



CDQAP - WDR General
Order Reference Binder
TAB 5.3
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Process Wastewater (Liquid Manure) Sampling Protocol

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In May 2007, the Central Valley Regional Water Quality Control Board (Regional Board) adopted Waste Discharge Requirements General Order No. R5-2007-0035 for Existing Milk Cow Dairies (General Order)¹. The Monitoring and Reporting Program of the General Order requires analyses of various types of materials to define baseline conditions, develop and implement a Nutrient Management Plan (NMP), and describe potential pollutant load in illegal discharges. This Monitoring and Reporting Program was revised in February, 2011² and describes minimum **liquid manure sampling** requirements to obtain data for use in the site specific Nutrient Management Plan. Results must be submitted to the Central Valley Regional Water Quality Control Board as part of the appropriate annual reporting activities (due July 1 of the following calendar year).

Part I –Laboratory Selection and Identification of Sampling and Analytical Requirements

1. Table 1 outlines the minimum constituents and frequency of sampling and analysis requirements specified under the revised MRP. Additional sampling may be necessary to meet the nutrient management plan needs defined in your sampling and analysis plan.

Table 1. Nutrient Monitoring – Process Wastewater Analyses (minimum regulatory requirements).

Quarterly during one application event:

Field or lab measurement of electrical conductivity (EC).

Laboratory analyses for nitrate-nitrogen (only when retention pond is aerated), ammonium-nitrogen, total Kjeldahl nitrogen, total phosphorus, total potassium, and total dissolved solids.

Once every two years (biennially):

Laboratory analyses for general minerals (calcium, magnesium, sodium, bicarbonate, carbonate, sulfate, and chloride).

Annually

Laboratory analyses of liquid process wastewater, prior to blending with irrigation water, for pH (if requested), total dissolved solids, electrical conductivity, nitrate-nitrogen (only when retention pond is aerated), ammonium-nitrogen, total Kjeldahl nitrogen, total phosphorus, and total potassium

Table 1 references: Modifications to Regional Board document Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies Revised 21 February 2008 available at http://www.waterboards.ca.gov/centralvalley/water_issues/dairies/general_order_guidance/sampling_analysis/sampling_and_analysis_21feb08.pdf

Clarifications to the 23 February 2011 MRP modifications provided by the Regional Board Staff include: laboratory analysis of ammonium-nitrogen is acceptable in lieu of un-ionized ammonia; pH on the annual sample is only needed if requested; nitrate-nitrogen in the annual sample is only required when retention pond is aerated

¹Central Valley Regional Water Quality Control Board. 2007. Order No. R5-2007-0035. Waste Discharge Requirements for General Order for Existing Milk Cow Dairies. May 3, 2007. Available at http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2007-0035.pdf.

² Central Valley Regional Water Quality Control Board. 2011. Revised Monitoring And Reporting Program Order No. R5-2007-0035. General Order For Existing Milk Cow Dairies Available at http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2007-0035_mrp_rev.pdf

2. Select a laboratory that utilizes methods described by the Manure Analyses Proficiency (MAP) Testing Program, California Department of Health Services Environmental Laboratory Analytical Procedures accredited for wastewater analyses, or alternative methodology accepted by the Central Valley Regional Water Quality Control Board. (Available at: http://www.waterboards.ca.gov/centralvalley/water_issues/dairies/general_order_guidance/sampling_analysis/sampling_procedures_rev_30jan09.pdf).
3. Contact your analytical laboratory to obtain labels, description of preferred sample containers, required record keeping, and chain of custody forms.

Part II - Sampling Preparation & Location Determination

1. Identify appropriate sampling locations (sampling spigot inserted into a pipeline, location within a sampling box, discharge to standpipe, etc.). Refer to your sampling and analysis plan for this information. A sampling spigot (hose bib or faucet) installed in the side of the pipe makes sampling more convenient.
2. Identify worker safety issues associated with sampling and be sure appropriate protective gear is available.
3. Determine how you will identify your samples (e.g., description of pond source and sample location).
4. Gather sampling equipment needed, e.g., disposable gloves, safety goggles, sample container holder apparatus to allow direct collection of sample into sample bottle, permanent marker, ice and ice chest, labels for sample bottles, chain of custody forms, notebook for record-keeping, and life line if sampling near a liquid manure storage structure or confined space.

Part III – Sample Collection

1. Label sample bottle(s) with sample site identification (consistent with NMP identification system), sampler's name, and the date and time of sampling.
2. Put on disposable gloves and safety goggles.
3. Secure sample bottle to sampling device (if using). Insert sample bottle into flowing waste stream. Fill bottle to within ½ inch of top. **DO NOT OVERFILL THE BOTTLE.** If the bottle is overfilled, empty and re-sample.
4. Tighten cap on bottle before placing in ice-cooled chest.
5. For dairies that will do their own field electrical conductivity (EC) readings:
 - a. Calibrate instrument prior to use.
 - b. Analyze EC according to instrument manufacturer instructions after collection and before storing on ice or within a refrigeration unit.
6. Complete a chain of custody form using the information on the bottle label. Request sample analyses necessary for compliance plus additional agronomic needs. Compliance requirements are listed in Table 1.
7. Keep a copy of the chain of custody form with sample identification records.
8. Deliver fresh samples to the laboratory within 24 hours of collection.

Information in this document was compiled by CDQAP to assist dairy producers in understanding and complying with the General Order Waste Discharge Requirements for Existing Milk Cow Dairies (Central Valley Regional Water Quality Control Board Order R5-2007-0035). Effort has been made to ensure accuracy, but these summaries are not official regulatory guidance and are not legal advice. Producers are advised that these summaries are not intended to be a substitute for producers reading the complete order and consulting their own legal counsel to ensure compliance with the waste discharge requirements. Should any information here conflict with the General Order and/or official information provided by the Regional Board, Board-provided information takes precedence.

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