CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2013-0112

WASTE DISCHARGE REQUIREMENTS

FOR
DIESTEL TURKEY RANCH
AND
TIMOTHY J. AND JOAN C. DIESTEL
TUOLUMNE COUNTY

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

1. On 19 December 2011, Diestel Turkey Ranch, a California Corporation, submitted two Reports of Waste Discharge (RWD's) to satisfy a Notice of Violation/Water Code section 13267 Order issued on 11 September 2011. Each RWD included a technical report, one titled, *Technical Report for Wastewater Treatment and Reuse, Diestel Turkey Ranch, Sonora, California* and the other titled, *Technical Report in Support of Report of Waste Discharge for Turkey Pastures, Diestel Turkey Ranch, Sonora, California* (Turkey Report). On 24 July 2012, on behalf of the Diestel Turkey Ranch, Sheppard Mullin Richter & Hampton LLP (SheppardMullin) submitted, via electronic mail, an update on the progress of submitting a revised RWD. On 14 December 2012, a revised RWD was submitted that included several technical memorandums addressing deficiencies from the December 2011 RWD's. On 11 March 2013, groundwater and effluent data were submitted to supplement the December 2012 RWD. Collectively, the three RWD's and the SheppardMullin electronic mail update describe turkey processing and wastewater and storm water management at the Diestel Turkey Ranch.

2. Included in the Turkey Report was a *2011-2012 Stormwater Best Management Practices (BMPs) and Monitoring Workplan* for the Ranch. The intent of the BMP Workplan is to implement long-term site BMPs that are effective and result in the reduction or elimination of pollutants in stormwater discharge and authorized non-stormwater discharges from site activity. The BMPs include, but are not limited to: establishing vegetation in the turkey pens; regrading and installing straw waddles and straw bales on downgradient edges of turkey pens; installing gravel bag berms around drains, and installing gravel on roads and equipment storage areas.

3. Diestel Turkey Ranch (hereafter "Ranch") owns and operates the Ranch that generates the waste and Timothy J. and Joan C. Diestel own the land discharge areas. Diestel Turkey Ranch and Timothy J. and Joan C. Diestel (hereafter collectively referred to as "Discharger") are responsible for compliance with these Waste Discharge Requirements (WDRs).

4. The Ranch is at 22200 Lyons Bald Mountain Road in Sonora (Section 16, T2N, R15E, MDB&M). The Ranch occupies Assessor's Parcel Number (APN) 085-050-20, as shown on Attachment A, which is attached hereto and made part of this Order by reference.

5. The Diestel family has raised turkeys at the Ranch since approximately 1957 and purchased the Ranch in the 1970's. The current slaughterhouse and processing facility was added in 1985, replacing an older and smaller facility. Waste discharge requirements have never been adopted for the Ranch.

Facility and Discharge

6. The 80-acre overall property contains an approximately 5-acre processing facility, a slaughterhouse, equipment repair shop, warehouses, three equalization ponds, a dissolved air flotation (DAF) unit, and a wastewater treatment plant (WWTP); and an active agricultural area of approximately 37 acres of enclosed turkey pastures and barns, as well as open-space grassy slopes, drainage corridors and worker housing. The remaining 38 acres of the overall property is open space hillside grassland with mature forest stands, and includes a storage pond and storage tank for treated wastewater, at least two domestic well tanks, and four water supply wells.

7. Prior to 2011, up to 20,000 turkeys were raised on-site each year. In 2011, the amount of turkeys raised at the Ranch was reduced to 8,000. In 2012, the Discharger eliminated all commercial use of the on-site pens, but will continue to raise several hundred chickens and turkeys, several dozen goats, pigs, and/or sheep, and 4 to 6 cattle for non-commercial purposes. Commercial turkeys are raised off-site and delivered by truck to the Ranch for processing.

8. Domestic waste is discharged to an on-site septic tank and leach field.

9. The processing facility is active up to approximately 220 days per year. Normal hours of operation are Monday through Friday from 5:00 am to 1:00 pm. During this time, the facility processes an average of approximately 2,500 to 6,000 turkeys per day. The processing facility is normally inactive during January, February, and March and normally operates at roughly half capacity during December, April, and May.

10. Wastewater generated at the processing facility consists of wash water from turkey processing and wash water from equipment, truck, and pavement cleaning. The wastewater is conveyed to one of two equalization ponds (EQP#2 or EQP#3). Prior to entering the pond(s), solids (consisting of feathers and entrails) are removed from the wastewater as it passes through three rotary drum screens and an additional screen separator.

11. Storm water generated at the processing facility is captured in a sump and is directed to either EQP#2 or EQP#3.

12. All wastewater and storm water that enters EQP#2 and EQP#3 is treated with a DAF unit, discharged to another equalization pond (EQP#1) and pumped through the WWTP. Treated wastewater is either reused in the processing facility or discharged to a holding pond or tank prior to on-site irrigation of pasture land (also referred to as the wastewater application area and consists of land occupying pens 1 through 7 and additional land outside of the pens).

13. EQP#1 has a capacity of 415,000 gallons (with two feet of freeboard), is lined with a single layer of 40-mil high-density polyethylene (HDPE), and is 14 feet deep. EQP#2 has a capacity of 590,000 gallons (with two feet of freeboard), is lined with a single layer of 80-mil HDPE, and is 16 feet deep. EQP#3 has a capacity of 1,000,000 gallons (with one foot of freeboard), is lined with a single layer of 60-mil HDPE, and is 14 feet deep.

14. The WWTP consists of a ZeeWeed Membrane System® bioreactor designed by Zenon International Inc. in 2005, constructed in 2006, and operational in 2007. The WWTP replaced the previous wastewater disposal system, which consisted of an on-site leach field that was used to infiltrate untreated wastewater. The WWTP is designed for an average flow of 50,000 gallons per day (gpd) with a maximum flow of 100,000 gpd. The design influent and effluent concentrations for BOD_5 are 650 mg/L and <10 mg/L, respectively, while the design influent and effluent concentrations for total Kjeldahl nitrogen are 170 mg/L and <10 mg/L, respectively.

15. The DAF unit was installed in September 2012 and operates at the same capacity as the WWTP. Solids are removed from the wastewater at the DAF unit by a rotary scraper to a separate tank.

16. Various chemicals are used on a routine basis in conjunction with the wash water and as additives to the DAF unit and WWTP. Chemical descriptions and annual usage are:

    Processing Facility
    I. Chlormate XF (Chlorinated Alkaline Foam Cleaner) – 500 gallons
    II. Super Cleaner (Concentrated Liquid Alkaline Degreaser) – 672 gallons
    III. Sani Chlor (12.5% Sodium Hypochlorite) – 1,500 gallons
    IV. Circulation Liquid (Liquid CIP Caustic Cleaner) – 85 gallons
    V. NRQ (Hard Surface Sanitizer and Disinfectant, Ammonium Chloride) – 37 gallons
    VI. Foaming Agent (Phosphoric Acid) – 36 gallons
    VII. Food Contamination Remover (Sodium Hydroxide) – 45 gallons
    VIII. Low Suds Detergent – 618 gallons

    DAF Unit
    I. High Charge Polyacrylamide Flocculent – annual usage to be determined

WWTP

I. Sodium Hydroxide – 500 gallons
II. Ferric Chloride – 700 gallons

17. From June through November, peak processing flows from the processing facility are up to 50,000 gpd. These flows normally reduce to about 50 percent in December, April, and May. There is normally no flow in January, February, and March.

18. Effluent samples collected from 2009 through 2012 from the WWTP are summarized below.

Parameter	Units	Number of Samples	Mean Result
pH	pH Units	32	7.4
Biochemical Oxygen Demand	mg/L	31	2.4
Chemical Oxygen Demand	mg/L	1	113
Total Suspended Solids	mg/L	31	8.7
Electrical Conductivity	umhos/cm	5	1,231
Total Dissolved Solids	mg/L	5	611
Volatile Dissolved Solids	mg/L	4	276
Chloride	mg/L	5	204
Sodium	mg/L	5	134
Total Kjeldahl Nitrogen	mg/L	30	1.7
Ammonia as N	mg/L	29	1.4
Nitrate as N	mg/L	29	60
Nitrite as N	mg/L	4	0.26
Phosphorus	mg/L	1	4.49

19. The Discharger has indicated the concentrations of nitrate as N in samples collected from the WWTP effluent have decreased since the DAF unit was installed in September 2012. The nitrate as N concentrations of three effluent samples collected after the DAF unit was installed were 40.5 mg/L (October 2012), 5.28 mg/L (November 2012), and 5.51 mg/L (December 2012). However, these effluent sample results may be diluted by storm water that is captured and mixed with process facility wastewater in EQP#2 and EQP#3 before entering the WWTP.

20. Since the DAF unit was installed, chloride, sodium, and electrical conductivity in samples collected from the WWTP effluent have increased. Effluent chloride, sodium, and electrical conductivity in July 2012 were 42.1 mg/L, 12.9 mg/L, and 411 umhos/cm, respectively. However, effluent as high as 339 mg/L for chloride, 245 mg/L for sodium, and 1,737 umhos/cm for electrical conductivity were reported for

November 2012. This Order includes a Provision requiring the Discharger to prepare and implement a Salinity Management Plan that will evaluate cost-effective alternatives for reducing the salinity of the waste stream.

21. Treated effluent is either pumped back to the processing facility for reuse or to a roughly 3.2 million gallon capacity storage pond and 200,000 gallon storage tank. The treated effluent storage pond is unlined and approximately 14 feet deep. The Discharger plans to install a single layer HDPE liner in the treated wastewater pond.

22. Treated wastewater from the 200,000 gallon storage tank is pumped through a sprinkler system to irrigate 37 acres of wastewater application area consisting primarily of lolium perenne (rye grass). Up to 40,000 gallons per day of irrigation water are applied to sustain vegetation. During a typical year, the 40,000 gallons per day application rate would occur for approximately 180 days, with reduced irrigation in the non-summer months, for a total annual volume of 10,800,000 gallons.

23. Solid waste from truck, pavement, equipment, and turkey washing, and sludge from the DAF unit and WWTP are stored in concrete lined basins or bins. The solid wastes are transported by the Discharger to an off-site composting facility.

Site-Specific Conditions

24. Source water is from four on-site water supply wells (W-01 through W-04). Groundwater from each well is pumped to a common manifold for use at the Ranch. Average results from groundwater samples collected from each well in December 2012 and January and February 2013 are summarized below:

Parameter	Units	W-01	W-02	W-03	W-04
Aluminum	ug/L	<50	<50	<50	<50
Copper	ug/L	<50	<50	<50	<50
Iron	ug/L	<100	<100	263	564
Manganese	ug/L	284	196	230	195
Strontium	ug/L	307	270	223	197
Total Alkalinity	mg/L	172	118	134	135
Ammonia as N	mg/L	<0.2	<0.2	<0.2	<0.2
Calcium	mg/L	37	30	32	32
Chloride	mg/L	75	54	35	45
Electrical Conductivity	umhos/cm	619	524	489	436
Hardness	mg/L	166	134	140	154
Potassium	mg/L	2	2	2	2

Parameter	Units	W-01	W-02	W-03	W-04
Magnesium	mg/L	18	14	15	18
Sodium	mg/L	13	11	11	14
Nitrate as N	mg/L	6	8	8	3
pH	pH Units	7.1	6.5	7.2	7
TDS	mg/L	406	356	302	294
Sulfate	mg/L	50	41	36	28
TKN	mg/L	0.48	0.42	0.5	1.4

25. The Ranch is approximately four miles northeast of Sonora in the foothills of the western Sierra Nevada Mountains at an elevation of approximately 2,600 feet above mean sea level. The area around the Ranch is a gently southeast sloping hillside. The USGS topographic map of the Ranch shows two shallow ephemeral drainage areas that flow into an unnamed creek, identified by the Discharger as Chicken Creek. Chicken Creek is an ephemeral tributary to Phoenix Reservoir, which is used as a drinking water source for the Tuolumne Utility District service area in the Sonora region. Phoenix Reservoir drains into Sullivan Creek, which drains into the Tuolumne River.

26. The California Division of Mines and Geology, State of California geologic map sheet indicates the Ranch in underlain by granitic rock of Mesozoic age. A Water Well Drillers Report for an on-site well indicates decomposed granite or alluvium consisting of granitic detritus exists from ground surface to approximately 23 feet below ground surface (bgs). The decomposed granite is underlain by granitic bedrock with fractures encountered at intervals below 70 feet bgs.

27. Annual precipitation in the vicinity averages approximately 29 inches; the 100-year, 24 hour rainfall is approximately 7.7 inches; and the average reference evapotranspiration rate is approximately 5.19 inches per month from April through November.

28. The water balance submitted with the RWD was used to model storage and disposal capacity at the Ranch. Design storage was based on the containment of the 100-year, 24-hour storm and confirmed to prevent overflow of the ponds through long-term continuous modeling based on local rain gauge data. The model indicates the ponds and wastewater application areas have sufficient capacity to handle the flow rate of the WWTP allowed by this Order.

Groundwater Conditions

29. Groundwater is encountered between 35 and 76 feet bgs in wells W-01 through W-04 in fractured bedrock. Since groundwater typically occurs under confined or semi-confined conditions in fractured bedrock, groundwater may actually be deeper.

30. Groundwater is estimated to flow towards the southeast, which is consistent with site topography. Well pumping rates up to 42 gallons per minute have been observed in W-01 through W-04.

31. Groundwater quality can be characterized by the analytical data collected from the on-site water supply wells W-01 and W-04 and summarized in Finding 24.

Basin Plan, Beneficial Uses, and Regulatory Considerations

32. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins,* Fourth Edition (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Board. Pursuant to Water Code section 13263(a), waste discharge requirements must implement the Basin Plan.

33. Local drainage is to the Tuolumne River (Hydrologic Unit 536). The designated beneficial uses of the Tuolumne River, as stated in the Basin Plan, are municipal and domestic supply; agricultural supply; hydropower generation; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; and wildlife habitat.

34. The beneficial uses of underlying groundwater as set forth in the Basin Plan are municipal and domestic supply, agricultural supply, industrial service supply and industrial process supply.

35. The Basin Plan establishes narrative water quality objectives for chemical constituents, tastes and odors, and toxicity in groundwater. It also sets forth a numeric objective for total coliform organisms.

36. The Basin Plan's numeric water quality objective for bacteria requires that the most probable number (MPN) of coliform organisms over any seven-day period shall be less than 2.2 per 100 mL in MUN groundwater.

37. The Basin Plan's narrative water quality objectives for chemical constituents, at a minimum, require waters designated as domestic or municipal supply to meet the MCLs specified in Title 22 of the California Code of Regulations (hereafter Title 22). The Basin Plan recognizes that the Central Valley 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.

38. The narrative toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, animal, plant, or aquatic life associated with designated beneficial uses.

39. 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. The Basin Plan states that when compliance with a narrative objective is required to protect specific beneficial uses, the Central Valley Water Board will, on a case-by-case basis, adopt numerical limitations in order to implement the narrative objective.

40. 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.

41. With regard to BOD, excessive application can deplete oxygen in the vadose zone and lead to anoxic conditions. At the ground surface, this can result in nuisance odors and fly-breeding. When insufficient oxygen is present below the ground surface, anaerobic decay of the organic matter can create reducing conditions that convert metals that are naturally present in the soil as relatively insoluble (oxidized) forms to more soluble reduced forms. This condition can be exacerbated by acidic soils and/or acidic wastewater. If the reducing conditions do not reverse as the percolate travels down through the vadose zone, these dissolved metals (primarily iron, manganese, and arsenic) can degrade shallow groundwater quality. Many aquifers contain enough dissolved oxygen to reverse the process, but excessive BOD loading over extended periods may cause beneficial use impacts associated with these metals.

42. *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 lb/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.

43. The *Process Design Manual for Land Treatment of Municipal Wastewater*, produced by the United States Environmental Protection Agency, indicates lolium perenne (rye grass) will take up to 280 kilograms per hectare (250 pounds per acre) of nitrogen per year.

44. The Discharger estimated the nitrogen loading of the wastewater application area from irrigation with wastewater will be up to 130 lbs/acre/year. The nitrogen loading from the non-commercial livestock is estimated to be 40 lbs/acre/year.

Antidegradation Analysis

45. State Water Resources Control Board Resolution 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereafter Resolution 68-16) prohibits degradation of groundwater unless it has been shown that:

    a. The degradation will not unreasonably affect present and anticipated future 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 degradation is consistent with the maximum benefit to the people of the state, and

    d. The discharger employs best practicable treatment or control (BPTC) to minimize degradation.

46. The Discharger submitted an antidegradation analysis for nitrate and nitrite as nitrogen, chloride, and TDS. Concentrations of these constituents in infiltrated water were estimated by performing a site-wide water balance and mass balance, taking into account contributions from precipitation, treated wastewater used for irrigation, groundwater used for irrigation, and pond seepage. The Discharger concluded that, due to nutrient uptake of the wastewater application area and eightfold dilution from rainfall and irrigation with groundwater, the concentrations of chloride and TDS in the infiltrated water are less than their corresponding groundwater concentrations; therefore, the existing high quality of groundwater will be maintained and no groundwater degradation will occur.

47. Although the Discharger's antidegradation analysis indicated no groundwater degradation will occur as a result of the discharge, the analysis is based on a site conceptual model which is a simplified representation of site conditions and depends on many external influences, including: precipitation; integrity of pond liners; manual rotation of sprinkler irrigation system; and operation and maintenance of the WWTP and DAF unit. As a result, some groundwater degradation may occur.

48. The Discharger aids in the economic prosperity of the region by direct employment and provides a tax base for local and county governments. Provided the discharge from the Plant complies with State and Central Valley Water Board plans and policies, authorized degradation due to the continued operation of the plant is to the maximum benefit to the people of the State.

Treatment and Control Practices

49. The Discharger provides treatment and control of the discharge that incorporates:

a. Discharge of untreated wastewater and storm water to lined ponds.

b. All process wastewater and storm water produced in the processing facility are treated with a DAF unit and membrane bioreactor at the WWTP.

c. Irrigation buffer zones of 100-foot radius around water supply wells and 35-foot setback from ephemeral drainages.

d. Agronomic application of irrigation water to the wastewater application area, and

e. Reuse of wastewater in the processing facility to reduce the quantity of water discharged to land.

These treatment and control measures, in combination with the requirements of this Order, represent BPTC. Adoption of this Order will result in the implementation of BPTC.

Antidegradation Conclusion

50. This Order establishes groundwater limitations that allow some degradation, but that will not unreasonably threaten present and future anticipated beneficial uses of groundwater or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan.

51. This Order requires monitoring to evaluate potential groundwater impacts from the discharge and confirm that the BPTC measures are sufficiently protective of groundwater. This Order also includes Provisions requiring the Discharger to install a liner in the treated wastewater storage pond and prepare a Salinity Management Plan.

52. The discharge and the potential for groundwater degradation allowed in this Order is consistent with the Antidegradation Policy since: (a) the limited degradation allowed by this Order will not unreasonably affect present and anticipated beneficial uses of groundwater, or result in water quality less than water quality objectives, (b) the limited degradation is of maximum benefit to people of the State, and (c) the Discharger has implemented BPTC to minimize degradation.

Other Regulatory Considerations

53. 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 in 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."

54. Title 27 of the California Code of Regulations (hereafter Title 27) contains regulatory requirements for the treatment, storage, processing, and disposal of solid waste. However, Title 27 exempts certain activities from its provisions. Discharges regulated by this Order are exempt from Title 27 pursuant to provisions that exempt wastewater and reuse. Title 27, section 20090 states in part:

> The following activities shall be exempt from the SWRCB-promulgated provisions of this subdivision, so long as the activity meets, and continues to meet, all preconditions listed:
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> ***
>
> (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 RWQCB has issued WDRs, reclamation requirements, or waived such issuance;
>
> (2) the discharge is in compliance with the 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.
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> ***

55. The discharge authorized herein, and the treatment and storage facilities associated with the discharge, are exempt from the requirements of Title 27 as follows:

    a. The discharge to the HDPE lined ponds and wastewater application area is exempt pursuant to Title 27, section 20090(b):

        i. The Central Valley Water Board is issuing WDRs.

        ii. The discharge is in compliance with the Basin Plan, and;

        iii. The treated effluent discharged to the ponds and wastewater application area does not need to be managed as hazardous waste.

56. The State Water Board adopted Order 97-03-DWQ (NPDES General Permit CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities, and requiring submittal of a Notice of Intent by all affected industrial dischargers. All storm water from the processing facility is collected in a single-lined HDPE pond and treated at the WWTP. The Discharger is,

therefore, not required to obtain coverage under NPDES General Permit CAS000001.

57. Water Code section 13267(b) states:

> In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposes to discharge within its region … shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

The technical reports required by this Order and the attached Monitoring and Reporting Program R5-2013-0112 are necessary to ensure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

58. Pursuant to Water Code section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

California Environmental Quality Act

59. The Ranch has been in existence since 1957 with the addition of the processing facility in 1985. By prescribing these WDRs, the Board is imposing regulatory requirements on this existing discharge in order to ensure the protection of groundwater resources. This action is exempt from the provisions of the California Environmental Quality Act ("CEQA")(Pub. Resources Code, § 21000 et seq.) in accordance with California Code of Regulations, title 14, section 15301, which exempts the "operation, repair, maintenance, [and] permitting … of existing public or private structures, facilities, mechanical equipment, or topographical features" from environmental review.

Public Notice

60. 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.

61. 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.

62. 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, Diestel Turkey Ranch and Timothy J. and Joan C. Diestel, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and regulations adopted thereunder, shall comply with the following:

A. Discharge Prohibitions

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

2. Discharge of waste classified as 'hazardous', as that term is defined in California Code of Regulations, title 22, section 66261.1 *et seq*., is prohibited.

3. Discharge of waste classified as 'designated', as defined in Water Code section 13173, is prohibited.

4. Bypass of untreated or partially treated waste is prohibited, except as allowed by Standard Provision E.2 of the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*.

5. Discharge of waste at a location or in a manner different from that described in the RWDs and Findings herein, is prohibited.

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

7. Discharge of domestic wastewater to the process wastewater treatment system is prohibited.

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

9. Discharge of anything other than domestic wastewater to the septic tank and leach field system is prohibited.

B. Discharge Specifications

1. As determined by measuring the flow at monitoring location EFF-001[1], the discharge from the WWTP shall not exceed:

[1] Monitoring location EFF-001 is described in Monitoring and Reporting Program R5-2013-0112.

I. A monthly average discharge of 50,000 gpd, or

II. A maximum daily discharge of 100,000 gpd when the WWTP is in operation.

2. No waste constituent shall be released, discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations of this Order.

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

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

5. The Discharger shall operate all systems and equipment to optimize the quality of the discharge.

6. All conveyance, treatment, storage, and disposal systems shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year, 24-hour return frequency.

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

8. The discharge of treated wastewater shall be distributed uniformly on adequate acreage within the wastewater application area in compliance with the Discharge Specifications.

9. The Discharger shall periodically monitor solids accumulation in the equalization ponds (EQP#1, EQP#2, and EQP#3) and the treated wastewater pond and shall remove solids from all ponds to maintain adequate storage capacity. Solids shall be removed from the wastewater ponds and shipped off-site to an authorized compost or disposal facility.

C. Effluent Limitations

1. As determined by collecting samples from monitoring location EFF-001[1], effluent discharged from the WWTP shall not exceed the following limits:

Constituent	Units	Monthly Average Limit
BOD_5[1]	mg/L	10
Total Kjeldahl Nitrogen	mg/L	10

1. 5-day biochemical oxygen demand at 20°C.

D. Wastewater Application Area Specifications

1. The Discharger shall maintain the appropriate BMPs identified in the *2011-2012 Stormwater Best Management Practices (BMPs) and Monitoring Workplan* to eliminate pollutants in stormwater discharge from the reduced livestock raised at the Ranch.

2. Crops (which may include pasture grasses, native grasses and trees, and/or ornamental landscaping) shall be grown in the wastewater application area.

3. Application of waste constituents to the treated wastewater application area shall be at reasonable agronomic rates to preclude creation of a nuisance and degradation of groundwater, considering the crop, soil, climate, and irrigation management system. The annual nutritive loading of the wastewater application area, including the nutritive value of organic and chemical fertilizers, manure from on-site livestock, and of the wastewater, shall not exceed the annual crop demand.

4. Hydraulic loading of treated wastewater and irrigation water shall be at reasonable agronomic rates.

5. Land application of treated wastewater shall be managed to minimize erosion.

6. The Discharger may not discharge treated wastewater to the wastewater application area within 24 hours of a storm event of measurable precipitation or when soils are saturated.

7. Any runoff of wastewater resulting from irrigation shall be confined to the wastewater application area and shall not enter any surface water drainage course or storm water drainage system.

[1] Monitoring location EFF-001 is described in Monitoring and Reporting Program R5-2013-0112.

8. Treated wastewater shall not be discharged within 100 feet of water supply wells or within 35 feet of ephemeral drainage courses.

9. The wastewater application areas shall be managed to prevent breeding of mosquitos. More specifically:

   a. All applied irrigation water must infiltrate completely within 48-hours;

   b. Ditches not serving as wildlife habitat shall be maintained free of emergent, marginal, and floating vegetation; and

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

E. Groundwater Limitations

Release of waste constituents associated with the discharge shall not cause or contribute to groundwater containing constituent concentrations in excess of the concentrations specified below or in excess of natural background quality for the specified constituents, whichever is greater:

(i) Nitrate as nitrogen of 10 mg/L[1].

(ii) Electrical Conductivity of 900 umhos/cm[2].

(iii) Total coliform organisms equal to or greater than 2.2 MPN/100 mL over any 7-day period.

(iv) For constituents identified in Title 22 of the California Code of Regulations, the MCLs quantified therein[1,2].

[1] Primary MCLs applied as an instantaneous concentration.

[2] Secondary MCLs applied as an annual average concentration.

F. Provisions

1. The Discharger shall comply with Monitoring and Reporting Program R5-2013-0112, which is part of this Order, and any revisions thereto as ordered by the Executive Officer. The submittal dates of Discharger self-monitoring reports shall be no later than the submittal date specified in the MRP.

2. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated 1 March 1991, which are attached hereto and made a part of this Order. This attachment and its individual paragraphs are commonly referenced as "Standard Provisions."

3. **By 31 March 2014**, the Discharger shall submit a Design Plan with a time

schedule for liner installation in the treated wastewater pond. The Design Plan must be prepared by or under the direct supervision of a Civil Engineer registered in California or other persons registered to practice in California pursuant to California Business and Professions Code, and approved by the Executive Officer prior to construction. The design report shall include the following: (a) details on the pond liner, (b) a construction quality assurance plan describing testing and observations needed to document construction of the liner in accordance with the design criteria, and (c) manufacture's maintenance specifications for the liner. Upon written acceptance of the Design Plan by the Executive Officer, the Discharger shall begin construction on the pond improvements to be completed by **1 October 2014**. The Discharger shall submit a post-construction report following completion of the pond liner installation.

4. **By 1 October 2013**, the Discharger shall submit a post-construction report documenting the installation of the liners in equalization ponds EQP#1, EQP#2, and EQP#3. The post-construction report shall include: (a) liner specifications, (b) construction quality assurance that was completed during liner installation, and (c) manufacture's maintenance specifications for the liner. The post-construction report must be prepared by or under the direct supervision of a Civil Engineer registered in California or other persons registered to practice in California pursuant to California Business and Professions Code.

5. **By 1 January 2014,** the Discharger shall submit a Salinity Management Plan, which identifies additional cost effective methods that could be used to further reduce the salinity of the discharge to the maximum extent feasible from the processing facility, DAF unit, and WWTP. The management plan shall be subject to review by the Executive Officer.

6. The Discharger shall either demonstrate the existing on-site water supply wells are adequate to monitor groundwater downgradient of the wastewater application area and or install and maintain a sufficient number of groundwater monitoring well(s) to monitor groundwater downgradient of the wastewater application area. Prior to installing new groundwater monitoring wells, the Discharger shall submit a Work Plan and Time Schedule to install the monitoring well(s). The demonstration to utilize the existing on-site water supply wells or the Work Plan to install new monitoring wells shall be subject to review by the Executive Officer.

   The Work Plan shall satisfy the information needs specified in the monitoring well installation section of Attachment B, *Standard Requirements for Monitoring Well Installation Work Plans and Monitoring Well Installation Reports*. New and replacement wells shall comply with appropriate standards as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981), and any more

stringent standards adopted by the Discharger or county pursuant to Water Code Section 13801.

The Discharger shall comply with the following compliance schedule in implementing the work required by this Provision.

	Task	Compliance Date
a.	Submit Work Plan and Time Schedule for monitoring well installation or demonstration that existing on-site water supply wells adequately monitor groundwater downgradient of the wastewater application area.	**By 1 February 2014**
b.	Complete installation of additional monitoring well(s) and collection of one round of groundwater samples in accordance with the MRP.	**Within 120 days of Executive Officer approval of Work Plan**
c.	Submit technical report documenting monitoring well installation.	**Within 90 days following well installation and sampling.**

7. As a means of discerning compliance with Discharge Specification B.7, the dissolved oxygen (DO) content in the upper one foot of any pond holding treated or untreated wastewater shall not be less than 1.0 mg/L for three consecutive weekly sampling events. If the DO in any single pond is below 1.0 mg/L for three consecutive sampling events, the Discharger shall report the findings to the Central Valley Water Board in writing within 10 days and shall include a specific plan to resolve the low DO results within 30 days.

8. The Discharger shall operate and maintain all treated and untreated wastewater and storm water 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).

9. The wastewater ponds or structures shall have sufficient capacity to accommodate allowable wastewater flow, seasonal precipitation, and ancillary inflow and infiltration during the winter while ensuring continuous compliance with all requirements of this Order.

10. On or about **1 October** of each year, available capacity shall at least equal the volume necessary to comply with Provision F.9.

11. Any new construction or rehabilitation of berms or levees (excluding internal berms that separate ponds or control the flow of water within a pond) shall be designed and constructed under the supervision of a California Registered Civil Engineer.

12. In accordance with California Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans for investigations and studies, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall bear the professional's signature and stamp.

13. The Discharger shall submit the technical reports and work plans required by this Order for consideration by the Executive Officer, and incorporate comments the Executive Officer may have in a timely manner, as appropriate. Unless expressly stated otherwise in this Order, the Discharger shall proceed with all work required by the foregoing provisions by the due dates specified.

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

15. The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by the Discharger only when the operation is necessary to achieve compliance with the conditions of this Order.

16. 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.

17. At least **90 days** prior to termination or expiration of any lease, contract, or agreement involving disposal or recycling areas or off-site reuse of effluent, used to justify the capacity authorized herein and assure compliance with this Order, the Discharger shall notify the Central Valley Water Board in writing of the situation and of what measures have been taken or are being taken to assure full compliance with this Order.

18. In the event of any change in control or ownership of the plant, the Discharger must notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.

19. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. If approved by the Executive Officer, the transfer request will be submitted to the Central Valley Water Board for its consideration of transferring the ownership of this Order at one of its regularly scheduled meetings.

20. A copy of this Order including the MRP, Information Sheet, Attachments, and Standard Provisions, shall be kept at the Ranch for reference by operating personnel. Key operating personnel shall be familiar with its contents.

21. If the Central Valley Water Board determines that the discharge has a reasonable potential to cause or contribute to an exceedance of a water quality objective, or to create a condition of nuisance or pollution, this Order may be reopened for consideration of additional requirements.

22. The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan amendment that will establish a salt and nitrate management plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objectives are to be interpreted for the protection of agricultural use. If new information or evidence indicates that groundwater limitations different than those prescribed herein are appropriate, this Order may be reopened to incorporate such limits.

23. The Central Valley Water Board will review this Order periodically and will revise requirements when necessary.

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

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

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

or will be provided upon request.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region on 26 July 2013

Original signed by:

PAMELA C. CREEDON, Executive Officer

Order Attachments:

A. Site Location Map
B. Standard Requirements for Monitoring Well Installation Work Plans and Monitoring Well Installation Reports

Monitoring and Reporting Program R5-2013-0112
Information Sheet
Standard Provisions (1 March 1991) (separate attachment to Discharger only)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2013- 0112

FOR
DIESTEL TURKEY RANCH
AND
TIMOTHY J. AND JOAN C. DIESTEL
TUOLUMNE COUNTY

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

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

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

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

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

If monitoring consistently shows no significant variation in magnitude of a constituent concentration or parameter after at least 12 sampling events, the Discharger may request this MRP be revised to reduce monitoring and/or reporting frequency. The proposal must include adequate technical justification for reduction in monitoring and/or reporting 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
EFF-001	Location where a representative sample of the WWTP's effluent can be obtained prior to discharge to the treated effluent pond, holding tank or the wastewater application area. Effluent samples shall be collected prior to mixing wastewater with supplemental irrigation water.
WAA-001	Pasture where treated wastewater is applied.
PND-001	Equalization pond EQP#1
PND-002	Equalization pond EQP#2
PND-003	Equalization pond EQP#3
PND-004	Treated wastewater pond
SPL-001	On-site water supply well W-01
SPL-002	On-site water supply well W-02
SPL-003	On-site water supply well W-03
SPL-004	On-site water supply well W-04
RGW-001, RGW-002, etc.[1]	Groundwater monitoring well(s)

1. Applicable if and when groundwater monitoring wells installed at the site.

WWTP EFFLUENT MONITORING

The Discharger shall monitoring treated effluent at EFF-001 as follows:

Frequency	Constituent/Parameter	Units	Sample Type
Continuous	Flow	gpd	Meter
Weekly	pH	pH Units	Grab
Weekly	EC	umhos/cm	Grab
Monthly	BOD_5	mg/L	Grab
Monthly	Ammonia as N	mg/L	Grab
Monthly	Nitrate as N	mg/L	Grab
Monthly	TKN	mg/L	Grab
Monthly	Total Nitrogen	mg/L	Computed
Monthly	Chloride	mg/L	Grab
Monthly	Sodium	mg/L	Grab
Monthly	TDS	mg/L	Grab
Monthly	FDS	mg/L	Grab
Monthly	Total Coliform	MPN/100mL	Grab
Annually	General Minerals[1]	mg/L	Grab
1/Three Years	Metals[2]	mg/L	Grab

1. General minerals include: alkalinity (as $CaCO_3$), bicarbonate (as $CaCO_3$), calcium, carbonate (as $CaCO_3$), chloride, hardness (as $CaCO_3$), magnesium, phosphorus, potassium, sodium, and sulfate. General minerals analysis results shall include a cation/anion balance. Samples collected for metals shall be filtered with a 0.45 micron filter prior to preservation, digestion, and analysis.
2. Metals include: aluminum, boron, chromium, copper, iron, lead, manganese, molybdenum, nickel, and zinc. Samples collected for metals shall be filtered with a 0.45 micron filter prior to preservation, digestion, and analysis.

WASTEWATER APPLICATION AREA MONITORING

The Discharger shall perform the following routine monitoring and loading calculations for the wastewater application area (WAA-001). In addition the Discharger shall keep a log of routine monitoring observations of the wastewater application area, for example: areas of ponding, broken irrigation pipes, odors and/or flies within the wastewater application area. Data shall be collected and presented in tabular format and shall include the following:

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

1. National Weather Service data from the nearest weather station is acceptable.
2. Loading rates to be calculated using the applied volume of wastewater, applied acreage, and average of the three most recent concentrations for BOD. The BOD loading rate shall be divided by the #days between applications to determine cycle average.
3. Nitrogen and salt loading shall be calculated using the applied volume of wastewater, applied acreage, and average of the three most recent concentrations for total nitrogen and FDS.

EQUALIZATION PONDS AND TREATED WASTEWATER POND MONITORING

Pond monitoring (PND-001 through PND-004) shall be in effect so long as the ponds contain wastewater (either treated or untreated), shall be monitored in each pond, and shall include at least the following:

Frequency	Constituent/Parameter	Units	Sample Type
Weekly	Freeboard	feet	Measured
Weekly	Dissolved Oxygen	mg/L	grab
Weekly	Visual Inspection[1]	n/a	n/a
1/Five Years[2]	Liner Leak Testing[3]	n/a	n/a

1. Visual inspection shall include observing the pond sides and surface area for items such as: weeds, algae, animal holes, integrity of liner, and erosion.
2. The first liner leak testing shall be conducted within the first year following the adoption of the Order, then once every five years.
3. The liner leak testing procedure shall be selected in accordance with American Society of Testing and Materials (ASTM) Method D 6747, *Standard Guide for Selection of Techniques for Electrical Detection of Potential Leak Paths in Geomembranes* or a procedure approved by the Executive Officer.

WATER SUPPLY AND GROUNDWATER MONITORING WELL MONITORING

For each water supply well SPL-001 through SPL-004 and groundwater monitoring well (RGW-001, RGW-002, etc.), the Discharger shall collect samples for chemical analysis in accordance with Title 22 drinking water requirements for the following:

Frequency	Constituent/Parameter	Units	Sample Type
Annually	Depth to Groundwater	feet	Measurement
Annually	Groundwater Elevation	feet	Computed
Annually	Electrical Conductivity	umhos/cm	Grab
Annually	Ammonia as N	mg/L	Grab
Annually	Nitrate as N	mg/L	Grab
Annually	TKN	mg/L	Grab
Annually	Total Nitrogen	mg/L	Computed
Annually	Total Coliform	MPN/100mL	Grab
Annually	General Minerals[1]	mg/L	Grab

1. General minerals include: alkalinity (as $CaCO_3$), bicarbonate (as $CaCO_3$), calcium, carbonate (as $CaCO_3$), chloride, hardness (as $CaCO_3$), magnesium, phosphorus, potassium, sodium, sulfate, and TDS. General minerals analysis results shall include a cation/anion balance. Samples collected for metals shall be filtered with a 0.45 micron filter prior to preservation, digestion, and analysis.

REPORTING

All monitoring results shall be reported in **Quarterly Monitoring Reports** which are due by the first day of the second month after the calendar quarter. Therefore, monitoring reports are due as follows:

First Quarter Monitoring Report: **1 May**

Second Quarter Monitoring Report: **1 August**

Third Quarter Monitoring Report: **1 November**

Fourth Quarter Monitoring Report: **1 February**.

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

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

Discharger: Diestel Turkey Ranch and Timothy J. and Joan C. Diestel
Facility: Diestel Turkey Ranch
MRP: R5-2013-0112
Contact Information (telephone number and email)

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

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

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

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

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

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

A. All Quarterly Monitoring Reports, shall include the following:

WWTP Effluent Reporting

1. The results of WWTP effluent monitoring specified on page 3.

2. For each month of the quarter, calculation of the maximum daily flow, monthly average flow, and cumulative annual flow from the WWTP.

Wastewater Application Area Reporting

1. The results of the routine monitoring specified on page 4.

2. Provide a Site Map of the wastewater application area showing predominant features and acreage where wastewater was applied.

3. A summary of the notations made in the wastewater application area monitoring log during each quarter. The entire contents of the log do not need to be submitted.

Equalization Ponds and Treated Wastewater Pond Monitoring Reporting

1. The results of the routine monitoring specified on page 5.

B. Fourth Quarter Monitoring Reports, in addition to the above, shall include the following:

WWTP Effluent Reporting

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 WWTP for emergency and routine situations.

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

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

Wastewater Application Area Reporting

1. The type of crop(s) grown, planting and harvest dates (if applicable), and the quantified nitrogen and fixed dissolved solids uptakes (as estimated by technical references or, preferably, determined by representative plant tissue analysis). Include any soil and/or tissue sampling results that may be available.
2. The monthly and annual discharge volumes during the reporting year expressed as million gallons and inches.
3. A monthly balance for the reporting year that includes:
   a. Monthly crop uptake

      i. Crop water utilization rates are available from a variety of publications available from the local University of California Davis extension office.

      ii. Irrigation efficiency – Frequently, engineers include a factor from irrigation efficiency such that the application rate is slightly greater than the crop utilization rate. A conservative design does not include this value.

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

         (b) Monthly average and annual average discharge flow rates from the wastewater treatment area.

         (c) Monthly estimates of the amount of wastewater percolating below the root zone (i.e., amount of wastewater applied in excess of crop requirements)

4. A summary of average and cycle BOD_5 loading rates.
5. The total pounds of nitrogen applied to the wastewater application area, as calculated from the sum of the monthly loadings, and the total annual nitrogen loading to the wastewater application area in lbs/acre-year.
6. The total pounds of FDS that have been applied to the wastewater application area, as calculated from the sum of the monthly loadings, and the total annual FDS loading to the wastewater application area in lbs/acre-year.

7. Annual production totals of solids generated at the Ranch and a description of off-site disposal methods of solids, including location, and Order number of regulatory permit (if appropriate).

Water Supply and Groundwater Monitoring Well Reporting

1. The results of the routine monitoring specified on page 5.

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

Original signed by:

PAMELA C. CREEDON, Executive Officer

26 July 2013

(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
WWTP	Wastewater treatment plant
Continuous	The specified parameter shall be measured by a meter continuously.
24-hr Composite	Samples shall be a flow-proportioned composite consisting of at least eight aliquots.
Daily	Samples shall be collected every day except weekends or holidays.
Twice Weekly	Samples shall be collected at least twice per week on non-consecutive days.
Weekly	Samples shall be collected at least once per week.
Twice Monthly	Samples shall be collected at least twice per month during non-consecutive weeks.
Monthly	Samples shall be collected at least once per month.
Bimonthly	Samples shall be collected at least once every two months (i.e., six times per year) during non-consecutive months.
Quarterly	Samples shall be collected at least once per calendar quarter. Unless otherwise specified or approved, samples shall be collected in March, June, September, and December.
Semiannually	Samples shall be collected at least once every six months (i.e., two times per year). Unless otherwise specified or approved, samples shall be collected in June and December.
Annually	Samples shall be collected at least once per year.
Biennially	Samples shall be collected at least once every two years.
1/Three Years	Samples shall be collected at least once every three years.
1/Five Years	Liner leak tests shall be conducted once every five years.
mg/L	Milligrams per liter
mL/L	Milliliters [of solids] per liter
ug/L	Micrograms per liter
umhos/cm	Micromhos per centimeter
mgd	Million gallons per day
MPN/100 mL	Most probable number [of organisms] per 100 milliliters
mg/kg	Milligrams per kilogram
yds^3	Cubic yards
ac-ft	Acre-feet

INFORMATION SHEET

INFORMATION SHEET – ORDER R5-2013-0112
DIESTEL TURKEY RANCH
TIMOTHY J. AND JOAN C. DIESTEL
TUOLUMNE COUNTY

BACKGROUND

Diestel Turkey Ranch (hereafter "Ranch") owns and operates the Ranch at 22200 Lyons Bald Mountain Road in Sonora (Section 16, T2N, R15E, MDB&M). Timothy J. and Joan C. Diestel own the land discharge areas. The Diestel Turkey Ranch and Timothy J. and Joan C. Diestel are collectively referred to as "Discharger." The Ranch occupies Assessor's Parcel Numbers (APN) 085-050-20. The Diestel family has raised turkeys at the Ranch since approximately 1957 and purchased the Ranch in the 1970's. The current slaughterhouse and processing facility was added in 1985, replacing and older and smaller facility. A wastewater treatment plant (WWTP) began operating in 2007 and a dissolved air flotation (DAF) unit was installed in September 2012. Waste discharge requirements have never been adopted for the Ranch.

On 19 December 2011, the Discharger submitted two Reports of Waste Discharge (RWD) to satisfy a Notice of Violation/California Water Code section 13267 Order issued on 11 September 2011. Each RWD included a technical report, one titled, *Technical Report for Wastewater Treatment and Reuse, Diestel Turkey Ranch, Sonora, California* (the wastewater report) and the other titled, *Technical Report in Support of Report of Waste Discharge for Turkey Pastures, Diestel Turkey Ranch, Sonora, California* (the turkey report). On 24 July 2012, on behalf of the Ranch, Sheppard Mullin Richter & Hampton LLP (SheppardMullin) submitted, via electronic mail, an update on the progress of submitting a revised RWD. On 14 December 2012, a revised RWD was submitted that included several technical memorandums addressing deficiencies from the December 2011 RWD's. On 11 March 2013, groundwater and effluent data were submitted to supplement the December 2012 RWD. Collectively, the three RWD's and the SheppardMullin electronic mail update describe turkey processing and wastewater and storm water management at the Diestel Turkey Ranch.

Included in the turkey report was a *2011-2012 Stormwater Best Management Practices (BMPs) and Monitoring Workplan* for the Ranch. The intent of the BMP Workplan is to implement long-term site BMPs that are effective and result in the reduction or elimination of pollutants in stormwater discharge and authorized non-stormwater discharges from site activity. The BMPs include, but not limited to: establishing vegetation in the turkey pens; regrading and installing straw waddles and straw bales on downgradient edges of turkey pens; installing gravel bag berms around drains, and installing gravel on roads and equipment storage areas.

The Discharger has eliminated all commercial use of the pens to raise turkeys, but will continue to raise a couple hundred chickens and turkeys, several dozen goats, pigs, and/or sheep, and 4 to 6 cows. This is a significant reduction in livestock compared to when up to 20,000 turkeys were raised at the Ranch during commercial use of the pens. It was estimated the reduced livestock at the Ranch will produce approximately 40 pounds of total nitrogen per acre per year. The combined annual nitrogen loading of the wastewater application area from irrigation with treated wastewater (130 lbs/acre) and manure from the reduced herd (40 lbs/acre) will not exceed the annual nitrogen uptake of the 37 acres of rye grass

(250 lbs/acre). The nitrogen loading of the reduced livestock at the Ranch was estimated based on information from *Bulletin 804* from the Ohio State University and site specific knowledge reported from the Discharger and includes:

- Wet turkey manure output is 115% of dry feed consumed by each turkey,
- Fresh turkey manure is 75% water
- 2.75 pounds of feed is needed per pound of live turkey weight,
- At an 18 pound live turkey weight average, each bird that survives to slaughter (200 days) would eat a total of 50 pounds of dry feed,
- Cows produce 0.38 lbs or total nitrogen per day and sheep/goats produce 0.04 lbs of total nitrogen per day, and
- 400 turkeys, 6 cows and 36 sheep/goats would be on-site year-round.

Wastewater

Wastewater generated at the processing facility consists of wash water from turkey processing and wash water from equipment, truck, and pavement cleaning and is conveyed from the processing facility to one of two equalization ponds (EQP#2 or EQP#3). Prior to entering the pond(s), solids (consisting of feathers and entrails) are removed from the wastewater as it passes through three rotary drum screens and an additional screen separator. Storm water generated at the processing facility is captured and conveyed to a sump and directed to either EQP#2 or EQP#3. All wastewater and storm water that enters EQP#2 and EQP#3 is processed through a DAF unit and discharged to EQP#1 and treated at the WWTP. Treated effluent is then reused in the processing facility or on-site irrigation of pasture land (also referred to as the wastewater application area).

The WWTP consists of a ZeeWeed Membrane System® bioreactor designed by Zenon International Inc. in 2005, constructed in 2006, and operational in 2007. The WWTP replaced the previous wastewater disposal system, which consisted of an on-site leach field that was used to infiltrate untreated wastewater. The WWTP is designed for an average flow of 50,000 gallons per day (gpd) with a maximum flow of 100,000 gpd. The DAF unit was installed in September 2012 and operated at the same capacity as the WWTP. Solids are removed from the wastewater at the DAF unit by a rotary scraper to a separate tank. From June through November, peak processing flows from the processing facility are up to 50,000 gpd. These flows reduce to about 50 percent in December, April, and May. There is typically no flow in January, February, and March.

Effluent samples collected from 2009 through 2012 from the WWTP are summarized below.

Parameter	Units	Number of Samples	Mean Result
pH	pH Units	32	7.4
Biochemical Oxygen Demand	mg/L	31	2.4
Chemical Oxygen Demand	mg/L	1	113

Parameter	Units	Number of Samples	Mean Result
Total Suspended Solids	mg/L	31	8.7
Electrical Conductivity	umhos/cm	5	1,231
Total Dissolved Solids	mg/L	5	611
Volatile Dissolved Solids	mg/L	4	276
Chloride	mg/L	5	204
Sodium	mg/L	5	134
Total Kjeldahl Nitrogen	mg/L	30	1.7
Ammonia as N	mg/L	29	1.4
Nitrate as N	mg/L	29	60
Nitrite as N	mg/L	4	0.26
Phosphorus	mg/L	1	4.49

The Discharger has indicated the concentrations of nitrate as N in samples collected from the WWTP effluent have decreased since the DAF unit was installed. Three WWTP effluent samples have been collected since the DAF unit was installed. The nitrate as N concentrations of these effluent samples were 40.5 mg/L (October 2012), 5.28 mg/L (November 2012), and 5.51 mg/L (December 2012). However, these effluent sample results may be diluted by storm water that is captured and mixed with process facility wastewater in EQP#2 and EQP#3.

Since the DAF unit was installed, chloride, sodium, and electrical conductivity in samples collected from the WWTP effluent have increased. Effluent chloride, sodium, and electrical conductivity in July 2012 were 42.1 mg/L, 12.9 mg/L, and 411 umhos/cm, respectively. However, effluent as high as 339 mg/L for chloride, 245 mg/L for sodium, and 1,737 umhos/cm for electrical conductivity were reported for November 2012. This Order includes a Provision requiring the Discharger to prepare and implement a Salinity Management Plan that will evaluate cost effective alternatives for reducing the salinity of the waste stream.

Various chemicals are used on a routine basis in conjunction with the wash water and as additives to the DAF unit and WWTP. Chemical descriptions and annual usage are:

Processing Facility

I. Chlormate XF (Chlorinated Alkaline Foam Cleaner) – 500 gallons
II. Super Cleaner (Concentrated Liquid Alkaline Degreaser) – 672 gallons
III. Sani Chlor (12.5% Sodium Hypochlorite) – 1,500 gallons
IV. Circulation Liquid (Liquid CIP Caustic Cleaner) – 85 gallons
V. NRQ (Hard Surface Sanitizer and Disinfectant, Ammonium Chloride) – 37 gallons
VI. Foaming Agent (Phosphoric Acid) – 36 gallons
VII. Food Contamination Remover (Sodium Hydroxide) – 45 gallons

VIII. Low Suds Detergent – 618 gallons

DAF Unit

I. High Charge Polyacrylamide Flocculent – annual usage to be determined

WWTP

I. Sodium Hydroxide – 500 gallons
II. Ferric Chloride – 700 gallons

Source Water

Source water is from four on-site water supply wells (W-01 through W-04). Groundwater from each well is pumped to a common manifold for use at the Ranch. Average results from groundwater samples collected from each well in December 2012 and January and February 2013 are summarized below:

Parameter	Units	W-01	W-02	W-03	W-04
Aluminum	ug/L	<50	<50	<50	<50
Copper	ug/L	<50	<50	<50	<50
Iron	ug/L	<100	<100	263	564
Manganese	ug/L	284	196	230	195
Strontium	ug/L	307	270	223	197
Total Alkalinity	mg/L	172	118	134	135
Ammonia as N	mg/L	<0.2	<0.2	<0.2	<0.2
Calcium	mg/L	37	30	32	32
Chloride	mg/L	75	54	35	45
Electrical Conductivity	umhos/cm	619	524	489	436
Hardness	mg/L	166	134	140	154
Potassium	mg/L	2	2	2	2
Magnesium	mg/L	18	14	15	18
Sodium	mg/L	13	11	11	14
Nitrate as N	mg/L	6	8	8	3
pH	pH Units	7.1	6.5	7.2	7
TDS	mg/L	406	356	302	294
Sulfate	mg/L	50	41	36	28
TKN	mg/L	0.48	0.42	0.5	1.4

DISPOSAL METHODS

Solids

Solid waste from truck, pavement, equipment, and turkey washing, and sludge from the DAF unit and WWTP are stored in concrete lined basins or bins. The solid wastes are transported by the Discharger to an authorized off-site composting facility.

Wastewater

Treated effluent is either pumped back to the processing facility for reuse or to a roughly 3.2 million gallon capacity storage pond and 200,000 gallon storage tank. The treated effluent storage pond is unlined and approximately 14 feet deep. The Discharger plans to install a single layer HDPE liner in the treated wastewater pond. Treated wastewater from the 200,000 gallon storage tank is pumped through a sprinkler system to irrigate 37 acres of pasture consisting primarily of lolium perenne (rye grass). Up to 40,000 gallons per day of irrigation water are applied to sustain vegetation. During a typical year, the 40,000 gallons per day application rate would occur for approximately 180 days, with reduced irrigation in the non-summer months, for a total annual volume of approximately 10,800,000 gallons.

GROUNDWATER CONDITIONS

Groundwater is encountered between 35 and 76 feet bgs in wells W-01 through W-04 in fractured bedrock. Since groundwater typically occurs under confined or semi-confined conditions in fractured bedrock, groundwater may actually be deeper. Groundwater is estimated to flow towards the southeast, which is consistent with site topography. Well pumping rates up to 42 gallons per minute have been observed in W-01 through W-04. Groundwater quality can be characterized by the analytical data collected from the on-site water supply wells W-01 and W-04.

REGULATORY CONSIDERATIONS

Basin Plan

The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins,* Fourth Edition (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Board. Pursuant to Water Code section 13263(a), waste discharge requirements must implement the Basin Plan. Local drainage is to the Tuolumne River (Hydrologic Unit 536). The beneficial uses of the Tuolumne River, as stated in the Basin Plan, are municipal and domestic supply; agricultural supply; hydropower generation; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; and wildlife habitat. The beneficial uses of underlying groundwater as set forth in the Basin Plan are municipal and domestic supply, agricultural supply, industrial service supply and industrial process supply.

Treatment and Control Practices

The Discharger provides treatment and control of the discharge that incorporates:

a. Discharge of untreated wastewater and storm water to lined ponds.

b. All process wastewater and storm water produced at the processing facility is treated with a DAF unit and a membrane bioreactor at the WWTP.

c. Irrigation buffer zone of 100-foot radius around water supply wells and 35-foot setback from ephemeral drainages.

d. Agronomic application of irrigation water to the wastewater application area via a mobile sprinkler system.

e. Reuse of wastewater in the processing facility to reduce the quantity of water discharged to land.

In combination with the requirements of this Order, these treatment and control measures represent best practicable treatment and control (BPTC).

Antidegradation

The antidegradation directives of State Water Board Resolution No. 68-16, "*Statement of Policy With Respect to Maintaining High Quality Waters in California*," or "Antidegradation Policy" require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Policy and procedures for complying with this directive are set forth in the Basin Plan.

The discharge and the potential for groundwater degradation allowed in this Order is consistent with the Antidegradation Policy since: (a) the limited degradation is of maximum benefit to people of the State, (b) the limited degradation allowed by this Order will not unreasonably affect present and anticipated beneficial uses of groundwater, or result in water quality less than water quality objectives, and (c) the Discharger has implemented BPTC to minimize degradation.

Title 27

Unless exempt, the release of designated waste is subject to full containment pursuant to Title 27 requirements. Here, the discharge is exempt from the requirements of Title 27 pursuant to the wastewater exemption found at Title 27, section 20090(b).

California Environmental Quality Act

The Ranch has been in existence since 1957 and the processing facility was added in 1985. As such, the adoption of this Order for an existing facility is exempt from the requirements of California Environmental Quality Act in accordance with California Code of Regulations, title 14, section 15301.

PROPOSED ORDER TERMS AND CONDITIONS

Discharge Prohibitions, Effluent Limitations, Discharge Specifications, and Provisions

The proposed Order prohibits discharge to surface waters and drainage courses. In addition, the Order requires the Discharger to continue to implement/sustain the stormwater BMP's identified in the turkey report to preclude discharge of pollutants in stormwater to drainage courses from the turkey pens.

The proposed Order sets the following effluent flow limits: a monthly average discharge of 50,000 gpd and a maximum daily discharge of 100,000 gpd when the WWTP is in operation.

Based on the design parameters of the WWTP, effluent discharged from the WWTP shall not exceed the following limits:

Constituent	Units	Monthly Average Limit
BOD_5[1]	mg/L	10
Total Kjeldahl Nitrogen	mg/L	10

1. 5-day biochemical oxygen demand at 20°C.

This Order includes Provisions for the Discharger to submit the following: a Salinity Management Plan to evaluate and implement cost effective measures that could reduce the salinity of the discharge; a post-construction report documenting the installation of HPDE liners in the equalization ponds; and a work plan for installation of HPDE liner in the treated wastewater pond.

Application of waste constituents to the wastewater application area shall be at reasonable agronomic rates to preclude creation of a nuisance or degradation of groundwater, considering the crop, soil, climate, and irrigation management system. The annual nutritive loading of the wastewater application area, including the nutritive value of organic and chemical fertilizers, manure from non-commercial livestock, and of the wastewater, shall not exceed the annual crop demand.

Monitoring Requirements

Water Code section 13267 authorizes the Central Valley Water Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the State. In recent years there has been increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Water Code section 13268 authorizes the assessment of administrative civil liability for failure to submit required monitoring and technical reports.

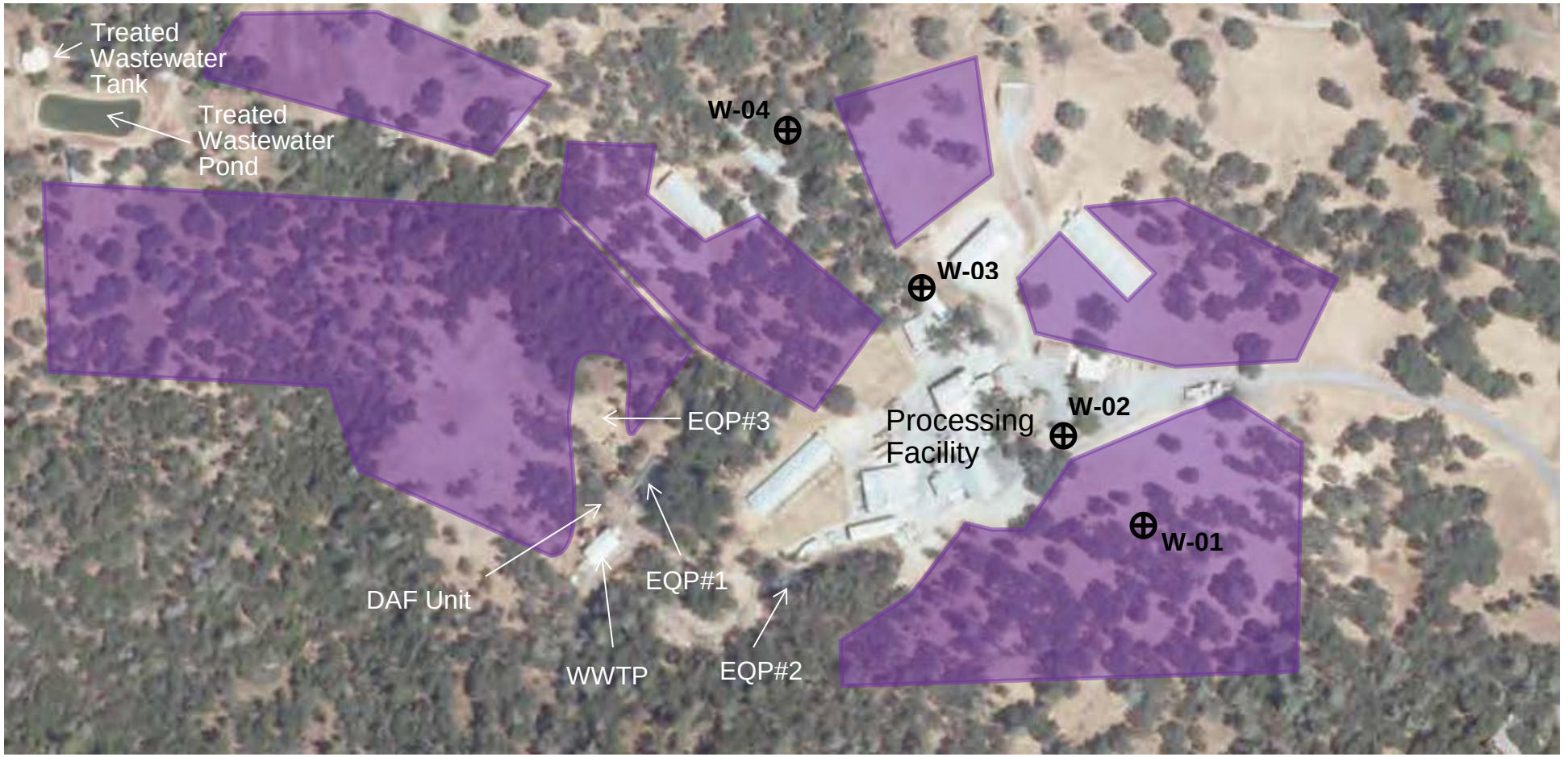
The Discharger is required to either submit a demonstration that samples collected from the existing on-site water supply wells adequate characterize groundwater downgradient of

discharge to the wastewater application area or install a sufficient number of downgradient groundwater monitoring wells.

The proposed Order includes monitoring requirements for WWTP effluent, wastewater application area, equalization and treated wastewater ponds, and groundwater wells. In addition, the proposed Order requires monitoring of the wastewater loading calculations for organics, nutrients, and salts. This monitoring is necessary to characterize the discharge, and evaluate compliance with effluent limitations and discharge specifications prescribed in the Order.

Reopener

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



Approximate Location of Wastewater Application Area

⊕ Approximate Location of Water Supply Well

Drawing Reference: **COLUMBIA SE QUADRANGLE** U.S.G.S TOPOGRAPHIC MAP 7.5 MINUTE QUADRANGLE ***2012*** ***Not to scale***	ATTACHMENT A - SITE LOCATION MAP WASTE DISCHARGE REQUIREMENTS ORDER R5-2013-0112 DIESTEL TURKEY RANCH TUOLUMNE COUNTY	N W E S

WASTE DISCHARGE REQUIREMENTS ORDER R5-2013-0112
ATTACHMENT B
STANDARD REQUIREMENTS FOR
MONITORING WELL INSTALLATION WORK PLANS AND
MONITORING WELL INSTALLATION REPORTS

Prior to installation of groundwater monitoring wells, the Discharger shall submit a work plan containing, at a minimum, the information listed in Section 1, below. Wells may be installed after staff approve the work plan. Upon installation, the Discharger shall submit a well installation report that includes the information contained in Section 2, below. All work plans and reports must be prepared under the direction of, and certified by, a California registered geologist or civil engineer.

SECTION 1 - Monitoring Well Installation Work Plan and Groundwater Sampling and Analysis Plan

The monitoring well installation work plan shall contain, at a minimum, the following information:

A. General Information:
   Purpose of the well installation project
   Brief description of local geologic and hydrogeologic conditions
   Proposed monitoring well locations and rationale for well locations
   Topographic map showing facility location, roads, and surface water bodies
   Large-scaled site map showing all existing on-site wells, proposed wells, surface water bodies and drainage courses, buildings, waste handling facilities, utilities, and major physical and man-made features

B. Drilling Details:
   On-site supervision of drilling and well installation activities
   Description of drilling equipment and techniques
   Equipment decontamination procedures
   Cuttings disposal methods
   Soil sampling intervals (if appropriate); logging methods; number and location of soil samples and rationale; and sample collection, preservation, and analytical methods

C. Monitoring Well Design (in graphic form with rationale provided in narrative form):
   Diagram of proposed well construction details
   - Borehole diameter
   - Casing and screen material, diameter, and centralizer spacing (if needed)
   - Type of well caps (bottom cap either screw on or secured with stainless steel screws)
   - Anticipated depth of well, length of well casing, and length and position of perforated interval
   - Thickness, position and composition of surface seal, sanitary seal, and sand pack
   - Anticipated screen slot size and filter pack

D. Well Development (not to be performed until at least 48 hours after sanitary seal placement):
Method of development to be used (i.e., surge, bail, pump, etc.)
Parameters to be monitored during development and record keeping technique
Method of determining when development is complete
Disposal of development water

E. Well Survey (precision of vertical survey data shall be at least 0.01 foot):
Identify the Licensed Land Surveyor or Civil Engineer that will perform the survey
Datum for survey measurements
List well features to be surveyed (i.e., top of casing, horizontal and vertical coordinates, etc.)

F. Schedule for Completion of Work

G. Appendix: Groundwater Sampling and Analysis Plan (SAP)
The Groundwater SAP, a guidance document that is referred to by individuals responsible for conducting groundwater monitoring and sampling activities, shall contain, at a minimum, a detailed written description of standard operating procedures for:

- Equipment to be used during sampling
- Equipment decontamination procedures
- Water level measurement procedures
- Well purging (include a discussion of procedures to follow if three casing volumes cannot be purged)
- Monitoring and record keeping during water level measurement and well purging (include copies of record keeping logs to be used)
- Purge water disposal
- Analytical methods and required reporting limits
- Sample containers and preservatives
- Sampling
  - General sampling techniques
  - Record keeping during sampling (include copies of record keeping logs to be used)
  - QA/QC samples
- Chain of Custody
- Sample handling and transport

SECTION 2 - Monitoring Well Installation Report

The monitoring well installation report must provide the information listed below. In addition, the report must also clearly identify, describe, and justify any deviations from the approved work plan.

A. General Information:
   Purpose of the well installation project
   Number of monitoring wells installed and identifying label(s) for each
   Brief description of geologic and hydrogeologic conditions encountered during well installation
   Topographic map showing facility location, roads, surface water bodies
   Large-scaled site map showing all previously existing wells, newly installed wells, surface water bodies and drainage courses, buildings, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details (in narrative and/or graphic form):
   On-site supervision of drilling and well installation activities
   Drilling contractor and driller's name
   Description of drilling equipment and techniques
   Equipment decontamination procedures
   Well boring log (provide for each well)
   - Well boring number and date drilled
   - Borehole diameter and total depth
   - Total depth of open hole (i.e., total depth drilled if no caving or back-grouting occurs)
   - Depth to first encountered groundwater and stabilized groundwater depth
   - Detailed description of soils encountered, using the Unified Soil Classification System

C. Well Construction Details (provide for each well):
   Well construction diagram including:
   - Monitoring well number and date constructed
   - Casing and screen material, diameter, and centralizer spacing (if needed)
   - Length of well casing
   - Length and position of slotted casing and size of perforations
   - Thickness, position and composition of surface seal, sanitary seal, and sand pack
   - Type of well caps (bottom cap either screw on or secured with stainless steel screws)

E. Well Development (provide for each well):
   Date(s) and method of development
   How well development completion was determined
   Volume of water purged from well and method of development water disposal

F. Well Survey (provide for each well):
   Reference elevation at the top rim of the well casing with the cap removed (feet above mean sea level to within 0.01 foot)
   Ground surface elevation (feet above mean sea level to within 0.01 foot)

Horizontal geodetic location, where the point of beginning shall be described by the California State Plane Coordinate System, 1983 datum, or acceptable alternative (provide rationale)
Present the well survey report data in a table

G. Water Sampling:

Date(s) of sampling	Sample identification
How well was purged	Analytical methods used
How many well volumes purged	Laboratory analytical data sheets
Levels of temperature, EC, and pH at stabilization	Water level elevation(s)
Sample collection, handling, and preservation methods	Groundwater contour map

H. Soil Sampling (if applicable):
Date(s) of sampling
Sample collection, handling, and preservation methods
Sample identification
Analytical methods used
Laboratory analytical data sheets
Present soil sampling data in a table

I. Well Completion Report(s) (as defined in California Water Code §13751). Blank forms are available from California Department of Water Resources' website **www.water.ca.gov**. Submit this section under separate cover.

J. Appendix - include, at a minimum, copies of the following:
County-issued well construction permits
Registered engineer or licensed surveyor's report and field notes
Field notes from well development