

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2013-0006

WASTE DISCHARGE REQUIREMENTS

FOR
HORIZON NUT, LLC
AND
GLOBAL AG PROPERTIES USA, LLC
LOST HILLS PISTACHIO PROCESSING PLANT
KERN COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Central Valley Water Board) finds that:

1. On 13 February 2003, A & P Growers (A & P) submitted a Report of Waste Discharge (RWD) for its Lost Hills Pistachio Processing Plant (Plant). Supplemental information was submitted by A & P on 23 April 2003. On 9 August 2006 and 11 May 2009, A & P submitted additional information that described an increase to the wastewater flows at the Plant and to the acreage where the wastewater is applied. On 27 February 2012, Horizon Nut, LLC (Horizon) submitted a RWD to change the name of the owners of the Plant. On 19 June 2012, Horizon submitted a technical report that describes additional increases to the wastewater flows and to the acreage where wastewater is applied, and the described the construction of an additional emergency wastewater storage pond. In addition, Horizon indicates that the acreage where wastewater and solids are applied was sold to Global Ag Properties USA, LLC (Global Ag).
2. Horizon Nut, LLC owns and operates the Plant and Global Ag Properties USA, LLC owns and operates the wastewater and solids application areas. Horizon Nut, LLC and Global Ag Properties USA, LLC collectively hereafter are referred to as "Discharger" and are responsible for compliance with these Waste Discharge Requirements (WDRs).
3. The Plant is at 14663 Highway 33 in Lost Hills, Kern County (Section 26, T26S, R19E, MDB&M). The Plant occupies Assessor's Parcel Number (APN) 057-180-42. The acreage where wastewater is applied occupies APN 057-180-01, 057-180-13, and 057-190-17. The acreage where solids are applied occupies APN 057-180-01, 057-170-49, 057-170-27, 057-170-28, and 057-170-29. The Plant and wastewater and solids application areas are shown on Attachment A, which is attached hereto and a part of this Order.

Existing Plant and Discharge

4. The Plant operates seasonally during the pistachio harvest for an approximate six-to eight- week period from mid-August to mid-October.
5. The Berrenda Mesa Water District supplies source water to the Plant from the California Aqueduct. The plant disinfects the source water with chlorine gas or sodium hypochlorite when chlorine gas is not available and then filters it through carbon prior to use for pistachio processing. No other chemicals are added to the waste stream during processing.
6. During harvest, pistachios are collected and delivered directly to the Plant and unloaded at the pre-cleaning area outside the processing building. Leaves, twigs, and other debris are removed at this area. The pistachios are conveyed to several hoppers inside the processing building to remove the hulls (pistachio skin). During this process, source water is introduced to facilitate removal of the hulls and to clean the pistachios. The wastewater with the pistachio hulls is separated from the nuts and is directed to the floor drains. The pistachio nuts are moved by conveyor belts to the float tanks to separate blank nuts and to clean the pistachios further. Wastewater generated at the float tanks is also directed to the floor drains. The cleaned nuts are then dried and stored in silos until shipment.
7. All wastewater from the different processes discharges into two 8-ft x 8-ft x 10-ft concrete sumps and then is pumped into the wastewater ponds. There are six unlined wastewater ponds at the Plant with a total combined capacity of approximately 32.8 million gallons. Ponds 1 through 5 were in existence when the original RWD was submitted in 2003. Pond 6 was constructed in 2012. Pond 1 is primarily for settling out solid material (primarily hulls) and Pond 2 discharges to any of four irrigation reservoirs. The remaining four wastewater ponds are for emergency storage. All six wastewater ponds are hydraulically connected.
8. Information submitted with the RWD indicates percolation from the wastewater ponds is estimated to be 10.2 inches per year.
9. Solid waste generated at the Plant consists of twigs, leaves, and other debris removed from the waste stream during the pre-cleaning process, and pistachio hulls that settle-out in the wastewater ponds. Solids removed during the pre-cleaning process are moved with the rest of the debris from the pistachio orchards and composted or shipped off-site as a commodity. The pistachio hulls are removed from the wastewater ponds annually or once every two years and thinly applied and incorporated into up to 400 acres of open land.

10. Wastewater is pumped from Pond 2 to any of four irrigation reservoirs near the wastewater application area. Based on crop requirements and agricultural suitability, wastewater is mixed with irrigation water from the Berrenda Mesa Canal or applied undiluted. The water is pumped through sand filters before being applied to 1,460 acres of pistachios via micro-irrigation. Sand filters are backflushed approximately every three hours of operation. Backflush water is recirculated to an irrigation reservoir.
11. According to the RWD, the monthly average discharge, the maximum daily discharge, and the total annual discharge of wastewater from the Plant are: 2.3 million gallons per day (mgd); 4.6 mgd, and 130 million gallons, respectively.
12. Typical pistachio wastewater exhibits high concentrations of electrical conductivity, total dissolved solids, biochemical oxygen demand, and potassium. Effluent samples collected from 2006 through 2012 from the ponds prior to discharge to the irrigation reservoir are summarized below.

Parameter	Units	Number of Samples	Mean Result
Total dissolved solids (TDS)	mg/L	7	2,593
Fixed dissolved solids (FDS)	mg/L	1 ¹	1,600
Biochemical oxygen demand (BOD)	mg/L	19	3,195
Electrical conductivity (EC)	umhos/cm	2	2,610
Nitrate as N	mg/L	6	<5
Total Kjeldahl Nitrogen	mg/L	19	134
Boron, total	mg/L	7	0.22
Calcium, total	mg/L	7	43
Copper, total	mg/L	6	0.05
Iron, total	mg/L	7	1.34
Magnesium, total	mg/L	7	21
Manganese, total	mg/L	7	0.11
Potassium, total	mg/L	7	583
Sodium, total	mg/L	7	61
Bicarbonate	mg/L	7	514
Chloride	mg/L	6	104
Fluoride	mg/L	5	49
Sulfate	mg/L	5	56

1. Sample collected on 4 October 2012. TDS result of sample collected at same time = 3,500 mg/L.

13. A high percentage of the inorganic portion of the discharge EC is from potassium. There is no Maximum Contaminant Level (MCL) or other numeric limit for potassium except overall limits for EC and total dissolved solids, to which potassium would contribute. In addition, potassium is an important nutrient for crops, especially pistachios, and if readily available, plants will take up potassium in excess of their needs. The discharge of wastewater high in potassium to the pistachio orchard would be beneficial to the crop. Further, while potassium that is not bound to soil particles is readily soluble in water, the positively charged ion impedes transport through the soil column allowing for greater retention time within the root zone. With a vadose zone greater than 200 feet in depth, potassium concentrations in groundwater are not expected to increase.
14. Due to the high organic content, the discharge has the potential to create nuisance conditions (i.e., insects and/or objectionable odors) if not properly handled.
15. Storm water generated on-site is discharged to the wastewater ponds.
16. The water balance submitted with the RWD was used to model storage and disposal capacity and utilized the average annual rainfall with at least two feet of freeboard in every pond. Central Valley Water Board staff updated the water balance model to include total annual precipitation using a return period of 25 years, distributed monthly in accordance with historical rainfall patterns. The updated model indicates the ponds and wastewater application areas have sufficient capacity to handle the flow rate of the plant allowed by this Order.
17. Domestic wastewater is discharged separately to an on-site septic tank/leachfield regulated by Kern County.

Site-Specific Conditions

18. Source water supplied by the Berrenda Mesa Water District comes from the California Aqueduct. Data from the Devil's Den monitoring station (Station ID 381), operated by the Department of Water Resources, located upstream of where the District draws water, indicates the average EC of the source water from 1998 to 2000 was 367 umhos/cm.
19. The Plant and solids and wastewater application areas are at an elevation of approximately 675 feet above mean sea level (MSL), and the area around the site is relatively flat, sloping slightly to the northeast. Elevated berms and tail water collection ponds preclude irrigation water from leaving the wastewater application area.
20. Review of the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map Number 06029C0600E, effective 26 September 2008, indicates the Plant and wastewater ponds are located within FEMA Zone A, an area within the 100-year

floodplain. Of the 1,460 acres of the wastewater application area, 660 acres are located within Zone A and 800 acres are located within Zone X, an area outside of the 100 and 500-year floodplains. The solids application area is primarily in Zone A with minor acreage in Zone X.

21. According to Kern County Zoning Maps, the Plant is within a district classified "A FPS" (Exclusive Agriculture, Flood Plane Secondary). Surrounding areas are all "A" (Exclusive Agriculture), with the exception of a small district east of the Plant across State Route 33 where a Paramount Farms facility processes pistachios, which is classified "A-1" (Limited Agriculture).
22. A 2006 Kern County Land Use Map indicates the land surrounding the Plant to the north, south, and west is primarily almonds and pistachios with some tomatoes, melons, squash, and cucumbers to the southeast. Land to the east of the Plant is identified as native vegetation.
23. Average precipitation, evapotranspiration, and pan evaporation in the vicinity of the Plant is approximately 5.1 inches, 40.2 inches, and 108 inches per year, respectively.
24. According to the US Department of Agriculture, Natural Resources Conservation Service, surface soils at the Plant and surrounding area consist of Twisselman clay and panoche clay loam. Twisselman clay is described as deep, well-drained soil on alluvial fans mainly from sedimentary rocks. Permeability and runoff are slow and the hazard of erosion is slight. Panoche clay loam is also described as deep, well-drained soil on alluvial fans derived from granitic or sedimentary rocks. Permeability is moderate. Runoff is described to be very slow and the hazard of water erosion is slight.

Groundwater Considerations

25. Limited geologic information exists in the immediate vicinity of the Plant. However, geologic conditions of the Blackwells Corner Oil Field, located to the west, and the Lost Hills Oil Field, located to the east, of the Plant and wastewater and solids application areas, are known. Alluvium underlying each oil field consists of lenticular sand, silts, and clays. The thickness of the alluvium increases from west to east from approximately 250 to 500 feet thick. Underlying the alluvium is the Tulare Formation which is lithologically similar to the alluvium and has a thickness of approximately 500 feet in the west to up to 1,100 feet to the east. Groundwater present in the alluvium and Tulare Formation is considered to be unconfined. Based on data from the Department of Water Resources, depth to groundwater was greater than 200 feet below ground surface near the Plant in the 1960's and the predominant direction of groundwater flow is towards the northeast.

26. Groundwater in the vicinity of the Plant is saline and generally of poor quality, which is characteristic of the west side of the San Joaquin Valley. The table below presents water quality data obtained from the *Water Quality Portal* database provided by the United States Geological Survey, National Water Quality Monitoring Council, and the United States Environmental Protection Agency for five wells in the vicinity of the Plant. The analytical results show a consistent poor quality groundwater.

Parameter ¹	Well Identification				
	026S019E 25M001M	026S018E2 2C001M ²	026S018E2 3C001M ²	026S018E E21A001M	026S019E 12L001M
Well Depth	363	300	286	285	358
Sample Date	4/20/1930	8/5/1954 & 8/5/1955	8/5/1954 & 8/5/1955	8/5/1955	8/3/1954
EC	3,630	2,315	2,295	2,720	4,730
TDS	2,350	1,670	1,590	2,000	3,660
pH	--	7.8	7.9	7.8	8
Bicarbonate	200	205	210	220	150
Nitrate as N	--	4.63	8.36	5.2	2.71
Hardness	960	670	620	800	1,700
Calcium	200	102	94	110	360
Magnesium	110	104	95	130	190
Sodium	450	290	300	350	540
Potassium	--	3.1	2	3.2	6
Chloride	610	190	240	220	630
Sulfate	880	825	680	1,000	1,800
Boron	1.2	1.7	2.1	2.1	2.7

1. Well depth in feet below ground surface, EC in umhos/cm, pH in standard pH units.
All other parameters in mg/L.

2. Results are an average of the two sample dates.

Basin Plan, Beneficial Uses, and Regulatory Considerations

27. The *Water Quality Control Plan for the Tulare Lake Basin*, Second Edition (hereafter 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. Pursuant to Water Code section 13263(a), waste discharge requirements must implement the Basin Plan.

28. The Plant is in Detailed Analysis Unit 259 within the Kern County Basin hydrologic unit. The Basin Plan designates the beneficial uses of underlying groundwater as municipal and domestic supply; agricultural supply; and industrial service supply.
29. The discharge is to cropland on the edge of the San Joaquin Valley and any surface drainage would be to Valley Floor Waters. The beneficial uses of Valley Floor Waters within the subject hydrologic area (Antelope Plain Hydrologic Area No. 558.60) are agricultural and industrial service and process supply; water contact and non-contact water recreation; wildlife and warm freshwater habitat; groundwater recharge; and preservation and enhancement of rare, threatened, and endangered species.
30. The Basin Plan establishes narrative water quality objectives for chemical constituents, tastes and odors, and toxicity in groundwater. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial uses. The Basin Plan states that when compliance with a narrative objective is required to protect specific beneficial uses, the Central Valley Water Board will, on a case-by-case basis, adopt numerical limitations in order to implement the narrative objective.
31. The Basin Plan identifies the greatest long-term problem facing the entire Tulare Lake Basin as the increase in salinity in groundwater, which has accelerated due to the intensive use of soil and water resources by irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until a valley wide drain is constructed to carry salts out of the basin. Until the drain is available, the Basin Plan establishes several salt management requirements, including:
 - a. The incremental increase in salts from use and treatment must be controlled to the extent possible. The maximum electrical conductivity (EC) in the discharge shall not exceed the EC of the source water plus 500 umhos/cm. When the source water is from more than one source, the EC shall be a weighted average of all sources.
 - b. Discharges to areas that may recharge good quality groundwater shall not exceed an EC of 1,000 umhos/cm, a chloride content of 175 mg/L, or a boron content of 1.0 mg/L. As indicated in [Finding 26](#), groundwater in the vicinity of the Plant is saline and generally of poor quality. As such, the effluent limits for EC, chloride, and boron to not apply.
32. The Basin Plan allows an exception to the EC limit of source water plus 500 umhos/cm where the discharge exhibits a disproportionate increase in EC over the EC of source water due to unavoidable concentrations of organic dissolved solids from the raw food product, provided water quality objectives are met. The difference between the average total dissolved solids (TDS) and average fixed dissolved solids

(FDS) concentrations in the effluent indicates approximately 38% of the EC could result from organic compounds. As such, the discharge meets the incremental EC limit exception of the Basin Plan. Although only one effluent sample has been analyzed for FDS, the ratio of FDS to TDS is consistent with effluent data from other similarly operated pistachio processing facilities in the Tulare Lake Basin. This Order requires the Discharger to monitor effluent FDS and TDS to verify the incremental EC limit continues to be applicable to this discharge.

33. The Basin Plan's narrative water quality objectives for chemical constituents, at a minimum, require waters designated as domestic or municipal supply to meet the MCLs specified in Title 22 of the California Code of Regulations (hereafter Title 22).
34. In the absence of specific numerical water quality limits, objectives for receiving waters must be considered case-by-case. General salt tolerance guidelines, such as *Water Quality for Agriculture* by Ayers and Westcot and similar references indicate that yield reductions in nearly all crops are not evident when irrigation water has an EC less than 700 umhos/cm. There is, however, an eight- to ten-fold range in salt tolerance for agricultural crops and the appropriate salinity values to protect agriculture in the Central Valley are considered on a case-by-case basis. It is possible to achieve full yield potential with waters having EC up to 3,000 umhos/cm if the proper leaching fraction is provided to maintain soil salinity within the tolerance of the crop.
35. The list of crops in [Finding 22](#) is not intended as a definitive inventory of crops that are or could be grown in the area affected by the discharge, but it is representative of current and historical agricultural practices in the area.
36. With regard to BOD, excessive application can deplete oxygen in the vadose zone and lead to anoxic conditions. At the ground surface, this can result in nuisance odors and fly-breeding. When insufficient oxygen is present below the ground surface, anaerobic decay of the organic matter can create reducing conditions that convert metals that are naturally present in the soil as relatively insoluble (oxidized) forms to more soluble reduced forms. This condition can be exacerbated by acidic soils and/or acidic wastewater. If the reducing conditions do not reverse as the percolate travels down through the vadose zone, these dissolved metals (primarily iron, manganese, and arsenic) can degrade shallow groundwater quality. Many aquifers contain enough dissolved oxygen to reverse the process, but excessive BOD loading over extended periods may cause beneficial use impacts associated with these metals.
37. Typically, irrigation with high strength wastewater results in high BOD loading on the day of application. It is reasonable to expect some oxidation of BOD at the ground surface, within the evapotranspiration zone and below the root zone within the vadose (unsaturated) zone. The maximum BOD loading rate that can be applied to

land without creating nuisance conditions or leaching of metals can vary significantly depending on soil conditions and operation of the land application system.

38. Wastewater data included in the RWD indicate the BOD, nitrogen, and potassium loading of the pistachio orchard from wastewater is up to 103 lbs/acre/day 97 lbs/acre/yr, and 432 lbs/acre/yr, respectively. The BOD loading was calculated using the maximum daily discharge of 4.6 mgd; however, this flow rate is not anticipated to occur for an extended period of time. US EPA guidance, publication No. 625/3-77-007, *Pollution Abatement in the Fruit and Vegetable Industry*, indicates loading rates in excess of 100 lbs/acre/day is possible if the site is irrigated for only a few weeks each year and is well maintained. According to A & P, pistachio trees use 200 to 250 lbs/acre/year of nitrogen. In addition, the *Western Fertilizer Handbook*, produced by the California Plant Health Association, indicates almonds trees (similar to pistachio trees) will take up 200 lbs/acre/yr of nitrogen. The University of California, Davis (Zeng et al, 2001) recommends 100 to 200 lbs/acre/year of potassium for pistachios. Pistachios will take up potassium in excess of their needs.
39. The Discharger has reported its standard irrigation practice is to irrigate 90 acre sections with fan jet irrigation systems and 200 acre sections with drip irrigation systems. The fan jet systems utilize 0.11 acre-feet/acre of water for 24 hours and the drip irrigation systems utilize 0.05 acre-feet/acre of water for 24 hours. Following irrigation cycles, the sections of land are allowed to rest (between four and ten days) in order to reduce the cycle average BOD loading to approximately 100 lbs/acre/day. Pistachios are harvested during the rest period for each section. Standard practice for pistachio harvesting is to not allow the pistachios to come in contact with the ground.

Antidegradation Analysis

40. State Water Resources Control Board Resolution 68-16 (*"Policy with Respect to Maintaining High Quality Waters of the State"*) (hereafter Resolution 68-16 or "Antidegradation Policy") prohibits degradation of groundwater unless it has been shown that:
- a. 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;
 - b. The discharger employs best practicable treatment or control (BPTC) to minimize degradation;
 - c. The degradation will not unreasonably affect present and anticipated future beneficial uses; and
 - d. The degradation is consistent with the maximum benefit of the people of the State.

41. Constituents of concern that have the potential to cause degradation include, in part, nutrients, and salts.
- a. For nitrogen, the limited processing and discharge season, significant depth of vadose zone, and application of the wastewater to the pistachio trees at agronomic rates should preclude degradation of groundwater by nitrates.
 - b. For salinity, the EC of the discharge significantly exceeds the Basin Plan Limit of source water + 500 $\mu\text{mhos/cm}$. However, the Basin Plan allows an exception for food processing industries that discharge to land and exhibit a disproportionate increase in the EC of the discharge due to unavoidable concentrations of organic dissolved solids from the raw food product. The Basin Plan's maximum effluent limit of 1,000 $\mu\text{mhos/cm}$ does not apply to this discharge since it does not recharge good quality groundwater.
 - c. A high percentage of the inorganic portion of the discharge EC is from potassium, which is an important nutrient for pistachio trees. The limited processing and discharge season, significant depth of vadose zone, and limited migration of potassium in subsurface soils should preclude degradation of groundwater by potassium.
 - d. Due to the short processing and discharge season, best practicable treatment or control measures and blending wastewater with surface water that is much better quality than groundwater, should be protective of groundwater and prevent exceedance of groundwater limits.
 - e. As indicated in [Finding 26](#), groundwater in the vicinity of the Plant is saline and generally of poor quality since before 1968. The discharge allowed by this Order is not anticipated to further degrade groundwater quality.

Treatment and Control Practices

42. The Discharger provides treatment and control of the discharge that incorporates:
- a. Pre-cleaning to remove leaves, twigs, and other debris,
 - b. Annual removal of solids from the wastewater ponds,
 - c. Organic loading rates consistent with EPA recommendations and unlikely to cause unacceptable groundwater degradation,
 - d. Application of nitrogen at agronomic rates, and
 - e. Hydraulic loading at rates to preclude standing water around the pistachio trees.

Antidegradation Conclusions

43. Based on the factors described in Findings 23 (precipitation/evaporation), 24 (surface soil types), and 42 (treatment and control practices), no degradation of groundwater is expected to occur.

Water Reuse

44. The Basin Plan encourages the reuse of wastewater and identifies crop irrigation as a reuse option where the opportunity exists to replace an existing or proposed use of fresh water with recycled water.

Other Regulatory Considerations

45. Based on the threat and complexity of the discharge, the plant is determined to be classified as 2C as defined below:
- a. Category 2 threat to water quality: "Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance."
 - b. Category C complexity, defined as: "Any discharger for which waste discharge requirements have been prescribed pursuant to Section 13263 of the Water Code and not included in Category A or B. Included are dischargers having no waste treatment systems or that must comply with best management practices, discharger having passive treatment and disposal systems, or dischargers having waste storage systems with land disposal."
46. California Code of Regulations, title 27 (hereafter Title 27) contains regulatory requirements for the treatment, storage, processing, and disposal of solid waste, which includes designated waste, as defined by Water Code section 13173. However, Title 27 exempts certain activities from its provisions. Discharges regulated by this Order are exempt from Title 27 pursuant to a provision that exempts wastewater under specific conditions. This exemption, found at Title 27, section 20090, is described below:
- (b) Wastewater – Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leachfields if the following conditions are met:
 - (1) The applicable regional water quality control board has issued WDRs, reclamation requirements, or waived such issuance;
 - (2) The discharge is in compliance with applicable water quality control plan; and
 - (3) The wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste.

47. The discharge authorized herein is exempt from the requirements of Title 27 in accordance with Title 27, section 20090(b) because:
- a. The Central Valley Water Board is issuing WDRs.
 - b. The discharge is in compliance with the Basin Plan, and;
 - c. The discharge does not need to be managed as hazardous waste.
48. Title 27 applies to discharges of "solid waste to land where water quality could be affected as a result of such discharge." (Cal. Code Regs., tit. 27, §21710(a).) The seasonal land application of solids accumulated in the wastewater ponds does not threaten groundwater and therefore the application of these solids to the 400 acres of land is not subject to regulation by Title 27. However, there may be alternate beneficial uses for these materials, and therefore Provision G.10 requires the Discharger to submit a report assessing these other potential uses.
49. The State Water Board adopted Order 97-03-DWQ (NPDES General Permit CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities, and requiring submittal of a Notice of Intent by all affected industrial dischargers. All storm water from the plant is collected and allowed to percolate on-site and does not discharge into a water of the United States. The Discharger is therefore not required to obtain coverage under NPDES General Permit CAS000001.
50. Water Code section 13267(b) states:
- In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposes to discharge within its region ... shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.
- The technical reports required by this Order and the attached Monitoring and Reporting Program R5-2013-0006 are necessary to ensure compliance with these waste discharge requirements. The Discharger owns and operates the plant that discharges the waste subject to this Order.
51. Pursuant to Water Code section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

California Environmental Quality Act

52. The Plant has been in existence since at least 1990, as documented by a Building Permit Inspection Record from the Kern County Department of Planning and Development Services that was submitted with A & P's April 2003 information submittal. As indicated in Finding 1, the Discharger has submitted additional information in 2006, 2009, and 2012 updating the status of the Plant's continued operations. No permits or discretionary actions on the part of Kern County were required for the Plant's expansions, as these expansions needed only ministerial approvals (at most) under the County's General Plan. Furthermore, due to resource constraints and the very limited threat that the Plant's operations pose to water quality, the Board only began its environmental review of the Plant and its potential to cause significant effects on the environment following the Discharger's 2012 submittal. These WDRs ensure that the operation of the Plant will not have any significant effects on the environment, authorize no additional expansion, and prohibit degradation of groundwater quality. As such, the action of prescribing these WDRs to this existing facility is exempt from the requirements of California Environmental Quality Act in accordance with California Code of Regulations, title 14, section 15301.

Public Notice

53. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated herein, were considered in establishing the following conditions of discharge.
54. The Discharger and interested agencies and persons have been notified of the Central Valley Water Board's intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity to submit written comments and an opportunity for a public hearing.
55. All comments pertaining to the discharge were heard and considered in a public hearing.

IT IS HEREBY ORDERED that Horizon Nut, LLC, and Global Ag Properties USA, LLC, their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and regulations adopted hereunder, shall comply with the following:

A. Discharge Prohibitions

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.

2. Discharge of waste classified as 'hazardous', as defined in the California Code of Regulations, title 23, section 2510 et seq., is prohibited.
3. Discharge of waste classified as 'designated', as defined in Water Code section 13173, is prohibited.
4. Discharge of waste at a location or in a manner different from that described in the Findings is prohibited.

B. Effluent Limitations

1. The pH of the discharge shall not be less than 4.5 or greater than 9.0 pH units through the length of each discharge season.

C. Discharge Specifications

1. The discharge from the Plant shall not exceed the following: a monthly average discharge of 2.3 mgd, a maximum daily discharge of 4.6 mgd, or a total annual discharge of 130 million gallons.
2. No waste constituent shall be released, discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations of this Order.
3. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050.
4. The discharge shall remain within the permitted wastewater ponds, conveyance structures and wastewater and solids application areas at all times.
5. The Discharger shall operate all systems and equipment to optimize the quality of the discharge.
6. The Plant and wastewater ponds shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
7. Objectionable odors shall not be perceivable beyond the limits of the wastewater ponds or the wastewater and solids application areas at an intensity that creates or threatens to create nuisance conditions.
8. The discharge of process wastewater shall be distributed uniformly on adequate acreage in compliance with the Discharge Specifications.

9. All ponds and open containment structures shall be managed to prevent breeding of mosquitoes.
10. The Discharger shall periodically monitor solids accumulation in the wastewater ponds and shall remove solids to maintain adequate storage capacity. Solids shall be removed from the wastewater ponds and incorporated into the solids application areas annually outside of the rainy season and before the beginning of the pistachio processing season.

D. Wastewater Application Area Specifications

1. Crops shall be grown in the wastewater application area. Crops shall be selected based on nutrient uptake, consumptive use of water, and irrigation requirements to maximize crop uptake.
2. Application of waste constituents to the wastewater application area shall be at reasonable agronomic rates to preclude creation of a nuisance or degradation of groundwater, considering the crop, soil, climate, and irrigation management system. The annual nutritive loading of the wastewater application area, including the nutritive value of organic and chemical fertilizers and of the wastewater, shall not exceed the annual crop demand, except for potassium.
3. Hydraulic loading of wastewater and irrigation water shall be at reasonable agronomic rates designed to minimize the percolation of wastewater and irrigation water below the root zone (i.e., deep percolation).
4. The BOD loading to the wastewater application area calculated as a cycle average as determined by the method described in the attached Monitoring and Reporting Program, shall not exceed 100 pounds per acre per day.
5. The resulting effect of the discharge on soil pH shall not exceed the buffering capacity of the soil profile.
6. The Discharger may not discharge process wastewater to the wastewater application area within 24 hours of a storm event of measurable precipitation or when soils are saturated.
7. Any irrigation runoff shall be confined to the wastewater application area and shall not enter any surface water drainage course or storm water drainage system.
8. Discharge of process wastewater to any wastewater application area not having a fully functional tailwater/runoff control system is prohibited.

9. Irrigation pipelines shall be flushed with fresh water after wastewater application as often as needed to ensure continuous compliance with Discharge Specification C.7.
10. The wastewater application area shall be managed to prevent breeding of mosquitos. More specifically:
 - a. All applied irrigation water must infiltrate completely within 48-hours;
 - b. Ditches not serving as wildlife habitat shall be maintained free of emergent, marginal, and floating vegetation; and
 - c. Low-pressure and unpressurized pipeline and ditches accessible to mosquitos shall not be used to store recycled water.

E. Solids Disposal Specifications

Solids generated at the Plant consist of leaves, twigs, and other debris removed from the waste stream during the pre-cleaning process and pistachio hulls removed from the wastewater ponds during the dry season when the ponds are empty of wastewater.

1. Any drying, handling and storage of solids at the Plant shall be temporary, and controlled and contained in a manner that minimizes leachate formation and precludes the development of odor nuisance conditions and infiltration of waste constituents into soils in a mass or concentration that will violate groundwater limitations of this Order. Solids removed during the pre-cleaning process shall be collected and composted or shipped off-site as a commodity. Solids removed from the wastewater ponds shall be evenly applied and incorporated into up to 400 acres of the solids application area and shall not be applied to the solids application area within 24 hours of a storm event of measurable precipitation or when soils are saturated. Solids removed from the wastewater ponds shall not be applied to the wastewater application area.
2. Any proposed change in solids use or disposal practices shall be reported in writing to the Executive Officer at least 90 days in advance of the change.

F. Groundwater Limitations

Release of waste constituents associated with the discharge shall not cause or contribute to groundwater containing constituent concentrations in excess of the concentrations of natural background quality.

G. Provisions

1. The Discharger shall comply with Monitoring and Reporting Program R5-2013-0006, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.

The submittal dates of Discharger self-monitoring reports shall be no later than the submittal date specified in the MRP.

2. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated 1 March 1991, which are attached hereto and made a part of this Order. This attachment and its individual paragraphs are commonly referenced as "Standard Provisions."
3. **By 1 October 2013**, the Discharger shall provide a demonstration the Plant and wastewater ponds are designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
4. As a means of discerning compliance with Discharge Specification [C.7](#), the dissolved oxygen (DO) content in the upper one foot of any wastewater pond or irrigation reservoir containing wastewater shall not be less than 1.0 mg/L for three consecutive weekly sampling events. If the DO in any single pond is below 1.0 mg/L for three consecutive sampling events, the Discharger shall report the findings to the Central Valley Water Board in writing within 10 days and shall include a specific plan to resolve the low DO results within 30 days.
5. The Discharger shall operate and maintain all wastewater ponds and irrigation reservoirs sufficiently to protect the integrity of containment dams and berms and prevent overtopping and/or structural failure. Unless a California-registered civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard in any pond shall never be less than two feet (measured vertically from the lowest possible point of overflow).
6. The wastewater ponds or structures (including irrigation reservoirs) shall have sufficient capacity to accommodate allowable wastewater flow, design seasonal precipitation, and ancillary inflow and infiltration during the winter while ensuring continuous compliance with all requirements of this Order. Design seasonal precipitation shall be based on average annual precipitation.
7. On or about **1 October** of each year, available capacity shall at least equal the volume necessary to comply with [Provisions G.5 and G.6](#).
8. This Order includes a lower pH limit of 4.5 pH units. In order for the effluent limit range for pH to be revised, the Discharger shall submit a technical report

justifying how the revision will not degrade or threaten to degrade groundwater quality. Central Valley Water Board would consider any justified change through amendment of this Order.

9. This Order includes a cycle average BOD loading specification of 100 lbs/acre/day. In order for the BOD loading specification to be revised, the Discharger shall submit a technical report justifying how the revision will not degrade or threaten to degrade groundwater quality. Central Valley Water Board would consider any justified change through amendment of this Order.
10. **By 1 September 2013**, the Discharger shall submit a Solids Beneficial Use Plan. The Plan shall characterize the solids removed from the wastewater ponds with respect to nutrients, salts, and metals; identify any practicable beneficial uses of the solids (i.e., soil supplement, animal feed, biomass fuel, or other uses); propose an implementation time schedule for Executive Officer approval of any practicable uses; and provide a description of the tasks, cost, and time required to investigate and implement various beneficial use elements in the Plan. The Discharger shall implement the approved plan in accordance with the approved schedule.
11. Newly constructed or rehabilitated berms or levees (excluding internal berms that separate ponds or control the flow of water within a pond) shall be designed and constructed under the supervision of a California Registered Civil Engineer.
12. In accordance with California Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans for investigations and studies, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall bear the professional's signature and stamp.
13. The Discharger shall submit the technical reports and work plans required by this Order for consideration by the Executive Officer, and incorporate comments the Executive Officer may have in a timely manner, as appropriate. Unless expressly stated otherwise in this Order, the Discharger shall proceed with all work required by the foregoing provisions by the due dates specified.
14. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports. On or before each report due date, the Discharger shall submit the specified document to the Central Valley

Water Board or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, then the Discharger shall state the reasons for such noncompliance and provide an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board in writing when it returns to compliance with the time schedule. Violations may result in enforcement action, including Central Valley Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.

15. The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by the Discharger only when the operation is necessary to achieve compliance with the conditions of this Order.
16. The Discharger shall use the best practicable cost-effective control technique(s) including proper operation and maintenance, to comply with this Order.
17. As described in the Standard Provisions, the Discharger shall report promptly to the Central Valley Water Board any material change or proposed change in the character, location, or volume of the discharge.
18. At least **90 days** prior to termination or expiration of any lease, contract, or agreement involving disposal or recycling areas or off-site reuse of effluent, used to justify the capacity authorized herein and assure compliance with this Order, the Discharger shall notify the Central Valley Water Board in writing of the situation and of what measures have been taken or are being taken to assure full compliance with this Order.
19. In the event of any change in control or ownership of the Plant, the Discharger must notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.
20. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator

assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. If approved by the Executive Officer, the transfer request will be submitted to the Central Valley Water Board for its consideration of transferring the ownership of this Order at one of its regularly scheduled meetings.

21. A copy of this Order including the MRP, Information Sheet, Attachments, and Standard Provisions, shall be kept at the Plant for reference by operating personnel. Key operating personnel shall be familiar with its contents.
22. If the Central Valley Water Board determines that the discharge has a reasonable potential to cause or contribute to an exceedance of a water quality objective, or to create a condition of nuisance or pollution, this Order may be reopened for consideration of additional requirements.
23. The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan amendment that will establish a salt and nitrate management plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objectives are to be interpreted for the protection of agricultural use. If new information or evidence indicates that groundwater limitations different than those prescribed herein are appropriate, this Order will be reopened to incorporate such limits.
24. The Central Valley Water Board will review this Order periodically and will revise requirements when necessary.

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order or with the WDRs may result in the assessment of Administrative Civil Liability of up to \$10,000 per violation, per day, depending on the violation, pursuant to the Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

http://www.waterboards.ca.gov/public_notices/petitions/water_quality

or will be provided upon request.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 1 February 2013.

Original signed by

PAMELA C. CREEDON, Executive Officer

Order Attachments:

A. Site Map

Monitoring and Reporting Program R5-2013-0006

Information Sheet

Standard Provisions (1 March 1991) (separate attachment to Discharger only)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2013- 0006

FOR
HORIZON NUT, LLC
AND
GLOBAL AG PROPERTIES USA, LLC
LOST HILLS PISTACHIO PROCESSING PLANT
KERN COUNTY

This Monitoring and Reporting Program (MRP) is required pursuant to Water Code section 13267.

The Discharger shall not implement any changes to this MRP unless and until the Central Valley Water Board adopts, or the Executive Officer issues, a revised MRP. Changes to sample location shall be established with concurrence of Central Valley Water Board staff, and a description of the revised stations shall be submitted for approval by the Executive Officer.

All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. All analyses shall be performed in accordance with **Standard Provisions and Reporting Requirements for Waste Discharge Requirements**, dated 1 March 1991 (Standard Provisions).

Field test instruments (such as pH) may be used, provided that the operator is trained in the proper use of the instrument and each instrument is serviced and/or calibrated at the recommended frequency by the manufacturer or in accordance with manufacturer instructions.

Analytical procedures shall comply with the methods and holding times specified in the following: *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater* (EPA); *Test Methods for Evaluating Solid Waste* (EPA); *Methods for Chemical Analysis of Water and Wastes* (EPA); *Methods for Determination of Inorganic Substances in Environmental Samples* (EPA); *Standard Methods for the Examination of Water and Wastewater* (APHA/AWWA/WEF); and *Soil, Plant and Water Reference Methods for the Western Region* (WREP 125). Approved editions shall be those that are approved for use by the United States Environmental Protection Agency or the California Department of Public Health's Environmental Laboratory Accreditation Program. The Discharger may propose alternative methods for approval by the Executive Officer.

If monitoring consistently shows no significant variation in magnitude of a constituent concentration or parameter after at least 12 sampling events, the Discharger may request

this MRP be revised to reduce monitoring frequency. The proposal must include adequate technical justification for reduction in monitoring frequency.

A glossary of terms used within this MRP is included on [page 9](#).

EFFLUENT MONITORING

Effluent samples shall be collected after the wastewater ponds and prior to discharge to the irrigation reservoir. Effluent samples shall be collected prior to mixing wastewater with irrigation water. Effluent monitoring shall include at least the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Continuous	Flow	mgd or ac-ft	Meter
Weekly	pH	pH Units	Grab
Weekly	EC	umhos/cm	Grab
Weekly	BOD ₅	mg/L	Grab
Weekly	Nitrate as N (NO ₃ -N)	mg/L	Grab
Weekly	TKN	mg/L	Grab
Weekly	Total Nitrogen	mg/L	Computed
Weekly	TDS	mg/L	Grab
Weekly	FDS	mg/L	Grab
Monthly ¹	General Minerals ²	mg/L	Grab
Once ³	Metals ⁴	mg/L	Grab

1. At least two samples per season.
2. General minerals include: alkalinity (as CaCO₃), aluminum, bicarbonate (as CaCO₃), boron, calcium, carbonate (as CaCO₃), chloride, copper, hardness (as CaCO₃), iron, magnesium, manganese, phosphate, potassium, sodium, and sulfate. General minerals analysis results shall include a cation/anion balance. Samples collected for metals shall be filtered with a 0.45 micron filter prior to preservation, digestion, and analysis.
3. Sample collection for metals analysis shall be collected within the first year following the adoption of the Order.
4. Metals include: aluminum, chromium, copper, lead, molybdenum, nickel, and zinc.

SOURCE WATER MONITORING

For each source, the Discharger shall calculate the flow-weighted average concentrations for the specified constituents utilizing monthly flow data and the most recent chemical analysis conducted in accordance with Title 22 drinking water requirements. Alternatively, the Discharger may establish representative sampling stations within the distribution system serving the same area as is served by the Plant.

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Annually ¹	Flow-Weighted EC	umhos/cm	Computed average

1. During the processing season.

WASTEWATER APPLICATION AREA MONITORING

The Discharger shall perform the following routine monitoring and loading calculations for the wastewater application area. In addition the Discharger shall keep a log of routine monitoring observations of the wastewater application area, for example: areas of ponding, broken irrigation pipes, odors and/or flies within the wastewater application area. Data shall be collected and presented in tabular format and shall include the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Daily	Application location	n/a	n/a
Daily	Application area	acres	n/a
Daily	Wastewater flow	gallons or ac-ft	Metered
Daily	Wastewater loading	inches/day	Calculated
Daily	Supplemental irrigation	gallons or ac-ft	Metered
Daily	Precipitation	inches	Rain gage ¹
	BOD loading rate ²		
Daily	day of application	lbs/acre	Calculated
Daily	cycle average	lbs/acre-day	Calculated
	Nitrogen loading		
Monthly	from wastewater ³	lbs/acre	Calculated
Monthly	from fertilizer	lbs/acre	Calculated
Annually	Cumulative nitrogen loading	lbs/acre-year	Calculated
Monthly	Salt loading ³	lbs/acre	Calculated
Annually	Cumulative Salt loading	lbs/acre-year	Calculated

¹ National Weather Service data from the nearest weather station is acceptable.

² Loading rates to be calculated using the applied volume of wastewater, applied acreage, and average of the three most recent concentrations for BOD. The BOD loading rate shall be divided by the #days between applications to determine cycle average.

³ Nitrogen and salt loading shall be calculated using the applied volume of wastewater, applied acreage, and average of the three most recent concentrations for total nitrogen and FDS.

SOLIDS APPLICATION AREA MONITORING

The Discharger shall perform the following routine monitoring and loading calculations for the solids application area. In addition, the Discharger shall keep a log of routine monitoring observations of the solids application area, for example: odors and/or flies within the solids application area. Data shall include the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Each application	Application location	n/a	n/a
Each application	Application area	Acres	n/a
Each application	Solids applied	Tons or cubic yards	n/a
Each application	Solids loading	Tons or cubic yards per acre	Calculated

WASTEWATER POND AND IRRIGATION RESERVOIR MONITORING

Pond monitoring shall be in effect so long as the ponds contain wastewater, shall be monitored in each pond, and shall include at least the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Daily	Freeboard	feet	Measured
Weekly	Dissolved Oxygen	mg/L	grab
Weekly	Visual Inspection ¹	n/a	n/a

¹ Visual inspection shall include observing the pond sides and surface area from items such as: weeds, algae, animal holes, and erosion.

REPORTING

All monitoring results shall be reported in an **Annual Monitoring Report** which is due by **1 February of the year following the year the samples were collected.**

A transmittal letter shall accompany each monitoring report. The transmittal letter shall discuss any violations that occurred during the reporting period and all actions taken or planned for correcting violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions or a time schedule for implementing the corrective actions, reference to the previous correspondence is satisfactory.

The following information is to be included on the annual report, as well as any report transmittal letters, submitted to the Central Valley Water Board:

Discharger: Horizon Nut, LLC and Global Ag Properties USA, LLC
Facility: Lost Hills Pistachio Processing Plant
MRP: R5-2013-0007
Contact Information (telephone number and email)

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner that illustrates clearly, whether the Discharger complies with waste discharge requirements.

In addition to the details specified in Standard Provision C.3, monitoring information shall include the method detection limit (MDL) and the Reporting limit (RL) or practical quantitation limit (PQL). If the regulatory limit for a given constituent is less than the RL (or PQL), then any analytical results for that constituent that are below the RL (or PQL) but above the MDL shall be reported and flagged as estimated.

Laboratory analysis reports do not need to be included in the monitoring reports; however, the laboratory reports must be retained for a minimum of three years in accordance with Standard Provision C.3.

All monitoring reports shall comply with the signatory requirements in Standard Provision B.3.

All monitoring reports that involve planning, investigation, evaluation or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1.

At any time henceforth, the State or Central Valley Regional Water Board may notify the Discharger to electronically submit monitoring reports using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (<http://www.waterboards.ca.gov/ciwqs/index.html>) or similar system. Until such notification is given, the Discharger shall submit hard copy monitoring reports.

All Annual Monitoring Reports, shall include the following:

Effluent Reporting

1. The results of effluent monitoring specified on [page 2](#).
2. For each month of the processing season, calculation of the maximum daily flow, monthly average flow, and cumulative annual flow.

3. For each month of the processing season, calculation of the average monthly effluent EC and BOD₅.
4. The names and general responsibilities of all persons in charge of wastewater disposal.
5. The names and telephone numbers of persons to contact regarding the Plant for emergency and routine situations.
6. A statement certifying when the effluent flow meter and other monitoring instruments and devices were last calibrated, including identification of who performed the calibrations (Standard Provision C.4).
7. A summary of any changes in processing that might affect waste characterization and/or discharge flow rates.

Source Water Reporting

1. The results of source water monitoring specified on [page 2](#).

Wastewater Application Area Reporting

1. The results of the routine monitoring and loading calculations for BOD, nitrogen, and salts as specified on [page 3](#).
2. Provide a Site Map of the wastewater application area showing predominant features, and include field numbers (if applicable) and where wastewater was applied.
3. For each month that wastewater is applied to the wastewater application area, calculation of the monthly hydraulic load on each individual section for wastewater and supplemental irrigation water in millions of gallons.
4. A summary of the notations made in the wastewater application area monitoring log during routine observations. The entire contents of the log do not need to be submitted.
5. The type of crop(s) grown, planting and harvest dates, and the quantified nitrogen and fixed dissolved solids uptakes (as estimated by technical references or, preferably, determined by representative plant tissue analysis). Include any soil and/or tissue sampling results that may be available.
6. The monthly and annual discharge volumes during the reporting year expressed as million gallons and inches.
7. A monthly balance for the reporting year that includes:
 - a. Monthly crop uptake
 - i. Crop water utilization rates are available from a variety of publications available from the local University of California Davis extension office.

- ii. Irrigation efficiency – Frequently, engineers include a factor from irrigation efficiency such that the application rate is slightly greater than the crop utilization rate. A conservative design does not include this value.
 - b. Monthly average precipitation – this data is available at <http://www.cimis.water.ca.gov/> or at <http://www.ncdc.noaa.gov/oa/climate/online/ccd/nrmlprcp.html>.
 - c. Monthly average and annual average discharge flow rates.
 - d. Monthly estimates of the amount of wastewater percolating below the root zone (i.e., amount of wastewater applied in excess of crop requirements)
- 8. A summary of average and cycle BOD₅ loading rates.
 - 9. The total pounds of nitrogen applied to the wastewater application area, as calculated from the sum of the monthly loadings, and the total annual nitrogen loading to the wastewater application area in lbs/acre-year.
 - 10. The total pounds of FDS that have been applied to the wastewater application area, as calculated from the sum of the monthly loadings, and the total annual FDS loading to the wastewater application area in lbs/acre-year.

Solids Application Area Reporting

- 1. The results of the routine monitoring and loading calculations as specified on [page 4](#).
- 2. A description of solids application methods.
- 3. Provide a Site Map of the solids application area showing predominant features, including field numbers (if applicable) where solids were applied and soil sample locations.
- 4. A summary of the notations made in the solids application area monitoring log during routine observations. The entire contents of the log do not need to be submitted.

Wastewater Pond and Irrigation Reservoir Reporting

- 1. The results of the routine monitoring specified on [page 4](#).

MONITORING AND REPORTING PROGRAM R5-2013-0006
HORIZON NUT, LLC
GLOBAL AG PROPERTIES USA, LLC
LOST HILLS PISTACHIO PROCESSING PLANT
KERN COUNTY

-8-

The Discharger shall implement the above monitoring program on the first day of the month following adoption of this Order.

PAMELA C. CREEDON, Executive Officer

(Date)

GLOSSARY

BOD ₅	Five-day biochemical oxygen demand
CBOD	Carbonaceous BOD
DO	Dissolved oxygen
EC	Electrical conductivity at 25° C
FDS	Fixed dissolved solids
NTU	Nephelometric turbidity unit
TKN	Total Kjeldahl nitrogen
TDS	Total dissolved solids
TSS	Total suspended solids
Continuous	The specified parameter shall be measured by a meter continuously.
24-hr Composite	Samples shall be a flow-proportioned composite consisting of at least eight aliquots.
Daily	Samples shall be collected every day except weekends or holidays.
Twice Weekly	Samples shall be collected at least twice per week on non-consecutive days.
Weekly	Samples shall be collected at least once per week.
Twice Monthly	Samples shall be collected at least twice per month during non-consecutive weeks.
Monthly	Samples shall be collected at least once per month.
Bimonthly	Samples shall be collected at least once every two months (i.e., six times per year) during non-consecutive months.
Quarterly	Samples shall be collected at least once per calendar quarter. Unless otherwise specified or approved, samples shall be collected in March, June, September, and December.
Semiannually	Samples shall be collected at least once every six months (i.e., two times per year). Unless otherwise specified or approved, samples shall be collected in June and December.
Annually	Samples shall be collected at least once per year.
Biannually	Samples shall be collected at least once every two years.
mg/L	Milligrams per liter
mL/L	Milliliters [of solids] per liter
ug/L	Micrograms per liter
umhos/cm	Micromhos per centimeter
mgd	Million gallons per day
MPN/100 mL	Most probable number [of organisms] per 100 milliliters
mg/kg	Milligrams per kilogram
yds ³	Cubic yards
ac-ft	Acre-feet

INFORMATION SHEET

R5-2013-0006
HORIZON NUT, LLC
GLOBAL AG PROPERTIES USA, LLC
LOST HILLS PISTACHIO PROCESSING PLANT
KERN COUNTY

BACKGROUND

Horizon Nut, LLC (Horizon) owns and operates a pistachio processing plant (Plant) at 14663 Highway 33 near Lost Hills in Kern County (Section 26, T26S, R19E, MDB&M). The Plant occupies Assessor's Parcel Numbers (APN) 057-180-42. The acreage where wastewater is applied occupies APN 057-180-01, 057-180-13, and 057-190-17. The acreage where solids are applied occupies APN 057-180-01, 057-170-49, 057-170-27, 057-170-28, and 057-170-29. The Plant has been in operation since at least 1990 with various owners, although the discharges have not been regulated by waste discharge requirements issued pursuant to Water Code section 13264.

On 13 February 2003, A & P Growers (A & P) submitted a Report of Waste Discharge (RWD) for the Plant. The 2003 RWD indicated a maximum daily flow of 1.152 million gallons per day (mgd); total annual flow of 34.56 million gallons; 360 acres of wastewater application area (APN 057-180-41); and 100 acres of solids application area (APN 057-170-27, 057-170-28, 057-170-29, and 057-170-49). Additional information was submitted by A & P on 23 April 2003 to complete the RWD. On 9 August 2006 and 11 May 2009, A & P submitted an addendum to the RWD that described an increase to the wastewater flows at the Plant and acreage where wastewater is applied. The 2006 RWD indicated a maximum daily flow of 1.152 mgd; total annual flow of 100 million gallons; 760 acres of wastewater application area (APN 057-180-13 and 057-180-41); and 100 acres of solids application area (APN 057-170-02, 057-170-27, and 057-170-28). The 2009 RWD indicated maximum daily flow of 1.75 million gallons per day (mgd); total annual flow of 130 million gallons; 1,070 acres of wastewater application area (APN 057-180-01, 057-180-13, 057-180-41); and 100 acres of solids application area (APN 057-170-02, 057-170-27, 057-170-28, 057-170-29, 057-170-49, 057-170-52 and 057-180-01). On 27 February 2012, Horizon submitted a RWD to change the name of the owners of the Plant. On 19 June 2012, Horizon submitted a technical report that described additional increases to the wastewater flows and acreage where wastewater is applied. The 2012 RWD indicated an average daily flow of 2.3 mgd; maximum daily flow of 4.6 million gallons per day (mgd); total annual flow of 130 million gallons; 1,460 acres of wastewater application area (APN 057-180-01, 057-180-13, 057-180-41, 057-190-16, and 057-190-17); and 400 acres of solids application area (APN 057-170-27, 057-170-28, 057-170-29, 057-170-49 and 057-180-01). In addition, Horizon indicated that the acreage where wastewater and solid are applied was sold to Global Ag Properties USA, LLC (Global Ag).

Horizon processes raw pistachios by mechanical removal of the hulls and washing with water. The Plant operates seven days a week for between 30 and 60 days, usually beginning in September. Total annual discharge is 130 million gallons. The monthly average discharge is 2.3 mgd and the maximum daily discharge is 4.6 mgd.

Wastewater

During harvest, pistachios are collected and delivered directly to the Plant and unloaded at the pre-cleaning area outside the processing building. Leaves, twigs, and other debris are removed at this area. The pistachios are conveyed to several hoppers inside the processing building to remove the hulls (pistachio skin). During this process, source water is introduced to facilitate removal of the hulls and to clean the pistachios. The wastewater with the pistachio hulls is separated from the nuts and is directed to the floor drains. The pistachio nuts are moved by conveyor belts to the float tanks to separate blank nuts and to clean the pistachios further. Wastewater generated at the float tanks is also directed to the floor drains. The cleaned nuts are then dried and stored in silos until shipment.

Wastewater flows by gravity into a concrete-lined sump. Wastewater is pumped from the sump through two unlined wastewater ponds (10.8 million gallons total capacity). The first wastewater pond removes most of the large hulls and other solids by floatation and settling. A pump in the second wastewater pond transfers wastewater to up to four irrigation/mixing pond within the wastewater application area. Four additional wastewater ponds with a total capacity of about 22 million gallons are available for emergency storage.

Effluent wastewater data from 2006 through 2012 is summarized in the table below. For chloride, an outlier data point (1,100 mg/L on 28 September 2009) and for sulfate, an outlier data point (2,400 mg/L on 10 October 2006) were removed from the data set presented in the table below.

Parameter	Units	Number of Samples	Mean Result
Total dissolved solids (TDS)	mg/L	7	2,593
Fixed dissolved solids (FDS)	mg/L	1 ¹	1,600
Biochemical oxygen demand (BOD)	mg/L	19	3,195
Electrical conductivity (EC)	umhos/cm	2	2,610
Nitrate as N	mg/L	6	<5
Total Kjeldahl Nitrogen	mg/L	19	134
Boron, total	mg/L	7	0.22
Calcium, total	mg/L	7	43
Copper, total	mg/L	6	0.05
Iron, total	mg/L	7	1.34
Magnesium, total	mg/L	7	21
Manganese, total	mg/L	7	0.11
Potassium, total	mg/L	7	583

<u>Parameter</u>	<u>Units</u>	<u>Number of Samples</u>	<u>Mean Result</u>
Sodium, total	mg/L	7	61
Bicarbonate	mg/L	7	514
Chloride	mg/L	6	104
Flouride	mg/L	5	49
Sulfate	mg/L	5	56

1. Sample collected on 4 October 2012. TDS result of sample collected at same time = 3,500 mg/L.

Source Water

The Berrenda Mesa Water District supplies water to the Plant from the California Aqueduct. The Plant disinfects the source water with chlorine gas or sodium hypochlorite when chlorine gas is not available and then filters it through carbon prior to use for pistachio processing. No chemicals are added to the waste stream during processing.

DISPOSAL METHODS

Solids

Solids consist of leaves, twigs, and other debris removed from the waste stream during the pre-cleaning process and pistachio hulls removed from the wastewater ponds during the dry season when the ponds are empty of wastewater. Solids collected during the pre-cleaning process are collected and composted or shipped off-site as a commodity. Solids removed from the wastewater ponds are thinly applied and incorporated into up to 400 acres of the solids application area. Horizon estimates that approximately 500 tons of sludge has been generated during each pond cleaning event once every two years. This Order requires solids to be removed from the wastewater ponds on an annual basis outside of the rainy season and before the beginning of the pistachio processing season. This Order requires the submittal of a Solids Beneficial Use Plan that characterizes the solids removed from the wastewater ponds and identifies any practicable beneficial uses for the solids that could be implemented at the Plant. Average annual rainfall is far less than annual pan evaporation (5.1 inches versus 108 inches) in the vicinity of the solids application area. The limited rainfall would not exceed the capacity of the clay soils at the solids application area to hold the water in the upper few inches. Water that infiltrates would evaporate from the soils after the rainfall season. Therefore, constituents associated with the solids applied to the soils would not be expected to migrate more than a few inches into the soils of the solids application area. Given this, there is no threat to water quality from the discharge to the solids application area and, therefore, by definition in Section 21710, Title 27 does not apply.

Wastewater

Based on crop requirements and agricultural suitability, wastewater gets mixed with irrigation water from Berrenda Mesa Canal or applied undiluted. Wastewater is stored in the wastewater ponds for up to two months, as it is metered into the irrigation system for application at agronomic rates. The water is pumped through sand filters before being applied to the wastewater application area via micro-irrigation, which consists of 1,460 acres of mature pistachio trees. The wastewater application area is owned by Global Ag. Global Ag co-signed the Form 200 that was submitted with the 2012 technical report.

GROUNDWATER CONDITIONS

Groundwater in the vicinity of the Plant is saline and generally of poor quality, which is characteristic of the west side of the San Joaquin Valley. The table below presents water quality data obtained from the *Water Quality Portal* database provided by the United States Geological Survey, National Water Quality Monitoring Council, and the United States Environmental Protection Agency for five wells in the vicinity of the Plant.

Parameter ¹	Well Identification				
	026S019E 25M001M	026S018E2 2C001M ²	026S018E2 3C001M ²	026S018E E21A001M	026S019E 12L001M
Well Depth	363	300	286	285	358
Sample Date	4/20/1930	8/5/1954 & 8/5/1955	8/5/1954 & 8/5/1955	8/5/1955	8/3/1954
EC	3,630	2,315	2,295	2,720	4,730
TDS	2,350	1,670	1,590	2,000	3,660
pH	--	7.8	7.9	7.8	8
Bicarbonate	200	205	210	220	150
Nitrate as N	--	4.63	8.36	5.2	2.71
Hardness	960	670	620	800	1,700
Calcium	200	102	94	110	360
Magnesium	110	104	95	130	190
Sodium	450	290	300	350	540
Potassium	--	3.1	2	3.2	6
Chloride	610	190	240	220	630
Sulfate	880	825	680	1,000	1,800
Boron	1.2	1.7	2.1	2.1	2.7

1. Well depth in feet below ground surface, EC in umhos/cm, pH in standard pH units.

All other parameters in mg/L.

2. Results are an average of the two sample dates.

REGULATORY CONSIDERATIONS

Basin Plan

The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition*, revised January 2004 (hereafter Basin Plan) designates beneficial uses, establishes narrative and numerical water quality objectives, contains implementation plans and policies for protecting all waters of the Basin, and incorporates, by reference, plans and policies of the State Water Resources Control Board (State Water Board). Pursuant to Water Code section 13263(a), these requirements must implement the Basin Plan.

The Basin Plan indicates the greatest long-term problem facing the entire Tulare Lake Basin is increasing salinity in groundwater, a process accelerated by man's activities and particularly affected by intensive irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until there is a long-term solution to the salt imbalance. The Central Valley Water Board encourages proactive management of waste streams by dischargers to control addition of salt through use, and has established an incremental EC limitation of 500 umhos/cm over source water or a maximum of 1,000 umhos/cm, as the measure of the permissible addition of salt constituents through use. In addition, discharges to areas that may recharge good quality groundwater shall not exceed an EC of 1,000 umhos/cm, a chloride content of 175 mg/L, or a boron content of 1.0 mg/L.

The Basin Plan allows an exception to the EC limit of source water plus 500 umhos/cm where the discharge exhibits a disproportionate increase in EC over the EC of source water due to unavoidable concentrations of organic dissolved solids from the raw food product, provided water quality objectives are met. The difference between the average total dissolved solids (TDS) and average fixed dissolved solids (FDS) concentrations in the effluent indicates approximately 38% of the EC could result from organic compounds. As such, the discharge meets the incremental EC limit exception of the Basin Plan. Although only one effluent sample has been analyzed for FDS, the ratio of FDS to TDS is consistent with effluent data from other similarly operated pistachio processing facilities in the Tulare Lake Basin. This Order requires the Discharger to monitor effluent FDS and TDS to verify the incremental EC limit continues to be applicable to this discharge.

Treatment and Control Practices

Horizon provides treatment and control of the discharge that incorporates: (a) pre-cleaning to remove leaves, twigs, and other debris, (b) annual removal of solids from the wastewater ponds, (c) organic loading rates consistent with EPA recommendations and unlikely to cause unacceptable groundwater degradation, (d) application of nitrogen at agronomic rates, and (e) hydraulic loading at rates to preclude standing water around the pistachio trees. In combination with the requirements of this Order, these treatment and control measures represent best practicable treatment and control (BPTC).

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

Constituents of concern that have the potential to cause degradation include, in part, nutrients and salts.

- a. For nitrogen, the limited processing and discharge season, significant depth of vadose zone, and direct application of the wastewater to the pistachio trees at agronomic rates should preclude degradation of groundwater by nitrates.
- b. For salinity, the EC of the discharge significantly exceeds the Basin Plan Limit of source water + 500 $\mu\text{mhos/cm}$ or a maximum of 1,000 $\mu\text{mhos/cm}$. However, the Basin Plan allows an exception for food processing industries that discharge to land and exhibit a disproportionate increase in the EC of the discharge due to unavoidable concentrations of organic dissolved solids from the raw food product.
- c. A high percentage of the inorganic portion of the discharge EC is from potassium, which is an important nutrient for pistachio trees. The limited processing and discharge season, significant depth of vadose zone, and limited migration of potassium in subsurface soils should preclude degradation of groundwater by potassium.
- d. The short processing and discharge season, best practicable treatment or control measures; depth to groundwater; low permeability of the alluvium; low precipitation and high evaporation; and blending wastewater with surface water that is much better quality than groundwater, should be protective of groundwater and prevent degradation or exceedance of groundwater limits.
- e. Groundwater in the vicinity of the Plant is saline and generally of poor quality since before 1968. The discharge allowed by this Order is not anticipated to further degrade groundwater quality.

This Order establishes groundwater limitations that do not authorize degradation over naturally occurring background quality.

Title 27

Unless exempt, the release of designated waste is subject to full containment pursuant to Title 27 requirements. Here, the discharge is exempt from the requirements of Title 27 pursuant to the wastewater exemption found at Title 27, section 20090(b). Title 27, section 21710(a) requires any person discharging or proposing to discharge solid waste to land where

water quality could be affected as a result of such discharge to submit to the regional water board a report of waste discharge. The seasonal land application of solids accumulated in the wastewater ponds will not affect the groundwater and, therefore, the application of the solids to the 400 acres of land is not subject to regulation by Title 27.

California Environmental Quality Act

The Plant has been in existence since at least 1990, as documented by a Building Permit Inspection Record from the Kern County Department of Planning and Development Services that was submitted with A & P's April 2003 information submittal. As indicated in Finding 1, the Discharger has submitted additional information in 2006, 2009, and 2012 updating the status of the Plant's continued operations. The limited processing and discharge season; significant depth of vadose zone consisting of inter-bedded sand, silts, and clays; agronomic application of nutrients in wastewater (except for potassium which has limited migration in subsurface soils); and annual removal of solid material from the wastewater ponds do not threaten to cause significant environmental impacts. No permits or discretionary actions on the part of Kern County were required for the Plant's expansions, as these expansions needed only ministerial approvals (at most) under the County's General Plan. Furthermore, due to resource constraints and the very limited threat that the Plant's operations pose to water quality, the Board only began its environmental review of the Plant and its potential to cause significant effects on the environment following the Discharger's 2012 submittal. These WDRs ensure that the operation of the Plant will not have any significant effects on the environment, authorize no additional expansion, and prohibit degradation of groundwater quality. As such, the action of prescribing these WDRs to this existing facility is exempt from the requirements of California Environmental Quality Act in accordance with California Code of Regulations, title 14, section 15301.

PROPOSED ORDER TERMS AND CONDITIONS

Discharge Prohibitions, Effluent Limitations, Discharge Specifications, and Provisions

The proposed Order prohibits discharge to surface waters and drainage courses.

The proposed Order sets the following effluent flow limits: a monthly average discharge of 2.3 mgd; a maximum daily discharge of 4.6 mgd; or a total annual discharge of 130 million gallons.

The proposed or specifies the pH of the discharge shall not be less than 4.5 or greater than 9.0 pH units through the length of each discharge season. After the comment period on the tentative Waste Discharge Requirements closed, the Discharger expressed concern with complying with this limit. In order for the effluent limit range for pH be revised, the Discharger shall submit a technical report justifying how the revision will not degrade or threaten to degrade groundwater quality. Central Valley Water Board would consider any justified change through amendment of this Order.

The proposed Order also requires the Discharger to provide a demonstration the Plant and wastewater ponds are designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency

To address the potential for the discharge to impact groundwater quality due to organic loading or the creation of nuisance conditions, the proposed Order will set a BOD cycle average loading limit to the wastewater application area of 100 lbs/acre/day. During the comment period, the Discharger requested the BOD loading specification be increased to 300 lbs/acre/day and referenced US EPA No. 625/3-77-007 as justification. However, US EPA publication No. 625/3-77-007 indicates an increase in BOD loading above 100 lbs/acre/day would not cause odor and nuisance conditions and not necessarily be protective of groundwater quality. In order for the BOD loading specification to be revised, the Discharger shall submit a technical report justifying how the revision will not degrade or threaten to degrade groundwater quality. Central Valley Water Board would consider any justified change through amendment of the adopted Order.

In addition, application of waste constituents to the wastewater application area shall be at reasonable agronomic rates to preclude creation of a nuisance or degradation of groundwater, considering the crop, soil, climate, and irrigation management system. The annual nutritive loading of the wastewater application area, including the nutritive value of organic and chemical fertilizers and of the wastewater, shall not exceed the annual crop demand, except for potassium.

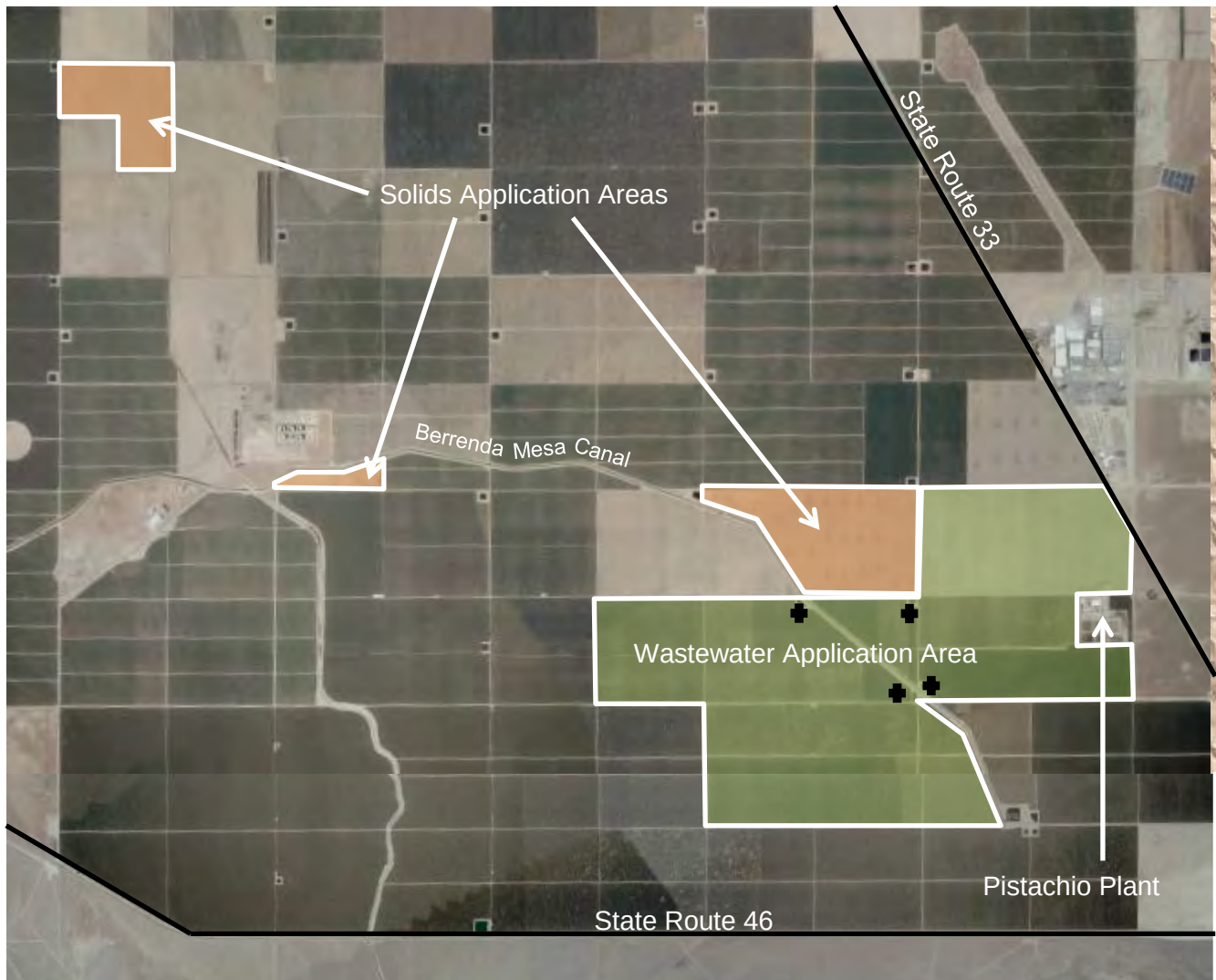
Monitoring Requirements

Water Code section 13267 authorizes the Central Valley Water 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. Water Code section 13268 authorizes the assessment of administrative civil liability for failure to submit required monitoring and technical reports.

The proposed Order includes monitoring requirements for effluent wastewater, source water, solids removed from the wastewater ponds, and soils within the Solids Application Area. In addition, the proposed Order requires monitoring of the wastewater and solids loading calculations for organics, nutrients, and salts. This monitoring is necessary to characterize the discharge, and evaluate compliance with effluent limitations and discharge specifications prescribed in the Order.

Reopener

The conditions of discharge in the proposed Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. It may be appropriate to reopen the Order if new technical information is provided or if applicable laws and regulations change.



✚ Irrigation Reservoir

Drawing Reference:
**EMIGRANT HILL AND SHALE
 POINT QUADRANGLES**
 U.S.G.S TOPOGRAPHIC MAP
 7.5 MINUTE QUADRANGLE
2012
Not to scale

ATTACHMENT A - SITE LOCATION MAP
 WASTE DISCHARGE REQUIREMENTS
 ORDER R5-2013-0006
 HORIZON NUT, LLC
 GLOBAL AG PROPERTIES USA, LLC
 PISTACHIO PROCESSING PLANT
 KERN COUNTY

