

INFORMATION SHEET

ORDER NO. R5-2010-____
GRANT PARK DEVELOPMENT, INC.
DUNNIGAN WATER WORKS WASTEWATER TREATMENT FACILITY
YOLO COUNTY

Background

Grant Park Development, Inc. owns and operates the Dunnigan Water Works wastewater treatment facility (WWTF), which serves a 186-unit mobile home park and a 67-space recreational vehicle (RV) park with two restroom/shower facilities and a laundry room.

The WWTF is currently regulated by WDRs Order No. 93-176. The treatment plant currently provides the equivalent of secondary treatment in unlined ponds, from which it is allowed to evaporate and percolate as the sole means of disposal. Current influent flows are approximately 20,000 gallons per day (gpd).

The Discharger plans to improve and expand the WWTF to accommodate flows from two planned development projects: the North Valley Depot near the existing WWTF and the Dunnigan Truck and Travel Center. The planned developments will include retail and office space, motels, gas stations, a truck stop, and restaurants. The new development will be constructed in phases.

The WWTF expansion project will provide a new treatment plant which will provide full secondary treatment in lined ponds. The effluent will be disinfected and used to irrigate crops at two effluent recycling areas totaling approximately 41 acres at full build out. Recycled water will be applied by sprinkler irrigation year round as needed to support the crops.

The new WWTF and water recycling areas will be designed to provide a firm treatment, storage and disposal capacity of 0.105 mgd as an average annual flow at full build out. The water balance presented in the RWD used reasonable estimates of normal influent flows, precipitation, evaporation, and evapotranspiration. However, no allowance for seasonal I/I was made. Therefore, the RWD did not provide sufficient information to set flow limits for wet weather months.

Groundwater Conditions

Surface soils at the wastewater treatment plant site are predominantly silty clay loam, which is well drained and non-saline. Surface soils at the off-site water recycling area are gravelly loam, silty clay loam and silty loam, which are also well-drained.

The Discharger installed three groundwater monitoring wells at the existing wastewater treatment plant in May 2007. Soils at the existing WWTF are typically interbedded silts and clays from the ground surface to depths ranging from 23 to 41 feet below ground surface (bgs). Interbedded sands and gravels were encountered in to monitoring well borings.

The Discharger has performed groundwater monitoring three times since the wells were installed: in June, July, and December 2007. During that period, shallow groundwater levels in all wells declined by approximately two feet; the groundwater gradient was very low (0.0003 to 0.0006); and the flow direction switched from northwestward in June and July to southeastward in December. Historical groundwater monitoring data for two private WWTFs

within 2,000 feet of this site¹ indicate that the low gradient and seasonal flow direction variability are typical of the area. Based on local topography and drainage features, the local groundwater flow direction should be consistently towards the east-northeast, but local groundwater use may be causing the directional variability in the shallow groundwater gradient. However, it is noted that the very low gradient combined with the directional variability may indicate that there is little net movement of shallow groundwater within the fine-grained soils below the existing WWTF.

The limited groundwater monitoring data, when considered with the shallow groundwater flow regime discussed above, may indicate that the existing WWTF has degraded groundwater quality with respect to coliform organisms, nitrogen, and salinity constituents. The nitrate nitrogen concentrations exceed the primary maximum concentration limit (MCL). However, the data are very limited. Additional monitoring wells, further hydrogeologic assessment, additional monitoring data, and statistical analysis of the data are required to determine background concentrations and whether the degradation, if confirmed, has caused exceedance of applicable water quality limits.

The Discharger has not evaluated the existing groundwater monitoring data to determine whether the wastewater treatment plant has unreasonably degraded the underlying groundwater. It is appropriate to require that the Discharger install additional monitoring wells as needed at the wastewater treatment plant and effluent recycling sites. It is also appropriate, after sufficient data have been collected, to require a formal determination of background groundwater quality and the degree to which degradation has occurred. This Order requires that the Discharger continue monitoring groundwater at the treatment plant and complete a formal determination of background groundwater quality and the degree to which degradation has occurred.

Basin Plan, Beneficial Uses, and Water Quality Objectives

Surface water drainage is to the Colusa Basin Drainage Canal, which is tributary to the Sacramento River at Knights Landing. The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Board.

The Basin Plan encourages water recycling where practicable. Upon completion of the planned improvements, the Discharger will recycle all effluent for beneficial uses.

Antidegradation Analysis

State Water Resources Control Board Resolution No. 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereafter Resolution 68-16) prohibits degradation of groundwater unless it has been shown that:

1. The degradation is consistent with the maximum benefit to the people of the State;
2. The degradation will not unreasonably affect present and anticipated future beneficial uses;

¹ The Pilot Travel Center and the Ritchie Brothers Auctioneers sites (see Attachment A).

3. The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives; and
4. The discharger employs best practicable treatment or control (BPTC) to minimize degradation.

Resolution 68-16 prohibits degradation of groundwater quality as it existed in 1968, or at any time thereafter that groundwater quality was better than in 1968, other than degradation that was previously authorized. An antidegradation analysis is required for a new discharge location, and/or an increased volume of waste and/or an increased concentration of waste constituents.

There has been a wastewater treatment facility at the current site since before 1974, when the first WDRs were issued. Although the Discharger has been monitoring groundwater quality at the current WWTF site since 2007, the available data are not sufficient to determine background groundwater quality.

When the new WWTF is complete, the facility will provide the following treatment and control measures:

- a. Full secondary treatment;
- b. Disinfection;
- c. Recycling of all treated effluent for beneficial reuse;
- d. Geosynthetic liners for all wastewater treatment ponds; and
- e. A certified wastewater treatment plant operator.

However, the Discharger has not implemented any source control and the proposed unlined effluent storage ponds do not incorporate any specific measures to reduce the potential for groundwater degradation. This Order requires the Discharger to submit a Background Groundwater Quality Study and Antidegradation Analysis Report and continue groundwater monitoring at the WWTF. If groundwater monitoring data shows that the discharge has violated the groundwater limitations of this Order, this Order may be reopened to add additional requirements that address the violations.

Additionally, although the WWTF is not publicly owned, the complexity of the system and the potential threat to water quality and public health provide sufficient reason to require that a certified wastewater treatment plant operator be retained operate and maintain the WWTF, to perform wastewater sampling and other monitoring required by this Order. Therefore, this Order requires that the Discharger provide the correct grades of certified operators and appropriate supervision for any OITs to ensure proper operation and maintenance of the WWTF.

Surrounding land uses are primarily irrigated agriculture, and these land uses predate the existing WWTF. Based on the limited data available and historic land uses, it is reasonable to expect that agricultural practices have degraded groundwater quality at both sites, and that it

will not be possible to determine pre-1968 groundwater quality. Therefore, determination of compliance with Resolution 68-16 for this facility must be based on existing background groundwater quality.

The Discharger cannot fully evaluate existing and potential future impacts to groundwater quality until completion of WWTF improvements and additional hydrogeologic studies. The limited antidegradation analysis below indicates that the proposed discharge may comply with the Basin Plan. However, this Order includes interim groundwater limitations that are effective immediately and do not allow exceedance of Basin Plan water quality objectives. Final Groundwater Limitations, which will become effective on 30 January 2015, are the Basin Plan water quality objectives or existing background groundwater concentrations, whichever is greater.

Constituents of concern that have the potential to degrade groundwater include salts (primarily EC, sodium, and chloride), nutrients and coliform organisms, as discussed below:

- a. The RWD did not provide sufficient high quality data for the water supply, treated effluent, or shallow groundwater to assess whether the discharge poses an unreasonable threat of groundwater degradation due to salinity constituents. Therefore, it is appropriate for this order to require further monitoring to determine the threat posed by salinity, and to require that the Discharger submit and implement a *Salinity Evaluation and Minimization Plan*.
- b. For nutrients such as nitrate, the potential for unreasonable degradation depends not only on the quality of the treated effluent, but the ability of the vadose zone below the effluent storage/disposal ponds to provide an environment conducive to nitrification and denitrification to convert the effluent nitrogen to nitrate and the nitrate to nitrogen gas before it reaches the water table. Groundwater monitoring data for the wastewater treatment plant site indicate that the discharge may have caused significant degradation due to nitrate. However, the new wastewater treatment ponds will have geosynthetic liners and the crops grown at the water recycling areas should remove most of the nitrogen in the applied wastewater. These two changes will minimize the threat to groundwater quality and allow the existing degradation, if confirmed, to attenuate over time.
- c. For coliform organisms, the potential for exceedance of the Basin Plan's numeric water quality objective depends on the ability of vadose zone soils below the treatment plant and effluent storage ponds and saturated soils within the shallow water bearing zone to provide adequate filtration. Groundwater monitoring data for the wastewater treatment plant indicates that the shallow soils beneath the treatment ponds may not provide sufficient filtration. However, the new WWTF's treatment ponds will have geosynthetic liners and the treated effluent will be disinfected prior to recycling.

The Discharger has not completed an antidegradation analysis to determine whether unreasonable groundwater degradation has, or likely will, result from the discharge. It is the responsibility of the Discharger to provide information for the Central Valley Water Board to evaluate whether any degradation caused by the discharge is consistent with Resolution No. 68-16.

Although this Order allows expansion of the WWTF, the new treatment plant will improve effluent quality, reduce the potential for continued percolation of wastewater to groundwater, and provide recycled water for beneficial reuse. Sufficient reason exists to accommodate this growth as long as the Discharger completes an antidegradation analysis and selects and implements appropriate salinity reduction and BPTC measures within a reasonable timeframe. It is also appropriate to allow some groundwater degradation as long as it is consistent with the Basin Plan and Resolution No. 68-16 because economic prosperity of local communities and associated industry is of benefit to the people of California.

In keeping with the intent of Resolution 68-16, there should no significant increase in influent flows before the Discharger completes the WWTF improvements that will provide better groundwater quality protection than the existing WWTF. Therefore, this Order limits influent flows to the existing WWTF to a small increment above current flows.

This Order establishes terms and conditions of discharge to ensure that the discharge does not unreasonably affect present and anticipated uses of groundwater and includes groundwater limitations that apply water quality objectives established in the Basin Plan to protect beneficial uses. This Order also establishes effluent limitations that are protective of the beneficial uses of the underlying groundwater; requires a groundwater quality evaluation and determination of the need for salinity reduction; and requires groundwater monitoring to quantify any water quality impacts. Following completion of the work required by the time schedule contained in the Provisions, this Order will be reopened, if necessary, to reconsider effluent limitations and other requirements to comply with Resolution 68-16. Based on the existing record, the discharge is consistent with the antidegradation provisions of Resolution 68-16.

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 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 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.

The treatment and effluent recycling facilities associated with the discharge authorized herein, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27, Section 20005 et seq. The exemption is based on the following:

- a. The reuse of treated wastewater at the water recycling areas is unconditionally exempt from Title 27 pursuant to Section 20090(h) because it constitutes recycling of material produced by waste treatment.
- b. Based on current influent quality and projected effluent quality, wastewater in the treatment ponds and treated effluent discharged to the effluent storage ponds and emergency storage ponds do not need to be managed as Hazardous Waste and may qualify for an exemption under Title 27 pursuant to Section 20090(b). However, the applicability of this exemption also depends on whether the discharge is in compliance with the Basin Plan. This will not be known until the first phase of the new WWTF is constructed and the Discharger provides additional groundwater monitoring data and a Background Groundwater Quality Study. These will be used to determine appropriate final groundwater limitations to protect the beneficial uses of groundwater and to determine whether additional treatment and/or improved containment are needed to ensure compliance with the Basin Plan. Because compliance with the Basin Plan cannot be determined immediately, this Order includes a compliance schedule for completion of those tasks.

Discharge Prohibitions, Specifications and Provisions

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

<u>Condition</u>	<u>Capacity</u>
Average daily dry weather flow ¹	0.105 mgd
<u>Total annual flow</u>	38.3 MG

¹ Based on the months of June through September, inclusive.

The RWD did not include separate water balances for each phase of WWTF build out, but the engineer of record states that each treatment train will have a firm hydraulic capacity of 0.035 mgd as an average dry weather flow when combined with at least 13.3 acres of recycling area and 32 acre-feet of effluent storage capacity if the new WWTF is built to be consistent with the drawings provided in the RWD.

Because the engineering design is not final, and the draft design does not discuss phased construction of the effluent recycling areas and effluent storage facilities in detail, it is appropriate to require that the Discharger submit a water balance for each phase of WWTF construction as it is completed to verify that the as-built hydraulic capacity of the system is consistent with the flow limits set forth in this Order, including a reasonable estimate of I/I flows during the 100-year, 365-day precipitation event.

The effluent limits for BOD and TSS of 30 mg/L monthly average and 80 mg/L daily maximum are based on reasonable expectations of performance of the secondary treatment system.

The EC of the treated effluent is not currently known. This Order imposes an effluent limit of the water supply EC plus an increment of 500 umhos/cm as an annual average, which is a reasonable increment until the Discharger gathers sufficient data to determine whether another limit is more appropriate.

The proposed Order prescribes groundwater limitations that implement water quality objectives for groundwater from the Basin Plan. The limitations require that the discharge not cause or contribute to exceedance of these objectives or natural background water quality, whichever is greatest.

The Provisions require submittal of certain technical reports to verify completion of the improvements project and compliance with requirements to install monitoring wells, evaluate groundwater quality, and implement salinity reduction and/or BPTC measures as necessary to comply with the groundwater limitations.

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

ALO:1/12/10