



## 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)<sup>1</sup>. The Monitoring and Reporting Program of the General Order requires analysis of various types of materials to define baseline conditions, develop and implement a Nutrient Management Plan, and describe potential pollutant load in illegal discharges. This Monitoring and Reporting Program was revised in February, 2011<sup>2</sup> and describes minimum **solid 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.
2. Select a laboratory that utilizes methods described by the Manure Analysis Proficiency (MAP) Program or alternative methodology accepted by the Central Valley Regional Water Quality Control Board. (Available at their website: [http://www.waterboards.ca.gov/centralvalley/water\\_issues/dairies/general\\_order\\_guidance/sampling\\_analysis/sampling\\_procedures\\_rev\\_30jan09.pdf](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.

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

<p><b>Each application to each land application area:</b> Record the percent moisture and total weight (tons) applied.</p> <p><b>Twice per year:</b> Laboratory analysis for total nitrogen, total phosphorus, total potassium, and percent moisture.</p> <p><b>Once every two years (biennially):</b> Laboratory analyses for general minerals (calcium, magnesium, sodium, sulfur, chloride) and fixed solids.</p> <p><b>Each offsite export of manure:</b> Record the percent moisture and total weight (tons) exported. Laboratory analyses for percent moisture</p> <p><b>Annually:</b> Record the total dry weight (tons) of manure applied annually to each land application area and the total dry weight (tons) of manure exported offsite.</p>
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<sup>1</sup>Central 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](http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2007-0035.pdf).

<sup>2</sup>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](http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2007-0035_mrp_rev.pdf)

## **Part II - Sampling Preparation & Location Determination**

1. Refer to your sampling and analysis plan to determine the different solid manure sources you will take to represent the materials either removed from the facility or applied to crop land (corral scraping from milking cows, dry cows or heifers; separated solids, etc.).
2. Determine how you will identify your samples (such as: descriptions 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 applied to land.

1. Label sample bag with the source identification information (see II.2 above), sampler's name, and 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 and from several different 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 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. Check with your analytical laboratory to determine if you should 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 (refrigerated) or frozen samples to laboratory as soon as possible after collection.
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 at the facility.

*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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