CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION
ORDER R5-2018-0024

WASTE DISCHARGE REQUIREMENTS
FOR
CITY OF NEWMAN
WASTEWATER TREATMENT FACILITY
STANISLAUS COUNTY

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

1. On 12 February 2015, the City of Newman (Discharger) submitted a Report of Waste Discharge (RWD) to apply for revised Waste Discharge Requirements (WDRs) for the City of Newman Wastewater Treatment Facility (WWTF). Additional information was submitted on 13 January 2016, 27 May 2016, 6 September 2016, 13 January 2017, and 16 March 2017. On 27 April 2017, the Discharger submitted a revised RWD. On 28 August 2017, the Discharger submitted a memo providing an updated summary of management practices to reduce salinity in the effluent and minimize impacts to groundwater.

2. The WWTF is located at 2600 Hills Ferry Road, Newman, in Sections 16 and 17, T7S, R9E, MDB&M. The WWTF property is located within Stanislaus and Merced Counties. The Assessor's Parcel Numbers (APNs) for the WWTF in Stanislaus County are 049-043-005, 049-043-007, 049-043-008, and 049-043-009. The APNs for the WWTF in Merced County are 054-004-002, 054-004-009, 054-004-012, and 054-004-013. The location of the facility is shown on Attachment A, which is attached hereto and made part of this Order by reference.

3. The City of Newman owns and operates the WWTF and is responsible for compliance with these WDRs. WDRs Order 98-163, adopted by the Central Valley Water Board on 24 July 1998, currently prescribes requirements for the WWTF. This Order rescinds and replaces Order 98-163.

4. Order 98-163 sets an influent flow limit of 1.69 million gallons per day (MGD) as a monthly average dry weather flow (ADWF). However, the current design influent ADWF rate for the WWTF is only 1.25 MGD, because the treatment capacity of the WWTF is limited by high-strength organic matter in the influent and by the oxygen capacity of the treatment basins.

5. The Discharger is proposing to modify the facility in two phases. This Order will allow the Discharger to increase in the influent ADWF limit from 1.25 MGD to 1.5 MGD in Phase I, and then to 2.4 MGD in Phase 2, provided that the Discharger has demonstrated to the Central Valley Water Board that the proposed WWTF modifications have been successfully completed.

Existing Facility and Discharge

6. The WWTF receives wastewater from residential, commercial, and industrial sources. The current estimated population in the city is 10,224 residents with 5,210 equivalent

dwelling units (EDUs) including 3,007 residential EDUs, 259 commercial EDUs, and 1,373 industrial EDUs. The WWTF accepts wastewater from three local industries: a cheese manufacturer, a turkey hatchery, and a tomato processor.

7. Based on City of Newman 2011-2015 Consumer Confidence Reports, the characterization of potable groundwater supply is summarized below.

Constituent	Units	2011	2012	2013	2014	2015	2016
Electrical Conductivity	µmhos/cm	1,597	1,335	1,425	1,415	1,415	1,383
Total Dissolved Solids	mg/L	1,033	878	960	934	934	814
Chloride	mg/L	231	231	179	177	177	177
Sodium	mg/L	129	129	124	120	120	108
Hardness	mg/L	425	425	440	458	458	417
Nitrate as N	mg/L	5.13	5.76	5.30	5.93	5.78	5.11
Sulfate	mg/L	169	169	161	165	165	170
Total Chromium	µg/L	22.5	22.5	12	10.3	10.3	10.3
Lead	µg/L	3	0.005	0.005	<0.005	<0.005	<0.005

8. The WWTF includes a bar screen, two unlined earth basins BASIN-1 and BASIN-2, an unlined Oxidation Pond, two unlined effluent storage reservoirs with a total capacity of 230 million gallons (MG), 60 acres of overland flow terraces, and 199 acres of land application areas (LAAs). Based on two feet of freeboard, BASIN-1, BASIN-2, and Oxidation Pond have capacities of 7MG, 9 MG and 90 MG respectively.

9. In general, influent wastewater flows in series through BASIN-1, BASIN-2, and the Oxidation Pond. The Oxidation Pond has a recirculation channel which allows recirculation of treated effluent to the head of BASIN-2. The undisinfected secondary effluent is discharged to the storage reservoirs and then applied to the LAAs during the dry season (generally April through October) by flood irrigation of crops including alfalfa, corn and oats. Excess tailwater from the LAAs is collected in a tailwater pond of approximately one acre and returned to the effluent storage reservoir. The site plan and the treatment process flow schematic are shown on Attachment B and C, respectively, which are attached hereto and made part of this Order by reference.

10. The influent ADWF ranged from 1.08 to 1.32 MGD from 2010 through 2015. Based on the Discharger's monitoring reports, the water supply, influent and effluent quality is summarized below. The effluent quality is monitored from the storage reservoirs:

Constituent	Unit	Source Water Average	Influent Average	Effluent Average
Biological Oxygen Demand[1]	mg/L	--	1,030	50
Electrical Conductivity	µmhos/cm	1,380[2]	2,690[1]	3,780[1]
Total Dissolved Solids	mg/L	820[2]	1,820[2]	2,920[1]
Chloride[2]	mg/L	200	520	810
Sodium[3]	mg/L	150	470	880

Constituent	Unit	Source Water Average	Influent Average	Effluent Average
Nitrate Nitrogen	mg/L	3.3[2]	2.0[2]	2.2[1]
Total Kjeldahl Nitrogen[4]	mg/L	--	44	11
Arsenic[5]	µg/L	2	<2	3
Manganese[6]	µg/L	<10	60	10

1. Average of monthly monitoring data from 2014 through 2016
2. Average of quarterly monitoring data from 2014 through 2016
3. Average of annual monitoring data from 2011 through 2016
4. Average of quarterly monitoring data from 2nd Quarter 2008 through 1st Quarter 2010
5. Average of quarterly monitoring data from 2nd Quarter 2008 through 4th Quarter 2016
6. Average of quarterly monitoring data from 2nd Quarter 2008 through 1st Quarter 2010 and annual monitoring data starting in 4th quarter 2010 through 2016 (15 samples total)

-- Data not available

Based on the above data, the influent BOD concentration indicates high strength organic matter in the waste streams. The influent TDS and EC are approximately double that of the source water, indicating considerable salinity contributions from community sewer and industry. The average effluent TDS concentration is 1,100 mg/L greater than that in the influent, indicating considerable amounts of evaporation occur during the treatment and storage of wastewater. The Discharger states that the salinity of the effluent is lowest at the end of the wet season and increases through the summer until the start of next wet season.

11. The WWTF does not have a grit removal system and sludge accumulates on the bottom of the treatment basins. Since January 2010, sludge in the basins has been removed in-place using a biological treatment process. The 2015 RWD states that as of 2013, the depth of 4.25 feet of sludge had been removed from BASIN-2. Based on the Discharger's 28 March 2017 *Sludge Mass and Mass Measurements* report (included as Appendix D of the 2017 RWD), BASIN-1 was found to be 50% full of sludge. The Discharger states that the sludge in BASIN-1 is being reduced in-place by microbial treatment and expects to maintain the sludge layer at less than 20% of AB-1's capacity.

12. As a means of preventing objectionable odors, Discharge Specification B.3 of WDRs 98-163 requires that the dissolved oxygen (DO) concentration in the upper zone (1 foot) of wastewater in ponds shall not be less than 1.0 mg/L. Based on the Discharger's monthly monitoring reports from January 2015 through December 2016, the average DO concentration in BASIN-1 was 0.2 mg/L. This indicates that the WWTF does not have an adequate treatment capacity to aerobically treat the high strength wastewater.

While BASIN-1 was originally designed to function as an aerobic treatment basin, the Discharger submitted a letter dated 13 January 2017 stating that BASIN-1 is operating as an anaerobic treatment basin. The letter states that converting BASIN-1 to operate as an aerobic basin would be cost prohibitive. The Discharger's 28 March 2017 *Sludge Mass and Mass Measurements* report describes BASIN-1 as removing roughly 70 percent of the influent BOD concentration and that operating BASIN-1 as an anaerobic basin is critical to the WWTF operating efficiently.

The low DO concentration has the potential to cause odors and may be contributing to reducing conditions in underlying groundwater that can mobilize metals that occur naturally in soil, such as arsenic, iron, and manganese.

13. The City of Newman Code 11.06.070, Industrial Wastewater Discharges requires that all industrial users obtain discharge permits. Based on the Discharger's 1 February 2016 *Commercial Salinity Reduction Study,* there are three industrial users in the city. The City set numerical limits in the cheese manufacturer's permit at 0.3 MGD for monthly average flow rate, 4,000 µmhos/cm for EC as a daily maximum, 4,010 lbs/day for BOD as a monthly average, and 8,000 lbs/day for BOD as a daily maximum.

    Based on the cheese manufacturer's wastewater data, collected from January 2014 through December 2016, the discharge averaged 0.26 MGD and the average EC and BOD concentrations were approximately 3,240 µmhos/cm and 1,910 mg/L, respectively. The cheese manufacture's discharge accounts for approximately 25 percent of influent flow to the WWTF, a third of the EC[1], and half of the BOD concentration to the overall WWTF's influent.

14. Based on the *Commercial Salinity Reduction Study* and the 28 August 2017 salinity reduction memo*,* the Discharger has: 1) reduced the cheese manufacturer's industrial discharge EC limit from 6,000 µmhos/cm to 4,000 µmhos/cm, 2) required that water softener regeneration water be diverted from the sewer for off-site disposal, 3) required the cheese manufacturer's clean-in-place (CIP) processes to be optimized to reduce the amount of caustic used in the cleaning process, and 4) required that the timing of CIP activities be adjusted from a schedule which had all CIP processes occurring at once to a staggered schedule to prevent spikes in salinity. According to the study, these measures had minimal effect on reducing the salinity concentration in the discharge, so the cheese manufacturer constructed an equalization tank in November 2014 to stabilize discharge flow and characteristics. The equalization tank reduced the average EC concentration from approximately 4,000 µmhos/cm to 3,240 µmhos/cm. The salt load to the WWTF remains the same. The feasibility analysis of the study states the cheese manufacturer has completed all economically feasible salinity control. Further salinity reduction would require considerable economic investment, such as improving the source water quality by constructing a reverse osmosis system or using low salinity surface water.

    In July 2016, the Discharger set a daily maximum FDS industrial discharge limit of 2,000 mg/L. It is not clear if the FDS limit will require the cheese manufacturer to implement additional salinity source control to reduce the salinity concentrations. The Discharger did not propose requiring the cheese manufacturer to implement pretreatment to reduce BOD concentrations of the high-strength industrial wastewater.

15. The City submitted a *Salinity Impact Assessment and Mitigation Plan* dated 13 August 2012 for the planned expansion of the City's sphere of influence. The report states that the use of water softeners is common due to the potable water supply's high hardness and contributes to the high salinity of the WWTF influent wastewater.

[1] The EC ratio was calculated by dividing the flow-weighted EC in the cheese facility discharge by the flow-weighted EC in the WWTF influent.

Planned Changes in the Facility and Discharge

16. The City plans to increase the existing ADWF capacity from 1.25 MGD to 1.5 MGD in Phase 1 and then to 2.4 MGD in Phase 2. The proposed modifications include:

Phase 1 (Proposed ADWF limit: 1.5 MGD)

a) Creating a new unlined 9 MG aeration basin (BASIN-3) by baffling a five-acre area of the Oxidation Pond. After installation of BASIN-3, the surface area of Oxidation Pond will be reduced from 50 acres to 45 acres and the capacity of Oxidation Pond will be reduced from 90 MG to 81 MG;

b) Modifying the headworks to improve influent flow-splitting capabilities. The flow splitting structure will allow the influent to be directed to BASIN-1, BASIN-2 and BASIN-3 at varying ratios as required for optimal treatment under seasonally varying climatic conditions;

c) Improve BASIN-1 by adding baffling, prevent short circuiting, and improve mixing to treat the high-strength BOD influent.

d) Irrigating with relatively saline effluent and relatively low salinity groundwater, such that the resulting salinity load to shallow groundwater is similar to the salinity load of historical agricultural practices, and

e) Adding LAA5 (142 acres) and LAA6 (200 acres), which were purchased by the City in 2011 and 2014, respectively. The total LAA will be 541 acres after completion of - Phase 1.

Phase 2[1]: (Proposed AWDF limit: 2.4 MGD)

a) Expanding BASIN-3 from 9 MG to 20 MG by increasing baffling area from five acres to ten acres in the Oxidation Pond. After expansion of BASIN-3, the surface area of Oxidation Pond will be reduced from 45 acres to 40 acres and the capacity of Oxidation Pond will be reduced from 81 MG to 70 MG;

b) Adding new aerators to BASIN-3;

c) Installing effluent Storage Basin 3 with a capacity of 130 MG in the existing LAA3. The area of LAA3 will be reduced from 66 acres to 22 acres;

d) Improving the influent distributing system. Improvements planned by the City would allow recirculation to all aerations basins and piping and diversion facilities to allow influent to be distributed to any, or all, of the three aeration basins.

e) Irrigating with effluent and relatively low salinity groundwater and/or surface water to reduce salinity loading. Currently the surface water from CCID is not available but the Discharger plans to use surface water as supplemental water in the future.

f) Increasing LAAs from 541 acres in Phase 1 to 1,077 acres in Phase 2.

[1] Phase 2 will be completed in sub-phases on an as-needed basis to meet the City's growth.

17. The following table summarizes the pond design data provided in the April 2017 RWD. Values refer to existing conditions unless otherwise indicated.

Pond	Surface Area (acres)	Depth (feet)[3]	Volume (MG)[3]	Invert Elevation (feet, NGVD 29)
BASIN-1	2.7	8	7	59.5
BASIN-2	5	9	14.7	52
Proposed BASIN-3	5[1], 10[2]	>5.5	9[1], 20[2]	52
Oxidation Pond	50, 45[1], 40[2]	9	147, 138[1], 127[2]	52
Effluent Storage Reservoir 1	29	12	95	63.75
Effluent Storage Reservoir 2	39	12	135	63.75
Proposed Effluent Storage Basin 3	40[2]	12[2]	130[2]	63.75
Tailwater Return Storage	1	5	1.6	Not available

1. Phase 1 value
2. Phase 2 value.
3. Based on two feet of freeboard.

18. The following table summarizes the current LAA acreage and the expected acreage after completion of each phase.

Existing LAAs (1.25 MGD)		Phase 1 LAAs (1.5 MGD)		Phase 2 LAAs (2.4 MGD)	
Name	Acres	Name	Acres	Name	Acres
LAA1	55	LAA1	55	LAA1	55
LAA2	66	LAA2	66	LAA2	66
LAA3	66	LAA3	66	LAA3	22
LAA4	12	LAA4	12	LAA4	12
-	-	LAA5	142	LAA5	142
-	-	LAA6	200	LAA6	200
-	-	-	-	John Rocha[1]	80
-	-	-	-	Borba Dairy Farm[1]	500
Total	199	Total	541	Total	1,077

1. Regulated under the General Order WQ-2016-0068-DDW

19. Fodder crops will be planted on all LAAs and irrigated with WWTF effluent and supplemental irrigation water. All LAAs will have tailwater collection systems similar to the existing ones.

20. City-owned LAAs (LAA1 through LAA6) are regulated under this Order. The proposed LAAs of John Rocha and Borba Dairy Farms are owned and operated by the individual farms. All discharges to individually-owned farms, including those added after the adoption of this Order, will be regulated under General Order WQ-2016-0068-DDW, *Water Reclamation Requirements for Recycled Water Use*.

21. The April 2017 RWD provides a water balance based on a 100-year annual precipitation storm event. Based on the water balance, the Discharger owns sufficient LAA acreage (LAA1 through LAA6) to accommodate the Phase 1 flow limit of 1.5 MGD. After completion of all proposed changes in Finding 16, the WWTF will have adequate storage and disposal capacities for the proposed flow limits. This Order requires that the Discharger maintain a minimum amount of LAA acreage to be allowed to discharge effluent at proposed flows of 1.5 MGD or greater.

Industrial Discharge Pretreatment

22. Industrial discharges to publicly-owned wastewater treatment facilities (WWTFs) can cause one or more of the following problems, if not adequately controlled:

    a. *Interference or Upset.* Discharges of high volumes or concentrations of certain pollutants can inhibit or interfere with the proper operation of the WWTF, causing it to do an inadequate job of treating wastes. As a result, the facility could be prevented from meeting its permit requirements.

    b. *Sludge Management.* Industrial pollutants, particularly metals and other toxic pollutants, can limit the sludge management alternatives available to the Discharger and increase the cost of sludge management and disposal. Additionally, biosolids contaminated with toxic pollutants could be rendered unsuitable for as a soil amendment.

    c. *Pass-through.* Some industrial pollutants 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.

    Additionally, the discharge of explosive, reactive, or corrosive wastes can cause damage to the wastewater collection system or the treatment works, and may also pose a threat to worker or public safety.

23. The Discharger has implemented an industrial pretreatment program to regulate the discharge of industrial wastes into the wastewater collection system or treatment works to prevent damage to the sewer system or treatment works, inhibit or disrupt the treatment process, or cause violation of the effluent or groundwater limits of this Order. The City of Newman Code 11.06.070, entitled “Industrial Wastewater Discharges,” requires that all industrial wastewater discharged to the sewer system obtain discharge permits. City code section 11.06.004.C.22 states that discharges with EC concentrations greater than 4,000 µmhos/cm are prohibited unless it is demonstrated not to be harmful to the sewer system. The City code does not specify a BOD concentration limit but states that a BOD limit may be set after review of the industrial discharge permit application. The Discharger’s 1 February 2016 *Commercial Salinity Reduction Study* states that there are three industrial users in the City: a cheese manufacturer, a tomato

processor, and a turkey hatchery. The cheese manufacturer contributes approximately 25% of the influent flow as discussed in Finding 13. The tomato processor is permitted for a maximum monthly average of 6,666 gallons per day and the turkey hatchery is permitted for a maximum monthly average of 21,050 gallons per day; these discharges contribute approximately a combined 2% of the influent flow. The salinity reduction study provides a description of implemented measures to reduce salinity and did not propose any additional measures. The Central Valley Water Board may require that the Discharger reevaluate its industrial pretreatment program if industrial wastewater results in non-compliance with the conditions imposed by these WDRs.

Site-Specific Conditions

24. California Department of Water Resources (DWR) reports annual precipitation in Newman to be approximately 10.65 inches; the 100-year return total is 19.26 inches. The mean evapotranspiration rate is approximately 56.1 inches per year.

25. The site is generally flat, with a slight slope to the northeast towards the San Joaquin River. The WWTF is located within the Federal Emergency Management Agency (FEMA) 100-year flood plain protected by flood prevention levees. The entire WWTF site and all current LAAs are surrounded by containment berms with an elevation of 72 feet NGVD 29. The WWTF has a 0.2 percent annual chance of flooding as a result of constructed flood prevention levees.

26. The City of Newman's *Anti-degradation Analysis and Groundwater Conditions* (Anti-Degradation Analysis) dated 13 January 2016 indicates that the WWTF is divided by two Quaternary deposits, including the San Luis Ranch (Qsl) and Dos Palos (Qdp) Alluvium according to the California Division of Mines and Geology geologic map of the San Francisco-San Jose Quadrangle (1991). The dividing line between these two geologic units occurs as an approximate north-south trend, with Qsl occurring on the western portion of the WWTF property and Qdp present on the east. The Qsl is described as being comprised of fine to coarse grained fan, mudflow, terrace, and floodplain deposits, while Qdp is described as being limited to floodplain deposits. Locally, wetlands are noted as also being present outside of the eastern portion of the WWTF property (separated by the canal) and within Qdp deposits, indicating that this area has a very shallow groundwater table and likely serves as a region of groundwater discharge.

27. Based on information provided by Brown and Caldwell in a 1975 Environmental Impact Report, the soils at the LAAs consist primarily of Orestimba clay loam with some areas containing Camarillo loam. The infiltration rate of Orestimba clay loam is estimated to be slowly permeable at 0.06 to 0.63 inches per hour (in/hr). Camarillo loam is estimated to be moderately permeable at 0.63 to 2.0 in/hr.

28. Surrounding land uses are agriculture and residential.

Groundwater Conditions

29. The Discharger's Anti-Degradation Analysis states that, according to the California DWR Bulletin 118 (Bulletin 118), the City of Newman lies within the San Joaquin Valley Groundwater Basin, Delta Mendota Subbasin. Groundwater-bearing formations within the subbasin are reported to include the Tulare Formation, terrace deposits, alluvium,

and flood-basin deposits. Groundwater principally occurs in three water-bearing strata, including: (1) a lower confined zone containing fresh water in the lower section of the Tulare Formation; (2) an upper zone containing confined, semi-confined, and unconfined water in the upper section of the Tulare Formation and younger deposits; and, (3) a shallow zone, which contains unconfined water within about 25 feet of land surface.

30. Bulletin 118 identifies a shallow saline groundwater zone within about 10 feet of ground surface covering large portions of the subbasin. This water is reported to contain elevated concentrations of iron, fluoride, nitrate, and boron. This is the same first recoverable shallow groundwater monitored at the City's WWTF. Due to the shallow groundwater, subsurface agricultural drain pipes are in use throughout the area to protect the root zone of local agricultural parcels. Shallow groundwater collected in these drains is discharged to the San Joaquin River. An agricultural drain called the A-line passes under LAA1, as shown in Attachment B. Recharge to this zone is expected to be dominated by agricultural return and wastewater reclamation.

31. The Corcoran Clay or "E Clay" is a member of the Tulare Formation and constitutes a regional confining layer that is generally demarked as the dividing line between the upper and lower Tulare Formation aquifers. Locally within the City of Neman area, the Corcoran Clay is present at depths of around 220 to 260 ft. below ground surface (bgs). Water-bearing strata above and below the Corcoran Clay is also highly channelized and may be further subdivided by significant clay and silt aquitards.

32. Available shallow groundwater monitoring data from DWR water quality reports prior to 1968 show EC ranged from 740 to 1,260 µmhos/cm upgradient of the WWTF. Monitoring stations within 3 miles southeast of the WWTF show EC ranged from 2,000 to 12,600 µmhos/cm increasing east toward the San Joaquin River. Groundwater monitoring station NEWMAN WY, previously located near Storage Reservoir 2's current location, was sampled ten times from June 1975 through August 1976. Sampling data show that EC results varied from 1,060 to 1,970 µmhos/cm, increasing over time.

33. The Discharger has been monitoring groundwater since 1998. Seven shallow groundwater monitoring wells MW-1 through MW-7 were installed at the WWTF as shown on Attachment A and B. The depths of these wells ranged from 19 to 32 feet below ground surface (bgs) as shown below.

Wells	Top of Casing Elevation (ft, NGVD)	Depth (ft, bgs)	Screen Interval (ft, bgs)
MW-1	74.02	19	9 - 19
MW-2	72.45	19	9 - 19
MW-3	72.83	19	9 - 19
MW-4	74.16	20	10 - 20
MW-5	68.99	32	23 - 32
MW-6	76.28	26.5	11.5 - 26.5
MW-7	73.38	29	14 - 29

34. The Discharger's Anti-Degradation Analysis states that "*groundwater flow typically varies from being toward a northerly and easterly direction, and temporally, radial from a central mound originating near MW-3 and the storage reservoir. The groundwater mound, that is sometimes present at MW-3, is likely controlled in part by percolation of water from the unlined reservoir".* Based on the quarterly monitoring reports from January 2015 through November 2016, the horizontal gradient ranged from 0.0014 to 0.007 feet/foot.

35. The monitoring wells MW-2 and MW-5 typically have the lowest groundwater elevations, while groundwater at the remaining wells has a comparably higher elevation. Well MW-3 is located adjacent to the storage reservoir No.1 and has higher groundwater elevations due to percolation from the effluent reservoir. The RWD states that MW-2, MW-3, and MW-5 are at locations most likely influenced by effluent storage and/or reclamation activities. The Discharger's Anti-Degradation Analysis states that monitoring wells MW-2, MW-3, and MW-5 are comprised of a large fraction of percolated wastewater ranging from approximately 45 to 50% at MW-2, 80% at MW-5, and more than 90% at MW-3 and are considered compliance wells. The Anti-Degradation Analysis states that monitoring wells MW-1, MW-4, MW-6, and MW-7 did not indicate a large fraction of wastewater and represent up-gradient groundwater quality.

36. A summary of groundwater historical monitoring data is presented in the table below based on data collected during April 2008 through December 2016.

Groundwater Average Concentration									
		EC (µmhos/cm)	TDS (mg/L)	Chloride (mg/L)	Sodium (mg/L)	Nitrate as N (mg/L)	Arsenic (µg/L)	Iron (µg/L)	Manganese (µg/L)
Potential Water Quality Objective		900-2,200[1]	500-1,500[2]	250-600[3]	69[4]	10[5]	10[5]	300[6]	50[6]
Upgradient Wells	MW-1[7]	2,910	1,790	510	380	3.9	6	660	510
	MW-4[7]	3,820	2,470	620	450	5.0	3	110	190
	MW-6[8]	3,760	2,390	610	620	8.0	4	<50	50
	MW-7[8]	1,520	900	180	230	5.6	3	<50	<10
Compliance Wells	MW-2[7]	8,750	5,850	1,990	1,220	6.0	5	80	30
	MW-3[7]	3,630	2,080	700	560	2.9	10	500	170
	MW-5[7]	8,970	5,460	2,150	1,670	<0.5	15	370	2,320

1. Secondary Maximum Contaminant Level range: Recommended level = 900; Upper level = 1,600 mg/L; Short-term level = 2,200 mg/L.
2. Secondary Maximum Contaminant Level range: Recommended level = 500; Upper level = 1,000 mg/L; Short-term level = 1,500 mg/L.
3. Secondary Maximum Contaminant Level range: Recommended level = 250; Upper level = 500 mg/L; Short term level = 600 mg/L.
4. Lowest Agricultural Water Quality Goal.
5. Primary Maximum Contaminant Level.
6. Secondary Maximum Contaminant Level
7. Data collected quarterly from 2nd Quarter 2008 through 4th Quarter 2016.
8. Data collected quarterly from 1st Quarter 2012 through 4th Quarter 2016.

37. Groundwater monitoring data indicate that upgradient groundwater is of poor quality, except for nitrate and arsenic. In comparison to the other upgradient groundwater

monitoring wells, MW-7 has the best groundwater quality regarding constituents representative of salinity (EC, TDS, sodium, and chloride). MW-7 is located within the land area of proposed LAA5 and LAA6.

38. Compliance groundwater monitoring wells MW-2 and MW-5 have concentrations of salinity significantly greater than the concentrations in the up-gradient monitoring wells. This indicates that the discharge may have further degraded groundwater quality with regards to salinity. However, the Discharger's *Salinity Impact Assessment and Mitigation Plan* dated 13 August 2012, provides evidence that salinity concentrations in shallow groundwater tend to increase with groundwater gradient direction toward the San Joaquin River. The mitigation plan references DWR maps showing shallow groundwater monitoring data for EC in 2001 and 2005. The maps show that the salinity of shallow groundwater under the City is less than 2,000 µmhos/cm EC and increases in the easterly to northeasterly direction to 2,000 to 4,000 µmhos/cm EC. The maps also show that a portion of the easterly and northeasterly areas closest to the San Joaquin River increased to 4,000 to 10,000 µmhos/cm in 2005. However, the submitted maps do not provide sufficient resolution of EC concentrations to determine whether the elevated concentrations observed in the WWTF compliance monitoring wells are naturally occurring.

39. Although the average nitrate nitrogen concentrations in all wells are less than the Primary MCL of 10 mg/L for nitrate as nitrogen, quarterly sampling results of upgradient groundwater began exceeding 10 mg/L starting in 2012. Upgradient monitoring well MW4 shows a statistically significant increasing trend from 2008 through 2016. A statistically significant increasing trend is also apparent in downgradient monitoring wells MW-2 and MW-3. The nitrate exceedances in the up-gradient monitoring wells may be a result of long term agricultural practices in the area and may begin affecting nitrate concentrations in compliance wells. The Discharger states that around 2013 the neighboring agricultural practices have changed from flood irrigation of fodder crops to micro-sprinkler irrigation of almonds, which may have an impact on MW-4.

40. Compliance groundwater monitoring well MW-5 has concentrations of arsenic and manganese significantly greater than the potential water quality objective and the concentration of up-gradient monitoring wells. This indicates that the WWTF may have further degraded groundwater with regards to arsenic and manganese. Since the effluent has a low concentration of arsenic and manganese, the source of degradation may be a result of anaerobic conditions created by the WWTF's unlined ponds. The high strength BOD influent and operation of BASIN-1 as an anaerobic pond may create redox conditions that mobilize metals. The Discharger states that the Oxidation Pond and effluent storage basins may create conditions that facilitate the elevated concentrations in MW-5. The Discharger also states that the neighboring land area is a marsh and the observed concentrations may be a natural occurrence. However, the Discharger did not provide supporting groundwater data to indicate that the increased arsenic and manganese concentrations downgradient are naturally occurring. This Order requires the Discharger to evaluate whether the elevated concentrations are naturally occurring, and, if not, to implement additional management practices.

41. The proposed LAA expansion will encompass the location of up-gradient monitoring well MW-7. This Order requires the Discharger to reevaluate the WWTF's monitoring well

network and install additional upgradient and/or compliance monitoring wells if necessary.

Basin Plan, Beneficial Uses, and Regulatory Considerations

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

43. Local drainage is to the San Joaquin River. The beneficial uses of the San Joaquin River are municipal and domestic supply; agricultural supply; stock watering; process water supply; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.

44. The beneficial uses of underlying groundwater as set forth in the Basin Plan are municipal and domestic supply, agricultural supply, industrial service supply and industrial process supply.

45. The Basin Plan establishes narrative water quality objectives for chemical constituents, tastes and odors, and toxicity in groundwater. It also sets forth a numeric objective for total coliform organisms.

46. The Basin Plan's numeric water quality objective for bacteria requires that the most probable number (MPN) of coliform organisms over any seven-day period shall be less than 2.2 per 100 mL in MUN groundwater.

47. The Basin Plan's narrative water quality objectives for chemical constituents, at a minimum, require waters designated as domestic or municipal supply to meet the MCLs specified in Title 22 of the California Code of Regulations (Title 22). The Basin Plan recognizes that the Central Valley Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.

48. The narrative toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, animal, plant, or aquatic life associated with designated beneficial uses.

49. Quantifying a narrative water quality objective requires a site-specific evaluation of those constituents that have the potential to impact water quality and beneficial uses. The Basin Plan states that when compliance with a narrative objective is required to protect specific beneficial uses, the Central Valley Water Board will, on a case-by-case basis, adopt numerical limitations in order to implement the narrative objective.

50. In the absence of specific numeric water quality limits, the Basin Plan methodology is to consider any relevant published criteria. General salt tolerance guidelines, such as *Water Quality for Agriculture* by Ayers and Westcot and similar references indicate that

yield reductions in nearly all crops are not evident when irrigation water has an EC less than 700 µmhos/cm. There is, however, an eight to ten-fold range in salt tolerance for agricultural crops and the appropriate salinity values to protect agriculture in the Central Valley are considered on a case-by-case basis. It is possible to achieve full yield potential with waters having EC up to 3,000 µmhos/cm if the proper leaching fraction is provided to maintain soil salinity within the tolerance of the crop.

51. The stakeholder-led Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative has been coordinating efforts to implement new salt and nitrate management strategies. The Board expects dischargers that may be affected by new salt and nitrate management policies, including the Discharger, to coordinate their long-term salt and nitrate planning with the CV-SALTS initiative.

52. In conjunction with the CV-SALTS initiative, the Central Valley Water Board is developing amendments to the Basin Plan to incorporate new strategies for addressing ongoing salt and nitrate accumulation in the waters and soils of the Central Valley. The Salinity Control Program currently being developed would subject dischargers that do not meet stringent salinity numeric values (700 µS/cm EC as a monthly average to protect the AGR beneficial use and 900 µS/cm EC as an annual average to protect the MUN beneficial use) to performance-based salinity requirements and would require these dischargers to participate in a basin-wide Prioritization and Optimization Study. The conditions imposed by these WDRs impose performance-based salinity requirements and are intended to be compatible with new requirements currently under consideration. However, should the Central Valley Water Board incorporate the Salinity Control Program into the Basin Plan as currently contemplated, the Discharger will likely be required to participate in a basin-wide Prioritization and Optimization Study during Phase 1 of this Program (anticipated to last 10-15 years).

Antidegradation Analysis

53. State Water Board Resolution 68-16, the Statement of Policy with Respect to Maintaining High Quality of Waters in California (*State Antidegradation Policy*) prohibits the Board from authorizing the degradation of high-quality water unless it has been shown that:

    a. The degradation will not unreasonably affect present and anticipated beneficial uses;

    b. The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives;

    c. The discharger employs best practicable treatment or control (BPTC) to minimize degradation; and

    d. The degradation is consistent with the maximum benefit to the people of the state.

54. The Discharger has been monitoring groundwater quality at the site since 1998. Although limited groundwater quality data from as far back as 1945 is available, existing information is not sufficient to allow the Board to determine pre-1968 groundwater quality with certainty. Determination of compliance with the *State Antidegradation Policy* is based on the Discharger's groundwater monitoring data since 2008 when the Discharger began monitoring additional constituents in all wells.

55. Constituents of concern that have the potential to degrade groundwater include salts, nutrients, and metals as discussed below.

Constituent	Average Concentrations			
	Effluent	Upgradient Groundwater[6]	Compliance Well Groundwater[7]	Potential Water Quality Objective
EC (µmhos/cm)	3,780[1]	1,520 to 3,820	3,630 to 8,970	900 - 2,200[8]
TDS (mg/L)	2,920[1]	900 to 2,440	2,080 to 5,850	500 - 1,500[9]
Chloride (mg/L)	810[2]	180 to 620	700 to 2,150	106[10] - 600[11]
Sodium (mg/L)	880[1]	230 to 620	560 to 1,670	69[10]
Nitrate Nitrogen (mg/L)	2.2[1]	3.9 to 8.0	< 0.5 to 6.0	10[12]
Arsenic (µg/L)	3[4]	3 to 6	5 to 15	10[12]
Manganese (µg/L)	10[5]	<10 to 510	30 to 2,320	50[13]

[1] Average of monthly monitoring data from 2014 through 2016
[2] Average of quarterly monitoring data from 2014 through 2016
[3] Average of annual monitoring data from 2011 through 2016
[4] Average of quarterly monitoring data from 2nd Quarter 2008 through 4th Quarter 2016
[5] Average of quarterly monitoring data from 2nd Quarter 2008 through 1st Quarter 2010 and annual monitoring data starting in 4th quarter 2010 through 2016 (15 samples total)
[6] Range of average concentrations from MW-1, MW-4, MW-6 and MW-7; data for MW-1, MW-4 collected quarterly from 2nd Quarter 2008 through 4th Quarter 2016; data for MW-6 and MW-7 collected 1st Quarter 2012 through 4th Quarter 2016.
[7] Range of average concentrations from MW-2, MW-3, and MW-5; data collected from 2nd Quarter 2008 through 4th Quarter 2016.
[8] EC Secondary Maximum Contaminant Level range, Recommended level = 900; Upper level = 1,600 mg/L; Short term level = 2,200 mg/L.
[9] TDS Secondary Maximum Contaminant Level range, Recommended level = 500; Upper level = 1,000 mg/L; Short term level = 1,500 mg/L.
[10] Lowest Agricultural Water Quality Goal.
[11] Secondary Maximum Contaminant Level range, Recommended level = 250; Upper level = 500 mg/L; Short term level = 600 mg/L.
[12] Primary Maximum Contaminant Level.
[13] Secondary Maximum Contaminant Level

a. **Salinity (EC, TDS, chloride, and sodium):** Groundwater in the area of the discharge is highly variable with respect to salinity. However, concentrations of EC, TDS, chloride, and sodium, even in upgradient groundwater, all exceed numeric values that would protect salt-sensitive crops (700 µS/cm EC as a monthly average) and that reflect the established "recommended" (900 µS/cm EC as an annual average), "upper" (1,600 µS/cm EC as an annual average) and "short-term" (2,200 µS/cm EC as an annual average) drinking water secondary maximum contaminant levels for consumer acceptance in Title 22. Further, the Discharger has also provided evidence that the salinity of shallow groundwater increases in the easterly to northeasterly direction and can range from 2,000 to 10,000 µmhos/cm. Nonetheless, the concentration of salinity constituents in compliance wells MW-2 and MW-5 are two to three times the concentration observed in upgradient groundwater monitoring wells, indicating impacts to groundwater as a result of discharges associated with the WWTF. These impacts are presumably the combined product of poor quality source water, residential and industrial salinity discharge contributions, and the effects of evapoconcentration during

wastewater treatment and land application. Since the discharge is expected to continue to degrade groundwater with respect to salinity, the Board will require that the Discharger implement "best efforts" to reduce impacts to groundwater caused by the salinity in its discharges.

These "best efforts" must include:

i. Continued implementation of an industrial program to regulate salinity inputs from significant industrial users.

ii. Compliance with performance-based EC limits (the 4,200 µS/cm EC as an annual average limit established by this order).

iii. The use of supplemental irrigation groundwater to mitigate EC, TDS, and chloride concentrations applied to the LAAs.

iv. Efforts to develop a lower-salinity potable groundwater well for the City of Newman to reduce the salinity of the WWTF influent.

v. Implementation of a ban on the installation of new self-regenerating water softeners to reduce the salinity of the WWTF influent.

vi. Participation in long-term planning efforts currently underway under the CV-SALTS initiative to develop comprehensive valley-wide solutions to the problem of salinity accumulation in the valley's soils and groundwater.

This Order also requires the Discharger to submit and implement a *Salinity Evaluation and Minimization Plan*.

b. **Nitrate:** The average nitrate concentration in all wells is less than the Primary MCL of 10 mg/L, which means that groundwater is considered "high quality" with respect to nitrate. However, the upgradient wells have each had one exceedance from 2012 through 2016; MW-1 had the highest nitrate nitrogen concentration in the 1st Quarter of 2016 at 29 mg/L, and MW-4 shows a statistically significant increasing concentration trend from 2008 through 2016, which may be a result of neighboring agricultural practices. Because groundwater beneath the facility is considered high-quality with respect to nitrate, these WDRs require the Discharger to implement BPTC to limit degradation caused by nitrates in the discharge.

For nutrients such as nitrate, the potential for groundwater degradation depends on wastewater quality; crop uptake, and the ability of the vadose zone below the LAAs to support nitrification and denitrification to convert the nitrogen to nitrogen gas before it reaches the water table. Most of the nitrogen in the process wastewater is present as Total Kjeldahl Nitrogen (TKN), which can readily mineralize and convert to nitrate (with some loss via ammonia volatilization) during treatment and application to the LAAs.

Effective treatment or control of nitrate depends in large part on ensuring that nitrate applied in wastewater is applied at agronomic rates. These WDRs set a narrative total nitrogen loading limit to the land application areas based off of crop uptake.

c. **Arsenic:** For arsenic, dissolved concentrations in upgradient groundwater are statistically less than the primary MCL, so groundwater is considered a high-quality water for arsenic. However, the annual average dissolved concentration of arsenic in

MW-5 indicates that discharges from the WWTF may be causing degradation of groundwater.

Since the effluent does not contain elevated concentrations of arsenic, the groundwater degradation may be a result of redox conditions created by the WWTF, such as the high strength BOD in the influent and operation of BASIN-1 as an anaerobic basin. The resulting redox conditions in groundwater may be creating the potential to mobilize naturally occurring arsenic and manganese in the soil. The Discharger also states that the neighboring land area is a marsh and the observed concentrations may be a natural occurrence.

These WDRs require the Discharger to implement BPTC, analyze groundwater data, and determine whether downgradient elevated concentrations of arsenic are naturally occurring. If the groundwater data indicate that the elevated concentrations are due to discharges from the WWTF, the Discharger will be required to submit a workplan to the Central Valley Water Board with a proposal for addressing the arsenic impacts.

d. **Manganese:** For manganese, upgradient concentrations are significantly higher than the Secondary MCL for manganese, indicating that groundwater is not a high-quality water for manganese. However, monitoring results indicate that the discharges from the WWTF may be causing further degradation of this groundwater for the same reason that discharges from the WWTF may be causing arsenic degradation (reducing conditions potentially mobilize naturally-occurring manganese in the soil). Since the discharge may degrade non-high quality groundwater with respect to manganese, the Board will require that the Discharger implement “best efforts” to reduce impacts to groundwater caused by the salinity in its discharges.

   Incorporating a discussion of potential manganese impacts into the analysis that the Discharger will perform to address potential arsenic degradation, and incorporating a discussion of arsenic in any workplan required (should the elevated downgradient concentrations be found to be due to discharges from the WWTF) would be sufficient to constitute “best efforts” to address potential manganese degradation.

56. Degradation with respect to salinity, nitrate, arsenic and manganese could occur as a result of discharges from the WWTF. The Board finds that the underlying groundwater is considered “high quality” for nitrate and arsenic. The beneficial use potentially affected by discharges of nitrate and arsenic from the WWTF is the MUN beneficial use. By establishing permit terms that limit discharges of nitrate to agronomic rates, the Board is ensuring that the degradation will not unreasonably affect present and anticipated beneficial uses with respect to nitrate. By requiring the Discharger to investigate whether elevated concentrations of arsenic are attributable to discharges from the WWTF and to develop a workplan if they are, the Board is ensuring that the degradation will not unreasonably affect present and anticipated beneficial uses with respect to arsenic. By establishing these requirements, the degradation potentially caused by nitrate and arsenic is not expected to result in water quality less than that prescribed in state and regional policies.

57. The Discharger will employ treatment or control of the wastes in its discharge that will incorporate:

a. Irrigating with the effluent and with relatively low salinity groundwater and/or surface water that will reduce the effluent salinity and loading rates.

b. Additional LAAs to reduce nutrient loading rates.

c. Use of effluent to irrigate crops and landscaped areas using water and nutrient application rates consistent with plant needs.

d. The blending of collected storm water with effluent to reduce salinity.

e. Reducing irrigation with effluent in late summer when the effluent is most saline, and increasing the use of lower salinity supplemental irrigation water.

f. Enforcing limits on industrial wastewater discharges into the Discharger's collection system.

g. The investigation of elevated concentrations of arsenic and manganese downgradient of discharges to determine whether increased concentrations are due to reducing conditions caused by the discharges, and the development of workplans to address those increased concentrations, if the discharges are the cause.

h. The employment of certified wastewater treatment operators.

The Central Valley Water Board finds that the Discharger's implementation of these practices is considered BPTC for the wastes in the discharge. This Order requires the discharger to implement these practices consistent with the *State Antidegradation Policy*.

58. Degradation of groundwater by some of the typical waste constituents associated with discharges from a municipal wastewater utility, after effective source control, treatment, and control measures are implemented, is consistent with the maximum benefit to the people of the state. The technology, energy, water recycling, and waste management advantages of municipal utility service far exceed any benefits derived from reliance on numerous, concentrated individual wastewater systems, and the impact on water quality will be substantially less. The economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, and provides sufficient justification for allowing the limited groundwater degradation that may occur pursuant to this Order.

59. This Order is consistent with the *State Antidegradation Policy* since the limited degradation allowed by this Order will not result in water quality less than water quality objectives or unreasonably affect present and anticipated beneficial uses, the Discharger will implement BPTC of the wastes in its discharge to minimize degradation that may occur as a result of its discharge, and the limited degradation is of maximum benefit to people of the State.

Water Recycling Regulatory Considerations

60. Undisinfected domestic wastewater contains human pathogens that are typically measured using total or fecal coliform organism as indicator organisms. The State Water

Resources Control Board Division of Drinking Water, which has primary statewide responsibility for protecting water quality and the public health, has established statewide criteria in Title 22, section 60301 et seq. for the use of recycled water.

61. On 3 February 2009, the State Water Board adopted Resolution 2009-0011, Adoption of a Policy for Water Quality Control for Recycled Water (Recycled Water Policy). The Recycled Water Policy promotes the use of recycled water to achieve sustainable local water supplies and reduce greenhouse gases.

62. On 23 April 2009, the Central Valley Water Board adopted Resolution R5-2009-0028, In Support of Regionalization, Reclamation, Recycling and Conservation for Wastewater Treatment Plants. Resolution R5-2009-0028 encourages water recycling, water conservation, and regionalization of wastewater treatment facilities. It requires the municipal wastewater treatment agencies to document:

    a. Efforts to promote new or expanded wastewater recycling opportunities and programs;

    b. Water conservation measures; and

    c. Regional wastewater management opportunities and solutions (e.g., regionalization).

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

63. The Discharger submitted a *Title 22 Engineering Report*, dated 11 February 2015 to DDW pursuant to Title 22 for water recycling of undisinfected secondary recycled water. On 27 March 2015, DDW commented on the *Title 22 Engineering Report* and required the City to revise the report to address several concerns. On 21 September 2015, the Discharger submitted the revised *Title 22 Engineering Report* and DDW approved the report on 12 October 2015.

Other Regulatory Considerations

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

65. Based on the threat and complexity of the discharge, the facility is determined to be classified as 2B as defined below:

    a. Category 2 threat to water quality: “Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance.”

b. Category B complexity, defined as: “Any discharger not included [as Category A] that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal) or any Class 2 or Class 3 waste management units.”

66. Title 27 of the California Code of Regulations (Title 27) contains regulatory requirements for the treatment, storage, processing, and disposal of solid waste that generally require all wastes that have the potential to degrade water quality be placed in lined landfills. However, Title 27 exempts certain activities from its provisions. Discharges regulated by this Order are exempt from Title 27 pursuant to provisions that exempt domestic sewage, wastewater, and reuse. Title 27, section 20090 states, in relevant part:

> The following activities shall be exempt from the SWRCB-promulgated provisions of this subdivision, so long as the activity meets, and continues to meet, all preconditions listed:
>
> (a) Sewage - Discharges of domestic sewage or treated effluent which are regulated by WDRs issued pursuant to Chapter 9, Division 3, Title 23 of this code, or for which WDRs have been waived, and which are consistent with applicable water quality objectives, and treatment or storage facilities associated with municipal wastewater treatment plants, provided that residual sludges or solid waste from wastewater treatment facilities shall be discharged only in accordance with the applicable SWRCB-promulgated provisions of this division.
>
> (b) Wastewater - Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leachfields if the following conditions are met:
>
> (1) the applicable RWQCB has issued WDRs, reclamation requirements, or waived such issuance;
>
> (2) the discharge is in compliance with the applicable water quality control plan; and
>
> (3) the wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste.

67. The discharge authorized herein and the treatment and storage facilities associated with the discharge, are exempt from the requirements of Title 27 as follows:

a. The treatment basins BASIN-1, BASIN-2, proposed BASIN-3, oxidation pond and two effluent storage reservoirs are exempt pursuant to Title 27, section 20090(a) because they are treatment and storage facilities associated with a municipal domestic wastewater treatment plant.

b. The LAAs are exempt pursuant to Title 27, section 20090(b) because:

i. The Central Valley Water Board is issuing WDRs.

ii. Following completion of the modifications required by this Order, the discharge will be in compliance with the Basin Plan, and;

iii. The treated effluent discharged to the LAAs does not need to be managed as hazardous waste.

68. The U.S. EPA published *Statistical Analysis of Groundwater Monitoring Data at Resource Conservation and Recovery Act (RCRA) Facilities, Unified Guidance* (Unified Guidance) in 2009. As stated in the Unified Guidance, the document:

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

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

69. On 2 May 2006, the State Water Board adopted Statewide General Waste Discharge Requirements for Sanitary Sewer Systems General Order 2006-0003-DWQ. This General Order requires all public agencies that own or operate sanitary sewer systems greater than one mile in length to comply with the Order. The Discharger's collection system exceeds one mile in length, and the Discharger's collection system is regulated under Order 2006-0003-DWQ.

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

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

The technical reports required by this Order and the attached Monitoring and Reporting Program R5-2018-0024 are necessary to ensure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

71. DWR sets standards for the construction and destruction of groundwater wells (hereafter DWR Well Standards), as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 74-81* (December 1981). These standards, and any more stringent standards adopted by the state or county pursuant to Water Code section 13801, apply to all monitoring wells used to monitor the impacts of wastewater storage or disposal governed by this Order.

72. A Mitigated Negative Declaration was certified by the City of Newman on 11 April 2017 in accordance with the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). The Mitigated Negative Declaration describes the project as expanding the existing WWTF and reducing salinity impacts to groundwater by reducing the salinity of the City's potable water supply, reducing salinity to the wastewater stream, using supplemental irrigation water with a lower salinity, upgrading the headworks, building additional aeration basins, removing accumulated sludge from existing basins, improving the aeration of treatment basins, improving flow splitting capabilities of wastewater between treatment basins, expanding the land application area for effluent reclamation, and constructing an additional effluent storage reservoir.

73. Pursuant to Water Code section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

Public Notice

74. All the above, including attachments incorporated herein by reference, were considered in establishing the following conditions of discharge.

75. The Discharger and interested agencies and persons have been notified of the Central Valley Water Board's intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity to submit written comments and an opportunity for a public hearing.

76. All comments pertaining to the discharge were heard and considered in a public hearing.

IT IS HEREBY ORDERED that Order 98-163 is rescinded and, pursuant to Water Code sections 13263 and 13267, the City of Newman, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and regulations adopted thereunder, shall comply with the following:

A. Discharge Prohibitions

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.

2. Discharge of waste classified as 'hazardous', as defined in the California Code of Regulations, title 22, section 66261.1 et seq., is prohibited.

3. Treatment system bypass of untreated or partially treated waste is prohibited, except as allowed by Standard Provision E.2 of the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*.

4. Discharge of waste at a location or in a manner different from that described in the Findings is prohibited.

5. The Discharger shall not allow toxic substances to be discharged into the wastewater treatment system such that biological treatment mechanisms are disrupted.

B. Flow Limitations

1. **Effectively immediately**, the influent flows to the WWTF shall not exceed the following limits:

Measurement	Limit
Total Annual Flow [1]	490 MG
Average Dry Weather Flow [2]	1.25 MGD

[1] As determined by the total flow for the calendar year.
[2] As determined by the total flow for the months of August through October, inclusive, divided by 92 days.

2. Effective on the date of Executive Officer approval of each successive *Wastewater Treatment Facility Phase Completion Report* submitted pursuant to Provision H.1.e, influent flows shall not exceed the limits specified in the following table. Approval is dependent on submittal of a water balance capacity analysis demonstrating that the as-built hydraulic capacity of the WWTF is consistent with the flow limits.

Measurement	Limit
Maximum Total Influent Annual Flow [1]	up to 940 MG
Maximum Average Influent Dry Weather Flow [2]	up to 2.4 MGD
Minimum Land Application Area	varies [3]

[1] As determined by the total flow for the calendar year.
[2] As determined by the total flow for the months of August through October, inclusive, divided by 92 days.
[3] Dependent on approved water balance capacity analysis and determined by the land application area owned by the Discharger, plus the land application area regulated by General Order WQ 2016 0068-DDW, or other equivalent water reclamation general order.

C. Effluent and Mass Loading Limitations

1. **Effective immediately,** the treated wastewater applied to the LAAs shall not exceed the following concentration limits:

Constituent	Units	Quarterly Average	Annual Average
Effluent Flow-Weighted Average EC	µmhos/cm	--	4,200
Effluent Flow-Weighted Average BOD	mg/L	100	80

Compliance with these requirements shall be determined as specified in the Monitoring and Reporting Program.

2. **Effective immediately**, the irrigation with treated wastewater and supplemental water applied to the LAAs shall not exceed the following mass loading limits:

Constituent	Units	Daily Maximum	Irrigation Cycle Average	Annual Maximum
BOD Mass Loading	lb/ac/day	300	100	--
Total Nitrogen Mass Loading	lb/ac/year	--	--	Crop Demand[1]

[1] As determined using published nitrogen uptake rates for the grown vegetation/crops.

Compliance with these requirements shall be determined as specified in the Monitoring and Reporting Program.

D. Discharge Specifications

1. No waste constituent shall be released, discharged, or placed where it will cause a violation of the Groundwater Limitations of this Order.

2. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050.

3. The discharge shall remain within the permitted waste treatment/containment structures and land application areas at all times.

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

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 WWTF shall be prevented through such means as fences, signs, or acceptable alternatives.

7. Objectionable odors shall not be perceivable beyond the limits of the WWTF property at an intensity that creates or threatens to create nuisance conditions.

8. As a means of discerning compliance with Discharge Specification 7, the dissolved oxygen (DO) content in the upper one foot of any wastewater pond, excluding BASIN-1, shall not be less than 1.0 mg/L for three consecutive sampling events. If the DO in any single pond is below 1.0 mg/L for three consecutive sampling events, the Discharger shall report the findings to the Regional Water Board in writing within 10 days and shall include a specific plan to resolve the low DO results within 30 days.

9. The Discharger shall operate and maintain all ponds sufficiently to protect the integrity of containment dams and berms and prevent overtopping and/or structural failure.

Unless a California-registered civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard in any treatment 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 continuous 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 9 and 10.

12. All ponds, basins, and open containment structures shall be managed to prevent breeding of mosquitoes. Specifically:

    a. An erosion control program shall be implemented to ensure that small coves and irregularities are not created around the perimeter of the water surface.

    b. Weeds shall be minimized through control of water depth, harvesting, or herbicides.

    c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

    d. The Discharger shall consult and coordinate with the local Mosquito Abatement District to minimize the potential for mosquito breeding as needed to supplement the above measures.

13. Newly constructed or rehabilitated berms or levees (excluding internal berms that separate ponds or control the flow of water within a pond) shall be designed and constructed under the supervision of a California Registered Civil Engineer.

14. Wastewater contained in any unlined pond shall not have a pH less than 6.0 or greater than 10 as an annual average.

15. The Discharger shall monitor sludge accumulation in the wastewater treatment/storage basins at least every five years beginning in 2018, and shall periodically remove sludge as necessary to maintain adequate storage capacity. Specifically, if the estimated volume of sludge in the basin exceeds ten percent of the volume listed in Finding 17, the Discharger shall complete sludge cleanout within 12 months after the date of the estimate.

16. In order to minimize salinity discharges, the Discharger shall undertake the following actions:

    a. By **31 December 2018**, Discharger shall submit and implement a *Salinity Evaluation and Minimization Plan* (SEMP) to address the sources of salinity discharged from the wastewater treatment system. The SEMP shall provide a comprehensive strategy to minimize WWTF salinity impacts to groundwater and may be compiled from results of previous studies. At a minimum, the plan shall include the following:

        i. Estimate of all pollutant sources contributing, or potentially contributing, to the loadings of salinity in the treatment plant influent including water supply, water softeners, and other residential, commercial and industrial salinity sources.

        ii. Analyze methods that could be used to prevent the discharge of salinity into the facility, including application of local limits to industrial or commercial dischargers regarding pollution prevention techniques, public education and outreach, or other innovative and alternative approaches to reduce discharges of the pollutant to the facility. The analysis shall also identify sources, or potential sources, not within the ability or authority of the Discharger to control.

        iii. An estimate of salinity load reductions that may be identified through the methods identified in Water Code section 13263.3(d)(3)(ii) [discussing POTW pollution prevention planning].

        iv. A plan for monitoring the results of the salinity pollution prevention program.

        v. A description of the tasks, costs, and time required to investigate and implement various elements in the salinity pollution prevention plan.

        vi. A statement of the Discharger's salinity pollution prevention goals and strategies, including priorities for short-term and long-term action, and a description of the Discharger's intended pollution prevention activities for the immediate future.

        vii. A description of the Discharger's existing salinity pollution prevention programs.

        viii. An analysis, to the extent feasible, of any adverse environmental impacts, including cross-media impacts or substitute chemicals that may result from the implementation of the pollution prevention program.

        ix. An analysis, to the extent feasible, of the costs and benefits that may be incurred to implement the pollution prevention program.

        x. Progress to date in reducing the concentration and/or mass of salinity in the discharge.

        xi. Progress in implementation of the plan shall be reported each year in the Annual Monitoring Report required pursuant to the Monitoring and Reporting Program.

b. Continue to implement City of Newman Code 11.06.070, requiring that all industrial users must obtain discharge permits to minimize salinity in the WWTF's effluent.

c. Continue to pursue supplemental irrigation groundwater to mitigate EC, TDS, and chloride concentrations applied to the LAAs.

d. By **2 December 2019**, the Discharger shall submit a copy of the adopted Ordinance prohibiting the installation of new residential water softening or conditioning appliances that discharge sodium, chloride, or other saline substances to the community sewer system (self-regenerating water softeners).

e. By **5 December 2022**, the Discharger shall submit a copy of the adopted Ordinance prohibiting the installation of self-regenerating water softeners to replace failing units.

E. Groundwater Limitations

Effective immediately through 31 December 2022 release of waste constituents from any portion of the facility shall not cause groundwater to exhibit a statistically significant increasing trend. Compliance with this limitation shall be determined annually using compliance groundwater monitoring wells as specified in the Monitoring and Reporting Program using statistical methods defined in the approved *Groundwater Limitations Compliance Assessment Plan*. Salinity constituents EC, TDS, chloride, and sodium are excluded from this limitation.

Effective 1 January 2023, release of waste constituents from any portion of the facility shall not cause groundwater to:

1. Contain concentrations that exceed either the associated Primary or Secondary MCLs established in Title 22 or the background groundwater quality, whichever is greater.

2. Exceed a total coliform organism level of 2.2 MPN/100 mL over any seven-day period.

3. Contain taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.

The wells to which the above requirements apply are specified in the Monitoring and Reporting Program. Compliance with these limitations shall be determined annually as specified in the Monitoring and Reporting Program using approved statistical methods.

F. Water Recycling Specifications

1. For the purpose of this Order, "use area" means an area with defined boundaries where recycled water is used or discharged.

2. Notwithstanding the following requirements, the production, distribution, and use of recycled water shall conform to an Engineering Report prepared pursuant to Title 22, section 60323 and approved by the Division of Drinking Water.

3. The recycled water shall be at least undisinfected secondary recycled water as defined in Title 22, section 60301.

4. Recycled water shall be used in compliance with Title 22, section 60304. Specifically, uses of recycled water shall be limited to those set forth in Title 22, section 60304(d).

5. Tailwater runoff and spray of recycled water shall not be discharged outside of the use areas.

6. Application rates of recycled water to the use area shall be reasonable and shall consider soil, climate, and plant demand. In addition, application of recycled water and use of fertilizers shall be at a rate that takes into consideration nutrient levels in recycled water and nutrient demand by plants. As a means of discerning compliance with this requirement:

    a. Crops or landscape vegetation shall be grown on the use areas, and cropping activities shall maximize the uptake of applied nitrogen, including any fertilizers and manure.

    b. Hydraulic loading of recycled water and supplemental irrigation water (if any) shall be managed to:

        i. Provide water only when water is needed and in amounts consistent with that need;

        ii. Maximize crop nutrient uptake;

        iii. Maximize breakdown of organic waste constituents in the root zone; and

        iv. Minimize the concentration of waste constituents percolating below the root zone.

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

7. No recycled water used for irrigation, or soil that has been irrigated with recycled water, shall come into contact with the edible portion of food crops that may be eaten raw by humans.

8. Irrigation of the use areas shall occur only when appropriately trained personnel are on duty or when other methods are implemented to ensure that recycled water remains within the use areas.

9. The Discharger shall conduct periodic inspections of the recycled water use areas to determine compliance with the requirements of this Order. If an inspection reveals noncompliance or threat of noncompliance with this Order, the Discharger shall temporarily stop recycled water use immediately and implement corrective actions to ensure compliance with this Order.

10. Grazing of milking animals within the use areas is prohibited.

11. Discharge of storm water runoff from the use areas to off-site land or surface water drainage courses is prohibited.

12. All storm water runoff from the use areas shall be captured and recycled for irrigation or allowed to percolate within the use areas.

13. The irrigation with recycled water shall be managed to minimize erosion within the use areas.

14. The use areas shall be managed to prevent breeding of mosquitoes or other vectors.

15. Use areas and recycled water impoundments shall be designed, maintained, and operated to comply with the following setback requirements:

Setback Definition	**Minimum Irrigation Setback (feet)**
Edge of use area to property boundary	25
Edge of use area to public road right of way	25
Edge of use area to manmade water drainage course	25
Edge of use area to natural surface water drainage course	50
Edge of use area to domestic water supply well	150
Toe of recycled water impoundment berm to domestic water supply well	150
Edge of use area to residence	100
Edge of use area using spray irrigation to public park, playground, school yard, or similar place of potential public exposure	100

16. At the time of adoption of this Order, the Discharger does not spray irrigate. This Order does not prevent the Discharger from spray irrigating in the future provided spray irrigation complies with the following specifications:

    a. Spray irrigation with recycled water is prohibited when wind speed (including gusts) exceeds 30 mph.

    b. Spray, mist, or runoff shall not enter dwellings, designated outdoor eating areas, or food handling facilities.

17. Drinking water fountains shall be protected against contact with recycled water spray, mist, or runoff.

18. Public contact with recycled water shall be controlled using fences, signs, and other appropriate means.

19. Use areas that are accessible to the public shall be posted with signs that are visible to the public and no less than four inches high by eight inches wide. Signs shall be placed at all areas of public access and around the perimeter of all use areas and at above-ground

portions of recycled water conveyances to alert the public of the use of recycled water. All signs shall display an international symbol similar to that shown in Attachment D, which is attached and forms part of this Order, and shall include the following wording:

"RECYCLED WATER – DO NOT DRINK"

"AGUA DE DESPERDICIO RECLAMADA – NO TOME"

20. All recycling equipment, pumps, piping, valves, and outlets shall be marked to differentiate them from potable water facilities. Quick couplers, if used, shall be different than those used in potable water systems.

21. Recycled water controllers, valves, and similar appurtenances shall be equipped with removable handles or locking mechanisms to prevent public access or tampering.

22. Hose bibs and unlocked valves, if used, shall not be accessible to the public.

23. No physical connection shall exist between recycled water piping and any potable water supply system (including domestic wells), or between recycled water piping and any irrigation well that does not have an approved air gap or reduced pressure principle device.

24. Horizontal and vertical separation between pipelines transporting recycled water and those transporting potable water shall comply with Title 22, section 64572, except to the extent that DDW has specifically approved a variance.

25. No physical connection shall be made or allowed to exist between any recycled water system and any separate system conveying potable water or auxiliary water source system.

26. A public water supply shall not be used as backup or supplemental source of water for a recycled water system unless the connection between the two systems is protected by an air gap separation which complies with the requirements of California Code of Regulations, title 17 (Title 17), sections 7602(a) and 7603(a).

27. All recycled water piping and appurtenances in new installations and appurtenances in retrofit installations shall be colored purple or distinctively wrapped with purple tape in accordance with California Health and Safety Code section 116815.

28. Any backflow prevention device installed to protect a public water system shall be inspected and maintained in accordance with Title 17, section 7605.

G. Solids Disposal Specifications

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

1. Sludge and solid waste shall be removed from screens, sumps, ponds, and clarifiers as needed to ensure optimal plant operation.

2. Any handling and storage of residual sludge, solid waste, and biosolids at the WWTF shall be temporary (i.e., no longer than six months) and controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate the groundwater limitations of this Order.

3. Residual sludge, biosolids, and solid waste shall be disposed of in a manner approved by the Executive Officer and consistent with Division 2 of Title 27. 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

H. Provisions

1. The following reports shall be submitted pursuant to Water Code section 13267 and shall be prepared as described in Provision H.4:

    a. By **1 February 2019**, the Discharger shall submit a *Groundwater Monitoring Well Installation Workplan* that evaluates the adequacy of the existing monitoring well network and, if necessary, proposes additional upgradient and compliance monitoring wells to verify compliance with the Groundwater Limitations. Compliance monitoring wells may be installed within or downgradient of the LAA expansion areas. The workplan shall be prepared in accordance with, and include the items listed in, the first section of Attachment E, which is attached hereto and made part of this Order by reference. The groundwater monitoring wells shall be designed to yield samples representative of the uppermost portion of the first encountered aquifer. The workplan shall also describe the proposed monitoring

wells or other methods that will be used to complete the *Arsenic and Manganese Groundwater Impact Evaluation Report* described below.

b. By **1 February 2019**, the Discharger shall submit a *Groundwater Limitations Compliance Assessment Plan*. The plan shall describe and justify the statistical methods that are proposed to determine compliance with the Groundwater Limitations, which require that release of waste constituents from any portion of the facility shall not cause groundwater to exhibit a statistically significant increasing trend. The plan shall discuss proposed changes to the monitoring well network per the *Groundwater Monitoring Well Installation Workplan* and which groundwater monitoring wells are proposed to be compliance and background monitoring wells. The plan shall evaluate whether compliance should be based on an interwell or intrawell analysis on a per constituent basis for all the constituents listed in the Groundwater Monitoring section of the MRP. Compliance shall be determined annually based on methods prescribed in Title 27, section 20415(e)(7 and 8) and as described in the MRP. As a result of any proposed changes, the MRP may need to be revised. The plan shall also describe the proposed statistical methods to complete the *Arsenic and Manganese Groundwater Impact Evaluation Report* described below.

c. By **3 September 2019,** the Discharger shall submit a *Groundwater Monitoring Well Installation Report* for any new groundwater monitoring wells constructed to comply with Provision H.1.a. The report shall be prepared in accordance with, and including the items listed in, the second section of Attachment E. The report shall describe the installation and development of all new monitoring wells, and explain any deviation from the approved workplan.

d. By **1 February 2021**, the Discharger shall submit an *Arsenic and Manganese Groundwater Impact Evaluation Report* that evaluates whether the concentrations observed in MW-5 are naturally occurring or a result of the discharge. This evaluation may utilize sampling tools that can collect a representative ground water sample without requiring the installation of a ground water monitoring well.

The report shall provide all collected data in a tabular format and a description of the analysis method used to develop a conclusion. If the unlined ponds are determined to be causing unallowable groundwater degradation, the report shall provide a feasibility study of at least the following alternatives: (1) more stringent EC and BOD_5 pretreatment requirements, (2) operating BASIN-1 as an aerobic basin, (3) lining the treatment ponds, and (4) alternative wastewater treatment technologies, such as concrete lined oxidation ditches and clarifiers. The evaluation shall also provide a schedule for implementing the feasible alternative(s).

e. At least **60 days** prior to a planned flow limit increase, the Discharger shall submit a *Wastewater System Improvements & Expansion Report* that documents the construction of new treatment basins and/or storage reservoirs. The report shall certify that the structures are fully functional and ready to receive wastewater in compliance with the requirements of this Order. The report shall include as-built drawings, final dimensions, and storage capacity of the new treatment basins and/or storage reservoirs.

The report shall include a scaled map that depicts the location and boundary of new LAAs and associated tailwater collection systems. The report shall certify that the LAAs and tailwater collection systems are fully functional and ready to receive wastewater in compliance with the requirements of this Order.

The report shall include a revised water balance based on a 100-year annual precipitation storm event that demonstrates the wastewater storage capacity of the WWTF and minimum acres of LAA required for disposal.

The report shall be approved by the Executive Officer before the Discharger increases the WWTF influent or effluent flow.

2. At least **180 days** prior to any sludge removal and disposal from the wastewater treatment ponds, the Discharger shall submit a *Sludge Monitoring and Cleanout Plan*. The plan shall include a detailed plan for sludge removal, drying, and disposal. The plan shall specifically describe the phasing of the project, measures to be used to control runoff or percolate from the sludge as it is drying, and a schedule that shows how all dried sludge will be land applied to the LAAs or removed from the site prior to the onset of the rainy season (1 October).

3. 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**.

4. 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.

5. 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.

6. The Discharger shall comply with Monitoring and Reporting Program R5-2018-0024, 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.

7. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated 1 March 1991, which are attached hereto and made part of this Order by reference. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."

8. 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.

9. The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by the Discharger when the operation is necessary to achieve compliance with the conditions of this Order.

10. The Discharger shall use the best practicable cost-effective control technique(s) including proper operation and maintenance, to comply with this Order.

11. As described in the Standard Provisions, the Discharger shall report promptly to the Central Valley Water Board any material change or proposed change in the character, location, or volume of the discharge.

12. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986."

13. At least **90 days** prior to termination or expiration of any lease, contract, or agreement involving disposal or recycling areas or off-site reuse of effluent, used to justify the capacity authorized herein and assure compliance with this Order, the Discharger shall notify the Central Valley Water Board in writing of the situation and of what measures have been taken or are being taken to assure full compliance with this Order.

14. In the event of any change in control or ownership of the facility, 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.

15. 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.

16. 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.

17. The Central Valley Water Board will review this Order periodically and will revise requirements when necessary.

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

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

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

or will be provided upon request.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full true, and correct copy of an Order adopted by the California Regional Water Quality Control Board on 6 April 2018.

Original signed by

PAMELA C. CREEDON, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2018-0024

FOR

CITY OF NEWMAN
NEWMAN WASTEWATER TREATMENT PLANT
STANISLAUS COUNTY

This monitoring and reporting program (MRP) incorporates requirements for monitoring of the wastewater influent, wastewater effluent, wastewater treatment and storage ponds, land application areas, solid waste, and groundwater. This MRP is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer.

All wastewater samples should be representative of the volume and nature of the discharge. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form. Wastewater flow monitoring shall be conducted continuously using a flow meter and shall be reported in cumulative gallons per day.

Field test instruments (such as pH and dissolved oxygen) may be used if:

1. The operator is trained in the proper use of the instrument;
2. The instruments are field calibrated prior to each use;
3. Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the “Reporting” section of this MRP.

Analytical procedures shall comply with the methods and holding times specified in the following: Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater (EPA); Test Methods for Evaluating Solid Waste (EPA); Methods for Chemical Analysis of Water and Wastes (EPA); Methods for Determination of Inorganic Substances in Environmental Samples (EPA); Standard Methods for the Examination of Water and Wastewater (APHA/AWWA/WEF); and Soil, Plant and Water Reference Methods for the Western Region (WREP 125). Approved editions shall be those that are approved for use by the United States Environmental Protection Agency or the California Department of Public Health’s Environmental Laboratory Accreditation Program. The Discharger may propose alternative methods for approval by the Executive Officer. Where technically feasible, laboratory reporting limits shall be lower than the applicable water quality objectives for the constituents to be analyzed.

INFLUENT FLOW MONITORING

The monitoring shall be performed at the headworks. Influent monitoring shall include the following:

Constituents	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Daily Flow	gallons	Continuous[1]	Daily	Quarterly
Total Monthly Flow	MG	Calculated	Monthly	Quarterly
Average Monthly Flow	gpd	Calculated	Monthly	Quarterly
BOD [3]	mg/L	24-hr Composite[2]	Weekly	Quarterly
Total Suspended Solid	mg/L	24-hr Composite[2]	Weekly	Quarterly
Total Dissolved Solids	mg/L	24-hr Composite[2]	Monthly	Quarterly
Electrical Conductivity	µmhos/cm	24-hr Composite[2]	Twice Monthly	Quarterly

[1] Continuous monitoring requires daily meter reading or automated data collection.

[2] Samples shall be a flow-proportioned composite consisting of at least eight aliquots over a 24-hour period.

[3] 5-day biochemical oxygen demand.

MG – million gallons

Influent Trigger Concentration

The following trigger concentration is intended to serve as a means of assessing whether the Dischargers salinity source control BMPs are effective and whether additional salinity source control is necessary.

Constituent	Trigger
Electrical Conductivity	Increasing concentration trend for 3 consecutive years

If the annual evaluation of the influent EC concentration performed pursuant to the Annual Monitoring Report section of this MRP shows a statistically significant increasing trend for three consecutive years, the Discharger shall submit one or both of the following technical reports, as applicable, by **1 May of the following calendar year** (e.g., if the influent EC concentration shows an increasing trend during compliance years 2020, 2021, and 2022, the appropriate report is due by 1 May 2023):

1. A technical evaluation of the reason[s] for the concentration increase and a technical demonstration that although the concentration has increased more than expected, the source control BMPs are effective at reducing overall salinity loading.
2. A *Salinity Evaluation and Implementation Plan* that addresses the sources of salinity discharged to the wastewater treatment system, determines whether additional source control is feasible, and proposes a schedule to complete feasible additional source control. The plan shall meet the requirements outlined in Water Code section 13263.3(d)(3).

POND MONITORING

Freeboard shall be measured vertically from the surface of the pond water to the lowest elevation of the surrounding berm and shall be measured to the nearest 0.1 foot.
The Discharger shall monitor each of the basins, ponds, or reservoirs as specified below:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Dissolved Oxygen[1]	mg/L	Grab	Weekly	Quarterly
Oxygen Reduction Potential[1]	mV	Grab	Weekly	Quarterly
Freeboard	feet (±0.1)	Measurement	Weekly	Quarterly
pH	Std.	Grab	Weekly	Quarterly
Berm Condition[2]	--	Observation	Weekly	Quarterly
Odors	--	Observation	Weekly	Quarterly

[1] Samples shall be collected at a depth of one foot, opposite the inlet.
[2] Pond berms shall be observed for signs of seepage or surfacing water along the exterior toe.

EFFLUENT MONITORING

Effluent samples should be representative of the volume and nature of the discharge. Effluent monitoring shall include at least the following:

The following constituent samples shall be collected immediately prior to effluent being discharged to a storage reservoir.

Constituents	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Electrical Conductivity	µmhos/cm	Grab	Twice Monthly	Quarterly
Total Dissolved Solids	mg/L	Grab	Monthly	Quarterly

The following constituent samples shall be collected from the storage pond just prior to discharge to the land application areas.

Constituents	Units	Type of Sample	Sampling Frequency	Reporting Frequency
pH	Std.	Grab	Weekly	Quarterly
BOD_5 [1]	mg/L	Grab	Weekly	Quarterly
Electrical Conductivity	µmhos/cm	Grab	Twice Monthly	Quarterly
Total Dissolved Solids	mg/L	Grab	Monthly	Quarterly
Chloride	mg/L	Grab	Monthly	Quarterly
Sodium	mg/L	Grab	Monthly	Quarterly
Nitrate as Nitrogen	mg/L	Grab	Monthly	Quarterly
Total Kjeldahl Nitrogen	mg/L	Grab	Monthly	Quarterly
Total Nitrogen	mg/L	Calculated	Monthly	Quarterly
Standard Minerals [2,3]	mg/L	Grab	Annually	Annually

[1] Five-day, 20° Celsius Biochemical Oxygen Demand.
[2] Standard Minerals shall include at least the following compounds: arsenic, boron, calcium, iron, manganese, magnesium, potassium, sulfate, total alkalinity (including alkalinity series), and hardness.
[3] Samples shall be filtered prior to preservation using a 0.45µ filter.

WATER SUPPLY MONITORING

The Discharger shall establish a sampling station where a representative sample of the municipal water supply can be obtained. Monitoring shall include, at a minimum, the following. As an alternative to sampling for standard metals, the Discharger may submit a copy of the most current Department of Public Health Consumer Confidence Report or analytical results submitted to the County Environmental Health Department or California Department of Public Health, as applicable.

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Total Dissolved Solids	mg/L	Grab	Quarterly	Quarterly
Electrical Conductivity	µmhos/cm	Grab	Quarterly	Quarterly
Nitrate as Nitrogen	mg/L	Grab	Quarterly	Quarterly
Total Kjeldahl Nitrogen	mg/L	Grab	Quarterly	Quarterly
Total Nitrogen	mg/L	Calculated	Quarterly	Quarterly
Standard Minerals [1]	mg/L	Grab	Annually	Annually

[1] If the Discharger samples for Standard Minerals, sampling shall include, at a minimum, the following: boron, calcium, chloride, iron, magnesium, manganese, potassium, sodium, sulfate, total alkalinity (including alkalinity series), and hardness.

SUPPLEMENTAL IRRIGATION WATER MONITORING

The Discharger shall monitor the supplemental water used to irrigate LAAs. Monitoring shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Total Dissolved Solids	mg/L	Grab	Monthly	Quarterly
Electrical Conductivity	µmhos/cm	Grab	Monthly	Quarterly
Nitrate as Nitrogen	mg/L	Grab	Monthly	Quarterly
Total Kjeldahl Nitrogen	mg/L	Grab	Monthly	Quarterly
Total Nitrogen	mg/L	Calculated	Monthly	Quarterly

LAND APPLICATION AREA MONITORING

Daily Pre-Application Inspections
The Discharger shall inspect LAA1 through LAA6 at least once within 2 days prior to irrigation events and then daily during irrigation. Observations from those inspections shall be documented for inclusion in the monthly monitoring reports. The following items shall be documented for each check or field to be irrigated on that day:

a. Evidence of erosion;
b. Containment berm condition;
c. Condition of above-ground pipes, flow control valves, sprinklers, and/or drip emitters (as applicable);
d. Proper use of valves;

e. Ponding;
f. Irrigation supply and tailwater ditch condition and potential for runoff to off-site areas;
g. Potential and actual discharge of waste to surface water;
h. Odors that have the potential to be objectionable at or beyond the property boundary; and
i. Insects (e.g., flies, mosquitoes).
j. Any corrective actions taken based on observations made.

A copy of entries made in the log during each month shall be submitted as part of the Quarterly Monitoring Report. If no irrigation with wastewater takes place during a given month, then the monitoring report shall so state.

Land Application Monitoring

The Discharger shall perform the following routine monitoring and loading calculations for LAA1 through LAA6 each day when water is applied.

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Precipitation	0.1 in.	Rain Gauge [1]	Daily	Quarterly
LAAs and individual checks receiving effluent	--	Observation	Daily	Quarterly
Hydraulic loading rate				
Effluent	in.	Calculated	Daily	Quarterly
Supplemental irrigation water	in.	Calculated	Daily	Quarterly
Total	in.	Calculated	Daily	Quarterly
Daily BOD loading rate	lb/ac/day	Calculated [2]	Daily	Quarterly
Cycle average BOD loading rate	lb/ac/day	Calculated [2]	Cycle	Quarterly
Nitrogen loading rate	lb/ac/year	Calculated [2]	Monthly	Quarterly
Total dissolved solids loading rate (effluent plus irrigation water)	lb/ac/year	Calculated [2]	Monthly	Quarterly

[1] Data obtained from the nearest National Weather Service rain gauge is acceptable.
[2] Loading rates shall be calculated using the method specified in the Reporting Section of this MRP.

GROUNDWATER MONITORING

Prior to construction and/or sampling of any groundwater monitoring wells, the Discharger shall submit plans and specifications to the Board for review and approval. Once installed, all new wells shall be added to the MRP and shall be sampled and analyzed according to the schedule below. All samples shall be collected using EPA approved methods and water table elevations shall be calculated and used to determine groundwater gradient and direction of flow. Compliance groundwater monitoring wells are designated as follows until the *Groundwater Limitations Compliance Assessment Plan* is approved, at which time this MRP may be revised.

Prior to land application of wastewater to the proposed LAA5, compliance wells are designated as follows:

MW-2, MW-3, MW-5

After land application of wastewater to the proposed LAA5, compliance wells are designated as follows:

MW-2, MW-3, MW-5, MW-7

The Groundwater Limitations set forth in Section E of the WDRs shall apply to the compliance monitoring wells as specified above.

Prior to sampling, depth to groundwater elevations shall be measure and the wells shall be purged at least three well volumes until temperature, pH, and electrical conductivity have stabilized. Low or no-purge sampling methods are acceptable, if described in an approved Sampling and Analysis Plan. Depth to groundwater shall be measured to the nearest 0.01 feet. Groundwater monitoring for all monitoring wells shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling and Reporting Frequency
Depth to Groundwater	±0.01 feet	Measurement	Quarterly
Groundwater Elevation [1]	±0.01 feet	Calculated	Quarterly
Gradient	feet/feet	Calculated	Quarterly
Electrical Conductivity	µmhos/cm	Grab	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly
Nitrate as Nitrogen	mg/L	Grab	Quarterly
pH	mg/L	Grab	Quarterly
Chloride	mg/L	Grab	Quarterly
Sodium	mg/L	Grab	Quarterly
Dissolved Iron [2]	µg/L	Grab	Quarterly
Dissolved Manganese [2]	µg/L	Grab	Quarterly
Standard Minerals [2,3]	mg/L	Grab	Annually

[1] Groundwater elevation shall be determined based on depth-to-water measurements from a surveyed measuring point elevation on the well.

[2] Samples shall be filtered prior to preservation using a 0.45µm or less filter.

[3] Standard Minerals shall include at least the following compounds: arsenic, boron, calcium, magnesium, potassium, sulfate, total alkalinity (including alkalinity series), and hardness.

SLUDGE AND/OR BIOSOLIDS MONITORING

Sludge and/or biosolids samples shall be analyzed to determine the total concentration in mg/Kg for the following constituents each time sludge is removed from any pond:

Arsenic	Lead	Nickel
Cadmium	Mercury	Selenium
Copper	Molybdenum	Zinc
Total Nitrogen	Total Solids	

Sludge and/or biosolids monitoring records shall be retained for a minimum of five years in accordance with 40 CFR, Part 503.17. A log shall be kept of sludge quantities generated and of handling, application, and disposal activities. The frequency of entries is discretionary; however, the log should be complete enough to serve as a basis to report sludge monitoring.

REPORTING

The Central Valley Water Board has gone to a paperless office system. All regulatory documents, submissions, materials, data, monitoring reports, and correspondence should be converted to a searchable Portable Document Format (PDF) and submitted electronically. Documents that are less than 50MB should be emailed to:
centralvalleysacramento@waterboards.ca.gov

Documents that are 50 MB or larger should be transferred to a CD, DVD, or flash drive and mailed to the following address:

Central Valley Regional Water Quality Control Board
ECM Mailroom
11020 Sun Center Drive, Suite 200
Rancho Cordova, California 95670

To ensure that your submittal is routed to the appropriate staff person, the following information should be included in the body of the email or transmittal sheet:

Attention: Compliance/Enforcement Section
City of Newman WWTF
Stanislaus County
Place ID: 244250

A transmittal letter shall accompany each monitoring report. The letter shall include a discussion of all violations of the WDRs and this MRP during the reporting period and actions taken or planned for correcting each violation. If the Discharger has previously submitted a report describing corrective actions taken and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. Pursuant to Section B.3 of the Standard Provisions and General Reporting Requirements, the transmittal letter shall contain a statement by the Discharger or the Discharger's authorized agent certifying under penalty of perjury that the report is true, accurate and complete to the best of the signer's knowledge.

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., effluent, pond, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported in the next scheduled monitoring report.

Laboratory analysis reports do not need to be included in the monitoring reports; however, all laboratory reports must be retained for a minimum of three years in accordance with Standard Provision C.3. For a Discharger conducting any of its own analyses, reports must also be signed and certified by the chief of the laboratory.

In addition to the requirements of Standard Provision C.3, monitoring information shall include the method detection limit (MDL) and the Reporting limit (RL) or practical quantitation limit (PQL). If the regulatory limit for a given constituent is less than the RL (or PQL), then any analytical results for that constituent that are below the RL (or PQL) but above the MDL shall be reported and flagged as estimated.

All monitoring reports that involve planning, investigation, evaluation or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1.

In the future, the State Water Board or Central Valley Regional Water Board may require electronic submittal of monitoring reports using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (*http://www.waterboards.ca.gov/ciwqs/index.html*) or similar system. Electronic submittal to CIWQS, when implemented, will meet the requirements of our Paperless Office System.

A. Quarterly Monitoring Reports

Quarterly monitoring reports shall be submitted to the Central Valley Water Board by the **1st day of the second month after the quarter** (e.g. the January-March quarterly report is due by **May 1st**). Each Quarterly Monitoring Report shall include the following:

1. Results of Influent Monitoring, including calculated values for total annual flow to date.
2. Results of Pond Monitoring.
3. Results of Effluent Monitoring, including the flow-weighted annual average concentration for EC (µmhos/cm) and flow-weighted annual and quarterly average concentration for BOD (mg/L), as collected from the storage pond just prior to discharge, shall be calculated using the following formula. The cumulative flow-weighted annual average concentration of EC and BOD shall be calculated from the start of the year through the current reporting quarter.

$$C_a = \frac{\sum_{i=1}^{n}(C_i \cdot V_i)}{\sum_{i=1}^{n}(V_i)}$$

Where C_a = Flow-weighted average annual (µmhos/cm or mg/L) or quarterly (mg/L) concentration:
n = Total number of samples to be averaged for month or calendar year
i = The sample number out of *n* total samples taken during the month or year
C_i = Concentration of *i*th EC or BOD sample in µmhos/cm or mg/L, respectively
Vi = Volume of wastewater applied to the LAA during *i*th sample in million gallons

4. Results of Water Supply Monitoring.
5. Results of Supplemental Irrigation Watering.
6. Results of Land Application Area Monitoring, including:
   a. The mass loading rate of BOD applied to each LAA on a daily basis shall be calculated using the following formula:

$$M = \frac{8.345(C \cdot V)}{A}$$

Where M = Mass of BOD applied to an LAA in lb/ac/day
C = Concentration of BOD in mg/L based on the most recent monitoring result
V = Daily volume of wastewater applied to the LAA in million gallons
A = Area of the LAA irrigated in acres
8.345 = Unit conversion factor

   b. The mass loading rate of BOD applied to each LAA as an irrigation cycle average shall be calculated using the following formula:

$$M = \frac{8.345(C \cdot V)}{A \cdot T}$$

Where M = Mass of BOD applied to an LAA in lb/ac/day
C = Concentration of BOD in mg/L based on the most recent monitoring result
V = Total volume of wastewater applied to the LAA during the irrigation cycle in million gallons
A = Area of the LAA irrigated in acres
T = Cycle time (i.e., irrigation cycle length from start of irrigation to start of next irrigation event, in days)
8.345 = Unit conversion factor

c. The cumulative mass loading rate of total nitrogen applied to each LAA from the start of the year through the current reporting quarter shall be calculated using the following formula and compared to published crop demand for the crops actually grown.

$$M = \sum_{i=1}^{12} \frac{(8.345(C_i \cdot V_i) + M_x)}{A}$$

Where M = Mass of total nitrogen applied to an LAA in lb/ac/year

i = The number of the month (e.g., January = 1, February = 2, etc.)
C_i = Monthly average concentration of total nitrogen for month *i* in mg/L
V_i = Volume of wastewater applied to the LAA during calendar month *i* in million gallons
A = Area of the LAA irrigated in acres
M_x = Nitrogen mass from other sources (e.g., fertilizer and compost) in pounds
8.345 = Unit conversion factor

d. For each discrete LAA, a comparison of monitoring data to the loading rate limitations and discharge specifications and an explanation of any violation of those requirements.

7. Results of Groundwater Monitoring including:
   a. A narrative description of all preparatory, monitoring, sampling, and sample handling for groundwater monitoring.
   b. A field log for each well documenting depth to groundwater; method of purging; parameters measured before, during, and after purging; sample preparation (e.g., filtering); and sample preservation.
   c. Summary data tables of historical and current water table elevations and analytical results.
   d. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells, surface waters, groundwater elevation contours referenced to an appropriate datum (e.g., NGVD), and indicating direction of the groundwater gradient.
   e. Copies of laboratory analytical report(s) for groundwater monitoring.
8. Results of Sludge/Biosolids Monitoring completed during the quarter, and (if applicable) verification of classification of biosolids as nonhazardous per 22 CCR, Article 11, Criteria for Identification of Hazardous and Extremely Hazardous Waste (California Assessment Manual procedures).
9. A narrative evaluation of compliance comparing monitoring data to the prohibitions, specifications, and limitations of the WDRs with an explanation of any violation of those requirements.

10. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells, surface water monitoring locations, and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum.
11. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program.
12. A copy of equipment maintenance and calibration records verifying calibration of all hand-held monitoring instruments performed during the quarter, as described in Standard Provision No. C.4.

B. Annual Monitoring Report

The Annual Monitoring Report shall be submitted to the Central Valley Water Board by **1 February** each year. The Annual Monitoring Report shall include the following:

1. The calculated average influent dry weather flow, total influent annual volume of wastewater generated during the year, and comparison to the currently approved influent flow limitations. If the approved influent flow limitations have been changed since the adoption of the WDRs, the report shall specify the new limitations. The report shall reference the date of the *Wastewater System Improvements & Expansion Report* that proposed the flow limit increase and date of the Executive Officer letter that approved the flow limit increase.
2. A year-end summary of quarterly monitoring results for influent, pond, effluent, water supply, supplemental irrigation water, and groundwater. Summaries shall include tabular and concentration versus time graphs representations of all data collected for at least the last two years. Graphs shall show a horizontal line indicating the WDR specified limitation when applicable. Data collected through observation does not need to be graphed (e.g., levee condition and odor).
3. A digital database (e.g., Microsoft Excel workbooks) of historic influent, pond, effluent, water supply, supplemental irrigation water, groundwater, and sludge/biosolids monitoring to date.
4. An evaluation of the influent EC concentration trend using influent monitoring data starting from January 2017 through the current compliance year. The evaluation shall use a statistical trend analysis trend such as the Mann-Kendall test, describe whether the data set satisfies the assumptions of the test (e.g., normality, if applicable), describe the results of the test, and explain whether the Influent Trigger Concentration has been triggered. If the data set does not meet all the assumptions of the test, an explanation of why the test is more appropriate than another statistical trend test shall be provided.
5. A statistical evaluation of groundwater quality and compliance with the Groundwater Limitations of the WDRs in accordance with the approved *Groundwater Limitations Compliance Assessment Plan* submitted pursuant to Provision H.1.a of the WDRs.
6. A narrative annual evaluation summary of compliance comparing monitoring data to the prohibitions, specifications, and limitations of the WDRs with an explanation of any violation of those requirements that occurred during the year. The summary shall include a discussion of the corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements.

7. An evaluation of the effectiveness of the year's WWTF operation and wastewater application operation in terms of odor control and groundwater protection, including consideration of application management practices (e.g., waste constituent and hydraulic loadings, application cycles, drying times, and cropping practices), and groundwater monitoring data.
8. A summary of the crops removed from each LAA (ton per acre). The summary shall include planting and harvest dates and crop type.
9. Estimated flows for the next calendar year.
10. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells, surface water monitoring locations, and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum.
11. Copies of laboratory analytical report(s) for groundwater monitoring, if requested by staff.

A transmittal letter shall accompany each self-monitoring report. The letter shall include a discussion of all violations of the WDRs or this MRP during the reporting period and actions taken or planned for correcting each violation. If the Discharger has previously submitted a report describing corrective actions taken and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. Pursuant to Section B.3 of the Standard Provisions and General Reporting Requirements, the transmittal letter shall contain a statement by the Discharger or the Discharger' authorized agent certifying under penalty of perjury that the report is true, accurate and complete to the best of the signer's knowledge.

The Discharger shall implement the above monitoring program as of the date of this Order.

Ordered by: *Original signed by*
PAMELA C. CREEDON, Executive Officer

6 April 2018
(Date)

INFORMATION SHEET

ORDER R5-2018-0024
CITY OF NEWMAN
WASTEWATER TREATMENT FACILITY
STANISLAUS COUNTY

Facility Description

The City of Newman (Discharger) owns and operates a wastewater treatment facility (WWTF). The WWTF treats wastewater from residential, commercial, and industrial sources: a cheese manufacturer, a turkey hatchery, and a tomato processor. As of 2016, the estimated population of the City is approximately 11,000 residents. The WWTF discharge is currently regulated by Order 98-163, which set an influent flow limit of 1.69 million gallons per day (MGD) as a monthly average dry weather flow (ADWF).

The WWTF includes a bar screen, two unlined earth basins BASIN-1 and BASIN-2, an unlined Oxidation Pond , two unlined effluent storage reservoirs with a total capacity of 230 million gallons (MG), 60 acres of overland flow terraces, and 199 acres of land application areas (LAAs). Based on two feet of freeboard, BASIN-1, BASIN-2, and Oxidation Pond have capacities of 7MG, 9 MG and 90 MG respectively.

On 23 January 2017, the Discharger submitted a letter stating that BASIN-1 is operating as an anaerobic treatment basin rather than an aerobic treatment basin as originally designed. From September 2014 through December 2016, the dissolved oxygen (DO) in BASIN-1 averaged approximately 0.2 mg/L, with a maximum of 0.28 mg/L. WDRs 98-163 set a minimum DO limit of 1.0 mg/L for all ponds to prevent objectionable odors beyond the boundary limits of the WWTF. While BASIN-1 has not met the minimum DO limit, the Discharger reports that no objectionable odors are apparent at the boundary of the WWTF because BASIN-1 effluent is further treated by aerobic basins and odors are minimized. An inspection by Board staff on 17 August 2017 confirmed that objectionable odors were not noticeable on the WWTF property boundary. The Discharger submitted a sludge volume report for BASIN-1 as part of the April 2017 RWD, which states that operating BASIN-1 as an anaerobic treatment basin reduces high strength BOD influent by sixty to eighty percent and is necessary to stabilize the BOD for aerobic treatment. The Discharger states that converting BASIN-1 to a conventional aeration basin by installing additional aerators, as originally proposed in the February 2015 RWD, is cost prohibitive. The anaerobic operation of BASIN-1 may be contributing to conditions that mobilize naturally occurring metals in groundwater

Groundwater monitoring data indicate that groundwater upgradient of the WWTF is of poor quality. Salinity concentrations in compliance groundwater monitoring wells surrounding the WWTF are approximately double of the up-gradient monitoring wells. Average nitrate nitrogen concentrations in all monitoring wells are less than the Title 22 Primary Maximum Contaminant Level (Primary MCL) of 10 mg/L for nitrate. Monitoring data indicate an increasing trend for nitrate that may be a result of long-term agricultural practices in the area.

The Discharger's 2015 *Urban Water Management Plan* indicated that nitrate and hexavalent chromium are the primary concerns in the potable groundwater supply. Three active supply wells have nitrate concentrations above 50 percent of the Primary MCL. The City has stopped using one supply water well where hexavalent chromium concentrations almost double the Primary MCL, while three other supply wells have hexavalent chromium concentrations that are

either close to or in excess of the Primary MCL. Salinity constituent concentrations measured as electrical conductivity (EC) and total dissolved solids (TDS) are also high in the city's water supply.

Influent BOD concentrations to the WWTF indicate high-strength organic matter in the community waste stream. Influent TDS and EC are approximately double that of the source water, indicating considerable salinity contributions from community sewer and industry.

A private residence is located approximately 0.4 miles northwest and downgradient of the WWTF. The residence is not identified in the RWD. Two wells are located on the residential property, a 200-foot agricultural well used for growing fodder crops and a 100-foot domestic well that is used for general home uses but not as a source of potable water. The Discharger collected groundwater samples from the two wells in late 2017. In a letter dated 17 November 2017, the Discharger's consultant submitted an analysis report of the well samples. The agricultural well was reported to have a TDS concentration of 6,490 mg/L and the domestic well a TDS concentration of 3,700 mg/L). Both wells were reported to have an arsenic concentration of 0.004 mg/L. Based on general mineral and isotopic data, the Discharger's consultant states that these wells are not impacted from Newman WWTF wastewater discharge.

Regulatory Background

In March 2008, the Discharger submitted a Report of Waste Discharge (RWD) for the construction of an additional storage reservoir to ensure adequate capacity for permitted influent flow. Revised WDRs have not yet been adopted because groundwater degradation concerns with regard to salinity, arsenic, manganese, and iron were not addressed in the RWD.

As early as 2006, the Discharger proposed converting the potable groundwater supply to higher quality surface water as a means of salinity source reduction, but no significant progress has yet been made to acquire a surface water supply. From 2008 through 2017, the Discharger and Central Valley Water Board staff worked to develop economically feasible source control measures and wastewater treatment and disposal methods that would allow the City to increase permitted wastewater flows.

In August 2012, the Discharger submitted a *Salinity Impact Assessment* that determined the cost and financing of the surface water potable water supply project would be infeasible until the City population had doubled. The initially-proposed alternative approach would use infiltration basins to percolate Central California Irrigation District (CCID) surface water into groundwater upgradient of the City with the intent of generally improving groundwater quality in the area. In May 2013, the Central Valley Water Board's Executive Officer notified the Discharger that this would not be an appropriate use of high-quality surface water. It was then suggested that CCID water with an average EC of 800 µmhos/cm be blended with effluent water with an average EC of 3,800 µmhos/cm to be used for irrigation. The Executive Officer also required the City to begin taking immediate actions to reduce salinity sources, such as maximizing use of low salinity groundwater supply wells and banning installation of new self-regenerating water softeners.

In February 2015, the Discharger submitted a Notice of Intent (NOI) for State Water Resources Control Board Recycled Water Use Order WQ 2016-0068-DDW (Recycled Water Use General Order). The NOI proposed that farmer-owned land application areas will be enrolled in the City's recycled water use program, which would be regulated under the Recycled Water Use General Order. The Discharger also submitted an updated RWD, which proposed using irrigation wells,

rather than CCID water, for blending with effluent as irrigation water. The average EC of the irrigation well water was estimated to be 1,800 µmhos/cm. In July 2015, Central Valley Water Board staff issued a letter stating the RWD and NOI were incomplete. The RWD did not include an evaluation of groundwater quality at the wastewater treatment facility, an Antidegradation Analysis, or a project schedule to achieve compliance.

In March 2017, the Discharger submitted a letter stating that they completed the actions, to the extent feasible, required by the Executive Officer in May 2013. In April 2017, the Discharger submitted a revised RWD, which contained sufficient information to develop these WDRs.

Planned Facility Changes

The Discharger is proposing to modify the facility in two phases. This Order will allow the Discharger to increase the influent ADWF limit from 1.25 MGD to 1.5 MGD in Phase 1, and then to 2.4 MGD in Phase 2, provided that the Discharger has demonstrated to the Central Valley Water Board that the proposed WWTF modifications have been successfully completed.

CV-SALTS Regulatory Considerations

The Central Valley Water Board is developing amendments to the Basin Plan to incorporate new strategies for addressing ongoing salt and nitrate accumulation in the waters and soils of the Central Valley as part of the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative. The Salinity Control Program currently being developed would subject dischargers that do not meet stringent salinity numeric values (700 µS/cm EC as a monthly average) to protect the AGR beneficial use and 900 µS/cm EC as an annual average to protect the MUN beneficial use) to performance-based salinity requirements and would require these dischargers to participate in a basin-wide Prioritization and Optimization Study to develop a long-term strategy for addressing salinity accumulation in the Central Valley.

The level of participation required of dischargers whose discharges do not meet stringent salinity requirements will vary based on factors such as the amount of salinity in the discharge, local conditions, and type of discharge. The Board anticipates that the CV-SALTS initiative will result in regulatory changes that will be implemented through conditional prohibitions and modifications to many WDRs region-wide, including the WDRs that regulate discharges from the Newman WWTF. More information regarding this regulatory planning process can be found at the following link*: https://www.waterboards.ca.gov/centralvalley/water_issues/salinity/*

Legal Effect of Rescission of Prior WDRs or Orders on Existing Violations

The Board's rescission of prior waste discharge requirements and/or monitoring and reporting orders does not extinguish any violations that may have occurred during the time those waste discharge requirements or orders were in effect. The Central Valley Water Board reserves the right to take enforcement actions to address violations of prior prohibitions, limitations, specifications, requirements, or provisions of rescinded waste discharge requirements or orders as allowed by law.

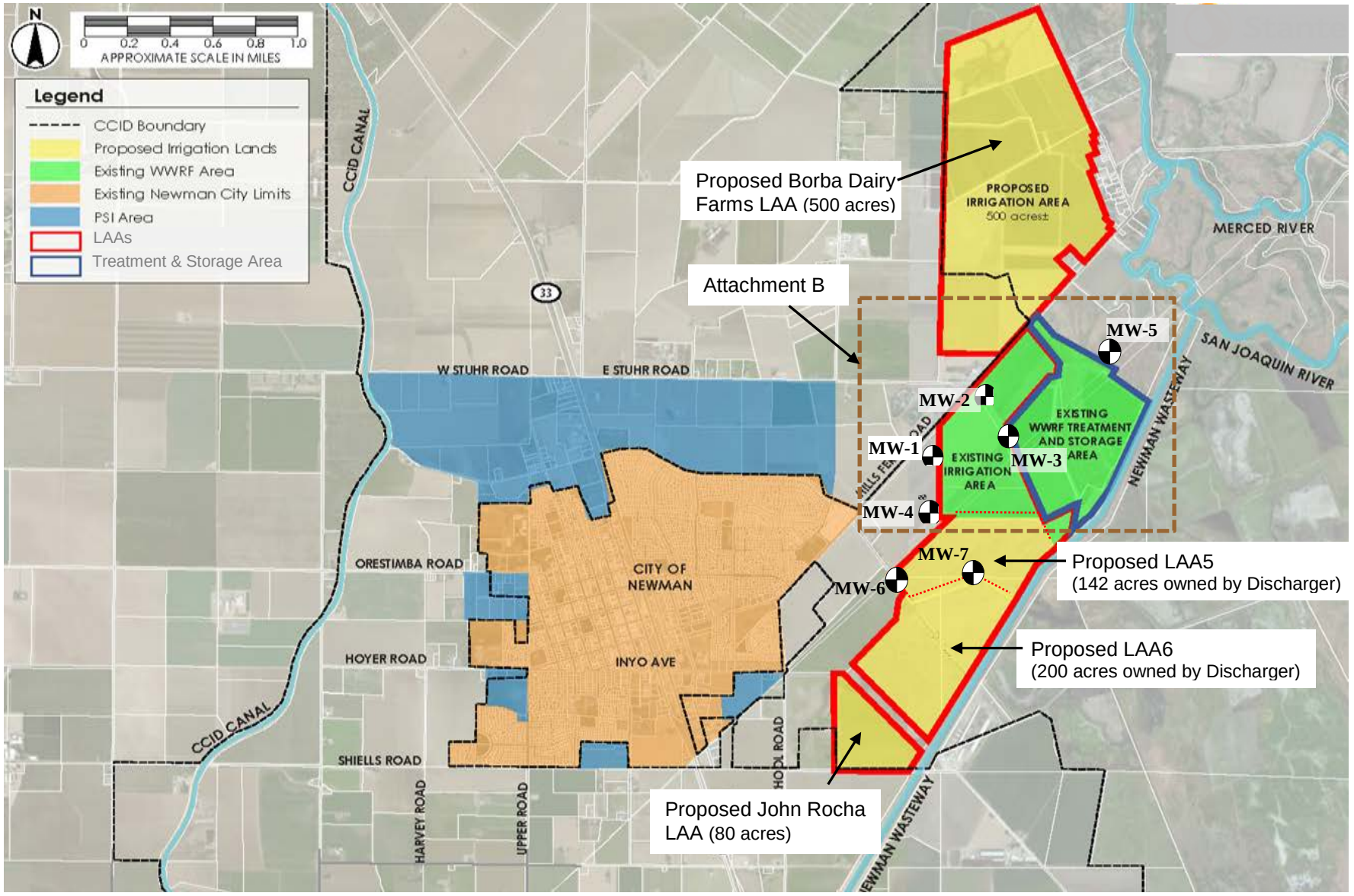
Discharge Limitations and Provisions

This Order establishes flow limits to the WWTF and a schedule to increase flow limits based on completing proposed work. This Order establishes a performance based annual average effluent limit for EC. This limit was determined using the reported monthly average EC from storage reservoir 1 collected from January 2014 through December 2017 (47 samples) and

applying a bootstrap approach to calculate the prediction limit on a mean with a sample size of 24 (representing an annual compliance evaluation of EC effluent data based on the twice monthly sampling frequency required in the MRP) and a one-sided confidence level of 0.99 (i.e., the 99^{th} percentile of the bootstrap distribution). This Order establishes effluent BOD limits based on typical wastewater pond treatment performance.

This Order also sets a time schedule for groundwater limitations for the Discharger to come into compliance with the Basin Plan. Under the time schedule waste constituents in groundwater are not allowed to exhibit a statistically significant increasing trend. Salinity constituents EC, TDS, chloride, and sodium are excluded from this limitation because salinity concentrations in groundwater may increase even though the Discharger has implemented “best efforts” to reduce salinity in the discharge.

The Provisions section of this Order requires submittal of technical and monitoring reports by the specified dates.

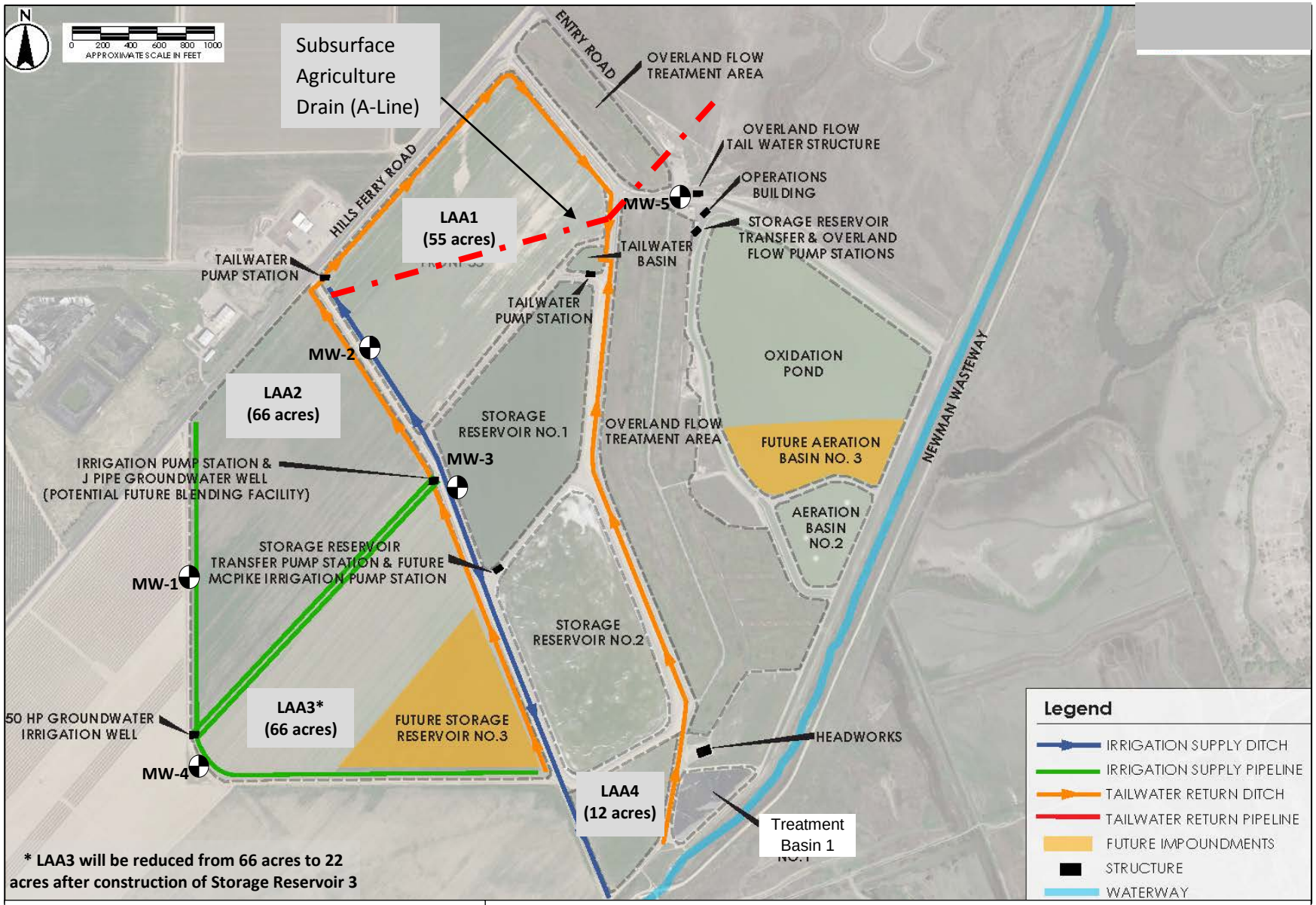


Drawing Reference:

Stantec, Inc
Report of Waste Discharge
February 2015

SITE LOCATION MAP

CITY OF NEWMAN WWTF
STANISLAUS COUNTY

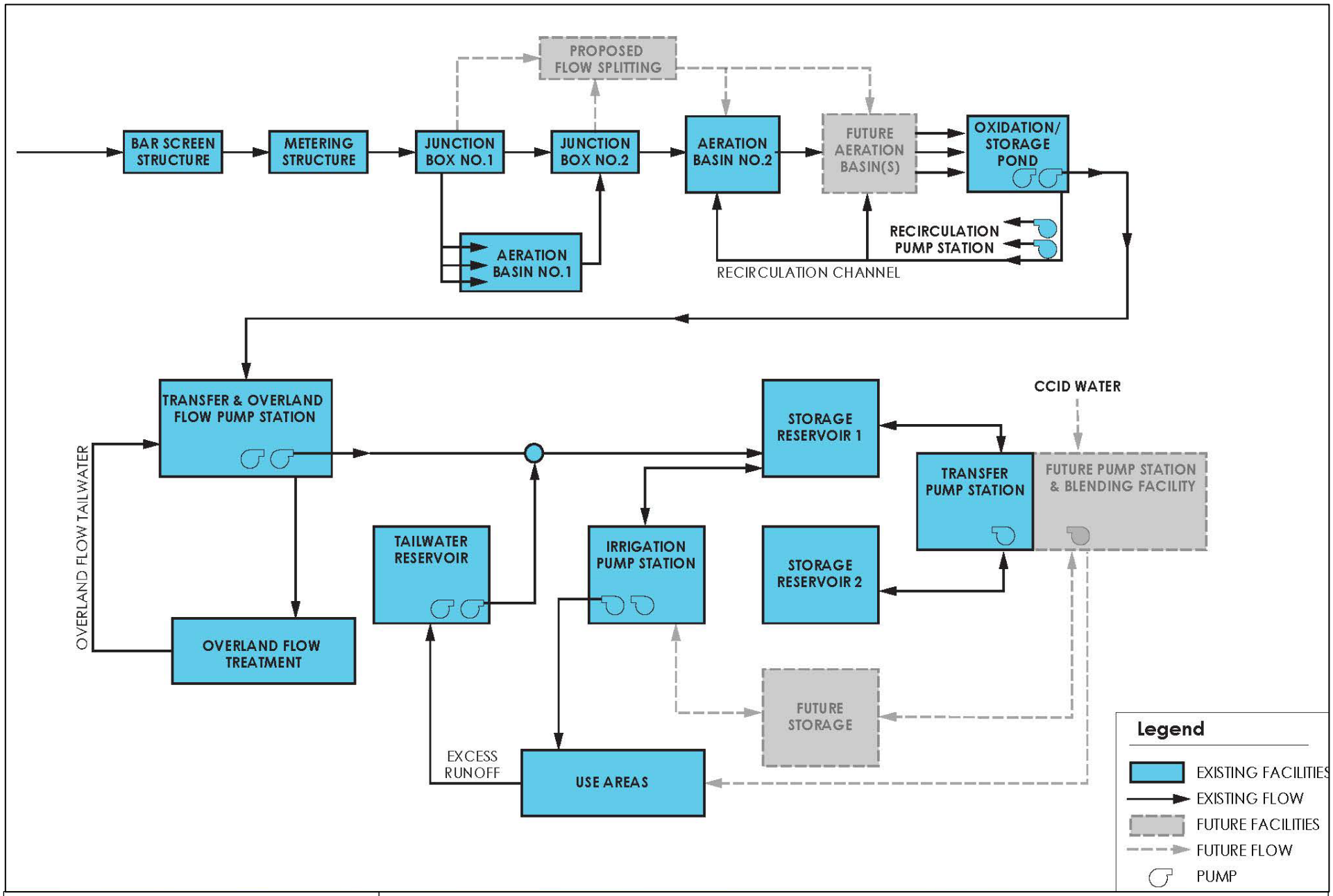


Drawing Reference:

Stantec, Inc.
Report of Waste Discharge
February 2015

SITE PLAN

CITY OF NEWMAN WWTF
STANISLAUS COUNTY



Drawing Reference:
Stantec, Inc
Report of Waste Discharge
February 2015

EXISTING AND PROPOSED FLOW SCHEMATIC

CITY OF NEWMAN WWTF
STANISLAUS COUNTY

RCREEKW

Drawing Reference: TITLE 22 , CALIFORNIA CODE OF REGULATIONS	**RECYCLED WATER SYMBOL** CITY OF NEWMAN WWTF STANISLAUS COUNTY

ATTACHMENT E
REQUIREMENTS FOR MONITORING WELL INSTALLATION WORKPLANS AND MONITORING WELL INSTALLATION REPORTS

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing, at a minimum, the information listed in Section 1, below. Wells may be installed after staff approves the workplan. Upon installation of the monitoring wells, the Discharger shall submit a well installation report which includes the information contained in Section 2, below. All workplans and reports must be prepared under the direction of, and signed by, a registered geologist or civil engineer licensed by the State of California.

SECTION 1 - Monitoring Well Installation Workplan and Groundwater Sampling and Analysis Plan

The monitoring well installation workplan shall contain the following minimum 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 drainage courses, surface water bodies, buildings, waste handling facilities, utilities, and major physical and man-made features

B. Drilling Details:
- On-site supervision of drilling and well installation activities
- Description of drilling equipment and techniques
- Equipment decontamination procedures
- Soil sampling intervals (if appropriate) and logging methods

C. Monitoring Well Design (in narrative and/or graphic form):
- Diagram of proposed well construction details
  - Borehole diameter
  - Casing and screen material, diameter, and centralizer spacing (if needed)
  - Type of well caps (bottom cap either screw on or secured with stainless steel screws)
  - Anticipated depth of well, length of well casing, and length and position of perforated interval
  - Thickness, position and composition of surface seal, sanitary seal, and sand pack
  - 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 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.

H. 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
    - General sampling techniques
    - Record keeping during sampling (include copies of record keeping logs to be used)
    - 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 workplan.

A. General Information:
- Purpose of the well installation project
- Brief description of local geologic and hydrogeologic conditions encountered during installation of the wells
- Number of monitoring wells installed and copies of County Well Construction Permits
- Topographic map showing facility location, roads, surface water bodies
- Scaled site map showing all previously existing wells, newly installed wells, surface water bodies, 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 activities
- Drilling contractor and driller's name
- Description of drilling equipment and techniques
- Equipment decontamination procedures
- Soil sampling intervals and logging methods
- Well boring log
  - Well boring number and date drilled
  - Borehole diameter and total depth
  - Total depth of open hole (same as total depth drilled if no caving or back-grouting occurs)
  - Depth to first encountered groundwater and stabilized groundwater depth
  - Detailed description of soils encountered, using the Unified Soil Classification System

C. Well Construction Details (in narrative and/or graphic form):
- Well construction diagram, including:
  - Monitoring well number and date constructed
  - Casing and screen material, diameter, and centralizer spacing (if needed)
  - Length of well casing, and length and position of perforated interval
  - 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)

E. Well Development:
- Date(s) and method of development
- How well development completion was determined
- Volume of water purged from well and method of development water disposal
- Field notes from well development should be included in report

F. Well Survey (survey the top rim of the well casing with the cap removed):
- Identify the coordinate system and datum for survey measurements
- Describe the measuring points (i.e. ground surface, top of casing, etc.)
- Present the well survey report data in a table
- Include the Registered Engineer or Licensed Surveyor's report and field notes in appendix.