



Solid 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, and describe potential pollutant load in illegal discharges. The General Order requires dairy operators to sample **solid manure** and obtain specific laboratory analyses for use in nutrient application tracking.

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

1. Table 1 outlines the constituents and frequency of sampling analysis requirements specified under the General Order.
2. Select a laboratory that utilizes methods described by the Manure Analyses Proficiency (MAP) Testing Program or alternative methodology accepted by the Central Valley Regional Water Quality Control Board. (Available at their website (<http://www.waterboards.ca.gov/>))
3. Contact your analytical laboratory to obtain labels, description of preferred sample containers, required record keeping, and chain of custody forms.

Table 1. Nutrient Monitoring- Solid Manure Analyses (minimum regulatory requirements)

Once within 12 months: Laboratory analyses for general minerals (calcium, magnesium, sodium, bicarbonate, carbonate, sulfate, and chloride).

Twice per year: Laboratory analyses for total nitrogen, total phosphorus, potassium, and density (if volume manure applied is reported) or percent moisture (if weight manure applied is reported).

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

Part II - Sampling Preparation & Location Determination

1. Determine how many different sources of samples you will take to have a representation of the different solid materials either removed from the facility or applied to land (corral scraping from milking cows, dry cows or heifers; separated solids, etc.). Refer to your sampling and analysis plan for this information.
2. Determine how you will identify your samples (such as: description of pile origin –by pen, corral, or stage of animal production—high cows, low cows, milk cows, dry cows, heifers, separated solids, etc.). Include date and time sampled.
3. Gather sampling equipment needed, e.g., disposable gloves, bucket, auger or shovel, ziplock bags, permanent marker, ice and ice chest, labels for sample identification, chain of custody forms, notebook for record-keeping, etc.

Part III – Sample Collection

Sampling should occur as close to actual removal/use as possible so moisture and nutrient content represent what is being land applied.

1. Label sample bag with manure identification (animal category or location), sampler's name, the date and time of sampling.
2. Put on sampling gloves.
3. Take a small grab sample (either with gloved hand if manure has been loaded, or with auger if manure is in a pile) from at least 10 to 20 locations of each source (pens or piles) of manure while loading several truck loads. Place samples together in a bucket.
4. Thoroughly mix the material in the bucket.
5. Remove a 1 lb subsample (one to two handfuls) from the bucket and place it into a one-gallon plastic bag.
6. Release excess air in bag and seal tightly.
7. Immediately put the bag into an ice-cooled chest.
8. Freeze samples if they are not delivered to the laboratory on the day of sampling.
9. Complete and maintain a copy of the chain of custody form.
10. Deliver fresh (same day of sampling) or frozen samples to laboratory as soon as possible.
11. Request sample analyses necessary for compliance and additional agronomic needs. Compliance requirements are located in Table 1.
12. Maintain a copy of the chain of custody form and sample identification records

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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