CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO._____

WASTE DISCHARGE REQUIREMENTS
FOR
CALIFORNIA DEPARTMENT OF CORRECTIONS
KERN VALLEY STATE PRISON
WASTEWATER TREATMENT FACILITY
KERN COUNTY

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

1. The California Department of Corrections (hereafter Discharger) submitted a Report of Waste Discharge, dated 8 April 2003, for a new wastewater treatment facility (WWTF) to serve the Kern Valley State Prison (Prison) in Kern County. The WWTF has a design average daily flow of 0.77 million gallons per day (mgd), a maximum daily flow of 1.54 mgd, and peak hourly flow of 2.31 mgd. The WWTF provides services for up to 5,080 inmates and Prison staff. The WWTF was designed and constructed to process all of the wastewater generated from the Prison. No outside sewer mains are connected to the Prison sewer system.

2. For the purposes of this Order, the term WWTF shall mean the wastewater collection system, the wastewater treatment system, sludge beds, recycled water distribution piping, recycled water storage ponds, and the land application area.

3. The Prison is at the southeast corner of Cecil Avenue and Wasco-Pond Road, about four miles west of the City of Delano, in Section 7, T25S, R25E, MDB&M, as shown on Attachment A, which is attached hereto and made a part of this Order by reference. The WWTF is in the southeast corner of Section 7 adjacent the northeast corner of Benner Avenue and Garces Highway (Kernell Avenue).

Wastewater Treatment Facility

4. The Report of Waste Discharge presents information on site conditions, wastewater quantity, the wastewater collection system, the treatment process, and the management and disposal of effluent.

5. The WWTF provides disinfected secondary treatment of the wastewater stream. Treatment includes screening to remove large solids, extended aeration, and disinfection. Waste activated sludge is pumped to lined drying beds pending offsite disposal. A treatment system flowchart is presented in Attachment B, which is attached hereto and made a part of this Order by reference. Each of the treatment system components is described below.

6. The headworks contain two mechanical screens, a coarse bar screen (2-inch spacing) and a fine screen (1/4 inch spacing). Screenings from the fine bar screen are washed to remove fecal material, dewatered, and compacted. Screenings are deposited in a trash bin and hauled to a permitted landfill disposal site. The screens can be operated manually or automatically.

7. Wastewater is delivered by four influent pumps (influent pump station, three working and one on standby) into two soil-cement lined extended aeration basins. Water level sensors control the pumps. The design capacity of each inflow pump is 700 gallons per minute. The flow is recorded by a magnetic flow meter and a totalizer records the cumulative flow quantity.

8. The aeration basins are rectangular soil-cement lined ponds, 12 feet deep in the center and having 3:1 side slopes. The dimensions at the bottom of each basin are about 127 feet long and 52 feet wide and when filled to a depth of ten feet contain about 0.82 million gallons. Air is supplied by three 75-horsepower blowers capable of delivering 1,500 standard cubic feet of air per minute. The flow is then directed into a distribution box where the flow is directed to two secondary clarifiers.

9. The secondary clarifiers are 45 feet in diameter with a sidewall height of 12 feet. Each clarifier has a surface area of approximately 1,590 square feet. Wastewater from the clarifiers is collected and delivered to two chlorine contact chambers.

10. The chlorine contact chambers utilize a 12 percent sodium hypochlorite solution at a dose of 10 milligrams per liter (mg/L) for disinfection. Each contact basin has five 4-foot wide passes that are 60 feet long. There is an effluent weir to maintain a depth of 4 feet in each chamber. The chlorine flow rate is paced to the wastewater flow rate as measured by the effluent Parshall flume. The chlorine contact chamber is designed to provide 52 minutes of contact time at the maximum daily flow rate.

11. Three waste activated sludge pumps deliver sludge from the secondary clarifiers to the six lined sludge drying beds. Each sludge bed has a bottom area of 16,000 square feet, is lined with 6-inches of soil cement, and contains two filtering under drain channels to return sludge percolate to the WWTF influent pump station.

12. Generators will power the WWTF in case of a power failure and will start automatically.

13. Self-monitoring reports from 2006 indicate that winter flows are not higher than summer flows, demonstrating insignificant inflow and infiltration to the collection system during winter months. Flows initially appeared to exceed the limit of 0.77 mgd, but the Discharger showed the cause was due to recirculation of activated sludge by the RAS. The return activated sludge (RAS) meter was calibrated and when the return flow was subtracted, the influent flows were less than 0.77 mgd.

14. Self-monitoring data from January 2006 to December 2006 characterize the discharge as follows:

Constituent / Parameter	Units[1]	Influent	Effluent	% Removal
Monthly Average Daily Flow	mgd	0.696[2]	0.588	NA[3]
Conventional Pollutants				
pH	su	7.4	7.3	NA
BOD[4]	mg/L	300	15.1	97
Total Suspended Solids	mg/L	320	7.0	98
Salts				
Chloride	mg/L	NS[5]	123	NA
Sodium	mg/L	NS	129	NA
EC[6]	µmhos/cm	NS	737	NA
TDS[7]	mg/L	NS	449	NA
Nitrogen Forms				
Nitrate as Nitrogen	mg/L	NS	6.1	NA
Total Kjeldahl Nitrogen (TKN)	mg/L	NS	3.5	NA
Ammonia	mg/L	NS	1.1	NA
Total Nitrogen (Nitrate and TKN)	mg/L	NS	9.0	NA

[1] million gallons per day (mgd); Standard pH units (su); milligrams per liter (mg/L); micromhos per centimeter (umhos/cm).

[2] Only November and December 2006 data was used because the previous months included recirculated sludge from the RAS that overestimated the actual flow.

[3] Not applicable (NA).

[4] 5-day, 20°C biochemical oxygen demand (BOD).

[5] Not sampled (NS).

[6] Electrical Conductivity at 25°C (EC).

[7] Total dissolved solids (TDS).

15. On average, the EC of WWTF effluent is about 340 µmhos/cm higher than source water EC.

16. The Discharger is not required to obtain coverage under a National Pollutant Discharge Elimination System general industrial storm water permit for the WWTF because all storm water runoff is diverted into an existing storm water retention basin, kept separate from the wastewater stream, and does not discharge to a water of the United States.

Recycled Water Discharge

17. There are two effluent storage ponds with a combined surface area of 35 acres to store the disinfected secondary effluent for later reuse as irrigation water. The ponds have a total storage capacity of 143.7 million gallons (mg). One pond has a storage capacity of about 63.6 mg, while the other has a storage capacity of 80.1 mg. At an average daily flow of 0.77 mgd, the smaller pond will retain effluent for 82.5 days, and the larger for 104 days.

18. Disinfected recycled water from the unlined storage ponds is recycled on a 200-acre agricultural parcel owned by the Discharger (hereafter Use Area). Recycled water is pumped from the storage ponds and discharged into a steel storage tank. The recycled water is gravity fed from the storage tank using a 24-inch pipeline to the 200-acre Use Area. Two 14-inch flow meters installed at the southeast corner of the Use Area split the effluent into two deliveries with one supplying recycled water to the northern half of the Use Area and one supplying recycled water to the southern half of the Use Area. Attachment A shows the location of WWTF, the storage ponds, and the 200-acre Use Area.

19. The Use Area has been leased to R&D Mettler Farms who will grow feed and fodder crops such as alfalfa, corn silage, and Sudan grass. The effluent mineral quality and chloride concentrations are sufficiently low for growing these relatively salt-tolerant crops. The 200-acre Use Area is divided into five 40-acre parcels and crops will be rotated within the parcels.

20. Annual nitrogen uptake rates by the Use Area crops are reported by the Discharger as shown below. The values are similar to those shown in the *Western Fertilizer Handbook*:

Crop Type	Nitrogen Uptake, lbs/ac/yr
Alfalfa	380
Corn	225
Sudan Grass	122

21. 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.

22. The Discharger's July 2006 *Recycled Water System Managemant Plan* demonstrates the 200-acre Use Area is sufficient to maintain the water balance at the full WWTF flows for irrigation. At the current maximum permitted capacity of 0.77 mgd, the hydraulic load to the Use Area is about 292 mgd or 896 ac-ft/year. The average total nitrogen concentration of the effluent is about 9.0 mg/L. The Discharger assumed a concentration

of 10 mg/L in its nitrogen balance and demonstarted that the alfalfa crop would be nitrogen deficient even when using all of the effluent to meet the crops' entrire water needs.

Wastewater Collection System

23. The wastewater collection system for the Prison consists of gravity flow PVC sewer pipelines ranging in size from 4 inches to 21 inches at the headworks. Building sewer lines are a minimum diameter of 4 inches, while sewer mains have a minimum 8-inch diameter. Minimum slopes for sewer mains were selected to maintain a velocity of 2.0 feet per second or greater when flowing half full.

24. Manholes have a 350-foot maximum spacing and are located in areas with changes in slope, changes in pipe size, junctions at the sewer mains, and laterals if the lateral is the same size as the main.

25. Clean-outs are located at the termination of the sewer where there is no manhole and where building services change direction. Grease separators have been provided at food service buildings.

26. A "sanitary sewer overflow" is defined as a discharge to ground or surface water from the sanitary sewer system at any point upstream of the treatment facility. Temporary storage and conveyance facilities (such as wet wells, regulated impoundments, tanks, highlines, etc.) may be part of a sanitary sewer system and discharges to these facilities are not considered sanitary sewer overflows, provided that the waste is fully contained within these temporary storage/conveyance facilities.

27. On 2 May 2006, the State Water Board adopted Statewide General Waste Discharge Requirements For Sanitary Sewer Systems General Order No. 2006-003-DWQ (General Order). The General Order requires all public agencies that own or operate sanitary sewer systems greater than one mile in length to comply with the order. The Discharger's collection system is greater than one mile in length; therefore the General Order is applicable. The application or Notice of Intent (NOI) for coverage under the general permit must be submitted to the State Water Resources Control Board by 1 November 2007.

Site-Specific Conditions

28. The WWTF is in an arid climate characterized by hot dry summers and mild winters. The rainy season generally extends from November through March. Occasional rains occur during the spring and fall months, but summer months are dry. Average annual precipitation and evapotranspiration in the discharge area are about 6.5 inches and 52.1 inches, respectively, according to information published by California Department of Water Resources (DWR).

29. The WWTF and Use Area lie within the Tulare Lake Basin, specifically the North Kern Hydrologic Area (No. 558.80) of the South Valley Floor Hydrologic Unit (No. 558), as depicted on interagency hydrologic maps prepared by the DWR in August 1986.

30. Areal soils consist of sandy clay and sand. Soils within the WWTF and surrounding area include Garces silt loam, Garces silt hard substratum, and Kimberlina fine sandy loam according to the U.S. Soil Conservation Service (now the National Resources Conservation Service). Permeability of the soils is considered moderate. Published infiltration rates for the soils range from 0.06 to 2.0 inches per hour.

31. The WWTF is midway between the eastern edge of the San Joaquin Valley floor and the Tulare Lake's historic shoreline. Surface water drainage in the area is by sheet flow on the Valley floor. Runoff in the region travels in a northwesterly direction to the Tulare Lake bed. There are no perennial surface waters nearby the WWTF. Nearby drainages are the Rag Gulch watershed that historically flows to the Poso Creek watershed, both of which originate in the Greenhorn Mountain area in the southern Sierra Nevada Mountains east of Delano. The Friant-Kern Canal is about eight miles to the east and the Alpaugh Irrigation District Canal is about eight miles to the west. Lake Woollomes, about eight miles east/southeast of the WWTF, is a storage facility for the Friant-Kern Canal.

32. Federal Emergency Management Agency maps indicate the WWTF lies within and along the southeastern edge of the Rag Gulch 100-year floodplain. Upstream of the Prison, two drainage ditches designed to carry the City of Delano's storm water converge at Cecil Avenue, where flows are directed through two culverts. The channels are relatively small, with capacities between 15 and 50 cubic feet per second (cfs). Beyond Cecil Avenue, a single trapezoidal channel with a ten-foot base directs the flow in a northwesterly direction toward Poso Creek. The capacity of this channel is reported to be between 185 to 335 cfs.

33. Cecil Avenue to the north and an earthen road to the east are both 3 to 4 feet above grade and serve as levees for the flood flows that direct flows to the culvert. Additionally, the WWTF and Prison building pads were constructed at least 1 foot above the 100-year flood level.

34. Land use in the WWTF vicinity is primarily agricultural but includes the Delano North Kern State Prison about 1 mile northeast of the WWTF and the City of Delano WWTF about ¾ mile east. Crops grown within one mile of the WWTF include cotton, corn, sugar beets, beans (dry), artichokes, carrots, green beens, onions, tomatoes, flowers, alfalfa, grain crops, almonds, walnuts, pistacios, and oranges according to DWR land use data published in 1998. Most crops in this area are flood irrigated, although others are sprinkler, micro-sprinkler, and drip irrigated, according to the University of California Cooperative Extension.

Groundwater Considerations

35. Areal groundwater is depicted as relatively shallow, approximately 40 to 50 feet below ground surface (bgs) and flows southwesterly, according to information in *Lines of Equal Elevation of Water in Wells in Unconfined Aquifer*, published by DWR in Spring 2004. This uppermost groundwater layer is separated from the remainder of the aquifer by a confining clay layer, designated the Corcoran Clay, at about 300 feet bgs. Generally, water quality is better in the confined aquifer below the Corcoran Clay, and most domestic and irrigation wells in the area are perforated below the Corcoran Clay.

36. Water supply for the Prison and WWTF is from two onsite wells screened well below the Corcoran clay (~780 – 1,370 feet bgs). Well No. 1 was sampled in 2003 and is summarized below.

Constituent	Units[1]	Concentration
Arsenic	ug/L	14 to 27
Bicarbonate	mg/L	10 to 50
Chloride	mg/L	35 to 70
Electrical Conductivity	umhos/cm	316 to 478
Hardness	mg/L	7.5 to 50
Potassium	mg/L	<1.0
Nitrate	mg/L	<0.4 to 37
Ph	Standard Units	8.9 to 9.7
Sodium	mg/L	69 – 89
TDS	mg/L	200 to 300

[1] micrograms per liter or parts per billion, milligrams per liter (mg/L), micromhos per centimeter (umhos/cm).

37. Arsenic concentrations exceed the Water Quality Objective of 10 ug/L, so the Discharger will filter arsenic to remove it from the wastewater stream. Arsenic will be removed by oxidation with sodium hypochlorite; co-precipitation with ferric chloride; pH adjustment with sulfuric acid; that is followed by iron coagulation and filtration.

38. The actual depth to groundwater beneath the Prison and WWTF is variable and has been recorded at depths ranging from about 7 to 28 feet bgs. The Discharger conducted a geotechnical investigation in 1999/2000 that encountered groundwater between 6.7 and 15.0 feet bgs. The direction of groundwater flow was reported to the west/southwest.

39. The Discharger collected background samples of the shallow groundwater on 7 January 2000 from six shallow grondwater monitoring wells installed during the geotechnical investigation (subsequently destroyed). Shallow groundwater was found to be saline with concentrations as follows: chloride ranged between approximately 5 and 450 mg/L; electrical conductivity ranged from approximately 700 to 5,200 umhos/cm; nitrate ranged from about 10 to 81 mg/L; and arsenic concentrations ranged bewteen 10 and 128 ug/L.

40. The Discharger installed four shallow groundwater monitoring wells in early 2005: Well MW-1 was installed in the interpreted upgradient direction at the eastern edge of the property boundary. Well MW-2 was installed on the western and downgradient side of the effluent storage ponds. Wells MW-3 and MW-4 were installed on the western and downgradient edges of the 200-acre effluent storage area.

41. Groundwater sampling was initiated in March 2005, one month prior to any wastewater being discharged to the WWTF. The depth to water ranged from 16 feet bgs in well MW-4 and 28 feet bgs in well MW-2. The direction of groundwater flow was interpreted to be to the southwest. Depth to groundwater was similar in December 2006, ranging from 13.0 feet bgs in well MW-4 to 20.7 feet in well MW-2.

42. The Discharger has conducted groundwater sampling on six dates, but not all constituents were analyzed in all sampling events. This results in samples being collected for certain constituents six times and others as few as two. Because groundwater data from the Discharger consists of only two to six analyses, characterization of the quality of groundwater influenced by the WWTF and discharge is premature. However, the limited data provide preliminary indications of groundwater conditions. Since treated wastewater is stored in unlined ponds, percolating effluent may have caused a mounding effect on the groundwater table. Average values for constituents from four rounds of groundwater sampling are listed below:

Constituent	Units	MW-1 (Upgradient)	MW-2 (Downgradient)	MW-3 (Downgradient)	MW-4 (Downgradient)
Depth to groundwater	feet bgs	18.8	20.5	14.0	13.0
Nitrate-Nitrogen	mg/L	10.5	21	10.8	15.3
Total Nitrogen	mg/L	11.8	23.2	12.7	17.3
EC	µmhos/cm	3,300	3,320	2,360	2,475
Total Dissolved Solids	mg/L	2,067	2,633	1,500	2,050
Chloride	mg/L	675	128	163	157
Calcium	mg/L	118	218	310	355
Sodium	mg/L	570	625	267	260
Arsenic	ug/L	35	53	18	14
Total Trihalomethanes	ug/L	<0.5	<0.5	<0.5	<0.5
Total Coliforms	MPN/100mL	<2 – 2	<2	<2 - 2	<2 – 500

43. The data are similar to the data collected in 2000 from the shallow groundwater and do not indicate an increase in concentration due to the discharge of effluent to the ponds or the Use Area. The trends for each of the analytes indicate stable to decreasing trends in concentration since the first samples were collected in March 2005 and concentrations similar to those recorded in January 2000.

44. The existing data indicate poor quality of shallow perched groundwater. EC concentrations are highest in well MW-1 and MW-2 with lower concentrations in downgradient wells MW-3 and MW-4. Elevated chloride concentrations are reported from well MW-1 and elevated nitrate concentrations were observed in well MW-2.

45. Total coliform has not been an issue in samples collected from wells MW-1, MW-2, and MW-3. Total coliforms were detected at elevated levels (500 and 170 MPN/100mL) in two of eight samples collected from well MW-4.

46. The Discharger treated an average of 18.5 million gallons (56.7 ac-ft) per month of wastewater in 2006, according to its 2006 monthly reports. Approximately 11.2 mgd (34.4 acre feet) of wastewater was applied to the Use Area in 2006. The nitrogen content in the WWTF effluent ranged from about 7.6 to 18.8 mg/L and the total nitrogen from wastewater applied to the crops was 2,092 lbs. The Discharger reported harvesting 246 tons of alfalfa and 1,140 tons of silage corn and estimated the total nitrogen removed from crop harvest as 26,250 lbs and resulted in a nitrogen deficiency of 84.8 lbs/acre.

Basin Plan, Beneficial Uses, and Water Quality Objectives

47. The *Water Quality Control Plan for the Tulare Lake Basin, 2nd Edition,* (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting all waters of the basin, and incorporates by reference plans and policies of the State Water Board. Pursuant to Section 13263(a) of the California Water Code, these waste discharge requirements implement the Basin Plan.

48. The WWTF is in Detailed Analysis Unit (DAU) No. 256 of the South Valley Floor Hydrologic Unit. The Basin Plan designates the beneficial uses of groundwater in this DAU as municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply.

49. The Basin Plan identifies the greatest long-term problem facing the Tulare Lake Basin as the increase in salinity in groundwater, which has accelerated due to the intensive use of soil and water resources by irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until there is a long-term solution to the salt imbalance. Until then, the Basin Plan establishes the following limits:

    a. The incremental increase in salts from use and treatment must be controlled to the extent possible. The maximum EC shall not exceed the EC of the source water plus 500 umhos/cm. When the source water is from more than one source, the EC shall be a weighted average of all sources.

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

These effluent limits are considered reflective of best practicable treatment or control (BPTC).

50. The Basin Plan requires municipal WWTFs that discharge to land to comply with treatment performance standards for BOD_5 and TSS. WWTFs that preclude public access and discharge one mgd or more must provide removal of at least 80 percent or reduction to 40 mg/L, whichever is more restrictive, of both BOD_5 and TSS. WWTFs that discharge less than one mgd must provide reduction to 40 mg/L of both BOD_5 and TSS.

Antidegradation Analysis

51. State Water Board Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality Waters in California* (State "Antidegradation" Policy or Resolution 68-16) 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 BPTC 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.

52. In general, shallow groundwater exceeds Water Quality Objectives for nitrate as nitrogen, EC, TDS, chloride, and arsenic. The discharge of treated effluent from the WWTF will not degrade the beneficial uses of groundwater beneath the Prison because the first encountered groundwater is not of high quality. The concentrations of the effluent (Finding 14) are less than the concentrations reported for background groundwater (Finding 42). EC and TDS concentrations in background groundwater are four to five times the EC and TDS concentrations of the effluent.

Treatment and Control Practices

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

    a. Alarm and automatic flow diversion systems to prevent system bypass or overflow;

    b. Secondary treatment of the wastewater;

    c. A nitrogen removal treatment process;

    d. Disinfection of treated effluent;

    e. Recycled water application at plant uptake (for nitrogen and water) rates;

f. Appropriate biosolids storage and disposal practices;

g. An Operation and Maintenance (O&M) manual; and

h. Certified operators to insure proper operation and maintenance.

Water Recycling Criteria

54. Domestic wastewater contains pathogens harmful to humans that are typically measured by means of total or fecal coliform, as indicator organisms. California Department of Health Services (DHS), which has primary statewide responsibility for protecting public health, has established statewide criteria in Title 22, California Code of Regulations, Section 60301 et seq., (hereafter Title 22) for the use of recycled water and has developed guidelines for specific uses. Revisions of the water recycling criteria in Title 22 became effective on 2 December 2000. The revised Title 22 expands the range of allowable uses of recycled water, establishes criteria for these uses, and clarifies some of the ambiguity contained in the previous regulations.

55. A 1988 Memorandum of Agreement (MOA) between DHS and the State Water Resources Control Board (State Water Board) on the use of recycled water establishes basic principles relative to the agencies and the regional water boards. In addition, the MOA allocates primary areas of responsibility and authority between these agencies, and provides for methods and mechanisms necessary to assure ongoing, continuous future coordination of activities relative to the use of recycled water in California.

56. Title 22, Section 60323 requires recyclers of treated municipal wastewater to submit an engineering report detailing the use of recycled water, contingency plans, and safeguards. The Discharger submitted an engineering report to the Regional Water Board and DHS pursuant to Title 22, Section 60323, for its water recycling operations on its 200-acre Use Area in January 2005. In June 2006, the Discharger requested that the engineering report be ammended to include provisions for the planting of corn silage and Sudan grass as a rotational crop with alfalfa.

57. 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 (California Water Code 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.

58. 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 draft Title 22 Engineering Report to DHS in September 2004 and

an amendment letter to the Title 22 Report on 6 December 2004. DHS provided comments on the draft Title 22 Engineering report on 1 November 2004 and the revised Title 22 Engineering Report on 7 December 2004.

Other Regulatory Considerations

59. The United States Environmental Protection Agency (EPA) has promulgated biosolids reuse regulations in Title 40, Code of Federal Regulations, Part 503, Standards for the Use or Disposal of Sewage Sludge, which establishes management criteria for protection of ground and surface waters, sets application rates for heavy metals, and establishes stabilization and disinfection criteria. The Discharger may have separate and/or additional compliance, reporting, and permitting responsibilities to EPA. The Report of Waste Discharge states that all biosolids will be hauled to a separate permitted facility.

60. As the discharge consists of treated municipal sewage and incidental discharges from treatment and storage facilities associated with a municipal wastewater treatment plant, and as these discharges are regulated by waste discharge requirements consistent with applicable water quality objectives, the Facility and its discharge is exempt from containment pursuant to Title 27, Section 20090(a).

CEQA

61. The Discharger certified an environmental impact report (EIR) on 8 June 2001 in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et, seq.) and the State CEQA guidelines (Title 14, Division 6, California Code of Regulations, as amended). The Superior Court of California required the Discharger to withdraw the certification until a cumulative impact analysis could be prepared.

62. The Discharger certified a *Cumulative Impact Report* dated August 2001. The report identified impacts including water usage. The report concluded the Prison and WWTF would have an impact on water resources of the region, but these impacts were consistent with Basin Plan requirements.

63. The Discharger submitted a Notice of Determination on 13 December 2001 that indicated the project would have a significant effect on the environment (loss of farmland, air resources, noise, schools, sensitive species, and traffic issues), but mitigation measures were a condition of approval and a Statement of Overriding Consideration (benefit to the people of the State) was adopted for the project.

64. The Regional Water Board, as a responsible agency under CEQA, has reviewed the final EIR for the project relative to impacts to groundwater quality and concurs that the design of the WWTF and the treatment and control practices (lined aeration basins and sludge

drying beds, disinfecting effluent, recycling treated secondary disinfected effluent) will mitigate the project's potential groundwater impacts.

General Findings

65. Pursuant to California 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.

66. The Regional Water Board will review this Order periodically and will revise requirements when necessary.

67. California Water Code Section 13267(b) states 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 having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional 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."

68. The technical reports required by this Order and the attached Monitoring and Reporting Program No. R5-2005-_____ are necessary to assure compliance with these waste discharge requirements. The Discharger operates the Facility that discharges the waste subject to this Order.

69. The California Department of Water Resources set standards for the construction and destruction of groundwater wells, as described in California Well Standards Bulletin 74-90 (June 1991) and Water Well Standards: State of California Bulletin 94-81 (December 1981). These standards, and any more stringent standards adopted by the State or county pursuant to California Water Code Section 13801, apply to all monitoring wells.

Public Notice

70. 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.

71. 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.

72. The Discharger and interested agencies and persons have been notified of the intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

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

IT IS HEREBY ORDERED that, pursuant to Sections 13263 and 13267 of the California Water Code, the California Department of Corrections and its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

A. Prohibitions:

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

2. Bypass or overflow of untreated wastes, except as allowed by Provision E.2 of Standard Provisions and Reporting Requirements, is prohibited.

3. Discharge of waste classified as 'hazardous', as defined in Section 2521(a) of Title 23, California Code of Regulations, Section 2510 et seq., is prohibited. Discharge of waste classified as 'designated,' as defined in California Water Code Section 13173, in a manner that causes violation of groundwater limitations, is prohibited.

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

B. Effluent Limitations:

1. The discharge flow shall not exceed:

   a. a monthly average discharge flow of 0.77 mgd; and

   b. a maximum daily discharge flow of 1.54 mgd.

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

Constituent	Units[1]	Monthly Average	Daily Maximum
BOD_5	mg/L	40	80
TSS	mg/L	40	80
Chloride	mg/L	175	---

3. The arithmetic mean of BOD_5 and of total suspended solids in effluent samples collected over a monthly period shall not exceed 20 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (80 percent removal).

4. The annual flow-weighted average EC of the discharge, shall not exceed 1,000 umhos/cm at any given time. The flow-weighted average EC for the discharge shall be a moving average for the most recent twelve months. The most recent value will be compared to the previous twelve months.

5. The number of total coliform bacteria shall not exceed an MPN of 23 per 100 mL in more than one sample in any 30-day period.

C. Discharge Specifications:

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

2. The depth from the bottom of the impoundments to the anticipated highest level of groundwater shall not be less than five feet in depth.

3. Public contact with effluent shall be precluded through such means as fences, signs, or acceptable alternatives.

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

5. Disposal ponds shall have sufficient capacity to accommodate allowable discharge flow and design seasonal precipitation and ancillary inflow and infiltration, excluding effluent discharged as authorized by valid requirements to reclamation areas and to off-site effluent storage and disposal areas.

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

7. Ponds shall be managed to prevent breeding of mosquitoes. In particular,

   a. An erosion control plan should assure that coves and irregularities are not created around the perimeter of the water surface.

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

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

d. Vegetation management operations in areas in which nesting birds have been observed shall be carried out either before or after, but **not during**, the **April 1** to **June 30** bird nesting season.

8. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of groundwater limitations.

D. Recycling Specifications

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

1. Recycled water (i.e., effluent) shall remain within the Discharger's on-site use areas. Recycled water provided off-site shall only be provided to users that hold Regional Water Board adopted water reclamation requirements, or users who have obtained a waiver of reclamation requirements from the Regional Water Board.

2. Use of recycled water shall be limited to flood irrigation of fodder, fiber, seed crops not eaten by humans, and shall comply with the provisions of Title 22.

3. The Discharger will maintain the following setback distances from areas irrigated with recycled water:

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

4. No physical connection shall exist between recycled water piping and any domestic water supply or domestic well, or between recycled water piping and any irrigation well that does not have an air gap or reduced pressure principle device.

5. The perimeter of use areas shall be graded to prevent ponding along public roads or other public areas.

6. Areas irrigated with recycled water shall be managed to prevent breeding of mosquitoes. More specifically:

a. All applied irrigation water must infiltrate completely within a 48-hour period.

b. Ditches not serving as wildlife habitat should be maintained free of emergent, marginal, and floating vegetation.

c. Low-pressure and unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store recycled water.

7. Recycled water shall be managed to minimize runoff onto adjacent properties not owned or controlled by the Discharger.

8. Recycled water shall be managed to minimize contact with workers.

9. If recycled water is used for construction purposes, it shall comply with the most current edition of Guidelines for Use of Reclaimed Water for Construction Purposes. Other uses of recycled water not specifically authorized herein shall be subject to the approval of the Executive Officer and shall comply with Title 22.

10. Areas irrigated with recycled water shall be posted with warning signs in accordance to Title 22, Section 60310 (g). Signs with proper wording (shown below) of a size no less than four inches high by eight inches wide shall be placed at all areas of public access and around the perimeter of all areas used for effluent disposal or conveyance to alert the public of the use of recycled water. All signs shall display an international symbol similar to that shown in Attachment C, which is attached hereto and made a part of this Order by reference, and present the following wording:

"RECYCLED WATER—DO NOT DRINK"

"AGUA DE DESPERDICIO RECLAMADA—POR FAVOR NO TOME"

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

E. Sludge Specifications

Sludge in this document means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screening material generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the WWTF. Biosolids refers to sludge that has undergone sufficient treatment and testing to qualify for reuse pursuant to federal and state regulations as a soil amendment for agriculture, silviculture, horticulture, and land reclamation.

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

2. Treatment and storage of sludge generated by the WWTF shall be confined to the WWTF property.

3. Any storage of residual sludge, solid waste, and biosolids on property of the WWTF shall be temporary (i.e., no longer than two years) and controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate groundwater limitations of this Order.

4. Residual sludge, biosolids, and solid waste shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27. Removal for further treatment, disposal, or reuse at sites (i.e., landfill, composting sites, soil amendment sites) operated in accordance with valid waste discharge requirements issued by a regional water quality control board will satisfy this specification.

5. Use of biosolids as a soil amendment shall comply with valid waste discharge requirements issued by a regional water quality control board or State Water Board. In most cases, this means the General Biosolids Order (State Water Board Water Quality Order No. 2000-10-DWQ, "General Waste Discharge Requirements for the Discharge of Biosolids to Land for Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities"). For a biosolids use project to be authorized by the General Biosolids Order, the Discharger must file a complete Notice of Intent and receive a Notice of Applicability for each project.

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.

F. Groundwater Limitations

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

   a. Containing constituent concentrations in excess of the concentrations specified below, or natural background quality (as defined in Finding 42 and updated as appropriate as a result of ongoing monitoring), whichever is greater:

      (i) Nitrate of 10 mg/L.

      (ii) Total coliform organisms of 2.2 MPN/100 mL.

      (iii) For other constituents identified in Title 22, the MCLs quantified therein.

b. Taste or odor-producing constituents, or toxic substances, in concentrations that cause nuisance or adversely affect beneficial uses.

G. Provisions

1. The Discharger shall comply with the Standard Provisions and Reporting Requirements for Waste Discharge Requirements, dated 1 March 1991, which are part of this Order. This attachment and its individual paragraphs are referred to as Standard Provisions(s).

2. The Discharger shall comply with Monitoring and Reporting Program (MRP) No. R5-2007-____, which is part of this Order, and any revisions thereto as adopted by the Regional Water Board or approved by the Executive Officer. The submittal date shall be no later than the submittal date specified in the Monitoring and Reporting Program for Discharger self-monitoring reports.

3. The Discharger shall keep at the WWTF a copy of this Order, including its MRP, Information Sheet, attachments, and Standard Provisions, for reference by operating personnel. Key operating personnel shall be familiar with its contents.

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

5. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. To demonstrate compliance with sections 415 and 3065 of Title 16, CCR, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

6. At least 90 days prior to termination or expiration of any agreement involving a recycled water use area that may jeopardize compliance with this Order due to lack of disposal capacity, the Discharger shall notify the Executive Officer in writing of the

situation and of what measures have been taken or are being taken to ensure full compliance with this Order.

7. The Discharger shall not allow pollutant-free wastewater to be discharged into the Facility collection, treatment, and disposal systems in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means storm water (i.e., inflow), groundwater (i.e., infiltration), cooling waters, and condensates that are essentially free of pollutants.

8. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Accordingly, the Discharger shall submit to the Regional Water Board on or before each report due date the specified document or, if an action is specified, a written report detailing evidence of compliance with the date and task. If noncompliance is being reported, the reasons for such noncompliance shall be stated, plus an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Water Board by letter when it returns to compliance with the time schedule. Violations may result in enforcement action, including Regional Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.

9. In the event of any change in control or ownership of land or waste treatment and storage facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the appropriate Regional Water Board office.

10. The Discharger shall maintain and operate all ponds sufficient to protect the integrity of containment levees and prevent overtopping or overflows. Unless a California civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard in any pond shall never be less than two feet (measured vertically). As a means of management and to discern compliance with this Provision, the Discharger shall install and maintain in each pond permanent markers with calibration that indicates the water level at design capacity and enables determination of available operational freeboard.

11. As a means of discerning risk of violation of Discharge Specification C.4, the Discharger shall monitor the dissolved oxygen content in the upper zone (1 foot) of effluent in disposal ponds as specified in Monitoring and Reporting Program Order No. 05-2007-____. The DO concentration shall not be less than 1.0 mg/L for three consecutive sampling events. Should the DO be below 1.0 mg/L for three consecutive sampling events, the Discharger shall report the findings to the Regional Water Board **within 7 days** and propose a remedial action to resolve the low DO results **within 30 days**.

12. To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the address and telephone number of the persons responsible for contact with the Regional Water Board and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. If approved by the Executive Officer, the transfer request will be submitted to the Regional Water Board for its consideration of transferring the ownership of this Order at one of its regularly scheduled meetings.

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 _____.

_____
PAMELA C. CREEDON, Executive Officer

JSP/kes 9 April 2007