

EXAMPLE SAMPLING AND ANALYSIS PLAN FOR NUTRIENT MANAGEMENT

MANURE SAMPLING AND ANALYSIS PLAN				
Minimum Sampling Frequency	Sampling Method	Source Description (pond, corral, separator, or settling basin solids, or other)	Minimum Analyses	
			Field	Laboratory
Each application to each land application area	For laboratory analyses: One composite sample from each source (corrals, settling basin solids, and freestall scrapings) per “Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies” For field measurement: Scaled weight by truckload	Corrals Settling basin solids Freestall scrapings	Total weight (tons) applied	Percent Moisture
Once within 12 months	For laboratory analyses: One composite sample from each source (corrals, settling basin solids, and freestall scrapings) per “Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies”	Corrals Settling basin solids Freestall scrapings	None required	General minerals, including: calcium, magnesium, sodium, bicarbonate, carbonate, sulfate, and chloride
Twice per year	For laboratory analyses: One composite sample from each source (corrals, settling basin solids, and freestall scrapings) per “Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies”	Corrals Settling basin solids Freestall scrapings	None required	Total nitrogen, total phosphorus, potassium, and percent moisture

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			Field	Laboratory
Each offsite export of manure-solid and/or slurry	For field measurement: Scaled weight by truckload For laboratory analyses: one composite sample for each source of manure loaded into truck for export	Corrals Settling basin solids Freestall scrapings	Total weight (tons exported)	Percent moisture
Annually	Total dry weight applied = annual sum of individual dry weight applications (weight applied X (1 – percent moisture)) to each field from corrals, settling basin solids, and freestall scrapings Total dry weight exported = annual sum of individual dry weight exports (weight exported X (1 – percent moisture)) from corrals, settling basin solids, and freestall scrapings.	Corrals Settling basin solids Freestall scrapings	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	None required

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CDQAP – WDR General
Order Reference Binder
TAB 11.3, Version 2-29-08

PROCESS WASTEWATER SAMPLING AND ANALYSIS PLAN				
Minimum Sampling Frequency	Sampling Method	Source Description (pond identification)	Minimum Analyses	
			Field	Laboratory
Each application	For each pond, record: Date of each application of process wastewater to each field and metered volume of each application to each land application area	Pond 1 Pond 2 Pond 3	Date applied and volume (gallons or acre-inches) applied	None required
Quarterly during one application event	For field measurement: For each pond, one composite sample (describe collection method) per the "Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies" For laboratory analyses: For each pond, one composite sample (describe collection method) per the "Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies"	Pond 1 Pond 2 Pond 3	Electrical conductivity	Nitrate-nitrogen (only when pond is aerated), ammonium-nitrogen, total Kjeldahl nitrogen, total phosphorus, and potassium
Once within 12 months and annually for two years after groundwater monitoring wells are required	For each pond, one composite sample (describe collection method) per the "Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies"	Pond 1 Pond 2 Pond 3	None required	General minerals, including: calcium, magnesium, sodium, bicarbonate, carbonate, sulfate, and chloride

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SOIL SAMPLING AND ANALYSIS PLAN				
Minimum Sampling Frequency	Sampling Method	Source Description (soil sampling locations)	Minimum Analyses	
			Field	Laboratory
Once in summer of 2008 and then once every five years from each land application area	Per the “Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies” and specifically: For each of Fields 1, 2, 3, 4, and 5: one composite sample consisting of 10 sample sites for each 80-acre portion. Soil sample locations are shown on attached map.	Field 1 - 200 acres Field 2 - 200 acres Field 3 - 200 acres Field 4 - 200 acres Field 5 - 200 acres	None required	<u>0 to 1 foot</u> : Total phosphorus
Recommended: Spring pre-plant for each crop	Per the “Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies” and specifically: For each of Fields 1 and 2: one composite sample consisting of 10 sample sites for each 80-acre portion. Soil sample locations are shown on attached map. For each of fields 3, 4, and 5: For the initial planting only, one composite sample consisting of 10 samples sites for each 80-acre portion. Soil sample locations are shown on the attached map.	Field 1 - corn Field 2 - corn Field 3 - alfalfa Field 4 - alfalfa Field 5 - alfalfa	None required	<u>0 to 1 foot</u> : Nitrate-nitrogen and organic matter <u>1 to 2 foot</u> : Nitrate-nitrogen

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SOIL SAMPLING AND ANALYSIS PLAN				
Recommended: Fall pre-plant for each crop	Per the “Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies” and specifically: For each of Fields 1 and 2: one composite sample consisting of 10 sample sites for each 80-acres. Soil sample locations are shown on attached map.	Field 1 - oats Field 2 - oats	None required	<u>0 to 1 foot:</u> Electrical conductivity, nitrate-nitrogen, soluble phosphorus, potassium, organic matter <u>1 to 2:</u> Nitrate- nitrogen <u>2 to 3 foot:</u> Nitrate-nitrogen

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PLANT TISSUE SAMPLING AND ANALYSIS PLAN				
Minimum Sampling Frequency	Sampling Method	Source Description (land application area)	Minimum Analyses	
			Field	Laboratory
At each harvest from each land application area	<p>For field measurement: Scaled weight by truckload</p> <p>For Fields 1 and 2: One composite sample consisting of five samples from silage pile from each field per “Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies”</p> <p>For Fields 3, 4, and 5: One composite sample consisting of 10 samples from each field from the storage area per “Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies”</p>	<p>Field 1 - corn/oat silage Field 2 - corn/oat silage Field 3 - alfalfa Field 4 - alfalfa Field 5 - alfalfa</p>	Total weight (tons) harvested material removed from each land application area	<p>Percent wet weight of harvested plant removed</p> <p>Total nitrogen, phosphorus, and potassium, expressed on a dry weight basis</p>
Mid-season, if necessary to assess need for additional nitrogen 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)	<p>For Fields 1 and 2: one composite sample consisting of five samples from silage pile from each field per “Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies”</p> <p>For Fields 3, 4, and 5: One composite sample consisting of 10 samples from each field from the storage area per “Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies”</p>	<p>Field 1 - corn/oat silage Field 2 – corn/oat silage Field 3 - alfalfa Field 4 - alfalfa Field 5 - alfalfa</p>	None required	Total nitrogen, expressed on a dry weight basis

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IRRIGATION WATER SAMPLING AND ANALYSIS PLAN¹				
Minimum Sampling Frequency	Sampling Method	Source Description (well or canal identification)	Minimum Analyses	
			Field	Laboratory
Each irrigation event for each land application area	Irrigation Wells 1 and 2 – meter Irrigation Well 3 – flow rate multiplied by run time Canal Water - meter	Irrigation Well 1 Irrigation Well 2 Irrigation Well 3 Canal Water (irrigation district)	Volume (gallons or acre-inches) ² applied and date applied	None required
One irrigation event during each irrigation season during actual irrigation events – for each irrigation water source (well and canal)	<u>Spring-Summer:</u> All Irrigation Wells and Canal Water - per “Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies” <u>Fall-Winter:</u> All Irrigation Wells - per “Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies” (use groundwater monitoring data) Canal Water – irrigation district data	Irrigation Well 1 Irrigation Well 2 Irrigation Well 3 Canal Water (irrigation district)	None required	Electrical conductivity and nitrate-nitrogen ³ Data collected to satisfy the groundwater monitoring requirements will satisfy this requirement for irrigation wells

¹ Irrigation water from each well source and canal that is used on all land application areas are to be monitored.

² 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.

³ In lieu of sampling the irrigation water, the Discharger may provide equivalent data from the local irrigation district.