Regional Water Quality Control Board
Central Valley Region
Board Meeting – 31 January/1 February 2013

Response to Written Comments for Nichols Pistachio, Pistachio Processing Plant Tentative Waste Discharge Requirements

At a public hearing scheduled for 31 January/1 February 2013, the Regional Water Quality Control Board, Central Valley Region, (Central Valley Water Board) will consider adoption of Waste Discharge Requirements (WDRs) for the Nichols Pistachio, Pistachio Processing Plant. This document contains responses to written comments received from interested parties regarding the Tentative WDRs initially circulated on 15 November 2012. Written comments from interested parties were required by public notice to be received by the Central Valley Water Board by 17 December 2012 to receive full consideration. Comments were received from Ms. Jo Anne Kipps (private citizen).

Written comments from the above interested party are generally cut and pasted into the appropriate sections below, followed by the responses of the Central Valley Water Board staff.

JO ANNE KIPPS COMMENTS

JO ANNE KIPPS (JK) – COMMENT No. 1: Finding 6 indicates that the Discharger operates the Plant 24 hours per day, seven days per week during the pistachio harvest. Finding 2 indicates that the pistachio processing season lasts from six to eight weeks or 42 to 56 days. Finding 8 cites the processing season lasting 40 days, and uses this value along with the Discharger's proposed 2.4 million gallons per day average discharge flow rate to calculate the annual total discharge flow to the 675-acre Reuse Area as 96 million gallons. Finding 15 uses this value, along with the discharge nitrogen data to calculate the discharge's annual total nitrogen loading to the 675-acre Reuse Area. The Tentative Order does not prescribe a limitation for total annual discharge flow or for the time period during which discharge flow is authorized, so it is possible that the discharger may exceed the Tentative Order's projected annual 96 million gallons discharge flow by five to 40 percent thereby significantly increase the loading of waste constituents to the Reuse Area beyond that characterized by the Tentative Order.

Recommendation 1: Revise Finding 8 to cite the same pistachio processing season duration as that cited in Finding 2 (i.e., six to eight weeks), and revise Finding 15 to use the longest cited duration (i.e., 56 days) for characterizing the discharge's heaviest nitrogen loading to the Reuse Area, and use that value to compare annual nitrogen demands for the crops (i.e., almonds, pistachios, and unspecified field crops) to demonstrate the discharge's annual nitrogen loading does not exceed reasonable agronomic demand.

Recommendation 2: Revise the Tentative Order to include a discharge specific total annual discharge flow for the time period during which discharge flow is authorized.

RESPONSE to Recommendations 1 and 2: The pistachio harvest takes place in the six to eight week period between late August and the middle of October. Generally the actual harvesting and processing of the pistachios occurs over a 30 to 40 day period within that six to eight week window. On rare occasions (i.e., once every 10 to 20 years) the processing season may extend beyond the 40 days due to seasonal weather patterns that delay or extend the harvest. When this occurs, operations at the Plant will be staggered as the pistachios mature at different times and wastewater concentrations will decrease due to the smaller volumes of pistachios being processed each day. Monitoring records for Nichols Pistachio indicate the processing season exceeded 40 days only once in the last 15 years back in 2005, when the processing season lasted about 44 days. In 2005,

average BOD, EC, TDS, and total nitrogen concentrations at 712 mg/L, 1,364 umhos/cm, 880 mg/L, and 59 mg/L, respectively, were significantly less than normal.

Loading calculations for nitrogen using the average daily flow limit over a 56 day season (8 weeks) of 134 million gallons and average constituent concentrations would still be within typical agronomic rates at 156 lbs/acre/year, and the loading rate for fixed dissolved solids would be about 1,600 lbs/acre/year. The BOD loading rates would not change significantly since the Discharger would still need to comply with the average daily flow and BOD loading limits included in the Order. Since loading calculations for nitrogen, BOD, and fixed dissolved solids for a season that extends beyond the normal 30 to 40 days will be within agronomic rates, and since the Discharger is required to apply its wastewater at agronomic rates, it is unnecessary to establish an annual flow limit for the discharge. Therefore, no change was made to include a total annual flow limit.

Findings 2 and 6 were modified as follows to clarify issues regarding the length of the processing season.

"*Finding 2. The Plant, which has been in operation since 1991, processes and packs pistachio nuts for export and sale. In general, the pistachio processing season takes place over a 30 to 40 day period within ~~during~~ the six to eight weeks ~~pistachio harvest~~ between late August and the middle of October."*

"*Finding 6. During the 30 to 40 day pistachio processing season ~~harvest, from late August to the middle of October~~ the Plant may operate~~s~~ up to 24 hours a day seven days a week. Pistachios brought in from the fields are cleaned and processed to remove the hulls. Wastewater, generated from the cleaning and hulling process, is screened to remove solids and discharged to four temporary retention basins."*

JO ANNE KIPPS (JK) – COMMENT No. 2: Finding 9 presents a table of data characterizing the discharge for several major waste constituents and parameters, and indicates that the waste characterization is based on monitoring data collected from 2006 through 2011. Page 1 of the Information Sheet also presents waste characterization data, again based on data collected from 2006 through 2011, but the values provided for minimum, maximum, and average are different for each constituent or parameter. Take pH for example, Finding 9 characterizes the discharge pH as ranging from 5.0 to 7.5 and average of 6.1, while the Information Sheet characterizes discharge pH as ranging from 3.2 to 12.5 and averaging 6.0. The Tentative Order does not indicate whether the average pH values were determined by transforming the reported pH values logarithmically into hydrogen ion concentrations, averaged, and then transformed back into pH. Food processing wastewater discharges characterized by low pH may leach metals such as chromium, lead, molybdenum, and zinc from metallic waste collection, conveyance, and containment facilities. Consequently, the discharge may contain metals in concentrations exceeding those in the Plant's source water and possibly applicable water quality objectives. Furthermore, the discharge of waste with a pH of 12.5 requires compliance with hazardous waste disposal laws and regulations.

Recommendation 3: Explain the pH value of 12.5 for the maximum discharge pH cited in the Information Sheet and justify why, if the discharge exhibits such high pH values, it does not meet the criteria for a hazardous waste.

Recommendation 4: Revise Finding 9 (or the Information Sheet) to correct the data used to characterize the discharge. If the data in Finding 9 are corrected to match that in the Information Sheet, then also correct the values in various findings that characterize projected waste constituent loading data (i.e., Findings 15 and 42.b for total nitrogen loading, Findings 17 and 42.a for BOD loading, Finding 40 for TDS loading, and Finding 42.a. for EC).

Recommendation 5: If there are available data, revise Finding 9 (and the Information Sheet) to characterize the discharge for metals (i.e., aluminum, chromium, copper, lead, molybdenum, nickel, and zinc). If the discharge has not yet been characterized for metals, revise the Tentative Order's Monitoring and Reporting Program to require discharge monitoring for metals at least three times in non-consecutive weeks during the first processing season following order adoption.

Recommendation 6: Include a footnote in tables characterizing discharge quality that documents the method used to calculate average discharge pH.

RESPONSE to Recommendations 3 and 4: The pH values in the Information Sheet were incorrect, including the reported pH of 12.5 pH units. The Table in Finding 9 contains the correct values for the individual waste constituents found in the discharge. The Table in the Information Sheet has been corrected to reflect the correct values presented in Finding 9. As such the loading calculations within the Order for total nitrogen, BOD, EC, and TDS do not need to be changed.

RESPONSE to Recommendation 5: Soil sampling at the site in the Reuse Area and beneath the ponds prior to the installation of the liners shows slightly alkali soils with pH ranges of 7.3 to 8.4 (beneath the ponds) and 7.6 to 9.1 (in the Reuse Area) and a high cation exchange capacity above 10 meq/kg and generally above 15 meq/kg. The cation exchange capacity of the soil is a measure of the degree to which a soil can adsorb and exchange cations. The higher the exchange capacity the better able the soil is to adsorb and bind metals that might be present in the wastewater such as cadmium, zinc, nickel and lead (Miller and Gardiner, 1998). With the lined ponds, the short processing season, and soils with a high cation exchange capacity, the potential for metals picked up by the wastewater to reach groundwater is unlikely.

Nonetheless, we have added a requirement to the Monitoring and Reporting Program to require the Discharger to collect a single effluent sample for analysis of aluminum, chromium, copper, lead, molybdenum, nickel, and zinc during the middle of its next processing season following adoption of this Order.

RESPONSE to Recommendation 6: The average pH value was corrected (5.6) and a footnote was added to both Tables detailing how the average pH was calculated.

JO ANNE KIPPS (JK) – COMMENT No. 3: Finding 17 characterizes the discharge's average BOD loading to the Reuse Area as about 50 lbs/acre/day, and states that the discharger's implementation of best management practices, including waiting seven to 14 days before reapplying wastewater to the same discrete irrigation area and tilling the soil following applications, as sufficient to preclude nuisance odors or reducing conditions in soils that could unreasonably degrade groundwater quality. The Tentative Order prescribes a cycle average BOD loading limit of 100 lbs/acre/day, but does not prescribe a minimum resting period between applications.

Finding 17 does not characterize the BOD loading on the day of application. This is important information for the public to evaluate the discharge's potential to create objectionable odors that may adversely impact Plant employees and impair the use of private property by the discharger's neighbors. BOD loadings for wastewater delivered via 6-inch-deep furrow irrigation will be very high on the day of application. For example, the instantaneous BOD loading using the average BOD concentrations cited in Finding 9 (1,712 mg/L) exceeds 2,200 lbs/acre. The instantaneous BOD loading increases to over 10,000 lbs/acre using the maximum BOD concentration cited in the Information Sheet (8,200 mg/L). To achieve a cycle average BOD loading of 100 lbs/acre/day, areas receiving wastewater via flood irrigation may be restricted to one or two wastewater applications per processing season, a rest period that far exceeds the seven to 14 day resting period identified in Finding 17 as a best management practice.

Recommendation 7: Revise Finding 17 to characterize the discharge's instantaneous BOD loading for the various irrigation methods used in the Reuse Area (i.e., sprinkler, flood, and drip). Include a summary of an analysis that demonstrates that the Reuse Area is sufficient to dispose of the projected wastewater flow while meeting the cycle average BOD loading limit. The summary should also address any cultivation practices (e.g., nut harvest) that may limit the use of certain areas during the processing season for wastewater disposal.

Recommendation 8: Include a discharge specification that states, "The discharge of process wastewater and solids/sludge shall be distributed uniformly on adequate acreage in compliance with the Discharge Specifications."

RESPONSE to Recommendation 7: For furrow irrigation, assuming a minimum acreage of 15 acres and using the average BOD concentrations from the Table in Finding 9, would result a daily BOD loadings of about 2,280 lbs BOD/acre/day. However, with irrigation blocks of only 15 acres at a time and an application area of 675 acres that would allow the Discharger about 45 days between applications, which would come out to about 92 lbs/acre/day as a cycle average, which is under the limit of 100 lbs/acre/day. At this rate and with the limited processing season, the discharge would be limited to no more than two applications per year. This is a worst case scenario; only a small portion of the Reuse Area is furrow irrigated. A majority of the fields, especially the orchards, are drip or sprinkler irrigated. On these fields wastewater will generally be blended with some fresh irrigation water and applied in blocks of 30 to 100 acres per day. This would result in daily BOD loading rates of about 2,000 to 340 lbs BOD/acre/day. With 675 acres, the Discharger would still have land available to allow for sufficient resting periods between applications to comply with the cycle average BOD loading rate of less than 100 lbs/acre/day.

The Monitoring and Reporting Program requires tracking of individual applications and calculating the instantaneous and cycle average BOD loading rates. With careful management of the operation, the Discharger should be able to comply with the BOD loading limits in this Order. As far as objectionable odors or nuisance conditions due to the high instantaneous BOD loading rates, soils in the Reuse Area consist primarily of loam and fine sandy loam, with moderate to high hydraulic conductivities. Under normal conditions, the applied wastewater will infiltrate within six to 12 hours, minimizing the potential for anoxic conditions due to standing water. In addition, the Monitoring and Reporting Program requires the Discharger to monitor the application areas on a daily basis to check for standing water, odors, and nuisance conditions. The Order also requires the Discharger to prepare a Nutrient and Wastewater Management Plan that includes an action

plan to address these conditions if they develop. With the required monitoring and other specifications included in the Order, the discharge should not cause nuisance or odor conditions that would affect workers or neighbors.

Finding 17 has been modified as follows to include instantaneous BOD loading rates:

"*Finding 17. With an average flow rate of 2.4 mgd and an average BOD concentration of 1,712 mg/L, the ~~average~~ daily BOD loading rate to the Reuse Area would be between 340 and 2,300 lbs BOD/acre/day depending on the type of application (i.e., furrow, sprinkler, or drip). With 675 acres, the average BOD loading rate for the season would be about 50 lbs/acre/day. With the short processing season ~~(40 days)~~ and careful management of the Reuse Area, including implementation of best management practices~~, including~~ such as allowing for sufficient resting periods~~7 to 14 day~~, ~~resting periods between applications~~ and tilling the soil following applications, the discharge is not expected to cause reducing or nuisance conditions."*

RESPONSE to Recommendation 8: The Tentative Order already includes Reuse Specifications C.5 and C.6, which require hydraulic loading and the application of waste constituents be at agronomic rates to preclude nuisance conditions and degradation of groundwater. Therefore, no change was made to address this recommendation.

JO ANNE KIPPS (JK) – COMMENT No. 4: Discharge Specification B.4 states, "Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050." Standard Provision 1.11 states, "Neither the treatment nor the discharge shall create a condition of nuisance or pollution as defined by the California Water Code, section 13050." Land use in the discharge area includes rural residential. There are a few residences close to the Plant and Reuse Area. To ensure the discharge's waste storage and disposal methods do not adversely impact these households, the Tentative Order should require the discharger to conduct the discharge in a manner that does not result in the detection of objectionable odors beyond the boundaries of the Discharger's property. This will protect the Discharger's neighbors from enduring objectionable conditions created by the discharge without having to justify that the discharge has impacted an entire community or neighborhood, or any considerable number of persons (see California Water Code Section 13050(m)(2)).

Recommendation 9: Include a Discharge Specification that requires the discharge to be managed in a manner that precludes the development of objectionable odors or vectors perceivable beyond the Discharger's property. An example of such a specification is as follows: "Objectionable odors originating at this facility shall not be perceivable beyond the limits of the property owned by the Discharger."

Recommendation 10: Include a Reuse Area specification that establishes setback requirements of at least 50 feet from the edge of the land application area to any properties with an occupied residence.

Recommendation 11: Include a Solids Specification regarding the land application of screenings and pond sludge, for example: "Solids/sludge applied to the Reuse Area shall be evenly spread at a thickness that will not cause nuisance conditions."

RESPONSE to Recommendations 9 and 10: When prescribing waste discharge requirements pursuant to Water Code section 13263, the Board's authority is limited with respect to nuisance conditions that aren't covered by the definition in Water Code section 13050 or connected with impacts to water quality. Discharge Specification B.7 of the Order already requires that: "*Objectionable odors shall not be perceivable beyond the limits of the Plant or Reuse Area at an intensity that creates or threatens to create nuisance conditions*". In addition, there is no evidence in the administrative record of odor complaints associated with the discharge of pistachio processing wastewater from this facility. Since Discharge Specification B.7 already prohibits objectionable odors and nuisance conditions beyond the limits of the Plant and Reuse Area and there has been no record of any objectionable odors at this facility, it is unnecessary to require specified setbacks from any properties with an occupied residence. Therefore, no change was made to address this recommendation.

RESPONSE to Recommendation 11: The Order has been modified to add the following to the Solids Specifications:

"Solids and sludges applied to the Reuse Area shall be evenly spread and incorporated into the soil as needed to prevent odors and nuisance conditions."

JO ANNE KIPPS (JK) – COMMENT No. 5: Finding 11 indicates that wastewater is applied to crops via flood, sprinkler, or drip irrigation depending on crop type. Wastewater temporarily stored in the Discharger's sprinkler or drip irrigation delivery system may become anoxic and generate offensive odors when discharged.

Recommendation 12: Include a requirement for flushing with fresh water all pressurized pipelines conveying wastewater to the Reuse Area upon completion of waste application to preclude the generation of objectionable odors perceivable beyond the discharger's property. An example of such a specification is as follows: "Irrigation pipelines shall be flushed with fresh water after wastewater application as often as needed to ensure compliance with [Discharge Specification regarding objectionable odors perceivable beyond the Discharger's property]."

RESPONSE to Recommendation 12: The Order has been modified to include the following Discharge Specification:

"Irrigation pipelines and drip lines used to convey wastewater to the application areas shall be flushed with fresh water after application of wastewater, as needed, to ensure compliance with Discharge Specification B.7."

JO ANNE KIPPS (JK) – COMMENT No. 6: Finding 7 indicates wastewater is impounded in four ponds equipped with a 36-mil scrim-reinforced polypropylene synthetic liner. The discharge is seasonal, meaning the ponds will be empty and the liners subject to solar degradation for most of the year. The Tentative Oder's Monitoring and Reporting Program does not, but should, require periodic monitoring of pond liners for containment integrity.

Recommendation 13: Revise the Tentative Order's Monitoring and Reporting Program to require leak detection monitoring of all pond liners (e.g., via geoelectrical leak detection methods) at least once every five years beginning in the first year following Order adoption.

RESPONSE to Recommendation 13: The Monitoring and Reporting Program has been modified to require geoelectrical leak detection monitoring of the pond liners every five years starting prior to the 2013 processing season.

JO ANNE KIPPS (JK) – COMMENT No. 7: Finding 19 presents data on discharge salinity constituents and parameters collected in 1996 (three sampling events) and 2012 (one sampling event). Discharge TDS ranges from 80 to 2,464 mg/L (average 1,810 mg/L) and FDS ranges from 516 to 1,496 mg/L (average 1,000 mg/L). Finding 20 states, "Based on the results the differences between the TDS and FDS the samples shows a 30 to 40 percent increase due to concentrations of organic dissolved solids in the discharge." This statement appears to indicate that the discharge TDS concentration is about 30% to 40% greater than discharge FDS concentrations due to the presence of organic dissolved solids in the discharge it would be helpful if staff included a sample calculation (perhaps in the Information Sheet) regarding this analysis.

Recommendation 14: Revise Finding 20 to identify method and references used by staff to analyze data presented in Finding 19 to support conclusion in Finding 20 regarding the increase in TDS due to organic dissolved solids.

RESPONSE to Recommendation 14: Finding 20 has been modified as follows:

"*Finding 20. Based on the results <u>of</u> the difference between the TDS and FDS in the samples <u>presented in Finding 19, and compared with discharges from other similar pistachio processing facilities, in general, there is</u> ~~shows~~ a 30% to 40% increase due to concentrations of organic dissolved solids in the discharge."*

In addition, the following information has been added to the Information Sheet.

"Food processing wastewater may contain elevated concentrations of total dissolved solids resulting from the fruit and vegetable products or materials used for production. Typically, a percentage is from organic constituents, which will generally decompose into its component elements and can be utilized by plants and microorganisms in the soil. In contrast, the fixed dissolved solids is that portion of the total which consists of inorganic constituents that can accumulate in the soil. Samples of the discharge were collected in 1996 and again in 2012 to compare the total and fixed dissolved solids in the discharge. The increase in total verses the fixed dissolved solids was calculated by taking the difference between the total and fixed dissolved solids for an individual sampling event and dividing that by the total dissolved solids concentration in the discharge. Taking the samples from 1996 and 2012, the increase in total dissolved solids in the discharge due to organic constituents ranged from 35 to 53 percent. In looking at additional data from similar pistachio processors, it appears that, in general, there is a 30 to 40 percent increase in total dissolved solids due to organic constituents in the discharge."

JO ANNE KIPPS (JK) – COMMENT No. 8: The Tentative Order contains several findings related to an antidegradation analysis of the proposed discharge, but it does not identify the individual(s) responsible for conducting the analysis. The Tulare Lake Basin Plan, Page IV-21, establishes that it is the Discharger's responsibility to include information in its report of waste discharge (RWD) "Regarding the nature and extent of the discharge and the potential for the discharge to affect surface or

groundwater quality in the region." Finding 4 indicates the Discharger submitted a RWD for an increase in flow almost 20 years ago in 1994. If the Discharger's 1994 RWD and subsequent submittals did not include the results of an antidegradation analysis, then staff should have determined the application incomplete until the Discharger submitted the analysis. In any event, Regional Board members (and the public) should be informed when the Discharger has failed to submit an antidegradation analysis, thereby requiring staff to use State resources to conduct the analysis.

Recommendation 15: Revise Finding 4 to indicate whether the Discharger's RWD included an antidegradation analysis, and revise Finding 42 to identify the entity responsible for conduction the antidegradation analysis. Please include in the Staff Response to Comments a discussion explaining staff's procedures for processing RWD that lack an antidegradation analysis.

RESPONSE to Recommendation 15: Central Valley Water Board staff completed the antidegradation analysis based on the information and data presented in the RWD, addendums, self-monitoring reports, and other information cited in the findings of the Order. Resolution 68-16 does not specify who is required to complete the antidegradation analysis; therefore, who prepared the antidegradation analysis is considered extraneous and was not included in the Tentative Order. No change was made to address this recommendation.

JO ANNE KIPPS (JK) – COMMENT No. 9: The Tentative Order does not characterize the Discharger's storm water collection, conveyance, and disposal systems for its Plant and Reuse Area. Finding 26 indicates the Plant and Reuse Area are within Flood Zone A, an area subject to potential flooding by a 100-year flood, and states the Discharger has constructed "flood control features' and "berms" to prevent inundation or runoff from the Reuse Area. Discharge Prohibition A.1 prohibits the discharge of waste (including storm water containing waste) to surface waters or surface water drainages. Most WDR Program waste discharge requirements require the Discharger to design, construct, operate, and maintain all waste conveyance, treatment, storage, and disposal units to prevent inundation or washout due to floods with a 100-year return frequency. Without such a discharge specification, the Discharger is in threatened violation of Discharge Prohibition A.1.

Recommendation 16: Include a discharge specification that states "All waste 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."

Recommendation 17: Include a Finding that describes the Discharger's storm water collection, storage, and disposal for the Plant and Reuse Area.

RESPONSE to Recommendation 16: The pistachio processing season takes place in late summer and early fall when the potential for precipitation and flooding is minimal. By the beginning of November and the start of the rainy season, all discharge to the ponds and the Reuse Area has ceased and the ponds have been emptied. All product storage and packaging lines are in aboveground silos or takes place inside and, thus, are protected from flooding. With the cessation of the discharge and emptying of the ponds prior to the start of the rainy season, the likelihood of a 100-year flood occurring during the cleaning and hulling operation when the ponds are filled and the wastewater is being discharged to the fields is improbable. Nevertheless, the following Discharge Specification was added to address this recommendation.

"*The Plant and all wastewater ponds shall be operated and maintained to prevent inundation or washout due to floods with a 100-year return frequency."*

RESPONSE to Recommendation 17: The Order was modified to include the following Finding:

"Storm water around the Plant is absorbed into soils at the site, or on paved areas, is collected in drains and directed into an on-site storm water retention basin. The Discharger is not required to obtain coverage under a National Pollutant Discharge Elimination System general industrial storm water permit since all storm water runoff is reportedly retained on-site and does not discharge into a water of the U.S."

JO ANNE KIPPS (JK) – COMMENT No. 10: Finding 48, item b, states the Tentative Order "prohibits discharge in the event soils become saturated." The Tentative Order does not include such a discharge prohibition.

Recommendation 18: Include the following Reuse Specification: "The Discharger may not discharge to the Reuse Area within 24 hours of a predicted storm event, during periods of precipitation, and for at least 24 hours after cessation of precipitation, or when soils are saturated."

RESPONSE to Recommendation 18: As discussed previously (Recommendation 16) the discharge occurs during the late summer and early fall when the chance of a significant rain event that would result in any measurable precipitation is minimal. Nevertheless, to address this recommendation the Order has been modified to include the following Reuse Area Specification:

"*Discharge to areas within the Reuse Area shall cease in the event that soils become saturated*."

JO ANNE KIPPS (JK) – COMMENT No. 11: Discharge Specification B.2 states, "The median pH of the discharge shall not be less than 4.5 or greater than 9.0 over the course of the processing season." The Tentative Order's Monitoring and Reporting Program requires daily monitoring of discharge pH. If the waste characterization provided in Finding 9 is correct (as opposed to the characterization provided in the Information Sheet), then discharge pH ranges from 5.0 to 7.5. The Tentative Order provides no technical justification for allowing the Discharger such a wide pH limit. Also, there is no technical justification for why staff selected a median pH discharge limit instead of an instantaneous pH discharge limit.

Recommendation 19: Include technical justification supporting the proposed discharge specification for pH, and include technical information regarding the Reuse Area soils showing that the soils have sufficient buffering capacity to receive waste without reliance on frequent soil amendment applications to adjust soil for pH.

RESPONSE to Recommendation 19: Soil conditions at the site, with a high cation exchange capacity and slightly alkali pH ranging from 7.6 to 9.1, shows sufficient buffering capacity to handle the limited seasonal flow of slightly acidic wastewater (seasonal average pH of 5.6). The pH limit in the Order has been modified as follows:

"B.2. The ~~median~~ pH of the discharge shall not be less than 4.5 or greater than 9.0 ~~over the course of the processing season~~."

In addition, the following information regarding establishment of the pH limit in the Order has been added to the Information Sheet:

"The proposed Order sets a pH limit such that the pH of the discharge shall not be less than 4.5 or greater than 9.0. The pH limit takes into account the day to day variability in discharge pH. The lower pH limit is not expected to contribute to soil acidity in the Reuse Area due to the limited seasonal discharge, collection in lined ponds, and supplemental irrigation with high quality water. Required soil monitoring and effective management of the Reuse Area should mitigate any adverse effect on crops and would be preferable to chemically adjusting the pH of the effluent on a continuous basis."

JO ANNE KIPPS (JK) – COMMENT No. 12: The Tentative Order's Groundwater Limitations are limited to a Nitrate-Nitrogen limitation of 10 mg/L and Title 22 MCLs ("for constituents identified in Title 22, the MCLs quantified therein"). While this may be acceptable for constituents with primary MCLs, it is not appropriate for constituents or parameters with secondary MCLs since Title 22 provides three sets of secondary MCLs (Recommended, Upper, and Short-Term) for EC, TDS, chloride, and sulfate. For compliance and enforcement reasons, the Groundwater Limitations should specify which set of secondary MCLs applies to the discharge. Since the EC of the Plant's source water is only 240 umhos/cm (from Finding 22), the Groundwater Limitations should specify the Recommended Secondary MCLs (i.e., 500 mg/L TDS, 900 umhos/cm EC, 250 mg/L chloride, and 250 mg/L sulfate). Maximum groundwater limitations of 900 umhos/cm for EC and 250 mg/L for chloride may be excessive, given crops grown in the area. Staff should have evaluated and proposed groundwater limitations for salinity constituents that are also protective of area groundwater's beneficial use for agricultural supply.

Recommendation 20: Revise the Tentative Order's Groundwater Limitations to identify which set of secondary MCLs applies in this discharge situation. Include more stringent groundwater limitations for salinity constituents (e.g., EC, chloride), as appropriate, to protect area groundwater beneficial uses for agricultural supply.

RESPONSE to Recommendation 20: The Groundwater Limitations are <u>not</u> the primary mechanism for ensuring that beneficial uses are protected and that only very limited degradation occurs. Instead, the Groundwater Limitations are more appropriately considered a regulatory backstop – in that an exceedance of a Groundwater Limitation could trigger enforcement actions if waste constituents were unexpectedly detected in groundwater at concentrations at levels that could be considered "pollution." Rather than rely on the Groundwater Limitations, the primary mechanism for protecting groundwater in this Order is the numerous requirements that obligate the Discharger to maintain its current operational practices, which, combined with the specific geologic setting, render this a very low-threat discharge. The following facts, discussed in more detail in the information sheet, support the conclusion that the discharge presents only a very low threat to groundwater quality:

- First encountered groundwater is over 130 feet below ground surface. Soils underlying the facility are interbeded clays and sands.
- The processing season, and therefore the discharge season, is short. As a result, organic and salinity loading rates are low.

- Over the course of a year, applied wastewater will be diluted by a ratio of one part wastewater to approximately six parts high quality groundwater.
- The annual average TDS of the combined wastewater and irrigation water will be about 280 mg/L and meet all agricultural water quality objectives.
- A large portion of the TDS associated with the wastewater is potassium, much of which will be taken up by the crops. Of the remainder, much of it will be fixed to the clays as the irrigation water percolates from the ground surface toward groundwater. Little (if any) potassium associated with the discharge is expected to reach groundwater.

If the Groundwater Limitations were the only component of these WDRs that protected water quality, then the Board would likely be required to set them lower to prohibit any threat to water quality from occurring – but, as demonstrated above, it is the continued utilization of low-threat discharge practices (mandated by the WDRs) that protects groundwater, not the Groundwater Limitations. No change was made to address this recommendation.

JO ANNE KIPPS (JK) – COMMENT No. 13: The Tentative Order's, Monitoring and Reporting Program does not currently require the Discharger to monitor groundwater potentially affected by the storage or wastewater in single-lined surface impoundments or discharge of waste to the Reuse Area. Instead staff is recommending the Regional Board to require the Discharger to monitor its discharge and soils in the Reuse Area. The Monitoring and Reporting Program requires the Discharger to establish at least five soil profile monitoring stations and at least one representative background location. This requirement amounts to one soil sample profile monitoring station per 135 acres. Reliance on only one background soil location is not advised for a discharge area so large as the Reuse Area. Standard sampling for agricultural soil evaluation purposes typically recommend one sample per 40 acres, provided the soil within the 40 acres is relatively homogeneous. Also, soil samples submitted for laboratory analysis are usually composited from multiple samples collected in the same sample area from the same depth. Best management practices for this discharge should include soil sampling that is at least as stringent as accepted agricultural soil sampling methods.

Recommendation 21: Revise the Tentative Order's, Monitoring and Reporting Program to require the Discharger to establish at least one soil profile monitoring station per 40 acres of the Reuse Area and at least three representative background soil profile locales, and to collect composite samples for each profile monitoring station in order to provide data that better represent the discharge's affect on soil quality. Because of the inherent difficultly of evaluating soil monitoring data and interpreting the data with respect to potential water quality impacts, the Regional Board should also require the Discharger to (1) submit a detailed soil sampling and monitoring plan prepared by a California registered civil engineer with experience in evaluating the impacts to soil and groundwater from discharges of food processing waste, and (2) to include in each Annual Monitoring Report an evaluation by a California registered civil engineer of discharge, Reuse Area, and soil monitoring data for the past processing season and previous processing seasons (as appropriate) that shows the discharge is being conducted in compliance with the Order and does not threaten to unreasonably degrade groundwater quality.

RESPONSE to Recommendation 21: The soil monitoring required by the Monitoring and Reporting Program is intended to determine whether the application of wastewater is adversely affecting Reuse Area soils or resulting in a buildup of waste related constituents in the soils. The soil sampling program is not intended to provide a full evaluation of the fields to identify where

additional nutrients or soil amendments are needed or to provide data on whether a particular crop should or should not be grown. Therefore, additional soil monitoring has not been required.

The Order has been modified to require the Discharger to have a registered Civil Engineer or soil agronomist with experience in soil sampling, prepare a soil sampling plan prior to the initial sampling event. The sampling plan shall evaluate soil conditions within the Reuse Area and establish one background sampling location that has never received wastewater and a minimum of six sampling locations within the Reuse Area, including at least two distinct sampling locations in areas for each irrigation practice (i.e, furrow, sprinkler, or drip irrigation).