

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER NO. R5-2008-\_\_\_\_\_

WASTE DISCHARGE REQUIREMENTS  
FOR  
CITY OF MCFARLAND  
WASTEWATER TREATMENT FACILITY  
KERN COUNTY

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

1. The City of McFarland (hereafter Discharger) submitted a *Report of Waste Discharge* (RWD) in June 2004, in support of a discharge to land of wastewater from its existing Wastewater Treatment Facility (hereafter WWTF). Additional information was included in a 17 May 2005 *Final Geotechnical Investigation* report prepared by BSK regarding effluent storage reservoir expansion at the McFarland WWTF. The purpose of the reports was to document the plans proposed by the Discharger to increase the storage capacity at the WWTF to match the designed treatment capacity.
2. The WWTF is approximately two miles west of the City of McFarland at the northwest corner of the intersection of Melcher Road and Perkins Avenue in the northeast quarter of Section 9, Township 26 South, Range 22 East, MDB&M, as shown on [Attachment A](#), which is attached hereto and made part of this Order by reference.
3. The existing WWTF began operations in early 1979 and was regulated by Waste Discharge Requirements (WDR) Order No. 78-174, which permitted a flow of 0.5 million gallons per day (mgd). WDR Order No. 89-154 was issued in late 1989 and allowed an increase in flow to 0.8 mgd. The Discharger submitted a RWD in March 2000 requesting an increase in flow to an average of 1.1 mgd.
4. Order No. 89-154 prescribed effluent limitations on a monthly average basis for 5-day biochemical oxygen demand (BOD), dissolved oxygen (DO), total settleable solids (TSS), and requires quarterly sampling of effluent for nitrogen forms. The Discharger has had difficulty in complying with the effluent BOD limit. However, recent plant maintenance activities appear to have reduced BOD concentrations. Nitrate concentrations, while not having a listed effluent limit, continue to be elevated in the effluent and the underlying groundwater.
5. The Discharger's self-monitoring reports (SMRs) indicate that it routinely violated the monthly average (40 milligrams per liter [mg/L]) five-day biochemical oxygen demand (BOD) and total suspended solids (TSS) limit of in 2005 and 2006. BOD exceeded the limit in 19 of 24 months between January 2005 and December 2006 including all 12 months in 2005. TSS concentrations were similar exceeding the limits in 16 of the 24 months in 2005 and 2006. However, recent improvements to the WWTF have improved BOD and TSS concentrations. In 2007, BOD was below the limit in nine of the 12 monitoring events, while TSS was below in eight of the 12 monitoring events.

6. Nitrate as nitrogen concentrations in groundwater are typically above the primary maximum contaminant level (MCL) of 10 mg/L in groundwater samples collected from the WWTF's monitoring wells. However, the McFarland area has historically had high nitrate/nitrogen concentrations in groundwater and background nitrate/nitrogen concentrations in the WWTF's upgradient monitoring wells are higher than the concentrations reported in the downgradient wells.
7. In 1988, the Discharger conducted a Brine/Nitrate Study in efforts to reduce the amount of salts and nitrates in the two domestic wells used to supply water to the City of McFarland. The City of McFarland installed an ion exchange system to remove nitrate/nitrogen from its two deep water supply wells. The regenerant from the ion exchange process is discharged to the sewer system and likely contributes to the elevated concentrations observed in the effluent from the WWTF.
8. The Discharger violated [Discharge Specification No. B.12](#) of Order No. 89-154 for continuing to irrigate crops other than fodder, fiber, or seed crops. When the WDRs were adopted in 1989, Title 22 also allowed the discharge of non-disinfected secondary treated wastewater to food crops where recycled water does not come into contact with the edible portion of the food crop and where the food crop undergoes commercial pathogen-destroying processing before being consumed by humans. In January 2003, the California Department of Health Services (now the Department of Public Health [DPH]) issued a memorandum stating that contact with recycled water is likely to occur in vineyards and that there may be a potential for pathogens to gain access to the interior of fruits. The DPH now recommends that all vineyards be irrigated with water that meets the requirements of disinfected secondary-2.2 recycled water as defined in Title 22. Regional Water Board staff notified the Discharger of this information in a 9 August 2004 letter.
9. Order No. 89-154 is no longer adequate because it does not reflect the current conditions of the WWTF and the Expansion Project, does not reflect current discharge flow rates, and is not consistent with the current disposal guidelines. The continued discharge of undisinfected wastewater to the vineyard without an updated Use Area Management Plan warrant the adoption of revised Waste Discharge Requirements and a Cease and Desist Order to bring the WWTF into compliance with applicable regulations and guidelines.
10. The RWD and Final Geotechnical Investigation present information on site conditions, the existing wastewater treatment process and quality, planned plant upgrades, and the conceptual design of the Expansion Project. [Attachment B](#), which is attached hereto and made a part of this Order by reference, depicts a plan view of the existing WWTF and Expansion Project (new pond area), as depicted in the RWD and the Final geotechnical Investigation. However, the design presented in the RWD and Final Geotechnical Investigation has been changed. A new technical report describing the construction of the new pond and a new RWD documenting the expanded WWTF and the corresponding Use Area for the recycling of treated wastewater is required as stated in [Provision H.13](#).

**Existing Wastewater Treatment Facility**

11. The existing WWTF consists of a headworks with two mechanical bar screens and an influent meter. The wastewater is then routed to four aerated lagoons (Nos. 1, 1A, 2 and 3) equipped with small bubble diffused-air aeration devices. Wastewater is pumped to the Use Area that consists of two unlined storage ponds that comprised about 30 acres or about 236 acre-feet of storage (new pond under construction). Additionally, recycled water is used for irrigation on approximately 270 acres of adjacent farmland. Two small effluent storage ponds are located at the southwest corner of the WWTF and are used to deliver effluent to the adjacent farm fields.
12. Wastewater is collected from the central and northern portions of the City and transported to the WWTF in an 18-inch trunk line that trends east to west along Perkins Avenue. A new 24-inch line was constructed in 2001 to serve the southern portion of the City. The 24-inch line trends east along Taylor Avenue, then north along Garzoli Avenue to Perkins, then is set parallel to the old 18 inch line west to the WWTF.
13. Influent enters at the headworks, which house two screen/compactors (one connected to the 18-inch line, the other to the 24-inch line), an open channel flow meter, and a splitter box. Solids from the screen/compactor are dewatered and deposited in a trash-bin.
14. From the headworks, influent is discharged by gravity to Aeration Lagoon Nos. 1 or 1A (or both) and then flows by gravity into Aeration Lagoon No. 2 for further aeration and solids settling. The partially treated wastewater is then pumped to Aeration Lagoon No. 3 before being sent to the disposal ponds or to the adjacent farm fields for water recycling. Lagoon Nos. 1, 2, and 3 have dimensions of 380 feet by 200 feet, while lagoon No. 1A is slightly larger at 376 feet by 206 feet.
15. Effluent from the Aeration Lagoons is discharged to the eastern Disposal Ponds, which comprise approximately 30 acres and have a capacity of approximately 236 acre feet.
16. Self-monitoring reports indicate that winter flows are not higher than summer flows, demonstrating insignificant inflow and infiltration to the collection system during winter months.
17. Self-monitoring data from January 2007 to December 2007 characterize the discharge as follows:

<u>Constituent/Parameter</u>	<u>Units</u> <sup>1</sup>	<u>Influent</u>	<u>Effluent</u>	<u>% Removal</u> <sup>2</sup>
Monthly Average Discharge Flow	mgd	1.01	NS <sup>2</sup>	--
Conventional Pollutants				
BOD <sup>3</sup>	mg/L	298	39	87
TSS <sup>4</sup>	mg/L	168	41	76
Salts				
Chloride	mg/L	NS <sup>5</sup>	58	--

<u>Constituent/Parameter</u>	<u>Units</u> <sup>1</sup>	<u>Influent</u>	<u>Effluent</u>	<u>% Removal</u> <sup>2</sup>
Salts (continued)				
Sodium	mg/L	NS	98	--
EC <sup>6</sup>	µmhos/cm	NS	599	--
TDS <sup>7</sup>	mg/L	NS	380	--
Nitrogen				
Nitrate as Nitrogen	mg/L	NS	21.9 <sup>8</sup>	--
Total Nitrogen <sup>9</sup>	mg/L	NS	27	--
Metals				
Aluminum	µg/L	NS	340	--
Iron	µg/L	NS	190	--
Manganese	µg/L	NS	<20	--

<sup>1</sup> Million gallons per day (mgd); milligrams per liter (mg/L); micromhos per centimeter (µmhos/cm); micrograms per liter (µg/L).

<sup>2</sup> Percent removal (% removal), -- = No data available

<sup>3</sup> 5-day biochemical oxygen demand (BOD)

<sup>4</sup> Total suspended solids (TSS)

<sup>5</sup> Not sampled (NS)

<sup>6</sup> Electrical conductivity at 25°C (EC)

<sup>7</sup> Total dissolved solids (TDS)

<sup>8</sup> Data reported as Nitrate. Converted to nitrate as nitrogen by dividing by a factor of 4.5.

<sup>9</sup> Calculated by adding nitrate as nitrogen and total Kjeldahl nitrogen (TKN)

18. The EC of the WWTF influent ranges from about 300 to 420 µmhos/cm over source water.
19. The WWTF does not have a sludge management plan. Sludge was removed from the aerated lagoons in 2005 and 2006 as it was suspected the buildup of sludge was contributing to the routine exceedance of the BOD effluent limit. Effluent BOD concentrations improved considerably following the removal of the sludge and other maintenance activities. Updating the existing Operations and Management Plan is needed to provide a schedule for sludge removal and disposal as required by [Provision H.14](#).

### Expansion Project

20. The design of the Expansion Project is not complete; however, conceptually the expansion project consists of expanding the capacity of the disposal ponds by adding another 30-acre disposal pond east of the existing disposal pond, and adding acreage to the existing recycled water Use Area.
21. The initial design to expand the disposal pond was presented in the 17 May 2005 *Final Geotechnical Investigation* prepared by BSK. The report proposed expanding the existing pond by removing the eastern wall of the pond and replacing it further to the east. The additional storage was to be about 20 acres or about 125 acre-feet. Regional Water Board staff concurred with report findings in a 22 May 2006 letter to the Discharger.

22. A 23 June 2006 *McFarland Storage Pond Expansion – Progress Update* prepared by Boyle indicates 100-acres of alfalfa in combination with the disposal ponds would be required for recycling or disposing of 1.55 mgd of treated wastewater. The Use Area was to consist of a 15-acre field in the central portion of the WWTF property, a 75-acre field north of the WWTF, and 80-acres of the 160-acre vineyard would be converted to alfalfa.
23. The Discharger changed the design of the proposed pond construction and Use Area and has constructed a separate 30-acre disposal pond east of the existing ponds. The operator indicated the new plan would remove the remaining 15 acres of alfalfa from the central portion of the property. This would leave the 75-acre parcel north of the WWTF, and the 160-acre vineyard south of the WWTF for recycling of treated wastewater. The 80-acres of grapes has yet to be converted to alfalfa, and the Plant Operator indicated the discharger is addressing purchasing/leasing additional land instead of converting the vineyard to alfalfa. The revised design of the ponds appears to be more than adequate to service the needs of the WWTF, but the Discharger will need to provide a technical report (RWD) as required in [Provision H.13](#), that will include revised water and nutrient balances to illustrate that the Discharger has adequate pond volume and land for recycling.
24. Based on adding another 30-acre disposal pond, the storage capacity will increase from about 236 acre feet to about 470 acre feet. A water balance provided by the Discharger in June 2006 indicated a minimum of 100 acres of alfalfa were required for wastewater recycling in addition to the then-planned 361 acre-feet of disposal pond storage.
25. It is anticipated that effluent mineral and metals quality characterized in [Finding 17](#) for the existing WWTF will be similar to the effluent quality resulting from the Expansion Project.

### **Sanitary Sewer Overflows**

26. A “sanitary sewer overflow” is defined as a discharge to ground or surface water from the sanitary sewer system at any point upstream of the treatment facility. Temporary storage and conveyance facilities (such as wet wells, regulated impoundments, tanks, highlines, etc.) may be part of a sanitary sewer system and discharges to these facilities are not considered sanitary sewer overflows, provided that the waste is fully contained within these temporary storage/conveyance facilities.
27. On 2 May 2006, the State Water Board adopted Statewide General Waste Discharge Requirements For Sanitary Sewer Systems General Order No. 2006-003-DWQ (General Order). The General Order requires all public agencies that own or operate sanitary sewer systems greater than one mile in length to comply with the order. The Discharger’s collection system is greater than one mile in length; therefore the General Order is applicable. The application or Notice of Intent (NOI) for coverage under the general permit was submitted to the State Water Resources Control Board in October 2007.

### **Water Recycling**

28. The Discharger recycles undisinfected treated wastewater to about 270-acres of adjacent farmland owned by the Discharger. The acreage included a 75 acre parcel north of the WWTF, a 35-acre parcel in the central portion of the WWTF property, and 160-acres of "wine grapes" south of the WWTF. Currently, the acreage available for recycling is about 235 acres.
29. Title 22 allows for the discharge of non-disinfected secondary treated wastewater to food crops where recycled water does not come into contact with the edible portion of the food crop and where the food crop undergoes commercial pathogen-destroying processing before being consumed by humans. However, the DPH issued an 8 January 2003 memo regarding *Orchard and Vineyard Irrigation Using Recycled Water*. The DPH now recommends that all vineyards be irrigated with water that meets the requirements of disinfected secondary-2.2 recycled water as defined in Title 22. To meet DHS guidelines for Orchard and Vineyard Irrigation Using Recycled Water, the wastewater discharged to the wine grapes must meet disinfected secondary-2.2 recycled water requirements as defined in Title 22, Section 60301.220.

### **Site-Specific Conditions**

30. The WWTF is in an arid climate characterized by hot dry summers and mild winters. The rainy season generally extends from November through March. Occasional rains occur during the spring and fall months, but summer months are dry. Average annual precipitation and evaporation in the discharge area are about 11 inches and 63 inches, respectively, according to information published by the California Department of Water Resources (DWR).
31. Areal soils in the vicinity of the WWTF and the Use Areas are predominantly the Kimberlina fine sandy loam with lesser amounts of Wasco sandy loam and the McFarland loam, according to the USDA Natural Resources Conservation Service. These soils are well drained and were developed from predominantly granitic parent rock.
32. The WWTF is not within a 100-year floodplain according to Federal Emergency Management Agency maps. The northern end of the flood plain for Poso Creek is depicted on FEMA Flood map No. 060075-0245B as being about a half mile southwest of the WWTF property.
33. The Discharger is not required to obtain coverage under a National Pollutant Discharge Elimination System general industrial storm water permit for the WWTF because all storm water runoff is retained onsite and does not discharge to a water of the United States.
34. Land use in the WWTF vicinity is primarily agricultural with the City of Mc Farland approximately two miles to the east. A dairy is about a half mile east of the WWTF. The primary crops grown within five miles of the WWTF include grapes, almonds, alfalfa, cotton,

corn (forage), apricots, peaches, and dry beans according to DWR Kern County land use data published in 1998. Irrigation water is supplied primarily by surface water.

### Groundwater Considerations

35. Regional groundwater is approximately 140 feet below ground surface and flows west southwesterly, according to information in *Lines of Equal Elevation of Water in Wells in Unconfined Aquifer*, published by DWR in Spring 2004.
36. Depth to first encountered groundwater in the Discharger’s monitoring wells ranged from about 90 to 100 feet below the ground surface in March 2007. The WWTF appears to be just east of the eastern edge of the “Corcoran Clay” or “E-clay layer.” Drillers logs indicate a clay layer at about 200 feet bgs in some borings, but none in others drawing question to the extent of the clay layer in this area.
37. The City of McFarland obtains its source water from four deep groundwater wells and treats the water with ion exchange to remove nitrates. The resulting source water is of good quality, with the exception of arsenic, as indicated by the City’s 2006 Consumer Confidence Report. Excerpts of this Annual Report are presented in the following table.

<u>Constituent/Parameter</u>	<u>Units</u> <sup>1</sup>	<u>Range</u>	<u>Average</u>
Sodium	mg/L	41 – 79	75
Sulfate	mg/L	4.0 – 11	98
EC <sup>2</sup>	µmhos/cm	203 – 892	550
Nitrate	mg/L	0.9 – 6.5	4.03
TDS <sup>3</sup>	mg/L	140 – 556	385
Arsenic	ug/L	2 – 16	11

1. mg/L = milligrams per liter, µmhos/cm = micromhos per centimeter, ug/L = micrograms per liter.

2. EC = Electrical conductivity

3. TDS = Total dissolved solids.

38. The Discharger has a six-well groundwater-monitoring network as shown in [Attachment B](#). The original network was constructed in 2001 and consisted of five wells: two in the interpreted upgradient direction (MW-4 and MW-5) and three in the interpreted downgradient to crossgradient direction (MW-1 through MW-3 and MW-6). Wells MW-1 and MW-5, went dry in 2004 and two replacement wells MW-1A and MW-5A, were installed in January 2007. An additional well, MW-6, was installed along the southern property boundary. The following table characterizes groundwater from the Discharger’s monitoring wells (data from September 2001 through September 2007).

McFarland WWTF - Groundwater Monitoring Data

<u>Constituent</u> <sup>1</sup>	<u>Units</u> <sup>2</sup>	<u>MW-1</u>	<u>MW-2</u>	<u>MW-3</u>	<u>MW-4</u>	<u>MW-5</u>	<u>MW-6</u> <sup>3</sup>
pH	mg/L	7.8	7.9	8.0	7.6	7.7	7.8
EC	µmhos/cm	1285	862	857	1336	1014	886
Nitrate as N	mg/L	36.5	13.6	15.6	37.4	20.0	0.5
Sulfate	mg/L	204	80	115	145	87	70
TDS	mg/L	938	571	585	956	724	555
Chloride	mg/L	79	100	92	111	78	75
Sodium	mg/L	129	83	78	144	98	137
Calcium	mg/L	142	92	92	128	119	68
Magnesium	mg/L	21.9	18.6	15.9	20.7	25.9	9.9
Potassium	mg/L	6.3	8.0	5.5	6.1	13.1	0.8
Iron	ug/L	31	36.3	17.1	9.6	30.6	<0.028 <sup>4</sup>
Bicarbonate	mg/L	210	159	133	284	290	325

1 EC = Electrical conductivity.

2 µmhos/cm = micromhos per centimeter, mg/L = milligrams per liter, ug/L = micrograms per liter.

3 Data is from two/three 2007 sampling events

4 The less than symbol indicates the result was not detected at a concentration greater than the listed value.

39. The highest measurements/concentrations of EC, TDS, sulfate, and nitrate are currently observed in upgradient well MW-4. EC and TDS results in all samples collected since 2001 have exceeded the lower secondary maximum contaminant level (MCL) of 900 umhos/cm and 500 mg/l, for EC and TDS, respectively. The upgradient well (MW-4) does not appear to represent true background conditions and is likely influenced from an offsite source.

40. Formerly, the highest EC, TDS, sulfate, and nitrate as nitrogen results were observed in well MW-1 as illustrated in the averages listed in the previous table. All samples collected from this well since 2001 have exceeded the recommended MCLs for EC, TDS, and nitrate as nitrogen. However, EC measurements in well MW-1 have decreased considerably from 1,720 umhos/cm in 2001 to about 1,000 umhos/cm (just above the MCL) in 2007.

41. The lowest concentrations are typically observed in the downgradient wells MW-2 and MW-3. MW-6 has been sampled only three times so trends in concentration cannot be assessed, but concentrations are low and similar to those in wells MW-2 and MW-3.

**Basin Plan, Beneficial Uses, and Water Quality Objectives**

42. The Water Quality Control Plan for the Tulare Lake Basin, 2nd Edition, (hereafter Basin Plan) designates beneficial uses, establishes numerical and narrative water quality objectives, contains implementation plans and policies for protecting all waters of the basin, and incorporates by reference plans and policies of the State Water Board. Pursuant to

Section 13263(a) of the California Water Code (CWC), these waste discharge requirements implement the Basin Plan.

43. Water in the Tulare Lake Basin is in short supply, requiring importation of surface water from other parts of the State. The Basin Plan encourages recycling on irrigated crops wherever feasible and indicates that evaporation of recyclable wastewater is not an acceptable permanent disposal method where the opportunity existing to replace an existing uses or proposed use of fresh water with recycled water.
44. The WWTF is in Detailed Analysis Unit (DAU) No. 256 within the Kern County Basin hydrologic unit. The Basin Plan designates the beneficial uses of groundwater in this DAU as municipal and domestic supply, agricultural supply, and industrial process and service supply.
45. The Basin Plan includes a water quality objective for chemical constituents that, at a minimum, require waters designated as domestic or municipal supply to meet the MCLs specified in Title 22. The Basin Plan recognizes that the Regional 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.
46. The Basin Plan establishes narrative water quality objectives for Chemical Constituents, Tastes and Odors, and Toxicity. The Toxicity objective, in summary, requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial uses. 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.
47. The Basin Plan identifies the greatest long-term problem facing the entire Tulare Lake Basin as the increase in salinity in groundwater, which has accelerated due to the intensive use of soil and water resources by irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until there is a long-term solution to the salt imbalance. Until then, the Basin Plan establishes several salt management requirements, including:
  - a. The incremental increase in salts from use and treatment must be controlled to the extent possible or limited to a maximum of 1,000  $\mu\text{mhos/cm}$ . The maximum EC shall not exceed the EC of the source water plus 500  $\mu\text{mhos/cm}$ . When the source water is from more than one source, the EC shall be a weighted average of all sources.
  - b. Discharges to areas that may recharge good quality groundwaters shall not exceed an EC of 1,000  $\mu\text{mhos/cm}$ , a chloride content of 175 mg/L, or boron content of 1.0 mg/L.These effluent limits are considered reflective of best practicable treatment or control (BPTC).

48. The list of crops in [Finding 34](#) is not intended as a definitive inventory of crops that are or could be grown in the area affected by the discharge, but is representative. Crops sensitive to salt and boron are currently being grown in the area. The effluent characterized in [Finding 17](#) should protect the crops grown. Additional monitoring for salt-specific constituents, such as boron, is necessary, but will likely be less than the quality specified in [Finding 47](#).
49. The Basin Plan requires municipal WWTFs that discharge to land to comply with treatment performance standards for BOD<sub>5</sub> and TSS. WWTFs that preclude public access and are greater than 1 mgd must provide removal of 80 percent or reduction to 40 mg/L, whichever is more restrictive, of both BOD<sub>5</sub> and TSS.

### **Antidegradation**

50. State Water Resources Control Board Resolution No. 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereafter Resolution 68-16) prohibits degradation of groundwater unless it has been shown that:
- The degradation is consistent with the maximum benefit to the people of the State;
  - The degradation will not unreasonably affect present and anticipated future beneficial uses;
  - The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives; and
  - The discharger employs BPTC to minimize degradation.
51. Constitutes of concern that have the potential to degrade groundwater include, in part, salts and nutrients.
- For salinity, the Basin Plan contains effluent limits (EC of the source water plus 500  $\mu\text{mhos/cm}$ , or a maximum of 1,000  $\mu\text{mhos/cm}$ ) that considered Resolution 68-16 when adopted. The discharge meets these limits and therefore should not unreasonably degrade the beneficial uses of groundwater with respect to salinity.
  - For nitrogen, practicable measures are: 1) treating the effluent such that it is below objectives for drinking water, or 2) storing the effluent in a manner that protects the underlying groundwater from percolation from ponds until it can be beneficially used on crops. Nitrogen concentrations in effluent are slightly elevated and exceed the MCL of 10 mg/L. However, nitrogen concentrations in groundwater typically exceed the concentrations in the effluent, and the upgradient (MW-4 and MW-5) and crossgradient (MW-1) wells have the highest concentrations, indicating the WWTF is not the primary source of the elevated nitrogen concentrations in groundwater.

### **Treatment and Control Practices**

52. The Expansion Project described in [Findings 20 through 26](#), once completed, will provide treatment and control of the discharge that incorporates:
- secondary treatment;
  - recycling of wastewater at agronomic rates;

- c. an operation and maintenance (O&M) manual; and
- d. certified operators to ensure proper operation and maintenance.

53. This Order establishes groundwater limitations for the WWTF that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan. This Order contains requirements for a groundwater assessment for assuring that the highest water quality consistent with the maximum benefit to the people of the State will be achieved.

### **Other Regulatory Considerations**

54. The United States Environmental Protection Agency (EPA) has promulgated biosolids reuse regulations in Title 40, Code of Federal Regulations, Part 503, Standards for the Use or Disposal of Sewage Sludge, which establishes management criteria for protection of ground and surface waters, sets application rates for heavy metals, and establishes stabilization and disinfection criteria. The Discharger may have separate and/or additional compliance, reporting, and permitting responsibilities to EPA.
55. As the discharge consists of treated municipal sewage and incidental discharges from treatment and storage facilities associated with a municipal wastewater treatment plant, and as these discharges are regulated by waste discharge requirements consistent with applicable water quality objectives, the Facility and its discharge is exempt from containment pursuant to Title 27, Section 20090(a).

### **CEQA**

56. The Discharger certified an initial study and mitigated negative declaration (MND) in August 2001 in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et, seq.) and the State CEQA guidelines (Title 14, Division 6, California Code of Regulations, as amended). The MND indicates that the discharge will comply with Regional Water Board regulations, which will mitigate any groundwater impacts.
57. This Order implements measures necessary to mitigate any adverse impacts to groundwater from the Expansion Project to less than significant levels, including:
- a. [Effluent Limitation B.1](#), which restricts flow to 1.1 mgd until the Discharger can treat and dispose of the proposed increase in discharge flow in accordance with the terms and conditions of this Order and the CWC.
  - b. [Effluent Limitations B.2](#), which establish effluent limitations consistent with the Basin Plan's performance standards.
  - c. [Discharge Specification C.7](#), which stipulates waste constituents cannot be released or discharged in a concentration or mass that causes violation of the Order's groundwater limitations.

### **General Findings**

58. Pursuant to CWC 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.
59. The Regional Water Board will review this Order periodically and will revise requirements when necessary.
60. California Water Code Section 13267(b) states that: "In conducting an investigation specified in subdivision (a), the Regional Water Board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Regional Water Board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the Regional Water Board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports."
61. The technical reports required by this Order and the attached Monitoring and Reporting Program No. [R5-2008-\\_\\_\\_\\_\\_](#) are necessary to assure compliance with these waste discharge requirements. The Discharger operates the Facility that discharges the waste subject to this Order.
62. The California Department of Water Resources set standards for the construction and destruction of groundwater wells, as described in California Well Standards Bulletin 74-90 (June 1991) and Water Well Standards: State of California Bulletin 94-81 (December 1981). These standards, and any more stringent standards adopted by the State or county pursuant to California Water Code Section 13801, apply to all monitoring wells.

### **Public Notice**

63. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge.
64. The Discharger and interested agencies and persons have been notified of the intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
65. All comments pertaining to the discharge were heard and considered in a public meeting.

**IT IS HEREBY ORDERED** that, Waste Discharge Requirements Order No. 89-154 is rescinded and that, pursuant to Sections 13263 and 13267 of the CWC, the City of McFarland and its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the CWC and regulations adopted thereunder, shall comply with the following:

**A. Prohibitions**

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.
2. Bypass or overflow of untreated wastes, except as allowed by [Provision E.2](#) of Standard Provisions and Reporting Requirements, is prohibited.
3. Discharge of waste classified as 'hazardous', as defined in Section 2521(a) of Title 23, California Code of Regulations, Section 2510 et seq., is prohibited. Discharge of waste classified as 'designated,' as defined in California Water Code Section 13173, in a manner that causes violation of groundwater limitations, is prohibited.

**B. Effluent Limitations**

1. The monthly average discharge flow shall not exceed:
  - a. 1.1 mgd until the Discharger meets the requirements of [Provision H13](#).
  - b. 1.55 mgd after the requirements [Provision H13](#) has been satisfied and approved by the Executive Officer.

2. The effluent discharge to the Storage Ponds shall not exceed the following limitations:

<u>Constituent</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>
BOD <sub>5</sub> <sup>1</sup>	mg/L	40	80
TSS <sup>2</sup>	mg/L	40	80

<sup>1</sup> Five-day biochemical oxygen demand

<sup>2</sup> Total suspended solids

3. The arithmetic mean of BOD<sub>5</sub> and TSS in effluent samples collected over a monthly period shall not exceed 20 percent of the arithmetic mean of the values for influent samples collected at the same times during the same period (80 percent removal).
4. The annual flow-weighted average EC of the discharge shall not exceed the flow-weighted average EC of the source water plus 500 µmhos/cm or a maximum of 1,000 µmhos/cm, whichever is less. The flow-weighted average of the source water shall be a moving average for the most recent 12 months.

**C. Discharge Specifications**

1. All conveyance, treatment, storage, and disposal units shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

2. Public contact with effluent shall be precluded through such means as fences, signs, or acceptable alternatives.
3. Objectionable odors shall not be perceivable beyond the limits of the WWTF property at an intensity that creates or threatens to create nuisance conditions.
4. Disposal ponds shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the winter. 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.
5. On or about **1 October** of each year, available disposal pond storage capacity shall at least equal the volume necessary to comply with [Discharge Specification C.4](#).
6. Ponds shall be managed to prevent breeding of mosquitoes. In particular,
  - a. An erosion control plan should assure that coves and irregularities are not created around the perimeter of the water surface.
  - b. Weeds shall be minimized through control of water depth, harvesting, and herbicides.
  - c. Dead algae, vegetation and other debris shall not accumulate on the water surface.
  - d. Vegetation management operations in areas in which nesting birds have been observed shall be carried out either before or after, but **not during**, the April 1 to June 30 bird nesting season.
7. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of groundwater limitations.

#### **D. Recycling Specifications**

The following specifications apply to use areas under the ownership or control of the Discharger. Other use areas are covered by separate water recycling requirements.

1. Recycled water (i.e., effluent) shall remain within the Use Area. Recycled water provided off-site shall only be provided to users that hold Regional Water Board adopted water reclamation requirements, or users who have obtained a waiver of reclamation requirements from the Regional Water Board.
2. Use of recycled water shall be limited to flood irrigation of fodder, fiber, seed crops not eaten by humans or for grazing of non-milking cattle and shall comply with the provisions of Title 22.
3. The Discharger will maintain the following setback distances from areas irrigated with recycled water:

<u>Setback Distance (feet)</u>	<u>To</u>
25	Property Line
30	Public Roads
50	Drainage courses
100	Irrigation wells
150	Domestic wells

4. No physical connection shall exist between recycled water piping and any domestic water supply or domestic well, or between recycled water piping and any irrigation well that does not have an air gap or reduce pressure principle device.
5. The perimeter of the Reclamation Areas shall be graded to prevent ponding along public roads or other public areas and prevent runoff onto adjacent properties not owned or controlled by the Discharger.
6. Areas irrigated with recycled water shall be managed to prevent nuisance conditions or breeding of mosquitoes. More specifically:
  - a. All applied irrigation water must infiltrate completely within a 48-hour period;
  - b. Ditches not serving as wildlife habitat should be maintained free of emergent, marginal, and floating vegetation; and
  - c. Low-pressure and unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store recycled water.
7. Areas irrigated with recycled water shall be posted with warning signs in accordance to Title 22, Section 60310 (g). Signs will be of a size no less than four inches high by eight inches wide, shall be placed at all areas of public access and around the perimeter of all areas used for effluent disposal or conveyance to alert the public of the use of recycled water. All signs shall display an international symbol similar to that shown in [Attachment C](#), which is attached hereto and made a part of this Order by reference, and present the following wording:

**“RECYCLED WATER – DO NOT DRINK”**

**“AGUA DE DESPERDICIO RECLAMADA – POR FAVOR NO TOME”**

8. Reclamation of WWTF effluent shall be at reasonable agronomic rates considering the crop, soil, climate, and irrigation management plan. The annual nutrient loading of reclamation areas, including the nutritive value of organic and chemical fertilizers and of the recycled water, shall not exceed crop demand.

### **E. Sludge Specifications**

Sludge 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 screening material 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 undergone sufficient treatment and testing to qualify for reuse pursuant to federal and state regulations as a soil amendment for agriculture, silviculture, horticulture, and land reclamation.

1. Sludge and solid waste shall be removed from screens, sumps, aeration basins, ponds, clarifiers, etc. as needed to ensure optimal plant operation.
2. Any handling and storage of residual sludge, solid waste, and biosolids on property of the WWTF shall be temporary (i.e., no longer than two years) 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 groundwater limitations of this Order.
3. Residual sludge, biosolids, and solid waste shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27. Removal for further treatment, disposal, or reuse at sites (i.e., landfill, composting sites, soil amendment sites) operated in accordance with valid waste discharge requirements issued by a regional water quality control 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 quality control board or State Water Board or a local (e.g., county) program authorized by a regional water quality control board. In most cases, this means the General Biosolids Order (State Water Board Water Quality Order No. 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 authorized by the General Biosolids Order, the Discharger must file a complete Notice of Intent and receive a Notice of Applicability for each project.
5. 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.

### **F. Pretreatment Requirements**

1. The Discharger shall implement the necessary legal authorities, programs, and controls to ensure that the following incompatible wastes are not introduced to the treatment system, where incompatible wastes are:
  - a. Wastes that create a fire or explosion hazard in the treatment works;
  - b. Wastes that will cause corrosive structural damage to treatment works, but in no case wastes with a pH lower than 5.0, unless the works is specially designed to accommodate such wastes;

- c. Solid or viscous wastes in amounts that cause obstruction to flow in sewers, or which cause other interference with proper operation or treatment works;
  - d. Any waste, including oxygen demanding pollutants (BOD<sub>5</sub>, etc.), released in such volume or strength as to cause inhibition or disruption in the treatment works, and subsequent treatment process upset and loss of treatment efficiency;
  - e. Heat in amounts that inhibit or disrupt biological activity in the treatment works, or that raise influent temperatures above 40°C (104°F), unless the treatment works is designed to accommodate such heat;
  - f. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;
  - g. Pollutants that result in the presence of toxic gases, vapors, or fumes within the treatment works in a quantity that may cause acute worker health and safety problems; and
  - h. Any trucked or hauled pollutants, except at points predesignated by the Discharger.
2. The Discharger shall implement the legal authorities, programs, and controls necessary to ensure that indirect discharges do not introduce pollutants into the sewerage system that, either alone or in conjunction with a discharge or discharges from other sources:
- a. Flow through the system to the receiving water in quantities or concentrations that cause a violation of this Order, or
  - b. Inhibit or disrupt treatment processes, treatment system operations, or sludge processes, use, or disposal and either cause a violation of this Order or prevent sludge use or disposal in accordance with this Order.

### **G. Groundwater Limitations**

1. Release of waste constituents from any treatment or storage component associated with the WWTF shall not cause or contribute to groundwater:
  - a. Containing concentrations of constituents identified below, or natural background quality, whichever is greater.
    - (i) Nitrate as nitrogen of 10 mg/L.
    - (ii) Electrical Conductivity of 900 µmhos/cm.
    - (iii) Total Coliform Organisms of 2.2 MPN/100 mL.
    - (iv) For constituents identified in Title 22, the MCLs quantified therein.
  - b. Containing taste or odor-producing constituents, toxic substances, or any other constituents, in concentrations that cause nuisance or adversely affect beneficial uses.

## H. Provisions

1. The Discharger shall comply with the Standard Provisions and Reporting Requirements for Waste Discharge Requirements, dated 1 March 1991, which are part of this Order. This attachment and its individual paragraphs are referred to as Standard Provisions(s).
2. The Discharger shall comply with Monitoring and Reporting Program (MRP) No. [R5-2008-\\_\\_\\_\\_\\_](#), which is part of this Order, and any revisions thereto as adopted by the Regional Water Board or approved by the Executive Officer. The submittal date shall be no later than the submittal date specified in the Monitoring and Reporting Program for Discharger self-monitoring reports.
3. The Discharger shall keep at the WWTF a copy of this Order, including its MRP, Information Sheet, attachments, and Standard Provisions, for reference by operating personnel. Key operating personnel shall be familiar with its contents.
4. The Discharger shall not allow pollutant-free wastewater to be discharged into the Facility collection, treatment, and disposal systems in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means storm water (i.e., inflow), groundwater (i.e., infiltration), cooling waters, and condensates that are essentially free of pollutants.
5. The Discharger must 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 include 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 only when the operation is necessary to achieve compliance with the conditions of the Order.
6. All technical reports and work plans required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. To demonstrate compliance with sections 415 and 3065 of Title 16, CCR, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports and work plans must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
7. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Accordingly, the Discharger shall submit to the Regional Water Board on or before each report due date the specified document or, if an action is specified, a written report detailing evidence of compliance with the date and task. If noncompliance is being reported, the reasons for such noncompliance shall be stated, plus an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Water Board by letter when it returns to compliance with the time schedule. Violations may result in

enforcement action, including Regional Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.

8. In the event of any change in control or ownership of land or waste treatment and storage facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the appropriate Regional Water Board office.
9. To assume operation 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 address and telephone number of the persons responsible for contact with the Regional 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 California Water Code. If approved by the Executive Officer, the transfer request will be submitted to the Regional Water Board for its consideration of transferring the ownership of this Order at one of its regularly scheduled meetings.
10. As a means of discerning compliance with [Discharge Specification C.3](#), the dissolved oxygen content in the upper zone (1 foot) of effluent in the effluent storage ponds shall not be less than 1.0 mg/L for three consecutive sampling events. Should the DO be below 1.0 mg/L for three consecutive sampling events, the Discharger shall report the findings to the Regional Water Board and propose a remedial approach to resolve the low DO results **within 30 days**.
11. The Discharger shall maintain and operate all ponds sufficient to protect the integrity of containment levees and prevent overtopping or overflows. Unless a California civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard in any pond shall never be less than two feet (measured vertically). As a means of management and to discern compliance with this Provision, the Discharger shall install and maintain in each pond permanent markers with calibration that indicates the water level at design capacity and enables determination of available operational freeboard.
12. The Discharger shall submit the technical reports and work plans required by this Order for Regional Water Board staff consideration and incorporate comments they may have in a timely manner, as appropriate. The Discharger shall proceed with all work required by the following provisions by the due dates specified.
13. **By 30 June 2009**, the Discharger shall submit a technical report or reports that address:
  - a. A design and performance demonstration for the effluent storage ponds. The performance demonstration shall establish that the pond design will be protective of groundwater quality and that seepage from the ponds will not contribute to groundwater exceeding applicable groundwater limitations;

- b. A Use Area Management Plan describing the areas (Use Area) to receive recycled water and the associated water and nutrient loading balances for the Use Area. The report shall demonstrate that the Use Area is sufficient for the recycled water to be applied at plant uptake rates for both nutrient and hydraulic loading. The report will address the type of crops to be irrigated and the level of treatment that will be maintained to recycle the wastewater in accordance with all applicable regulations and guidelines.

The design and performance demonstration for the effluent storage ponds and the Use Area Management Plan can be combined for ease of submittal or submitted under separate cover. This Provision will be considered satisfied following written acceptance from the Executive Officer.

14. **By 30 June 2009**, the Discharger shall update the O&M Plan to include a sludge handling and disposal plan.
15. Upon completion of tasks set forth in **Provisions H.13 and H.14**, the Regional Water Board will consider the evidence proved regarding groundwater and the discharge and reopen the WDRs to evaluate the effluent limitations and conditions of this Order to ensure consistency with water quality policies and plans and the CWC, as appropriate.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on \_\_\_\_\_.

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PAMELA C. CREEDON, Executive Officer

Order Attachments:

- Monitoring and Reporting Program
- A Vicinity Map – WWTF
- B. Treatment, Storage, and Disposal Layout
- C. International Symbol for Recycled Water

Information Sheet

Standard Provisions (1 March 1991) (separate attachment to Discharger only)