CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2018-0005

WASTE DISCHARGE REQUIREMENTS

FOR
PRIMEX FARMS, L.L.C.
WASCO PISTACHIO PROCESSING FACILITY>
KERN COUNTY

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

1. On 10 May 2013, Erwin Engineering submitted a Report of Waste Discharge (RWD) on behalf of Primex Farms, L.L.C. (hereafter Primex or Discharger) that describes operations at its Wasco pistachio processing facility (Facility) in Kern County.

2. The Facility is at 16070 Wildwood Avenue, about five miles west/southwest of the community of Wasco in Kern County as shown on Attachment A, which is attached hereto and made part of this Order by reference. The Facility is in the northern half of Section 19, T27S, R24E, MDB&M and is owned by a Mr. Ali Amin of Los Angeles, California.

3. The Primex Facility was constructed and began operations in 2002 and includes offices, a warehouse, three dryers, five rows of silos, about 2 acres of solar panels, and associated parking areas, as shown on Attachment B, which is attached hereto and made part of this Order by reference. Two ½-acre unlined retention ponds are present in the northeast corner of the Facility. The northern pond is primarily a storm water pond, while the southern pond is used for the temporary storage of wastewater prior to discharge to the land application areas.

4. A review of aerial photographs dating from 1994 to October 2016 documents the construction and growth of the Facility. In May 1994 the property is vacant and appears to be agricultural land. In May 2004, the main office/warehouse building is visible just west of Wildwood Avenue with one row of storage silos (8 individual silos) visible along the then northern Facility boundary, and a single nut off-loading area east of the silos. The Facility occupied about 27 acres at that time (not including the land application areas) and included a storm water /wastewater retention pond at the then northeast corner of the property. This pond is now the southern most of the two storage ponds onsite and is used to store wash/rinse wastewater and storm water. In August 2006, a second row of storage silos and a third partial row are visible south of the existing row of storage silos, and a second pistachio off-loading area is present directly north of the previous offloading area. The Facility expanded between 2004 and 2006 as another 13 acres along the northern side of the property was added increasing the total acreage of the Facility to about 40 acres. The Facility appears relatively unchanged until August of 2012, when two new rows of silos were added to the north of the existing silos and what appears to be a third nut off-loading area is

present north of the existing offloading structures. A second retention pond (i.e., storm water) is also now visible at the northeast corner of the site, but it does not appear to contain any water at the time.

Existing Facility and Discharge

5. Central Valley staff inspected the Facility in July 2017, prior to the processing season, and again in September 2017 during the processing season. The Facility generates wastewater during the six to seven week pistachio processing season that typically extends from August through September or about 50 days.

6. Primex has been sampling its discharge of pistachio processing wastewater since 2002, and submits annual reports summarizing the results. However, the September 2017 inspection revealed there are actually two separate waste streams generated from the processing of the pistachios. The first waste stream (the one that Primex has been sampling since 2002) is the direct process wastewater from the hulling, washing, and sorting of the raw pistachios as the pistachios arrive at the Facility. The second waste stream is wash/rinse water from the cleaning of the processing equipment and storage silos, as well as any storm water runoff that collects on-site. Primex discharges both wastewaters to the land application areas, but they are not blended together and the Discharger had not sampled the wash/rinse wastewater prior to September 2017.

7. Pistachio processing wastewater is generated from the washing and hulling of raw pistachios. The pistachios are delivered to the Facility in bottom dump trailers, offloaded, and sent to a pre-cleaner to remove leaves, twigs, and branches. The pistachios are then conveyed to a huller and then on to a wash tank for washing and rinsing. Following washing, the pistachios are conveyed to dryers, and then to the silos for storage and subsequent packaging.

8. Process wastewater is discharged via floor drains and gravity flows to a sump inside the Facility, from which it is pumped over a vibrating screen to remove solids. The process wastewater is then discharged directly to about 230-acres of farmland (land application areas) owned by Primex that are adjacent the Facility to the north and east (Attachment B). The majority of the land application area acreage (~ 195 acres) is currently planted with pistachio trees, with an approximately 35 acre parcel that is fallow at this time.

9. Primex submits annual wastewater and soil self-monitoring reports that contain analytical results of the process wastewater, but not the wash/rinse wastewater stored in the southern retention pond. The volume of the process wastewater discharged directly to the land application areas from 2012 through 2016 is summarized in the following table. The average value is the first number shown, and the range of the values is listed in parentheses below.

Table 1 – Volume of Process Wastewater Discharged

Total Flow Millions of Gallon	Days of Discharge Days	Daily Average mgd[1]
56.7 (22.4 – 77.9)	46 (35 - 50)	1.27 (0.45 - 1.95)

1. mgd = million gallons per day/

10. The averages of process wastewater monitoring are shown in Table 2. The nitrogen (all forms), electrical conductivity (EC), total dissolved solids (TDS), pH, biochemical oxygen demand (BOD), and potassium values are from 2011 through 2016, while samples for volatile dissolved solids (VDS), fixed dissolved solids (FDS), chloride, and sodium are from samples collected since the 2014 processing season. The pH value shown is the median value.

Table 2 – Process Wastewater Results

Constituent	Units[1]	Result
Nitrate as Nitrogen	mg/L	7.5
Total Kjeldahl Nitrogen	mg/L	241
Total Nitrogen	mg/L	249
Electrical Conductivity	umhos/cm	2,787
Total Dissolved Solids	mg/L	3,423
Volatile Dissolved Solids	mg/L	1,505
Fixed Dissolved Solids	mg/L	3,058
Biochemical Oxygen Demand	mg/L	3,569
pH	s.u.	5.3
Chloride	mg/L	264
Potassium	mg/L	827
Sodium	mg/L	166

1. mg/L = milligrams per liter; umhos/cm = micromhos per centimeter; s.u. = Standard pH units.

11. A sample of the wash/rinse wastewater was collected on 8 September 2017, as part of the inspection conducted at the Facility during the 2017 processing season. The results are summarized in the following table.

Table 3 – September 2017 Wash/Rinse Wastewater Results

Constituent	Units[1]	Result
Nitrate as Nitrogen	mg/L	nd
Total Kjeldahl Nitrogen	mg/L	8.8
Total Nitrogen	mg/L	8.8
Electrical Conductivity	umhos/cm	1,300
Total Dissolved Solids	mg/L	780
Fixed Dissolved Solids	mg/L	570
Volatile Dissolved Solids	mg/L	200

Table 3 – September 2017 Wash/Rinse Wastewater Results

Constituent	Units[1]	Result
Total Alkalinity	mg/L	170
Bicarbonate	mg/L	190
Boron	ug/L	110
Calcium	mg/L	23
Chloride	mg/L	280
Magnesium	mg/L	6.7
Potassium	mg/L	60
Sodium	mg/L	200
Sulfate	mg/L	nd

1. mg/L = milligrams per liter; umhos/cm = micromhos per centimeter; ug/L = micrograms per liter.

12. The results of the wash/rinse wastewater sampling summarized in Table 3 for nitrogen, EC, and TDS show significantly lower results than the same constituents in the process wastewater. Sodium and chloride however, are higher. If blended with the process wastewater, the overall EC, TDS, and total nitrogen results would likely decrease, but the chloride and sodium results may increase.

13. The results of the process wastewater monitoring summarized in Tables 1 and 2, indicate a high strength wastewater with average EC, TDS, and chloride values that are in excess of secondary maximum contaminant levels (MCLs). The Annual reports submitted by Primex list the nitrogen and salt loading for the given year. It should be noted that these loading estimates do not include the volume or the quality of the wash/rinse wastewater that is discharged to the land application areas as well. Based on the results of the one sample shown in Table 3 above, it would appear the wash/rinse wastewater would dilute the wastewater and lower the nitrogen and salt loading rates from the discharge of the pistachio process wastewater discharge. The estimated loadings from the application of the process wastewater only is shown in Table 4.

Table 4 – Process Wastewater Loading Estimates

Year	Biochemical Oxygen Demand lbs/ac/day[1]	Nitrogen lbs/ac/yr[2]	Total Dissolved Solids lbs/ac/yr[2]	Fixed Dissolved Solids lbs/ac/yr[2]	Potassium lbs/ac/yr
2011	237	571	4,875	3,168	2,430
2012	196	440	3,065	2,054	1,504
2013	201	455	3,787	2,537	1,625
2014	165	428	8,380	5,315	1,425
2015	69	219	3,612	2,381	741
2016	259	880	14,406	10,058	2,872
Averages	175	499	6,354	4,252	1,692

1. lbs/ac/day = pounds per acre per day.
2. lbs/ac/yr = pounds per acre per year.

14. The average BOD loading exceeds the limit of 100 pounds per acre per day (lbs/ac/day) typically used as a BOD limit for the discharge of food processing wastewater (see finding 29). However, considering the short duration of the discharge (typically about 44 days) followed by no discharge for over 300 days, and a depth to water that is on the order of 350 feet below the ground surface (bgs), the discharge appears unlikely to threaten the quality of the underlying groundwater. The Discharger does allow a minimum seven day resting period between its wastewater applications. Wastewater is screened and discharged to approximately 20-acre cells, and then allowed to rest for 7 to 14 days before the wastewater is applied to the same cell again.

15. Nitrogen loading is excessive and exceeds the amounts that could be removed by pistachio trees. According to UC Davis, pistachios have an “on” year where they can utilize more nitrogen, and “off” years where the nitrogen uptake is less. Pistachios can utilize from about 200 to 225 pounds per acre per year (lbs/ac/yr) in an on year and from 100 to 113 lbs/ac/yr during an off year. On average, a pistachio orchard has the ability to utilize about 188 lbs/ac/yr.

16. The salt load calculated using FDS results is high, but considering the saline nature of groundwater and the short duration of the discharge, discharges of less than 3,000 lbs/ac/yr would be acceptable. The loading rate was, however, higher than 3,000 lbs/ac/yr in 2014, and the 10,058 lbs/ac/yr loading rate in 2016 was over three times the typical salt loading rate for a food processing discharge.

17. The discharge in 2016 resulted in very high loadings to the land application area. While the loading estimates only include the discharge of the process wastewater, and including the wash/rinse water discharge will likely lower the loadings, the values presented in the annual reports are excessive. The causes of the high loadings are thought to be the result of Primex processing its largest crop in 2016 along with Primex introducing water conservation measures (changing nozzles to reduce the amount of potable water used, etc.). For comparison, in 2011 Primex produced 17,895 tons of pistachios and discharged an average of 1.95 mgd of wastewater to the land application areas. In 2016, Primex produced 29,271 tons of pistachios, but discharged and average of 1.44 mgd or only 74 percent of the wastewater produced in 2011. The end result is that the discharge becomes more concentrated as less water is used.

18. Erwin Engineering conducts annual soil sampling on behalf of Primex and submits Soil Sampling reports. The results since 2014 are summarized in Table 5.

Table 5 – Annual Soil Sampling Results

Date	Boring No.	Depth feet bgs[1]	pH s.u.[2]	Electrical Conductivity umhos/cm[3]	Sodium mg/kg[4]	Potassium mg/kg[4]	Total Nitrogen mg/kg[4]
2014	B-1	1.5	7.8	2100	398	292	443
	B-1	4.5	7.9	1400	262	198	366
	B-2	1.5	8.0	2000	377	200	379
	B-2	4.5	8.1	2400	435	212	448
	B-3	1.5	8.2	2200	391	328	441
	B-3	4.5	8.1	2800	499	172	436
2015	B-1	2	7.5	1500	262	312	374
	B-1	4	7.9	1600	177	106	295
	B-2	2	7.8	1500	166	642	378
	B-2	4	8.2	1600	143	184	293
	B-3	2	8.0	2200	285	788	544
	B-3	4	7.9	1900	251	90	591
2016	B-1	2	7.3	210	---	---	540
	B-1	4	7.5	170	---	---	368
	B-2	2	7.6	200	---	---	370
	B-2	4	7.7	240	---	---	298
	B-3	2	7.4	250	---	---	387
	B-3	4	7.5	170	---	---	230
2016	B-4	2	7.9	140	---	---	224
	B-4	4	8.1	130	---	---	292

1. feet bgs = feet below the ground surface.
2. s.u. = standard pH units.
3. umhos/cm = micromhos per centimeter.
4. mg/kg = milligram per kilogram.

All of the soil samples are collected from within the smaller 35-acre land application area and none represent background soil conditions. This Order will require soil sampling over the entire acreage that makes up the land application areas and will include at least two background soil sampling locations. Still, the results show the acidic pH of the discharge has not significantly changed the alkaline nature of the soil. Additionally, the majority of the samples have lower values for the deeper samples, indicating attenuation of the discharge as it travels through the root zone.

Solids Handling/Composting Facility

19. An 8-acre solids-handling/composting facility is present adjacent and east of the 35-acre land application area (Attachment B). Solids removed during the washing and pre-cleaning of the raw pistachios and the screened solids are composted on the 8-acre parcel and then used off-site as a soil amendment or cattle feed. Pistachio shells are stored on the 8 acres as well, and are sold for various uses such as an additive for concrete.

Modifications to the Disposal System

20. The results of wastewater sampling presented in Tables 2 and 3 indicate that the current discharge of pistachio processing wastewater threatens to violate Effluent Limitation B.2 and Land Application Area Specifications E.2 and E.5 of WDRs Order R5-2018-0005.

21. During the 8 September 2017 Inspection conducted by Central Valley Water Board staff, Primex staff and its consultant, Mr. Mike Erwin of Erwin Engineering, proposed several alternative disposal options that included:

    a. Adding additional land to the land application areas,

    b. Changing the existing cropping patterns, and/or

    c. Lining the existing retention pond, and plumbing the Facility so both waste streams discharge and co-mingle in the lined pond, prior to discharge to the land application areas.

22. This Order includes Provision G.12 that requires the Discharger to measure all of the wastewater discharges from the Facility to the land application areas by the start of the 2018 pistachio processing season. In addition, this Order includes Provision G.13 with a time schedule for the Discharger to submit a Work Plan that proposes methods to store and discharge the wastewaters to the land application areas at agronomic rates that will be protective of the underlying groundwater.

Other Considerations for Food Processing Waste

23. Excessive application of food processing wastewater to land can create objectionable odors, soil conditions that are harmful to crops, and unreasonably degrade underlying groundwater. It is reasonable to expect some attenuation of various waste constituents that percolate below the root zone within the vadose (unsaturated) zone. Specifically, excess nitrogen can be mineralized and denitrified by soil microorganisms, organic constituents (measured as both BOD and volatile dissolved solids) can be oxidized, and the cation exchange capacity of the soil may immobilize some salinity constituents.

24. Unless groundwater is very shallow, groundwater degradation with nitrogen species such as ammonia and nitrate can be prevented by minimizing percolation below the root zone of the crops and ensuring that the total nitrogen load does not exceed crop needs over the course of a typical year. Where there is sufficient unsaturated soil in the vadose zone, excess nitrogen can be mineralized and denitrified by soil microorganisms.

25. The loading estimates indicates the discharge will add an average of about 480 lbs/ac/yr of total nitrogen to the land application areas. The land application areas are planted with pistachios that can remove an average of about 190 lbs/ac/yr. The Discharger needs to apply wastewater at agronomic rates based on the type of

crop, soils, and climatic conditions of the area. This Order contains Land Application Area Specification E.2 that requires the application of waste constituents to the land application areas shall be at reasonable agronomic rates to preclude creation of a nuisance and unreasonable degradation of groundwater, considering the crop, soil, climate, and irrigation management system. The Discharger shall achieve compliance with this limit in accordance with the Time Schedule presented in Provision G.13.

26. Food processing wastewater may contain elevated concentrations of TDS resulting from the products or materials used for production. Typically, a percentage of the TDS is organic, which will generally decompose into its component elements of carbon, hydrogen and oxygen that can be utilized by plants and microorganisms in the soil. In contrast, the FDS is primarily that portion of the TDS that consists of inorganic constituents, which can accumulate in the soil. Excessive salts may leach to groundwater where they will degrade and could pollute groundwater quality. Growing and harvesting crops provides a means to remove some of these constituents, particularly calcium, magnesium, potassium, phosphorus, nitrate, and ammonia.

27. Irrigation with high strength wastewater can result in high BOD loading on the day of application. If the rate of oxygen transfer into the soil is not adequate, anaerobic or reducing conditions may result and lead to nuisance conditions. In addition, anaerobic conditions in soil can cause dissolution and leaching of some metals and increase groundwater alkalinity. The maximum BOD loading rate that can be applied to land without creating the conditions described above can vary significantly depending on soil conditions and operation of the land application system.

28. *Pollution Abatement in the Fruit and Vegetable Industry*, published by the United States Environmental Protection Agency, cites BOD loading rates in the range of 36 to 600 lbs/acre-day to prevent nuisance, but indicates the loading rates can be even higher under certain conditions. The studies that supported this report did not evaluate actual or potential groundwater degradation associated with those rates. There are few studies that have attempted to determine maximum BOD loading rates for protection of groundwater quality. Those that have been done are not readily adapted to the varying soil, groundwater, and climate conditions that are prevalent throughout the region.

29. The California League of Food Processor's (CLFP) Manual of Good Practice for Land Application of Food Processing/Rinse Water proposes risk categories associated with particular BOD loading rate ranges as follows:

    a. Risk Category 1: (less than 50 lbs/acre/day; depth to groundwater greater than 5 feet) Indistinguishable from good farming operations with good distribution important.

b. Risk Category 2: (less than 100 lbs/acre/day; depth to groundwater greater than 5 feet) Minimal risk of unreasonable groundwater degradation with good distribution more important.

c. Risk Category 3: (greater than 100 lbs/acre/day; depth to groundwater greater than 2 feet) Requires detailed planning and good operation with good distribution very important to prevent unreasonable degradation, as well as use of oxygen transfer design equations that consider site specific application cycles and soil properties and special monitoring.

The Manual of Good Practice recommends allowing a 50 percent increase in the BOD loading rates in cases where sprinkler irrigation is used, and recommends that additional safety factors be used for sites with heavy and/or compacted soils. Although it has not been subject to a scientific peer review process, the Manual of Good Practice provides science-based guidance for BOD loading rates that, if fully implemented, may be considered best management practices to help prevent groundwater degradation due to reducing conditions.

30. The cycle average BOD loading rates for the discharge of pistachio processing wastewater to the land application areas indicates BOD cycle loading rates that range from 69 to 259 lbs/ac/day. The typical BOD limit for the discharge of food processing wastewater is 100 lbs/ac/day, which the discharge will often exceed. However, this Order includes Provision G.13 that includes a time schedule for the Discharger to submit a work plan and make improvements to the disposal system to ensure wastewater is applied to the land application areas at agronomic rates. Should the Discharger demonstrate a higher BOD loading rate would be protective of the underlying groundwater quality, then this Order could be reopened and a new BOD limit would be considered.

Site-Specific Conditions

31. The site elevation is about 275 feet above mean seal level and the natural land surface slopes gently to the northwest. Surface water drainage in the area is by sheet flow to natural or manmade drainages then to the valley floor. The closest natural surface water is the Jersey Slough, which is about 5 miles southwest of the Facility. According to Federal Emergency Management Agency (FEMA), the Facility is outside of the 100-year return frequency flood zones.

32. According to the Web Soil Survey published by the United States Department of Agriculture, Natural Resources Conservation Service, soils underlying the Facility and the land application area are made up predominantly of the Garces silt loam (70%) and the Kimberlina fine sand (27%).

33. The Garces silt loam is described as well drained and a Class 3s soil that has severe limitations that reduce the choice of plants or that require special conservation practices, or both. The “s” subclass indicates the soil is limited mainly because it is

shallow, droughty, or stony. The Kimberlina fine sand is described as well drained and a Class 1 soil that has few limitations that restrict its use.

34. The area is characterized by hot dry summers and cooler, humid winters. The rainy season generally extends from November through March. Average annual precipitation is about 6.5 inches and annual evapotranspiration data is 54.6 inches with monthly averages ranging from 1.3 inches in January and December to 8.1 inches in July (California Irrigation Management Information System (CIMIS) Shafter Station # 5). The 100-year, 24-hour maximum precipitation is about 2.9 inches, based on maps obtained from the Kern County Resource Management Agency, Engineering, Survey and Permit Services, Floodplain Management Section.

35. Land usage surrounding the Facility is primarily agricultural with a few commercial/industrial facilities present within five miles of the Facility. An almond hulling operation (Kernpareil Co-Op Huller) is present about a mile southwest of the Facility on the south side of Kimberlina Road. A dairy is present about 1.5 miles southeast of the Facility, and Wasco State Prison is about 2 miles northeast of the Facility. Water for the area is supplied by the Buttonwillow Irrigation District.

36. According to the Agricultural Land and Water Use Estimates, Kern County 2010, available on the California Department of Water Resources Land and Water Use web page, the primary crops grown in Kern County are field crops (alfalfa), pasture, almonds and pistachios, other deciduous (apples, apricots, cherries, peaches, nectarines, pears, plums, figs, walnuts, etc.), onions and garlic, corn, dry beans, cotton, and tomatoes.

Groundwater Conditions

37. Groundwater in the area is found primarily in two aquifers, an upper unconfined aquifer, and a deeper confined aquifer beneath the E Clay or the Corcoran clay. The depth to the Corcoran Clay is shown as being about 350 feet bgs in the vicinity of the Facility. However, the Facility sits near the eastern edge of a known shallow groundwater area with elevated EC levels (Department of Water Resources (DWR) 2000 and 2001).

38. The DWR's, *Kern Groundwater Basin, Spring 2010, Lines of Equal Depth to Water in Wells* shows depth to water at about 300 feet bgs in 2010 with a flow direction to the west. DWR groundwater elevation data was available for several wells, including 7 wells within 2.5 miles of the Facility. Four of the wells had depth to water data for 2017, one for 2015, one for 2013, and one with data from 2012. One well is located on the northwest corner of the Facility and the depth to water was listed as 347 feet bgs on 3/16/2017. The other three wells measured in 2017 had water depths ranging from 345 feet to 349 feet bgs. Those same wells had depths to water of around 280 feet bgs in 2012 indicating the groundwater level has dropped about 65 feet since 2012.

39. Primex gets its source water primarily from a 900 foot supply well designated Well No. 4. The depths to water was listed in the RWD at 268 feet bgs in Well No.4 in 2013. Supply water sample results from samples collected in 2016 and 2017 are summarized in Table 6.

Table 6 – Supply Well No. 4 Results

Well	Units	2016	2017
pH	Standard pH Units	8.1	8.0
Electrical Conductivity	Micromhos per centimeter	1500	1000
Sodium	Milligrams per liter	131	81
Chloride	Milligrams per liter	67	88
Nitrate as Nitrogen	Milligrams per liter	7.5	4.4
Total Kjeldahl Nitrogen	Milligrams per liter	na	7.2
Total Nitrogen	Milligrams per liter	na	12.6

40. The RWD in 2013 included some data for four supply wells designated Wells 1 through 4, but only wells No 2 and No.4 are used for water supply. Well No 4. described above, while Well No. 2 is reported to be 600 feet bgs. Well No. 2 is used as a backup to Well No. 4. The RWD indicated that in 2013 Primex obtained its source water from Wells No. 2 and No. 4 and provided the following data.

Table 7 – RWD Supply Well Data

Well	Units	Well No. 2	Well No. 4
EC	Micromhos per centimeter	1,090	238
TDS	Milligrams per liter	680	160
Nitrate	Milligrams per liter	23	3
Arsenic	Micrograms per liter	5.9	1.3

The values from Well No.4 have increased since 2013. This Order includes Provision G.16 that requires the Discharger to submit a work plan that proposes methods to evaluate the water quality in Well No. 4 and determine the cause of the increase in the results since 2013.

41. Regional groundwater quality data can be found on the United States Geological Survey (USGS) Water Quality Portal web site. Results from 81 groundwater wells ranging in depth from 16 feet to 820 feet bgs are reported to be within a five mile radius of the Facility. Three of the wells are shallow wells with depths of less than 20 feet bgs that were all sampled in June of 1989. The remaining wells range in depth from 200 to 820 feet in depth. The data set is comprised of samples collected from March 1950 to February 2006. The majority of the results (72 of 81 wells) were from the 1950's (March 1950 through August 1959) with nine wells being sampled from August 1979 through February 2006. The averages of the data are presented in the following tables. The average result is shown first, and the range of results is shown below in parentheses.

Table 8 – USGS Groundwater Results

Constituent	Units[1]	Result
Nitrate as Nitrogen	Milligrams per liter	2.2 (non-detect- 56)
Electrical Conductivity	Micromhos per centimeter	474 (141 – 4,620)
Total Dissolved Solids	Milligrams per liter	290 (76 – 3,560)
Chloride	Milligrams per liter	48 (4.5 – 570)
Boron	Micrograms per liter	170 (non-detect – 2,500)

42. The data indicates the spatial variability of the quality of the underlying groundwater with large differences between the minimum and the maximum values. The majority of the wells sampled in the 1950's had water quality that was less than water quality objectives, but results exceeding the MCLs for EC and TDS were reported in 13 of the 81 wells. The data indicates water quality in the region has exceeded the water quality objectives for EC, TDS, and chloride dating back 60 plus years into the early 1950's.

43. The USGS results also contained information relating to the shallow water zone identified by the DWR that is present to the west of the Facility. Three wells with wells depths of 16 to 19 feet bgs were sampled in June 1989 and are present from a mile northwest of the Facility to four miles west of the Facility. Results from the three shallow wells sampled in June 1989 are shown below.

Table 9 – USGS Shallow Groundwater Results

Well Number	Well Depth Ft. bgs[1]	DTW Ft. bgs[1]	Date Sampled	EC umhos/cm[2]	TDS mg/L[3]	Nitrate as Nitrogen mg/L[3]	Boron ug/L[4]
353329119303401	16	9.4	6/29/89	2,130	1,250	13.0	1,400
353119119282601	19	11.8	6/2/89	1,980	1,400	56.0	350
353515119272001	19	13.8	6/26/89	1,210	734	0.0	380

1. Ft. bgs = feet below the ground surface.
2. umhos/cm = micromhos per centimeter.
3. mg/L = milligrams per liter.
4. ug/L = micrograms per liter.

44. The data from the three shallow wells confirms that shallow groundwater is present to the west (depths of 16 to 19 feet bgs in 1989) and the shallow groundwater has elevated EC, TDS, and boron results that exceed the applicable water quality objectives.

Basin Plan, Beneficial Uses, and Regulatory Considerations

45. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition, revised July 2016* (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.

46. The Facility and land application areas are in the Semitropic Hydrologic Area (No. 558.70) of the South Valley Floor Hydrologic Unit, as depicted on hydrologic maps prepared by State Water Resources Control Board in August 1986. The discharge is to cropland, where drainage is expected to be contained onsite. The designated beneficial uses of Valley Floor Waters 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.

47. The Facility and land application areas are in Detailed Analysis Unit (DAU) No. 255 within the Kern County Basin hydrologic unit. The Basin Plan designates the beneficial uses of groundwater in this DAU as municipal and domestic supply, agricultural supply, industrial service supply, and wildlife habitat.

48. The Basin Plan includes a water quality objective for chemical constituents that, at a minimum, requires waters designated as domestic or municipal supply to meet the MCLs specified in Title 22. The Basin Plan's incorporation of these provisions by reference is prospective, and includes future changes to the incorporated provisions as the changes take effect. The Basin Plan recognizes that that the Regional Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.

49. The Basin Plan establishes narrative water quality objectives for chemical constituents, taste and odors, and toxicity. The toxicity objective, in summary, 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. Quantifying a narrative water quality objective requires a site-specific evaluation of those constituents that have the potential to impact water quality and beneficial uses.

50. 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 mechanism to carry salts out of the basin is established. To limit the degradation, the Basin Plan establishes several salt management requirements, including:

a. The incremental increase in salt from use and treatment must be controlled to the extent possible. The Tulare Lake Basin Plan effluent limit for EC limits the increase from a point source discharge to a maximum of 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. However, as indicated in Findings 41 through 44, regional groundwater quality has been highly variable since the 1950's and would not be characterized as good quality for all constituents. Groundwater results from both upgradient and downgradient of the Facility have had EC results that exceed 4,500 umhos/cm and TDS results that exceed 3,500 mg/L dating back to the 1950's. Chloride results exceeding 500 mg/L were reported as far back as 1955 and boron was reported as high as 2,500 ug/L. As such, the effluent limits for EC, chloride, and boron do not apply.

51. In addition, the Basin Plan allows for an exception for food processing industries that exhibit a disproportionate increase in EC in the discharge over the EC of the source water due to unavoidable concentrations of organic dissolved solids. Based on the EC and TDS results shown in Table 3, the Primex discharge qualifies for the Basin Plan exception to the EC limit for industrial wastewaters. Still, this Order contains Provision G.14 that requires Primex to submit a Salinity Management Plan that requires Primex to evaluate salinity sources in its discharge and provide recommendations for alternatives that will reduce the salt in the discharge.

52. In the absence of specific numerical water quality limits, the Basin Plan methodology is to consider any relevant published criteria. 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.

53. The Basin Plan also states that the water quality objectives contained therein do not require improvement over naturally occurring background groundwater quality. If background water quality exceeds the numeric objectives, then background water quality becomes the objective.

54. The list of crops in Finding 36 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.

55. Some salts are plant macronutrients (e.g., nitrogen, potassium, and phosphorus) and the threat to groundwater quality posed by these salts can be minimized through controlled use to irrigate crops at agronomic rates for these nutrients. Because nitrate and nitrate precursors are common constituents in food processing wastewater, either treatment to reduce the nitrogen content or reuse for crop irrigation are important methods to prevent exceedance of the water quality objective for nitrate in groundwater.

56. Chloride is an anion that moves readily through the soil column with percolation. It will not adsorb to soil as sodium can, and crop uptake of chloride is minimal for most crops. However, plants do take up chloride and excessive chloride in the soil and/or irrigation water can be toxic to crops. Crop sensitivity to chloride varies greatly, but leaching is often used to control chloride to keep crop land in production. Leaching, whether intentional or not, can degrade groundwater quality and may cause water quality objectives for chloride to be exceeded.

Special Considerations for Salt and Nitrate Discharges

57. Many surface waters and local groundwater supplies have been degraded with salt. In some areas, the high salinity is naturally occurring, but in many areas it is due to the acts of man. In 2006, the Central Valley Water Board, the State Water Board, and stakeholders began a joint effort to address salinity and nitrate problems in the region and adopt long-term solutions that will lead to enhanced water quality and economic sustainability.

58. The Central Valley Water Board is developing amendments to the Basin Plan to incorporate new strategies for addressing ongoing salt and nitrate accumulation in the waters and soils of the Central Valley. Strategies currently under consideration may:

    - Alter the way the Board calculates available assimilative capacity for nitrate, which could result in new or modified requirements for nitrate management;
    - Require dischargers to implement actions identified under an interim salinity permitting approach; and/or
    - Establish alternate compliance approaches that would allow dischargers to participate in efforts to provide drinking water to local communities in consideration for longer compliance time schedules.

    Should the Board adopt amendments to the Basin Plan to effectuate such strategies, these waste discharge requirements may be amended or modified to incorporate any newly-applicable requirements.

59. The stakeholder-led Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative has been coordinating efforts to implement new salt and nitrate management strategies. The Board expects dischargers that may be affected by new salt and nitrate management policies to coordinate with the CV-SALTS initiative.

Antidegradation Analysis

60. State Water Resources Control Board Resolution 68-16, the Policy with Respect to Maintaining High Quality Waters of the State (State Antidegradation Policy) prohibits the Board from authorizing the degradation of high-quality water unless it has been shown that:

    a. The degradation will not unreasonably affect present and anticipated beneficial uses;

    b. 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;

    c. The discharger employs best practicable treatment or control (BPTC) to minimize degradation; and

    d. The degradation is consistent with the maximum benefit to the people of the state.

61. Constituents of concern that have the potential to cause degradation of the underlying groundwater include, in part, organics, nutrients, and salts. However, the discharge is not expected to cause groundwater to exceed water quality objectives because:

    a. Organic loading rates of the existing discharge are high (average cycle average BOD loading rate since 2011 is 175 lbs/ac/day), which exceeds the typical limit of 100 lbs/ac/day used for the discharge of food processing wastewater. The Discharger does allow resting periods between its wastewater applications. Wastewater is screened and discharged to approximately 30-acre cells, and then allowed to rest for a minimum of 7 days and up to 14 days before the wastewater is reapplied to the same cell. This Order includes Discharge Specification E.3 that limits the average BOD cycle loading to 100 lbs/ac/day. The discharge will likely not initially comply with the average BOD cycle loading rate of 100 lbs/ac/day, so this Order includes Provision G.13 that provides a time schedule that the requires the Discharger to submit a Work Plan with proposed improvements to the disposal system (i.e., more land, different cropping patterns, lined ponds) so the discharge will be at agronomic rates.

    b. For nitrogen, this Order limits the application of wastewater to agronomic rates for both nutrient and hydraulic loading. Total nitrogen loading estimates indicate the discharge on an average adds 499 lbs/ac/yr of nitrogen to the soil. The land application area is planted with pistachio trees, which can utilize about 188 lbs/ac/yr, which is much less than the pistachio orchard can utilize.

       In order to ensure that the discharge will not result in further groundwater degradation, this Order requires that nitrogen loading to the land application areas be at reasonable agronomic rates, and includes Provision G.13 as

discussed above, and this Order also includes Provision G.15 that requires the Discharger to submit a Nutrient and Wastewater Management Plan to assess and implement measures to ensure nutrient is applied at agronomic rates. The Central Valley Water Board expects that application of wastewater and fertilizers at reasonable agronomic rates for nitrogen will preclude further degradation/pollution of groundwater for nitrate as nitrogen.

c. For salinity, the Basin Plan allows for an exception to the effluent EC limits contained therein for food processing industries that exhibit a disproportionate increase in EC in the discharge over the EC of the source water due to unavoidable concentrations of organic dissolved solids. The TDS of a clean water discharge is typically about 60 to 70 percent of the EC result. As shown in Table 3, the average TDS result (4,563 mg/L) is considerably higher than the average EC result (2,966 umhos/cm). This Order contains Provision G. 14 that requires the Discharger to submit a Salinity Management Plan that requires the Discharger to evaluate salinity sources in its discharge and provide recommendations for alternatives that will add less salt to the discharge.

Treatment and Control Practices

62. Primex provides treatment and control of the discharge that incorporates:

a. Removal of solids at the Facility before discharge to the land application areas. Solids will be composted and used as a soil amendment;

b. Application of wastewater at rates that will not allow wastewater to stand for more than 48 hours;

c. Resting periods between wastewater applications;

d. At least daily inspection of the land application areas during times of discharge of blended wastewater and/or irrigation water;

e. Preparation of a Salinity Management Plan to evaluate potential methods to reduce the salinity of its discharge;

f. Preparation of Nutrient Management Plan to evaluate the nutrient load of the discharge and how to best manage its application,

g. Preparation of a Work Plan to evaluate and recommend modifications to the wastewater treatment and disposal system; and

h. Annual reporting requirements that measure the salt, BOD, and nitrogen loadings to the land application areas.

63. These Treatment and Control Practices are reflective of BPTC of the discharge.

Antidegradation Conclusions

64. This Order contains Effluent Limitation B.1 that limits the average daily discharge to 1.5 mgd of wastewater to the unlined retention pond and the land application areas during the processing season (typically August through September). This Order also contains Land Application Area Specification E.2 that limits the discharge to agronomic rates for the types of crops grown. The Discharger will be unlikely to immediately comply with the requirements contained in Land Application Area Specification E.2 that limits the discharge to agronomic rates for the types of crops grown, so this Order contains Provision G.13 that includes a time schedule for the Discharger to submit a work plan and make improvements to the disposal system to ensure wastewater is applied to the land application areas at agronomic rates.

65. Economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State and, therefore, sufficient reason exists to accommodate growth and limited groundwater degradation around the Facility, provided that the terms of the Basin Plan are met. Degradation of groundwater by some of the typical waste constituents released with discharge from a pistachio processor after effective source reduction, treatment, and control, and considering the best efforts of Primex and magnitude of degradation, is of maximum benefit to the people of the State. Primex contributes to the economic prosperity of the region by directly employing 300 workers at the Facility during the processing season and 180 workers in the offseason, provides incomes for numerous surrounding pistachio growers and associated trucking firms, agricultural service firms, and provides a tax base for local and county governments. Economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State and, therefore, sufficient reason to accommodate growth and limited groundwater degradation provided terms of the Basin Plan are met.

Other Regulatory Considerations

66. In compliance with Water Code section 106.3, it is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.

67. Based on the threat and complexity of the discharge, the Facility is determined to be classified as 2B 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 B complexity, defined as: "Any discharger not included [as Category A] that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal) or any Class 2 or Class 3 waste management units."

68. 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.
>
> ***

69. 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 will be in compliance with the Basin Plan, and;

c. The treated effluent discharged to the land application areas does not need to be managed as hazardous waste.

70. The discharges to the unlined retention pond does not meet the requirements of Title 27 section 20090, subsections (a) or (b). Provision G.13 of this Order requires the Discharger to demonstrate how it will modify its disposal operations to meet the preconditions for exemption from Title 27 or how the Discharger will line its wastewater disposal systems to comply with the containment requirements of Title 27.

71. 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.

72. The technical reports required by this Order and the attached Monitoring and Reporting Program R5-2018-0005 are necessary to ensure compliance with these waste discharge requirements. Primex Farms, LLC owns and operates the Facility that discharges the waste subject to this Order.

73. The California Department of Water Resources sets standards for the construction and destruction of groundwater wells (hereafter DWR Well Standards), as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981). These standards, and any more stringent standards adopted by the state or county pursuant to Water Code section 13801, apply to all monitoring wells used to monitor the impacts of wastewater storage or disposal governed by this Order.

74. The May 2013 RWD included a notation that Kern County had exempted the proposed project from CEQA in 2002 as it was an existing facility and that the land usage for the land application areas (agriculture) would remain in agricultural production.

75. This Order implements measures necessary to mitigate any adverse impacts to groundwater from the Facility to less than significant levels, including:

    a. Flow Limitation B.1, which restricts the daily average flow/discharge during the pistachio processing season to 1.5 mgd;

    b. Discharge Specification C.1, which stipulates that no waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of groundwater limitations;

    c. Discharge Specification C.2, which stipulates that wastewater storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050.

    d. Groundwater Limitation D.1.a and b that stipulates that a release of waste constituents from any treatment unit, storage unit, delivery system, or land application area associated with the Facility shall not cause or contribute to the underlying groundwater to contain nitrate as nitrogen greater than 10 mg/L, and for constituents identified in Title 22, the MCLs quantified therein, or natural background quality, whichever is greater.

    e. Land Application Area Specifications E.2, which stipulates that the application of waste constituents to the land application areas shall be at reasonable agronomic rates to preclude creation of a nuisance or unreasonable degradation of groundwater, considering the crop, soil, climate, and irrigation management system. The annual nutritive loading of the land application areas, including the

nutritive value of organic and chemical fertilizers and of the wastewater shall not exceed the annual crop demand.

76. 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.

Public Notice

77. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge.

78. 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.

79. All comments pertaining to the discharge were heard and considered in a public hearing.

IT IS HEREBY ORDERED that pursuant to Water Code sections 13263 and 13267, Primex Farms, 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 hazardous wastes, as that term is defined in California Code of Regulations, title 22, section 66261.1 *et seq*., is prohibited.

3. Bypass of untreated wastes or partially treated wastes, except as allowed by Provision E.2 of Standard Provisions and Reporting Requirements for Waste Discharge Requirements, dated 1 March 1991, is prohibited.

4. Discharge of wastewater in a manner or location other than that described in the report of waste discharge and herein is prohibited.

5. The discharge of wastewater not authorized by this Order, other than domestic wastewater to a septic system, is prohibited.

6. Discharge of toxic substances into the wastewater treatment system or land application areas such that biological treatment mechanisms are disrupted is prohibited.

7. Discharge of domestic wastewater to the wastewater pond, land application area, or any surface waters is prohibited.

8. Discharge of process wastewater to the domestic wastewater treatment system (septic system) is prohibited.

B. Flow Limitations

1. During the processing season (typically mid-August through September or about 50 days a year), the monthly average discharge flow of wastewater to the retention pond and land application areas shall not exceed a season average of 1.5 mgd. The volume shall be determined at DIS-01 and DIS-02 as described in Monitoring and Reporting Program R5-2018-0005.

C. Discharge Specifications

1. No waste constituent shall be released, discharged, or placed where it will cause a violation of the Groundwater Limitations of this Order.

2. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050.

3. The discharge shall remain within the permitted waste treatment/containment structures and land application areas at all times.

4. The treatment, storage, and disposal areas 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 total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.

5. Objectionable odors shall not be perceivable beyond the limits of the property where the waste is generated, treated, and/or discharged at an intensity that creates or threatens to create nuisance conditions.

6. The Discharger shall operate and maintain all ponds 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). As a means of management and to discern compliance with this requirement, the Discharger shall install and maintain in each pond a permanent staff gauge with calibration marks that clearly show the water level at design capacity and enable determination of available operational freeboard.

7. Wastewater treatment, storage, and disposal ponds or structures 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 total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.

8. On or about **1 October** of each year, available capacity shall at least equal the volume necessary to comply with Discharge Specifications E.7 and E.8.

9. All ponds and open containment structures shall be managed to prevent breeding of mosquitoes. Specifically:

    a. An erosion control program shall be implemented to ensure that small coves and irregularities are not created around the perimeter of the water surface.

    b. Weeds shall be minimized through control of water depth, harvesting, or herbicides.

    c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

    d. The Discharger shall consult and coordinate with the local Mosquito Abatement District to minimize the potential for mosquito breeding as needed to supplement the above measures.

10. 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.

D. Groundwater Limitations

1. Release of waste constituents from any treatment unit, storage unit, delivery system, or land application area associated with the Facility shall not cause or contribute to groundwater containing concentrations of constituents identified below, or natural background quality, whichever is greater.

    a. Nitrate as nitrogen of 10 mg/L.

    b. For constituents identified in Title 22, the MCLs quantified therein.

E. Land Application Area Specifications

1. For the purposes of this Order, “land application areas” refers to the discharge areas described in Finding 8.

2. Application of waste constituents, including nitrogen, to the land application areas shall be at reasonable agronomic rates to preclude creation of a nuisance and unreasonable degradation of groundwater, considering the crop, soil, climate, and irrigation management system. The annual nutritive loading to the land application areas, including the nutritive value of organic and chemical fertilizers and of the wastewater and nutrients in applied irrigation water and available in the root zone shall not exceed the annual crop demand.

3. Discharges to the land application areas will not exceed a BOD daily cycle average loading rate of 100 lbs/ac/day at any time. The Discharger will not immediately be able to comply with the 100 lbs/ac/day limit. However, this Order contains Provision G.13 that includes a time schedule for the Discharger to submit a work plan and make improvements to the disposal system to ensure wastewater is applied to the land application areas at agronomic rates. Compliance with this limit shall be determined by using the average of the weekly effluent BOD monitoring results.

4. Crops shall be grown in the land application areas. Crops shall be selected based on nutrient uptake, consumptive use of water, volume of the wastewater to be applied, available acreage, and irrigation requirements to maximize crop uptake of waste constituents.

5. The Discharger shall ensure that water, BOD, and nitrogen are applied and distributed uniformly across each land application area field. The Discharger shall implement changes to the irrigation system and/or operational practices as needed to ensure compliance with this requirement.

6. Any irrigation runoff shall be confined to the land application areas and shall not enter any surface water drainage course or storm water drainage system.

7. The perimeter of the land application areas shall be graded to prevent ponding along public roads or other public areas and prevent runoff onto adjacent properties not owned or controlled by the Discharger.

8. The volume of wastewater applied to the land application areas on any single day shall not exceed reasonable agronomic rates based on the vegetation grown, pre-discharge soil moisture conditions, and weather conditions.

9. Hydraulic loading of wastewater and supplemental irrigation water including precipitation shall be at reasonable agronomic rates designed to:

    a. Maximize crop nutrient uptake;

    b. Maximize breakdown of organic waste constituents in the root zone; and

    c. Minimize the percolation of waste constituents below the root zone.

10. The irrigation with wastewater shall be managed to minimize erosion within the land application areas.

11. The land application areas shall be managed to prevent breeding of mosquitoes. In particular:

    a. There shall be no standing water 48 hours after irrigation ceases;

    b. Tailwater ditches shall be maintained essentially free of emergent, marginal, and floating vegetation; and

    c. Low-pressure and unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store recycled water.

12. No physical connection shall exist between wastewater and any domestic water supply or domestic well, or between wastewater piping and any irrigation well that does not have an air gap or reduced pressure principle device.

13. Discharge of storm water runoff from the land application areas to off-site land or surface water drainage courses is prohibited.

F. Solids Disposal Specifications

Sludge, as used in this document, means the solid, semisolid, and liquid organic matter removed from wastewater treatment, settling, and storage vessels or ponds. Solid waste refers to solid inorganic matter removed by screens and soil sediments from washing of unprocessed fruit or vegetables. Except for waste solids originating from meat processing, residual solids means organic food processing byproducts such as culls, pulp, stems, leaves, and seeds that will not be subject to treatment prior to disposal or land application.

1. Sludge and solid waste shall be removed from screens, sumps, ponds, and clarifiers as needed to ensure optimal operation and adequate storage capacity.

2. Any handling and storage of sludge, solid waste, and residual solids shall be controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate the groundwater limitations of this Order.

3. If removed from the site, sludge, solid waste, and residual solids shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27, division 2. Removal for reuse as animal feed, or land disposal at facilities (i.e., landfills, composting facilities, soil amendment sites operated in accordance with valid waste discharge requirements issued by a Regional Water Board) will satisfy this specification.

4. Any proposed change in solids use or disposal practice shall be reported in writing to the Executive Officer at least 90 days in advance of the change.

G. Provisions

1. The Discharger shall comply with the Standard Provisions and Reporting Requirements for Waste Discharge Requirements, dated 1 March 1991 (Standard Provisions), which are a part of this Order.

2. The Discharger shall comply with Monitoring and Reporting Program (MRP) R5-2018-0005, which is part of this Order, and any revisions thereto as adopted by the Central Valley Water Board or approved by the Executive Officer.

3. The Discharger shall keep at the Facility office copies of this Order including its MRP, Information Sheet, attachments, and Standard Provisions, for reference by operating personnel. Key operating personnel shall be familiar with its contents.

4. The Discharger must at all times properly operate and maintain its respective facilities and systems of treatment and control (and related appurtenances) that are installed or used to achieve compliance with the conditions of this Order. Proper operation and maintenance also include 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 only when the operation is necessary to achieve compliance with the conditions of the Order.

5. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Accordingly, the Discharger shall submit to the Central Valley Water Board on or before each report due date the specified document or, if an action is specified, a written report detailing evidence of compliance with the date and task. If noncompliance is being reported, the reasons for such noncompliance shall be stated, plus an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board by letter 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.

6. In the event of any change in control or ownership of land or waste treatment and storage facilities presently owned or controlled by the Discharger, the Discharger shall 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.

7. 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 CWC. 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.

8. 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. All reports required herein are required pursuant to Water Code Section 13267.

9. 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.

10. The Discharger shall use the best practicable cost-effective control technique(s) including proper operation and maintenance, to comply with this Order.

11. 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.

12. **By 6 August 2018,** the Discharger shall submit a Work Plan/Technical Report that identifies the methods proposed to measure the flow of all waste streams generated at the Primex Facility for discharge to the land application areas. The Discharger shall implement the proposed modifications **prior to the 2018 pistachio processing season.**

13. The Discharger shall comply with WDRs Order R5-2018-0005, Land Application Area Specifications E.2, E.3, and E.5 in accordance with the following compliance schedule:

Task	Task Description	Due date
a.	Submit a work plan and time schedule that identifies the methods proposed in Finding 21 to discharge pistachio processing wastewater (all sources) to the land application areas at agronomic rates.	**4 February 2019**
b.	Begin modifications to the disposal system to comply with the requirements of WDRs Order R5-2018-0005.	**5 August 2019**
c.	Complete the proposed modifications to the disposal system.	**4 February 2021**

14. **By 4 February 2019**, the Discharger shall submit a Salinity Management Plan, with salinity source reduction goals and an implementation time schedule for Executive Officer approval. The control plan shall identify any additional methods that could be used to further reduce the salinity of the discharge to the maximum extent feasible, include an estimate on load reductions that may be attained through the methods identified, and provide a description of the tasks, cost, and time required to investigate and implement various elements in the salinity control plan. The Discharger shall implement the plan in accordance with the approved schedule.

15. **By 4 February 2019**, the Discharger shall submit a Nutrient Management Plan for the land application areas for Executive Officer approval. At a minimum the Plan must include procedures for monitoring the land application areas including daily records of wastewater applications and acreages, an action plan to deal with objectionable odors and/or nuisance conditions, a discussion on blending of wastewater and supplemental irrigation water, supporting data and calculations for monthly and annual water and nutrient balances, and management practices that will ensure wastewater, irrigation water, commercial fertilizers and soil amendments are applied at agronomic rates.

16. **By 6 August 2018,** the Discharger shall submit a Work Plan that identifies the methods proposed to evaluate the change in the water quality observed in supply well No.4 since 2013. The Discharger should consider evaluating the water quality in the well with additional sampling, review of the well construction details, and possibly video logging the well.

17. 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 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 that the foregoing is a full true, and correct copy of an Order adopted by the California Regional Water Quality Control Board on 2 February 2018.

Original signed by

PAMELA C. CREEDON, Executive Officer

Order Attachments:

A Site Vicinity Map
B Site Map

Monitoring and Reporting Program No. R5-2018-0005
Information Sheet
Standard Provisions (1 March 1991) (separate attachment to the Discharger only)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2018-0005
FOR
PRIMEX FARMS, L.L.C.
WASCO PISTACHIO PROCESSING FACILITY
KERN COUNTY

This Monitoring and Reporting Program (MRP) is issued 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, prior to changing the location.

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 months of monitoring, 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 10.

The Discharger shall monitor the following locations to demonstrate compliance with the requirements of this Order:

Monitoring Location Name	Monitoring Location Description
FM-01, FM-02	Location where the volume/flow of process wastewater (FM-01) and wash/rinse wastewater (FM-02) from the facility can be measured prior to discharge to the retention pond and/or land application areas.
EFF-01 and EFF-02, or EFF-03	Location where a representative water quality sample of the facility process wastewater (EFF-01) and facility wash/rinse wastewater (EFF-02) can be obtained prior to discharge to the land application areas and/or retention pond. If modifications to the Facility result in the two waste streams being comingled with the resulting wastewater stored in a retention pond, only one sample (EFF-03) need be collected of the blended wastewater prior to discharge to the land application area.
PND-01 and PND-02	Existing effluent (PND-01) and storm water storage ponds (PND-02).
LAA-01	Land application areas where the discharge from the facility and any other supplemental water source (irrigation, source water) sources are applied.
SW-01, SW-02, etc.	Existing source water wells and any other source water wells added to the source water well network.
Soil-01, Soil-02, etc. **Bkg-01, Bkg-02, etc.**	Locations where representative soil profile samples can be collected from monitoring locations within the land application areas and at least two background soil sampling locations

EFFLUENT MONITORING (EFF-01, EFF-02, and EFF-03)

The Discharger shall monitor the discharge of its process wastewater at a point (EFF-01) and its wash/rinse wastewater (EFF-02) prior to discharge to the land application areas. The samples shall be representative of the volume and nature of the discharges. If the two wastewaters are blended or comingled, the Discharger shall monitor the discharge of the blended wastewaters at a point (EFF-03) prior to discharge to the land application areas. Time of collection of the samples shall be recorded. Wastewater monitoring shall include at least the following:

Frequency	Constituent/Parameter	Units	Sample Type
Continuous	Flow	mgd	Meter
Weekly	pH	pH Units	Grab
Weekly	Electrical Conductivity	umhos/cm	Grab
Weekly	Total Dissolved Solids	mg/L	Grab
Weekly	Fixed Dissolved Solids	mg/L	Grab
Weekly	Biochemical Oxygen Demand	mg/L	Grab

Frequency	Constituent/Parameter	Units	Sample Type
Weekly	Total Suspended Solids	mg/L	Grab
Weekly	Nitrite as Nitrogen	mg/L	Grab
Weekly	Nitrate as Nitrogen	mg/L	Grab
Weekly	Ammonia Nitrogen	mg/L	Grab
Weekly	Total Nitrogen	mg/L	Grab
Monthly[1]	General Minerals	mg/L[2]	Grab

1. Twice during the processing season.
2. mg/L or ug/L, as appropriate.

POND MONITORING (PND-01 and PND-02)

Effluent (PND-01) and storm water (PND-02) pond monitoring shall include at least the following:

Frequency	Constituent/Parameter	Units	Sample Type
Weekly	Freeboard	Feet[1]	Calculated

1. To the nearest tenth of a foot.

Permanent markers (e.g., staff gauges) shall be placed in the effluent and storm water storage ponds. The markers shall have calibrations indicating water level at the design capacity and available operational freeboard. The Discharger shall inspect the condition of the wastewater/storm water contained in the retention ponds once per week during the processing season and write visual observations in a bound logbook. Notations shall include observations of whether weeds are developing in the water or along the bank, and their location; whether dead algae, vegetation, scum, or debris are accumulating on the wastewater retention pond surface and their location; whether burrowing animals or insects are present; and the color of the pond water (e.g., dark sparkling green, dull green, yellow, gray, tan, brown, etc.).

SOURCE WATER MONITORING (SW-01)

The Discharger shall collect samples from its source water well or wells (SW-01, etc.) and any wells added, and analyze them for the constituents specified in the following table. If the source water is from more than one well, the results shall also be presented as a flow weighted average of all the wells used.

Frequency	Constituent/Parameter	Units	Sample Type
Semi-Annually[1]	Electrical Conductivity	mg/L	Grab
Semi-Annually[1]	Total Dissolved Solids	mg/L	Grab
Semi-Annually[1]	Nitrate as Nitrogen	mg/L	Grab
Semi-Annually[1]	Total Kjeldahl Nitrogen	mg/L	Grab
Semi-Annually[1]	Total Nitrogen	mg/L	Grab
Annually[2]	General Minerals	mg/L[3]	Grab

1. A sample shall be collected from the supply well or wells in August prior to the beginning of the processing season. A second sample should be collected six months later in February.
2. The August sample shall be analyzed for General Minerals.
3. mg/L or ug/L, as appropriate.

LAND APPLICATION MONITORING (LAA-01)

The Discharger shall monitor the land application areas daily throughout the processing season and while wastewater is being discharged. The volume of the effluent applied will be monitored at EFF-01. The monitoring report shall identify the source and volume of the effluent applied, the specific parcels to which it is applied, the acreage to which it is applied, and the type of crops grown on each parcel. This information shall be submitted as part of the annual monitoring report in addition to a map, which shows the specific parcels that received Primex effluent.

In addition, the Discharger shall perform the following routine monitoring and loading calculations for each discrete irrigation area within the land application areas. If supplemental irrigation water is used, samples shall be collected from its source. The data shall be collected and presented in both a graphical (map) and tabular format and shall include the following:

Frequency	Constituent/Parameter	Units	Sample Type
Daily[1]	Application area	Acres	n/a
Daily[1]	Wastewater flow	Gallons	Metered
Daily[1]	Wastewater loading	Inches/day	Metered
Daily[1]	Supplemental irrigation	Inches/day	Metered
Daily[1]	Precipitation	Inches	Rain gage[2]
Monthly	Total Hydraulic loading[3]	Inches/acre-month	Calculated
BOD Loading[4]			
Daily[1]	Day of application	lbs/ac/day	Calculated
Cycle	Cycle average[5]	lbs/ac/day	Calculated
Nitrogen loading[4]			
Annual	From wastewater	lbs/ac/yr	Calculated
Annual	From fertilizers	lbs/ac/yr	Calculated
Annual	From supplemental irrigation water	lbs/ac/yr	Calculated
Salt loading[4]			
Annual	From wastewater	lbs/ac/yr	Calculated
Annual	From irrigation water	lbs/ac/yr	Calculated

1. When wastewater is applied to the land application areas.
2. National Weather Service or CIMIS data from the nearest weather station is acceptable.
3. Combined loading from wastewater, irrigation water, and precipitation.
4. The BOD, salt, and nitrogen loading rate shall be calculated using the applied volume of wastewater, applied acreage, and average of the BOD, FDS, and total nitrogen analytical results from the processing season.
5. A cycle average is the calculated by taking the pounds of BOD applied to the land application area in a given period, divided by the sum of the total days wastewater was applied plus the number of days of rest (no application of wastewater). For example, a 3-day cycle average would be calculated as follows. Effluent is discharged on the first day at a rate of 300 pounds per acre. No discharge occurs on days 2 and 3 (2 days rest). The BOD cycle average is the pounds per acre applied by the discharge (300 pounds) divided by the total number of days (three). The BOD cycle average loading would be 100 lbs per acre per day.

In addition, the Discharger shall inspect the application areas on a daily basis when wastewater is being applied. Evidence of erosion, field saturation, runoff, or the presence of nuisance conditions (i.e., flies, ponding, etc.) shall be noted in field logs and kept on site.

SOIL MONITORING (Soil-01, etc.)

The Discharger shall establish, with the concurrence of Central Valley Water Board staff, representative soil profile monitoring locations within the land application areas and at least two representative background location(s) (i.e., that historically have not received process wastewater). The Discharger shall submit a map to the Central Valley Water Board with the identified sample locations no fewer than **60 days** prior to the first soil-sampling event following adoption of this Order. The soil sampling shall be performed within two months prior to the start of the next pistachio processing season. The samples shall be collected and analyzed for the constituents and frequencies specified in the following table:

Frequency	Constituent/Parameter	Units	Sample Type
Annually	Soil pH	pH units	6 feet[1]
Annually	Buffer pH	mg/kg as $CaCO_3$	6 feet[1]
Annually	Sodium	mg/kg	6 feet[1]
Annually	Chloride	mg/kg	6 feet[1]
Annually	Nitrate as nitrogen	mg/kg	6 feet[1]
Annually	Total Kjeldahl Nitrogen	mg/kg	6 feet[1]

1. Samples to be analyzed shall be collected at depths of 6-inches, 2, 4, and 6 feet below the ground surface (bgs)

REPORTING

All monitoring results shall be reported in an **Annual Monitoring Report,** which shall be due by no later than **15 February** of the year following the processing season.

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 Central Valley Water Board has gone to a Paperless Office System. All regulatory documents, submissions, materials, data, monitoring reports, and correspondence shall be converted to a searchable Portable Document Format (PDF) and submitted electronically. Documents that are less than 50MB should be mailed to: centralvalleyfresno@waterboards.ca.gov. Documents that are 50MB or larger should be transferred to a disc and mailed to the appropriate regional water board office, in this case 1685 E Street, Fresno, CA, 93706.

To ensure that your submittals are routed to the appropriate staff, the following information block should be included in any email used to transmit documents to this office:

Program: Non-15, WDID: 5C15NC00043, Facility Name: Primex Farms, L.L.C. Wasco Pistachio Processing Plant, Order: R5-2018-0005.

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, and 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.

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.

A. Annual Monitoring Reports shall include the following:

Wastewater Reporting:

1. The results of the effluent monitoring specified on pages 2 and 3.
2. For each processing season, calculation of the daily average flows and the maximum daily flow from the wastewater stream.
3. For each processing season, calculation of the daily average EC of the discharge.

Pond Monitoring Reporting

1. The results of the monitoring specified on page 3.

Source Water Reporting

1. The results of the source water monitoring specified on pages 3 and 4. Results must include supporting calculations.

Land Application Area Reporting

1. The results of the monitoring and reporting and loading calculations specified on pages 4 and 5.

2. For each processing season that wastewater is applied to the land application areas, calculation of the hydraulic load for wastewater and supplemental irrigation water in millions of gallons and/or acre-feet to each discrete irrigation area.

3. A summary of the notations made in the land application areas log during each week of the processing season. The entire contents of the log do not need to be submitted.

4. The type of crop(s) grown, planting and harvest dates, and the quantified nitrogen and fixed dissolved solids uptakes (determined by representative plant tissue analysis). Include any soil and/or tissue sampling results.

5. The monthly and annual discharge volumes during the reporting year expressed as million gallons and inches.

6. A monthly balance for the reporting year that includes:

    a. Monthly average ET0 (observed evapotranspiration) – Information sources include California Irrigation Management Information System (CIMIS) http://www.cimis.water.ca.gov/

    b. 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 for irrigation efficiency such that the application rate is slightly greater than the crop utilization rate. A conservative design does not include this value.

    c. Monthly average precipitation – this data is available at http://www.cimis.water.ca.gov/ or http://www.ncdc.noaa.gov/oa/climate/online/ccd/nrmlprcp.html.

7. A summary of daily and cycle average BOD loading rates.

8. The total pounds of nitrogen applied to the land application areas from all source (wastewater, fertilizers, and irrigation waters) as calculated from the sum of the monthly loading to the land application areas in lbs/ac/yr.

9. The total pounds of FDS that have been applied to the land application areas, as calculated from the sum of the monthly loadings to the land application areas in lbs/ac/yr.

Solids Reporting

1. Annual production of total solids (excluding trash and recyclables) in dry tons or cubic yards.

2. A description of the disposal methods, including the following information to the disposal methods used. If more than one method is used, include the percentage disposed of by each method.

    a. For landfill disposal, include: the name and location of the landfill, and the Order of the WDRs that regulate it.

    b. For land application, include: the location of the site, and the Order number of any WDRs that regulate it.

    c. For incineration, include: the name and location of the site where incineration occurs, the Order number of WDRs that regulate the site, the disposal method of ash, and the name and location of the facility receiving ash (if applicable).

    d. For composting, include: the location of the site, and the Order number of any WDRs that regulate it.

    e. For animal feed, include: the location of the site, and the Order number of any WDRs that regulate it.

Soils Reporting

1. The results of soil monitoring specified on page 5. The analytical results should be presented in tabular form and include depth of sample. If no sample is collected at a specified depth it should be noted in the table along with the reason no sample was collected.

2. A site map showing the location of each sampling point. The map shall also include the locations of all wells and wastewater storage and/or discharge areas.

Facility Information:

1. The names and general responsibilities of all persons in charge of wastewater treatment and disposal.

2. The names and telephone numbers of persons to contact regarding the Plant for emergency and routine situations.

3. A statement certifying when the flow meters and other monitoring instruments and devices were last calibrated, including identification of who performed the calibrations (Standard Provision C.4).

4. A statement whether the current operation and maintenance manual, sampling plan, nutrient management plan, and contingency plan, reflect the Plant as currently

constructed and operated, and the dates when these documents were last reviewed for adequacy.

5. A summary of any changes in processing that might affect waste characterization and/or discharge flow rates.

6. A discussion of compliance and the corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements.

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

Ordered by: *Original Signed By*

PAMELA C. CREEDON, Executive Officer

1 February 2018

(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-Hour Composite	Unless otherwise specified or approved, samples shall be a flow-proportioned composite consisting of at least eight aliquots.
Daily	Samples shall be collected every day.
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 January, April, July, and October.
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 April and October.
Annually	Samples shall be collected at least once per year. Unless otherwise specified or approved, samples shall be collected in October.
mg/L	Milligrams per liter
mL/L	Milliliters [of solids] per liter
µg/L	Micrograms per liter
µmhos/cm	Micromhos per centimeter
mgd	Million gallons per day
MPN/100 mL	Most probable number [of organisms] per 100 milliliters
General Minerals	Analysis for General Minerals shall include at least the following:

Alkalinity	Chloride	Sodium
Bicarbonate	Hardness	Sulfate
Calcium	Magnesium	TDS
Carbonate	Potassium	

General Minerals analyses shall be accompanied by documentation of cation/anion balance.

INFORMATION SHEET

INFORMATION SHEET - ORDER R5-2018-0005
PRIMEX FARMS, L.L.C.,
PISTACHIO PROCESSING FACILITY
KERN COUNTY

BACKGROUND

Primex Farms, L.L.C. (Primex Farms or Discharger) owns and operates a pistachio processing facility (Facility) at 16070 Wildwood Avenue, which is about 5 miles west/southwest of the community of Wasco in Kern County. Primex Farms submitted a Report of Waste Discharge (RWD) on 10 May 2013 describing the operations at its pistachio processing Facility and proposing a discharge to land on about 235 acres of adjacent farmland.

Wastewater Generation and Disposal

Primex Farms generates two wastewater streams during the processing season, which typically extends for about 50 days from mid-August to late September. One is the process wastewater from the washing and sorting of the raw pistachios as the pistachios arrive at the Facility, and the second is wash water from the cleaning of the processing equipment and storage silos. Primex Farms discharges both waste streams to about 235-acres of adjacent land application areas, but they are not blended in the retention pond. The wash/rinse water was not part of the wastewater analytical program until recently and the volume of the wash/rinse wastewater discharged to the retention pond and then on to the land application areas was not recorded.

The average effluent results of the process wastewater since 2012 are presented in the following table.

Process Wastewater Results

Constituent	Units	Result
Nitrate as Nitrogen	milligrams per liter	7.5
Total Kjeldahl Nitrogen	milligrams per liter	241
Total Nitrogen	milligrams per liter	249
Electrical Conductivity	micromhos per centimeter	2,787
Total Dissolved Solids	milligrams per liter	3,423
Volatile Dissolved Solids	milligrams per liter	1,505
Fixed Dissolved Solids	milligrams per liter	3,058
Biochemical Oxygen Demand	milligrams per liter	3,569
Chloride	milligrams per liter	264
Potassium	milligrams per liter	827
Sodium	milligrams per liter	166

The results indicate a high strength wastewater with average EC, TDS, and chloride values that are in excess of secondary MCLs. While samples of the wash/rinse wastewater had not been part of the analytical program at the Facility, a sample of the wash/rinse wastewater was collected during a September 2017 inspection of the Facility. The results of the September sample of the wash/rinse wastewater are presented in the following table.

September 2017 Wash/Rinse Wastewater Results

Constituent	Units[1]	Result
Nitrate as Nitrogen	milligrams per liter	nd
Total Kjeldahl Nitrogen	milligrams per liter	8.8
Total Nitrogen	milligrams per liter	8.8
Electrical Conductivity	micromhos per centimeter	1,300
Total Dissolved Solids	milligrams per liter	780
Fixed Dissolved Solids	milligrams per liter	570
Volatile Dissolved Solids	milligrams per liter	200
Chloride	milligrams per liter	280
Potassium	milligrams per liter	60
Sodium	milligrams per liter	200
Sulfate	milligrams per liter	nd

The results of the wash/rinse wastewater sampling show significantly lower results for EC, TDS, and nitrogen than the same constituents in the process wastewater. Sodium and chloride however, are higher. If blended with the process wastewater, the overall EC, TDS, and total nitrogen of the wastewater would likely decrease, but the chloride and sodium results may increase.

The estimated loading calculated using only the process wastewater are presented in the following table. The actual loadings are unknown as the Discharger has not been measuring the volume of the wash/rinse wastewater also discharged to the land application areas, but the actual salt and nitrogen loadings are likely less than those estimated using only the results of the process wastewater sampling.

Process Wastewater Loading Estimates

Year	Biochemical Oxygen Demand lbs/ac/day[1]	Nitrogen lbs/ac/yr[2]	Total Dissolved Solids lbs/ac/yr[2]	Fixed Dissolved Solids lbs/ac/yr[2]	Potassium lbs/ac/yr
2012	196	440	3,065	2,054	1,504
2013	201	455	3,787	2,537	1,625
2014	165	428	8,380	5,315	1,425
2015	69	219	3,612	2,381	741
2016	259	880	14,406	10,058	2,872
Averages	175	499	6,354	4,252	1,692

1. lbs/ac/day = pounds per acre per day.
2. lbs/ac/yr = pounds per acre per year.

The average BOD loading exceeds the limit of 100 pounds per acre per day (lbs/ac/day) typically used as a BOD limit for the discharge of food processing wastewater. The Discharger does allow resting periods between its wastewater applications. BOD was not an analyte in the 2017 sample of wash/rinse water collected by Central Valley Water Board staff, and without knowing the volume of the wash/rinse wastewater discharged from the retention pond

to the land application areas, the estimated loadings cannot be accurately assessed. However, based on the majority of the other constituents being lower, especially the big difference in the nitrogen load, the addition of the wash/rinse wastewater would likely dilute the discharge and lower the loading estimates for BOD.

The loading estimates for nitrogen, salt, and potassium, using only the process wastewater, are excessive and exceed the amounts that could be removed by pistachio trees. According to UC Davis, on average, a pistachio orchard has the ability to utilize about 188 lbs/ac/yr. The average nearly 500 lbs/ac/yr is more than double the amount that can be utilized by pistachios. However, the total nitrogen content in the wash/rinse wastewater was about 10 mg/L, while the average total nitrogen results from the process wastewater averages about 250 mg/L. While the wash/rinse water samples are limited to the one sample in September 2017, if the result is reflective of the typical total nitrogen concentration in the wash/rinse wastewater, the loading estimates would be lower. Order R5-2018-0005 includes provision G.13, which requires Primex Farms to submit a work plan that proposes methods to discharge wastewater from the Facility at agronomic rates.

Solids Generation and Disposal
Screened solids generated during the processing are composted on-site on about 8-acres adjacent and east of the 35-acre land application area, and then are sent off-site as a soil additive. Pistachio hulls are also stored in the 8-acre area, and are sold to a nearby cement company as a fiber additive.

GROUNDWATER CONSIDERATIONS

Groundwater in the area is found primarily in two aquifers, an upper unconfined aquifer, and a deeper confined aquifer beneath the E Clay or the Corcoran clay. The depth to the Corcoran Clay is shown as being about 350 feet bgs in the vicinity of the Facility. Depth to water in the upper unconfined aquifer is shown by the DWR to be about 300 feet bgs in 2010, with a flow direction to the west. DWR groundwater elevation data was available for several wells, wells within 2.5 miles of the Facility. One well is located on the northwest corner of the Facility and the depth to water was listed as 347 feet bgs on 3/16/2017.

Primex gets its source water from two wells, Well No. 2 is an older well set at a depth of 600 feet bgs. It is used as a secondary source to Well No. 4. Well No. 4 is the primary source water well installed to a depth of 900 feet bgs. The depths to water are listed in the RWD as 230 feet bgs in Well No. 2 and 268 feet bgs in Well No.4 in 2013. The results of sampling Well No. 4 in 2016 and 2017 are presented in the following table.

Supply Well No. 4 Results

Well	Units	2016	2017
pH	Standard pH Units	8.1	8.0
Electrical Conductivity	Micromhos per centimeter	1500	1000
Sodium	Milligrams per liter	131	81
Chloride	Milligrams per liter	67	88

Well	Units	2016	2017
Nitrate as Nitrogen	Milligrams per liter	7.5	4.4
Total Kjeldahl Nitrogen	Milligrams per liter	na	7.2
Total Nitrogen	Milligrams per liter	na	12.6

The RWD included supply well results for Wells No.2 and No.4 as shown in the table below.

RWD Supply Well Data

Well	Units	Well No. 2	Well No. 4
Electrical Conductivity	micromhos per centimeter	1,090	238
Total Dissolved Solids	milligrams per liter	680	160
Nitrate	milligrams per liter	23	3
Arsenic	milligrams per liter	5.9	1.3

The values from Well No.4 have increased since 2013. This Order includes Provision G.16 that requires the Discharger to submit a work plan that proposes methods to evaluate the water quality in Well No. 4 and determine the cause of the increase in the results since 2013.

Regional groundwater quality data is available on the USGS Water Quality Portal web site. Results from 81 groundwater wells ranging in depth from 16 feet to 820 feet bgs are reported to be within a five-mile radius of the Facility. The averages of constituents of concern are presented below.

USGS Groundwater Results

Constituent	Units	Result
Nitrate as Nitrogen	milligrams per liter	2.2 (nd – 56)
Electrical Conductivity	micromhos per centimeter	474 (141 – 4,620)
Total Dissolved Solids	milligrams per liter	290 (76 – 3,560)
Chloride	milligrams per liter	48 (4.5 – 570)
Sodium	milligrams per liter	67 (11 – 780)

The data indicates the spatial variability of the quality of the groundwater of the region with large differences between the minimum and the maximum values and results that exceeded the respective MCLs (sodium excluded).

REGULATORY CONSIDERATIONS

Basin Plan, Beneficial Uses, and Water Quality Objectives

The Basin plan states that the evaporation of reclaimable wastewater is not an acceptable permanent disposal method where the opportunity exists to replace an existing use or proposed use of fresh water with reclaimed water. To that end, Primex Farms recycling its wastewater conserves local groundwater supplies.

PROPOSED MODIFICATIONS

During the September 2017 Inspection of the Primex Farms Facility, Primex staff indicated they had been exploring options to lower the loading rates from the discharge of pistachio processing wastewaters to the land application areas. Those options include:

a. Adding additional land to the land application areas,

b. Changing the cropping types and patterns, and/or

c. Lining the existing retention pond, and plumbing the Facility so both waste streams discharge and co-mingle in the lined pond, prior to discharge to the land application areas.

Order R5-2018-0005 includes Provision G.13, which includes a time schedule for the Primex Farms to submit a Work Plan that proposes methods to discharge the wastewater to the land application areas at agronomic rates that will be protective of the underlying groundwater. Order R5-2018-0005 also includes provision G.12 that requires the discharge to monitor the quality and volume of the discharge of wash/rinse wastewater discharged to the land application areas.

Legal Effect of Rescission of Prior WDRs or Orders on Existing Violations

The Board's rescission of prior waste discharge requirements and/or monitoring and reporting orders does not extinguish any violations that may have occurred during the time those waste discharge requirements or orders were in effect. The Central Valley Water Board reserves the right to take enforcement actions to address violations of prior prohibitions, limitations, specifications, requirements, or provisions of rescinded waste discharge requirements or orders as allowed by law.

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. The proposed Order would set limitations based on the information provided thus far. If applicable laws and regulations change, or once new information is obtained that will change the overall discharge and its potential to impact groundwater, it may be appropriate to reopen the Order.

SITE VICINITY MAP

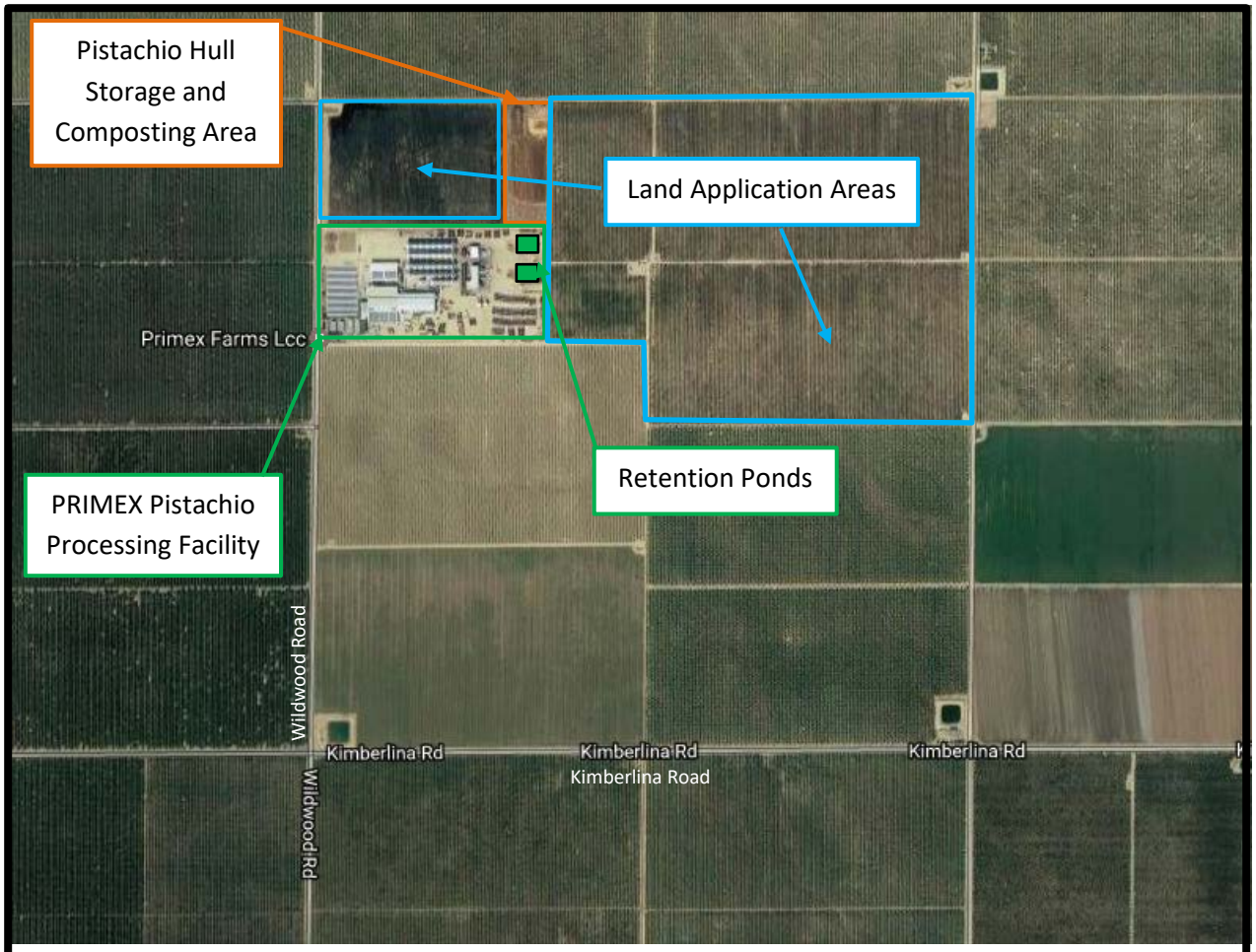
ORDER R5-2018-0005
WASTE DISCHARGE REQUIREMENTS
FOR
PRIMEX FARMS, LLC.
WASCO PISTACHIO PROCESSING FACILITY
KERN COUNTY

Approximate Scale in Miles

0 1 2 3 4 5

N
W E
S

ATTACHMENT A



SITE MAP

ORDER R5-2018-0005
WASTE DISCHARGE REQUIREMENTS
FOR
PRIMEX FARMS, LLC.
WASCO PISTACHIO PROCESSING FACILITY
KERN COUNTY

Approximate Scale in Miles

0.0 0.25 0.5 0.75 1.0 1.25

N
W E
S

ATTACHMENT B