

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. _____

GENERAL ORDER
FOR
EXISTING MILK COW DAIRIES

This Monitoring and Reporting Program (MRP) is issued pursuant to California Water Code (CWC) Section 13267. The Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Executive Officer.

This MRP requires monitoring of discharges of manure and/or process wastewater, storm water, and tailwater from the production area and land application area and groundwater monitoring in order to determine if the Discharger's dairy is in compliance with the discharge limitations of Waste Discharge Requirements General Order No. ____ (Order). Discharge monitoring should be infrequent for those dairies that are operating in compliance with the Order.

The MRP also requires periodic visual inspections of the dairy to ensure the dairy is being operated and maintained to ensure continued compliance with the Order. In addition, the MRP requires monitoring of nutrients applied to, and removed from, land application areas in order for the Discharger to develop and implement a Nutrient Management Plan that will minimize leaching of nutrients and salts to groundwater and transport of these constituents to surface water.

The Discharger shall conduct monitoring and reporting as specified below.

A. MONITORING PROVISIONS

Inspections

The results of inspections described below shall be recorded and the records shall be maintained on-site for a period of five years.

1. The Discharger shall inspect the production area weekly including all waste storage areas and note any conditions or changes that could result in discharges to surface waters and/or from property under the control of the Discharger.
2. During and after each significant storm event¹, the Discharger shall make visual inspections of storm water containment structures. These structures shall be inspected for discharge, freeboard, berm integrity, cracking, slumping, erosion, excess vegetation, animal burrows, and seepage.

¹ A significant storm event is defined as a storm event that results in continuous runoff of storm water for a minimum of one hour, or intermittent runoff for a minimum of three hours in a 12-hour period.

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3. Freeboard shall be measured weekly within each liquid manure storage structure using a depth marker. Freeboard shall be the vertical distance from the pond surface to the lowest elevation of the surrounding berm or the bottom of the spillway and shall be measured to the nearest 0.25 foot (3 inches).
4. The Discharger shall inspect land application areas immediately prior to commencement of application of process wastewater and daily when process wastewater is being applied and note: the conditions of the land application area berms including rodent holes, piping, and bank erosion; the presence (or lack) of field saturation, ponding, erosion, runoff (including tailwater discharges from the end of fields, pipes, or other conveyances), and nuisance conditions; and the conditions of any vegetated buffers or alternative conservation practices.

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Manure and Process Wastewater Monitoring

5. The Discharger shall monitor process wastewater and manure produced at the facility. This monitoring is for nutrient management and is expected to be part of the Nutrient Management Plan. Monitoring shall be performed to determine the nutrient and salt content of process wastewater and manure separately. Monitoring results shall be included in the Annual Monitoring Report (see Reporting Requirements B.2.n).
 - a. Manure composite samples shall be collected and analyzed as specified in Monitoring Provisions A.25 and A.35 below, respectively. Manure shall be monitored for parameters 1 (volume or weight) and 21 (moisture content/wet weight) or 22 (density) each time applied to land under the Discharger's control or exported offsite, and at least quarterly for parameters 2, 7, 8, 10, and 11 in Table 1. The total dry weight (tons) of manure applied annually to the land application area shall be recorded for each field.
 - b. Process wastewater composite samples shall be collected and analyzed as specified in Monitoring Provisions A.26 and A.36 below, respectively. Monitoring of process wastewater shall include, at a minimum, parameters 1, 2, 6, 7, 8, 10, and 11 in Table 1. Parameters 2, 6, 7, 8, 10, and 11 shall be monitored to determine the nutrient application to the land application area during at least one irrigation event each quarter (every three months) in which the process wastewater is applied to the land application area(s). Monitoring of nitrate-nitrogen (parameter 6) is only required if the retention pond is aerated. General minerals (parameter 13) shall be monitored when groundwater monitoring is required and at the frequency to be specified in the Monitoring Well Installation and Sampling Plan (MWISP). The volume (parameter 1) of process wastewater applied shall be measured to gauge the hydraulic application to the land application area during each irrigation event for each field. The process wastewater application dates and total gallons or acre-inches of process wastewater applied to each field shall be recorded for each application.

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Irrigation Water and Water Use Monitoring

6. The Discharger shall monitor irrigation water that is used on all land application areas under the Discharger’s control where manure and/or process wastewater is applied and shall assure monitoring of irrigation water when the irrigation is conducted where the Discharger’s process wastewater is applied under a third party’s control. The Discharger shall also monitor rainfall and crop water use at the dairy using information from the nearest California Irrigation Management Information System (CIMIS) weather station. Crop water use shall be determined using data on evapotranspiration from a standardized grass surface (ET_o) from the CIMIS station and the crop coefficient method (University of California Cooperative Extension Publications 21427 and 21428 available at <http://www.cimis.water.ca.gov/cimis/infoEtoCropCo.jsp>) or equivalent procedure. This monitoring is for nutrient management and is expected to be part of the Nutrient Management Plan. Irrigation water shall be sampled at least two times during the irrigation season as follows:
 - a. At a minimum, one sample shall be collected at the beginning and another sample shall be collected at the end of the irrigation season during actual irrigation events.
 - b. Canal and well water sources shall be considered separate supplies, each requiring sampling two times during actual irrigation events.
 - c. Monthly samples shall be collected from canals during actual irrigation events if the canal is subject to water quality variations due to changes in supply water sources.
7. Irrigation water samples shall be collected and analyzed as specified in Monitoring Provisions A.27 and A.36 below, respectively. Irrigation water shall be monitored for parameters 1, 2, 6, 7, 8, 10, and 11 in Table 1. The dates and volume (parameter 1) of each irrigation application shall be monitored and recorded for each land application area. Daily rainfall (parameter 23) and crop water use (parameter 24) shall also be recorded.

Soil Monitoring

8. At least once every five years, commencing with the first full calendar year regulated by the Order, the Discharger shall collect and analyze representative soil samples for parameters 2, 6, 7, 9, 10, and 11 in Table 1 from all land application areas under the Discharger’s control where process wastewater and/or manure is applied and shall assure that soil is analyzed where the Discharger’s process wastewater is applied under a third party’s control. Soil samples shall be collected following harvest of a crop and before nutrients are added for the following crop as specified in Monitoring Provision A.28 and analyzed as specified in Monitoring Provisions A.33 and A.34

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below. The results of these analyses are to be used in determining application rates of manure and process wastewater to the land application area and are expected to be part of the Nutrient Management Plan. Monitoring results shall be included in the Annual Monitoring Report (see Reporting Requirements B.2.n).

Plant Tissue Monitoring

9. The Discharger shall monitor plant tissue (1) at harvest to determine the nutrients removed from each land application area where manure and/or process wastewater is applied and (2) if necessary, mid-season to assess the need for additional nitrogen and/or phosphorus fertilizer during the growing season. The total weight (tons) and wet weight (parameter 21) or the volume (cubic yards) and density (parameter 22) of the harvested material which is removed from each land application area shall be determined and recorded. Plant tissue samples shall be collected and analyzed as specified in Monitoring Provisions A.29 and A.33 below, respectively. Plant tissue samples shall be monitored for parameters 9, 10, 11, and 21 (or 22) in Table 1.

Discharge and Surface Water Monitoring

10. The Discharger shall record the date and the approximate time and volume of each off-property discharge of wastes from the production area or land application area and the approximate duration and amount of wastes discharged. Such discharges shall be reported in accordance with Reporting Requirement B.1, B.2.h, or B.2.j below as appropriate.
11. The Discharger shall record the date and the approximate time and volume of each discharge of storm water from the production area to surface water and the approximate duration of the discharge. Such discharge shall be reported in accordance with Reporting Requirements B.1 and B.2.i.
12. During or immediately after any overflow or other unauthorized discharge of storm water to surface water or wastewater from a manure or process wastewater storage area, retention pond, corral or land application area, the Discharger shall collect samples of the discharge. If the discharge is to surface water, the Discharger shall also collect samples from surface water upstream² and downstream³ of the discharge. The Discharger shall record the estimated volume of the discharge and the date and time of the discharge. Discharges and surface water shall be monitored daily during each discharge event for parameters 2 through 8, 10 through 12, 14, 15, 18, and 19 in Table 1. Discharges shall also be monitored daily for volume (parameter 1). The results of such monitoring shall be reported in accordance with Reporting Requirements B.1 and B.2.m.

² Upstream samples shall be taken just far enough upstream so as not to be influenced by the discharge.

³ Downstream samples shall be taken just far enough downstream where the discharge is blended with the receiving water but not influenced by dilution flows or other discharges.

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Note: If conditions are not safe for sampling, the Discharger must provide documentation of why samples could not be collected and analyzed. For example, the Discharger may be unable to collect samples during dangerous weather conditions (such as local flooding, high winds, tornados, electrical storms, etc.). However, once the dangerous conditions have passed, the Discharger shall collect a sample of the discharge or, if the discharge has ceased, from the waste management unit from which the discharge occurred.

Tailwater Monitoring

13. The Discharger shall monitor and record each discharge of tailwater to surface water, at the point of discharge, from any land application area where irrigation has occurred less than 60 days after application of manure and/or process wastewater to that area. A map showing the sample locations, and the method of measuring the flow must be provided in the Annual Report (see Reporting Requirement B.2.j below). Samples of discharges shall be analyzed as specified in Monitoring Provision A.36 below. Each discharge shall be monitored during each event at the point of discharge for parameters 1 through 8, 10, 11, 14, 15, 18, and 19 in Table 1. Each discharge shall be monitored daily at the point of discharge for total dissolved solids (parameter 12). The results of all tailwater monitoring shall be reported in accordance with Reporting Requirements B.2.j and B.2.m below.

Storm Water Monitoring

14. During the first twelve months following enrollment under the Order, the Discharger shall monitor discharges of storm water to surface water from each separate land application area that is identified in Item 1.A (See Attachment C) of the Discharger's Nutrient Management Plan. The monitoring shall include the following:
 - a. Collection and analysis of grab samples from at least two storm events per wet season. The first sample shall be from the first storm event of the wet season that produces significant storm water discharge (continuous storm water runoff for a minimum of one hour, or intermittent storm water runoff for a minimum of three hours in a 12-hour period) and the second from a storm event that produces significant storm water discharge during the peak storm season (typically February) and that is preceded by at least three days of dry weather. The sample(s) should be taken during the first hour of the discharge. The samples shall be monitored for parameters 1, 2, 3, 4, 5, 6, 7, 8, 12, 14, 18, 19, and 20 in Table 1. The samples shall be analyzed as specified in Monitoring Provision A.36 below.
 - b. Sample locations must be chosen such that the samples are representative of the quality and quantity of storm water discharged. A rationale for the sample locations, a map showing the sample locations, and the method of measuring the

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storm water flow must be provided in the Annual Storm Water Monitoring Report (see Reporting Requirements B.4 below).

Documentation must be provided in the annual storm water monitoring report (required in the Reporting Requirements B.4 below) if no significant discharges of storm water from any of the land application areas occur, or if the Discharger is unable to collect any of the required samples due to adverse climatic conditions and/or inaccessibility to the discharge location.

If the Executive Officer does not approve reducing the constituents and/or sampling frequency for any land application area based on the first year of storm water monitoring report (see Reporting Requirements B.5 below), the Discharger shall continue the storm water monitoring in accordance with the requirements above.

Groundwater Monitoring

The Discharger must sample each domestic and agricultural supply well and subsurface (tile) drainage system present in the production and/or land application areas to characterize existing groundwater quality. The Executive Officer will use groundwater monitoring data from four quarters of monitoring events and additional information to assess and determine the need for additional groundwater monitoring at a facility. Groundwater monitoring data together with factors in Table 2 of this Monitoring and Reporting Program will be used as a guide to prioritize where and when monitoring wells are to be installed. The Discharger must comply with the groundwater monitoring requirements below:

15. The Discharger shall immediately begin sampling each domestic and agricultural supply well present in the production and land application areas. These wells shall be sampled quarterly for parameters 6, 7, and 12 in Table 1. Monitoring of the supply wells may be reduced to annually after one year of quarterly data are provided to the Executive Officer or may continue at the same frequency if directed by the Executive Officer.
16. The Discharger shall immediately begin sampling discharges from each subsurface (tile) drainage system present in the land application area(s) quarterly for parameters 6, 7, and 12 in Table 1.

Additional Groundwater Monitoring Requirements

17. When required by the Executive Officer, the Discharger shall install sufficient monitoring wells to:
 - a. Characterize groundwater flow direction and gradient beneath the site;

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- b. Characterize natural background (unaffected by the Discharger or others) groundwater quality upgradient of the facility; and
- c. Characterize groundwater quality downgradient of the corrals, downgradient of the retention ponds, and downgradient of the land application areas.

It may be necessary to install more than one upgradient monitoring well (i.e., for the production area and the land application area). The Executive Officer may require more extensive monitoring based on site-specific conditions. The Executive Officer will prioritize installation of monitoring wells based on the factors identified in Table 2.

- 18. Prior to installation of monitoring wells, the Discharger shall submit to the Executive Officer a Monitoring Well Installation and Sampling Plan (MWISP) (see Attachment G) and schedule prepared under the direct supervision of, and certified by, a California registered civil engineer or a California registered geologist with experience in hydrogeology. Installation of monitoring wells shall not begin until the Executive Officer notifies the Discharger in writing that the MWISP is acceptable.
- 19. All monitoring wells shall be constructed in a manner that maintains the integrity of the monitoring well bore hole and prevents the well from acting as a conduit for pollutant/contaminant transport. The sampling interval of each monitoring well shall be appropriately screened and fitted with an appropriate filter pack to enable collection of representative groundwater samples of the first encountered groundwater.
- 20. The construction and destruction of monitoring wells and supply wells shall be in accordance with the standards under *Water Wells* and *Monitoring Wells* in the *California Well Standards Bulletin 74-90 (June 1991)* and *Bulletin 74-81 (December 1981)*, adopted by the Department of Water Resources (DWR). Should any county or local agency adopt more stringent standards than that adopted by the DWR, then these local standards shall supercede the Well Standard of DWR, and the Discharger shall comply with the more stringent standards.
- 21. The horizontal and vertical position of each monitoring well shall be determined by a registered land surveyor or other qualified professional. The horizontal position of each monitoring well shall be measured with one-foot lateral accuracy using the North American Datum 1983 (NAD83 datum). The vertical elevations of each monitoring well shall be referenced to the North American Vertical Datum 1988 (NAVD88 datum) to an absolute accuracy of at least 0.5 feet and a relative accuracy between monitoring wells of 0.01 feet.
- 22. Within 45 days after completion of any monitoring well, the Discharger shall submit to the Executive Officer a Monitoring Well Installation Completion Report (MWICR) (see Attachment G) prepared under the direct supervision of, and certified by, a

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California registered civil engineer or a California registered geologist with experience in hydrogeology.

23. The Discharger shall sample monitoring wells quarterly for one year to establish background concentrations. Groundwater monitoring may be reduced to semi-annually once one year of quarterly groundwater monitoring data are provided to the Executive Officer. Groundwater monitoring shall include monitoring during periods of the expected highest and lowest water table levels. Groundwater monitoring shall include:
- a. Measurement of the depth to groundwater from a surveyed reference point to the nearest 0.010 foot in each monitoring well; and
 - b. Analysis of groundwater samples from each well as specified in Monitoring Provision A. 36 below, for parameters 2, 5, 6, 7, 8, 10, 11, 12, and 13 in Table 1.
24. The Discharger shall submit to the Executive officer an evaluation of the groundwater monitoring data within six months of obtaining sufficient data to evaluate trends in the data (usually about 8 independent samples). The submittal shall include a description of the statistical or non-statistical methods proposed for use in evaluating the groundwater monitoring data. The proposed methods must be approved by the Executive Officer

Sampling Requirements

The Discharger shall use sample containers and sample handling, storage, and preservation methods that are accepted or recommended by the selected analytical laboratory or, as appropriate, in accordance with approved United States Environmental Protection Agency analytical methods. The following sampling procedures are standards currently recognized by the Central Valley Water Board. When special procedures appear to be necessary at an individual dairy, the Discharger may request approval of alternative sampling procedures for nutrient management. The Executive Officer will review such requests and if adequate justification is provided, may approve the requested alternative sampling procedures.

25. Manure samples shall be collected as follows:
- a. At least 10 equal-size samples of manure shall be collected from various portions of the manure pile, with most samples from the center. No more than two samples shall be collected from the surface and two from the bottom.
 - b. The 10 samples shall be placed in a container and mixed well before a subsample is placed in a clean container provided by or approved by the analytical laboratory that will receive the samples.

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- c. Sample containers that are reused shall be washed with soap and thoroughly rinsed with clean (tap) water.
26. Process wastewater composite samples shall be collected as follows:
- a. A representative composite sample of process wastewater shall be prepared based on a minimum of three time-series samples collected during an irrigation event that are representative of the beginning, middle, and end of the process wastewater discharge. These samples shall be combined in a single container, mixed, and poured into a clean container provided by or approved by the laboratory that will receive the samples. Containers that are reused shall be washed with soap and thoroughly rinsed with clean (tap) water.
 - b. The samples shall be collected at a point that is prior to any dilution or blending with irrigation water and shall be representative of the process wastewater applied to the land application area.
27. Irrigation water samples shall be collected as follows:
- a. Samples shall be collected before the addition of process wastewater.
 - b. Samples from irrigation wells shall be collected after the pump has run for a minimum of 30 minutes or after at least three well volumes have been purged from the well.
28. Soil samples shall be collected as follows:
- a. Composite samples shall be collected from each land application area receiving manure and/or process wastewater. Samples shall be composited by:
 - i. Placing equal volumes of soil from each of 10 or more sample sites for each land application area and sample depth, in a clean plastic bucket. Moist soils may be air dried until they can be mixed easily.
 - ii. Thoroughly mixing the sample and placing at least one pint of the composite sample in a clean plastic container to be shipped to the laboratory. The laboratory should be consulted for the exact amount of sample and the sample container needed
 - b. At a minimum, composite samples shall be collected from a depth of 0 to 48 inches. Samples from each site shall be split into four sections representing depth intervals 0 to 12 inches, 12 to 24 inches, 24 to 36 inches, and 36 to 48 inches. All samples from the same depth interval for all sites within each land application area shall be composited for analyses.

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- c. Soil samples shall be collected with soil probes or augers from a minimum of 10 sites in each land application area and composited as described below.
 - i. At least three of the 10 samples shall be from the upper third of the land application area.
 - ii. In fields where soil texture, crop yield, or other soil-related factors vary, at least 10 samples shall be collected from each different area and composites from each area shall be analyzed separately.
 - iii. Sample locations in each land application area shall be recorded on a sketch for future sampling consistency.
 - iv. Soil probes or augers shall be cleaned thoroughly between selected sample depth intervals with a non-residual detergent such as Alconox.
- 29. Plant tissue samples shall be collected as follows.
 - a. Harvest plant tissue samples shall be collected as follows:
 - i. At least 10 equal-size samples (for example, using a two- to three-pound coffee can) of the harvested portion of the crop shall be collected as the material is moved off of the field. These samples shall be combined and thoroughly mixed in a plastic bag, taking care not to allow drying.
 - ii. Samples shall be contained in sealed plastic bags to retain moisture content.
 - b. Mid-season plant tissue samples, if collected, shall be collected following University of California recommendations for the specific plant being tested.
- 30. Samples of discharges, surface water, tailwater, and storm water shall be collected as specified above in Monitoring Requirements A.10 through A.14.
- 31. Groundwater samples from monitoring wells shall be collected as specified in an approved Monitoring Well Installation and Sampling Plan.
- 32. Groundwater samples from domestic wells shall be collected from the tap nearest to the pressure tank (and before the pressure tank if possible) after water has been pumped from this tap for 10 to 20 minutes. Groundwater samples from agricultural supply wells shall be collected after the pump has run for a minimum of 30 minutes or after at least three well volumes have been purged from the well.

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Analytical Requirements

- 33. Analyses of soil and plant tissue samples shall be conducted by: methods utilized by the North American Proficiency Testing (NAPT) Program or accepted by the University of California; and laboratories participating in the NAPT Program or other programs whose tests are accepted by the University of California. This shall include analysis for nitrate-nitrogen and ammonium-nitrogen utilizing the 1M potassium chloride extract of soil.
- 34. Analyses of phosphorus in soil samples shall be performed using the method recommended by the University of California or the bicarbonate-P or Olsen_P test.
- 35. Analyses of manure shall be conducted by: methods utilized by the Manure Analyses Proficiency (MAP) Testing Program or accepted by the University of California; and laboratories participating in the MAP Testing Program or other programs whose tests are accepted by the University of California.
- 36. Analyses of process wastewater, irrigation water, tailwater, discharges, surface water, storm water, and groundwater samples shall be conducted by a laboratory certified for such analyses by the California Department of Health Services. These laboratory analyses shall be conducted in accordance with the Title 40 Code of Federal Regulations Part 136 (*Guidelines Establishing Test Procedures for the Analysis of Pollutants*) or other test methods approved by the Executive Officer.

Record-Keeping Requirements

- 37. Dischargers shall maintain on-site for a period of five years from the date they are created all information as follows:
 - a. All information necessary to document implementation and management of the minimum elements of the nutrient management plan (NMP);
 - b. All records for the production area including:
 - i. Records documenting the inspections required under Monitoring Provisions A.1, A.2, and A.3 above.
 - ii. Records documenting any corrective actions taken to correct deficiencies noted as a result of the inspections required in Monitoring Provisions A.1, A.2, and A.3 above. Deficiencies not corrected in 30 days must be accompanied by an explanation of the factors preventing immediate correction;
 - iii. Records of the date, time, and estimated volume of any overflow;

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- iv. Records of mortality management and practices;
 - v. Steps and dates when action is taken to correct unauthorized releases as reported in accordance with Reporting Requirement B.1 below; and
 - vi. Records of monitoring activities and laboratory analyses conducted as required in Standard Provisions and Reporting Requirements D.5.
- c. All records for the land application area including:
- i. Expected and actual crop yields;
 - ii. Identification of crop, acreage, and dates of planting and harvest for each field;
 - iii. Dates, locations, and approximate weight and moisture content, or volume and density, of manure applied to each field;
 - iv. Dates, locations, and volume of process wastewater applied to each field;
 - v. Weather conditions at time of manure and process wastewater applications and for 24 hours prior to and following applications;
 - vi. Records documenting the inspections conducted required under Monitoring and Reporting Provisions A.4 above;
 - vii. Dates, locations, and test methods for soil, manure, process wastewater, irrigation water, and plant tissue sampling;
 - viii. Results from manure, process wastewater, irrigation water, soil, plant tissue, discharge (including tailwater), and storm water sampling;
 - ix. Explanation for the basis for determining manure or process wastewater application rates, as provided in the Technical Standards for Nutrient Management established by the Order (Attachment C);
 - x. Calculations showing the total nitrogen, phosphorus, and potassium to be applied to each field, including sources other than manure or process wastewater;
 - xi. Total amount of nitrogen, phosphorus, and potassium actually applied to each field, including documentation of calculations for the total amount applied;
 - xii. The method(s) used to apply manure and/or process wastewater;

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- xiii. Dates of manure and/or process wastewater application equipment inspections; and
 - xiv. Records documenting any corrective actions taken to correct deficiencies noted as a result of the inspections required in Monitoring Provisions A.4 above. Deficiencies not corrected in 30 days must be accompanied by an explanation of the factors preventing immediate correction.
 - xv. Records of monitoring activities and laboratory analyses conducted as required in Standard Provisions and Reporting Requirements D.5.
- d. A copy of the Discharger's site-specific NMP;
 - e. All Manure/Process Wastewater Tracking Manifest forms (Attachment D) which includes information on the manure hauler, destination of the manure, dates hauled, amount hauled, and certification; and
 - f. All analyses of manure, process wastewater, irrigation water, soil, plant tissue, discharges (including tailwater discharges), surface water, storm water, and groundwater.

General Monitoring Requirements

- 38. The Discharger shall comply with all the "Requirements Specifically for Monitoring Programs and Monitoring Reports" as specified in the Standard Provisions and Reporting Requirements.
- 39. All samples collected shall be representative of the volume and nature of the material being sampled.
- 40. All samples containers shall be labeled and records maintained to show the time and date of collection as well as the person collecting the sample and the sample location.
- 41. All samples collected for laboratory analyses shall be preserved and submitted to the laboratory within the required holding time appropriate for the analytical method used and the constituents analyzed.
- 42. All samples submitted to a laboratory for analyses shall be identified in a properly completed and signed Chain of Custody form.
- 43. Field test instruments used for pH, electrical conductivity and dissolved oxygen may be used provided:
 - a. The operator is trained in the proper use and maintenance of the instruments;

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- b. The instruments are field calibrated prior to each monitoring event; and
- c. Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency.

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TABLE 1. MONITORING PARAMETERS				
Parameter		Units		Type of Analysis
		Liquid Materials ⁴	Solid Materials ⁵	
1.	Volume or Weight ⁶	Gallons or Acre-inches	Tons	Field ⁷
2.	Electrical Conductivity	$\mu\text{mhos}/\text{cm}^8$	$\mu\text{mhos}/\text{cm}$	Field/Laboratory ⁹
3.	Dissolved Oxygen	mg/l^{10}	NA ¹¹	Field
4.	Temperature	$^{\circ}\text{F}$	NA	Field
5.	pH	pH units	pH units	Field/Laboratory ¹²
6.	Nitrate-Nitrogen	mg/l	mg/kg^{13}	Laboratory
7.	Ammonium-Nitrogen/Total Ammonia-Nitrogen and Unionized Ammonia-Nitrogen ¹⁴	mg/l	mg/kg	Laboratory
8.	Total Kjeldahl Nitrogen	mg/l	mg/kg	Laboratory
9.	Total Nitrogen	mg/l	mg/kg	Laboratory
10.	Phosphorus ¹⁵	mg/l	mg/kg	Laboratory
11.	Potassium	mg/l	mg/kg	Laboratory
12.	Total Dissolved Solids	mg/l	mg/kg	Laboratory
13.	General Minerals ¹⁶	mg/l	mg/kg	Laboratory
14.	BOD ₅ ¹⁷	mg/l	NA	Laboratory
15.	Total Suspended Solids	mg/l	NA	Laboratory
16.	Iron	mg/l	NA	Laboratory
17.	Manganese	mg/l	NA	Laboratory
18.	Total Coliform	MPN/100 ml ¹⁸	NA	Laboratory
19.	Fecal Coliform	MPN/100 ml	NA	Laboratory
20.	Turbidity	NTU	NA	Laboratory
21.	Moisture Content/Wet Weight ¹⁹	NA	percent	Laboratory
22.	Density ²⁰	NA	g/l^{21}	Laboratory
23.	Rainfall	inches ²²	NA	CIMIS ²³
24.	Crop Water Use	inches	NA	CIMIS

⁴ Liquid materials include process wastewater, irrigation water, tailwater, storm water, and surface water.

⁵ Solid materials include manure, soil, and plant tissue.

⁶ Volume or weight of waste application or discharge.

⁷ These parameters are to be measured in the field.

⁸ Micromhos per centimeter ($\mu\text{mhos}/\text{cm}$).

⁹ Electrical conductivity of: 1) liquid materials may be field measurements and 2) solid materials shall be laboratory measurements.

¹⁰ Milligrams per liter (mg/l).

¹¹ NA – not applicable.

¹² pH shall be determined by laboratory analysis for soil and manure. pH for all other types of samples may be by field measurements.

¹³ Milligrams per kilogram (mg/kg).

¹⁴ Samples of soil, manure, process wastewater, irrigation water, and groundwater shall be analyzed for ammonium-nitrogen. Samples of discharges of process wastewater, storm water, and tailwater to surface water and samples of surface water shall be analyzed for total ammonia-nitrogen and unionized ammonia-nitrogen.

¹⁵ Samples of manure, process wastewater, irrigation water, groundwater, and discharges of process wastewater, storm water, and tailwater to surface water shall be analyzed for total phosphorus. Samples of soil shall be analyzed for soluble phosphorus as required in A.34.

¹⁶ General minerals include calcium, magnesium, sodium, bicarbonate, carbonate, sulfate, and chloride reported individually.

¹⁷ Five-day Biochemical Oxygen Demand.

¹⁸ Most probable number, five dilutions minimum.

¹⁹ Manure shall be analyzed for moisture content (percent) when the amount of manure applied to a land application area or exported is expressed in weight (i.e., tons). Plant tissue shall be analyzed for wet weight (percent) when the amount harvested is reported in weight (i.e., tons), but the constituent analyses expressed on a dry weight basis.

²⁰ Manure density shall be analyzed when the amount of manure applied to a land application area or exported is expressed in volume (i.e., cubic yards). Plant density shall be analyzed when the amount harvested is expressed in volume (i.e., cubic yards).

²¹ Grams per liter (g/l).

²² Rainfall shall be reported to the nearest tenth of an inch.

²³ California Irrigation Management Information System (CIMIS) data from the nearest station..

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TABLE 2. GROUNDWATER MONITORING FACTORS FOR RANKING PRIORITY ²⁴			
FACTOR	SITE CONDITION	POINTS	SCORE
Highest nitrate concentration (nitrate-nitrogen in mg/l) in any existing domestic well, agricultural supply well, or tile drainage system at the dairy or associated land application area (detected two or more times in any one well or tile drainage system).*	< 10	0	
	10 - 20	10	
	>20	20	
Ammonium (ammonium-nitrogen in mg/l) detected twice at any concentration in any existing domestic well, agricultural supply well, or tile drainage system at the dairy or associated land application area.*	< detection limit ²⁵	0	
	≥ detection limit	20	
Location of production area or land application area relative to a Department of Pesticide Groundwater Protection Area ²⁶ (GWPA).	Outside GWPA	0	
	In GWPA	20	
Distance (feet) of production area or land application area from an artificial recharge area ²⁷ as identified in the California Department of Water Resources Bulletin 118 or by the Executive Officer.	> 1,500	0	
	601 to 1,500	10	
	0 to 600	20	
Nitrate concentration (nitrate-nitrogen in mg/l) in domestic well on property adjacent to the dairy production area or land application area (detected two or more times).	< 10 or unknown	0	
	10 or greater	20	
Distance (feet) from dairy production area or land application area and the nearest off-property domestic well.*	> 600	0	
	301 to 600	10	
	0 to 300	20	
Distance (feet) from dairy production area or land application area and the nearest off-property municipal well.*	> 1,500	0	
	601 to 1,500	10	
	0 to 600	20	
Number of crops grown per year per field.*	1	5	
	2	10	
	3	15	
Nutrient Management Plan completed by [24 months after adoption of the Order]?*	Yes	0	
	No	100	
Whole Farm Nitrogen Balance. ^{28*}	<1.5	0	
	1.5 to 3	10	
	>3	20	

Total Score: _____

* This information will be provided by the Discharger. All other information will be obtained by the Executive Officer.

²⁴ Information on each factor may not be available for each facility. Total scores will be the ratio of the points accumulated to the total points possible for each facility. Dairies with higher total scores will be directed to install monitoring wells first.

²⁵ The detection limit for ammonium-nitrogen shall not exceed 1.5 mg/l.

²⁶ The Department of Pesticide Regulation (DPR) defines a Groundwater Protection Area (GWPA) as an area of land that is vulnerable to the movement of pesticides to groundwater according to either leaching or runoff processes. These areas include areas where the depth to groundwater is 70 feet or less. The DPR GWPA's can be seen on DPR's website at <http://www.cdpr.ca.gov/docs/gwp/gwpamaps.htm>.

²⁷ An artificial recharge area is defined as an area where the addition of water to an aquifer is by human activity, such as putting surface water into dug or constructed spreading basins or injecting water through wells.

²⁸ The Whole Farm Nitrogen Balance is to be determined as the ratio of (Nitrogen generated + Nitrogen imported)/(Nitrogen Removed by Crops and Exported) as reported in the Preliminary Dairy Facility Assessment in the Existing Conditions Report (Attachment A).

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B. REPORTING REQUIREMENTS

Noncompliance Reporting

1. The Discharger shall report any noncompliance that endangers human health or the environment or any noncompliance with Prohibitions A.1, A.2, A.3, A.4, A.5, A.8, A.9, A.10, A.11, and A.12 in the Order, within 24 hours of becoming aware of its occurrence. The incident shall be reported to the Central Valley Water Board Office, local environmental health department, and to the California Office of Emergency Services (OES). During non-business hours, the Discharger shall leave a message on the Central Valley Water Board's voice mail. The message shall include the time, date, place, and nature of the noncompliance, the name and number of the reporting person, and shall be recorded in writing by the Discharger. The OES is operational 24 hours a day. A written report shall be submitted to the Central Valley Water Board office within two weeks of the Discharger becoming aware of the incident. The report shall contain a description of the noncompliance, its causes, duration, and the actual or anticipated time for achieving compliance. The report shall include complete details of the steps that the Discharger has taken or intends to take, in order to prevent recurrence. All intentional or accidental spills shall be reported as required by this provision. The written submission shall contain:
 - a. The approximate date, time, and location of the noncompliance including a description of the ultimate destination of any unauthorized discharge and the flow path of such discharge to a receiving water body.
 - b. A description of the noncompliance and its cause;
 - c. The flow rate, volume, and duration of any discharge involved in the noncompliance;
 - d. The amount of precipitation (in inches) the day of any discharge and for each of the seven days preceding the discharge;
 - e. A description (location; date and time collected; field measurements of pH, temperature, dissolved oxygen and electrical conductivity; sample identification; date submitted to laboratory; analyses requested) of noncompliance discharge samples and/or surface water samples taken to comply with Monitoring Provision A.12;
 - f. The period of noncompliance, including dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and
 - g. A time schedule and a plan to implement corrective actions necessary to prevent the recurrence of such noncompliance.

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The laboratory analyses of the noncompliance discharge sample and/or upstream and downstream surface water samples shall be submitted to the Central Valley Water Board office within 45 days of the discharge.

Annual Reporting

2. An annual monitoring report covering the 12-month period beginning 1 November and ending 31 October of the following year shall be submitted to the Executive Officer by **[12 months after adoption of the Order] of each year**. The annual report shall be completed on an annual report form provided by the Executive Officer (available on the Central Valley Water Board website at http://www.waterboards.ca.gov/centralvalley/available_documents/index.html#confined) and shall include all the information as specified below.
 - a. An updated Preliminary Dairy Facility Assessment using the tool provided in Attachment A.
 - b. Number and type of animals, whether in open confinement or housed under roof;
 - c. Estimated amount of total manure (tons) and process wastewater (gallons or acre-inches) generated by the facility in the previous 12 months;
 - d. Estimated amount of total manure (tons) and process wastewater (gallons or acre-inches) applied over the previous 12 months to each land application area identified in 3.f below;
 - e. Estimated amount of total manure (tons) and process wastewater (gallons or acre-inches) transferred to other persons by the facility in the previous 12 months;
 - f. Total number of acres and the Assessor Parcel Numbers for all land application areas covered by the Nutrient Management Plan;
 - g. Total number of acres and the Assessor Parcel Numbers of property that were used for land application of manure and process wastewater in the previous 12 months;
 - h. Summary of all manure and process wastewater discharges from the production area to surface water or to land areas (land application areas or otherwise) when not in accordance with the facility's Nutrient Management Plan that have occurred in the previous 12 months, including date, time, location, approximate volume, a map showing discharge and sample locations, rationale for sample locations, and method of measuring discharge flows;

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- i. Summary of all storm water discharges from the production area to surface water in the previous 12 months, including the date, time, approximate volume, duration, location, and a map showing the discharge and sample locations, rationale for sample locations, and method of measuring discharge flows.
- j. Summary of all discharges from the land application area to surface water that have occurred in the previous 12 months, including the date, time, approximate volume, location, source of discharge (i.e., tailwater, process wastewater, or blended process wastewater), a map showing the discharge and sample locations, rationale for sample locations, and method of measuring discharge flows;
- k. A statement indicating if the NMP has been updated and whether the current version of the facility's NMP was developed or approved by a certified nutrient management planner as specified in Attachment C of the Order;
- l. Copies of all manure/process wastewater tracking manifests for the reporting period;
- m. Copies of laboratory analyses of all discharges (manure, process wastewater, or tailwater), surface water (upstream and downstream of a discharge), and storm water, including chain-of-custody forms and laboratory quality assurance/quality control results;
- n. Tabulated analytical data for samples of manure, process wastewater, irrigation water, soil, and plant tissue. The data shall be tabulated to clearly show sample dates, constituents analyzed, constituent concentrations, and detection limits.
- o. Results of the Record-Keeping Requirements for the production and land application areas specified in Monitoring Provisions A.37.b.ii, A.37.b.iii, A.37.c.i, A.37.c.ii, A.37.c.iii, A.37.c.iv, A.37.c.v, A.37.c.xi, and A.37.c.xiv above.

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Groundwater Reporting

- 3. The Discharger shall report the results of all groundwater monitoring annually by **30 June** each year. Groundwater monitoring reports shall include all laboratory analyses (including chain-of-custody forms and laboratory quality assurance/quality control results) and tabular and graphical summaries of the monitoring data. Data shall be tabulated to clearly show the sample dates, constituents analyzed, constituent concentrations, detection limits, depth to groundwater, and groundwater elevations. Graphical summaries of groundwater gradients and flow directions shall also be included. Each groundwater monitoring report shall include a summary data table of all historical and current groundwater elevations and analytical results. The groundwater monitoring reports shall be certified by a California registered

professional as specified in General Reporting Requirements C.9 of the Standard Provisions and Reporting Requirements of the Order.

Storm Water Reporting

4. The Discharger shall submit an annual report by **30 June** of each year that details the results of the previous year's storm water monitoring, including the Discharger's preparation for the upcoming wet season for all land application areas. The annual report shall include a map showing all sample locations for all land application areas, rationale for all sampling locations, a discussion of how storm water flow measurements were made, the results (including the laboratory analyses, chain of custody forms, and laboratory quality assurance/quality control results) of all samples of storm water, a summary of events during the year that contributed pollutants to storm water from any land application area, and any modifications made to the facility or sampling plan in response to pollutants detected in storm water. The annual report must also include documentation if no significant discharge of storm water occurred from the land application area(s) or if it was not possible to collect any of the required samples or perform visual observations due to adverse climatic conditions.
5. The first year storm water report shall include an assessment of the storm water monitoring results for any land application area where monitoring was necessary. If the first year of storm water monitoring for any land application area indicates pollutants have not been detected in storm water samples, the Discharger may propose to the Executive Officer to reduce the constituents and/or sampling frequency for that area.

General Reporting Requirements

6. The results of any monitoring conducted more frequently than required at the locations specified herein shall be reported to the Central Valley Water Board.
7. Laboratory analyses for manure, process wastewater, and soil shall be submitted to the Central Valley Water Board upon request by the Executive Officer.
8. Each report shall be signed by the Discharger or a duly authorized representative as specified in the General Reporting Requirements C.7 of the Standard Provisions and Reporting Requirements (SPRR), and shall contain the following statement:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

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9. For facilities in Fresno, Kern, Kings, Madera, Mariposa, and Tulare counties, submit reports to:

California Regional Water Quality Control Board
Central Valley Region
1685 E Street
Fresno, CA 93706
Attention: Confined Animal Regulatory Unit

For facilities in Butte, Lassen, Modoc, Plumas, Tehama, and Shasta counties, submit reports to:

California Regional Water Quality Control Board
Central Valley Region
415 Knollcrest Drive, Suite 100
Redding, CA 96002
Attention: Confined Animal Regulatory Unit

For facilities in all other counties, submit reports to:

California Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive #200
Rancho Cordova, CA 95670
Attention: Confined Animal Regulatory Unit

ORDERED BY: _____
PAMELA C. CREEDON, Executive Officer

Date

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