INFORMATION SHEET

ORDER NO. R5-2007-____
CALIFORNIA DEPARTMENT OF CORRECTIONS
KERN VALLEY STATE PRISON
WASTEWATER TREATMENT FACILITY
KERN COUNTY

Background
The California Department of Corrections (Discharger) operates a wastewater collection, treatment, and disposal facility (WWTF) at the Kern Valley State Prison (Prison). 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. The WWTF has an average daily flow of 0.77 million gallons per day (mgd).

The Discharger submitted a report of waste discharge (RWD) dated 8 April 2003, for a new WWTF to serve the Prison. 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. Disinfected effluent is discharged into two unlined storage ponds and subsequently discharged to a 200-acre effluent disposal area or use area.

Solids and Biosolids Disposal
Screenings and grit removed from the wastewater are dewatered and placed in a dumpster prior to disposal at an offsite landfill. Sludge is discharged to the six lined sludge-drying beds for digestion and thickening. The sludge drying beds are lined with soil cement and have under drain systems to return liquids to the headworks. The Discharger will have sludge hauled by a composting firm for reuse of the sludge as compost.

Basin Plan, Beneficial Uses, and Regulatory Considerations
The Basin Plan indicates the greatest long-term problem facing the entire Tulare Lake Basin is increasing salinity in groundwater, a process accelerated by man's activities and particularly affected by intensive irrigated agriculture. The Regional Board encourages proactive management of waste streams by dischargers to control addition of salt through use, and has established an incremental EC limitation of 500 umhos/cm as the measure of the maximum permissible addition of salt constituents through use. A more restrictive limitation on salt constituents added through use is appropriate where necessary to assure compliance with a groundwater limitation for any constituent established by the Regional Water Board.

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

Shallow groundwater in the vicinity of the Prison is not of high water quality. EC and TDS concentrations in background groundwater are four to five times greater than that of the effluent that is discharged and thus no degradation will occur. Any impacts to the shallow groundwater will be localized and will not affect any beneficial uses. Due to the low permeability of the confining clay layer, it is expected that there will be minimal migration from the shallow groundwater to the deeper, confined groundwater. Any migration that does occur will be at or below the natural background levels of the shallow groundwater.

Treatment Technology and Control
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.

The disinfection of the treated effluent was required due to the possibility of groundwater occurring within five feet of the effluent storage pond bottoms. The Discharger had the option of lining the storage ponds, or disinfecting the effluent and chose the latter option.

Compliance History
Regional Water Board staff has conducted two inspections of the WWTF. The first inspection was on 15 January 2005 and the next on 21 February 2006. The 15 January 2005 inspection noted several deficiencies including the lack of an O&M manual, cracks in the soil cement lining the aeration basins and sludge drying beds, lack of wash water containment structures, various components of the WWTF (chlorine contact chamber, blowers, etc) that were inoperable or being operated manually, and an area in need of repair due to a broken water line. The Discharger had corrected all the cited violations except for the automatic operation of the components of the WWTF by the time of the February 2006 inspection. The Discharger continues to have all WWTF personnel trained to use the automated system to increase the WWTF efficiency.

The Regional Water Board adopted Monitoring and Reporting Program (MRP) No. R5-2005-0824 on 18 August 2005 in accordance with the provisions of CWC section 13267. The MRP allowed the Discharger to characterize the waste discharge while operating in accordance with

the provisions of CWC section 13264. The discharger submits monthly Self Monitoring reports per the requirements contained in the MRP. The results illustrate the effectiveness of the WWTF with 97% and 98% removal for BOD and TSS, respectively.

The Discharger's tenant farmer uses the disinfected water to supplement the irrigation of alfalfa, Sudan grass, or corn silage on the 200-acre Use Area that is not used for human consumption. The Discharger submitted a *Recycled Water System Management Plan* in July 2006 that illustrates that the crops will remain nitrogen deficient even if all of the treated wastewater was applied to the crops.

Groundwater Conditions

Regional groundwater flows westerly and the depth of water occurs about 40 feet below ground surface (bgs), according to information in *Lines of Equal Elevation of Water in Wells in Unconfined Aquifer*, published by the California Department of Water Resources (DWR) in Spring 1997. The actual depth to shallow groundwater is on the order of 10 to 30 feet bgs and resulted in the discharger disinfecting the effluent, as there was a possibility the depth of water beneath the storage ponds would have been less than 5 feet from the base of the ponds. 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.

Shallow groundwater exceeds Water Quality Objectives for nitrate as nitrogen, EC, TDS, chloride, and arsenic. However, the spatial distribution of the elevated results indicate they are regional in nature and do not reflect an impact from the WWTF. The Discharger collected samples from six shallow groundwater wells in 1999 and 2000, prior to the construction of the prison and WWTF. EC concentrations ranged from about 700 to 5,200 umhos/cm; TDS concentrations from about 900 to 4,000 mg/L; chloride concentrations from about 40 to 420 mg/L; and nitrate concentrations from about 10 to 81 mg/L. These concentrations are nearly identical to the results observed in the Discharger's current monitoring well network indicating the current conditions have not been impacted by the operation of the WWTF.

Title 27

Title 27, CCR, section 20005 et seq. (Title 27), contains regulations to address certain discharges to land. Title 27 establishes a waste classification system, specifies siting and construction standards for full containment of classified waste, requires extensive monitoring of groundwater and the unsaturated zone for any indication of failure of containment, and specifies closure and post-closure maintenance requirements. Generally, no degradation of groundwater quality by any waste constituent in a classified waste is acceptable under Title 27 regulations.

Discharges of domestic sewage and treated effluent can be treated and controlled to a degree that will not result in unreasonable degradation of groundwater. For this reason, they have been conditionally exempted from Title 27. Treatment and storage facilities for sludge that are part of the WWTF are considered exempt from Title 27 under section 20090(a), provided that

the facilities not result in a violation of any water quality objective. However, residual sludge (for the purposes of the proposed Order, sludge that will not be subjected to further treatment by the WWTF) is not exempt from Title 27. Solid waste (e.g., grit and screenings) that results from treatment of domestic sewage and industrial waste also is not exempt from Title 27. This residual sludge and solid waste are subject to the provisions of Title 27.

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

CEQA

The 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. The Discharger certified a Cumulative Impact Report dated August 2001 with the report identifying impacts including water usage. The report concluded the Prison and WWTF will not have an impact on water resources of the region and was consistent with Basin Plan requirements. The Discharger submitted a Notice of Determination on 13 December 2001 indicating the project would have a significant effect on the environment, but mitigation measures were a condition of approval and a Statement of Overriding Considerations was adopted for the project. 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.

Proposed Order Terms and Conditions

Discharge Prohibitions, Specifications and Provisions

The proposed Order prohibits discharge to surface waters and water drainage courses and cross connection between potable water and well water piping with recycled water piping.

The discharge specification regarding EC is consistent with Regional Water Board policy for effluent salinity limitation of the monthly flow-weighted average EC of the source water plus 500 umhos/cm. The discharge specifications regarding dissolved oxygen and freeboard are consistent with Regional Board policy for the prevention of nuisance conditions, and are applied to all such facilities.

The effluent limits prescribed in the proposed Order for total settleable solids and BOD_5 are based on the Basin Plan. The effluent limit prescribed for total suspended solids (TSS) is based on the Basin Plan. The proposed Order's Discharge Specification B.2 implements the Basin Plan's requirement that municipal facilities designed to discharge greater than 1 mgd

provide 80 percent removal efficiency or reduction to a concentration of 40 mg/L, whichever is more restrictive, of both 5-day BOD and TSS.

In order to protect public health and safety, the proposed Order requires the Discharger to comply with the provisions of Title 22 and to implement best management practices with respect to recycled water application (application at reasonable rates considering the crop, soil, and climate).

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

The proposed Order includes influent and effluent monitoring requirements, recycled water storage, pond monitoring, recycled water land application area monitoring, groundwater monitoring, sludge monitoring, and water supply monitoring. The monitoring is necessary to evaluate groundwater quality and the extent of any degradation or pollution from the discharge. The proposed Order includes monitoring of recycling activities to check compliance with Title 22 and the terms and conditions of the proposed Order.

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

Reopener
The conditions of discharge in the proposed Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. It may be appropriate to reopen the Order if applicable laws and regulations change.

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