



Paramount Farms
Pistachios & Almonds

April 20, 2015

W. Dale Harvey, RCE
Senior Water Resource Control Engineer
CA Regional Water Quality Board
Central Valley Region
1685 "E" Street
Fresno, CA 93706-2020

**RE: Tentative Waste Discharge Requirements and Monitoring and Reporting Program
Paramount Farms International, LLC and William J. Mouren Farming, Inc.
King Pistachio Processing Plant, Kern County**

Dear Mr. Harvey:

Paramount Farms International, LLC (PFI) appreciates the opportunity to comment on the above referenced tentative Waste Discharge Requirements (TWDRs) and Monitoring and Reporting Program (TMRP). Given the uncertain depth to groundwater and quality in the vicinity of the facility and land application areas, PFI is concerned about the appropriateness of installing a groundwater monitoring well network as specified in Finding #46 and Provision G.16 of the TWDR. Accordingly, we have contracted with NV5 to prepare the attached comments based on a hydrogeologically focused review of the TWDR and TMRP.

As recommended by NV5 in the attached letter, PFI requests an additional investigate phase should the concentrations and loading rates described in the TWDRs be exceeded for two consecutive years and/or cannot reduced to appropriate levels. Prior to the installation of a groundwater monitoring well network, PFI proposes to conduct an Ambient Conditions investigation to determine the need and/or feasibility of installing groundwater monitoring wells. The investigation will include assessing the underlying geology and restrictive clay beds with test borings, first encountered ground water quality, soil infiltration rates and existing wells in proximity to the facility. The resulting report will include a discussion of ambient conditions, infiltration results, a revised Anti-degradation Analysis and recommendations on the appropriateness of installing a monitoring well network or an alternative monitoring approach.

Thank you for your consideration of this request. If you have any questions, please contact me or Ms. Kathy Parker with Insight Environmental Consultants at 661-282-2200.

Sincerely,

Dan Lee
Technical Services Director

Attachment

April 20, 2015

Via Email

Mr. Daniel Lee
 Technical Services Manager
 Paramount Farms International
 13646 Highway 33
 Lost Hills, CA 63249

Re: Tentative WDRs and MRP - Hydrogeological Focus Review and Comments for the Paramount Farms Kings Pistachio Processing Plant

Dear Mr. Lee:

NV5 appreciates the opportunity to provide a focused review and comments regarding the 2015 Tentative Waste Discharge Requirements (TWDRs) and Monitoring and Reporting Program (TMRP) for the Paramount Farms International Kings Pistachio Processing Plant (Kings Plant or Facility).

As part of this comment effort, NV5 reviewed the following: Tentative WDR, Tentative MRP, October 2014 ROWD (Insight and referenced Reed 2012 ROWD), Geotracker, California Geological Survey Geology Maps, Department of Water Resources (DWR) California Statewide Groundwater Elevation Monitoring Program (CASGEM) and USGS Groundwater Ambient and Monitoring Program (GAMA) and associated technical reports.

Hydrogeologic Setting - The Kings Plant is located on thin veneer surficial alluvial fan deposits, and near the South Dome of the Kettleman Hills Anticline. Upper Pliocene marine bedrock deposits outcrop on the Land Application Area (LAA), typically within 6 feet of surface, and the dominant South Dome. The Facility is located within the Lost Hills oil field. A nearby oil well geologic log indicated that significant clay beds are shallow and also indicated evidence of saline marine bedrock deposits as shallow depths less than 245 feet below ground surface (bgs) were observed as hard, blue shale. For the 640 - acre LAA, bedrock deposits were encountered during construction efforts on site.

The Facility is located close to the Kings River Conservation District CASGEM boundary and is marginally within, but predominantly outside of, the Kern County DWR Subbasin. Additional ground water level information provided in the WDR reported ground water elevation of 234 feet bgs in 1966. No DWR ground water

contour maps were available. The ground water flow direction is unknown. Limited to no ground water beneficial use exists in the area.

Water quality provided in the WDR demonstrated poor water quality with elevated specific conductance, calculated TDS, chloride and sodium with one nitrate exceedance. Water quality was primarily available for 1953 through 1966, with one well sampled in 2009. The 2009 sampling confirmed the poor water quality observed historically and a nitrate MCL exceedance was observed.

Outstanding Considerations supporting the Limited Ground Water Beneficial Use – NV5 recommends, that prior to the submittal of a Monitoring Well Installation and Monitoring Plan (MWISP), that an Ambient Conditions Report (background soil and water quality investigation) be completed for the following reasons:

- 1) Low permeable clays exist at surface.
- 2) Shallow depth to bedrock (less than 6 feet) dominates the hydrogeologic setting in the 640 acre LAA.
- 3) There are a limited number of private ground water wells and limited ground water depth information. Known water quality is poor.
- 4) Extensive oil well field development with significant oil resources in the area.
- 5) Wastewater Treatment and Mitigation Plan results are unknown at this time which will reduce the environmental impact to the LAA. TWDR Provisions 13 through 15 (Wastewater Irrigation Management Plan, Nutrient Management Plan and Salinity Reduction Plan) will influence nutrient concentrations, loading impacts and the potential design of monitoring network. It is unknown how BOD or nitrogen concentrations may change given potential treatment options under consideration (for example, BOD treatment using pond aeration under review). Implementation of the revised nutrient and salt management plans will have significant influence on reducing the application impacts.

NV5 has developed the following comments and changed text in bold for consideration by the RWQCB for the Tentative WDRs:

- Provision B.3 Current Text: "...and the new 15-acre LAA..."
Proposed text in **Bold Highlight**: "...and the new 27-acre LAA..."

- Finding 46 Current Text: "Should the Discharger exceed the constituent concentrations and loading rates described above for two consecutive years and/or cannot reduce the constituent concentrations and loading rates, this Order will require the Discharger to submit a groundwater monitoring well network plan to evaluate any potential impacts from the discharge."

Finding 46 Proposed text in **Bold Highlight**: "**Should the Discharger exceed the constituent concentrations and loading rates described above for two consecutive years and/or cannot reduce the constituent concentrations and loading rates, this Order will require the Discharger to submit an 'Ambient Conditions Report'**" to evaluate soil infiltration, soil and ground water quality below the site with specific water quality and depth information. Evaluation of any existing wells surrounding the facility, including irrigation, domestic and production wells, will be completed to determine groundwater quality. These wells will also be evaluated to address the potential use for long term monitoring.

Upon approval and after the implementation of Provisions G.13 through G.16a (Wastewater Irrigation Plans), the Discharger shall submit the Ambient Conditions Report (G.16b) for completed assessment and boring activities to be completed within six months (weather permitting) of the second year concentration exceedances. An Updated Anti-degradation Analyses will be submitted concurrently and within the Ambient Conditions Report. If infiltration rates, ambient water quality information and beneficial use results indicate beneficial use impacts from application activities (infiltration rate excessive), the Discharger shall then submit a groundwater monitoring well installation work plan, referenced within G16c., within three months of notification to the Regional Board."

- Provision G.16:

Current Text/Table:

The Discharger shall comply with the following schedule:

	Task	Due Date
a.	Submit a technical report that describes measures the Discharger will implement to prevent future effluent exceedances for constituent concentrations and loadings from those described in Findings 12, 16, 27, and 28. The technical report shall include a proposed implementation schedule and shall be subject to Executive Officer approval.	3 months from the second exceedance of Effluent and Mass Loading Limitations B.3.
b.	Submit a Work Plan for the installation of a Ground water monitoring well network. The Work Plan shall satisfy the information needs specified in the monitoring well installation section of Attachment C, Standard Requirements for Monitoring Well Installation Work Plans and Monitoring Well Installation Reports. All wells shall comply with appropriate standards as described in California Well Standard Bulletin 74-90 (June 1991) and Water Well Standards: State of California Bulletin 74-81 (December 1981), and any more stringent standards adopted by the State or county pursuant to CWC section 13801, apply to all monitoring wells used to monitor the impacts of wastewater storage or disposal governed by this Order.	3 months from the second exceedance of Effluent and Mass Loading Limitations B.3.
c.	Complete well installation and commence groundwater monitoring in accordance with the Work Plan submitted pursuant to Provision G.16.a and Monitoring and Reporting Program R5-2015-XXXX.	3 months from the completion of Task b.
d.	Submit a groundwater monitoring well installation report that meets the requirements of Attachment C, Standard Requirements for Monitoring Well Installation Work Plans and Monitoring Well Installation Reports.	1 month from the completion of Task c.

Provision G.16, Proposed text/table in **Bold Highlight**:

The Discharger shall comply with the following schedule:

	Task	Due Date
a.	Submit a technical report that describes measures the Discharger will implement to prevent future effluent exceedances for constituent concentrations and loadings from those described in Findings 12, 16, 27, and 28. The technical report shall include a proposed implementation schedule and shall be subject to Executive Officer approval.	6 months from the first verified exceedance of Effluent and Mass Loading Limitations B.3.
b.	Submit an <i>Ambient Conditions Report with an Updated Anti-degradation Analysis</i>. The Ambient Conditions Report shall be submitted to the Regional Board that will 1) assess local private water well resources and water quality, 2) determine soil infiltration rates below the LAA and 3) assess existing ambient or background ground water conditions. This assessment effort will be used to characterize ground water conditions below the site and determine the effectiveness and type of ground water monitoring well network. The Updated Anti-degradation Analysis will be inclusive with an update of BOD and nitrogen loading using wastewater quality collected following the wastewater operation and plan implementation effort issued under Provisions G.13 through G.16a. to assess potential water quality impacts from continued wastewater land application.	6 months from the second consecutive year of reported exceedances of Effluent and Mass Loading Limitations B.3.
c.	Per findings and need identified under Task b., submit a Work Plan for the installation of a groundwater monitoring well network. The Work Plan shall satisfy the information needs specified in the monitoring well installation section of Attachment C, Standard Requirements for Monitoring Well Installation Work Plans and Monitoring Well Installation Reports. All wells shall comply with appropriate standards	Based on the findings provided in 16b., 3 months from approval and concurrence from Regional Board of deliverables under

	as described in California Well Standard Bulletin 74-90 (June 1991) and Water Well Standards: State of California Bulletin 74-81 (December 1981), and any more stringent standards adopted by the State or county pursuant to CWC section 13801, apply to all monitoring wells used to monitor the impacts of wastewater storage or disposal governed by this Order.	Task 16b.
d.	Complete well installation and commence groundwater monitoring in accordance with the Work Plan submitted pursuant to Provision G.16.a and Monitoring and Reporting Program R5-2015-XXXX.	3 months from the completion of Task c.
e.	Submit a groundwater monitoring well installation report that meets the requirements of Attachment C, Standard Requirements for Monitoring Well Installation Work Plans and Monitoring Well Installation Reports.	1 month from the completion of Task d.

Additional Supporting Rationale:

As presented in the WDR, limited information on ground water occurrence and quality beneath the site is available. Water level information is from time periods pre-1990 and water quality information is from the late 1950's to mid-1960's, except one well sampled in 2009. Water quality collected indicate that groundwater quality is very poor, with secondary MCL exceedances in all samples for electrical conductance, TDS (calculated from EC) and chloride and one primary MCL exceedance in the 2009 sample for nitrate as nitrogen. With poor water quality identified, the municipal beneficial use classification is questionable for this area of the subbasin. Determining impacts to ground water quality from surface wastewater application will be difficult as water quality has already been impacted.

Depth to water in the area is also unknown – the WDR states ground water occurrence as deep as 234 feet below ground surface (bgs).

In the area, based on climate data in the WDR, evapotranspiration is approximately 108 inches per year and average precipitation is 7 inches and usually falls during the winter months. Water demands for crops of native grass (in the larger LAA) or wheat (potential crop proposed for the smaller LAA) are estimated at 3.5 acre-feet per year. The plant proposes to discharge 110 million gallons per year during the harvest season, from August to September, and 15 million gallons

per year during the non-harvest season. Wastewater produced during the harvest season will be applied to the larger 640 acre LAA. The water demand for the 640 acre LAA for the year is approximately 2,240 acre feet per year (3.5 ac-ft x 640 ac). The plant will produce 393 acre feet during this period, or 17.5 percent of the total water demand. During the off season, the 15 million gallons will be applied to the smaller area of 27 acres. This unit will have an approximate water demand of 94.5 acre feet per year (3.5 ac-ft x 27 ac). The plant will produce approximately 46 acre feet per year or 49 percent of the irrigation demand. Wastewater will be a primary component of irrigation for the 27 acre area, but calculations provided in the WDR support the claim that the loading will be at or less than agronomic rates for BOD and nitrate. The additional water demand is presumed to be provided by irrigation wells or surface water supplies. Water quality is not available for the additional irrigation sources, but could serve to dilute the BOD and nitrogen concentrations in the wastewater stream. Additional data will need to be collected to assess the impacts of supplemental irrigation water. Based on the climate and water demand, the likelihood of wastewater applied to the land reaching ground water appears to be low as the evapotranspiration is so high, especially during the months of August and September, and the application to the larger LAA is a small portion of the total water demand. The potential for dilution of nutrients with supplemental irrigation water may also serve to reduce calculated loading rates. Additional refinement of crop water needs will be provided in the NMP and Wastewater Irrigation Management Plan and will be used in the Ambient Conditions and Anti-degradation Analysis assessment efforts.

The uncertainty of ground water occurrence and quality underlying the site should initiate a phased investigation approach for the Ambient Conditions report to determine the need for a ground water monitoring network. This proposed investigation effort will assess the underlying site geology and restrictive clay beds with test borings as well as underlying water quality in first encountered ground water. The boring investigations will determine potential perched water horizons and the depth to ground water below the site. Soil infiltration rates, determine from locations in the LAAs (640 acre and 27 acre parcels), will be used to assess travel time scenarios for percolation of wastewater application to the LAAs. With the excessive evapotranspiration rates in the area and low precipitation, it is possible that, based on the infiltration data, very little water may make it past the root zone to percolate to ground water. More information should be obtained for the area and current conditions before initiating a monitoring well installation effort.

Also included in the investigation effort, irrigation wells, production wells and domestic wells in proximity to the plant and LAA should be assessed to determine the ability to use as monitoring points in lieu of installing a new monitoring network. Wells identified in this effort will be sampled for identical parameters to the test borings to determine the water quality and the similarity to first encountered ground water. Well construction information will be obtained

Mr. Dan Lee
April 20, 2015
Page 8 of 8

where available and assessed. Wells within first encountered ground water will be the target, however, if water quality is similar between first encountered water and deeper wells, the deeper wells may be proposed as alternate or phased monitoring points.

Upon completion of the investigation, a report detailing the ambient conditions and infiltration results will be prepared and submitted to the Regional Board, including recommendations on the appropriateness of installing a monitoring well network. An additional Anti-degradation Analysis will also be submitted to reflect loading rates with revised data and travel time scenarios to provide a more accurate representation of the Facility and LAAs and potential impacts to ground water. If infiltration rates or ground water quality monitoring (temporary well point) demonstrate a need to determine future ground water quality impacts from LAA operations, a MWISP will be submitted to the board and the proposed schedule on above (Provision G.16) will be used to reflect the resulting proposed program.

We appreciate the opportunity to serve your ground water needs and look forward to working with you. Please contact me at (916) 641-9207 if you have questions or require clarifications.

NIV15



Patrick F. Dunn, M.S., P.G., C.Hg.
Group Director