CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2010-0120
FOR
CITY OF REEDLEY
WASTEWATER TREATMENT FACILITY
FRESNO COUNTY

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

1. The City of Reedley (City or Discharger) owns and operates a wastewater treatment facility (WWTF) located in sections 33 and 34, Township 15 South, Range 23 East, MDB&M, in Fresno County.

2. Waste Discharge Requirements (WDRs) Order No. 5-01-257, adopted by the Central Valley Water Board on 7 December 2001, for the City prescribes requirements for a monthly average discharge flow of 3.5 million gallons per day (mgd) of wastewater to approximately 39 acres of percolation ponds. The Order, as a National Pollutant Discharge Elimination System (NPDES) Permit No. CA0081230, also authorizes a monthly average discharge flow of 1.75 mgd of wastewater to the Kings River.

3. Special Order No. R5-2003-0156, adopted on 17 October 2003, amended Order No. 5-01-257 by delaying compliance dates for two provisions of Order No. 5-01-257.

4. Special Order No. R5-2006-0105, adopted on 22 September 2006 rescinded the NPDES Permit No. CA0081230 portion of Order No. 5-01-257.

5. On September 2007, Carollo Engineers, on behalf of the City, submitted a Report of Waste Discharge (RWD) for a proposed WWTF expansion from 3.0 mgd to 5.0 mgd and discharge of undisinfected secondary wastewater to land only.

6. WDRs Order No. 5-01-257 needs to be updated to ensure that the discharge is consistent with Central Valley Water Board plans and policies and prescribe requirements that reflect changes the City has made to its WWTF.

Wastewater Treatment Facility

7. Construction of the expanded WWTF was completed in November 2009. The expanded WWTF consists of headworks, two oxidation ditches, one anoxic basin, four secondary clarifiers, three return sludge holding tanks, and three centrifuges. Undisinfected secondary effluent is discharged to six percolation ponds adjacent to the Kings River (approximately 36 acres of percolation ponds). A site map of the WWTF is shown on Attachment A and a process flow schematic is shown on Attachment B, both of which are attached hereto and made part of this Order by reference.

8. A water balance included in the September 2007 RWD calculated, based on a 100-year wet year, the storage/disposal capacity of the percolation ponds assuming all the percolation ponds would be in use at the same time, not accounting for instances when a percolation pond might need to be taken out of service for maintenance and/or repairs. The water balance indicated the 36 acres of percolation available at the time would provide enough storage/disposal capacity for a discharge flow of 4.69 mgd. The City reconfigured its ponds and submitted a revised water balance in April 2009 shows that the capacity of its now existing 37.46 acres of ponds is 5.0 mgd. The revised water balance does not account for instances when percolation ponds are out of service for maintenance or, as discussed in more detail in Finding 36 below, when Ponds 4 and 5 are out of service due to high river flows. Therefore, this Order limits the discharge flow to 4.69 mgd and includes a provision requiring the Discharger to demonstrate the WWTF has sufficient treatment, storage, and disposal capacity before the discharge flow limit can be increased to 5.0 mgd.

9. Based on data contained in the City's Self-Monitoring Reports (SMRs) from January 2008 through March 2009, the monthly average discharge flows range from 1.99 to 3.51 mgd. Also, the monthly average influent and effluent characteristics for constituents/parameters of concern in the discharge from January 2008 through October 2009 is as follows:

Constituents/Parameters	Units	Average Influent	Average Effluent
Biochemical Oxygen Demand (BOD)	mg/L	207	8
Total Suspended Solids (TSS)	mg/L	230	9
Electrical Conductivity (EC)	µmhos/cm	826	602
pH	pH Units	7.5	7
Total Kjeldahl Nitrogen (TKN)	mg/L	---	5
Total Nitrogen (TN)	mg/L	---	10
Total Dissolved Solids (TDS)	mg/L	---	358
Sodium	mg/L	---	67
Chloride	mg/L	---	53

10. Monthly average influent and effluent data from November 2009 to May 2010 after the expansion of the WWTF is presented below.

Constituents/Parameters	Units	Average Influent	Average Effluent
BOD	mg/L	262	7
TSS	mg/L	257	6
EC	µmhos/cm	778	566
pH	pH Units	7.5	7.2
TKN	mg/L	---	2
TN	mg/L	---	10

Constituents/Parameters	Units	Average Influent	Average Effluent
TDS	mg/L	---	507
Sodium	mg/L	---	77
Chloride	mg/L	---	62

11. Treated wastewater consistently meets the monthly average BOD and TSS effluent limits of 40 mg/L established in WDRs Order No. 5-01-257. The average effluent total nitrogen concentration is approximately the same numerical value as the Maximum Contaminant Level (MCL) of 10 mg/L for nitrate as nitrogen (hereafter "nitrate (as N)") in Title 22, California Code of Regulations (CCR), section 64431. Given nitrogen losses in the percolation ponds and as the effluent percolates to groundwater, the nitrate (as N) concentration in groundwater will not exceed the MCL.

Sludge Management and Disposal

12. Sludge as used herein means the solid, semisolid, and liquid residues generated during the treatment of industrial and domestic sewage in a municipal WWTF. Sludge includes solids removed during primary, secondary, or advanced wastewater treatment processes, but no grit or screening material generated during preliminary treatment.

13. Historically, sludge handling practices included discharging sludge to unlined sludge drying beds; a practice that was conducted for over twenty years and has adversely impacted shallow groundwater. In August 2001, the Discharger submitted a technical report, *Groundwater Assessment Wastewater Treatment Facility* (GWA). The GWA report evaluated existing groundwater monitoring data from 1999 and 2000 quarterly monitoring reports. The average nitrate (as N) concentrations in MW-1, MW-2, MW-3, MW-15, MW-18, and MW-21 of 17, 28, 28, 19, 12, and 19 mg/L, respectively, well above the MCL of 10 mg/L. All these wells are near the north end of the WWTF, near the discontinued sludge drying operations. The GWA report identified MW-1, MW-2, MW-3, and MW-21 as being impacted from the historical use of unlined sludge drying beds.

14. In 1996, the City changed its sludge handling practices by installing two centrifuge units and hauling its sludge off-site.

15. In late 1997, the City excavated and then spread high nitrogen soils over the area where the sludge storage area and sludge drying beds were. In March 1998, the City planted the area with Eucalyptus trees in an effort to phytoremediate site soils and groundwater.

16. Currently, one older centrifuge unit is in use, along with two new centrifuge units that were installed as part of the WWTF expansion. Sludge generated at the WWTF will continue to be hauled off-site and discharged to McCarthy Family Farms Inc., near Corcoran, California, for composting under appropriate WDRs.

17. The WWTF does have approximately 1.5 acres of asphalt-lined sludge drying beds. The asphalt-lined sludge drying beds are only used in case of emergency.

Pretreatment Program

18. The City implements an industrial pretreatment program. Through its program, the City regulates one discharger that is classified as significant industrial user (SIU) as defined by Title 40 of the Code of Federal Regulations (CFR) section 403.3(v). The SIU is a categorical industrial user (CIU). The City also monitors and permits approximately 53 additional nondomestic dischargers.

19. Guardian Industries Corp., is a mirror manufacturing facility that is a CIU. Wastewater produced at this facility includes mirror process wastewater, hot wash from the laminating process, and glass-edging process wastewater. Pretreatment consists of cerium settling through small tubs and silver recovery unit utilizing ultrafiltration.

Sanitary Sewer Overflows

20. 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.

21. On 2 May 2006, the State Water Resources Control Board (hereafter State Water Board) adopted a General Sanitary Sewer Systems Order (State Water Board Water Quality Order No. 2006-0003-DWQ, *Statewide General Waste Discharge Requirements for Sanitary Sewer Systems*) (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 this order. The Discharger’s collection system is greater than one mile in length; therefore, the Discharger applied for, and is covered by, the General Order.

Water Recycling

22. On 3 February 2009, the State Water Board adopted Resolution No. 2009-0011, *Adoption of a Policy for Water Quality Control for Recycled Water* (Recycled Water Policy). The Recycled Water Policy promotes the use of recycled water to achieve sustainable local water supplies and reduce greenhouse gases.

23. On 23 April 2009, the Central Valley Water Board adopted Resolution No. R5-2009-0028, *In Support of Regionalization, Reclamation, Recycling and Conservation for Wastewater Treatment Plant* (Regionalization Resolution). The Regionalization

Resolution encourages water recycling, water conservation, and regionalization of wastewater treatment facilities. It requires discharges to document:

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

b. Water conservation measures; and

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

24. In 1997, a Feasibility Study was conducted by Provost and Pritchard Engineering Group, Inc. which investigated and evaluated five recycling alternatives: direct irrigation on neighboring privately-owned farmland, discharge to the Consolidated Irrigation District canal, landscape and golf course irrigation, irrigation of farmland owned and operated by the University of California Kearney Agricultural Center, and irrigation of City-owned farmland at the WWTF. The City determined that effluent recycling for irrigation to be infeasible due to the cost involved in providing additional treatment, and the University of California did not show an interest in obtaining treated wastewater for irrigation.

25. The recycling alternatives in the 1997 Feasibility Study were reevaluated by the City in the 2006 Master Plan. Again it was concluded that effluent recycling was infeasible because the WWTF was surrounded by orchards and vineyards, requiring higher quality water than what the WWTF can produce and the 20 acres of City land would instead be used to construct percolation ponds in the future to increase discharge capacity beyond 4.7 mgd.

26. The City needs to evaluate future land disposal options and conduct studies to promote new or expanded wastewater recycling opportunities in accordance with the Recycled Water Policy No. 2009-0011 and Regionalization Resolution No. R5-2009-0028. A provision requiring the City to document its efforts to promote new or expanded wastewater recycling and reclamation opportunities is included in this Order.

Site-Specific Conditions

27. The WWTF and percolation ponds are in an arid climate characterized by dry summers and mild winters. The rainy season generally extends from November through March. Occasional rains occur during spring and fall months, but summer months are dry. Average annual evaporation in the discharge area is about 65 inches, according to information published by the California Department of Water Resources (DWR). The average annual precipitation in the discharge area is about 11 inches, according to Western Regional Climate Center.

28. Soils in the vicinity of the WWTF are predominately Hanford Fine Sandy Loam, followed by Tujunga Loamy Sand, according to the Web Soil Survey published by the United

States Department of Agriculture Natural Resources Conservation Service. Hanford Fine Sandy Loam and Tujunga Loamy Sand have been assigned a land capacity classification of 1 and 4S, respectively. These soils have slight to severe limitations that restrict the choice of plants or that require very careful conservation management, or both. These soils have limitations within the root zone, such as shallowness of the root zone, a high content of stones, a low available water capacity, low fertility, or excessive salinity.

29. Land uses in the vicinity of the WWTF are primarily agricultural. There are residential developments to the north and northeast of the WWTF. The primary crops to the west and northwest are peaches and nectarines followed by plums, pears and some vineyards, according to the Fresno County 2000 Land Use Map published by the DWR.

30. According to the Federal Emergency Management Agency maps (Map Number 06019C2680H) the eastern portion of the WWTF is located within Zone X, an area outside of the 1% annual chance of inundation with water depth of one-foot or less.

31. 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 retain onsite and does not discharge to a water of the United States.

Groundwater Considerations

32. Shallow groundwater beneath the WWTF varies from 15 to over 30 feet below ground surface (bgs) based on groundwater monitoring data from 1999 to 2001. This variation is due to surface relief rather than a steep groundwater gradient. Groundwater generally flows southeast, towards the Kings River. Data from the early 1990s, the end of a six-year drought, indicated a northwesterly gradient away from the Kings River.

33. According to information in *Lines of Equal Elevation in Wells in Unconfined Aquifer*, published by the DWR in Spring 2004 regional groundwater flows southwesterly and is found at approximately 70 ft bgs.

34. A Water-Level Elevations and Direction of Groundwater Flow Map included in the September 2007 RWD indicates that groundwater flows in a northwest direction based on groundwater monitoring data from the 2007 third quarter groundwater monitoring report. Groundwater flow maps from the 2005 fourth quarter and the 1999 first quarter groundwater monitoring reports show water flowing to the southeast towards the Kings River.

35. Mounding and seasonal fluctuations in the groundwater table depicted by groundwater flow maps in the September 2007 RWD make it clear that groundwater flow direction varies.

36. Groundwater elevation data and staff observations indicate that high Kings River flows during the irrigation season (generally April through September) can result in groundwater mounding that eliminates the separation between the inverts of Ponds 4 and 5 and groundwater. This may reduce the effectiveness of pathogen removal as effluent migrates through the soil to groundwater. It is appropriate to limit the use of Ponds 4 and 5 to the non-irrigation season and to times when the separation of the Ponds' inverts and underlying groundwater is greater than five feet.

37. The quality of groundwater in the vicinity of the percolation ponds is depicted by groundwater monitoring wells MW-4, MW-5, MW-6, and MW-16. Based on groundwater monitoring data from February 1997 through 2010, the average EC (in µmhos/cm), nitrate (as NO_3, in mg/L) and chloride (in mg/L) concentrations for these monitoring wells is as follows MW-4 (658, 26, 62), MW-5 (691, 25, 55), MW-6 (649, 24, 61), and MW-16 (645, 28, 57), respectively.

38. EC in MW-4 fluctuated with a slight downward trend. EC in MW-5 is fairly stable through out the years until 2008 when EC decreased. EC in MW-6 and MW-16 is stable with no increase or decrease. EC in monitoring wells MW-4, MW-5, MW-6, and MW-16 are all below 1,000 µmhos/cm.

39. Nitrate (as NO_3) concentrations for MW-4, MW-5, and MW-6 fluctuate with no apparent pattern. Nitrate (as NO_3) concentrations are below the MCL of 45 mg/L. Nitrate (as NO_3) concentrations in MW-16 fluctuated generally above the MCL of 45 mg/L.

40. Chloride in MW-4, MW-5, MW-6, and MW-16 is stable with no increase or decrease in concentration.

41. As mentioned in Finding 13, the GWA report evaluated existing groundwater data and identified monitoring wells MW-4, MW-5, MW-6, and MW-16 as being effluent dominated since their location is adjacent to the percolation ponds. The GWA report further stated that monitoring wells MW-1, MW-2, MW-3, and MW-21 are impacted from the historical use of unlined sludge drying beds and that the northern extent of nitrate pollution had not been defined.

42. Based on groundwater monitoring data from February 1997 through March 2010, the average EC (in µmhos/cm), nitrate (as NO_3, in mg/L) and chloride (in mg/L) concentrations for monitoring wells in the vicinity of the abandoned sludge drying beds (MW-1, MW-2, MW-3, MW-15, MW-21, and MW-22) are as follows, MW-1 (1047, 92, 83), MW-2 (729, 86, 58), MW-3 (966, 134, 51), MW-15 (807, 44, 70), MW-21 (1045, 74, 62), and MW-22 (796, 49, 76), respectively.

43. EC in MW-1 fluctuated, and then decreased slowly from December 2008 through May 2010. EC in MW-2 and MW-15 has gradually been decreasing. EC in MW-3 has

generally not changed over a 13-year period. EC in MW-21 also fluctuated, and then decreased from 2007 through 2009. EC in MW-22 has been increasing since 2001.

44. Nitrate (as NO_3) concentrations for MW-1, MW-2, MW-3, MW-21, and MW-22 continue to exceed the nitrate (as NO_3) MCL of 45 mg/L. MW-15 has had nitrate (as NO_3) concentrations below the MCL since 2004.

45. Chloride concentrations in MW-1 fluctuate and in MW-2 the concentrations have been stable since 1997. Chloride concentrations in MW-3 and MW-15 have slightly decreased in mid-2004 and have been stable since then. Chloride concentrations in MW-21 fluctuate but show an overall decreasing trend and in MW-22 concentrations have increased.

46. Impacted soils that were spread over the abandoned sludge drying beds have been tested for nitrate (as N) concentrations twice yearly since 2002 (Sites 1 through 6) and at three depth intervals (4, 6, and 8 ft bgs). The ranges in nitrate (as N), TKN, and TN for these Sites based on data from 2002 through 2010 are as follows:

Site and Depth	Nitrate (as N in mg/kg)	TKN (in mg/kg)	TN (in mg/kg)
Site 1 at 4ft	1-4	52-1400	52-1400
Site 1 at 6ft	1-3	88-500	88-500
Site 1 at 8ft	1-4	45-400	47-400
Site 2 at 4ft	6-130	58-1400	129-1400
Site 2 at 6ft	1-75	52-550	57-625
Site 2 at 8ft	1-61	22-300	59-307
Site 3 at 4ft	2-56	140-1100	162-1156
Site 3 at 6ft	1-11	10-500	10-511
Site 3 at 8ft	2-38	75-400	75-409
Site 4 at 4ft	3-59	99-1000	111-1006
Site 4 at 6ft	3-103	60-1400	89-1503
Site 4 at 8ft	1-38	98-900	111-938
Site 5 at 4ft	2-84	160-1400	169-1484
Site 5 at 6ft	1-15	56-400	64-401
Site 5 at 8ft	1-12	43-500	46-501
Site 6 at 4ft	5-63	100-1200	110-1207
Site 6 at 6ft	1-93	100-1300	142-1301
Site 6 at 8ft	4-92	140-2200	200-2228

47. The City needs to evaluate the effectiveness of its phytoremediation project and groundwater cleanup strategy. A provision requiring the submittal of a technical report regarding this is included in this Order.

48. The City gets its source water from a network of six water supply wells. Based on the 2008 SMRs, the flow-weighted average for source water EC was reported as 221 µmhos/cm.

Basin Plan, Beneficial Uses, and Water Quality Objectives

49. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition, revised January 2004* (Basin Plan) designates beneficial uses, establishes narrative and numerical 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 requirements implement the Basin Plan.

50. The Basin Plan specifies that municipal and domestic wastewater dischargers will be required to reclaim and reuse wastewater whenever reclamation is feasible.

51. The Basin Plan finds that proliferation of small treatment plants serving individual communities in developed areas is undesirable and most small communities do not have adequate resources to properly manage, treat, and dispose of wastewater in an urban environment. The policies on consolidation are as follows:

    a. Adjoining small communities should combine resources to construct and operate a joint or regional wastewater treatment plant.

    b. Consolidation should be cost-effective, and consider benefits to the ecology, treatment efficiencies, and effective current and future reuse opportunities of the waters.

    c. Unsewered areas and new developments adjacent to or within existing wastewater collection system service areas should be connected to the system. Developments not within a service area but within the projected sphere of influence of a regional system should be developed in a manner that provides for future connection to the system when it becomes available.

    d. Each municipal collection and treatment facility should act as a regional facility and provide sewerage services within its sphere of influence. The municipality must be equitably compensated for these services.

52. The WWTF is in Detailed Analysis Unit (DAU) No. 239 within the Kings Basin hydrologic unit. The Basin Plan identifies the beneficial uses of groundwater in the DAU as municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply.

53. The WWTF is in the Alta hydrologic area (No. 551.60) of the South Valley Floor Hydrologic Unit, as depicted on interagency hydrologic maps prepared by the DWR in August 1986. The WWTF is adjacent to the Kings River.

54. 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 of the California Code of Regulations (CCR). The Basin Plan recognizes that the Central Valley Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.

55. The Basin Plan establishes narrative water quality objectives for chemical constituents, taste 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.

56. 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. The maximum EC of effluent discharged to land shall not exceed the EC of the source water plus 500 µmhos/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 to good quality groundwater shall not exceed an EC of 1,000 µmhos/cm, a chloride content of 175 mg/L, and a boron content of 1.0 mg/L.

57. The Basin Plan requires municipal WWTFs that discharge to land to comply with treatment performance standards for BOD 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, for both BOD and TSS.

Antidegradation Analysis

58. State Water Board Resolution No. 68-16 ("Policy with Respect to Maintaining High Quality Water of the State") (hereafter Resolution No. 68-16) prohibits degradation of groundwater unless it has been shown that:

    a. The degradation is consistent with the maximum benefits to the people of the State;

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

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

    d. The Discharger employs Best Practicable Treatment or Control (BPTC) practices to minimize degradation.

59. Degradation of groundwater by some of the typical waste constituents released with discharge from a municipal wastewater utility after effective source control, treatment, and control is consistent with maximum benefit to the people of the State. The technology, energy, and waste management advantages of municipal utility service far exceed any benefits derived from a community otherwise reliant on numerous concentrated individual wastewater systems, and the impacts on water quality will be substantially less. Economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, and therefore sufficient reason to accommodate planned growth and some groundwater degradation provided terms of the Basin Plan are met.

Terms and Conditions

60. Constituents of concern in the discharge that have the potential to degrade groundwater include primarily salts and nitrogen in the form of nitrate. This Order establishes terms and conditions to ensure that any degradation that results from the discharge does not unreasonably affect present and anticipated uses and does not result in water quality less than that prescribed in State and regional policies and complies with applicable water quality objectives. Specific terms and conditions follow:

a. For salinity, the Basin Plan contains effluent limits of EC of source water plus 500 µmhos/cm and 1,000 µmhos/cm maximum for discharges to areas that may recharge to good quality groundwater. As the Tulare Lake Basin is a closed basin, these limits are designed to control the rate of groundwater degradation with respect to salinity. These effluent limits reflect BPTC for salinity control and are included in this Order. The Order also contains Groundwater Limitations that limit groundwater EC degradation to the more stringent of: (1) the numerical MCLs in Title 22, CCR, section 64449, to protect the MUN designated beneficial use of groundwater, or (2) narratively to the level necessary to protect the AGR designated beneficial use of groundwater. Crops grown in the area (Finding 29) generally require irrigation water with an EC of 1000 µmhos/cm or less. It is unknown whether more salt sensitive crops such as beans or strawberries could be grown near the WWTF; however, given the quality of the effluent (average EC 600 µmhos/cm or less) it is unlikely that the discharge will cause the groundwater EC to exceed 700 µmhos/cm, which is the most stringent AGR objective. Authorized EC degradation will result in water quality that complies with applicable water quality objectives and protects beneficial uses.

b. Regarding nitrate (as N), the expanded WWTF is designed to remove total nitrogen and this Order includes effluent limits that require the effluent total nitrogen to be 10 mg/L or less. To protect the MUN designated beneficial use, Groundwater Limitations proscribe the discharge from increasing groundwater nitrate (as N) concentration beyond the MCL of 10 mg/L. Given that there will be nitrogen losses in the percolation ponds and as treated effluent percolates to groundwater, the nitrate (as N) concentration in effluent reaching groundwater will be less than the MCL of 10 mg/L. Therefore, any degradation that results from the discharge will result in groundwater water quality that complies with applicable water quality objectives and protects beneficial uses.

c. Regarding other constituents, coliform in groundwater is limited to the Basin Plan water quality objective of less than 2.2 MPN/100 mL or essentially non-detect. Taste or odor-producing constituents, toxic substances, and other constituents are limited to concentrations such that they do not cause nuisance or adversely affect beneficial uses of groundwater.

d. This Order includes extensive influent, effluent, and groundwater monitoring requirements to verify that the discharge does not cause violations of water quality objectives or impairment of beneficial uses.

Treatment and Control Practices

61. The WWTF described in Findings 7 through 11, will provide treatment and control of the discharge that incorporates:

a. Secondary treatment of wastewater;

b. Wastewater treatment for nitrogen removal;

c. Mechanical sludge dewatering;

d. Sludge hauled off-site;

e. Pretreatment permits for significant industrial users;

f. An operation and maintenance manual;

g. Certified operators to ensure proper operation and maintenance; and

h. Source water, discharge, and groundwater monitoring.

62. Implementation of the above treatment, operation, maintenance, and monitoring measures, as required by this Order, represents the implementation of BPTC of the discharge.

Conclusions

63. Based on Findings 59 through 62, the authorized discharge meets the requirements Resolution 68-16, as described in Finding 58.

CEQA

64. The City of Reedley adopted an Environmental Impact Report (EIR) (SCH # 2006021132) in accordance with the California Environmental Quality Act (CEQA) and filed a Notice of Determination on 24 May 2007 for an increase in capacity from 3.0 mgd to 5.0 mgd for Phase I and then up to 7.0 mgd for Phase II.

65. Central Valley Water Board staff reviewed the Final EIR and concurs with the conclusion that the project would be an improvement over the existing discharge and that the discharge would not have a significant impact on water quality, particularly because the effluent quality will improve. This Order includes effluent limits for BOD, TSS, EC, and nitrogen. Compliance with these will mitigate any significant impacts to water quality.

Title 27

66. CWC section 13173 defines designated waste as either:

a. Hazardous waste that has been granted a variance from hazardous waste management requirements pursuant to section 25143 of the Health and Safety Code.

b. Non-hazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or that could reasonably be expected to affect beneficial uses of the water of the state contained in the appropriate water quality control plan.

67. Pursuant to section 20090(a) of Title 27 CCR, the discharge of domestic sewage or treated wastewater associated with municipal wastewater treatment plants is exempt from Title 27, provided any resulting degradation of groundwater is in accordance with the Basin Plan and the waste need not be managed as a hazardous waste.

68. None of the wastes regulated by the proposed Order are hazardous wastes or require to be treated as hazardous wastes. As described under the Antidegradation Analysis section above, the authorized discharge of treated wastewater to land will not cause exceedances of Basin Plan requirements or applicable water quality objectives, and are thus exempt from Title 27 pursuant to section 20090(a).

69. As described in Findings 12 through 17 and 41 through 47, historical sludge handling practices included the discharge of sludge to unlined sludge drying beds and storage of biosolids at an unlined area in the north part of the WWTF property. Sludge drying and storage practices impacted shallow groundwater at the north end of the WWTF with salts and nitrate (as N). The Discharger discontinued these practices and is continuing a project to assess and remediate the groundwater plume. Additional assessment of remediation options is necessary to optimize the management of groundwater degradation caused by historic sludge handling practices.

70. The Discharger now mechanically dewaters its sludge and hauls it off-site to McCarthy Family Farm for composting under appropriate WDRs. Sludge is only stored onsite for short periods in a lined drying bed during emergencies. Short-term storage in a lined drying bed is not expected to result in degradation of groundwater quality.

Other Regulatory Considerations

71. The United States Environmental Protection Agency (EPA) has promulgated biosolids reuse regulations in Title 40, CFR, Part 503, *Standards for the Use or Disposal of Sewage Sludge*, which establish management criteria for protection of ground and surface waters, sets limits and 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.

General Findings

72. 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.

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

74. CWC section 13267(b) states that:

> In conducting an investigation specified in subdivision (a), the Central Valley 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 Central Valley 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 Central Valley 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.

75. The technical reports required by this Order and monitoring reports required by the attached Monitoring and Reporting Program (MRP) No. R5-2010-0120 are necessary to assure compliance with these waste discharge requirements. The Discharger operates the WWTF that discharges the waste subject to this Order.

76. DWR 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 CWC section 13801, apply to all monitoring wells.

Public Notice

77. 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.

78. 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.

79. All comments pertaining to the discharge were heard and considered in a public meeting.

IT IS HEREBY ORDERED that Waste Discharge Requirements Order No. 5-01-257 and Special Order Nos. R5-2003-0156 and R5-2006-0105 be rescinded and that, pursuant to sections 13263 and 13267 of the California Water Code, the City of Reedley 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 waste to surface waters or surface water drainage courses is prohibited.

2. Bypass or overflow of untreated wastes, except as allowed by Standard Provision E.2 in *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*, dated 1 March 1991, is prohibited.

3. Discharge of waste classified as 'hazardous', as defined in section 2521(a) of Title 23, CCR, section 2510 et seq., is prohibited. Discharge of waste classified as 'designated', as defined in CWC section 13173, in a manner that causes violation of groundwater limitations, is prohibited.

B. Effluent Limitations

1. Effluent shall not exceed the following limitations:

Constituent	Units	Monthly Average	Daily Maximum
BOD_5[1]	mg/L	40	80
TSS[2]	mg/L	40	80

[1] Five-day biochemical oxygen demand
[2] Total suspended solids

2. The arithmetic mean of BOD 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 approximately the same times during the same period (80 percent removal).

3. The 12-month rolling average EC of the discharge shall not exceed the 12-month rolling average EC of the source water plus 500 µmhos/cm. Compliance with this effluent limitation shall be determined monthly.

4. The monthly average total nitrogen concentration of the discharge shall not exceed 10 mg/L.

C. Discharge Specifications

1. The monthly average discharge flow shall not exceed 4.69 mgd. Following compliance with Provision F.18, the monthly average discharge flow shall not exceed 5.0 mgd.

2. 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.

3. Public contact with effluent (treatment works, percolation ponds) shall be precluded through such means as fences, signs, or acceptable alternatives.

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

5. Percolation 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.

6. On or about **1 October** of each year, available percolation pond capacity shall at least equal the volume necessary to comply with Discharge Specification C.5.

7. Percolation 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 1 April to 30 June bird nesting season.

8. 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 caused violation of groundwater limitations.

9. The City shall not discharge effluent to Ponds 4 and 5 from 1 April through 30 September or when the separation between the Ponds' inverts and groundwater is less than five vertical feet.

D. Sludge Specifications

Sludge in this document means the solid, semisolid, and liquid residues removed during primary, secondary, or advance 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.

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 and solid waste 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 the groundwater limitations of this Order.

3. Residual sludge 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 will satisfy this specification.

4. Use of biosolids as a soil amendment shall comply with valid waste discharge requirements issued by a regional water board or the State Water Board or a local (e.g., county) program authorized by a regional water 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 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.

E. Groundwater Limitations

1. Release of waste constituents from any treatment or storage component associated with the discharge shall not cause or contribute to groundwater:

    a. Containing constituent concentrations in excess of the concentrations specified below or natural background quality, whichever is greater:

(i) Nitrate (as N) of 10 mg/L.

(ii) Total Coliform Organisms of 2.2 MPN/100 mL.

(iii) 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.

F. 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 Provision(s).

2. The Discharger shall comply with MRP No. R5-2010-0120, which is part of this Order, and any revisions thereto as adopted by the Central Valley Water Board or approved by the Executive Officer. The submittal dates of Discharger self-monitoring reports shall be no later than the submittal date specified in the MRP.

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 WWTF 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 includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by the Discharger only when the operation is necessary to achieve compliance with the conditions of this 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 professionals(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 Central Valley 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 Central Valley Water Board by letter when it returns to compliance with the time schedule. Violations may result in enforcement action, including Central Valley Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.

8. 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 Central Valley Water Board.

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 Central Valley Water Board and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. If approved by the Executive Officer, the transfer request will be submitted to the Central Valley Water Board for its consideration of transferring the ownership of this Order at one of its regularly scheduled meetings.

10. If offensive odors are detected by or brought to the attention of WWTF personnel, the Discharger shall monitor affected pond(s) daily in the morning prior to 9:00 a.m. until dissolved oxygen concentrations equal or exceed 1.0 mg/L.

11. The pH of the discharge shall not be less than 6.5 or greater than 9.5 pH units for more than three consecutive sampling events. In the event that the pH of the discharge is outside of this range for more than three consecutive sampling events, the Discharger shall submit a technical evaluation in its quarterly SMRs documenting

the pH of the discharge to the percolation ponds, and if necessary demonstrate that the effect of the discharge on soil pH will not exceed the buffering capacity of the soil profile.

12. The City shall maintain and operate all percolation 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 condition of operation and maintenance) that less freeboard is adequate, the operating freeboard in any percolation 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 percolation pond permanent markers with calibration that indicates the water level at design capacity and enables determination of available operational freeboard.

13. 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 which create a fire or explosion hazard in the treatment works;

    b. Wastes which 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 which cause obstruction to flow in sewers, or which cause other interference with proper operation or treatment works;

    d. Any waste, including oxygen demanding pollutants (BOD, etc), released in such volume or strength as to cause inhibition or disruption in the treatment works, and subsequent treatment process upset and 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 which 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 tucked or hauled pollutants, except at points predesignated by the Discharger.

14. The Discharger shall implement the legal authorities, programs, and control 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 process, 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.

15. The Discharger shall be responsible for the performance of all pretreatment requirements contained in 40 CFR Part 403 and shall be subject to enforcement actions, penalties, fines, and other remedies by the EPA, Regional Board, or other appropriate parties, as provided in the Clean Water Act (CWA), as amended, or other applicable authorities, for noncompliance.

16. The Discharger shall enforce the requirements promulgated under sections 307(b), (c), (d) and 402(b) of the CWA. The Discharger shall cause industrial users subject to federal categorical standards to achieve compliance no later than that date specified in those requirements or, in the case of a new industrial user, upon commencement of the discharge.

17. The Discharger shall comply with all pretreatment requirements contained in 40 CFR Part 403 and perform the pretreatment functions required in 40 CFR 403, including, but not limited to:

    a. Implementing the necessary legal authorities as provided in 40 CFR 403.8(f)(1);

    b. Enforcing the pretreatment requirements under 40 CFR 403.5 and 403.6;

    c. Implementing the programmatic functions as provided in 40 CFR 403.8(f)(2);

    d. Providing the requisite funding and personnel to implement the pretreatment program as provided in 40 CFR 403.8(f)(3); and

    e. Publishing a list of industrial users which were in significant noncompliance and applicable pretreatment requirements as required by 40 CFR 403.8(f)(2)(vii).

    f. Conducting inspections in accordance with provisions of 40 CFR 403.8(f)(1)(v) and 403.8(f)(2)(v) and ensuring compliance with pretreatment standards and requirements by (1) assessing and collecting, when appropriate, civil penalties and civil administrative penalties in accordance with Government Code section 54740, 54740.5, and 54740.6, or (2) other equally effective means.

18. The Discharger shall submit the technical reports and work plans required by this Order for consideration by the Executive Officer, and incorporate comments the Executive Officer may have in a timely manner, as appropriate. The Discharger shall proceed with all work required by the following provisions by the due dates specified.

19. The Discharger shall continue to maintain coverage under, and comply with, Statewide General Waste Discharge Requirements For Sanitary Sewer Systems, Water Quality Order No. 2006-0003-DWQ and any revisions thereto as adopted by the State Water Board.

20. **By 12 December 2011**, the Discharger shall conduct a salinity evaluation and submit a salinity minimization plan to identify and implement measures to reduce the salinity in the discharge to the extent feasible and to ensure continued compliance with Effluent Limitation B.3. The salinity minimization plan shall include a time schedule to implement the identified measures.

21. **By 1 December 2011**, the Discharger shall submit a technical report that evaluates the effectiveness of the phytoremediation project and proposes a course of action to ensure that impacted groundwater is remediated. The technical report shall include a proposed time schedule for completing specific actions. The Discharger shall implement the plan according to the time schedule upon approval of the Executive Officer.

22. The Discharger shall evaluate land disposal options and conduct studies to promote new or expanded wastewater recycling and reclamation opportunities. If the studies show that year-round or continuous reuse of all the wastewater is not practicable, consideration must be given to partial reuse of the flow and seasonal reuse. **11 April 2011,** and periodically thereafter (but not less than once every five years), By the Discharger shall document its efforts in its fourth quarterly monitoring report to promote new or expanded wastewater recycling and reclamation opportunities.

23. Discharge flow shall be limited to 4.69 mgd until the Discharger has submitted an engineering report certifying the WWTF has sufficient treatment, storage, and disposal capacity to comply with a monthly average discharge flow limit of 5.0 mgd and with other terms and conditions of this Order. The report must be prepared by a California Registered Civil Engineer. This provision will be considered satisfied following written acknowledgment from the Executive Officer that the report is adequate.

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 10 December 2010.

Original signed by:

_____
PAMELA C. CREEDON, Executive Officer

Order Attachments:
A Site Location Map
B Flow Schematic
Monitoring and Reporting Program No. R5-2010-0120
Information Sheet
Standard Provisions (1 March 1991)

DMS/wdh

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2010-0120
FOR
CITY OF REEDLEY
WASTEWATER TREATMENT FACILITY
FRESNO COUNTY

This Monitoring and Reporting Program (MRP) is required pursuant to California Water Code (CWC) section 13267 and is incorporated in Waste Discharge Requirements Order No. R5-2010-0120 (WDRs).

The Discharger shall not implement any changes to this MRP unless and until the Central Valley Water Board adopts or the Executive Officer issues a revised MRP. Changes to sample locations shall be established with concurrence of Central Valley Water Board staff, and a description of the revised stations shall be submitted for approval by the Executive Officer.

All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. All analyses shall be performed in accordance with **Standard Provisions and Reporting Requirements for Waste Discharge Requirements**, dated 1 March 1991 (Standard Provisions)

Field test instruments (such as pH) may be used provided that the operator is trained in the proper use of the instrument and each instrument is serviced and/or calibrated at the recommended frequency by the manufacturer or in accordance with manufacturer instructions.

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

If monitoring consistently shows no significant variation in magnitude of a constituent concentration or parameter 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.

A glossary of terms used within this MRP is included on page 9 and a list of the constituents required for the monitoring of Priority Pollutants is included in Table 1, which is on page 10.

INFLUENT MONITORING

Influent samples shall be collected at the inlet of the headworks of the WWTF. Time of collection of the sample shall be recorded. Influent monitoring shall include at least the following:

Frequency	Constituent/Parameter	Units	Sample Type
Continuous	Flow	mgd	Meter
Weekly	pH	pH Units	Grab
Weekly	EC	µmhos/cm	Grab
Weekly	BOD_5	mg/L	24-hour composite
Weekly	TSS	mg/L	24-hour composite
Monthly	Monthly Average Flow	mgd	Computed

EFFLUENT MONITORING

Effluent samples shall be collected at a point in the system following treatment and before discharge to the effluent percolation ponds. Time of collection of the sample shall be recorded. Effluent monitoring shall include the following:

Frequency	Constituent/Parameter	Units	Sample Type
Weekly	pH	pH Units	Grab
Weekly	EC	µmhos/cm	Grab
Weekly	BOD_5	mg/L	24-hour composite
Weekly	TSS	mg/L	24-hour composite
Weekly	Nitrate (as N)[1]	mg/L	24-hour composite
Weekly	TKN[1]	mg/L	24-hour composite
Weekly	Total Nitrogen[1]	mg/L	Computed
Biannually[2]	General Minerals	mg/L	24-hour composite
Once every 5 years[3]	Priority Pollutants (see Table 1)	Varies[4]	Varies

[1] Weekly monitoring shall take place for at least 10 months beginning with data from August 2010. If monitoring results show that there are no significant variations in magnitude of a constituent concentration, and after approval by the Executive Officer, the monitoring frequency can be reduced to monthly.
[2] Biannaual monitoring shall consist of two samples per year.
[3] Beginning in 60 days after adoption of this Order.
[4] mg/L or µg/L, as appropriate.

POND MONITORING

Permanent markers (e.g., staff gages) shall be placed in all percolation ponds. The markers shall have calibrations indicating water level at the design capacity and available operational freeboard.

Effluent percolation pond monitoring shall include at least the following:

Frequency	Constituent/Parameter	Units	Sample Type
As Required[1]	DO	mg/L	Grab[2]
Weekly	Freeboard	Feet[3]	Observation

[1] If offensive odors are detected by or brought to the attention of WWTF personnel, the Discharger shall monitor affected pond(s) daily in the morning prior to 9:00 a.m. until dissolved oxygen concentrations equal or exceed 1.0 mg/L.
[2] Samples shall be collected at a depth of one foot from each pond, opposite the inlet. Time of sampling shall be reported.
[3] To the nearest tenth of a foot

The Discharger shall inspect the condition of the percolation ponds weekly and record 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 grease, dead algae, vegetation, scum, or debris are accumulating on the percolation 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 shall be included in the subsequent monitoring report.

GROUNDWATER MONITORING

After measuring water levels and prior to collecting samples, 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 standing water within the well casing and screen, or additionally the filter pack pore volume.

The Discharger shall monitor all wells in its Groundwater Monitoring Network, and any additional wells installed pursuant to this MRP, for the following:

Frequency	Constituent/Parameter	Units	Sample Type
Quarterly	Depth to groundwater	Feet[1]	Measured
Quarterly	Groundwater Elevation	Feet[2]	Computed
Quarterly	pH	pH Units	Grab
Quarterly	EC	µmhos/cm	Grab
Quarterly	Nitrate (as N)	mg/L	Grab
Quarterly	TKN	mg/L	Grab

Frequency	Constituent/Parameter	Units	Sample Type
Quarterly	Ammonia	mg/L	Grab
Quarterly	Total Nitrogen	mg/L	Calculated
Quarterly	Total Organic Carbon	mg/L	Grab
Annually	Arsenic[3]	mg/L	Grab
Annually	Iron[3]	mg/L	Grab
Quarterly	Manganese[3]	mg/L	Grab
Quarterly	General Minerals	mg/L	Grab
Annually	Total Coliform Organisms[4]	MPN/100 mL	Grab

[1] To nearest tenth of a foot
[2] To nearest tenth of a foot above Mean Sea Level
[3] Groundwater samples placed in an acid-preserved bottle for metals analysis must first be filtered. If filtering in the field is not feasible, sampling shall be collected in unpreserved containers and submitted to the laboratory within 24 hours with a request (on the chain of custody form) to immediately filter then preserve the sample.
[4] Quarterly groundwater monitoring for total coliform monitoring is required for monitoring well MW-16.

SOURCE WATER MONITORING

For each source (either well or surface water supply), the Discharger shall calculate the flow-weighted average concentrations for the specified constituents utilizing monthly flow data and the most recent chemical analysis conducted in accordance with Title 22 drinking water requirements. Alternatively, the Discharger may establish representative sampling stations within the distribution system serving the same area as is served by the WWTF.

Frequency	Constituent/Parameter	Units	Sample Type
Annually	Flow-Weighted EC	µmhos/cm	Computed average
Once every three years	General Minerals	mg/L	Computed average

SLUDGE MONITORING

Sludge shall be sampled for the following constituents:

Arsenic	Copper	Nickel
Cadmium	Lead	Selenium
Molybdenum	Mercury	Zinc

Monitoring shall be conducted: using the methods is “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods” (SW-846), as required in Title 40 of the Code of Federal Regulations (40 CFR), Part 503.8(b)(4). The constituents listed above shall be monitored at the following frequency, depending on volume generated:

Volume Generated (dry metric tons/year)	Frequency
0 to 290	Annually
290 to 1,500	Quarterly
1,500 to 15,000	Bimonthly (six samples per year)
Greater than 15,000	Monthly

The Discharger needs to comply with Title 40 CFR, Part 503 and demonstrate that the facility where sludge is hauled to also complies with these regulations.

INDUSTRIAL PRETREATMENT PROGRAM MONITORING

The Discharger shall submit an annual report to the Regional Water Board, with copies to the EPA Regional Administrator and the State Water Resources Control Board, describing the Discharger's pretreatment activities over the previous 12 months. In the event that the Discharger is not in compliance with any conditions or requirements of this Order, the Discharger shall include the reasons for noncompliance and state how and when the Discharger shall comply with such conditions and requirements. This annual report shall be submitted by **28 February** and shall contain, but not limited to items E.7.a through E.7.j of Standard Provisions dated 1 March 1991 (Standard Provisions).

In addition to the information required in the annual report, the Discharger shall report quarterly the information in E.7.d (1) through (7) of Standard Provisions. Quarterly reports shall also describe progress towards compliance with audit or pretreatment compliance inspection requirements. Quarterly reports shall be submitted by **1st day of the second month following the end of each quarter**. The fourth quarterly report may be included as part of the annual report. If none of the aforementioned conditions exists, at a minimum, the Discharger must submit a letter certifying that all industries are in compliance and no violations or changes to the pretreatment program have occurred during the quarter.

REPORTING

All monitoring results shall be reported in **Quarterly Monitoring Reports** which are due by the first day of the second month after the calendar quarter. Therefore, monitoring reports are due as follows:

First Quarter Monitoring Report:	**1 May**
Second Quarter Monitoring Report:	**1 August**
Third Quarter Monitoring Report:	**1 November**
Fourth Quarter Monitoring Report:	**1 February**

A transmittal letter shall accompany each monitoring report. The transmittal letter shall discuss any violations that occurred 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 or a time schedule for implementing the corrective actions, reference to the previous correspondence is satisfactory.

The following information is to be included on all monitoring and annual reports, as well as report transmittal letters, submitted to the Central Valley Water Board:

City of Reedley
Reedley WWTF
MRP No. R5-2010-0120
Chief Plant Operator (559)
637-4233

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.

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

Laboratory analysis reports do not need to be included in the monitoring reports; however, the laboratory reports must be retained for a minimum of three years in accordance with Standard Provision C.3.

All monitoring reports shall comply with the signatory requirements in Standard Provision B.3. Monitoring data or discussions submitted concerning WWTF performance must also be signed and certified by the chief plant operator. If the chief plant operator is not in direct line of supervision of the laboratory function for a Discharger conducting any of its own analyses, reports must also be signed and certified by the chief of the laboratory.

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

A. All Quarterly Monitoring Reports shall include the following:

Wastewater reporting

1. The results of influent, effluent, and percolation pond monitoring specified on page 2 and 3.

2. For each month of the quarter, calculation of the maximum daily flow and the monthly average flow.

3. For each month of the quarter, calculation of the 12-month rolling average EC of the discharge using the EC values recorded for that month averaged with the monthly average EC values for the previous 11 months.

4. For each month of the quarter, calculation of the monthly average effluent BOD and TSS concentrations, and calculation of the percent removal of BOD and TSS compared to the influent.

5. A summary of the notations made in the percolation pond monitoring log during each quarter. Copies of log pages covering the quarterly reporting period shall not be submitted unless requested by Central Valley Water Board staff.

Groundwater reporting

1. The results of groundwater monitoring specified on page 3 and 4.

2. For each monitoring well, a table showing constituent concentrations for at least five previous years, up through the current quarter.

3. A groundwater contour map based on groundwater elevations for that quarter. The map shall show the gradient and direction of groundwater flow under/around the facility and/ or effluent disposal area(s). The map shall also include the locations of monitoring wells and wastewater discharge areas.

Source water reporting

1. The result of source water monitoring specified on page 4.

2. For each month of the quarter, calculation of the flow-weighted 12-month rolling average EC of the source water using monthly flow data and the source water EC values for the most recent four quarters.

B. Fourth Quarter Monitoring Reports, in addition to the above, shall include the following:

Wastewater treatment facility information

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, sampling plan, 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 Provision E.4 and a figure depicting monthly average discharge flow for the previous five calendar years.

6. A summary of percolation pond maintenance operations during the calendar year. The summary should identify the percolation ponds that were in service during the calendar year and percolation ponds that were taken out of service for maintenance.

7. Identification of the available percolation pond capacity on or about 1 October and a statement certifying that the available capacity was sufficient to comply with Discharge Specification C.5.

Solids/Sludge monitoring

1. Annual production totals in dry tons or cubic yards.

2. A description of disposal methods, including the following information related to the disposal methods used. If more than one method is used, include the percentage disposed of by each method.
   a. For landfill disposal, include: the name and location of the landfill, and the Order number of WDRs that regulate it.
   b. For land application, include: the location of the site, and the Order number of any WDRs that regulate it.
   c. For incineration, include: the name and location of the site where incineration occurs, the Order number of WDRs that regulate the site, the disposal method of ash, and the name and location of the facility receiving ash (if applicable).
   d. For composting, include: the location of the site, and the Order number of any WDRs that regulate it.

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

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

12-10-2010
_____
(Date)

DMS/wdh

GLOSSARY

BOD_5	Five-day biochemical oxygen demand
CBOD	Carbonaceous BOD
DO	Dissolved oxygen
EC	Electrical conductivity at 25° C
FDS	Fixed dissolved solids
NTU	Nephelometric turbidity unit
TKN	Total Kjeldahl nitrogen
TDS	Total dissolved solids
TSS	Total suspended solids
Continuous	The specified parameter shall be measured by a meter continuously.
24-Hour Composite	Samples shall be a flow-proportioned composite consisting of at least eight aliquots.
Daily	Samples shall be collected at least every day.
Twice Weekly	Samples shall be collected at least twice per week on non-consecutive days.
Weekly	Samples shall be collected at least once per week.
Twice Monthly	Samples shall be collected at least twice per month during non-consecutive weeks.
Monthly	Samples shall be collected at least once per month.
Bimonthly	Samples shall be collected at least once every two months (i.e., six times per year) during non-consecutive months.
Quarterly	Samples shall be collected at least once per calendar quarter. Unless otherwise specified or approved, samples shall be collected in January, April, July, and October.
Semiannually	Samples shall be collected at least once every six months (i.e., two times per year). Unless otherwise specified or approved, samples shall be collected in April and October.
Annually	Samples shall be collected at least once per year. Unless otherwise specified or approved, samples shall be collected in October.
mg/L	Milligrams per liter
mL/L	milliliters [of solids] per liter
µg/L	Micrograms per liter
µmhos/cm	Micromhos per centimeter
mgd	Million gallons per day
MPN/100 mL	Most probable number [of organisms] per 100 milliliters
General Minerals	Analysis for General Minerals shall include at least the following:

Alkalinity	Chloride	Sodium
Bicarbonate	Hardness	Sulfate
Calcium	Magnesium	TDS
Carbonate	Potassium	

General Minerals analyses shall be accompanied by documentation of cation/anion balance.

Table 1. Priority Pollutant Scan

Inorganics[1]	1,2-Dichloropropane	Bis(2-chloroisopropyl) ether	***Pesticides***
Antimony	1,3-Dichloropropylene	Bis(2-Ethylhexyl)phthalate	Aldrin
Arsenic	Ethylbenzene	4-Bromophenyl phenyl ether	alpha-BHC
Beryllium	Methyl Bromide	Butylbenzyl Phthalate	beta-BHC
Cadmium	Methyl Chloride	2-Chloronaphthalene	gamma-BHC (Lindane)
Chromium (III)	Methylene Chloride	4-Chlorophenyl Phenyl Ether	delta-BHC
Chromium (VI)	1,1,2,2-Tetrachloroethane	Chrysene	Chlordane
Copper	Tetrachloroethylene (PCE)	Dibenzo(a,h)Anthracene	4,4'-DDT
Lead	Toluene	1,2-Dichlorobenzene	4,4'-DDE
Mercury	1,2-Trans-Dichloroethylene	1,3-Dichlorobenzene	4,4'-DDD
Nickel	1,1,1-Trichloroethane	1,4-Dichlorobenzene	Dieldrin
Selenium	1,1,2-Trichloroethane	3,3'-Dichlorobenzidine	alpha-Endosulfan
Silver	Trichloroethylene (TCE)	Diethyl phthalate	beta-Endosulfan
Thallium	Vinyl chloride	Dimethyl phthalate	Endosulfan Sulfate
Zinc	2-Chlorophenol	Di-n-Butyl Phthalate	Endrin
Cyanide	2,4-Dichlorophenol	2,4-Dinitrotoluene	Endrin Aldehyde
Asbestos	2,4-Dimethylphenol	2,6-Dinitrotoluene	Heptachlor
	2-Methyl-4,6-Dinitrophenol	Di-n-Octyl Phthalate	Heptachlor epoxide
Dioxin Congeners	2,4-Dinitrophenol	1,2-Diphenylhydrazine	Polychlorinated biphenyls
2,3,7,8-TCDD	2-Nitrophenol	Fluoranthene	Toxaphene
	4-Nitrophenol	Fluorene	
Organics	3-Methyl-4-Chlorophenol	Hexachlorobenzene	
Acrolein	Pentachlorophenol	Hexachlorobutadiene	
Acrylonitrile	Phenol	Hexachlorocyclopentadiene	
Benzene	2,4,6-Trichlorophenol	Hexachloroethane	
Bromoform	Acenaphthene	Indeno(1,2,3-c,d)pyrene	
Carbon tetrachloride	Acenaphthylene	Isophorone	
Chlorobenzene	Anthracene	Naphthalene	
Chlorodibromomethane	Benzidine	Nitrobenzene	
Chloroethane	Benzo(a)Anthracene	N-Nitrosodimethylamine	
2-Chloroethylvinyl Ether	Benzo(a)pyrene	N-Nitrosodi-n-Propylamine	
Chloroform	Benzo(b)fluoranthene	N-Nitrosodiphenylamine	
Dichlorobromomethane	Benzo(g,h,i)perylene	Phenanthrene	
1,1-Dichloroethane	Benzo(k)fluoranthene	Pyrene	
1,2-Dichloroethane	Bis(2-chloroethoxy) methane	1,2,4-Trichlorobenzene	
1,1-Dichloroethylene	Bis(2-chloroethyl) ether		

[1] With the exception of wastewater samples, samples placed in an acid-preserved bottle for metals analysis must first be filtered. If filtering in the field is not feasible, samples shall be collected in unpreserved containers and submitted to the laboratory within 24 hours with a request (on the chain of custody form) to immediately filter then preserve the sample.

INFORMATION SHEET

INFORMATION SHEET – ORDER NO. R5-2010-0120
CITY OF REEDLEY
WASTEWATER TREATEMENT FACILITY
FRESNO COUNTY

Background

Waste Discharge Requirements (WDRs) Order No. 5-01-257, adopted by the Central Valley Water Board on 7 December 2001, for the City of Reedley (City or Discharger), regulates the City's wastewater treatment facility (WWTF) located in sections 33 and 34, Township 15 South, Range 23 East, MDB&M, in Fresno County.

WDRs Order No. 5-01-257 authorizes a discharge of 3.5 million gallons per day (mgd) of wastewater to percolation ponds (Ponds 1 through 7) with a surface area of approximately 39 acres. The Order, as National Pollutant Discharge Elimination System (NPDES) Permit No. CA0081230, also authorizes a monthly average discharge flow of 1.75 mgd of wastewater to the Kings River.

On 17 October 2003, the Central Valley Water Board adopted Special Order No. R5-2003-0156 amending Order No. 5-01-257 and delaying the compliance dates for Provisions J.13 and J.14 of the Order.

Provision J.13 of Order No. 5-01-257 requires the Discharger to submit, by the schedule approved by the Executive Officer pursuant to Provision J.12, but no later than 15 December 2004, the written comprehensive technical evaluation and written recommendations for WWTF modifications (i.e., component upgrade, retrofit, and disposal method).

Provision J.14 of Order No. 5-01-257 requires the Discharger to submit, by 15 December 2004, a technical report that proposes specific numeric groundwater limitations that reflect full implementation of Best Practicable Treatment or Control (BPTC) practices, and specific supporting data, for Regional Water Board consideration.

Provision J.12 of Order No. 5-01-257 required the Discharger to submit a written Work Plan that sets forth a schedule for a systematic and comprehensive technical evaluation of each major component of the WWTF's waste treatment and disposal systems. The Work Plan was submitted by the Discharger and approved by the Executive Officer on 1 July 2003.

Given the approval date of 1 July 2003, and tasks involved in the Work Plan, the deadline of 15 December 2004 for Provisions J.13 and J.14 in Order No. 5-01-257 was no longer reasonable. Therefore, the due date of 15 December 2004 in Order No. 5-01-257 was extended to 1 March 2006 and 1 February 2006 for Provisions J.13 and J.14, respectively, with the adoption or Order No. R5-2003-0156.

In September 2006, Carollo Engineers submitted a Final Wastewater Treatment Plant Master Plan (Master Plan) with details for a proposed WWTF expansion in compliance with Provision J.13 of Order No. 5-01-257. In May 2007, a *Short List of Constituents of Concern for Best Practicable Treatment and Control* was submitted in compliance with Provision J.14 of Order No. 5-01-257. Central Valley Water Board staff has reviewed the Master Plan and the BPTC report; both reports appeared to be complete.

Since July 1998, the City has not discharged to the Kings River. At the City's request the Central Valley Water Board adopted Special Order No. R5-2006-0105 on 22 September 2006 to rescind the NPDES Permit No. CA0081230 portion of the Order.

On September 2007, the City submitted a Report of Waste Discharge (RWD) for a proposed expansion from 3.5 mgd to 5.0 mgd and discharge of its wastewater to land only.

The 2007 RWD water balance concludes the 36 acres of percolation ponds available at the time provided enough storage/disposal capacity for a discharge flow of 4.69 mgd. The City reconfigured its ponds and submitted a revised water balance in April 2009 showing that the capacity of its now existing 37.46 acres of ponds is 5.0 mgd. The revised water balance does not account for instances when percolation ponds are out of service for maintenance or, as discussed in more detail below, when Ponds 4 and 5 are out of service due to high river flows. The disposal capacity of the WWTF may be somewhat lower than 5.0 mgd so the Order limits the discharge flow to 4.69 mgd and includes a provision requiring the Discharger to demonstrate the WWTF has sufficient treatment, storage, and disposal capacity before the discharge flow limit can be increased to 5.0 mgd.

The construction of the expanded WWTF was completed in November 2009. The expanded WWTF includes a headworks, two oxidation ditches, one anoxic basin, four secondary clarifiers, three return sludge holding tanks, and three centrifuges.

Undisinfected secondary effluent is discharged to six percolation ponds (Ponds 1 through 5, and 7) with a surface area of approximately 36 acres. The new oxidation ditch was constructed on the location where Pond six was located.

Solids Management and Disposal

Historically sludge handling practices included discharging sludge to unlined sludge drying beds; a practice that was conducted for over twenty years and has impacted shallow groundwater. In 1996, the City changed its sludge handling practices by installing two centrifuge units and hauling its biosolids off-site.

In 1996, the City changed its sludge handling practices by installing two centrifuge units and hauling its sludge off-site.

In late 1997, the City excavated and then spread high nitrogen soils over the area where the sludge storage area and sludge drying beds were. In March 1998, the City planted the area with Eucalyptus trees in an effort to phytoremediate site soils and groundwater.

Currently, one older centrifuge unit is in use, along with two new centrifuge units that were installed as part of the WWTF expansion. Sludge generated at the WWTF will continue to be hauled off-site and discharged to McCarthy Family Farms Inc., near Corcoran, California, for composting under appropriate WDRs.

The WWTF has approximately 1.5 acres of asphalt lined sludge drying beds that are only used in case of emergency.

Groundwater Conditions

According to information in *Lines of Equal Elevation in Well in Unconfined Aquifer*, published by the Department of Water Resources in Spring 2004 regional groundwater flow southwesterly and is found at approximately 70 feet below ground surface (bgs).

A Water-Level Elevation and Direction of Groundwater Flow Map included in the September 2007 RWD indicates that groundwater flows in a northwest direction based on groundwater monitoring data from the 2007 third quarter groundwater monitoring report. Groundwater flow maps from the 2005 fourth quarter and the 1999 first quarter groundwater monitoring reports show water flowing to the southeast towards the Kings River.

Mounding and seasonal fluctuations in the groundwater table depicted by groundwater flow maps in the September 2007 RWD make it clear that groundwater flow direction varies.

Groundwater elevation data and staff observations made during inspections indicate that high Kings River flows during the irrigation season (generally April through September) can result in groundwater mounding that eliminates the separation between the inverts of Ponds 4 and 5 and groundwater. This may reduce the effectiveness of pathogen removal as effluent migrates through the soil to groundwater. It is appropriate to limit the use of Ponds 4 and 5 to the non-irrigation season and to times when the separation of the Ponds' inverts and underlying groundwater is less than five feet. This Oder includes a Discharge Specification that limits the use of Ponds 4 and 5 to times when the separation is more than five feet to ensure adequate pathogen removal.

The WWTF has 14 groundwater monitoring wells (MW-1 to MW-6, MW-14 to MW-16, MW-18 to MW-22). The quality of groundwater in the vicinity of the percolation ponds is depicted by groundwater monitoring wells MW-4, MW-5, MW-6, and MW-16. Based on groundwater monitoring data from February 1997 through 2010, the average EC (in µmhos/cm), nitrate (as NO_3, in mg/L) and chloride (in mg/L) concentrations for these monitoring wells is as follows MW-4 (658, 26, 62), MW-5 (691, 25, 55), MW-6 (649, 24, 61), and MW-16 (645, 28, 57), respectively.

EC in MW-4 fluctuated with a slight downward trend. EC in MW-5 is fairly stable through out the years until 2008 when EC decreased. EC in MW-6 and MW-16 is stable with no increase or decrease. EC in monitoring wells MW-4, MW-5, MW-6, and MW-16 are all below 1,000 µmhos/cm.

Nitrate (as NO_3) concentrations for MW-4, MW-5, and MW-6 fluctuate with no apparent pattern. Nitrate (as NO_3) concentrations are below the MCL of 45 mg/L. Nitrate (as NO_3) concentrations in MW-16 fluctuate generally above the MCL of 45 mg/L.

Chloride in MW-4, MW-5, MW-6, and MW-16 are stable with no increase or decrease in concentration.

The Discharger submitted a technical report, *Groundwater Assessment Wastewater Treatment Facility* (GWA) in August 2001. The GWA report evaluated existing groundwater

data and identified monitoring wells MW-4, MW-5, MW-6, and MW-16 as being effluent dominated since their location is adjacent to the percolation ponds. The GWA report further stated that wells MW-1, MW-2, MW-3, and MW-21 are impacted from the historical use of unlined sludge drying beds and that the northern extent of nitrate pollution had not been defined.

Based on groundwater monitoring data from February 1997 through March 2010, the average EC (in µmhos/cm), nitrate (as NO_3, in mg/L) and chloride (in mg/L) concentrations for monitoring wells in the vicinity of the abandoned sludge drying beds (MW-1, MW-2, MW-3, MW-15, MW-21, and MW-22) are as follows, MW-1 (1047, 92, 83), MW-2 (729, 86, 58), MW-3 (966, 134, 51), MW-15 (807, 44, 70), MW-21 (1045, 74, 62), and MW-22 (796, 49, 76), respectively.

EC in MW-1 fluctuated, and then decreased slowly from December 2008 through May 2010. EC in MW-2 and MW-15 has gradually been decreasing. EC in MW-3 has generally not changed over a 13-year period. EC in MW-21 also fluctuated, and then decreased from 2007 through 2009. EC in MW-22 has been increasing since 2001.

Nitrate (as NO_3) concentrations for MW-1, MW-2, MW-3, MW-21, and MW-22 continue to exceed the nitrate (as NO_3) MCL of 45 mg/L. MW-15 has had nitrate (as NO_3) concentrations below the MCL since 2004.

Chloride concentrations in MW-1 fluctuated and in MW-2 the concentrations have been stable since 1997. Chloride concentrations in MW-3 and MW-15 have slightly decreased in mid-2004 and have been stable since then. Chloride concentrations in MW-21 fluctuated but show an overall decreasing trend and in MW-22 concentrations have increased.

Impacted soils that were spread over the abandoned sludge drying beds have been tested for nitrate (as N) concentrations twice yearly since 2002 (Sites 1 through 6) and at three depth intervals (4, 6, and 8 ft bgs). The ranges in nitrate (as N), TKN, and TN for these Sites are as follows:

Site and Depth	Nitrate (as N in mg/kg)	TKN (in mg/kg)	TN (in mg/kg)
Site 1 at 4ft	1-4	52-1400	52-1400
Site 1 at 6ft	1-3	88-500	88-500
Site 1 at 8ft	1-4	45-400	47-400
Site 2 at 4ft	6-130	58-1400	129-1400
Site 2 at 6ft	1-75	52-550	57-625
Site 2 at 8ft	1-61	22-300	59-307
Site 3 at 4ft	2-56	140-1100	162-1156
Site 3 at 6ft	1-11	10-500	10-511
Site 3 at 8ft	2-38	75-400	75-409
Site 4 at 4ft	3-59	99-1000	111-1006
Site 4 at 6ft	3-103	60-1400	89-1503
Site 4 at 8ft	1-38	98-900	111-938

	Nitrate (as N in mg/kg)	TKN (in mg/kg)	TN (in mg/kg)
Site 5 at 4ft	2-84	160-1400	169-1484
Site 5 at 6ft	1-15	56-400	64-401
Site 5 at 8ft	1-12	43-500	46-501
Site 6 at 4ft	5-63	100-1200	110-1207
Site 6 at 6ft	1-93	100-1300	142-1301
Site 6 at 8ft	4-92	140-2200	200-2228

The City needs to evaluate the effectiveness of its phytoremediation project and groundwater cleanup strategy. A provision requiring the submittal of a technical report is included in this Order.

The City gets its source water from a network of six water supply wells. Based on the 2008 SMRs, the flow-weighted average for source water EC was reported as 221 µmhos/cm.

Basin Plan, Beneficial Uses, and Regulatory Considerations

The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition, revised January 2004* (hereafter Basin Plan) designates beneficial uses, establishes narrative and numerical water quality objectives, contains implementation plans and policies for protecting all water of the Basin, and incorporates, by reference, plans and policies of the State Water Board. Pursuant to section 12363(a) of the California Water Code (CWC), these requirements implement the Basin Plan.

The Basin Plan specifies that municipal and domestic wastewater dischargers will be required to reclaim and reuse wastewater whenever reclamation is feasible.

The Basin Plan identifies the greatest long-term water quality problem facing the entire Tulare Lake Basin is increasing salinity in groundwater, a process 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. The maximum EC of effluent discharged to land shall not exceed the EC of the source water plus 500 µmhos/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 to good quality groundwater shall not exceed an EC of 1,000 µmhos/cm, a chloride content of 175 mg/L, and boron content of 1.0 mg/L. WWTF monitoring data indicates effluent levels are significantly below these limits, thus this Order does not include numerical effluent limits for these constituents. This Order does require monitoring for these constituents.

The Basin Plan requires municipal WWTFs that discharge to land to comply with treatment performance standards for BOD 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, for both BOD and TSS.

Antidegradation
State Water Board Resolution No. 68-16 ("Policy with Respect to Maintaining High Quality Water of the State") (hereafter Resolution No. 68-16) prohibits degradation of groundwater unless it has been shown that:

a. The degradation is consistent with the maximum benefits to the people of the State;

b. The degradation will not unreasonable affect present and anticipated future beneficial uses;

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

d. The Discharger employs BPTC to minimize degradation.

Degradation of groundwater by some of the typical waste constituents released with discharge from a municipal wastewater utility after effective source control, treatment, and control is consistent with maximum benefit to the people of the State. The technology, energy, and waste management advantages of municipal utility service far exceed any benefits derived from a community otherwise reliant on numerous concentrated individual wastewater systems, and the impacts on water quality will be substantially less. Economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, and therefore sufficient reason to accommodate growth and groundwater degradation provided terms of the Basin Plan are met.

Constituents of concern in the discharge that have the potential to degrade groundwater include salts and nutrients. This Order establishes terms and conditions of discharge to ensure that the discharge does not unreasonably affect present and anticipated uses of groundwater.

The Order includes Basin Plan effluent limits for EC that represent BPTC with respect to salinity. It also contains groundwater limitations that apply water quality objectives established in the Basin Plan to protect beneficial uses. With respect to EC, the quality of the discharge is better than the most sensitive water quality objective for EC.

The WWTF provides nitrogen removal and the Order includes limits that require the effluent total nitrogen to be 10 mg/L or less. Nitrate (as N) represents only a portion of the total nitrogen in effluent. Other nitrogen species can include organic nitrogen, ammonia, and nitrite. Additional nitrogen losses will occur in the ponds and during the migration of effluent through the soil profile to groundwater. The total nitrogen limit of 10 mg/L will ensure that the nitrate (as N) concentration of this percolate will be less than the MCL of 10 mg/L. Groundwater Limitations in the Order also proscribe the discharge from causing the groundwater nitrate (as N) concentration from exceeding the MCL. Therefore, any

degradation that may result from the discharge will not exceed water quality objectives or impair beneficial uses.

Treatment Technology and Control

The expanded WWTF provides treatment and control of the discharge that incorporates:

a. Secondary treatment of wastewater;
b. Wastewater treatment for nitrogen removal;
c. Mechanical sludge dewatering;
d. Sludge hauled off-site;
e. Pretreatment permits for significant industrial users;
f. An operation and maintenance manual;
g. Certified operators to ensure proper operation and maintenance; and
h. Source water, discharge, and groundwater monitoring.

Implementation of the above treatment, operation, maintenance, and monitoring measures, as required by this Order, represents the implementation of BPTC of the discharge.

Given the above, the discharge meets the requirements of Resolution 68-16.

CEQA

The City of Reedley adopted an Environmental Impact Report (EIR) (SCH # 2006021132) in accordance with the California Environmental Quality Act (CEQA) and filed a Notice of Determination on 24 May 2007 for an increase in capacity from 3.0 mgd to 5.0 mgd for Phase I and then up to 7.0 mgd for Phase II.

Central Valley Water Board staff reviewed the Final EIR and concurs with the conclusion that the project would be an improvement over the existing discharge and that the discharge would not have a significant impact on water quality, particularly because the effluent quality will improve. This Order includes effluent limits for BOD, TSS, EC and nitrogen. Compliance with these will mitigate any significant impacts to water quality.

Title 27

CWC section 13173 defines designated waste as either:

a. Hazardous waste that has been granted a variance from hazardous waste management requirements pursuant to section 25143 of the Health and Safety Code.

b. Non-hazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives of could reasonably be expected to affect beneficial uses of the water of the State contained in the appropriate water quality control plan.

Pursuant to section 20090(a) of Title 27 California Code of Regulations, the discharge of domestic sewage or treated effluent associated with municipal wastewater treatment plants is

exempt from Title 27, provided any resulting degradation of groundwater is in accordance with the Basin Plan and the waste need not be managed as a hazardous waste.

None of the wastes regulated by the proposed Order are hazardous wastes or required to be treated as hazardous wastes. As described under the Antidegradation Analysis section above, the authorized discharge of treated wastewater to land will not cause exceedances of Basin Plan requirements or applicable water quality objectives, and are thus exempt from Title 27 pursuant to section 20090(a).

Historically, sludge handling practices included discharging sludge to unlined sludge drying beds. Sludge drying and storage practices impacted shallow groundwater at the north end of the WWTF with salts and nitrates. The Discharger discontinued these practices and is continuing a project to assess and remediate the groundwater plume. Additional assessment of remediation options is necessary to optimize the management of groundwater degradation caused by historic sludge handling practices.

The Discharger now mechanically dewaters its sludge and hauls it off-site to McCarthy Family Farm Inc. for composting under appropriate WDRs. Sludge is only stored onsite for short periods in a lined drying bed during emergencies. Short term storage in a lined drying bed is not expected to result in discharges causing exceedences of water quality objectives.

Proposed Order Terms and Conditions

Discharge Prohibitions, Specifications and Provisions

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

The proposed Order sets a monthly average daily flow limit of 4.69 mgd. The Discharger must submit an engineering report showing the WWTF has sufficient treatment, storage and disposal capacity to comply with a monthly average discharge flow limit of 5.0 mgd before discharge above 4.69 mgd will be authorized.

The Order includes effluent limits for BOD_5 and TSS of 40 mg/L as monthly average and 80 mg/L as daily maximum. These limitations are based on Basin Plan minimum performance standards for municipal facilities.

The proposed Order's provisions regarding percolation pond dissolved oxygen and freeboard are consistent with Central Valley Water Board policy for the prevention of nuisance conditions, and are applied to all such facilities.

The proposed Order prescribes groundwater limitations that implement water quality objectives for groundwater from the Basin Plan.

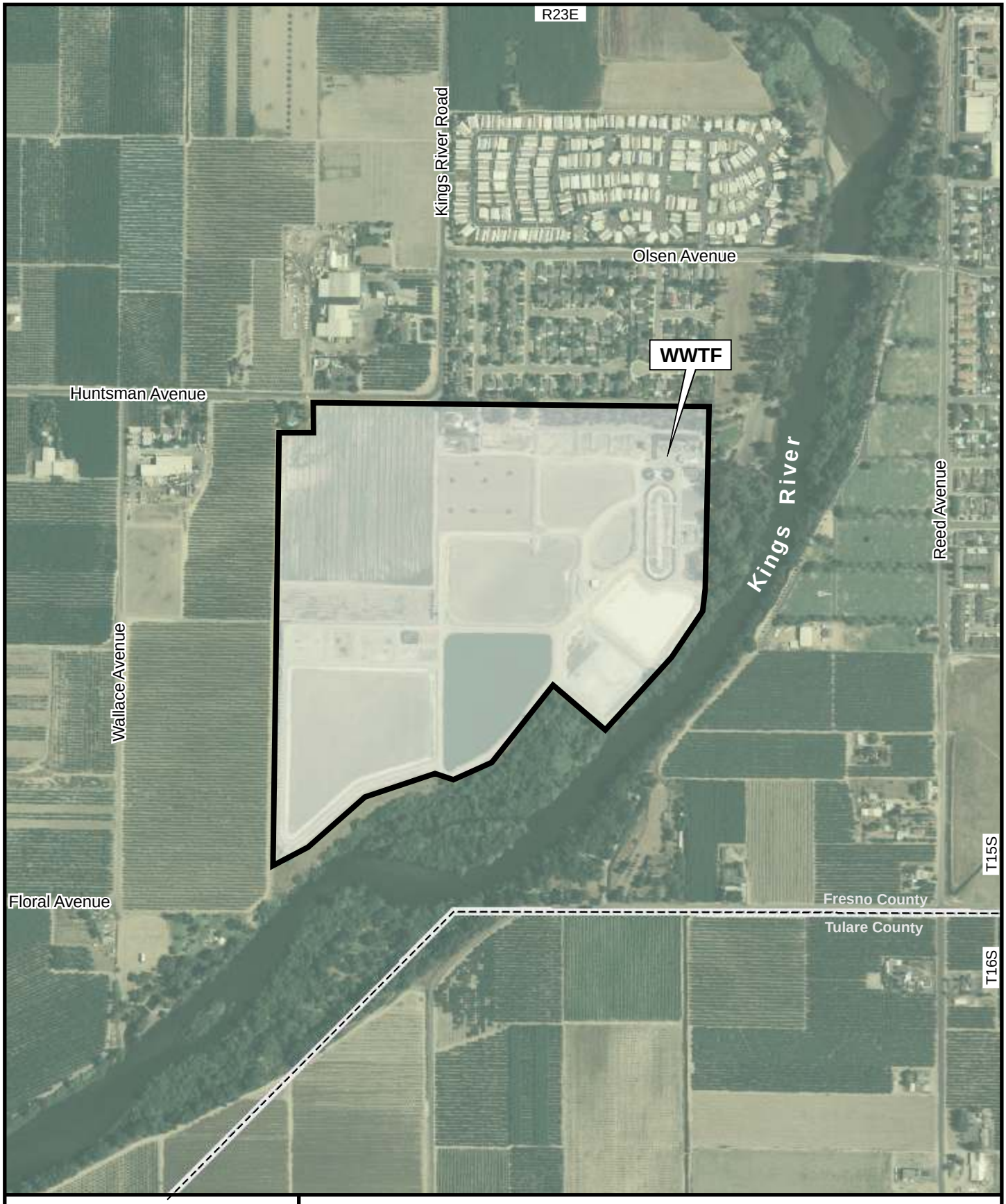
The proposed Order includes provisions that require the Discharger to conduct a salinity evaluation and submit a salinity minimization plan. A provision requiring the Discharger to evaluate the effectiveness of the phytoremediation project in remediating impacted

groundwater. The Order would also require the Discharger to periodically evaluate wastewater recycling options.

Monitoring Requirements
The proposed Order includes influent and effluent monitoring requirements, percolation pond monitoring, source water monitoring, sludge monitoring, and groundwater monitoring. This monitoring is necessary to characterize the discharge, evaluate compliance with effluent limitations prescribed by the Order, and evaluate groundwater quality and the extent of the degradation caused by the discharge.

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. It may be appropriate to reopen the Order if applicable laws and regulations change.

DMS/wdh



Map Source:
NAIP Aerial Photograph (2005)

Sections 33 & 34, T15S, R23E, MDB&M

SCALE IN FEET

0 250 500 1,000

SITE MAP

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2010-0120

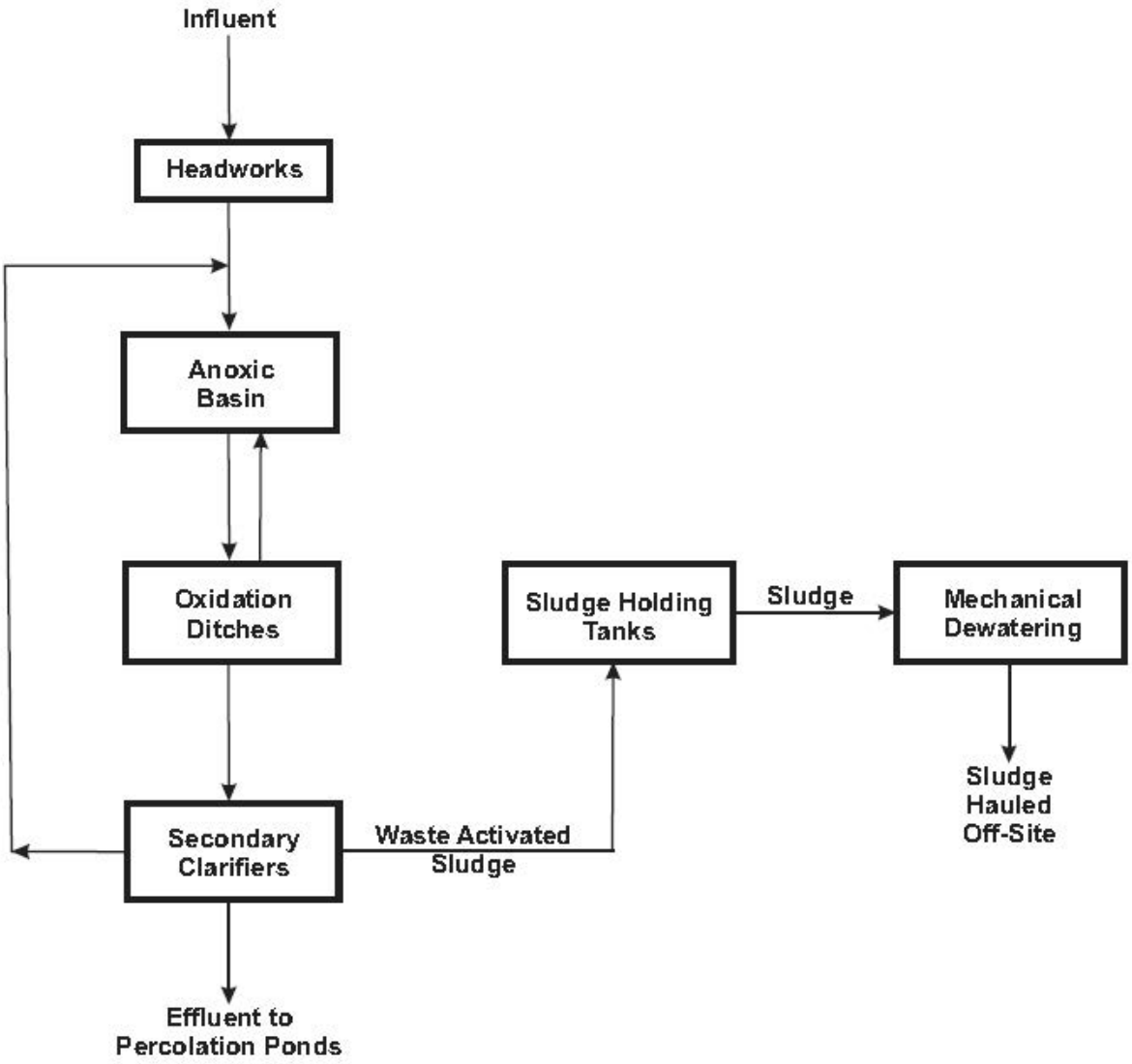
FOR

CITY OF REEDLEY

WASTEWATER TREATMENT FACILITY

FRESNO COUNTY

ATTACHMENT A



NOT TO SCALE

PROCESS FLOW DIAGRAM

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2010-0120

FOR

CITY OF REEDLEY

WASTEWATER TREATMENT FACILITY

FRESNO COUNTY

ATTACHMENT B