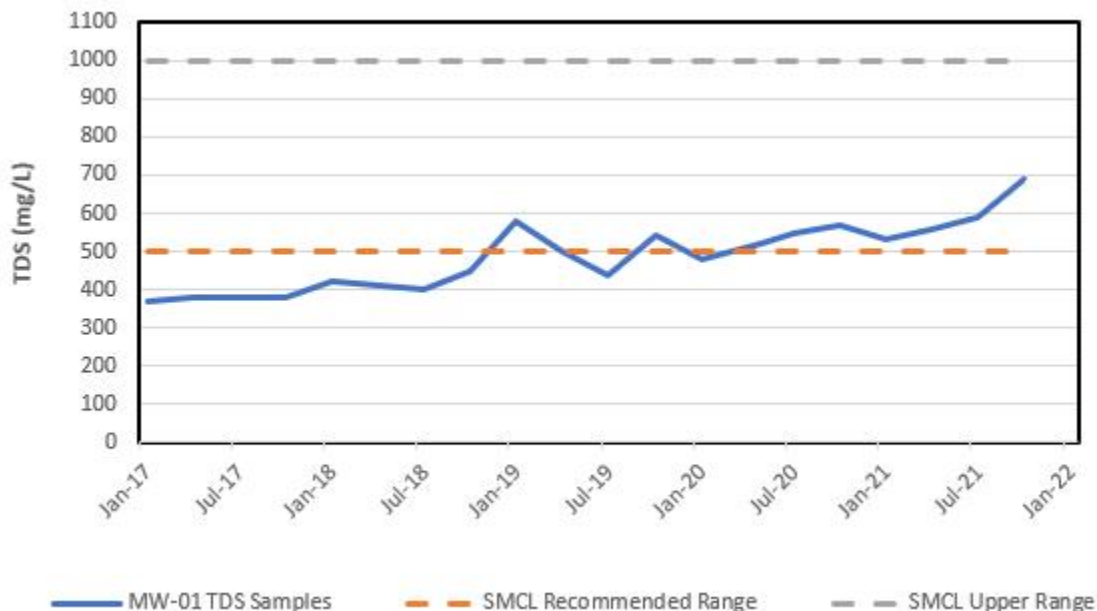


Figure 5 – MW-01 Total Dissolved Solids (2017-2022)

ANTIDEGRADATION

State Water Board Resolution 68-16 (Antidegradation Policy), which is incorporated as part of the Basin Plan, prohibits the Central Valley Water Board from authorizing degradation of “high quality waters” unless it is shown that such degradation: (1) will not unreasonably affect beneficial uses, or otherwise result in water quality less than as prescribed in applicable policies; (2) will be consistent with the maximum benefit to the people of the State; and (3) is minimized through the Discharger’s best practicable treatment or control (BPTC).

Antidegradation analysis and conclusions are discussed in Findings 59 through 65 of this Order.

DISCHARGE PROHIBITIONS, LIMITATIONS, DISCHARGE SPECIFICATIONS, AND PROVISIONS

The proposed Order prohibits the discharge of waste to surface water and to surface water drainage courses. This Order includes a flow limit of 7.0 mgd and sets an effluent limit for BOD and TSS of 40 mg/L (as a monthly average) and 80 mg/L (as a daily maximum). For salinity, this Order sets an effluent Salinity Action Level of 500 mg/L for TDS. This Order also prescribes groundwater limitations that ensure the discharge does not affect present and anticipated beneficial use of groundwater.

MONITORING REQUIREMENTS

Section 13267 of the California Water Code authorizes the Central Valley Water Board to require the monitoring and technical reports as necessary to investigate the impacts of waste discharges on waters of the State. Water Code Section 13268 authorizes assessment of civil administrative liability where appropriate. The Order includes influent, effluent, pond, source water, groundwater, and sludge/biosolids monitoring requirements. This monitoring is necessary to characterize the discharge and evaluate compliance with the requirements and specifications in the Order.

SALT AND NITRATE CONTROL PROGRAM REGULATORY CONSIDERATIONS

As part of the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative, the Central Valley Water Board adopted Basin Plan amendments (Resolution R5-2018-0034) incorporating new programs for addressing ongoing salt and nitrate accumulation in the Central Valley at its 31 May 2018 Board Meeting. On 16 October 2019, the State Water Resources Control Board adopted Resolution No. 2019-0057 approving the Central Valley Water Board Basin Plan amendments and also directed the Central Valley Water Board to make targeted revisions to the Basin Plan amendments within one year from the approval of the Basin Plan amendments by the Office of Administrative Law. The Office of Administrative Law approved the Basin Plan amendments on 15 January 2020 (OAL Matter No. 2019-1203-03).

On 5 January 2021, the Central Valley Water Board issued the Discharger a Notice to Comply for the Salt Control Program (CV-SALTS ID: 2672). On 8 August 2022, the Central Valley Water Board received a Salt Control Program Notice of Intent stating the City chose to participate in the Participation and Optimization (P&O) Study.

The Facility is within Priority 2 Groundwater Basin 5-022.06 (San Joaquin Valley – Madera). Notices to Comply for Dischargers located in Priority 2 Basins will be sent between 2022 and 2024.

REOPENER

The conditions of discharge in the Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. The Order sets limitations based on the information provided thus far. If applicable laws and regulations change, or once new information is obtained that will change the overall discharge and its potential to impact groundwater, it may be appropriate to reopen the Order.

LEGAL EFFECT OF RESCISSION OF PRIOR WDRS OR ORDERS ON EXISTING VIOLATIONS

The Central Valley Water Board's rescission of prior waste discharge requirements and/or monitoring and reporting orders does not extinguish any violations that may have

CITY OF MADERA

MADERA WASTEWATER TREATMENT FACILITY

MADERA COUNTY

INFORMATION SHEET

occurred during the time those waste discharge requirements or orders were in effect. The Central Valley Water Board reserves the right to take enforcement action to address violations of prior prohibitions, limitations, specifications, requirements, or provisions of rescinded waste discharge requirements or orders as allowed by law.