

INFORMATION SHEET

ORDER R5-_____
CITY OF WEST SACRAMENTO
GEORGE KRISTOFF WATER TREATMENT PLANT
YOLO COUNTY

Facility Description

The City of West Sacramento owns and operates the George Kristoff Water Treatment Plant (WTP) that treats Sacramento River water for distribution to the City of West Sacramento as a potable water supply. The WTP has a design capacity of 58 mgd and operates between 5 to 27 mgd. The WTP has been in operation since 1988 and has not previously been regulated under WDRs. A Report of Waste Discharge was submitted for the land discharge of water treatment wastewater.

The WTP provides treatment by settling, coagulation, filtration, and chlorine disinfection. There are two Actiflo® pretreatment trains (water clarification process that combines microsand enhanced flocculation with tube settling); eight dual media gravity filters; and associated chemical feed systems to add treatment chemicals including aluminum, polyaluminum chloride, anionic polymer, chlorine gas, hydrofluosilicic acid, and sodium hydroxide.

Wastewater is composed of sludge from the Actiflo® settling basins, spent water from the filter backwash operations (filter backwash water), and any water that has gone through analyzers for process control (process wastewater). The wastewater is collected in two concrete basins (Recycled Water Basin 1 and 2), where a portion of the decant water (less than ten percent of influent raw water flow rate) is returned to the treatment process. The remaining wastewater in the basins is discharged to the sanitary sewer that is managed by Sacramento Regional County Sanitation District and sometimes discharged to three existing unlined sludge drying ponds.

The sludge drying ponds (Sludge Pond 1, Sludge Pond 2, and Sludge Pond 3) are used for wastewater disposal on an as needed basis. Each drying pond has a storage capacity of approximately 247,000 gallons at 2-feet of freeboard.

Dried sludge accumulated in the drying ponds is excavated as needed. The dried sludge has historically been stockpiled at the WTP and taken to an adjacent city owned property for use as landscaping topsoil. Approximately 3,900 cubic feet of dried sludge was removed in 2012.

The Discharger has not characterized the dried sludge, determined the sludge mass that will be generated, or developed an operations plan for onsite dried sludge application or temporary onsite storage.

Site-Specific Conditions

Surficial soils near the sludge drying ponds consists of sandy silt extending to depths of approximately 5 to 10 feet below ground surface followed by 5 to 10 feet of silty sand.

The WTP is currently within the 100-year Federal Emergency Management Agency (FEMA) floodplain designation but protected by levees, dikes, or other structures subject to possible failure or overtopping during larger floods.

Based on data from California Irrigation Management Information System (CIMIS) Station 155, the average annual precipitation for the City is approximately 18 inches and the reference evapotranspiration rate is approximately 51 inches per year. The 100-year precipitation within the area is approximately 31 inches.

The land use in the WTP area is zoned water front, with adjacent property to the west zoned as commercial/water front. The sludge drying ponds lie just southwest of the Sacramento River, bounded on the north by North Harbor Boulevard, on the southwest by the water treatment plant, on the south by railroad tracks, and on the east/southeast by undeveloped land.

Groundwater Conditions

According to the Web Soil Survey published by the United States Department of Agricultural Natural Resources Conservation Service, the site is located in an area predominately in the Sycamore silt loam soil series, consisting of silt loam and a moderately high to high saturated hydraulic conductivity (0.57 to 1.98 inch/hour).

Three groundwater monitoring wells (MW-1, MW-2, and MW-3) were installed on 24 August 2011 and sampled on 26 August 2011 to determine groundwater quality near the existing sludge drying ponds. Based on the one monitoring event, groundwater was encountered at approximately 17.0 to 19.0 feet below existing site grade and the down gradient direction is towards the southwest. Seasonal fluctuations may occur. Proximity to the Sacramento River may recharge groundwater quality or influence groundwater flow direction.

In general, groundwater quality underlying the sludge drying ponds is of good quality with respect to salinity constituents (TDS, sodium, and chloride) and nitrate as nitrogen concentrations. The overall groundwater quality near the three monitoring wells appears fairly similar. Total trihalomethane (TTHM) concentrations were detected in the underlying groundwater but do not exceed the water quality objective. Analytical data show total coliform concentrations greater than 2.2 MPN/100 mL, which is the Basin Plan's numeric water quality objective, in all monitoring wells. Based on a single monitoring event, it is not known whether the groundwater coliform detections are due to cross-contamination of the monitoring wells during construction and/or subsequent sampling.

Basin Plan, Beneficial Uses, and Regulatory Considerations

Local drainage is to Sacramento River. The beneficial uses of Sacramento River, as stated in the Basin Plan, are municipal and domestic supply; agricultural supply; industrial process supply; hydropower generation; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; wildlife habitat; and spawning, reproduction, and/or early development. The beneficial uses of underlying groundwater as set forth in the Basin Plan are municipal and domestic supply, agricultural supply, industrial service supply and industrial process supply.

Antidegradation Analysis

Constituents of concern that have the potential to degrade groundwater include arsenic, lead, nickel, and TTHM. In consideration of the high quality source water, nature of the treatment process, concentration of the waste, the limited discharges to the sludge drying ponds, and operation of the sludge ponds to periodically remove the dried sludge, the discharge has minimal potential to cause exceedances of the water quality objectives. However, groundwater monitoring data is needed to verify that unreasonable groundwater degradation is not occurring. This Order requires monitoring the quality of the wastewater discharged to the sludge ponds and sets groundwater limits not to exceed water quality objectives. This Order also sets groundwater trigger concentrations to assess whether the discharge might potentially cause a violation of one or more of the groundwater limitations of the WDR at some later date.

For arsenic, lead, nickel, and TTHM, the nature of the waste, site-specific conditions, and current groundwater monitoring data indicate that the discharge may cause degradation, but will not cause exceedance of a water quality objective. The Discharger has implemented BPTC, so the degradation is allowable under Resolution 68-16.

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

- a. High quality source water;
- b. Engineered clay-lined solids drying ponds.
- c. Limited use of the solids drying ponds.
- d. Periodic removal of the dried solids from the sludge drying ponds.

Discharge Prohibitions, Specifications, Limitations and Provisions

This Order prohibits temporary storage of dried water treatment sludge on WTP property until and unless the Discharger has submitted the report required pursuant to Provision E.1.c.

This Order prohibits the land application of dried water treatment sludge on WTP property. This Order may be revised to allow land application of dried water treatment sludge onsite if the Discharger submits a new Report of Waste Discharge or alternatively, applies for coverage under the Statewide General Waste Discharge Requirements for Discharges to

Land with a Low Threat to Water Quality, Water Quality Order 2003-0003-DWQ or other applicable Order.

The Discharger shall operate and maintain all ponds sufficiently to protect the integrity of containment dams and berms and prevent overtopping and/or structural failure. Unless a California-registered civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard in any pond shall never be less than two feet (measured vertically from the lowest possible point of overflow).

This Order establishes groundwater limitations for the facility 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.

Groundwater trigger limits have been established to assess whether the discharge might potentially cause a violation of one or more of the groundwater limitations.

The Provisions section of this Order requires submittal of certain technical reports by the dates provided in the Order.

The Monitoring and Reporting Program is designed to ensure and verify compliance with the limitations and requirements in this Order.