

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER NO. R5-2008-0072

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. [R5-2008-0072](#) 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. [R5-2008-0072](#), 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 25 April 2008.

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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)

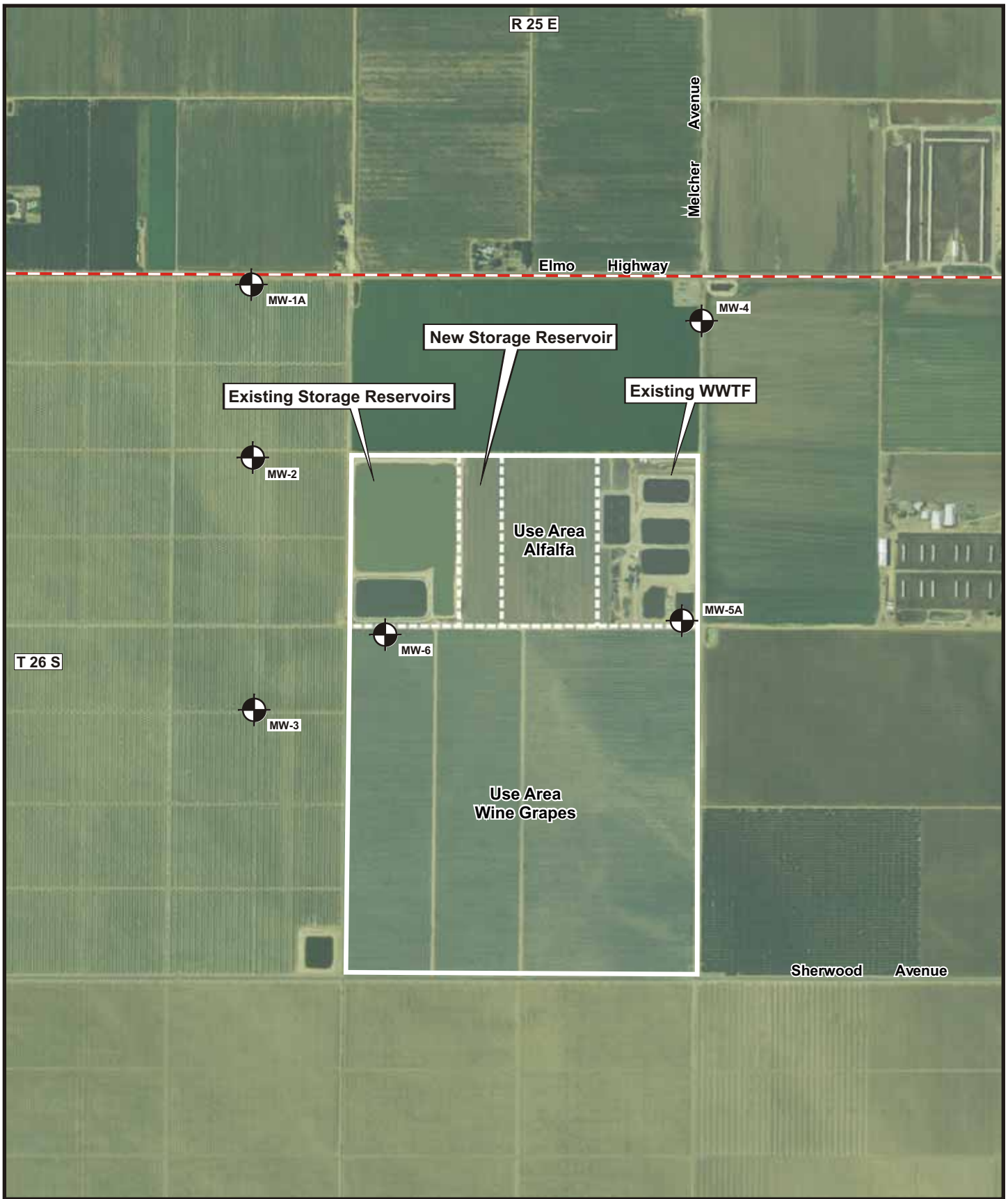


Map Source:  
 NAIP Aerial Photograph (2005)  
 Section 9, T26S R25E, MDB&M


  
 SCALE  
 1 inch = 2,000 feet

**SITE LOCATION MAP**  
 ORDER NO. R5 - 2008 - 0072  
 GENERAL WASTE DISCHARGE REQUIREMENTS  
 FOR  
 CITY OF McFARLAND  
 WASTEWATER TREATMENT FACILITY  
 KERN COUNTY

**ATTACHMENT A**



Map Source:  
 NAIP Aerial Photograph (2005)  
 Section 9, T26S R25E, MDB&M  
 \*Note: All locations are approximate

  
 SCALE  
 1 inch = 1,000 feet

**TREATMENT, STORAGE, & DISPOSAL LAYOUT**

ORDER NO. R5 - 2008 - 0072

GENERAL WASTE DISCHARGE REQUIREMENTS

FOR

CITY OF McFARLAND

WASTEWATER TREATMENT FACILITY

KERN COUNTY

**ATTACHMENT B**



**NONPOTABLE WATER INTERNATIONAL SYMBOL**

ORDER NO. R5 -2008-0072  
WASTE DISCHARGE REQUIREMENTS  
FOR  
CITY OF MCFARLAND  
WASTEWATER TREATMENT FACILITY  
KERN COUNTY

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2008-0072  
FOR  
CITY OF MCFARLAND  
WASTEWATER TREATMENT FACILITY  
KERN COUNTY

This Monitoring and Reporting Program (MRP) is required pursuant to California Water Code section 13267.

The Discharger shall not implement any changes to this MRP unless and until the Regional Board adopts or the Executive Officer issues a revised MRP. Changes to sample location shall be established with concurrence of Regional Water Board staff, and a description of the revised stations shall be submitted for approval by the Executive Officer. All samples should be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each sample shall be recorded on the sample chain of custody form. All analyses shall be performed in accordance with Standard Provisions and Reporting Requirements for Waste Discharge Requirements, dated 1 March 1991. The results of analyses performed in accordance with specified test procedures, taken more frequently than required at the locations specified in this MRP, shall be reported to the Regional Water Board and used in determining compliance.

Field test instruments (such as pH) may be used provided that:

1. the operator is trained in the proper use of the instrument;
2. the instruments are 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.

Each laboratory report shall clearly identify the following:

1. analytical method;
2. measured value;
3. units;
4. what constituent a value is reported as;
5. method detection limit (MDL);
6. reporting limit (RL) (i.e., a practical quantitation limit or PQL);
7. documentation of cation/balance for general minerals analysis of supply water and groundwater samples.

All analyses shall be performed in accordance with the latest edition of *Guidelines Establishing Test Procedures for Analysis of Pollutants*, promulgated by EPA (40 CFR 136) or other procedures approved by the Executive Officer, provided the methods have method detection limits equal to or lower than the analytical methods specified in this MRP. In reporting data, the Discharger shall indicate whether any analysis was performed using a method not in conformance with EPA's Guidelines. Analyses may also comply with the methods and holding



times specified in: *Methods for Chemical Analysis of Water and Wastes* (EPA-600/4-79-020, 1983); *Methods for Determination of Inorganic Substance in Environmental Samples* (EPA/600/R-93/100, 1993); *Standard Methods for the Examination of Water and Wastewater*, 20th Edition (WEF, APHA, AWWA); and *Soil, Plant and Water Reference Methods for the Western Region*, 2003, 2nd Edition, 2003.

If monitoring consistently shows no significant variation in magnitude of a constituent concentration after at least 12 months of monitoring, the Discharger may request the MRP be revised to reduce monitoring frequency. The proposal must include adequate technical justification for reduction in monitoring frequency.

### INFLUENT MONITORING

The Discharger shall collect influent samples at the headworks of the treatment facility prior to any treatment of waste. Time of a grab sample shall be recorded. Influent monitoring shall include at least the following:

| <u>Constituent</u>            | <u>Units</u> | <u>Type of Sample</u> | <u>Sampling Frequency</u> |
|-------------------------------|--------------|-----------------------|---------------------------|
| Flow                          | mgd          | Continuous            | Daily <sup>1</sup>        |
| Monthly Average Flow          | mgd          | Computed              | Monthly                   |
| BOD <sub>5</sub> <sup>2</sup> | mg/L         | Grab                  | Weekly                    |
| Monthly Average BOD           | mg/L         | Calculated            | Monthly                   |

<sup>1</sup> Sample frequencies referenced hereafter in this program as daily shall not include weekends or holidays.

<sup>2</sup> Five-day, 20°C biochemical oxygen demand

<sup>3</sup> 8-hour composite sampling as referred to in this program shall be flow-proportioned

### EFFLUENT MONITORING

The Discharger shall collect effluent samples at a point in the system following treatment and before discharge to the storage ponds. Time of collection of a grab sample shall be recorded. Effluent monitoring shall include the following:

| <u>Constituent</u> | <u>Units</u> | <u>Type of Sample</u> | <u>Sampling Frequency</u> <sup>1</sup> |
|--------------------|--------------|-----------------------|--|
| pH                 | pH Units     | Grab                  | Weekly                                 |
| BOD                |              |                       |  |
| Concentration      | mg/L         | Grab                  | Weekly                                 |
| Monthly Average    | mg/L         | Calculated            | Monthly                                |
| TSS                |              |                       |  |
| Concentration      | mg/L         | Grab                  | Weekly                                 |
| Monthly Average    | mg/L         | Calculated            | Monthly                                |

| <u>Constituent</u>            | <u>Units</u> | <u>Type of Sample</u> | <u>Sampling Frequency</u> <sup>1</sup> |
|-------------------------------|--------------|-----------------------|--|
| Salinity                      |              |                       |  |
| EC <sup>2</sup>               | µmhos/cm     | Grab                  | Monthly                                |
| TDS <sup>3</sup>              | mg/L         | Grab                  | Monthly                                |
| Chloride                      | mg/L         | Grab                  | Monthly                                |
| Nitrogen Forms                |              |                       |  |
| Nitrate (as N)                | mg/L         | Grab                  | Monthly                                |
| Total Kjeldahl Nitrogen (TKN) | mg/L         | Grab                  | Monthly                                |
| Total Nitrogen                | mg/L         | Calculated            | Monthly                                |
| General Minerals <sup>4</sup> | mg/L         | Grab                  | Annually <sup>5</sup>                  |

<sup>1</sup> If results of monitoring a pollutant appear to indicate either the failure to achieve the design treatment goals of the wastewater treatment facility (e.g., the monthly mean for BOD<sub>5</sub> or TSS exceeds 40 mg/L) or potential upset of the treatment process, but monitoring frequency is not sufficient to validate the results, the frequency of sampling shall be increased to confirm the magnitude and duration of such treatment failures, if any, and aid in identification and resolution of the problem.

<sup>2</sup> Electrical conductivity at 25°C.

<sup>3</sup> Total dissolved solids (TDS) referenced hereafter in this program shall be determined using Environmental Protection Agency (EPA) Method No. 160.1 for combined organic and inorganic TDS and EPA Method No. 160.4 for inorganic TDS or equivalent analytical procedures specified in 40 Code of Federal Regulations (CFR) Part 136.

<sup>4</sup> General Minerals as referred to in this program shall include the constituents in the General Minerals Analyte List presented below.

<sup>5</sup> In October

### General Minerals Analyte List <sup>1</sup>

|                                     |                                       |
|-------------------------------------|---------------------------------------|
| Alkalinity (as CaCO <sub>3</sub> )  | pH                                    |
| Bicarbonate (as CaCO <sub>3</sub> ) | Potassium                             |
| Calcium                             | Sodium                                |
| Carbonate (as CaCO <sub>3</sub> )   | Specific Electrical Conductivity (EC) |
| Chloride                            | Sulfate                               |
| Hardness (as CaCO <sub>3</sub> )    | Total Dissolved Solids (TDS)          |
| Magnesium                           |                                       |

<sup>1</sup> General Minerals analyte lists may vary depending on the laboratory, but shall include at least the above analytes and properties. An anion cation balance shall accompany results.

### RESERVOIR MONITORING

The storage reservoirs shall be sampled systematically for the parameters specified below. Storage and disposal pond monitoring shall include at least the following:

| <u>Constituent/Parameter</u>       | <u>Units</u>      | <u>Type of Sample</u> | <u>Sampling Frequency</u> |
|------------------------------------|-------------------|-----------------------|---------------------------|
| Dissolved Oxygen <sup>1</sup> (DO) | mg/L              | Grab <sup>2</sup>     | Weekly                    |
| <u>Freeboard<sup>3</sup></u>       | feet <sup>4</sup> | Observation           | Weekly                    |

- <sup>1</sup> To address potential for the creation of objectionable odors, the DO content in the upper zone (one foot) of either effluent storage reservoir should not be less than 1.0 mg/L for three consecutive sampling events. If results of monitoring indicate DO concentrations less than 1.0 mg/L, but monitoring frequency is not sufficient to validate the results, the frequency of sampling shall be increased to confirm the magnitude and duration of such low concentrations of DO, if any, and aid in identification and resolution of the problem.
- <sup>2</sup> Samples shall be collected at a depth of one foot from the storage reservoirs, opposite the inlet, and analyzed for DO. Samples shall be collected between 0700 and 0900 hours.
- <sup>3</sup> To prevent overtopping, overflows, or levee failures, freeboard in the reservoirs should never be less than two feet in the reservoir (measured vertically).
- <sup>4</sup> Freeboard shall be monitored to the nearest tenth (0.1) foot.

In addition, the Discharger shall inspect the condition of the storage reservoirs once per week and write visual observations in a bound logbook. Notations shall include observations of whether weeds are developing in the water or along the bank, and their location; whether dead algae, vegetation, scum, or debris are accumulating on the storage and disposal pond surface and their location; whether burrowing animals or insects are present; and the color of the reservoirs (e.g., dark sparkling green, dull green, yellow, gray, tan, brown, etc.). A summary of the entries made in the log during each month shall be submitted along with the monitoring report the following month.

### GROUNDWATER MONITORING

Concurrently with groundwater quality sampling, the Discharger shall measure the water level in each well as groundwater depth (in feet and hundredths) and as groundwater surface elevation (in feet and hundreds above mean sea level). The horizontal geodetic location of each monitoring well shall be provided where the point of beginning shall be described by the California State Plane Coordinate System, 1983 datum.

Prior to collecting samples and after measuring the water level, each monitoring well shall be adequately purged to remove water that has been standing within the well screen and casing that may not be chemically representative of formation water. Depending on the hydraulic conductivity of the geologic setting, the volume removed during purging is typically from 3 to 5 volumes of the standing water within the well casing and screen, or additionally the filter pack pore volume.

The Discharger shall include in its submittal of groundwater elevation data, a contour map based on said data showing the gradient and direction of groundwater flow under/around the facility and effluent disposal area(s). The groundwater contour map shall also include the

location of the monitoring wells and active storage and land disposal areas (i.e., areas receiving treated effluent).

Samples shall be collected quarterly from approved monitoring wells and analyzed for the following constituents:

| <u>Constituent/Parameter</u>    | <u>Units</u>              | <u>Type of Sample</u> | <u>Frequency</u>       |
|---------------------------------|---------------------------|-----------------------|------------------------|
| Depth to groundwater            | Feet <sup>1</sup>         | Measured              | Quarterly <sup>2</sup> |
|                                 | Feet above mean sea level |                       | Quarterly <sup>2</sup> |
| Groundwater elevation           |                           | Calculated            |                        |
| Electrical Conductance          | umhos/cm                  | Grab                  | Quarterly <sup>2</sup> |
| TDS                             | mg/L                      | Grab                  | Quarterly <sup>2</sup> |
| Chloride                        | mg/L                      | Grab                  | Quarterly <sup>2</sup> |
| Sodium                          | mg/L                      | Grab                  | Quarterly <sup>2</sup> |
| Nitrogen compounds:             |                           |                       |                        |
| Nitrate (as NO <sub>3</sub> -N) | mg/L                      | Grab                  | Quarterly <sup>2</sup> |
| Total Nitrogen (as N)           | mg/L                      | Calculated            | Quarterly <sup>2</sup> |
| General Minerals                | mg/L                      | Grab                  | Annually <sup>3</sup>  |

1. To the nearest hundredth of a foot.
2. January, April, July and October.
3. In October.

### WATER SUPPLY MONITORING

The supply water shall be monitored as follows:

| <u>Constituent</u> | <u>Units</u> | <u>Measurement</u> | <u>Frequency</u>       |
|--------------------|--------------|--------------------|------------------------|
| EC <sup>1</sup>    | µmhos/cm     | Grab               | Quarterly <sup>2</sup> |
| Arsenic            | mg/L         | Grab               | Quarterly <sup>2</sup> |
| General Minerals   | mg/L         | Grab               | Annually <sup>3</sup>  |

- 1 EC shall be reported as a flow-weighted average from all supply wells.
- 2 January, April, July and October.
- 3 In October.

### SLUDGE MONITORING

To ensure that discharges to the WWTF are not interfering with treatment process, the Discharger shall collect a composite sample of sludge annually, as set forth by Title 40 Code of federal Regulations (CFR) Part 503.16. Any Notice of Necessary Information (NANI) form prepared for submittal to the United States Environmental Protection Agency shall be forwarded to the Regional Board.

Composite samples shall be collected in accordance with the Environmental Protection Agency's *POTW Sludge Sampling And Analysis Guidance Document* (EPA/ 833B89100, August 1989) and test for metals:

|            |         |          |
|------------|---------|----------|
| Arsenic    | Copper  | Nickel   |
| Cadmium    | Lead    | Selenium |
| Molybdenum | Mercury | Zinc     |

The control of pathogens and the reduction of vector attraction shall be achieved in accordance with the Environmental Protection Agency's *Control of Pathogens and Vectors In sewage Sludge* (EPA/625-R-92/013, July 2003).

Sampling records shall be retained for a minimum of five years. A log shall be kept of sludge quantities generated and of handling, application, and disposal activities. The frequency of entries is discretionary; however, a log should be complete enough to serve as a basis for part of the annual report.

### USE AREA MONITORING

Monitoring of the land application area shall be conducted daily (when recycled water is being applied )and the results shall be included in an annual monitoring report. Evidence of erosion, field saturation, runoff, or the presence of nuisance conditions shall be noted in the annual monitoring report. Effluent monitoring results shall be used in calculations to ascertain loading rates at the application area. Monitoring of the land application areas shall include the following:

| <u>Constituent</u>                         | <u>Units</u>   | <u>Type of Sample</u>   | <u>Sampling Frequency</u> |
|--|----------------|-------------------------|---------------------------|
| Acreage Applied <sup>1</sup>               | Acres          | Calculated              | Daily <sup>2</sup>        |
| Application Rate <sup>3</sup>              | Gal/acre/day   | Calculated              | Daily <sup>2</sup>        |
| BOD <sub>5</sub> Loading Rate <sup>3</sup> | lbs/acre/day   | Calculated <sup>4</sup> | Monthly                   |
| Total Nitrogen Loading Rate <sup>3</sup>   | lbs/acre/month | Calculated <sup>4</sup> | Monthly                   |

<sup>1</sup> Land application areas shall be identified.

<sup>2</sup> While recycled water is being applied and for at least 48-hours following application.

<sup>3</sup> For each land application area.

<sup>4</sup> BOD<sub>5</sub> and Total Nitrogen loading rates shall be calculated using the daily applied volume of wastewater, daily application area, and a running average of the three most recent results of BOD<sub>5</sub> and Total Nitrogen, which shall also be reported along with supporting calculations.

### REPORTING

The Discharger shall report monitoring data and information as required in this MRP and as required in the Standard Provisions and Reporting Requirements. Daily, weekly, semi-monthly, and monthly data shall be reported in monthly monitoring reports.

Monitoring data and/or discussions submitted concerning WWTF performance must also be signed and certified by the chief plant operator. When reports contain laboratory analyses

performed by the Discharger and the chief plant operator is not in the direct line of supervision of the laboratory, reports must also be signed and certified by the chief of the laboratory.

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner that illustrates clearly, whether the Discharger complies with waste discharge requirements. If the Discharger monitors any pollutant at the locations designated herein more frequently than is required by this Order, the results of such monitoring shall be included in the discharge monitoring report.

#### **A. Monthly Reports**

Daily, weekly, and monthly monitoring data shall be reported in monthly monitoring reports. Monthly monitoring reports shall be submitted to the Regional Board **by the 1<sup>st</sup> day of the second month following sampling** (i.e., the January Report is due by 1 March). At a minimum, the reports shall include at the minimum:

1. Results of influent, effluent, pond, and use area (land application) monitoring;
2. Calculated Monthly Average Daily Flow;
3. A comparison of monitoring data to the discharge specifications and an explanation of any violation of those requirements. Data shall be presented in tabular format;
4. Copies of laboratory analytical reports; and
5. A calibration log verifying calibration of all hand-held monitoring instruments and devices used to comply with the prescribed monitoring program.

#### **B. Quarterly Reports**

**Wastewater:** Daily, weekly, monthly, and quarterly monitoring data shall be reported in quarterly monitoring reports. Quarterly monitoring reports shall be submitted to the Regional Water Board **by the 1<sup>st</sup> day of the second month after the calendar quarter** (i.e., the 1<sup>st</sup> Quarter Report is due by 1 May, 2<sup>nd</sup> Quarter Report is due by 1 August, and the 3<sup>rd</sup> Quarter Report is due 1 November). The monthly reports required on 1 May, 1 August, and 1 November shall be combined with the quarterly report for ease of submittal. Quarterly monitoring reports shall include all monitoring data required in the monthly monitoring schedule, and the data from quarterly effluent and water supply monitoring events.

**Groundwater:** Quarterly groundwater monitoring data shall be reported in quarterly monitoring reports and submitted to the Regional Water Board as detailed in the previous section. Quarterly monitoring reports shall include all monitoring data required from quarterly groundwater monitoring events. The quarterly groundwater monitoring reports shall contain:

1. Quarterly groundwater contour maps;
2. Graphs of the laboratory analytical data for all samples taken from each well within at least the previous five calendar years. Each such graph shall plot over time for a given monitoring well the concentration of one or more waste constituents; and
3. All monitoring analytical data obtained during the quarter presented in tabular form and included with previous data obtained for the given well.

### C. Annual Reports

**Wastewater:** An Annual Report shall be prepared as a fourth quarter monitoring report. The Annual Report will include all monitoring data required in the monthly/quarterly schedule plus the results of any annually sampled constituents (general minerals, selected metals, etc). The Annual Report shall be submitted to the Regional Board **by 1 February of the year following the year the samples were collected.** In addition to the data normally presented, the Annual Report shall include the following:

1. The names, certificate grades, and general responsibilities of all persons in charge of wastewater treatment and disposal;
2. The names and telephone numbers of persons to contact regarding the WWTF for emergency and routine situations;
3. A statement certifying when the flow meter and other monitoring instruments and devices were last calibrated, including identification of who performed the calibrations (standard Provision C.4);
4. A statement whether the current operation and maintenance manual, and contingency plan, reflect the WWTF as currently constructed and operated, and the dates when these documents were last reviewed for adequacy;
5. The results of an annual evaluation conducted pursuant to Standard Provisions E.4 and a figure depicting monthly average discharge flow for the previous five calendar years;
6. A summary of sludge monitoring, including:
  - a. Annual sludge production in dry tons and percent solids;
  - b. A schematic diagram showing sludge handling facilities and solids flow diagram; and
  - c. A description of disposal methods, including the following information related to the disposal methods used at the WWTF. If more than one method is used, include the percentage of sludge production disposed of by each method.

- i. For **landfill disposal**, include (a) the Order numbers that regulate the landfill(s) used, (b) the present classifications of the landfill(s) used, and (c) the names and locations of the facilities receiving the sludge.
  - ii. For **land application**, include: (a) the locations of the site(s), and (b) the Order number of any WDRs that regulates the site(s).
  - iii. For **incineration**, include: (a) the names and location of the site(s) where sludge incineration occurs, (b) the Order numbers of WDRs that regulate the site(s), (c) the disposal method of ash, and (d) the names and locations of facilities receiving ash (if applicable); and
  - iv. For **composting**, include: (a) the location of the site(s), and (b) the order numbers of any WDRs that regulate the site(s).
7. A summary of all recycled water operations for the previous year (i.e., from October through September). The summary shall discuss total monthly water application; total wastewater recycled annually; total nutrient loading annually from applied wastewater, biosolids, and chemical fertilizers; and total estimated amount of nutrients removed through crop harvest. The summary shall also review the use area management plan (described in Provision F.7) and make recommendations regarding continuation or modification of the plan. In short, the summary shall present a mass balance relative to constituents of concern and hydraulic loading along with supporting data and calculations.
8. A summary and discussion of the compliance record for the reporting period. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with this Order.
9. A statement regarding whether the current operation and maintenance manual, and contingency plan, reflect the groundwater cleanup system as currently constructed and operated, and the dates when these documents were last reviewed for adequacy.

**Groundwater:** An Annual Groundwater Monitoring Report shall be prepared as a fourth quarter groundwater monitoring report. The Annual Groundwater Monitoring Report will include all groundwater monitoring data required in the monthly/quarterly groundwater monitoring schedule plus the results of any annually sampled groundwater constituents (general minerals, selected metals, etc). The Annual Groundwater Monitoring Report shall be submitted to the Regional Board **by 1 February of the year following the year the samples were collected.** In addition to the data normally presented in the quarterly groundwater monitoring reports, the Annual Report shall include the following:

1. Quarterly groundwater contour maps from the previous four quarters;
2. Graphs of the analytical data for all samples collected from each monitoring well for at least five calendar years. Each such graph shall plot over time for a given monitoring well the concentration of one or more waste constituents specified herein and selected in concurrence with Regional Water Board staff. Graphs



shall be plotted at a scale appropriate to show trends or variations in water quality, and shall plot each datum, rather than plotting mean values.

3. All monitoring data obtained during the previous monitoring events for at least the last five calendar years.
4. The most recent water supply report for the City of McFarland (Consumer Confidence Report) including laboratory data;

All technical reports required herein must be overseen and certified by a California registered civil engineer, certified engineering geologist, or certified hydrogeologist in accordance with California Business and Professions Code, sections 6735, 7835, and 7835.1.

All reports submitted in response to this Order shall comply with the signatory requirements in Standard Provision B.3.

A transmittal letter shall accompany each self-monitoring report. The letter shall discuss any violations during the reporting period and all actions taken or planned for correcting violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory.

The Discharger shall implement the above monitoring program on the first day of the month following adoption of this Order.

Ordered by: \_\_\_\_\_

PAMELA C. CREEDON, Executive Officer

25 April 2008

\_\_\_\_\_  
(Date)

## INFORMATION SHEET

ORDER NO. R5-2008-0072  
CITY OF MCFARLAND  
WASTEWATER TREATMENT FACILITY  
KERN COUNTY

### **Background**

The City of McFarland (Discharger or City) operates a wastewater collection, treatment, and disposal facility (WWTF) for the residents and small industry of the City of McFarland. The WWTF has an average daily flow of about 1.0 million gallons per day (mgd).

The Discharger submitted a report of waste discharge (RWD) dated in June 2004, in support of a discharge to land of 1.55 mgd of wastewater from the existing Wastewater Treatment Facility (hereafter "WWTF"). Additional information was included in a 17 May 2005 Final Geotechnical Investigation report prepared by BSK regarding modification and expansion (hereafter Expansion Project) of the WWTF. The existing WWTF provides secondary treatment of the wastewater stream. Treatment includes screening to remove large solids, aeration, and sedimentation. Effluent is discharged to approximately seven acres of lined (soil cement) aeration lagoons. Effluent then is discharged to approximately 30 acres of unlined evaporation/percolation ponds (Disposal Ponds) and/or an approximately 270-acre Use Area.

Waste Discharge Requirements (WDRs) Order No. 89-154, adopted by the Regional Water Board on 11 August 1989, currently limits the discharge flow to 1.1 million gallons per day (mgd). The WDRs also establish monthly average and daily maximum limits for settleable solids (SS) of 0.2 milliliter per liter (mL/L) and 1.0 mL/L and biochemical oxygen demand (BOD) of 40 milligram per liter (mg/L) and 80 mg/L. WDRs Order No. 89-154 does not reflect the configuration of the Expansion Project.

The Expansion Project consists of constructing a new 30-acre Disposal Pond and re-cropping of city owned land to meet agronomic requirements for discharge of effluent to land. The Discharger has not submitted a technical report describing the construction of the new storage pond. The 17 May 2005 Final Geotechnical Investigation report proposed expanding the eastern wall of the western disposal pond. The expansion project as designed would have added 25 acres of storage and increased the total storage from about 236 acre-feet to 361 acre-feet. Regional Water Board staff concurred with the proposed expansion project in a 22 May 2006 letter to the Discharger. However, during a 16 May 2007 site inspection, it was observed that the eastern wall of the pond had not been removed and a separate 30-acre pond was being constructed in the same area. While the new design appears to be adequate, a technical report describing the storage ponds is required from the Discharger.

The Regional Water Board's 22 May 2007 letter requested the Discharger address the amount of land that would be required to recycle wastewater due to the proposed expansion project removing 20 acres of the available alfalfa. The Discharger earlier provided a 23 June 2006 *McFarland Storage Pond Expansion – Progress Update* indicating that 100 acres of land planted with alfalfa was required to meet the discharge requirements and proposed converting 75-acres planted with Sudan grass to alfalfa as well as converting 80 acres of wine grapes. The proposed 155 acres exceeded the indicated required proposed 100-acre area. However, information provided by the operator in July 2007 indicated the Discharger was now looking

into acquiring additional land (not the vineyard) to meet their recycling requirements and is still discharging wastewater to the nearby wine grape orchard in violation of 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. The proposed WDRs require an updated Use Area Management Plan and Final Construction report be submitted.

### **Solids and Biosolids Disposal**

Screenings from the headworks are placed in a dumpster prior to disposal at an offsite landfill. The Discharger removed accumulated solids from the aeration lagoons in 2005 and 2006 because they had indicated the accumulated solids were contributing to the WWTF's recurring exceedance of the effluent BOD and nitrogen limits. This Order will require the Discharger to update the O&M Plan to include a sludge management plan.

The WWTF has no sludge storage facilities. All sludge removed from the ponds will be hauled offsite to an appropriate disposal facility by a licensed disposal carrier.

### **Groundwater Conditions**

Regional groundwater flows west southwesterly and the depth of water occurs at about 90 to 100 feet below ground surface (bgs), according to information recorded in the WWTF monitoring wells. 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 into question the extent of the clay layer in this area.

In 2001, the City began monitoring groundwater in five wells (MW-1 through MW-5) at the WWTF. Wells MW-1 (northern property boundary) and MW-5 (southeastern property corner) went dry in 2004. The Discharger installed replacement wells MW-1A and MW-5A in January 2007 and added well MW-6 along the southern property boundary. The two-upgradient wells MW-4 and MW-5/5A typically have the highest EC (about 950 to 1,500 umhos/cm) and nitrate as nitrogen concentrations (about 17 to 44 mg/L) indicating these wells likely do not represent true background conditions. Well MW-1 (cross to downgradient) has had high EC (up to 1,700 umhos/cm) and nitrate (up to 48.5 mg/L) concentrations in the past, but concentrations have decreased considerably since 2001. The lowest EC and nitrogen concentrations are observed in downgradient wells MW-2, MW-3, and MW-6.

**Compliance History**

The Discharger consistently exceeded the effluent limitation for BOD specified in WDRs Order No. 89-154 in 2005 and 2006, but results indicated improvement in 2007. Discharger self-monitoring reports (SMRs) in 2006 show the Discharger exceeded the monthly average BOD and TSS effluent limit of 40 mg/L in 7 and 6 months respectively. During 2007 monitoring events, the discharger exceeded the limit for BOD only three times and TSS four times. Table 1 summarizes the effluent BOD and TSS concentrations from 2007.

**TABLE 1. Effluent Quality**

| <u>Month</u> | <u>BOD (mg/L)</u> | <u>TSS (mg/L)</u> | <u>Month</u> | <u>BOD (mg/L)</u> | <u>TSS (mg/L)</u> | <u>Month</u> | <u>BOD (mg/L)</u> | <u>TSS (mg/L)</u> |
|--------------|-------------------|-------------------|--------------|-------------------|-------------------|--------------|-------------------|-------------------|
| Jan-07       | <b>54</b>         | 28                | May-07       | 22                | 37                | Sep-07       | 24                | 31                |
| Feb-07       | <b>70</b>         | <b>60</b>         | June-07      | 20                | 28                | Oct-07       | 32                | 37                |
| Mar-07       | 36                | 39                | July-07      | 31                | 23                | Nov-07       | 40                | <b>59</b>         |
| Apr-07       | 35                | <b>51</b>         | Aug-07       | 40                | 27                | Dec-07       | <b>70</b>         | <b>73</b>         |

Bolded values note violations of the effluent limit

Since 2000, the Discharger was issued five Notice of Violation (NOVs). A November 1999 inspection led to the issuance of a February 2000 NOV issued for exceeding the EC limit of source water plus 500 umhos/cm, failing to monitor for the required constituents at the required frequency, failing to meter flow, failing to maintain a freeboard of 3 feet in the storage ponds, and for failing to provide backup power. A follow up inspection in August 2000 led to the issuance of a 12 March 2001 NOV. The NOV included all of the previous concerns (with the exception of the backup power issue) and included in addition violations concerning overflow of untreated waste, failing to properly dispose of solids, and for submitting incomplete reports. Subsequent NOVs were issued in August 2003 and June 2005 for the same issues as listed above. The Discharger has since made considerable progress in addressing the various issues of violation. The May 2007 pre-WDR inspection by Regional Water Board staff did not reveal operational violations at the WWTF.

**Basin Plan, Beneficial Uses, and Regulatory Considerations**

The Basin Plan indicates the greatest long-term problem facing the entire Tulare Lake Basin is increasing salinity in groundwater, a process accelerated by man’s activities and particularly affected by intensive irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until there is a long-term solution to the salt imbalance. The Regional Water Board encourages proactive management of waste streams by dischargers to control addition of salt through use, and has established an incremental EC limitation of 500 µmhos/cm as a measure of the maximum permissible addition of salt constituents through use.

Discharges to areas that may recharge good quality groundwaters shall not exceed an EC of 1,000 µmhos/cm, a chloride content of 175 mg/L, or boron content of 1.0 mg/L.

### **Antidegradation**

The antidegradation directives of State Water Board Resolution No. 68-16 (Resolution 68-16), "Statement of Policy With Respect to Maintaining High Quality Waters in California," or "Antidegradation Policy" require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Waters can be of high quality for some constituents or beneficial uses and not others. Policy and procedures for complying with this directive are set forth in the Basin Plan.

Constituents typically elevated in domestic wastewater threaten the beneficial uses of groundwater if not adequately controlled by a treatment process or attenuated in the soil profile prior to discharge to first encountered groundwater. Discharges that rely on percolation for disposal may result in the percolation of excess organic carbon, and the mobilization of other constituents.

The discharge from the Expansion Project will likely not degrade the beneficial uses of groundwater because:

- a. 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. The discharge meets these limits and therefore consistent with Resolution 68-16.
- b. For nitrogen, effluent concentrations exceed typical nitrogen limits of 10 mg/L for total nitrogen. However, the McFarland area is known for high nitrate concentrations in groundwater. The effluent nitrogen concentrations are lower than that in background (upgradient) monitoring wells. While the Discharger is required to evaluate its system to ensure it is removing nitrogen efficiently, the current concentrations will not degrade the existing groundwater as it is lower than background concentrations.

### **Treatment Technology and Control**

The Expansion Project will provide treatment and control of the discharge that incorporates:

- a. Secondary treatment of the wastewater;
- b. Appropriate biosolids storage and disposal practices;
- c. An Operation and Maintenance (O&M) manual; and
- d. Certified operators to ensure proper operation and maintenance.

### **Title 27**

Title 27, CCR, section 20005 et seq. (Title 27) contains regulations to address certain discharges to land. Title 27 establishes a waste classification system, specifies siting and construction standards for full containment of classified waste, requires extensive monitoring of groundwater and the unsaturated zone for any indication of failure of containment, and

specifies closure and post-closure maintenance requirements. Generally, no degradation of groundwater quality by any waste constituent in a classified waste is acceptable under Title 27 regulations.

Discharges of domestic sewage and treated effluent can be treated and controlled to a degree that will not result in unreasonable degradation of groundwater. For this reason, the Discharger has been conditionally exempted from Title 27. Treatment and storage facilities for sludge that are part of the WWTF are considered exempt from Title 27 under section 20090(a), provided that the facilities not result in a violation of any water quality objective. However, residual sludge (for the purposes of the proposed Order, sludge that will not be subjected to further treatment by the WWTF) is not exempt from Title 27. Solid waste (e.g., grit and screenings) that results from treatment of domestic sewage and industrial waste also is not exempt from Title 27. This residual sludge and solid waste are subject to the provisions of Title 27.

Accordingly, the municipal discharge of effluent and the operation of treatment or storage facilities associated with a municipal wastewater treatment plant can be allowed without requiring compliance with Title 27, but only if resulting degradation of groundwater is in accordance with the Basin Plan.

### **CEQA**

The Kern County Community Development Program (CDP) circulated an Environmental Assessment/Initial Study for reclamation of sewage at the current WWTF site in September 1997. The Kern County CDP circulated another Environmental Assessment/Initial Study in September 1999 in support of an expansion of the WWTF. 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. To mitigate the Expansion Project's groundwater quality impacts to less than significant levels, the terms and conditions of this proposed Order and accompanying enforcement order are appropriate and necessary.

### **Proposed Order Terms and Conditions**

#### **Discharge Prohibitions, Effluent Limitations, Discharge Specifications, and Provisions**

The proposed Order prohibits discharge to surface waters and water drainage courses.

The proposed Order would carry over the current Order's monthly average daily discharge flow limitation until the City completes the Expansion Project and submits technical reports documenting the construction of the new pond, a Use Area Management Plan, an update of the Dischargers O&M Plan to include a schedule for sludge removal from the aeration lagoons, and an assessment of the potential effluent stored in the unlined storage ponds and aeration lagoons to impact groundwater. The proposed Order would carry over the previous Order's

effluent limits for BOD of 40 mg/L (monthly average), and 80 mg/L (daily maximum). These limitations are based on Basin Plan minimum performance standards for municipal facilities.

The discharge requirements regarding dissolved oxygen and freeboard are consistent with Regional Water Board policy for the prevention of nuisance conditions, and are applied to all such facilities.

The proposed WDRs would prescribe groundwater limitations that implement water quality objectives for groundwater from the Basin Plan. The limitations require that the discharge not cause or contribute to exceedance of these objectives or natural background water quality, whichever is greatest.

The WDRs would also require the Discharger assess its discharge on a constituent-by-constituent basis for consistency with Regional Water Board plans and policies, including Resolution No. 68-16. This assessment would identify those constituents that threaten the beneficial uses of groundwater. This may result in the WDRs being reopened and additional or modified effluent limitations imposed.

### **Monitoring Requirements**

Section 13267 of the CWC authorizes the Regional Water Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the State. In recent years there has been an increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Section 13268 of the CWC authorizes assessment of civil administrative liability where appropriate.

The proposed Order includes influent and effluent monitoring requirements, pond monitoring, groundwater monitoring, water supply monitoring, and septage monitoring. The monitoring is necessary to evaluate groundwater quality and the extent of the degradation from the discharge.

The Discharger must monitor groundwater for constituents present in the discharge that are capable of reaching groundwater and violating groundwater limitations if its treatment and control, and any dependency of the process on sustained environmental attenuation, proves inadequate. For constituents listed in [Section G](#), Groundwater Limitations, of the WDRs, the Discharger must, as a part of each monitoring event, compare concentrations of constituents found in each monitoring well (or similar type of groundwater monitoring device) to the background concentrations or to prescribed numerical limitations to determine compliance.

The proposed Order does not require the Discharger to monitor total coliform organisms (TCO) in the groundwater, but proposes a Groundwater Limitation of 2.2 MPN/100 mL. The Groundwater Limitation is necessary to protect municipal beneficial uses. Given the existing site-specific conditions, it is unlikely that the presence of pathogens resulting from groundwater

monitoring is a result of the percolation of wastewater. The presence of pathogens in groundwater would likely occur from compromises in the monitoring well's construction. The proposed Order may be re-opened or additional groundwater monitoring required if site conditions warrant.

### **Reopener**

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

### **Proposed Enforcement Order**

The Discharger recycles non-disinfected treated wastewater to nearby grape vineyards in violation of Discharge Specification B.12. An accompanying draft Cease and Desist Order would require the Discharger to use recycled water only on fodder, fiver, or seed crops not eaten by humans or used for grazing of non-milking cattle.