CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2006-0114-001

WASTE DISCHARGE REQUIREMENTS

FOR

OAKWOOD LAKE WATER DISTRICT
WASTEWATER TREATMENT PLANT
SAN JOAQUIN COUNTY

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

1. Oakwood Lake Water District and Beck Properties, Inc. submitted a Report of Waste Discharge (RWD), in September 2005 for updating existing Waste Discharge Requirements (WDRs) for the Oakwood Lake Water District wastewater treatment plant. The purpose of the update is to treat and dispose of domestic wastewater generated in new residential developments and an existing mobile home park. Supplemental information was received on 13 January 2006, 7 February 2006, and 24 March 2006.

2. For the purposes of this Order, the term "Wastewater Treatment Plant" (WWTP) shall mean the wastewater collection system, the wastewater treatment system, the sludge basin, recycled water distribution piping, recycled water storage ponds, and the land application areas. The general location of the facility is shown on Attachment A, which is attached hereto and made part of this Order by reference.

3. The WWTP is at 874 East Woodward Avenue, Manteca, in Section 10, T2S, R6E and Section 11, T2S, R6E, MDB&M. The Oakwood Lake Water District owns the mechanical treatment system; Beck Properties Inc. owns the land where it is located and the land application areas. The treatment plant site plan is shown on Attachment B, which is attached hereto and made part of this Order by reference. Oakwood Lake Water District and Beck Properties, Inc. are hereafter jointly referred to as "Discharger."

4. WDRs Order No. 5-01-113, adopted by the Regional Water Board on 11 May 2001, prescribes requirements for the Oakwood Lake Water District and Vernalis Partners Ltd. wastewater treatment plant. Continued use of Order 5-01-113 is not consistent with the mitigation measures described in the Oakwood Lake Environmental Impact Report nor would it be adequate or consistent with the current plans and policies of the Regional Water Board.

5. Portions of the WWTP are in various locations. The headworks, treatment ponds, and sludge digestion pond is adjacent to the San Joaquin River and Walthall Slough; land application areas and recycled water storage ponds are in several areas surrounding the lakes. The locations of the wastewater system components and land application areas are presented on Attachment C, which is attached hereto and made part of this Order by reference. The Assessor's Parcel Numbers (APNs) for the headworks and treatment

ponds is 241-030-10; the APNs for the land application areas are 241-510-01, 241-510-05, 241-510-06, 241-520-01, 241-520-02, 241-520-05, 241-520-08, and 241-520-09.

6. The WWTP will serve residential and commercial developments. The developments will be constructed in two phases. The phasing and anticipated time of development is presented below:

Phase	Scheduled Construction	Number of Residences	Commercial
Phase I	Late 2006	220 Single Family Residences 56 Mobile Home Units	None Planned
Phase II	Approximately in mid-2008	260 Single Family Residences 56 Mobile Home Units (total)	10.2 Acres of Commercial/Professional Office Space

Existing Facility, Proposed Facility, and Discharge

7. An existing WWTP is in operation at the site serving the mobile home units. Historically, the existing WWTP served all of Oakwood Lake Resort, which provided water slides, campgrounds, and a concert venue. Although the resort closed in 2005, the mobile homes are still occupied. The existing wastewater system is operating to treat wastewater from the mobile homes. Presently, the WWTP is being expanded to provide better treatment for the wastewater that will be generated in the future land development.

8. The WWTP is being constructed to treat wastewater from new residential and commercial developments. The developments will be constructed in phases; initially, the existing flow from the mobile home park will be treated (approximately 15,000 gallons per day (gpd)). The first phase of development will generate a total of approximately 55,000 gpd of domestic wastewater. The second phase of development is expected to bring the total wastewater flow rate to 136,200 gpd. The treatment system equipment will be constructed as part of the Phase I development. Land application areas and recycled water storage ponds will be constructed in phases.

9. The Dischargers have reported that they intend to connect to the City of Manteca wastewater collection system when it is available. The RWD reports, based on conversations with the City of Manteca, treatment capacity should be available in 10 to 15 years.

10. The treatment plant will provide tertiary treatment and disinfection using a sequential batch reactor (SBR) system. The treatment system consists of screening, SBR, flow equalization, sand filtration, disinfection, effluent pumping, and land application. Sludge will be digested and stored on-site pending off-site disposal. A treatment system flowchart is presented in Attachment D, which is attached hereto and made part of this Order by reference. Each of the treatment components is further described below.

11. Wastewater will be delivered to the treatment system from three pump stations; one located adjacent to the treatment plant site and two located within the housing developments.
12. Influent wastewater will be screened with a fine mesh self-cleaning gravity screen to remove larger solids and grit that could damage pumps or interfere with downstream process equipment. Screenings and grit will be stored in a covered container for disposal at an off-site location.
13. Wastewater flow rate will be measured with a magnetic flow meter. A totalizer will record the cumulative flow quantity.
14. Screened wastewater will be treated using an SBR process. The SBR will consist of a 200,000 gallon lined basin that will be aerated and mixed using floating aerators. The aerators will be cycled on and off to create anoxic conditions to facilitate denitrification. The SBR is anticipated to perform four cycles per day. Excess sludge will be wasted to the sludge storage basin.
15. Flow from the SBR will be equalized in a secondary effluent storage basin with a storage capacity of approximately 49,000 gallons. Wastewater from the effluent storage basin will be pumped through sand filters. A polymer (polyaluminum chloride) will be added to the discharge to increase the efficiency of the sand filters.
16. Duplex sand filters will be used to remove suspended solids in the wastewater that remains after clarification. Solids removed by the filters will be flushed in backwash water and returned to the SBR basin.
17. Disinfection will be performed by addition of hypochlorite to the sand filter effluent. Duplex hypochlorite feed units will be used for redundancy. The contact chamber will consist of a 24-inch diameter pipe to maximize contact time.
18. Disinfected wastewater will flow by gravity to the effluent storage basin. From the effluent storage basin the treated wastewater will be pumped to lined recycled water storage reservoirs.
19. Sludge will discharged to the sludge storage basin for digestion and thickening. Decant water from the basin will be returned to the SBR pond. Sludge will be hauled off-site for disposal.
20. An emergency storage reservoir will be available for storage of wastewater during a malfunction of the treatment plant and when effluent doesn't meet effluent requirements. The emergency storage reservoir will provide approximately 233,000 gallons of storage capacity.
21. The wastewater system includes provisions for component malfunction and primary power outage. Critical mechanical components have duplex units or available spare parts. The control system will monitor the status and performance of equipment. An alarm will automatically dial system operators if a problem is detected by the control system.
22. A 100-kilowatt standby power generator will be available for use during power failures. The generator will automatically start in the event of a power outage. The generator will also power the wastewater lift station adjacent to the treatment plant.

23. Recycled water will be stored in the effluent holding basin after disinfection. During Phase I, effluent storage will be provided in a 23.97-acre foot reservoir located in the northeast corner of Oakwood Lake Water District. The location of the pond is presented on Attachment C.

24. Treatment ponds located at the treatment facility are described below. Recycled water storage ponds are described in the "Recycled Water Discharge" portion of this Order. A summary of the treatment facility ponds, their size, and their liners is presented in the table below:

Pond	Size	Use	Liner
SBR Pond	200,000 gallons	Wastewater Treatment	HDPE 40 mil [1]
Secondary Effluent	49,000 gallons	Flow Equalization	HDPE 40 mil [1]
Effluent Storage	330,000	Flow Equalization/Storage	HDPE 40 mil [1]
Sludge Storage	178,000	Recycled Water Storage	HDPE 40 mil [1]
Emergency Storage	233,000 gallons	Emergency Storage	HDPE 40 mil [1]

[1] HDPE 40-mil denotes High Density Polyethylene, or equivalent.

25. Storm water that falls on the treatment plant concrete paved areas will be collected and directed into the system headworks. Storm water that falls on turf areas at the treatment plant will infiltrate.

26. Because construction of these developments is not complete, no site-specific data on wastewater quality is available. According to the RWD, the projected wastewater characteristics are presented below:

Constituent	Units	Average
Biochemical Oxygen Demand	mg/L	220
Total Suspended Solids	mg/L	220
Total Nitrogen	mg/L	30
Total Dissolved Solids	mg/L	710 [1]

[1] Total Dissolved Solids estimate is approximately 300 mg/L higher than the potable water supply (410 mg/L).

27. The Discharger estimates the quality of the effluent will be as described below:

Constituent	Units	Treatment Plant Effluent
Biochemical Oxygen Demand	mg/L	Not Provided
Bicarbonate	mg/L	240
Calcium	mg/L	58
Chloride	mg/L	140
Total Coliform Organisms	MPN/100 mL	<2.2
Sodium	mg/L	148
Total Nitrogen	mg/L	<10
pH	Std. Unit	7.5
Sulfate	mg/L	34

Constituent	Units	Treatment Plant Effluent
Total Dissolved Solids	mg/L	710

MPN denotes Most Probable Number.

Recycled Water Discharge

28. Treated recycled water will be stored in lined storage ponds and applied to landscaped land application areas. All of the ponds and land application areas are within the Oakwood Lake Water District service area boundary (see Attachment C).

29. Storage ponds will be used to store recycled water when not irrigating; the locations of the ponds are presented on Attachment C. The table below lists recycled water storage ponds.

Pond	Size	Use	Liner
Basin No. 1	23.83 ac•ft	Recycled Water Storage	HDPE 40 mil
Basin No. 2	26.86 ac•ft	Recycled Water Storage	HDPE 40 mil
Basin No. 3	1.02 ac•ft	Recycled Water Storage	HDPE 40 mil
Basin No. 4	3.45 ac•ft	Recycled Water Storage	HDPE 40 mil
Totals	55.16 ac•ft		

30. All the ponds will be lined with 40-mil high-density polyethylene (HDPE) or equivalent to minimize percolation.

31. Land application areas will be planted with turf grass, shrubs, and trees. Most irrigation will occur through drip irrigation lines installed approximately one foot below the ground surface (Geoflow). Some spray irrigation will be used to apply wastewater. The acreage, development phase, and application method are described in the table below:

Land Application Area	Acreage	Dev. Phase	Application Type
LAA No. 1	12.5	I	Geo-Flow
LAA No. 2	2.16	I	Spray
LAA No. 3	1.03	I	Geo-Flow
LAA No. 4	0.72	II	Geo-Flow
LAA No. 5	4.34	II	Geo-Flow
LAA No. 6	0.87	II	Spray
LAA No. 7	0.87	II	Spray
LAA No. 8	0.12	II	Geo-Flow
LAA No. 9	9.14	II	Geo-Flow
Total Land Area	31.75		

32. Effluent will be applied at plant uptake rates for both nitrogen and water application. Irrigation tailwater will be controlled through such measures as perimeter berms and/or grading the area to prevent off-site drainage.

33. The RWD contains a Phase I water balance that demonstrates hydraulic capacity for a wastewater flow rate of 55,000 gpd. The Phase I water balance requires 21.1 ac•ft of

storage capacity and 13.0 acres of land application area. Basin No. 1 will be constructed for the first phase of development; Basins Nos. 2, 3, and 4 will be constructed for the second phase of development.

34. The RWD contains a Phase II water balance that demonstrates hydraulic capacity for a wastewater flow rate of 136,200 gpd. The Phase II water balance requires a total of 53.0 ac•ft of storage capacity and 30.0 acres of land application area.

35. Phase II land application areas and recycled water ponds will be developed in the future. Authorization to use the Phase II land application areas and wastewater ponds must be obtained from the Executive Officer prior to use.

Wastewater Collection System

36. The wastewater collection system will consist primarily of 6-inch diameter gasketed schedule-40 poly vinyl chloride (PVC) pipe. Most of the existing collection system associated with the previous use as Oakwood Lake Resort will be abandoned. However, the collection system associated with the existing mobile home park is not planned for removal. If excessive inflow and infiltration in that area is identified, the RWD states that portions of the collection system will be replaced as needed to control infiltration and inflow.

37. The sanitary sewer system collects wastewater and consists of sewer pipes, manholes, and/or other conveyance system elements that direct raw sewage to the treatment facility. A "sanitary sewer overflow" is defined as a discharge to ground or surface water from the sanitary sewer system at any point upstream of the treatment facility. Temporary storage and conveyance facilities (such as wet wells, regulated impoundments, tanks, highlines, etc.) may be part of a sanitary sewer system and discharges to these facilities are not considered sanitary sewer overflows, provided that the waste is fully contained within these temporary storage/conveyance facilities. Sanitary sewer overflow is also defined in State Water Board Order No. 2006-0003-DWQ, *Statewide General Waste Discharge Requirements for Sanitary Sewer Systems*. The Internet web location for State Water Board Order No. 2006-0003-DWQ is presented on Attachment E, which is attached hereto and made part of this Order by reference.

38. For the proposed facility, any sanitary sewer overflows would 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.

39. 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 exceedances 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.

40. The Discharger is expected to take all necessary steps to adequately maintain, operate, and prevent discharges from its sanitary sewer collection system. This Order requires the

Discharger to prepare and implement a *Sewer System Management Plan* (SSMP) consistent with State Water Resources Control Board (State Water Board) Order No. 2006-0003-DWQ.

Site-Specific Conditions

41. Annual precipitation in the vicinity averages approximately 11.18 inches. The mean evapotranspiration rate is approximately 53.06 inches per year. All portions of the facility are outside the 100-year flood zone. Flood protection is provided by levees maintained by Reclamation District 17.

42. The facility lies within the San Joaquin Delta Hydrologic Unit Area No. 544.00, as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.

43. Based on the National Resource Conservation Service soil survey, the soils at the development consist of the Merritt silty clay loam and the Egbert silty clay loam. Published infiltration rates for the soils range from 0.06 to 2.0 in/hr.

Groundwater Considerations

44. Groundwater currently used for municipal supply is pumped from two wells that screen a confined aquifer that underlies the site. Well No. 1 will be used on a standby basis to supply non-potable water for use as supplemental irrigation water; Well No. 2 will be abandoned. Two new wells for potable supply will be constructed. The current potable water supply quality was sampled in 2005 and is summarized below:

Analyte	Units	Concentration
Bicarbonate	mg/L	170
Calcium	mg/L	32
Chloride	mg/L	110
Magnesium	mg/L	6
Nitrate	mg/L	ND
Sodium	mg/L	98
Potassium	mg/L	3
Electrical Conductivity	µmhos/cm	650
Sulfate	mg/L	14
Total Dissolved Solids	mg/L	410
Total Hardness	mg/L	110

45. Depth to groundwater varies depending on location, season, and local influences such as irrigation practices, groundwater extraction, the presence and stage of surface water bodies. Historically, the operators of Brown Sand and the Oakwood Lake Resort pumped lake water into the San Joaquin River to lower lake levels to allow mining and operation of water slides. The pumping also lowered the surrounding groundwater elevations. The pumping has now stopped.

46. The RWD presented available groundwater flow direction information that characterizes groundwater elevations in the vicinity prior to beginning dewatering activities in 1969. Maps prepared by the Department of Water Resources (DWR) in 1958 and 1962 indicate

that groundwater flow is to the west at the project area. Groundwater is expected to locally reverse flow direction when the San Joaquin River elevation is greater than normal.

47. Groundwater models prepared for the area by Condor Earth Technologies and Kleinfelder predicted groundwater elevations ranging from 2.8 to 4.3 feet mean sea level (msl) with groundwater elevations reaching 8 to 10 feet msl in wet years. With a final ground surface elevation of approximately 12 feet msl, the depth to groundwater below the surface is likely to vary from 2 to 10 feet.

48. The following table presents a summary of the monitoring wells that have been installed to date and their status. The well locations are presented on Attachment C.

Well Name	Location	Dia. (in.)	Depth (ft.)	Screen Int. (ft. bgs)	Status
MW-1	WWTP	4	31.5	14-29	Active
MW-2	WWTP	4	31.5	14-29	Active
MW-3	WWTP	4	31.5	14-29	Active
MW-4	WWTP	4	36.5	15.5-30.5	Active
MW-5	Northeast	4	31.5	13-28	Active
MW-6	Northeast	4	31.5	13-28	Active
MW-7	Northeast	4	31.5	13-28	Active
MW-8	Southeast	4	31.5	13-28	Abandoned
MW-9	Southeast	4	31.5	13-28	Abandoned

WWTP denotes Wastewater Treatment Plant.

49. Groundwater monitoring wells No. MW-8 and MW-9 were destroyed on 13 April 2005. The San Joaquin County Environmental Health Department issued a permit for the well destruction and supervised the grouting.

50. The RWD and the Fourth Quarter, 2005 Groundwater Monitoring Report prepared by Kleinfelder contains the following information about groundwater conditions at the site:

    a. On 22 November 2005 the groundwater flow direction at the wastewater treatment system was to the northeast. This is consistent with previous sample events. However, groundwater flow directions may change with cessation of pumping from Oakwood Lake.

    b. Groundwater elevations vary across the site but presently groundwater flow directions seem to be towards Oakwood Lake. At the southern and western sides of the area, groundwater flows to the north or east; at the eastern and northern sides of the area, groundwater flows to the south or west.

    c. Groundwater elevations vary from approximately 14 to 17 feet bgs in the area of the wastewater treatment facility and approximately 14 to 16 feet bgs in the northeast portion of the facility.

51. Groundwater quality has been characterized by sampling groundwater monitoring wells. Because the wells were installed for different purposes, varying amounts of data exist for each area. A summary of average groundwater quality for all the wells is presented in the table below as well as the Water Quality Objectives for each analyte.

Analyte	Units	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	WQO
pH	std.	6.7	6.8	6.8	6.7	7.5	7.3	7.4	7.1	7.1	6.5-8.4 [1]
TDS	mg/L	411	544	663	536	877	1,027	871	525	535	450 [1]
EC	umhos/cm	675	606	662	873	1,306	1,381	1,299	804	812	700 [1]
NO_3-N	mg/L	0.9	2.9	15.1	0.9	6.6	22.8	13.6	3.7	13.1	10 [2]
NH_3	mg/L	3.1	2.3	1.9	0.5	0.2	0.2	0.2	0.1	0.3	1.5 [3]
TCO	MPN/100 mL	ND	9.2	8.1	13.8	7.4	10.5	5.0	13.1	ND	2.2/100 mL [4]
THMs	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	see below
Chloroform (ug/L)											0.26 [5]
Bromodichloromethane (ug/L)											0.27 [6]
Dibromochloromethane (ug/L)											0.37 [6]
Bromoform (ug/L)											4.0 [7]

TDS denotes Total Dissolved Solids. EC denotes Electrical Conductivity. NO_3-N denotes Nitrate as Nitrogen. NH_3 denotes Ammonia. TCO denotes Total Coliform Organisms. THMs denotes the sum of Trihalomethanes. MPN/100mL denotes Most Probable Number per 100 mL. ND denotes Not Detected. WQO denotes Water Quality Objective. [1] Agricultural Water Quality Goals. [2] Primary Maximum Contaminant Level (Drinking Water). [3] Taste and Odor Threshold. [4] Water Quality Control Plan. [5] National Academy of Sciences Health Advisory. [6] Cal/EPA Cancer Potency Factor. [7] USEPA Integrated Risk Information System.

52. In general, groundwater exceeds Water Quality Objectives for TDS, electrical conductivity, nitrate as nitrogen, ammonia, and total coliform organisms. The trends for each of the analytes is presented below:

    a. TDS concentrations in Wells MW-1 through MW-4 (located at the wastewater treatment facility) range in average from 411 to 663 mg/L with the background well (MW-4) containing an average TDS concentration of 536 mg/L. All the wells except Well MW-1 possess TDS concentrations above the WQO. Because the wastewater treatment facility is located adjacent to the San Joaquin River levee, and historic pumping of Oakwood Lake caused a hydraulic gradient through the levee, the groundwater conditions at the wastewater treatment plant have likely been significantly influenced by river water percolating through the levee.

    TDS concentrations at the northeast portion of the development (Wells MW-5, MW-6, and MW-7) range in average from 871 to 1,027 mg/L with the background well (MW-5) containing an average TDS concentration of 877. Wastewater has not yet been applied at the northeast area so the concentrations may represent background conditions for the area. The concentrations reported exceed the applicable WQO.

    TDS concentrations at the southeast portion of the development (Wells MW-8 and MW-9) range in average from 525 to 535 mg/L. Historically, these wells were outside any waste application area with the exception of private residences equipped with septic tanks. The concentrations reported exceed the applicable WQO.

    b. Nitrate as nitrogen concentrations in Wells MW-1 through MW-4 (located at the wastewater treatment facility) range in average from 0.9 to 15.1 mg/L with the background well (MW-4) containing an average nitrate concentration of 0.9 mg/L. Only Well MW-3 possesses a nitrate as nitrogen concentration above the WQO and it is the well most directly downgradient of the formerly unlined wastewater ponds. Because the

wastewater treatment facility is located adjacent to the San Joaquin River levee and historic pumping of Oakwood Lake caused a hydraulic gradient through the levee, the groundwater conditions at the wastewater treatment plant have likely been significantly influenced by river water percolating through the levee.

Nitrate as N concentrations at the northeast portion of the development (Wells MW-5, MW-6, and MW-7) range in average from 6.6 to 22.8 mg/L with the background well (MW-5) containing an average nitrate as N concentration of 6.6 mg/L. Wastewater has not yet been applied at the northeast area so the concentrations may represent background conditions for the area. The cause of the variation of concentrations is unknown. The concentrations reported in Wells MW-6 and MW-7 exceed the applicable WQO.

Nitrate as N concentrations at the southeast portion of the development (Wells MW-8 and MW-9) range in average from 3.7 to 13.1 mg/L. Historically, these wells were outside any waste application area with the exception of private residences equipped with septic tanks. The cause of the variation of concentrations is unknown. The concentration reported in Well MW-9 exceeds the applicable WQO.

c. Ammonia concentrations in Wells MW-1 through MW-4 (located at the wastewater treatment facility) range in average from 0.5 to 3.1 mg/L with the background well (MW-4) containing an average ammonia concentration of 0.5 mg/L. Wells MW-1, MW-2, and MW-3 possesses ammonia concentrations above the WQO. Because the wastewater treatment facility is located adjacent to the San Joaquin River levee and historic pumping of Oakwood Lake caused a hydraulic gradient through the levee, the groundwater conditions at the wastewater treatment plant have likely been significantly influenced by river water percolating through the levee.

   Ammonia concentrations at the northeast portion of the development (Wells MW-5, MW-6, and MW-7) each average 0.2 mg/L. Wastewater has not yet been applied at the northeast area so the concentrations may represent background conditions for the area. The concentrations reported in the wells are below the applicable WQO.

   Ammonia concentrations at the southeast portion of the development (Wells MW-8 and MW-9) range in average from 0.1 to 0.3 mg/L. Historically, these wells were outside any waste application area with the exception of private residences equipped with septic tanks. The variation of concentrations observed in these wells is considered insignificant. The concentration reported in the wells are below the applicable WQO.

d. Total Coliform Organisms (TCO) concentrations in Wells MW-1 through MW-4 (located at the wastewater treatment facility) range in average from not detected to 13.8 Most Probable Number (MPN)/100 mL with the background well (MW-4) containing an average TCO concentration of 13.8 MPN/100 mL. Wells MW-2, MW-3, and MW-4 possesses TCO concentrations above the WQO. The source of the TCO in the wells may be the result of the wastewater treatment facility or sample/well contamination. Because bacteria is normally filtered as it migrates through soil media, the San Joaquin River is not likely to be the source of coliform measured in the wells.

   TCO concentrations at the northeast portion of the development (Wells MW-5, MW-6, and MW-7) range in average from 5.0 to 10.5 MPN/100 mL. Wastewater has not yet

been applied at the northeast area so the concentrations may be the result of sample/well contamination. Groundwater does not normally contain measurable TCO. The concentrations reported in the wells are above the applicable WQO.

TCO concentrations at the southeast portion of the development (Wells MW-8 and MW-9) range in average from not detected to 13.1 MPN/100 mL. Historically, these wells were outside any waste application area with the exception of private residences equipped with septic tanks that are likely too far away to be sources of TCO at the wells. As stated above, groundwater does not normally contain measurable TCO. The concentration reported in Well MW-8 is above the applicable WQO.

e. Trihalomethanes (THMs) were not detected in any groundwater sample collected during two sample events performed at the wastewater treatment facility (Wells MW-1 through MW-4). No other THMs sampling has been reported. The sample events occurred on 1 November 2000 and 22 November 2005. The non-detectable THMs concentrations complies with the applicable WQOs.

53. The monitoring network is not adequate to evaluate groundwater quality at all proposed storage and/or application areas. Therefore, it is appropriate that the Discharger install additional groundwater monitoring wells, continue groundwater monitoring, and complete a technical analysis of groundwater monitoring data to determine final background concentrations.

54. The RWD presents a discussion of nitrogen compounds contained in applied recycled water. Approximately 1,675 pounds per year (107 pounds per acre/year) will be applied in Phase I; approximately 4,146 pounds per year (130.6 pounds per acre/year) will be applied in Phase II. When properly applied to land, the landscape plants should take up all the applied nitrogen. In addition, denitrification and/or conversion to relatively stable organic nitrogen compounds is anticipated to occur. Although not described in the RWD, denitrification in the recycled water storage ponds is also expected, further reducing the amount of applied nitrogen. Groundwater beneath land application areas is not anticipated to be degraded by nitrogen compounds as a result of the wastewater application.

Antidegradation Analysis

55. State Water Resources Control Board (State Board) Resolution No. 68-16 (hereafter Resolution 68-16 or the "Antidegradation Policy") requires the Regional Water Board in regulating the discharge of waste to maintain high quality waters of the state (i.e., background water quality) until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the state, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Water Board's policies (e.g., quality that exceeds water quality objectives). Resolution 68-16 requires that any discharge that could degrade the waters of the state be regulated to assure use of best practicable treatment or control of the discharge to assure that pollution or nuisance will not occur, and the highest water quality consistent with maximum benefit to the people of the State will be maintained.

56. This Order acknowledges that some degradation may occur as a result of the application of treated wastewater to land, but the Regional Board finds that such degradation at this facility is consistent with the maximum benefit to the people of the state. Economic

prosperity of local communities and associated industry is of benefit to the people of California, and therefore sufficient reason exists to accommodate growth and some groundwater degradation around the wastewater recycling areas, provided that the terms of the Basin Plan are met. State Board resolution No. 77-1, *Policy with Respect to Water Recycling in California*, encourages recycling projects that replace or supplement the use of fresh water, and *The Water Recycling Law* (CWC section 13500-13529.4) declares that utilization of recycled water is of primary interest to the people of the state in meeting future water needs. This Order is consistent with State Water Board policy.

57. The Regional Board further finds that some degradation of the groundwater beneath the WWTP is consistent with the maximum benefit to the people of the state provided that:

    a. The degradation is confined within a specified boundary;
    b. The Discharger minimizes the degradation by fully implementing, regularly maintaining, and optimally operating Best Practicable Treatment and Control (BPTC) measures;
    c. The degradation is limited to waste constituents typically encountered in municipal wastewater as specified in the groundwater limitations in this Order; and
    d. The degradation does not result in water quality less than that prescribed in the Basin Plan.

58. Some 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 California. 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. Degradation of groundwater by constituents (e.g., toxic chemicals) other than those specified in the groundwater limitations in this Order, and by constituents that can be effectively removed by conventional treatment (e.g., total coliform bacteria) is prohibited. When allowed, the degree of degradation permitted depends upon many factors (i.e., background water quality, the waste constituent, the beneficial uses and most stringent water quality objective, source control measures, waste constituent treatability).

Treatment and Control Practices

59. Resolution No. 68-16 requires the discharge to be regulated to assure use of best practicable treatment or control (BPTC). The Regional Water Board may not, in general, specify the manner of compliance; therefore, to implement Resolution No. 68-16, the Regional Water Board sets forth effluent and receiving water limitations. To be consistent with Resolution No. 68-16, the Discharger must assure that it is complying with the requirements of this Order and complying with the receiving water limits. The Discharger will provide treatment and control of the discharge that incorporates:

    a. Use of a low salinity, low hardness water supply;
    b. Metal, concrete and/or HDPE lined treatment structures that provide complete containment during wastewater treatment;
    c. Alarm and automatic flow diversion systems to prevent system bypass or overflow;
    d. Effluent storage pond liner systems consisting of 40-mil HDPE;

e. Disinfection of treated effluent;
f. Recycled water application at plant uptake (for nitrogen and water) rates;
g. Appropriate biosolids storage and disposal practices;
h. An Operation and Maintenance (O&M) manual; and
i. Certified operators to assure proper operation and maintenance.

60. The WWTP design and effluent-recycling program incorporate numerous BPTC measures. In order to determine compliance with Resolution No. 68-16 it is appropriate to establish a schedule for installation and sampling of additional groundwater monitoring wells and to formally determine background groundwater concentrations for selected constituents. Groundwater monitoring is presently insufficient to determine true background conditions at all land application and recycled water storage ponds, which are located across a large area. If groundwater is degraded or there is evidence that the discharge may cause degradation, then the Discharger will be required to evaluate and implement additional BPTC measures for each conveyance, treatment, storage, and disposal component of the system. Completion of these tasks will ensure that BPTC and the highest water quality consistent with the maximum benefit to the people of the state will be achieved.

61. This Order establishes interim groundwater limitations for the WWTP 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 contains tasks for assuring that BPTC and the highest water quality consistent with the maximum benefit to the people of the state will be achieved. Accordingly, the discharge is consistent with Resolution 68-16 and the Basin Plan. Based on the results of the scheduled tasks, the Regional Water Board may reopen this Order to reconsider groundwater limitations and other requirements to comply with Resolution 68-16.

Basin Plan, Beneficial Uses, and Regulatory Considerations

62. 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 Board. These requirements implement the Basin Plan.

63. The beneficial uses of the San Joaquin River (within the Sacramento San Joaquin Delta Hydrologic Area) are municipal and domestic supply; agricultural supply; industrial process supply; industrial service supply; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; wildlife habitat; and navigation.

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

65. The Basin Plan encourages water recycling.

66. The Basin Plan establishes numerical and narrative water quality objectives for surface water and groundwater within the basin. Numerical and narrative water quality objectives are maximum (i.e., least stringent) limits directly applicable to the protection of designated

beneficial uses of the water. Controllable water quality factors are not allowed to cause further degradation of water quality in instances where other factors have already resulted in water quality objectives being exceeded. Controllable factors are those actions, conditions, or circumstances resulting from human activities that may influence the quality of the waters of the State, are subject to the authority of the State or Regional Board, and that may be reasonably controlled. Controllable factors are not allowed to cause further degradation of water quality in instances where uncontrollable factors have already resulted in water quality objectives being exceeded. In addition, the water quality objectives do not require improvement over naturally occurring background concentrations. The Basin Plan requires that the Regional Water Board, on a case-by-case basis, follow specified procedures to determine maximum numerical limitations that apply the narrative objectives when it adopts waste discharge requirements.

67. The Basin Plan includes a water quality objective for Chemical Constituents that, at a minimum, requires waters designated as domestic or municipal supply to meet the maximum contaminant levels (MCLs) specified in the following provisions of Title 22, California Code of Regulations (CCR): Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, Table 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) of Section 64449, and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. The Basin Plan's incorporation of these provisions by reference is prospective, and includes future changes to the incorporated provisions as the changes take effect. The Basin Plan recognizes that that the Regional Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.

68. The Basin Plan contains narrative water quality objectives for Chemical Constituents, Tastes and Odors, and Toxicity. The Toxicity objective, in summary, requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial uses. The Chemical Constituents objective requires that groundwater "shall not contain chemical constituents in concentrations that adversely affect beneficial uses." The Tastes and Odors objective requires that groundwater "shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses." Chapter IV, Implementation, of the Basin Plan contains the "Policy for Application of Water Quality Objectives." This Policy specifies, in part, that compliance with narrative water quality objectives may be evaluated considering numerical criteria and guidelines developed and/or published by other agencies and organizations.

69. The CWC requires certain issues to be addressed when preparing Water Quality Control Plans and determining Water Quality Objectives (WQOs). CWC Section 13241 requires the following factors that must be considered in those determinations:

    a. Past, present, and probable future beneficial uses of water.

    b. Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto.

c. Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area.

d. Economic considerations.

e. The need for developing housing within the region.

f. The need to develop and use recycled water.

70. The Delta Protection Act of 1992 established the Delta Protection Commission, a new State entity to plan for and to guide the conservation and enhancement of the natural resources of the Delta, while sustaining agriculture and meeting increased recreational demand. The Act defines a Primary Zone, which comprises the principal jurisdiction of the Delta Protection Commission. The Secondary Zone is the area outside the Primary Zone and within the "Legal Delta;" the Secondary Zone is not within the planning area of the Delta Protection Commission. The Act requires the Commission to prepare and adopt a Land Use and Resource Management Plan for the Delta, which must meet specific goals. This facility is located in the Secondary Zone of the Delta.

71. Under the "Antidegradation" section, the attached Information Sheet lists the various waste constituents identified thus far as fitting the restriction of Findings No. 67 and 68, along with limits of each constituent necessary to maintain beneficial uses known to be adversely affected at certain concentrations of the waste constituent in groundwater. The listing identifies the constituent, the beneficial use and its associated limit, as well as the technical reference for the limit. Some limits become less restrictive when the water supply is limited to certain applications of a beneficial use, but that requires additional factual information. Maintenance of the existing high quality of water means maintenance of background water quality conditions, i.e., the water quality found upstream or upgradient of the discharge, unaffected by other discharges. Therefore, the water quality objectives will define the least stringent limits which will be imposed and background defines the most stringent limits which will be imposed on ambient water quality.

Water Recycling

72. As noted above, State Water Board Resolution No. 77-1, *Policy with Respect to Water Recycling in California*, encourages recycling projects that replace or supplement the use of fresh water, and *The Water Recycling Law* (CWC sections 13500-13529.4) declares that utilization of recycled water is of primary interest to the people of the State in meeting future water needs.

73. The California Department of Health Services (DHS) has established statewide water recycling criteria in Title 22, CCR, Section 60301 et. seq. (hereafter Title 22). The Discharger will treat the wastewater to tertiary standards and disinfect the effluent per Title 22 requirements.

74. A 1988 Memorandum of Understanding between DHS and the State Board on the use of recycled water establishes basic principles relative to the two agencies and the regional water boards. The Memorandum allocates primary areas of responsibility and authority between the agencies and provides for methods and mechanisms necessary to assure ongoing, continuous future coordination of activities relative to use of recycled water.

75. DHS requires that the American Water Works Association (AWWA) *Guidelines for Distribution of Non-Potable Water* and *Guidelines for the On-site Retrofit of Facilities Using Disinfected Tertiary Recycled Water* be implemented in design and construction of recycling equipment. The guidelines require installation of purple pipe, adequate signs, and adequate separation between the recycled water lines and domestic water lines and sewer lines. The Discharger proposes to fully comply with these requirements.

76. Section 60323(a) of Title 22 states that no person shall produce or supply recycled water for direct reuse from a proposed water recycling plant unless an engineering report is submitted for review and approval by DHS and the Regional Water Board. Irrigation of fodder crops, turf grass, and landscaping, is considered a beneficial reuse. The Discharger submitted a Revised Title 22 Engineering Report to DHS on 27 April 2006. DHS provided comments on the revised Title 22 Report on 20 June 2006, and those comments are addressed in these WDRs.

Other Regulatory Considerations

77. On 2 May 2006, the State Water Board adopted Statewide General Waste Discharge Requirements For Sanitary Sewer Systems General Order No. 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 will exceed one mile in length, therefore the General Order is applicable. The application or Notice of Intent (NOI) for coverage under the General Order must be submitted to the State Water Resources Control Board by 2 November 2006.

78. 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.

79. The Regional Water Board is using the Standards in 40 CFR 503 as guidelines in establishing this Order, but the Regional 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. The RWD states that all biosolids will be hauled to a separate permitted facility.

80. The State Water Board adopted Order No. 97-03-DWQ (General Permit No. 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. This Order requires the Discharger to obtain coverage under the General Permit.

81. An Environmental Impact Report (EIR) was prepared for this project. The EIR was adopted by the San Joaquin Community Development Department on 16 January2001, in accordance with the California Environmental Quality Act (CCR, Title 14, Section 15261 et. seq.). The proposed wastewater treatment and disposal system is consistent with the project as analyzed in the EIR when mitigation measures are implemented. Significant impacts are presented in the following table and mitigation measures are discussed in the identified findings:

Impact No.	Description of Significant Impact	Mitigation
4.4-3	Seepage along Walthall Slough.	See Finding 82a
4.5-1	Storm water Runoff – Preparation of Storm water Pollution Prevention Plan.	See Finding 82b
4.5-2A	Accommodation of increased wastewater flow during winter months.	See Finding 82c
4.5-3	Inadequate treatment of wastewater percolating to groundwater.	See Finding 82d
4.5-5	Seepage of partially treated wastewater to groundwater.	See Finding 82e
4.5-5	Need for State Reclamation Board, Reclamation District No. 17, and Department of Water Resources approval for expansion of wastewater systems.	See Finding 82f

82. The EIR identified significant impacts, which require mitigation measures as part of project implementation. Each of the items is discussed below.

    a. Levee improvement have been constructed along the outer edge of the patrol road at the toe of Walthall Slough levee. Reclamation District No. 17 issued an acceptance letter regarding the improvements on 14 November 2005.

    b. A Storm water Pollution Prevention Plan (SWPPP) was submitted for the construction storm water permit. The State Water Resources Control Board (State Board) issued a receipt of the notice to comply with the General Permit to Discharge Storm water Associated with Construction Activity on 5 November 2004.

    c. The accommodation of wastewater during the wet season is addressed in the adoption of WDRs. The RWD submitted demonstrates sufficient treatment and storage capacity for wastewater and 100-year return annual total precipitation.

    d. Wastewater treatment is addressed in the adoption of WDRs. The proposed system includes tertiary treatment with disinfection. Wastewater will be highly treated prior to discharge.

    e. The possibility of seepage of partially treated wastewater is greatly reduced because wastewater will be treated and stored in ponds that will be constructed with a synthetic liner.

    f. The engineer for Reclamation District 17 (Kjeldsen, Sinnock & Neudeck, Inc.) prepared a 27 November 2001 letter addressing slope stability at the wastewater treatment plant which stated the wastewater treatment ponds do not negatively impact the stability of the levee.

The Regional Water Board finds that this Order contains requirements that if complied with, implement the mitigation measures related to wastewater issues and will reasonably protect the beneficial uses of waters of the state and prevent nuisance.

83. Section 13267(b) of the CWC 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, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of discharging, or who proposes to discharge waste outside of its region that could affect the quality of the waters of the state 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 monitoring and reporting program required by this Order and the attached Monitoring and Reporting Program No. R5-2006-0114 are necessary to assure compliance with these waste discharge requirements. The Discharger operates the facility that discharges the waste subject to this Order.

84. 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. Those wells that do not have a construction log, boring log, or County permit may not be used for monitoring associated with this Order.

85. State regulations that prescribe procedures for detecting and characterizing the impact of waste constituents from waste management units on groundwater are found in Title 27 CCR Section 20380. While the WWTP is exempt from Title 27, the data analysis methods of Title 27 may be appropriate for determining whether the discharge complies with the terms for protection of groundwater specified in this Order.

86. 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, CCR, Section 20380 et seq.. The exemption, pursuant to Title 27 CCR Section 20090(a), is based on the following

    a. The waste consists primarily of domestic sewage and treated effluent;

    b. The waste discharge requirements are consistent with water quality objectives; and

    c. The treatment and storage facilities described herein are associated with a municipal wastewater treatment plant.

87. Pursuant to CWC Section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

Public Notice

88. The recommendations of the State Department of Health Services regarding the public health aspects of water recycling have been considered in preparation of this Order.

89. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, as well as the Regional Water Board's administrative record, were considered in establishing the following conditions of discharge.

90. The Discharger and interested agencies and persons have been notified of the Regional 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.

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

IT IS HEREBY ORDERED that Order No. 5-01-113 is rescinded, and that pursuant to Sections 13263 and 13267 of the California Water Code, Oakwood Lake Water District and Beck Properties, Inc. their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California 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. Bypass or overflow of untreated or partially treated waste is prohibited.

3. Discharge of sewage from a sanitary sewer system at any point upstream of a wastewater treatment plant is prohibited. Discharge of treated recycled water downstream of the wastewater treatment plant, other than at the designated storage ponds or land application areas, is prohibited.

4. Discharge of waste classified as "hazardous" under Title 23 CCR Chapter 15, Section 2521, or "designated," as defined in Section 13173 of CWC is prohibited.

5. Application of recycled water in a manner or location other than that described herein is prohibited.

6. The use of recycled water for purposes other than irrigation as defined in Title 22 CCR Section 60304(a) and this Order is prohibited.

B. Discharge Specifications

1. The monthly average flow rate may not exceed 15,000 gpd. Upon approval by the Executive Officer, the monthly average flow rate may be increased as described below.
2. **Effective on the date of Executive Officer approval** of the reports required by Provisions G.1.e, G.1.f, and G.1.h for each successive expansion of the WWTF, influent flows shall not exceed the average monthly flow limit specified in the approval letter. The monthly average flow rate is defined as the total flow during the calendar month divided by the number of days in that month.
3. The Executive Officer shall not approve an average monthly flow limit that exceeds 136,200 gpd..
4. Wastewater treatment and use of recycled water shall not cause pollution or a nuisance as defined by Section 13050 of the CWC.
5. The maximum total nitrogen loading to each land application area shall not exceed the plant uptake rate for plant available nitrogen (PAN) for the type of plant to be grown, as specified in the most recent edition of the Western Fertilizer Handbook or similar publication unless and until the Discharger demonstrates that another proportion is technically justified. PAN shall be calculated as 100% of the total nitrogen content of the waste plus nitrogen contributions from all other sources, including supplemental fertilizers.
6. Public contact with wastewater and recycled water shall be precluded or controlled through such means as fences, signs, or acceptable alternatives.
7. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations.
8. Objectionable odors originating at the facility shall not be perceivable beyond the limits of the property owned by the Discharger.
9. As a means of discerning compliance with Discharge Specification B.8, the dissolved oxygen content in the upper one foot of any wastewater or recycled water storage pond shall not be less than 1.0 mg/L.
10. The Discharger shall operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge. The wastewater shall be filtered at all times.
11. The Discharger shall treat the wastewater such that it complies with Title 22 CCR, Section 60301.230 (“Disinfected Tertiary Recycled Water”).
12. All treatment and storage facilities shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
13. Wastewater and recycled water ponds shall be managed to prevent breeding of mosquitoes. In particular,

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.

14. The facility shall have sufficient treatment, storage, and disposal capacity to accommodate allowable wastewater flow, design seasonal precipitation, and ancillary inflow and infiltration. 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.

15. Freeboard in any pond containing wastewater or recycled water shall never be less than two feet as measured from the water surface to the lowest point of overflow.

16. On or about **15 October** of each year, available pond storage capacity shall at least equal the volume necessary to comply with Discharge Specifications B.14 and B.15.

17. All recycled water conveyance and distribution piping and equipment shall comply with California Department of Health Services requirements and American Water Works Association (AWWA) *Guidelines for Distribution of Non-Potable Water* and *Guidelines for the On-site Retrofit of Facilities Using Disinfected Tertiary Recycled Water* with the exception of the pipe installation addressed in the 9 February 2005 DHS letter titled, *Recycled Water Main & Sanitary Sewer Force Main Separation Requirements*, and as approved by DHS.

18. Coagulation shall be practiced at all times when the SBR effluent is pumped to the filtration units.

19. The discharge of recycled water shall be limited to land application areas where shallow groundwater TDS average concentrations exceed 850 mg/L.

C. Effluent Limitations

1. Effluent discharged from the wastewater treatment plant into the Effluent Storage Basin (ES Basin) shall not exceed the following limits:

Constituent	Units	Monthly Average	Daily Maximum
BOD_5	mg/L	<10	<20
TSS	mg/L	<10	--
Total N	mg/L	<10	<10
TDS	mg/L	750	--

BOD_5 denotes 5-day Biochemical Oxygen Demand. TSS denotes Total Suspended Solids. Total N denotes Total Nitrogen. TDS denotes Total Dissolved Solids.

2. Effluent discharged from the wastewater treatment plant into the ES Basin shall comply with the following limits for total coliform organisms:
    a. The median concentration of total coliform bacteria measured in the disinfected effluent shall not exceed an MPN of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed.
    b. The number of total coliform bacteria shall not exceed an MPN of 23 per 100 milliliters per 100 milliliters in more than one sample in any 30-day period.
    c. No sample shall exceed an MPN of 240 total coliform bacteria per 100 milliliters.
3. Effluent discharged from the wastewater treatment plant into the ES Basin shall not exceed any of the following:
    a. An average of 2 NTU within a 24-hour period;
    b. 5 NTU more than 5 percent of the time within a 24-hour period;
    c. 10 NTU at any time.
4. No stored wastewater or recycled water shall have a pH less than 6.5 or greater than 10.0.

D. General Solids Disposal Specifications

Sludge 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 facility. Biosolids refers to sludge that has undergone sufficient treatment and testing to qualify for reuse pursuant to federal and state regulations as a soil amendment for agriculture, silviculture, horticulture, and land recycling.

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

2. Treatment and storage of sludge shall be confined to the treatment facility property, and shall be conducted in a manner that precludes infiltration of waste constituents into soils in a mass or at concentrations that will violate the Groundwater Limitations of this Order.

3. Any storage of residual sludge, solid waste, and biosolids at the facility shall be temporary, and the waste shall be controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or at concentrations that will violate the Groundwater Limitations of this Order.

4. Residual sludge, biosolids, and solid waste shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27 CCR Division 2. Removal for further treatment, disposal, or reuse at disposal sites operated in accordance with

valid waste discharge requirements issued by a regional water quality control board will satisfy this specification.

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

E. Water Recycling Specifications

1. Application of recycled water shall be confined to the designated application areas as defined in this Order.

2. Recycled water shall be used in compliance with Title 22, Division 4, Chapter 3, Article 3, *Uses of Recycled Water*.

3. Public contact with recycled water shall be controlled through use of fences, signs, and/or other appropriate means. All use areas where recycled water is used that are accessible to the public shall be posted with signs that are visible to the public, in a size no less than 4 inches by 8 inches and include the following wording, "Recycled Water – Do Not Drink." The size and content of these signs shall be as described in Section 60310(g) of Title 22.

4. Recycled water controllers, valves, and similar appurtenances shall be affixed with recycled water warning signs, and shall be equipped with removable handles or locking mechanisms to prevent public access or tampering. Quick couplers, if used, shall be of a type, or secured in a manner, that permits operation only by authorized personnel. Hose bibs shall not be used.

5. Application of recycled water shall comply with the following setback requirements:

Setback Definition	Minimum Setback (feet)
Edge of land application area to domestic well	50
Wastewater/Recycled water storage pond to domestic well	100
Land Application Area to Surface Water[1]	50

[1] Excluding ditches used exclusively for tailwater return from the land application area.

6. Any use of recycled water shall comply with the following:

7. Any irrigation runoff shall be confined to the recycled water use area, unless the runoff does not pose a public health threat and is authorized by the regulatory agency.

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

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

10. Any connection between the recycled water conveyance system and any potable water conveyance system, groundwater supply well, or surface water supply source for the purpose of supplementing recycled water shall be equipped with a DHS-approved backflow prevention device.

11. Application rates for recycled water shall not exceed nitrogen and water uptake rates considering the plant, soil, climate, and irrigation management system in accordance with the water balance submitted with the RWD.

12. Irrigation runoff (i.e., tailwater) shall be completely contained within the designated land application area and shall not enter any surface water drainage course or stormwater drainage system.

13. Sprinkler heads shall be of the type approved for recycled water and shall create a minimum amount of mist. Drainage through sprinkler heads is prohibited.

14. Irrigation with recycled water shall not be performed within 24 hours of a forecasted storm, during or within 24 hours after any precipitation event, nor when the ground is saturated.

15. The project shall include a weather station to measure wind velocity and other parameters needed to facilitate best management of the recycled water application.

16. Land application areas that are spray irrigated and allow public access shall be irrigated during periods of minimal use (typically between 9 p.m. and 6 a.m.). Consideration shall be given to allow maximum drying time prior to subsequent public use.

17. Land application areas shall be managed to prevent breeding of mosquitoes. In particular:
    a. There shall be no standing water 48 hours after application of recycled water;
    b. Tailwater ditches must be maintained essentially free of emergent, marginal, or floating vegetation, and;
    c. Low-pressure and unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store recycled water.

F. Groundwater Limitations

1. Release of waste constituents from any portion of the WWTP and land application areas shall not cause groundwater to:

a. Contain any of the following constituents in concentrations greater than listed or greater than natural background quality, whichever is greater. Note that natural background conditions have not yet been established for the land application areas.

Constituent	Units	Limitation
Boron	mg/L	0.7
Chloride	mg/L	106
Iron	mg/L	0.3
Manganese	mg/L	0.05
Sodium	mg/L	69
Total Coliform Organisms	MPN/100 mL	<2.2
Total Dissolved Solids	mg/L	450
Total Nitrogen	mg/L	10
Nitrite (as N)	mg/L	1
Nitrate (as N)	mg/L	10
Ammonia (as NH_4)	mg/L	1.5
Bromoform	μg/L	4
Bromodichloromethane	μg/L	0.27
Chloroform	μg/L	1.1
Dibromochloromethane	μg/L	0.37

b. Exhibit a pH of less than 6.5 or greater than 8.4 pH units.

c. Impart taste, odor, toxicity, or color that creates nuisance or impairs any beneficial use.

G. Provisions

1. All of the following reports shall be submitted pursuant to Section 13267 of the California Water Code and shall be prepared as described in Provision G.3.

   a. By **1 December 2006**, the Discharger shall either apply for coverage or submit a Notice of Non Applicability for Order No. 97-03-DWQ, Discharges of Stormwater Associated With Industrial Activities.

   b. By **31 January 2007**, the Discharger shall submit a Groundwater Monitoring Workplan prepared in accordance with, and including the items listed in, the first section of Attachment F: *"Requirements for Monitoring Well Installation Workplans and Monitoring Well Installation Reports."* The workplan shall describe a proposed expansion to the existing groundwater monitoring network specifically designed to ensure that background water quality is adequately characterized and any potential water quality impacts from the discharge are detected. The system shall be designed to yield samples representative of the uppermost portion of the first aquifer underlying the site. The Workplan shall include a plan for disinfection of groundwater monitoring wells that contain detectable concentrations of coliform, additional sampling to confirm disinfection was effective, and a discussion of the potential sources of coliform in the well(s). Installation of wells for Phase II land application areas and recycled

water storage ponds can be included in the 31 January 2007 workplan or can be addressed in a supplemental workplan that would be submitted at a later date.

c. By **31 May 2007**, the Discharger shall submit a Monitoring Well Installation Report prepared in accordance with, and including the items listed in, the second section of Attachment F: *"Monitoring Well Workplan and Monitoring Well Installation Report Guidance."* The report shall describe the installation and development of the new monitoring wells and explain any deviation from the approved workplan. Installation of wells for Phase II land application areas and recycled water storage ponds can be included in the 31 May 2007 report or can be addressed in a report that would be submitted at a later date.

d. By **2 July 2007**, the Discharger shall submit a Groundwater Well Disinfection Report that describes the disinfection of the site wells, follow-up sampling results, and if bacteria is detected in the wells, additional work to control the discharge of coliform bacteria, well construction repairs, or other methods to prevent groundwater contamination with coliform. If additional work is required, the report shall include an implementation schedule.

e. At least **30 days prior** to each expansion of the WWTP start-up, the Discharger shall submit an *As-Built Report* certifying WWTP construction. The as-built report shall address the mechanical treatment system, pumping stations, collection system, recycled water piping, potable water piping, recycled water storage ponds, land application areas, and construction quality assurance testing to ensure pond liner integrity. The report shall identify and discuss any significant deviation from the system design as presented in the RWD and Title 22 Engineering Report.

f. At least **30 days prior** to irrigating with recycled water on any of the land application areas, the Discharger shall submit a *Recycled Water Application Plan*. For each area listed in Finding No. 31, the Plan shall include the following elements:

   i. Documentation of operational status of the wastewater treatment system and compliance with all requirements for disinfection system performance. The documentation shall include written approval of the disinfection system from DHS as required by the 20 June 2006 *Oakwood Lake Water District* letter prepared by DHS.

   ii. Documentation of cross connection control tests.

   iii. Operation and Maintenance Plan for the Recycled Water System. The O&M Plan shall provide a description of the irrigation system and best practicable treatment and control methods employed in the installation and operation to prevent runoff, describe how the irrigation system will be operated and maintained to prevent spills, prevent over application of recycled water, perform inspections to confirm proper operation, training requirements for operators, and response to spills or broken equipment procedures. Methods to contain and return tailwater to recycled water storage ponds or land application areas shall also be described.

iv. Confirmation that the expansion will comply with setbacks described in Water Recycling Specification E.5.

g. By **31 January 2007**, the Discharger shall submit an *Interim Sewer System Management Plan* (SSMP), which shall contain technical reports consistent with the requirements of the State Water Board General Order No. 2006-0003-DWQ. A Internet web link to the General Order is included as Attachment E. The following portions of the SSMP shall be submitted in the Interim SSMP:

i. Item D.13.ii, Organization.

ii. Item D.13.iv, Operation and Maintenance Plan.

iii. Item D.13.vi, Overflow Emergency Response Plan.

iv. Item D.13.xi, Communication Program.

h. **At least 60 days** before the Discharger wishes to increase the wastewater flow rate to 55,000 gpd or to 136,200 gpd, the Discharger shall submit a *Recycled Water Expansion Report*, which shall contain the following:

i. An updated water balance.

ii. At least two groundwater well sampling events at wells installed at the new land application areas and/or recycled water storage ponds. It is the Discharger's responsibility to submit, as needed, the *Groundwater Monitoring Workplan* and the *Monitoring Well Installation Report* in accordance with a schedule that allows the sample event data to be included in the *Recycled Water Expansion Report*.

iii. Documentation that notification signs are installed as required by Water Recycling Specification E.3.

iv. Updates to the *As Built Report; Recycled Water Application Plan;* and *SSMP Plan.*

v. As part of the first RWER submittal, the Discharger shall submit a report describing the procedure that will be followed to connect the wastewater discharge to the City of Manteca or other regional treatment plant. The report shall include a written statement from the City of Manteca or other regional treatment plant regarding future allocation of capacity with an estimated schedule for connection. The report shall also include a schedule of implementation and a financing plan. The schedule of implementation shall include dates by which payments will be made to the regional plant to purchase capacity in future expansions. The schedule shall provide for connection to the regional treatment plant by **26 October 2016**. All subsequent RWERs shall include a status report on the progress made to connect to a regional treatment plant.

vi. Confirmation that the proposed land application area overlies shallow groundwater with an average TDS concentration of 850 mg/L or greater.

i. By **11 September 2009**, the Discharger shall submit a *Background Groundwater Quality Study Report*. For each groundwater monitoring parameter/constituent identified in the MRP, the report shall present a summary

of monitoring data and calculation of the concentration in background monitoring wells. Determination of background quality shall be made using the methods described in Title 27 CCR, Section 20415(e)(10), and shall be based on data from at least eight consecutive quarterly (or more frequent) groundwater monitoring events. For each monitoring parameter/constituent, the report shall compare the calculated background concentration with the interim numeric limitations set forth in Groundwater Limitation F.1.a. Where background concentrations are statistically greater than the interim limitations specified in Groundwater Limitation F.1.a, the report shall recommend final groundwater limitations which comply with Resolution 68-16 for the waste constituents listed therein. Subsequent use of a concentration as a final groundwater limitation will be subject to the discretion of the Executive Officer.

j. By **31 August 2009**, the Discharger shall submit the *Final Sewer System Management Plan* (Final SSMP) that has been certified by the responsible public agency. The Final SSMP shall be consistent with the requirements contained in State Water Board General Order No. 2006-0003-DWQ. The Final SSMP may be updated in the future as the collection system is expanded. Revisions to SSMP will be contained in the *Recycled Water Expansion Report* (RWER).

1. If groundwater monitoring results show that the discharge of waste is causing groundwater to contain waste constituents in concentrations statistically greater than background water quality then, 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 listed in the Groundwater Limitation F.1.a of this Order. The workplan shall contain a preliminary evaluation of each component of the WWTP 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.

2. 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.

3. The Discharger shall comply with Monitoring and Reporting Program No. R5-2006-0114, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.

4. 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)."
5. The Discharger shall use the best practicable cost-effective control technique(s) including proper operation and maintenance, to comply with discharge limits specified in this order.
6. The Discharger shall provide certified wastewater treatment plant operators in accordance with Title 23CCR, Division 3, Chapter 26.
7. As described in the Standard Provisions, the Discharger shall report promptly to the Regional Water Board any material change or proposed change in the character, location, or volume of the discharge.
8. 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; and
    d. Cleanup of sewage-related debris at the overflow site.
1. The Discharger shall report to the Regional 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."
2. The Discharger shall not allow pollutant-free wastewater to be discharged into the wastewater collection, treatment, and disposal system 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.
3. The Discharger shall submit to the Regional Water Board on or before each compliance report due date, the specified document or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, then the Discharge 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 Regional Water Board in writing when it returns to compliance with the time schedule.

4. In the event of any change in control or ownership of the facility or wastewater disposal areas, 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 this office. 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 Regional Water Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved by the Executive Officer.
5. 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 Regional 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.
6. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or recession of this Order.
7. A copy of this Order shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.
8. The Regional Water Board will review this Order periodically and will revise requirements when necessary.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 26 October 2006 as amended on 7 February 2014.

Original signed by

PAMELA C. CREEDON, Executive Officer

Amended
ALO: 2/10/14