INFORMATION SHEET

ORDER NO. R5-2010-_____
CAMPBELL SOUP SUPPLY COMPANY, LLC
SOLANO COUNTY

Campbell Soup Supply Company, LLC owns and operates a tomato processing facility located at 8380 Pedrick Road, Dixon, Solano County. The facility was opened in 1975. The facility presently only processes tomatoes for tomato paste and diced tomato end products, which are shipped in bulk to other Campbell Soup facilities for ingredients in commercial products. The Discharger plans to increase the land application area and expand the facility to process additional fruits and vegetables such as carrots, celery, beets, parsley, lettuce, watercress, and spinach (referred to as the V7 Line) for ingredients in the formulation of V8. The Discharger land applies their process wastewater and is not requesting to increase their total annual discharge flow.

Report of Waste Discharge Submittal

The Report of Waste Discharge (RWD) was submitted to allow an expansion of activities at the site. The Discharger submitted an RWD dated 9 May 2008 to expand the wastewater land application area to accommodate an increase in the facility's operations to process additional fruits and vegetables. Additional information was submitted on 9 December 2008 and an Amended RWD was received 5 June 2009 that addressed the construction of a tailwater pond and stormwater management not described in the original RWD.

Wastewater Generation

Process wastewater is generated by the cleaning and washing of processing equipment, flume overflow, evaporator condensate, and water softener backwash. All wastewater is commingled in a lift pit prior to being discharged to the land application area. Wastewater generation and land application occur during the processing season. With the addition of the V7 line, processing will begin in mid May and wind down with the harvest season in November.

Wastewater flow rates are anticipated to vary from approximately 1.0 to 5.0 million gallons per day (MGD). The highest wastewater flows are expected during the peak of the tomato processing season in August and September. Waste Discharge Requirements (WDRs) Order No. 95-101 allowed maximum daily flow of 5.0 MGD. The tentative WDRs allow a monthly average maximum flow limit of 5.0 MGD and an annual total of 490 million gallons.

The flow limit will provide the Discharger with management flexibility of wastewater application because, as indicated in the water balance, wastewater generation will be less than the monthly average limit. The total flow limit is designed to control the total loading rate of the land application area with waste constituents. The Order includes Discharge Prohibitions, Specifications, Effluent Limitations, and Land Application Area Requirements that will prevent overloading the land application areas and potential nuisance conditions.

Land Application Areas

Historically, 547 acres of land were available for wastewater application. An additional 73 acres can be used for land application once configured to comply with the Order. The total land application acreage will be divided into 23 management units. At a given time, 7 management units will be in rotation for wastewater flood irrigation. The Discharger's water

balance indicates that the land application area provides adequate capacity to handle a monthly average discharge of 5.0 MGD during the peak processing month of August, and a 100 year storm event. During the processing season, a tailwater pond will serve as emergency storage for wastewater and stormwater tailwater until it can be reapplied.

The fixed dissolved solids (FDS) loading rate is estimated to be 4,660 lbs/ac•year of which the applied wastewater contributes about 70 percent and supplemental irrigation water contributes the remaining 30 percent. Supplemental irrigation water is acquired from three deep groundwater wells. Considerable effort to maintain a low FDS concentration in the process wastewater will be required to minimize the loading rate and protect groundwater quality. Because historical monitoring provides an abundance of electrical conductivity (EC) data but lacks wastewater specific monitoring data for FDS and total dissolved solids (TDS), EC is used as the basis to set a limit on salinity loading and to evaluate the extent of salinity groundwater degradation.

Domestic Wastewater

The domestic wastewater disposal system was designed for 300 employees at 3,000 gallons per day for usage during peak season operations and is presently discharged to unlined wastewater ponds. In 2009, the Discharger began working with Solano County Department of Resource Management Environmental Health Division to install and permit a septic tank and subsurface leachfield in place of the wastewater disposal ponds. The Discharger is currently in the design and planning process and will continue to seek a county permit for domestic wastewater disposal. This Order includes regulations and monitoring requirements for the disposal of domestic wastewater until the discharger acquires a county permit. This Order also sets forth a time schedule to convert the treatment system in the case that the Discharger does not obtain a County disposal permit.

Stormwater

Stormwater runoff from the land application area is captured and returned with the process water via the tailwater collection system. During the off season, typically starting in October or November, the Discharger plans to allow stormwater to flow off site into roadside drainage ditches until the start of the next processing season. Prior to allowing stormwater to flow off site, the WDRs require the Discharger to wait three weeks from the date of last land applied wastewater to allow for soil stabilization or capture the first flush of salts and nutrients by retaining and reapplying the first 0.5 inches of rainwater, which ever comes first..

Solids Disposal

Generated wastewater either undergoes sedimentation or screening prior to commingling in the lift pit. Collected solids are hauled off site for use as soil amendment or cattle feed.

Groundwater Quality

Groundwater has been monitored by three monitoring wells since 1998 and process wastewater has been land applied since 1975. The typical depth to groundwater underlying the facility is 14 feet below ground surface and 19 to 26 feet below ground surface of the land application area.

The groundwater data indicate that in respect to nitrate as nitrogen (NO_3-N), downgradient groundwater quality exceeded background quality until June 2006. Since December 2006, background water quality has averaged 9.1 mg/L NO_3-N. This Order requires the Discharger to complete a Nutrient Management Plan to ensure adequate nutrient loading and prevent downgradient nitrate concentrations from exceeding background groundwater quality.

In respect to salinity measured as EC, the EC concentration in monitoring wells downgradient of the land application area (averaging 1120 µmhos/cm) have consistently exceeded the EC concentration in the background monitoring well (averaging 896 µmhos/cm). This Order requires the discharger to complete a Salinity Reduction Workplan to reduce the salinity load to groundwater. Additionally, an updated Antidegradation Analysis is required to substantiate the Discharger's assertions that the land application of wastewater does not pose a threat to groundwater quality. Long term groundwater monitoring is needed to verify whether implemented salinity reduction methods have reduced the salinity impact to groundwater.

Basin Plan, Beneficial Uses, and Regulatory Considerations

Surface water drainage from the site eventually flows into the Cache Slough. The *Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region, Fourth Edition* (Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin. Beneficial uses often determine the water quality objectives that apply to a water body. For example, waters designated as municipal and domestic supply must meet the Maximum Contaminant Levels (MCLs) for drinking waters. The Basin Plan sets forth the applicable beneficial uses (industrial, agricultural, and domestic and municipal supply in this instance) of groundwater, procedure for application of water quality objectives, and the process for and factors to consider in allocating waste assimilation capacity.

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. Policies and procedures for complying with this directive are set forth in the Basin Plan.

Resolution 68-16 is applied on a case-by-case, constituent-by-constituent basis in determining whether a certain degree of degradation can be justified. It is incumbent upon the Discharger to provide technical information for the Regional Board to evaluate and fully characterize:

- All waste constituents to be discharged;
- The background quality of the uppermost layer of the uppermost aquifer;
- The background quality of other waters that may be affected;
- The underlying hydrogeologic conditions;
- Waste treatment and control measures;

- How treatment and control measures are justified as best practicable treatment and control;
- The extent the discharge will impact the quality of each aquifer; and
- The expected degree of degradation below water quality objectives.

In allowing a discharge, the Regional Board must comply with CWC Section 13263 in setting appropriate conditions. The Regional Board is required, relative to the groundwater that may be affected by the discharge, to implement the Basin Plan and consider the beneficial uses to be protected along with the water quality objectives essential for that purpose. The Regional Board need not authorize the full utilization of the waste assimilation capacity of the groundwater (CWC 13263(b)) and must consider other waste discharges and factors that affect that capacity.

The Discharger prepared an antidegradation study as part of the RWD. The study reports that in regard to nitrogen and organic matter, land application of wastewater will pose minimal or no risk of groundwater degradation, respectively. In regards to salinity, the study reports that the discharge is similar to local irrigation and best practical treatment and control should be implemented to reduce the risk of impacting groundwater. The Discharger currently has installed a brine recovery system to reduce salt usage of the water softener system that feeds the boilers. Additionally, hot condensate water is primarily used to feed the boilers and softened water is only used for boiler make-up water, which reduces the need to regenerate the ion exchange resins of the water softener and, hence, salt usage.

Effluent Limitations

An effluent limitation for EC is included in the WDRs. An EC effluent limit time schedule is established to bring the process wastewater effluent into compliance. Historical process wastewater monitoring data show spikes in EC levels that exceed 900 µmhos/cm. Information provided by the Discharger suggests that these spikes may be the result of discharging after scheduled cleaning. Improved discharge management of highly saline cleaning wastewater will mitigate spikes in EC levels. EC limits are set on a daily maximum, monthly average, and annual average. The initial EC limits are expected to be achievable based on past performance and set to maintain effluent EC concentrations at their current level without further degradation of groundwater. The final EC limits are expected to be achievable with source control and set to reduce effluent EC concentrations to levels that will return groundwater EC concentrations to that of background groundwater conditions.

Nitrogen compounds are not expected to degrade groundwater quality because the proposed nitrogen loading rate is less than the likely crop uptake rate. The nitrogen loading rate is estimated to be 168 lbs/ac•year, which includes applied process wastewater, supplemental irrigation water, fertilizer, and manure application from cattle grazing. The process wastewater accounts for approximately 48 percent of the total nitrogen load. The nitrogen crop uptake rate is estimated to be 227 lbs/ac•year. Uptake of nitrogen should not pose a problem for the Discharger unless the character of the wastewater changes in the future or higher loading rates occur.

Treatment Technology and Control

Given the character of food processing wastewater, slow rate land treatment or secondary treatment technology is generally sufficient to control degradation of groundwater from decomposable organic constituents. But slow rate treatment may not control all waste constituents such as FDS.

Food processing wastewater typically contains nitrogen in concentrations greater than water quality objectives, which vary according to the form of nitrogen. Groundwater degradation by nitrogen can be controlled by an appropriate screening, settling, and slow rate land application with cropping activities when crops are harvested and removed from the land application area. The effectiveness varies, but generally best practicable treatment and control is able to control nitrogen degradation of groundwater at a concentration well below the water quality objectives. The WDRs require that the Discharger submit a Nutrient Management Workplan that proposes a study designed to determine the amount of FDS and nitrogen that crops grown in the land application area will take up, and will be removed during harvest. The objective of the study is to identify and utilize site specific data to determine the pounds per acre that may be applied to the land application area that will not cause these constituents in underlying groundwater to increase over background groundwater quality.

Dissolved solids can pass through the treatment process and soil profile; effective control of such constituents relies primarily upon source control and pretreatment measures. If not managed carefully, long-term land discharge of food processing wastewater is likely to degrade groundwater with dissolved solids (as measured by FDS). Source control is an effective means to prevent groundwater degradation by FDS. The WDRs require the Discharger to develop a Salinity Reduction Workplan and propose improvements to be made in the usage and disposal of chemicals involved in clean-in-place and water softening operations. The Discharger is also required to submit a follow up report that describes the implementation of chemical usage reductions and disposal improvements that have reduced salinity loading.

A discharge of wastewater that overloads soils with nutrients and organics can result in anaerobic conditions in the soil profile, which in turn creates organic acids and decreases soil pH. Under conditions of low soil pH (below 5), iron and manganese compounds in the soil can solubilize and leach into groundwater. Overloading the land application areas is preventable. However, soil is expected to provide adequate buffering of acidic or basic wastewater.

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 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 is acceptable under Title 27 regulations.

The discharge of wastewater and the operation of storage facilities associated with a wastewater application can be allowed without requiring compliance with Title 27 only if groundwater degradation complies with the Basin Plan, Resolution No. 68-16 (Antidegradation Policy), and does not violate any water quality objectives.

The groundwater data indicate that the permitted discharge under Order 95-101 seems to indicate violations with the Basin Plan bring into question the facility's exemption from the requirements of *Consolidated Regulation for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq., (Title 27). However monitoring well, MW-3 which is used to establish upgradient background groundwater quality is located adjacent to a surface water drainage ditch to the south. Therefore, the WDRs are being issued to require the Discharger to complete the necessary studies to evidence its assertions and to bring the discharge into compliance with the Basin Plan by requiring the Discharger to comply with effluent limits, groundwater limits, management practices, and established time schedules. The Order contains a time schedule for the Discharger to segregate the high salinity wastewater from its ion exchange water softener for off-site disposal at a permitted facility. In addition, this Order requires the Discharger to further investigate groundwater quality and determine background groundwater quality. Following receipt of this information, the applicability of Title 27 will be determined and, if needed, this Order will be reopened and further revisions to the Order will be made to protect groundwater.

Monitoring Requirements

Section 13267 of the CWC authorizes the Regional 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 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 civil administrative liability where appropriate.

The proposed Order includes monitoring requirements for effluent process wastewater, tailwater pond, stormwater pond, land application area, solids, and groundwater. In order to adequately characterize wastewater, the Discharger is required to monitor for BOD, pH, nitrogen compounds, EC, dissolved solids (TDS and FDS), sodium, chloride, and standard minerals.

Title 27 regulations pertaining to groundwater monitoring and the detection and characterization of waste constituents in groundwater have been in effect and successfully implemented for many years. No regulation currently specifies similar criteria more suitable for a situation where extensive land application of food processing wastewater occurs. It is appropriate that the Title 27 groundwater monitoring procedures be extended and applied on a case-by-case basis under Water Code Section 13267.

The Discharger must monitor groundwater for wastewater constituents expected to be present in the discharge, capable of reaching groundwater, and violating groundwater limitations if treatment, control, and environmental attenuation prove to be inadequate. Groundwater quality has not been characterized to make a formal determination of background conditions. This Order requires the formal determination of background groundwater quality. The determination of naturally occurring background groundwater quality shall be made using the methods approved by the Executive Officer as submitted in the Background Groundwater Quality Workplan.