CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2012-0063

WASTE DISCHARGE REQUIREMENTS

FOR

CITY OF OAKDALE
OAKDALE WASTEWATER TREATMENT FACILITY
STANISLAUS COUNTY

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

1. The City of Oakdale (hereafter Discharger) submitted a Report of Waste Discharge (RWD) dated 9 June 2010 to apply for revised Waste Discharge Requirements (WDRs) for the wastewater treatment facility (WWTF) that serves the City of Oakdale. Additional information to complete the RWD was received in September 2011 and January 2012.

2. For the purposes of this Order, the term "Wastewater Treatment Facility" (WWTF) shall mean the wastewater collection system, and wastewater treatment plant. The term "Wastewater Treatment Plant" (WWTP) shall mean the headworks, aeration lagoons, secondary clarifiers, cloth filters, UV disinfection system, percolation ponds, sludge storage tank, sludge dewatering screw presses, and sludge drying beds.

3. The WWTP is located at 9700 Liberini Avenue, Oakdale, in Section 10, T2S, R10E, MDB&M. The Assessor's Parcel Number (APN) for the WWTP is 6-11-42. The location of the plant is shown on Attachment A, which is attached hereto and made part of this Order by reference.

4. This Order updates WDRs Order 5-01-094, which is no longer adequate to describe and regulate operations of the WWTP.

5. The Discharger owns and operates the WWTF and is responsible for compliance with this Order.

Facility Regulated Under Previous WDRs

6. The City of Oakdale Wastewater Treatment Facility (the "WWTF") treats and disposes of domestic wastewater from residential and commercial sources in the City of Oakdale and has one industrial wastewater discharger.

7. WDRs Order 5-01-094 specified an average daily influent flow limit of 2.4 million gallons per day (MGD). The average influent daily flow to the WWTF from January 2006 to December 2010 was 1.69 MGD and the maximum average monthly flow during that period occurred in October 2006 at 1.99 MGD.

8. The following table summarizes influent monitoring data from January 2006 through December 2010:

		WWTF Influent	
Parameter	Units	Average[1]	Range
BOD_5 at 20˚C	mg/L	400	1 to 1,872
TDS	mg/L	461	212 to 735

[1] Average of monitoring data from January 2006 through December 2010

9. The Discharger receives industrial wastewater from Sconza Candy, a candy manufacturer. Based on data provided in the RWD, Sconza Candy accounts for about 4 percent of the flow at the wastewater treatment plant, 30 percent of the BOD mass load, and about 17 percent of the total dissolved solids (TDS) mass loading.

10. The WWTP was constructed in 1965 and underwent improvements in 1984, 1990, 1993, and 2003. The WWTP consists of a headworks, two aeration basins that operate in parallel, secondary clarification, sludge drying beds, and wastewater disposal to fourteen rapid infiltration ponds. The treatment plant site plan is shown on Attachment B, which is attached hereto and made part of this Order by reference.

11. In the past, the treatment capacity of the plant was limited by a single 90-foot secondary clarifier that was built in 1965. The secondary clarifier was designed as a water treatment solids contact clarifier and had inadequate efficiency for separation of activated sludge solids. The single secondary clarifier did not have capacity to treat peak wastewater flows, which resulted in sludge bypass to the rapid infiltration ponds. Additionally, there was no backup clarifier to use when the unit was taken out of service for maintenance or repair.

12. Sludge from the secondary clarifier was sent to an aerated above ground storage tank and stored for at least six weeks. Supernatant from the sludge storage tank was pumped to the headworks and wasted sludge was dewatered in the cement lined sludge drying beds.

13. The uncovered sludge drying beds do not adequately dry out the sludge solids during the wet winter months. This resulted in extended storage of sludge in the sludge drying beds, the sludge storage tank, and in the wastewater treatment system by allowing the mixed liquor solids to increase, which impacted operation of the biological treatment system. In 2008, a screw press was added for year-round mechanical sludge dewatering. The screw press was installed in a temporary steel shipping container prior to starting work on the WWTP upgrades. Dewatered sludge is disposed of at a local landfill and decant from the sludge drying beds and screw press is pumped back to the headworks.

14. The following table summarizes effluent monitoring data from January 2006 through December 2010:

		WWTF Effluent	
Parameter	Units	Average[1]	Range
BOD_5 at 20˚C	mg/L	4	<1 to 557
EC	µmhos/cm	555	455 to 638
TDS	mg/L	384	303 to 475
Nitrate-N	mg/L	11.3	<0.05 to 39
Ammonia-N	mg/L	0.7	<0.5 to 7
Total Coliform Organisms	MPN/100mL	21,573	2,400 to >24,000

[1] Average of monitoring data from January 2006 through December 2010

Changes in the Discharge

15. The Discharger has completed major upgrades to the WWTP that improve biological treatment, provide UV disinfection of effluent, provide a back-up secondary clarifier, and mechanically dewater the sludge. These improvements, described in the RWD, are expected to protect groundwater quality and serve the Discharger's projected population and wastewater treatment needs through year 2025.

16. Both aeration basins have been lined with a 60 mil HDPE single liner to protect groundwater quality. One aeration basin was lined in spring 2010 and the other was lined in spring 2011. Additionally, the aeration system was rehabilitated and upgraded with two additional 100-horsepower blowers.

17. A 120-foot diameter secondary clarifier was constructed in addition to the existing clarifier. The new clarifier is designed with a 16-foot water depth to adequately separate sludge solids. The existing 90-foot secondary clarifier will be used in parallel as needed or serve as a backup when the 120-foot clarifier is out of service for maintenance.

18. Cloth media filters and a ultraviolet light (UV) disinfection system were installed to protect shallow groundwater from coliform organism contamination. The filter system consists of four pile cloth-media type filters with a nominal pore size of ten microns to remove suspended solids that would inhibit the efficiency of UV disinfection. The UV disinfection system consists of two open channels (one duty and one standby), each equipped with eight banks of UV lights.

19. As part of the WWTP upgrades, an additional screw press was added and both screw presses with auxiliary equipment (flocculation tanks, polymer system and sludge feed pump) were installed under a permanent canopy structure. The sludge drying beds are uncovered and may be used in the summer for additional drying or for backup dewatering. The sludge storage tank is used for emergency storage of wasted sludge in-case of dewatering system failure.

20. The Discharger states that the mechanical sludge dewatering system has been prone to dysfunction since it was installed and the Discharger has been working to fix the system. This Order requires the Discharger to submit a sludge dewatering system operational report that describes the measures that have been completed to correct the problems and certify that the system is operational by 30 December 2012.

21. A schematic of the upgraded treatment system is shown on Attachment C, which is attached hereto and made part of this Order by reference. The wastewater treatment and disposal process is summarized below:

    a. Raw wastewater is pumped from the collection system to the headworks where it is screened and degritted. Screened wastewater travels through the WWTP by gravity flow until being pumped for filtration prior to UV disinfection. Filtered wastewater then travels through the remaining portions of the treatment system by gravity flow.

    b. Screened wastewater is aerobically treated in the West Aeration Basin and East Aeration Basin, which are mechanically aerated and operated in parallel. The aeration supply of the basins is designed to provide aerobic and anoxic zones to achieve nitrification and denitrification.

    c. Effluent from the aeration ponds is conveyed to the newly constructed 120-foot diameter secondary clarifier. The existing 90-foot secondary clarifier can be operated in parallel or serve as a backup when the 120-foot clarifier is being serviced.

    d. Effluent from the secondary clarifier is pumped through cloth media filters prior to UV disinfection. The filter system has a maximum throughput capacity of 11.6 MGD, which is greater than the design peak flow of 10 MGD. Influent and effluent turbidity is measured continuously using a turbidimeter.

    e. The pumps used for filtration are housed in a low-lift pump station. Currently, three pumps (two duty, one standby) are installed each with a capacity of 5 MGD and a fourth pump can be added in the future.

    f. Effluent from the cloth media filters is gravity fed to the UV disinfection system, which is designed for a minimum UV dose of 100 millijoules per square centimeter (mJ/cm^2).

    g. Disinfected effluent is discharged to eleven rapid infiltration ponds (Ponds 1, 2, 4, 5, and 8 through 14). Use of the ponds is alternated so that each pond is allowed to dry before being used again. The Discharger states that rapid infiltration Ponds 3, 6, and 7 are no longer used due to their close proximity to the Stanislaus River.

    h. Wasted sludge is pumped to the mechanical dewatering system. The sludge drying beds may be used in the summer for additional drying or for backup dewatering. Dewatered sludge is disposed by hauling to a local landfill.

22. The Discharger submitted a revised water balance in the RWD addendum. The water balance was prepared based on reasonable estimates of influent flows, inflow and infiltration (I/I), precipitation, percolation, and evaporation. The water balance was used to

model disposal capacity during the 100-year, 365-day precipitation event followed by a year with average precipitation. The model shows that the WWTF provides the following capacities:

Influent Flow Measurement	Capacity
Total Annual Flow	935 MG
Average Dry Weather Flow	2.45 MGD
Maximum Monthly Average Flow	2.7 MGD

23. The following table compares historical effluent data with effluent data obtained after a majority of the WWTP upgrades were completed in April 2011.

		Effluent prior to WWTP upgrades [1]		Effluent after WWTP upgrades [2]	
Parameter	Units	Average	Range	Average	Range
BOD_5 at 20˚C	mg/L	4	<1 to 557	<2	– –
TSS	mg/L	19	<5 to 226	<5	– –
EC	µmhos/cm	555	455 to 638	571	528 to 608
TDS	mg/L	384	303 to 475	410	374 to 439
Nitrate-N	mg/L	11.3	<0.05 to 39	19.3	12 to 24
Ammonia-N	mg/L	0.7	<0.5 to 7	0.7	<0.5 to 1.6
TCO	MPN/100mL	21,573	2,400 to >24,000	46	<2 to 170

[1] Average of effluent monitoring data from January 2006 through December 2010 prior to WWTP upgrades.

[2] Average of effluent monitoring data from April 2011 through October 2011 after WWTP upgrades.

24. Based on the data, UV disinfection has reduced total coliform organisms (TCO). However, the nitrate concentration did not improve in the same time period. The Discharger states that the upgraded WWTP treatment system was designed to meet an average nitrate-nitrogen effluent limit of 10 mg/L and required a optimization period. Between October 2011 and February 2012, the effluent nitrate-N concentration averaged 7.1 mg/L with a maximum of 8.0 mg/L. This Order sets a time schedule to ensure the Discharger will meet an average effluent total nitrogen concentration of 15 mg/L to protect groundwater quality.

Wastewater Collection System

25. The sewer system consists of approximately 86 miles of gravity pipe and 2 miles of force main. The collection system is comprised of four major trunk sewers: Oak Avenue, Cross-Town, Walnut Street, and Kimball Street mains. There are a total of eleven lift stations and each is equipped with standby generators and an auto-dialer alarm system for early warning of power failures.

26. Cross connections between the wastewater collection system and stormwater drainage system exist in the old town area of the city. During large storm events, higher flows to the WWTP can affect winter treatment operations. Therefore, the City has been eliminating these cross connections as existing roads are rebuilt or improved.

27. The sanitary sewer system consists of sewer pipes, manholes, and/or other conveyance system elements that direct raw sewage to the treatment plant. A "sanitary sewer overflow" is defined as a discharge to land or surface water from the sanitary sewer system at any point upstream of the treatment plant. Temporary storage and conveyance facilities (such as wet wells, regulated impoundments, tanks, 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. Sanitary sewer overflow is also defined in State Water Resources Control Board (State Water Board) Order 2006-0003-DWQ, *Statewide General Waste Discharge Requirements for Sanitary Sewer* Systems.

28. Sanitary sewer overflows consist of varying mixtures of domestic and commercial wastewater, depending on land uses in the sewage collection system. The chief causes of sanitary sewer overflows include grease blockages, root blockages, debris blockages, sewer line flood damage, manhole structure failures, vandalism, pump station mechanical failures, power outages, storm or groundwater inflow/infiltration, lack of capacity, and/or contractor caused blockages.

29. Sanitary sewer overflows often contain high levels of suspended solids, pathogenic organisms, toxic pollutants, nutrients, oxygen demanding organic compounds, oil and grease, and other pollutants. Sanitary sewer overflows can cause temporary exceedance of applicable water quality objectives, pose a threat to public health, adversely affect aquatic life, and impair the public recreational use and aesthetic enjoyment of surface waters in the area.

30. The Discharger is expected to take all necessary steps to adequately maintain, operate, and prevent discharges from its sanitary sewer collection system and comply with State Water Board Order 2006-0003-DWQ.

Site-Specific Conditions

31. The Oakdale community obtains its potable water from groundwater supply wells, which are owned and operated by the City. A summary of water supply quality is summarized below and compared to the WWTP effluent data.

Parameter	Units	Water Supply [1]		WWTF Effluent	
		2009/2010 Result	Reported Range	Average (before) [2]	Average (after) [3]
EC	µmhos/cm	243	200 to 310	555	571
TDS	mg/L	164	130 to 220	384	410
Chloride	mg/L	7.8	5.6 to 14	– –	– –
Sodium	mg/L	13.5	11 to 17	– –	– –
Nitrate-nitrogen	mg/L	3.6	1.3 to 6.2	11.3	19.3
Arsenic	µg/L	1.2	0 to 3	– –	– –

[1] Data reported in the City of Oakdale 2010 Drinking Water Consumer Confidence Report.

[2] Average of effluent monitoring data from January 2006 through December 2010 prior to WWTP upgrades.

[3] Average of effluent monitoring data from April 2011 through October 2011 after WWTP upgrades.

- - not analyzed or not reported

32. The WWTP is at an approximate elevation of 120 feet mean sea level (MSL) and adjacent to the north bank of the Stanislaus River. Based on the FEMA flood insurance rate map, portions of rapid infiltration Ponds 3, 6 and 7 may be within the 100-year flood plain. During a 100-year flood event the water surface of the Stanislaus River is expected to range from 102-feet to 107-feet. The levees on the south side of rapid infiltration Ponds 3, 6, and 7 have a crest elevation of 115-feet. The Discharger states that these ponds are no longer in use due to their proximity to the Stanislaus River. All other portions of the WWTF are outside of the 100-year flood zone.

33. The topography is relatively flat and storm water runoff in the area drains toward the Stanislaus River. The Discharger collects all storm water runoff generated at the WWTP and disposes of it in a holding pond, which can flow into rapid infiltration Pond 9 or 10.

34. The California Department of Water Resources reports the average annual precipitation for the Oakdale Gilbert Station to be 14.81 inches and the 100 year return total to be 26.79 inches. The California Irrigation Management Information System reports the total reference evapotranspiration rate to be 50.78 inches per year for the station closest to Oakdale.

35. Soils at the site generally consist of fine to coarse grained sand, silty sand, and clayey silt.

36. The City owns a walnut orchard north of the WWTP that is irrigated with groundwater. Surrounding land uses are primarily agricultural and residential.

Groundwater Considerations

37. Groundwater underlying the site ranges from 3 to 14 feet below the bottom of the rapid infiltration ponds. Discharges to the rapid infiltration ponds have resulted in groundwater mounding as indicated in groundwater elevation maps submitted by the Discharger.

38. In general, the groundwater flow direction is similar from quarter to quarter, with a ridge-shaped mound running northeast to southwest through the middle of the treatment plant. Without discharge to the rapid infiltration ponds, shallow groundwater would likely flow consistently from north to south towards the Stanislaus River.

39. Eight groundwater monitoring wells monitor first encountered groundwater at the WWTP. The monitoring well locations are shown on Attachment B. The monitoring wells are located either upgradient or downgradient to the wastewater treatment plant and its individual components as follows:

    a. OMW-1 is downgradient of Pond 9.
    b. OMW-2 is downgradient of Pond 2 and upgradient of the Stanislaus River.
    c. OMW-3 is downgradient of Pond 8 and the aeration basins.
    d. OMW-4 is upgradient of other monitoring wells due to the groundwater mound.
    e. OMW-5 is downgradient of Pond 7 and upgradient of the Stanislaus River.
    f. OMW-6 is located in the northeast corner, side-gradient of the WWTP
    g. OMW-7 is downgradient of Pond 14
    h. OMW-8 is downgradient of Pond 3 and Pond 5 and upgradient of the Stanislaus River

40. The following table summarizes groundwater monitoring data collected quarterly from November 2003 to November 2010.

	TDS (mg/L)		Chloride (mg/L)		Nitrate-N (mg/L)		Arsenic (µg/L)		Manganese (µg/L)		Total Coliform (MPN)	
MW	Avg[1]	Range	Avg[1]	Range	Avg[1]	Range	Avg[1]	Range	Avg[1]	Range	Avg[1]	Range
6*	118	30 to 180	5	2 to 14	1.5	0.1 to 6.9	1.9	0.4 to 5.0	83	10 to 570	2	1 to 4
1	316	210 to 410	57	46 to 83	5.6	0.2 to 16	6.6	2.0 to 18	536	60 to 1100	9	1 to 170
2	322	240 to 420	58	46 to 72	6.6	0.1 to 23	4.2	1.9 to 9.5	149	20 to 350	32	1 to 500
3	327	200 to 420	57	49 to 73	6.7	0.2 to 31	5.0	2.0 to 11	41	6 to 110	579	1 to 16,000
4	311	230 to 460	55	19 to 120	5.9	0.5 to 20	3.1	0.5 to 5.0	212	11 to 780	5	1 to 34
5	330	92 to 420	57	48 to 69	6.1	0.2 to 14	4.7	2.9 to 11	107	22 to 320	20	1 to 500
7	372	130 to 480	52	33 to 74	10.9	3.7 to 22	5.2	1.0 to 8.7	36	4 to 120	2	1 to 14

MW	TDS (mg/L) Avg[1]	TDS (mg/L) Range	Chloride (mg/L) Avg[1]	Chloride (mg/L) Range	Nitrate-N (mg/L) Avg[1]	Nitrate-N (mg/L) Range	Arsenic (µg/L) Avg[1]	Arsenic (µg/L) Range	Manganese (µg/L) Avg[1]	Manganese (µg/L) Range	Total Coliform (MPN) Avg[1]	Total Coliform (MPN) Range
8	338	240 to 470	57	38 to 74	4.3	0.1 to 23	7.0	1.0 to 26	500	50 to 1400	8	1 to 130
WQO	500 [2,3]		250 [2,4]		10 [5]		10 [5]		50 [2]		A. 2.2 [6]	

[1] Average of monitoring data from November 2003 through November 2010

[2] Secondary MCL

[3] The most stringent TDS Agricultural Water Quality Goal of 450 mg/L may be appropriate to implement the Basin Plan's toxicity objective for agricultural use of groundwater. However, site-specific data are needed to determine what concentration of TDS will protect the agriculture beneficial use.

[4] The most stringent chloride Agricultural Water Quality Goal of 106 mg/L may be appropriate to implement the Basin Plan's toxicity objective for agricultural use of groundwater. However, site-specific data are needed to determine what concentration of chloride will protect the agriculture beneficial use.

[5] Primary MCL

[6] Basin Plan numeric water quality objective

* Cross-gradient monitoring well

WQO – Water quality objective

41. Monitoring well OMW-4 is upgradient of other monitoring wells but is unlikely representative of background groundwater because of the distinct groundwater mound created by the ponds. Monitoring data from OMW-6 and its location relative to the WWTP indicate that it is cross-gradient of the WWTP, representative of shallow background groundwater quality, and unaffected by the wastewater treatment plant discharge. Therefore, OMW-6 will not be used as a monitoring well to determine compliance with groundwater limitations.

42. Based on groundwater monitoring data in comparison to monitoring well OMW-6, the discharge has degraded groundwater quality with total dissolved solids (TDS), chloride, nitrate, arsenic, and total coliform organisms. In the case of nitrate, arsenic, manganese, and coliform, the degradation of groundwater exceeds applicable water quality objectives.

43. The elevated concentrations of TDS and chloride in the groundwater are typical for a municipal wastewater treatment facility given the quality of the water supply. The recent facility upgrades are not expected to improve effluent salinity or groundwater quality. Therefore, this Order sets a TDS limit for effluent and groundwater and a groundwater limit for chloride to ensure that groundwater degradation complies with the Basin Plan water quality objectives.

44. The separation between the bottom of the disposal ponds and shallow groundwater can be as little as three feet. The short separation between the ponds and the groundwater may have led to the coliform and nitrate degradation in groundwater. Monitoring well OMW-3 (downgradient of the aeration basins) has had the highest detections for both constituents. The Discharger's previous problems of sludge overflow and the subsequent drying of sludge in the ponds may have exacerbated the nitrate and coliform organism degradation.

The Discharger has lined the aeration basins, improved aeration capacity, installed UV disinfection, and installed a mechanical sludge dewatering system to improve groundwater quality protection. This Order sets nitrate-nitrogen and total coliform effluent and groundwater limits to ensure compliance with the Basin Plan.

45. The elevated concentrations of arsenic and manganese are not typical for a domestic wastewater treatment plant such as Oakdale with low concentrations in the potable source water and without significant industrial dischargers. The Discharger has not indicated any industrial dischargers that would contribute a source of arsenic or manganese and the discharge is not expected to be contributing arsenic or manganese to the groundwater. The unlined treatment ponds and the Discharger's previous problems of sludge bypass into the ponds may have temporarily created anaerobic conditions that mobilize naturally occurring arsenic and manganese. As noted above, the Discharger has taken measures to improve protection of groundwater. This Order sets a time schedule for the Discharger to determine if the treatment and control measures have improved arsenic and manganese groundwater quality and whether further treatment or control is required.

Basin Plan, Beneficial Uses, and Regulatory Considerations

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

47. The facility lies within the San Joaquin Valley Floor Unit Area No. 535.30, as depicted on interagency hydrologic maps prepared by the Department of Water Resources. Local drainage is to the Stanislaus River. The beneficial uses of the Stanislaus River, as stated in the Basin Plan, are municipal and domestic supply; agricultural supply; industrial service and process supply; hydropower generation; contact and non-contact water recreation; warm and cold freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.

48. The Basin Plan designates the beneficial uses of underlying groundwater as municipal and domestic supply, agricultural supply, and industrial supply.

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

50. The Basin Plan's narrative water quality objectives for chemical constituents, at a minimum, require waters designated as domestic or municipal supply to meet the MCLs specified in Title 22 of the California Code of Regulations ("Title 22"). The Basin Plan

recognizes that the Central Valley Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.

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

52. The Basin Plan's numeric water quality objective for bacteria requires that the most probable number (MPN) of coliform organisms over any seven-day period shall be less than 2.2 per 100 mL in MUN groundwater. The applicability of this objective to groundwater designated as MUN has been affirmed by State Water Board Order WQO-2003-0014 and by subsequent decisions of the Sacramento County Superior Court and California Court of Appeal, 3rd Appellate District (*County of Sacramento v. State Water Resources Control Bd.* (2007) 153 Cal.App.4th 1579.).

Antidegradation Analysis

53. State Water Resources Control Board Resolution 68-16 (*The Policy with Respect to Maintaining High Quality Waters of the State*) (hereafter Resolution 68-16) prohibits degradation of groundwater unless it has been shown that:

    a. The degradation is consistent with the maximum benefit 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) to minimize degradation.

54. 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, water recycling, and waste management advantages of municipal utility service far exceed any benefits derived from a community otherwise reliant on numerous concentrated individual wastewater systems, and the impact 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.

55. The Discharger has been monitoring groundwater quality at the current WWTF site since 1989. Based on the data available, it is not possible to determine pre-1968 groundwater quality. Therefore, determination of compliance with Resolution 68-16 for this facility must be based on existing background groundwater quality.

56. Constituents of concern that have the potential to degrade groundwater include (a) salts (primarily TDS, sodium, and chloride), (b) nutrients, (c) coliform organisms, and (d) metals as discussed below:

    a. The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objective is to be interpreted for the protection of agricultural use. All studies conducted through this Order to establish an agricultural limit to implement the narrative objectives will be reviewed and consistent with the efforts underway by CV-SALTS.

       The secondary MCL for TDS is 500 mg/L as a recommended level, 1,000 mg/L as an upper level, and 1,500 mg/L as a short-term maximum. The Central Valley Water Board must determine the applicable numeric limit to implement the narrative objective for the protection of agricultural supply. The most limiting agricultural water quality goal may be as low as 450 mg/L as a long-term average based on Ayers and Westcot[1], which evaluates the impacts of salinity levels on crop tolerance and yield reduction, and establishes water quality goals that are protective of the agricultural uses. However, the water quality goal is not a site-specific goal or objective, but rather a general measure that was determined to protect salt-sensitive crops. Only the most salt-sensitive crops require irrigation water of 450 mg/L or less to prevent loss of yield. Most other crops can tolerate higher TDS concentrations without harm. Site specific TDS levels of the receiving waters are necessary to interpret the narrative chemical constituent objective for protection of agricultural supply.

       A review of the Discharger's monitoring reports shows that the average effluent TDS concentration is 384 mg/L, with a range from 374 mg/L to 439 mg/L, which are similar concentrations found in the downgradient monitoring wells. Compared to the source water TDS concentration, the effluent TDS concentration is elevated approximately 200 mg/L, which is typical for a domestic wastewater treatment facility and indicates that the Discharger's current treatment and control practices

[1] *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1, R.S. Ayers and D.W. Westcot, Rome, 1985.

are effective. The average TDS concentration in the cross-gradient groundwater well MW-6 is 118 mg/L with a range from 30 mg/L to 180 mg/L. Based on these results, it appears that some degradation has occurred as a result of the discharge. However, this Order does not allow degradation beyond that which may already exist. Therefore, this Order sets a performance-based TDS effluent limit of 450 mg/L and sets a TDS groundwater limit of 500 mg/L.

The secondary MCL for chloride is 250 mg/L as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum. The Central Valley Water Board must determine the applicable numeric limit to implement the narrative objective for the protection of agricultural supply. The most limiting agricultural water quality goal may be as low as 106 mg/L as a long-term average[1], which is intended to protect against adverse effects on sensitive crops when irrigated via sprinklers. However, the water quality goal is not a site-specific goal or objective, but rather a general measure to protect salt-sensitive crops. Site specific chloride levels of the receiving waters are necessary to interpret the narrative chemical constituent objective for protection of agricultural supply.

A review of the Discharger's monitoring reports shows that the average chloride concentration in the downgradient wells varies from 52 mg/L to 58 mg/L and ranges from 19 mg/l to 120 mg/L. The average chloride concentration in the cross-gradient groundwater well MW-6 is 5 mg/L with a range from 2 mg/L to 14 mg/L. Based on these results, it appears that some degradation has occurred as a result of the discharge. However, this Order does not allow degradation beyond that which may already exist. Therefore, this Order sets a chloride groundwater limit of 106 mg/L.

b. For nutrients such as nitrate, the potential for unreasonable degradation depends not only on the quality of the treated effluent, but the ability of the vadose zone below the effluent disposal ponds to provide an environment conducive to nitrification and denitrification to convert the effluent nitrogen to nitrate and the nitrate to nitrogen gas before it reaches the water table. Downgradient groundwater has exceeded the Basin Plan water quality objective for nitrate-nitrogen (10 mg/L), while the background groundwater concentration averages 1.5 mg/L. Therefore, the shallow vadose zone may not provide an environment conducive for denitrification. Prior to upgrades, effluent monitoring data show that the nitrate-nitrogen concentration historically averaged 11.3 mg/L. After upgrades and between April 2011 and October 2011, the effluent nitrate-nitrogen concentration averaged 19.3 mg/L. The Discharger states that the upgraded WWTP treatment system was designed to meet an average nitrate-nitrogen effluent limit of 10 mg/L and required an optimization period. Between October 2011 and February 2012, the effluent nitrate-N concentration averaged 7.1 mg/L with a maximum of 8.0 mg/L.

To protect groundwater quality, this Order sets an effluent limit for total nitrogen of 15 mg/L. This Order also sets a time schedule for compliance with this limit to allow time for optimization of the treatment system.

Although the Discharger has lined the aeration basins and improved sludge handling, the discharge has caused an exceedance of the nitrate-nitrogen water quality objective. Because groundwater quality is expected to improve as a result of effluent quality improvements, this Order sets a time schedule for the Discharger to meet the Basin Plan water quality objective for nitrate-nitrogen in groundwater.

c. For coliform organisms, the discharge appears to have caused an exceedance of the Basin Plan's numeric water quality objective. The potential to exceed the water quality objective depends on the ability of the vadose zone soils below the effluent storage/disposal ponds and saturated soils within the shallow water bearing zone to provide adequate filtration. Historically, total coliform organisms (TCO) detections in groundwater monitoring wells exceeded the Basin Plan limit suggesting that the shallow vadose zone and soil types at the facility may not provide adequate filtration. Considering data between November 2004 and November 2010, the greatest number of detections occurred in OMW-3, which is closest to the aeration basins. One aeration basin was lined in spring 2010 and the other was lined in spring 2011. Monitoring well OMW-3 has been relatively free of total coliform organisms since January 2007 except for a spike occurring in August 2010. This spike may have been due to construction of the facility upgrades. To ensure that the monitoring wells have not been colonized with coliform organisms it is appropriate to require the Discharger to perform a one-time disinfection of all monitoring wells.

An analysis of surface water monitoring data upstream and downstream of the facility from January 2006 to December 2010 shows that the Stanislaus River has not been impacted by the discharge with regard to total coliform organisms (see table below).

	Total Coliform Organisms (MPN/100 mL)	
Location	Avg.	Range
Upstream (R-6)	884	50 to >2,400
Immediately Upstream (R-7)	830	60 to >2,400
Immediately Downstream (R-8)	952	37 to >2,400
Downstream (R-9)	819	54 to >2,400

The Discharger has lined the aeration basins and begun disinfecting the effluent with UV. The effluent TCO concentration now has an average below 50 MPN/100L. This Order sets an effluent limit for TCO based on the design

specifications provided in the RWD to ensure that the UV disinfection system is operating correctly. With the effluent and monitoring wells being disinfected, the coliform degradation of underlying groundwater should be resolved. This Order requires the Discharger to meet the Basin Plan water quality objective for coliform organisms in groundwater after the wells have been disinfected.

d. For metals such as arsenic and manganese, the potential for unreasonable degradation depends on the quality of the treated effluent and the capacity of the vadose zone below the effluent disposal ponds to immobilize metals before percolate reaches the water table. The discharge itself is not expected to be contributing arsenic or manganese to the groundwater. However, the formerly unlined treatment ponds and the Discharger's past problems of sludge bypass into the percolation ponds may have created conditions that mobilized naturally occurring arsenic and manganese. Since the sludge bypass problems have been corrected, groundwater concentrations of arsenic and manganese are expected to reduce over time. This Order sets a time schedule for the Discharger to meet the Basin Plan water quality objectives for arsenic and manganese in groundwater.

57. Due to the Discharger's past history of accepting industrial wastewater that constitutes a substantial percentage of the BOD and TDS mass loading, which may have resulted in upsets of the treatment process and sludge bypass, this Order requires the Discharger to institute a pretreatment program.

58. This Order also requires the Discharger to submit a groundwater compliance assessment plan that proposes methods to be used for statistically determining compliance with the groundwater limits specified in this Order.

59. The Discharger provides treatment and control of the discharge that incorporates:

    a. Alarms to prevent system bypass or overflow.

    b. Collection system improvements to reduce the potential for SSOs and control inflow and infiltration.

    c. A wastewater treatment facility that includes HDPE lined aeration basins, two concrete secondary clarifiers, and an indoor mechanical sludge dewatering system.

    d. Effluent disinfection using UV light.

    e. A supervisory Control and Data Acquisition (SCADA) system for early detection of potential wastewater treatment disruptions.

    f. Certified operators to assure proper operation and maintenance.

    As noted above, additional time is needed to show whether these measures will constitute best practicable treatment and control and will prevent future violations of

water quality objectives for groundwater. Therefore, the Discharger has been given a time schedule to meet certain constituent limits and show the effectiveness of the implemented treatment and control.

60. This Order establishes effluent and groundwater limitations for the WWTF that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan. This Order also includes an enforceable schedule that provides three years to comply with nitrate-nitrogen, TCO, arsenic, and manganese groundwater limits. If these limits are not met, the Discharger is required to implement further treatment and control to ensure compliance with the Basin Plan and Resolution 68-16.

Other Regulatory Considerations

61. The Discharger states that effluent is no longer discharged to Ponds 3, 6, and 7 due to their close proximity to the Stanislaus River. Because the Discharger has had previous bypass of sludge through the secondary clarifier and used some ponds for extended sludge storage, it is likely that accumulated sludge needs to be removed from the ponds. Therefore, this Order requires the Discharger to submit and implement a pond closure plan and prevent future discharge to these ponds by grading and physically blocking or disconnecting these ponds from the disposal pipeline.

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

63. The State Water Board adopted Order 97-03-DWQ (NPDES General Permit CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities, and requiring submittal of a Notice of Intent by all affected industrial dischargers. The wastewater treatment facility has a design capacity of more than 1.0 MGD, but all storm water from the WWTF is collected and disposed of in a stormwater holding pond. The Discharger is therefore not required to obtain coverage under NPDES General Permit No. CAS000001.

64. The United States Environmental Protection Agency (EPA) has promulgated biosolids reuse regulations in 40 CFR 503, *Standard for the Use or Disposal of Sewage Sludge,* which establishes management criteria for protection of ground and surface waters, sets application rates for heavy metals, and establishes stabilization and disinfection criteria.

65. The Central Valley Water Board is using the Standards in 40 CFR 503 as guidelines in establishing this Order, but the Central Valley Water Board is not the implementing

agency for 40 CFR 503 regulations. The Discharger may have separate and/or additional compliance, reporting, and permitting responsibilities to the EPA.

66. An Initial Study and Mitigated Negative Declaration were certified by the City of Oakdale on 15 December 2008 in accordance with the California Environmental Quality Act (Pub. Resources Code, § 21000 et seq.) ("CEQA"). The Initial Study describes the project as WWTF upgrades to serve the City of Oakdale's projected population and wastewater treatment needs through the year 2025. The facility upgrades are described as follows:

    a. Upgrading the aeration equipment of the aeration basins and adding additional aerators.

    b. Adding a mixed liquor pipeline and secondary clarifier split structure.

    c. Constructing an additional secondary clarifier.

    d. Adding tertiary filters and a UV disinfection system.

    e. Adding a low-lift pump station for the tertiary filters

    f. Constructing an indoor, mechanical sludge dewatering system.

    g. Constructing a side-streams return pumping station.

    h. Constructing a nonpotable water pumping station.

67. The Mitigated Negative Declaration evaluated the potential impacts to groundwater quality and found that compliance with the new WDRs will ensure that impacts to water quality would be less than significant.

68. Compliance with these waste discharge requirements will mitigate or avoid significant impacts to water quality.

69. Water Code section 13267(b) provides that:

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

The technical reports required by this Order and the attached Monitoring and Reporting Program R5-2012-0063 are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

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

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

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

71. The California Department of Water Resources sets standards for the construction and destruction of groundwater wells (hereafter DWR Well Standards), as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 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 used to monitor the impacts of wastewater storage or disposal governed by this Order.

72. State regulations that prescribe procedures for detecting and characterizing the impact of waste constituents from waste management units on groundwater are found in California Code of Regulations, title 27 (“Title 27”), sections 20380 et seq. Title 27 conditionally exempts certain activities from its provisions. To qualify for an exemption, the activity must meet, and continue to meet, specified preconditions. Title 27 contains several conditional exemptions that are relevant to the discharge. These include exemptions for domestic sewage and wastewater. Title 27, section 20090, exempts these activities so long as the activity meets, and continues to meet, all preconditions listed:

    a. Sewage – Discharges of domestic sewage or treated effluent which are regulated by WDRs, or for which WDRs have been waived, and which are consistent with applicable water quality objectives, and treatment or storage facilities associated with municipal wastewater treatment plants, provided that residual sludge or solid waste from wastewater treatment facilities shall be discharged only in accordance with the applicable SWRCB-promulgated provisions of this division.

    b. Wastewater – Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leachfields if the following conditions are met:

        i. The applicable regional water quality control board has issued WDRs, or waived such issuance;

        ii. The discharge is in compliance with the applicable water quality control plan; and

iii. The wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22of this code as a hazardous waste.

73. The discharge authorized herein and the treatment and storage facilities associated with the discharge, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27 as follows:

    a. The aeration basins and secondary clarifiers are exempt from Title 27 pursuant to Section 20090(a) because they are treatment and storage facilities associated with a municipal domestic wastewater treatment plant.

    b. The rapid infiltration ponds are exempt from Title 27 pursuant to Section 20090 (a) and (b) because they are wastewater percolation ponds and:

        i. The Central Valley Water Board is issuing WDRs.

        ii. The discharge is in compliance with the Basin plan, and;

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

74. Although the WWTF is exempt from Title 27, the data analysis methods of Title 27 are appropriate for determining whether the discharge complies with Groundwater Limitations specified in this Order.

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

Public Notice

76. 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.

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

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

IT IS HEREBY ORDERED that Order 5-01-094 is rescinded except for purposes of enforcement, and pursuant to Sections 13263 and 13267 of the Water Code, the City of Oakdale, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and regulations adopted hereunder, shall comply with the following:

[*Note: Other prohibitions, conditions, definitions, and some methods of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated 1 March 1991.]*

A. Discharge Prohibitions

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

2. Discharge of waste classified as 'hazardous', as defined in the California Code of Regulations, title 22, section 66261.3, is prohibited.

3. Discharge of waste classified as 'designated', as defined in Water Code section 13173, is prohibited.

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

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

6. Discharge of waste to former rapid infiltration Ponds 3, 6, and 7 is prohibited.

7. Discharge of toxic substances into the wastewater treatment system or land application areas such that biological treatment mechanisms are disrupted is prohibited.

B. Flow Limitations

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

Flow Measurement	Flow Limit
Total Annual Flow [1]	935 MG
Average Dry Weather Flow [2]	2.45 MGD
Maximum Monthly Average Flow [3]	2.7 MGD

[1] As determined by the total flow for the calendar year.

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

[3] As determined by the total flow during the calendar month, divided by the number of days in that month.

C. Effluent Limitations

1. **Effective immediately**, effluent discharged to the rapid infiltration ponds shall not exceed the following limits:

Constituent	Units	Monthly Average Limit	7-day Median	Monthly Maximum Limit
BOD_5 [1]	mg/L	30		80
Total Dissolved Solids	mg/L	450		—
Total Nitrogen (as N)	mg/L	20		30
Total Coliform Organisms	MPN/100 ml		2.2 [2]	23

[1] 5-day biochemical oxygen demand at 20˚C.

[2] Compliance shall be determined using all results for each calendar week. (Sunday to Saturday)

2. **Effective 1 June 2014**, Effluent discharged to the rapid infiltration ponds shall not exceed the following limits:

Constituent	Units	Monthly Average Limit	7-day Median	Monthly Maximum Limit
BOD_5 [1]	mg/L	30		80
Total Dissolved Solids	mg/L	450		—
Total Nitrogen (as N)	mg/L	15		30
Total Coliform Organisms	MPN/100 ml		2.2 [2]	23

[1] 5-day biochemical oxygen demand at 20˚C.

[2] Compliance shall be determined using all results for each calendar week (Sunday to Saturday).

3. Wastewater contained in any unlined pond shall not have a pH less than 6.0 or greater than 9.0.

D. Groundwater Limitations

Release of waste constituents from any portion of the WWTF shall not cause groundwater to:

1. **Effective immediately**, contain waste constituents in concentrations statistically greater than those tabulated below for all compliance wells, which excludes OMW-6.

Constituent	Units	Limitation
Total Dissolved Solids	mg/L	500
Chloride	mg/L	106
Nitrate-nitrogen	mg/L	20

2.

3. **Effective immediately**, exhibit a pH of less than 6.5 or greater than 8.4 pH units.

4. **Effective immediately**, contain taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.

5. **Effective 30 December 2012**, exceed a total coliform organism level of 2.2 MPN/100mL.

6. **Effective 30 March 2015**, contain waste constituents in concentrations statistically greater than those tabulated below for all compliance wells, which excludes OMW-6.

Constituent	Units	Limitation
Total Dissolved Solids	mg/L	500
Chloride	mg/L	106
Nitrate-nitrogen	mg/L	10
Arsenic	µg/L	10
Manganese	µg/L	50

Except as required by the Provisions, compliance with these limitations shall be determined annually based on intrawell analysis using approved statistical methods.

E. Discharge Specifications

1. No waste constituent shall be released, discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations of this Order.

2. The discharge shall not cause degradation of any water supply.

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

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

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

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

7. Public contact with wastewater shall be prevented through such means as fences, signs, or acceptable alternatives.

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

9. As a means of discerning compliance with Discharge Specification E.8, the dissolved oxygen (DO) content in the upper one foot of any wastewater pond shall not be less than 1.0 mg/L for three consecutive weekly sampling events. This applies to any rapid infiltration pond containing more than two feet of standing water and the aerobic region of the treatment basins. If the DO in any single pond is below 1.0 mg/L for three consecutive sampling events, the Discharger shall report the findings to the Regional Water Board in writing within 10 days and shall include a specific plan to resolve the low DO results within 30 days.

10. The Discharger shall operate and maintain all ponds sufficiently to protect the integrity of containment dams and berms and prevent overtopping and/or structural failure. Unless a California-registered civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard in any pond shall never be less than two feet (measured vertically from the lowest possible point of overflow). As a means of management and to discern compliance with this requirement, the Discharger shall install and maintain in each pond a permanent staff gauge with calibration marks that clearly show the water level at design capacity and enable determination of available operational freeboard.

11. The treatment, storage, and disposal ponds or structures shall have sufficient capacity to accommodate allowable wastewater flow, design seasonal precipitation, and ancillary inflow and infiltration during the winter while ensuring continuous compliance with all requirements of this Order. Design seasonal precipitation shall

be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.

12. On or about **15 October** of each year, available capacity shall at least equal the volume necessary to comply with Discharge Specifications 10 and 11.

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

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

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

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

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

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

15. Wastewater contained in any unlined pond shall not have a pH less than 6.0 or greater than 9.0.

F. Ultraviolet Disinfection System Operating Specifications

1. The Discharger shall operate the UV disinfection system to provide a minimum UV dose per channel of 100 milijoules per square centimeter (mJ/cm^2) at peak daily flow, and shall maintain an adequate dose for disinfection at all times.

2. The Discharger shall provide continuous, reliable monitoring of flow, UV transmittance, and UV power.

3. The UV transmittance (at 254 nanometers) in the wastewater exiting the UV disinfection system shall not fall below 55 percent of maximum for more than three days per quarter.

4. The quartz sleeves and cleaning system components shall be visually inspected per the manufacturer's operations manual for physical wear (scoring, solarization, seal leaks, cleaning fluid levels, etc.) and to check the efficacy of the cleaning system.

5. The lamp sleeves shall be cleaned periodically as necessary to comply with these requirements.

6. Lamps shall be replaced per the manufacturer's operations manual, or sooner, if there are indications the lamps are failing to provide adequate disinfection. Lamp age and lamp replacement records shall be maintained.

G. Solids Disposal Specifications

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

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

2. Any handling and storage of residual sludge, solid waste, and biosolids at the WWTF shall be temporary (i.e., no longer than 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, biosolids, and solid waste shall be disposed of in a manner approved by the Executive Officer and consistent with Division 2 of Title 27 of the California Code of Regulations. Removal for further treatment, disposal, or reuse at disposal sites (i.e., landfills, WWTFs, composting sites, soil amendment sites) operated in accordance with valid waste discharge requirements issued by a Regional Water Board will satisfy this specification.

4. Use of biosolids as a soil amendment shall comply with valid waste discharge requirements issued by a regional water board or the State Water Board except in cases where a local (e.g., county) program has been authorized by a regional water board. In most cases, this will mean the General Biosolids Order (State Water Resources Control Board Water Quality Order 2004-12-DWQ, "General Waste Discharge Requirements for the Discharge of Biosolids to Land for Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities"). For a biosolids use project to be covered by Order 2004-12-DWQ, the Discharger must file a complete Notice of Intent and receive a Notice of Applicability for each project.

5. Use and disposal of biosolids shall comply with the self-implementing federal regulations of 40 Code of Federal Regulations part 503, which are subject to enforcement by the U.S. EPA, not the Central Valley Water Board. If during the life of this Order, the State accepts primacy for implementation of part 503, the Central Valley Water Board may also initiate enforcement where appropriate.

6. Any proposed change in sludge use or disposal practice shall be reported in writing to the Executive Officer at least 90 days in advance of the change.

H. Provisions

1. The following reports shall be submitted pursuant to Water Code section 13267 and shall be prepared as described in Provision H.5:

   a. **By 30 August 2012**, the Discharger shall submit a *Groundwater Monitoring Well Disinfection Workplan* and a *Sampling and Analysis Plan*. The disinfection workplan shall provide detailed procedures for a one-time well disinfection, and include a schedule to complete the work by **30 November 2012**. The *Sampling and Analysis Plan* shall propose effluent and groundwater sampling techniques designed to minimize cross-contamination of the monitoring wells and groundwater samples with coliform organisms.

   b. **By 30 August 2012**, the Discharger shall submit a *Pond Closure Workplan* that includes, at a minimum, the following information to close rapid infiltration Ponds 3, 6, and 7: (a) estimated volume of biosolids in each pond, (b) methods that will be used to remove the biosolids from the ponds, (c) proposed verification sampling locations and analysis methods following removal of biosolids from the ponds, (d) proposed background sampling locations, and analysis methods, (e) method of biosolids disposal and the location where biosolids are to be disposed, (f) plans for decommissioning the ponds and final grading of the pond areas, and (g) a schedule to complete the work by **30 June 2013**.

   c. **By 30 September 2012**, the Discharger shall submit a *Total Nitrogen Effluent Limitation Compliance Plan* that sets forth the scope and schedule to meet the total nitrogen effluent limit of 10 mg/L by **1 June 2014**. The workplan shall contain a preliminary evaluation of whether the current treatment system can comply with the final effluent limit for total nitrogen. If the treatment system is unable to meet the final limit, the Discharger shall propose and implement treatment and control measures to meet the limit.

   d. **By 30 October 2012**, the Discharger shall submit a *Groundwater Limitations Compliance Assessment Plan*. The plan shall describe and justify the statistical methods proposed to determine compliance with the Groundwater Limitations of this Order. Compliance shall be determined annually based on an intrawell statistical analysis that uses methods prescribed in Title 27, section 20415(e)(10) to compare monitoring data collected from each compliance well, which excludes

OMW-6, to the groundwater limitations of this Order.

e. **By 30 December 2012**, the Discharger shall submit a report documenting completion of monitoring well disinfection in accordance with the approved *Disinfection Workplan* and implementation of the approved *Sampling and Analysis Plan*.

f. **By 30 December 2012**, the Discharger shall submit a *Sludge Dewatering Operations Certification Report* that describes the measures that have been completed to correct the sludge dewatering system and certifies that the system is operating as designed.

g. **By 30 August 2013**, the Discharger shall submit a *Pond Closure Report* that provides results of the pond closure activities of rapid infiltration Ponds 3, 6, and 7 in accordance with the approved *Pond Closure Workplan*.

h. **By 30 August 2013**, the Discharger shall submit and implement a *Pre-Treatment Program Plan*. The plan shall describe the following:

   i. Planned measures to institute a pre-treatment program;

   ii. Evaluation of all accepted industrial discharges to determine whether the discharge interferes with the operation of the wastewater treatment facility, including interference with use or disposal of domestic wastewater residuals, or causes the exceedance of limits set forth in this Order;

   iii. Proposed pretreatment program and which industrial discharges will be enrolled under the pretreatment plan; and,

   iv. The date (and/or schedule) that industrial dischargers are required to comply with the pretreatment program, which shall not extend beyond 30 August 2015.

i. **By 1 June 2014**, the Discharger shall submit a *Nitrogen Effluent Limitation Compliance Report* that describes the system and operational improvements that have been implemented to ensure compliance with the final total-nitrogen effluent limit.

j. **By 30 March 2015**, the Discharger shall submit a *Final Groundwater Limitations Compliance Evaluation Report* that demonstrates compliance with the nitrate-nitrogen, arsenic, manganese, and total coliform organisms final groundwater limits established in this Order. The report shall present a summary of monitoring data and determine compliance using the methodology of the approved Groundwater *Limitations Compliance Assessment Plan*.

k. **By 30 August 2015**, the Discharger shall submit a *Pre-Treatment Program Implementation Report* that evaluates the effluent character since the implementation of the pretreatment program and describe the effectiveness of the pretreatment program. The report also needs to describe the compliance history of industrial dischargers under the pretreatment program and what treatment and

control measures have been implemented by the industrial discharger under the pretreatment program.

2. **After 30 March 2015**, if groundwater monitoring results show that the discharge of waste is causing groundwater to contain any waste constituents in concentrations statistically greater than the Groundwater Limitations of this Order, within 120 days of the request of the Executive Officer, the Discharger shall submit a BPTC Evaluation Workplan that sets forth the scope and schedule for a systematic and comprehensive technical evaluation of each component of the facility's waste treatment and disposal system to determine best practicable treatment and control for each waste constituent that exceeds a Groundwater Limitation. The workplan shall contain a preliminary evaluation of each component of the WWTF and effluent disposal system and propose a time schedule for completing the comprehensive technical evaluation. The schedule to complete the evaluation shall be as short as practicable, and shall not exceed one year.

3. At least **180 days** prior to any sludge removal and disposal, the Discharger shall submit a *Sludge Cleanout Plan*. The plan shall include a detailed plan for sludge removal, drying, and disposal. The plan shall specifically describe the phasing of the project, measures to be used to control runoff or percolate from the sludge as it is drying, and a schedule that shows how all dried biosolids will be removed from the site prior to the onset of the rainy season (**1 October**). If the Discharger proposes to land apply biosolids at the effluent recycling site, the report shall include a Report of Waste Discharge and filing fee to apply for separate waste discharge requirements.

4. A discharger whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment, collection, and disposal facilities. The projections shall be made in January, based on the last three years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in four years, the discharger shall notify the Central Valley Water Board by **31 January**.

5. In accordance with California Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans for investigations and studies, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall bear the professional's signature and stamp.

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

7. The Discharger shall comply with Monitoring and Reporting Program R5-2012-0063, which is part of this Order, and any revisions thereto as ordered by the Executive Officer. The submittal dates of Discharger self-monitoring reports shall be no later than the submittal date specified in the MRP.

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

9. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports. On or before each report due date, the Discharger shall submit the specified document to the Central Valley Water Board or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, then the Discharger shall state the reasons for such noncompliance and provide an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board in writing when it returns to compliance with the time schedule. Violations may result in enforcement action, including Central Valley Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.

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

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

12. 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 trucked or hauled pollutants, except at points predesignated by the Discharger.

13. 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.

14. 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, Central Valley Water Board, or other appropriate parties, as provided in the Clean Water Act (CWA), as amended, or other applicable authorities, for noncompliance.

15. The Discharger shall enforce the requirements promulgated under sections 307(b), (c), (d) and 402(b) of the federal Clean Water Act. 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.

16. 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);
    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); and
    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 sections 54740, 54740.5, and 54740.6, or (2) other equally effective means.

17. The Discharger shall provide certified wastewater treatment plant operators in accordance with Title 23, division 3, chapter 26.

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

19. Upon the reduction, loss, or failure of the sanitary sewer system resulting in a sanitary sewer overflow, the Discharger shall take any necessary remedial action to (a) control or limit the volume of sewage discharged, (b) terminate the sewage discharge as rapidly as possible, and (c) recover as much as possible of the sewage discharged (including wash down water) for proper disposal. The Discharger shall implement all applicable remedial actions including, but not limited to, the following:
    a. Interception and rerouting of sewage flows around the sewage line failure.
    b. Vacuum truck recovery of sanitary sewer overflows and wash-down water.
    c. Use of portable aerators where complete recovery of the sanitary sewer overflows are not practicable and where severe oxygen depletion is expected in surface waters.
    d. Cleanup of sewage-related debris at the overflow site.

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

21. The Discharger shall comply with the requirements of the Statewide General Waste Discharge Requirements (General WDRs) for Sanitary Sewer Systems (Water Quality Order 2006-0003), the Revised General WDRs Monitoring and Reporting Program (Water Quality Order 2008-0002-EXEC), and any subsequent revisions thereto. Water Quality Order 2006-0003 and Order 2008-0002-EXEC require the Discharger to notify the Central Valley Water Board and take remedial action upon the reduction, loss, or failure of the sanitary sewer system resulting in a sanitary sewer overflow.

22. The Discharger shall not allow pollutant-free wastewater to be discharged into the wastewater collection, treatment, and disposal systems in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.

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

24. In the event of any change in control or ownership of the WWTF, the Discharger must notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.

25. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the CWC. 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.

26. A copy of this Order including the MRP, Information Sheet, Attachments, and Standard Provisions, shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.

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

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

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

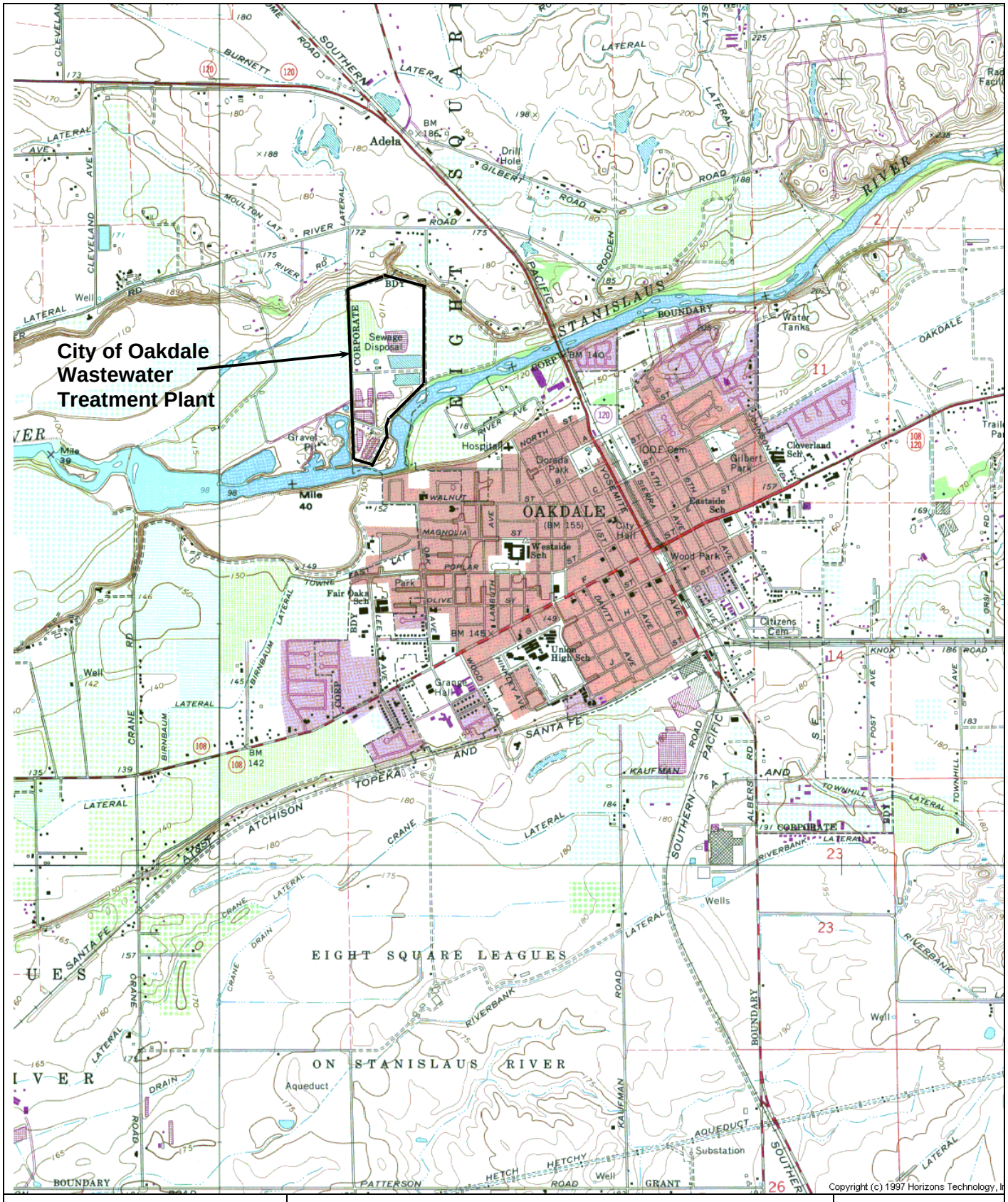
http://www.waterboards.ca.gov/public_notices/petitions/water_quality

or will be provided upon request.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Central Valley Water Quality Control Board, Central Valley Region, on 8 June 2012.

Original signed by

PAMELA C. CREEDON, Executive Officer



DRAWING REFERENCE:

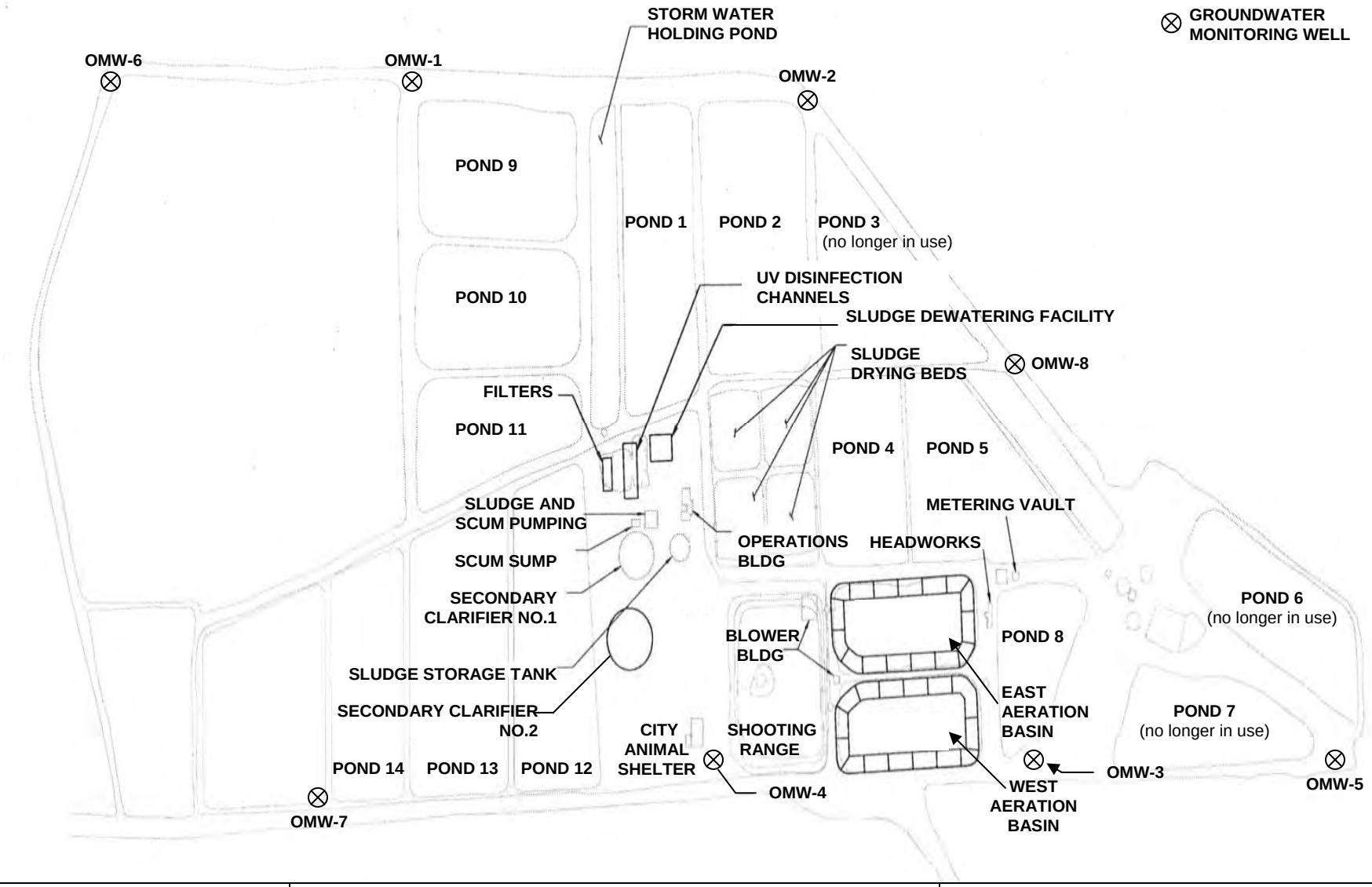
Oakdale Quadrangle
U.S.G.S. Topographic Map 7.5 Minute Quadrangle

SITE LOCATION MAP

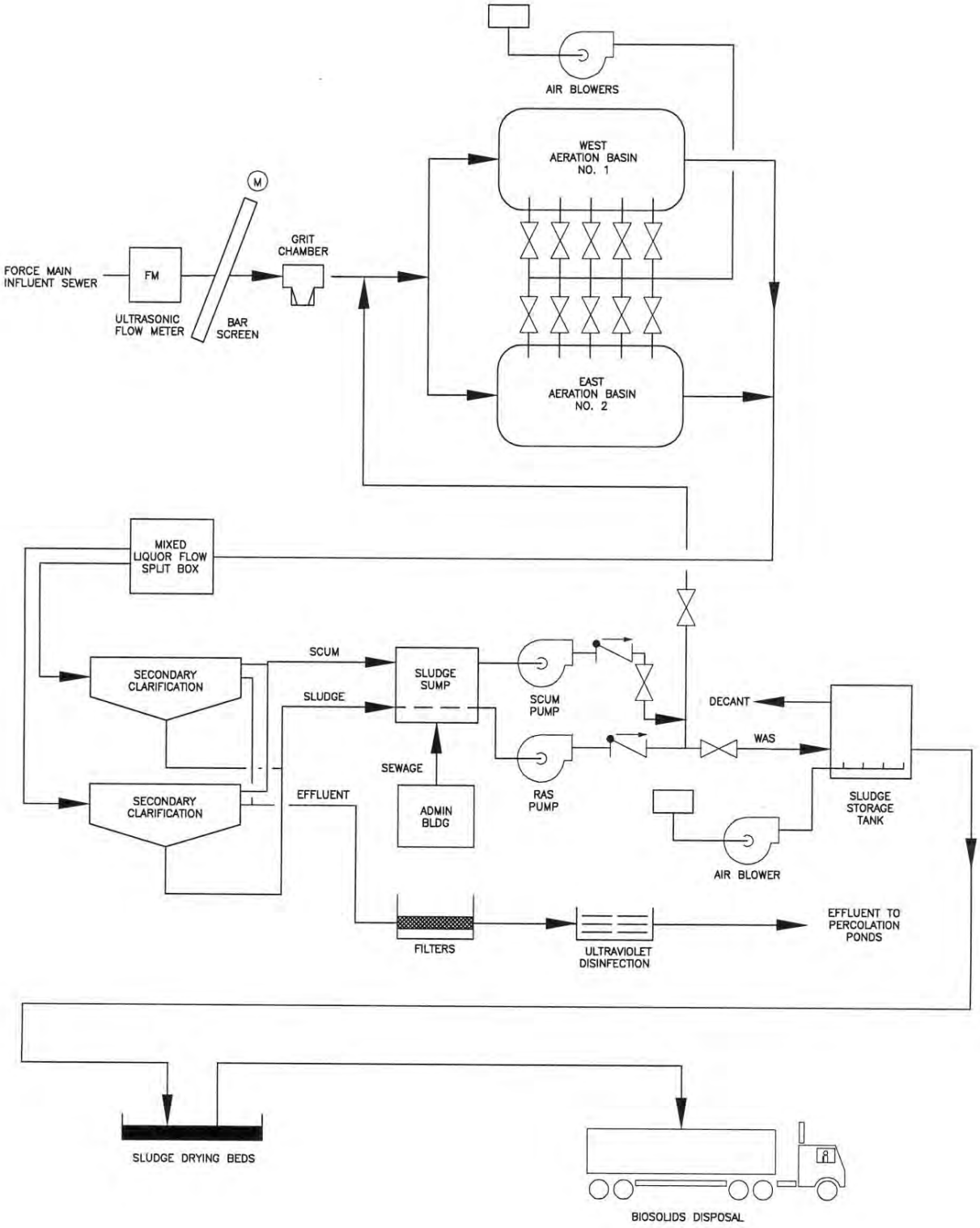
CITY OF OAKDALE
OAKDALE WASTEWATER TREATMENT FACILITY
STANISLAUS COUNTY

N
W E
S

Approx. Scale:
1 in. = 2,640 ft.



DRAWING REFERENCE:	SITE PLAN	Approximate Scale:
HDR, Inc., June 2010 Report of Waste Discharge	CITY OF OAKDALE OAKDALE WASTEWATER TREATMENT FACILITY STANISLAUS COUNTY	1 inch = 300 feet



Drawing Reference: **HDR, Inc.,** June 2010 Report of Waste Discharge	**UPGRADED WWTP FLOW SCHEMATIC** CITY OF OAKDALE OAKDALE WASTEWATER TREATMENT FACILITY STANISLAUS COUNTY	

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2012-0063

FOR

CITY OF OAKDALE
WASTEWATER TREATMENT FACILITY
STANISLAUS COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring influent wastewater, treated effluent, disposal ponds, groundwater, sludge, and water supply. This MRP is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. Central Valley Water Board staff shall approve specific sample station locations prior to implementation of sampling activities.

All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form. Field test instruments (such as those used to measure pH and dissolved oxygen) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are calibrated prior to each monitoring event;
3. The instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of the MRP.

INFLUENT MONITORING

Influent flow monitoring shall be performed at the headworks. Grab samples collected at the headworks will be considered representative of the influent. Influent monitoring shall include the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Flow	MGD	Continuous Meter	Daily	Monthly
BOD_5[1]	mg/L	Grab	Weekly	Monthly

[1] 5-day Biochemical Oxygen Demand.

EFFLUENT MONITORING

Effluent samples shall be collected after the UV disinfection system and prior to discharge to the rapid infiltration disposal ponds. Grab samples will be considered be representative of the effluent. Effluent monitoring shall include the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
BOD_5	mg/L	Grab	Weekly	Monthly
Total Dissolved Solids	mg/L	Grab	Weekly	Monthly
Sodium	mg/L	Grab	Monthly	Monthly
Chloride	mg/L	Grab	Monthly	Monthly
Total Nitrogen [1]	mg/L	Grab	Weekly	Monthly
Total Coliform Organisms	MPN/100 mL	Grab	Daily	Monthly

[1] Total nitrogen is the sum of Total Kjeldahl Nitrogen, nitrate-nitrogen, and nitrite-nitrogen.

Ultraviolet Light (UV) Disinfection System Monitoring

The UV disinfection system shall be monitored as specified below:

Parameter	Units	Sample Type	Monitoring Frequency	Reporting Frequency
Flow	MGD	Meter	Continuous [1]	Monthly
Turbidity	NTU	Meter	Continuous [1]	Monthly
Number of UV banks in operation	Number	Meter	Continuous [1]	Monthly
UV Transmittance	Percent (%)	Meter	Continuous [1]	Monthly
UV Power Setting	Percent (%)	Meter	Continuous [1]	Monthly
UV Dose [2]	MJ/cm [2]	Calculated	Continuous [1]	Monthly

[1] For continuous analyzers, the Discharger shall report documented routine meter maintenance activities including date, time of day, and duration, in which the analyzer(s) is not in operation.

[2] Report daily minimum UV dose, daily average UV dose, and weekly average UV dose. For the daily minimum UV dose, also report associated number of banks, gallons per minute per lamp, and UV transmittance used in the calculation. If effluent discharge has received less than the minimum UV dose, report the duration and dose calculation variables associated with each incident.

POND MONITORING

All ponds shall be monitored as specified below. Dissolved oxygen monitoring applies to any rapid infiltration pond containing more than two feet of standing water and the aerobic region of the treatment basins:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Dissolved Oxygen [1]	mg/L	Grab	Weekly	Monthly
Freeboard	0.1 feet	Measurement	Weekly	Monthly
pH [1]	Standard	Grab	Weekly	Monthly
Odors	--	Observation	Weekly	Monthly
Berm condition	--	Observation	Monthly	Monthly

[1] For treatment ponds, samples shall be collected from the aerobic zone; for rapid infiltration ponds, samples shall be collected opposite the pond inlet.

In addition, the Discharger shall inspect the condition of the ponds once per week and document visual observations. Notations shall include observations of:

a. Presence of weeds in the water or along the berm;
b. Accumulations of dead algae, vegetation, scum, or debris on the pond surface;
c. Animal burrows in the berms; and
d. Evidence of seepage from the berms or downslope of the ponds.

GROUNDWATER MONITORING

The current groundwater monitoring well network consists of OMW-1 through OMW-8. Prior to construction of any new groundwater monitoring wells, the Discharger shall submit plans and specifications to the Central Valley Water Board for review and approval.

Prior to sampling, the groundwater elevations shall be measured. Depth to groundwater shall be measured to the nearest 0.01 feet. Samples shall be collected using standard EPA methods. Groundwater monitoring shall include, at a minimum, the following constituents:

Constituent	Units	Type of Sample	Sampling and Reporting Frequency
Depth to Groundwater [1]	0.01 feet	Measurement	Quarterly
Groundwater Elevation [1]	0.01 feet	Calculated	Quarterly
Gradient [1]	feet/feet	Calculated	Quarterly
Gradient Direction [1]	Degrees	Calculated	Quarterly
pH	pH units	Grab	Quarterly
Total coliform organisms [2]	MPN/100 ml	Grab	Quarterly
Total dissolved solids	mg/L	Grab	Quarterly
Chloride	mg/L	Grab	Quarterly
Nitrate (as nitrogen)	mg/L	Grab	Quarterly
Ammonia (as nitrogen)	mg/L	Grab	Quarterly
Arsenic, dissolved [3]	µg/L	Grab	Quarterly [6]
Manganese, dissolved [3]	µg/L	Grab	Quarterly [6]
Standard minerals [4]	mg/L	Grab	Annually [7]
Metals [3,5]	µg/L	Grab	Annually [7]

[1] Groundwater elevations shall be determined based on depth-to-water measurements using a surveyed elevation reference point on the well casing.

[2] Using a minimum of 15 tubes or three dilutions.

[3] Samples analyzed for metals shall be filtered prior to sample preservation using a 0.45-micron filter.

[4] Standard Minerals shall include, at a minimum, the following elements/compounds: boron, bromide, calcium, fluoride, magnesium, phosphate, potassium, sodium, sulfate, total alkalinity (including alkalinity series), and hardness as $CaCO_3$.

[5] At a minimum, the following metals shall be included: copper, lead, iron, nickel, and zinc. Analytical methods shall be selected to provide reporting limits below the Water Quality Limit for each constituent.

[6] Arsenic and manganese shall be monitored quarterly through the first quarter of 2015, after which monitoring shall be on an annual basis.

[7] Results for constituents analyzed annually shall be reported in the fourth quarterly monitoring report each year

WATER SUPPLY MONITORING

A sampling station shall be established where a representative sample of the municipal water supply can be obtained. Water supply monitoring shall include at least the following for each water source used during the previous year. As an alternative, the Discharger may submit results of the most current Department of Public Health Consumer Confidence Report in the Annual Monitoring Report.

Constituents	Units	Sampling and Reporting Frequency
Total Dissolved Solids	mg/L	Annually
pH	Standard units	Annually
Standard minerals	mg/L	Annually

[1] Standard Minerals shall include, at a minimum, the following elements/compounds: boron, calcium, chloride, iron, magnesium, manganese, nitrogen, potassium, sodium, sulfate, total alkalinity (including alkalinity series), and hardness

SLUDGE MONITORING

A composite sample of digested sludge shall be collected when sludge is removed from the wastewater treatment system for disposal in accordance with EPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989, and analyzed for cadmium, copper, nickel, chromium, lead, and zinc.

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

REPORTING

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

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all Groundwater Monitoring Reports shall be prepared under the direct supervision of a Registered Engineer or Geologist and signed by the registered professional.

A. Monthly Monitoring Reports

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

1. Results of influent, effluent, UV disinfection, and disposal pond monitoring. Data shall be presented in a tabular format.
2. Average daily flow for the month and total annual flow to date.
3. Calculated 7-day median results for total coliform organisms (TCO).
4. A comparison of monitoring data to the discharge specifications and an explanation of any violation of those requirements.
5. Copies of inspection logs.
6. Copies of laboratory analytical report(s).
7. A calibration log verifying calibration of all hand-held monitoring instruments.

B. Quarterly Monitoring Reports

The Discharger shall establish a quarterly sampling schedule for groundwater monitoring such that samples are obtained approximately every three months. Quarterly monitoring reports shall be submitted to the Board by the **1st day of the second month after the quarter** (i.e. the January-March quarterly report is due by May 1st). The Quarterly Report shall include the following:

1. Results of groundwater monitoring.
2. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance with the WDR, this MRP, and the Standard Provisions and Reporting Requirements. The narrative shall be supported by field logs for each well documenting depth to groundwater; parameters measured before, during, and after purging; method of purging; calculation of casing volume; and total volume of water purged.
3. Calculation of groundwater elevations, an assessment of groundwater flow direction and gradient on the date of measurement, comparison of previous flow direction and gradient data, and discussion of seasonal trends if any.
4. A narrative discussion of the analytical results for all groundwater locations monitored including spatial and temporal tends, with reference to summary data tables, graphs, and appended analytical reports (as applicable).
5. Summary data tables of historical and current water table elevations and analytical results.

6. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells, surface water monitoring locations, and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum.
7. Copies of laboratory analytical report(s) for groundwater monitoring.

C. Annual Monitoring Report

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

1. The results of monitoring for effluent, water supply, groundwater, surface water, water supply, and sludge for the year.
2. Total annual influent flow, average monthly flows for each month of the year, and the average dry weather flow.
3. Tabular and graphical summaries of all data collected during the year.
4. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program.
5. For each compliance groundwater monitoring well, which excludes OMW-6, a statistical evaluation of the groundwater quality beneath the wastewater treatment facility, in accordance with the approved report submitted pursuant to Provision H.1.d and a comparison of the results to the groundwater limitations.
6. A digital database (Microsoft Excel) containing historic effluent, water supply and groundwater data.
7. An evaluation of the performance of the WWTF, including discussion of capacity issues, infiltration and inflow rates, nuisance conditions, and a forecast of the flows anticipated in the next year, as described in Standard Provision E.4
8. A discussion of compliance and the corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements.
9. Summary of information on the disposal of sludge and/or solid waste. The results from any sludge monitoring required by the disposal facility.
10. A copy of the certification for each certified wastewater treatment plant operator working at the facility and a statement about whether the Discharger is in compliance with Title 23, CCR, Division 3, Chapter 26.
11. Equipment maintenance and calibration records, as described in Standard Provision C.4.
12. A statement of when the O&M Manual was last reviewed for adequacy and a description of any changes made during the year.

A letter transmitting the self-monitoring reports shall accompany each report. The letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If

the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

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

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

_____
(Date)

INFORMATION SHEET

WASTE DISCHARGE REQUIREMENTS R5-2012-0063
CITY OF OAKDALE
OAKDALE WASTEWATER TREATMENT FACILITY
STANISLAUS COUNTY

Background

The City of Oakdale Wastewater Treatment Facility (WWTF) treats and disposes of domestic wastewater from residential and commercial sources in the City of Oakdale and has one industrial wastewater discharger. The Discharger receives industrial wastewater from Sconza Candy, a candy manufacturer. Based on data provided in the RWD, Sconza Candy accounts for about 4 percent of the flow at the wastewater treatment plant, 30 percent of the BOD mass load, and about 17 percent of the total dissolved solids (TDS) mass loading.

WDRs Order 5-01-094 specified an average daily influent flow limit of 2.4 MGD. The average influent daily flow to the WWTF from January 2006 to December 2010 was 1.69 MGD.

The previous wastewater treatment plant (WWTP) consisted of a headworks, two aeration basins that operate in parallel, secondary clarification, sludge drying beds, and wastewater disposal to fourteen rapid infiltration ponds. In the past, the treatment capacity of the plant was limited by a single 90-foot secondary clarifier that was built in 1965. The single secondary clarifier did not have capacity to treat peak wastewater flows, which resulted in sludge bypass to the rapid infiltration ponds. Additionally, there was no backup clarifier to use when the unit was taken out of service for maintenance or repair.

The uncovered sludge drying beds do not adequately dry out the sludge solids during the wet winter months. This resulted in extended storage of sludge in the sludge drying beds, the sludge storage tank, and in the wastewater treatment system, which impacted operation of the biological treatment system. In 2008, a screw press was added for year-round mechanical sludge dewatering.

Modifications to the Wastewater Treatment Plant

The Discharger completed major upgrades to the WWTP to improve biological treatment, provide UV disinfection of effluent, provide a back-up secondary clarifier, and mechanically dewater the sludge. The Discharger states that three rapid infiltration Ponds are no longer used due to their close proximity to the Stanislaus River. Both aeration basins have been lined with a 60 mil HDPE single liner. Additionally, the aeration system was rehabilitated and upgraded with two additional100-horsepower blowers. A 120-foot diameter secondary clarifier was constructed in addition to the existing clarifier. The existing 90-foot secondary clarifier will be used in parallel as needed or serve as a backup when the 120-foot clarifier is out of service for maintenance. Cloth media filters and a ultraviolet light (UV) disinfection system were installed to protect shallow groundwater quality from coliform organism contamination. As part of the WWTP upgrades, an additional screw press was added and both screw presses were

installed under a permanent canopy structure. The sludge drying beds are uncovered and may be used in the summer for additional drying or for backup dewatering.

The Discharger states that the mechanical sludge dewatering system has been prone to dysfunction since it was installed and the Discharger has been working to fix the system. This Order requires the Discharger to submit a sludge dewatering system operational report that describes the measures that will be taken to correct the problems and ensure that the system is operational by 30 December 2012.

A comparison of historical effluent data with effluent data obtained after a majority of the WWTP upgrades were completed in April 2011 shows UV disinfection has reduced total coliform organisms (TCO). However, the nitrate concentration has not improved. The Discharger states that the upgraded WWTP treatment system was designed to meet an average nitrate-nitrogen effluent limit of 10 mg/L. To protect groundwater quality this Order sets a time schedule for the Discharger to meet an average total nitrogen concentration of 10 mg/L.

Groundwater Considerations

Groundwater underlying the site ranges from 3 to 14 feet below the bottom of the rapid infiltration ponds. Discharges to the rapid infiltration ponds have resulted in groundwater mounding. Without discharge to the rapid infiltration ponds, shallow groundwater would likely flow consistently from north to south towards the Stanislaus River.

Eight groundwater monitoring wells monitor first encountered groundwater at the WWTP. Monitoring data from OMW-6 and its location relative to the WWTP indicate that it is cross-gradient of the WWTP, representative of shallow background groundwater quality, and unaffected by the wastewater treatment plant discharge.

Based on groundwater monitoring data, the discharger has degraded groundwater quality with TDS, chloride, nitrate, arsenic, manganese, and total coliform organisms. In the case of nitrate, arsenic, manganese, and coliform organism, the degradation of groundwater exceeds applicable water quality objectives.

The elevated concentrations of TDS and chloride in the groundwater are typical for a municipal wastewater treatment facility given the quality of the water supply. The recent facility upgrades are not expected to improve effluent salinity or groundwater quality. Therefore, to prevent further degradation, this Order sets TDS effluent and groundwater limits and a chloride groundwater limit.

The short separation between the ponds and the groundwater may have led to the coliform and nitrate degradation in groundwater. The Discharger's previous problems of sludge overflow and the subsequent drying of sludge in the ponds may have exacerbated the nitrate and coliform organism degradation. The Discharger has lined the aeration basins, improved aeration capacity, installed UV disinfection, and installed a mechanical sludge dewatering

system to improve groundwater quality protection. This Order sets nitrate and total coliform effluent and groundwater limits to ensure compliance with the Basin Plan.

Elevated concentrations of arsenic and manganese are not typical for a domestic wastewater treatment plant such as Oakdale with low concentrations in the potable source water and without significant industrial dischargers. The Discharger has not indicated any industrial dischargers that would contribute a source of arsenic or manganese and the discharge is not expected to be contributing arsenic or manganese to the groundwater. The unlined treatment ponds and the Discharger's previous problems of sludge bypass into the ponds may have temporarily created anaerobic conditions that mobilize naturally occurring arsenic and manganese. As noted above, the Discharger has taken measures to improve protection of groundwater. This Order sets a time schedule for the Discharger to determine if the treatment and control measures have improved arsenic and manganese groundwater quality and whether further treatment or control is required.

Basin Plan, Beneficial Uses, and Regulatory Considerations

The beneficial uses of the Stanislaus River, as stated in the Basin Plan, are municipal and domestic supply; agricultural supply; industrial service and process supply; hydropower generation; contact and non-contact water recreation; warm and cold freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat. The Basin Plan designates the beneficial uses of underlying groundwater as municipal and domestic supply, agricultural supply, and industrial supply. Local drainage in the area flows to the Stanislaus River, but the Discharger collects all storm water generated at the WWTP and disposes of it in a stormwater holding pond.

Antidegradation Analysis

The Discharger has been monitoring groundwater quality at the current WWTF site since 1989. Based on the data available, it is not possible to determine pre-1968 groundwater quality. Therefore, determination of compliance with Resolution 68-16 for this facility must be based on existing background groundwater quality.

Constituents of concern that have the potential to degrade groundwater include salts (primarily TDS, sodium, and chloride), nutrients, coliform organisms, and metals. The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objective is to be interpreted for the protection of agricultural use. All studies conducted through this Order to establish an agricultural limit to implement the narrative objectives will be reviewed and consistent with the efforts underway by CV-SALTS.

The secondary MCL for TDS is 500 mg/L as a recommended level, 1,000 mg/L as an upper level, and 1,500 mg/L as a short-term maximum. The Central Valley Water Board must

determine the applicable numeric limit to implement the narrative objective for the protection of agricultural supply. The most limiting agricultural water quality goal may be as low as 450 mg/L. However, the water quality goal is not a site-specific goal or objective, but rather a general measure that was determined to protect salt-sensitive crops. Only the most salt-sensitive crops require irrigation water of 450 mg/L or less to prevent loss of yield. Site specific TDS levels of the receiving waters are necessary to interpret the narrative chemical constituent objective for protection of agricultural supply.

The average effluent TDS concentration is 384 mg/L, with a range from 374 mg/L to 439 mg/L, which are similar concentrations found in the downgradient monitoring wells. Compared to the source water TDS concentration, the effluent TDS concentration is elevated approximately 200 mg/L, which is typical for a domestic wastewater treatment facility and indicates that the Discharger's current treatment and control practices are effective. The average TDS concentration in the cross-gradient groundwater well MW-6 is 118 mg/L with a range from 30 mg/L to 180 mg/L. Based on these results, it appears that some degradation has occurred as a result of the discharge. However, this Order does not allow degradation beyond that which may already exist. Therefore, this Order sets a performance based TDS effluent limit of 450 mg/L and sets a TDS groundwater limit of 500 mg/L

The secondary MCL for chloride is 250 mg/L as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum. The Central Valley Water Board must determine the applicable numeric limit to implement the narrative objective for the protection of agricultural supply. The most limiting agricultural water quality goal may be as low as 106 mg/L as a long-term average, which is intended to protect against adverse effects on sensitive crops when irrigated via sprinklers. However, the water quality goal is not a site-specific goal or objective, but rather a general measure to protect salt-sensitive crops. Site specific chloride levels of the receiving waters are necessary to interpret the narrative chemical constituent objective for protection of agricultural supply.

A review of the Discharger's monitoring reports shows that the average chloride concentration in the downgradient wells varies from 52 mg/L to 58 mg/L and ranges from 19 mg/l to 120 mg/L. The average chloride concentration in the cross-gradient groundwater well MW-6 is 5 mg/L with a range from 2 mg/L to 14 mg/L. Based on these results, it appears that some degradation has occurred as a result of the discharge. However, this Order does not allow degradation beyond that which may already exist. Therefore, this Order sets a chloride groundwater limit of 106 mg/L.

For nutrients such as nitrate, the potential for unreasonable degradation depends not only on the quality of the treated effluent, but the ability of the vadose zone below the effluent disposal ponds to provide an environment conducive to nitrification and denitrification to convert the effluent nitrogen to nitrate and the nitrate to nitrogen gas before it reaches the water table. Downgradient groundwater monitoring wells have exceeded the Basin Plan water quality objective for nitrate-nitrogen (10 mg/L), while the background groundwater concentration averages 1.5 mg/L. Therefore, the shallow vadose zone may not provide an environment

conducive for denitrification. Prior to upgrades, effluent monitoring data show that the nitrate-nitrogen concentration historically averaged 11.3 mg/L. After upgrades and between April 2011 and October 2011, the effluent nitrate-nitrogen concentration averaged 19.3 mg/L. The Discharger states that the upgraded WWTP treatment system was designed to meet an average nitrate-nitrogen effluent limit of 10 mg/L and required an optimization period. Between October 2011 and February 2012, the effluent nitrate-N concentration averaged 7.1 mg/L with a maximum of 8.0 mg/L.

To protect groundwater quality, this Order sets an effluent limit for total nitrogen of 15 mg/L. Since monitoring data shows that the discharge may not be able to meet this limit immediately, this Order also sets a three-year time schedule for compliance with the effluent limit for total nitrogen.

While the Discharger has lined and improved sludge handling, the discharge has caused an exceedance of the nitrate-nitrogen water quality objective. Because groundwater quality is expected to improve as a result of effluent quality improvements, this Order sets a three-year time schedule for the Discharger to meet the Basin Plan water quality objective for nitrate-nitrogen in groundwater.

For coliform organisms, the discharge has caused an exceedance of the Basin Plan's numeric water quality objective. The potential to exceed the water quality objective depends on the ability of the vadose zone soils below the effluent storage/disposal ponds and saturated soils within the shallow water bearing zone to provide adequate filtration. Historically, total coliform organisms (TCO) detections in groundwater monitoring wells exceeded the Basin Plan limit suggesting that the shallow vadose zone and soil types at the facility may not provide adequate filtration. The Discharger has lined the aeration basins and begun disinfecting the effluent with UV. This Order sets an effluent limit for TCO based on the design specifications provided in the RWD to ensure the UV disinfection system is operating correctly. To ensure that the monitoring wells have not been colonized with coliform organisms this Order requires the Discharger to disinfect all monitoring wells. The Discharger is required to meet the Basin Plan water quality objective for coliform organisms in groundwater after the wells have been disinfected.

For metals such as arsenic and manganese, the potential for unreasonable degradation depends on the quality of the treated effluent and the capacity of the vadose zone below the effluent disposal ponds to immobilize metals before percolate reaches the water table. The discharge is not expected to be contributing arsenic or manganese to the groundwater. The Discharger's problems of sludge bypass into the ponds may have created conditions that mobilize naturally occurring arsenic and manganese. This Order sets a three-year time schedule for the Discharger to meet the Basin Plan water quality objective for arsenic and manganese in groundwater.

This Order requires the Discharger to institute a pretreatment program because the Discharger accepts industrial wastewater that constitutes a substantial percentage of the BOD and TDS mass loading, which may have resulted in upsets of the treatment process and sludge bypass.

Other Regulatory Considerations

The Discharger states that effluent is no longer discharged to Ponds 3, 6, and 7 due to their close proximity to the Stanislaus River. Because the Discharger has had previous bypass of sludge through the secondary clarifier and used some ponds for extended sludge storage, it is likely that accumulated sludge needs to be removed from the ponds. Therefore, this Order requires the Discharger to submit and implement a pond closure plan and prevent future discharge to these ponds by backfilling them and physically blocking or disconnecting these ponds from the disposal pipeline.

Discharge Prohibitions, Specifications, and Provisions

The Discharger's water balance capacity analysis indicates the WWTF will provide the following capacities:

Flow Measurement	Flow Limit
Total Annual Flow [1]	935 MG
Average Dry Weather Flow [2]	2.45 MGD
Maximum Monthly Average Flow [3]	2.7 MGD

[1] As determined by the total flow for the calendar year.

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

[3] As determined by the total flow during the calendar month with the highest influent flow total, divided by the number of days in that month.

Discharge of waste to former rapid infiltration Ponds 3, 6, and 7 is prohibited.

This Order contains performance-based effluent limits for BOD, TDS, total nitrogen and total coliform organisms. A time schedule is given for the effluent total nitrogen concentration to comply with 10mg/L. This Order contains groundwater limits that implement Basin Plan groundwater water quality objectives for total coliform organisms, nitrate-nitrogen, arsenic, and manganese. This Order also contains groundwater limits for TDS and chloride that allow the current level of degradation to continue but prevent degradation beyond water quality objectives. A time schedule is given for the groundwater concentrations of nitrate-nitrogen, arsenic, and manganese to comply with the Basin Plan groundwater water quality objectives. Compliance with these limitations will be determined annually based on intrawell analysis using approved statistical methods.

The Provisions require the submittal of technical reports that describe the statistical methods used to determine compliance with groundwater limits. The Discharger is also required to close the former rapid infiltration ponds, disinfect all groundwater monitoring wells, certify the correct operation of the sludge dewatering system, and institute a pre-treatment program.

The Monitoring and Reporting Program is designed to verify compliance with effluent limitations, groundwater limitations, and operational requirements of the WDRs.