



CDQAP - WDR General  
Order Reference Binder  
Tab 1.4  
Revised March 2011

## NUTRIENT MONITORING

The following information was obtained from Tables 2 through 4 from the revised Monitoring and Reporting Program Order No. R5-2007-0035, posted March, 2011, at [http://www.waterboards.ca.gov/centralvalley/board\\_decisions/adopted\\_orders/general\\_order\\_s/r5-2007-0035\\_mrp\\_rev.pdf](http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_order_s/r5-2007-0035_mrp_rev.pdf).

Representative samples must be collected, preserved, and handled appropriately to maintain sample integrity. Additional information on sampling containers and preservation methods for the discharge samples is available at [www.cdqa.org/binder.asp](http://www.cdqa.org/binder.asp) Tab 8, documents 2 and 3.

| <b>PROCESS WASTEWATER (LIQUID MANURE)</b>         |   |  |
|---|---|--|
| <b>Minimum Sampling Frequency</b>                 | <b>Minimum Analyses</b>   |  |
|   | <b>Field</b>  | <b>Laboratory</b>  |
| Each application                                  | Date applied, definition of land application area and volume (gallons or acre-inches) applied | None   |
| Quarterly during one application event            | Electrical conductivity (may be done in laboratory)   | Nitrate-nitrogen (only when pond is aerated), ammonium-nitrogen, total Kjeldahl nitrogen, total phosphorus, total potassium and total dissolved solids                           |
| Once every two years                              | None  | General minerals: calcium, magnesium, sodium, bicarbonate, carbonate, sulfate, and chloride  |
| Annually, prior to blending with irrigation water |   | pH (if requested), total dissolved solids, electrical conductivity, nitrate-nitrogen (only when pond is aerated), total Kjeldahl nitrogen, total phosphorus, and total potassium |

The Regional Board will accept analysis of ammonium-nitrogen, although the revised MRP indicates analysis of un-ionized ammonia.

| <b>SOLID MANURE</b>                            |   |   |
|--|---|---|
| <b>Minimum Sampling Frequency</b>              | <b>Minimum Analyses</b>   |   |
|  | <b>Field</b>  | <b>Laboratory</b>   |
| Each application to each land application area | Total weight (tons) applied   | Percent Moisture  |
| Once every two years                           |   | General minerals: calcium, magnesium, sodium, sulfur, chloride, and fixed solids (ash). |
| Twice per year                                 |   | Total nitrogen, total phosphorus, total potassium, and percent moisture                 |
| Each offsite export of manure                  | Total weight (tons) exported  | Percent moisture  |
| Annually                                       | Total <u>dry weight</u> (tons) manure <u>applied</u> annually to each land application area, and total <u>dry weight</u> (tons) manure <u>exported</u> offsite annually |   |

| <b>IRRIGATION WATER SAMPLING</b>   |   |   |
|--|---|---|
| <b>Minimum Sampling Frequency</b>  | <b>Minimum Analyses</b>   |   |
|  | <b>Field</b>  | <b>Laboratory</b>   |
| Each irrigation event for each land application area   | Date applied, source of water, volume (gallons or acre-inches) <sup>1</sup> applied |   |
| One irrigation event during each irrigation season during actual irrigation events – for each irrigation water source (well and canal) |   | Electrical conductivity, total-nitrogen <sup>2</sup> , total dissolved solids<br><br>Data collected to satisfy the groundwater monitoring requirements will satisfy this requirement for irrigation wells |

<sup>1</sup> Initial volume measurements may be the total volume for all land application areas. Actual volume measurements for each irrigation source for each land application area are to be recorded no later than July 1, 2011.

<sup>2</sup> In lieu of sampling the irrigation water, the Discharger may provide equivalent data from the local irrigation district.

| <b>PLANT TISSUE SAMPLING</b>  |   |  |
|---|---|--|
| <b>Minimum Sampling Frequency</b>   | <b>Minimum Analyses</b>   |  |
|   | <b>Field</b>  | <b>Laboratory</b>  |
| At each harvest from each land application area   | Total weight (tons) of harvested material removed from each land application area | Total nitrogen, total phosphorus, total potassium (expressed on a dry weight basis), fixed solids (ash) and percent moisture |
| Mid-season, if necessary to assess need for additional nitrogen fertilizer during the growing season (only if Discharger wants to add fertilizer in excess of 1.4 times the nitrogen expected to be removed by the harvested portion of the crop) |   | Total nitrogen, expressed on a dry weight basis  |

| <b>SOIL SAMPLING</b>  |                         |   |
|---|-------------------------|---|
| <b>Minimum Sampling Frequency</b>   | <b>Minimum Analyses</b> |   |
|   | <b>Field</b>            | <b>Laboratory</b>   |
| Once every five years (may be distributed over a five year period by sampling 20% annually) | None                    | Soluble phosphorus (Olsen test)   |
| Recommended:<br>Spring pre-plant for each crop  |                         | <u>0 to 1 foot</u> : Nitrate-nitrogen and organic matter<br><u>1 to 2 feet</u> : Nitrate-nitrogen                   |
| Recommended:<br>Fall pre-plant for each crop  | None                    | <b><u>0 to 1 foot</u>: Electrical conductivity, nitrate-nitrogen, soluble phosphorus, potassium, organic matter</b> |

## GROUND WATER MONITORING

| <b>DOMESTIC AND AGRICULTURAL SUPPLY WELLS</b>  |   |   |
|--|---|---|
| <b>Minimum Sampling Frequency</b>  | <b>Minimum Analyses</b>   |   |
|  | <b>Field</b>  | <b>Laboratory</b>   |
| Annually for each domestic and agricultural supply well present in the production and land application areas | Electric conductivity (may be done in laboratory), ammonium nitrogen <sup>3</sup> | Nitrate- nitrogen, ammonium nitrogen if field test presence <sup>3</sup>                          |
| Every five years (may be distributed over a 5-year period by sampling 20% of the wells annually)             |   | Calcium, magnesium, sodium, bicarbonate, carbonate, sulfate, chloride, and total dissolved solids |

| <b>SUBSURFACE (TILE) DRAINAGE SYSTEMS</b>  |  |  |
|--|--|--|
| <b>Minimum Sampling Frequency</b>  | <b>Minimum Analyses</b>  |  |
|  | <b>Field</b>   | <b>Laboratory</b>  |
| Annually thereafter for each tile drain present in the production and land application areas | Electric conductivity (may be done in laboratory) and ammonium nitrogen (see footnote 3) | Nitrate-nitrogen and total phosphorus, ammonium nitrogen if field test indicates presence <sup>3</sup> |

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<sup>3</sup> If field measurement indicates the presence of ammonium nitrogen, the discharger shall collect a sample for laboratory analysis of ammonium nitrogen

## DISCHARGE MONITORING

| <b>DISCHARGES (INCLUDING OFF- PROPERTY DISCHARGES) OF MANURE OR PROCESS WASTEWATER, from the production area or land application area</b> |   |  |
|---|---|--|
| <b>Minimum Sampling Frequency</b>   | <b>Minimum Analyses</b>   |  |
|   | <b>Field</b>  | <b>Laboratory</b>  |
| Daily during each discharge   | Electric conductivity (may be done in laboratory), temperature and pH.<br><br>Record: date, time, approximate volume (gallons) or weight (tons), duration, location, source, and ultimate destination of discharge <sup>4</sup> | Nitrate-nitrogen, total ammonia-nitrogen, un-ionized ammonia-nitrogen, total Kjeldahl nitrogen, total phosphorus, potassium, total dissolved solids, BOD <sub>5</sub> , total suspended solids, and total and fecal coliform |
| Daily during each discharge to surface water – for surface water both upstream and downstream of the discharge                            | Electric conductivity, dissolved oxygen, temperature and pH   | Nitrate-nitrogen, total ammonia-nitrogen, un-ionized ammonia-nitrogen, total Kjeldahl nitrogen, total phosphorus, potassium, total dissolved solids, total suspended solids, and total and fecal coliform                    |

| <b>STORM WATER DISCHARGES TO SURFACE WATER FROM THE PRODUCTION AREA</b>  |  |   |
|--|--|---|
| <b>Minimum Sampling Frequency</b>  | <b>Minimum Analyses</b>  |   |
|  | <b>Field</b>   | <b>Laboratory</b>   |
| Daily during each discharge to surface water – for the discharge and for surface water both upstream and downstream of the discharge | Electric conductivity, dissolved oxygen, temperature, pH, total ammonia-nitrogen and un-ionized ammonia-nitrogen<br><br>Record: date, time, approximate volume (gallons), duration, location, source, and ultimate destination of discharge <sup>4</sup> | Nitrate-nitrogen, turbidity, total phosphorus, total and fecal coliform |

<sup>4</sup> Form available for reporting of significant events at [http://www.cdqa.org/docs/Priority\\_Reporting\\_of\\_Significant\\_Events-part\\_1\\_of\\_2.doc](http://www.cdqa.org/docs/Priority_Reporting_of_Significant_Events-part_1_of_2.doc)

## DISCHARGE MONITORING (CONTINUED)

| <b>STORM WATER DISCHARGES TO SURFACE WATER FROM THE LAND APPLICATION AREA</b>  |   |  |
|--|---|--|
| <b>Minimum Sampling Frequency</b>  | <b>Minimum Analyses</b>   |  |
|  | <b>Field</b>  | <b>Laboratory</b>  |
| First storm event of the wet season and during the peak storm season (typically February) each year from one third of the land application areas (sample areas within the land application area to be rotated each year) | Electric conductivity, temperature, pH, total ammonia-nitrogen and un-ionized ammonia-nitrogen<br><br>Record: date, time, approximate volume, duration, location, and ultimate destination of discharge | Nitrate- nitrogen, total phosphorus, turbidity, total and fecal coliform |

| <b>TAIL WATER DISCHARGES TO SURFACE WATER FROM THE LAND APPLICATION AREA</b>  |   |  |
|---|---|--|
| <b>Minimum Sampling Frequency</b>   | <b>Minimum Analyses</b>   |  |
|   | <b>Field</b>  | <b>Laboratory</b>  |
| Each discharge from each land application area where irrigation has occurred <60 days after application of manure and/or process wastewater (liquid manure) | Electric conductivity, temperature, pH, total ammonia-nitrogen and un-ionized ammonia-nitrogen<br><br>Record: date, time, approximate volume (gallons), duration, location, and ultimate destination of discharge | NONE   |
| First discharge of the year where irrigation has occurred < 60 days after application of manure and/or process wastewater (liquid manure)                   | Electric conductivity, temperature, pH, total ammonia-nitrogen and un-ionized ammonia-nitrogen<br><br>Record: date, time, approximate volume (gallons), duration, location, and ultimate destination of discharge | Nitrate-nitrogen, total phosphorus, total and fecal coliform |