PG Environmental

Memo

To: Nick Peak, U.S. Environmental Protection Agency (USEPA) Region 10

From: Jennifer Ferrando and Sirese Jacobson, PG Environmental (PG)

CC: Jennifer Molloy, USEPA; Cortney Itle, Eastern Research Group (ERG)

Date: June 18, 2021

Subject: Initial review of Four Brothers Dairy Nutrient Management Plan (NMP)

ERG and PG have been tasked with reviewing the NMP submitted with an application for National Pollutant Discharge Elimination System (NPDES) permit coverage for Four Brothers Dairy, a dairy concentrated animal feeding operation (CAFO) located in Shoshone, Idaho. The purpose of the review is to ensure the NMP conforms to USEPA Region 10's CAFO permit requirements and the federal NPDES and effluent limitations guideline (ELG) requirements for CAFOs, and that it includes the information necessary for USEPA Region 10 to identify the terms of the NMP to be incorporated into the NPDES permit.

PG conducted an initial evaluation and determined that the submitted NMP, dated March 11, 2021, does not include several key pieces of information necessary to complete the review. PG sent emails to USEPA Region 10 on March 24 and April 20, 2021, identifying the missing information, and participated in a conference call with Nick Peak (USEPA Region 10) and Certified Planner Matthew Thompson (AgTec) on June 10, 2021, to discuss the NMP review.

This memo summarizes the additional information needed in the NMP to complete the requested review. In addition, this memo includes several recommended clarifications that might facilitate the public review process. These information needs and recommendations are as discussed during the June 10 call along with additional, related suggestions identified during the development of this memo.

Information Needed to Complete NMP Review

1. Clarify solid manure storage volume.

Purpose: To demonstrate adequate storage capacity for solid manure and compost.

The NMP describes solid manure handling practices (composting) and storage areas (Barns 3 and 4 Composting Areas). Table A-1 appears to estimate the total volume of solid manure generated (Solids/Raw tons = 356,448, or 65,806 tons at 35% moisture). However, the NMP does not specify the facility's dry manure/compost storage capacity. To demonstrate that the facility has adequate storage capacity for solid manure, it is recommended that the NMP **specify the volume of solid**

manure annually removed from corrals and other animal confinement areas and the storage capacity of the designated composting areas. The volume of manure removed and handled as a solid should include manure from calf hutches, covered sheds, hospital barns, etc., including any intermingled bedding material.

2. Clarify off-site manure transport practices.

Purpose: To demonstrate that the facility will maintain adequate storage capacity for annual manure generation and that excess manure nutrients will not build up on site.

The NMP indicates that the dairy generates more manure nutrients than can be used on site; therefore, some portion of the manure generated at the dairy must be exported. The NMP includes a list of current third party receivers. To demonstrate that the facility will maintain adequate storage capacity for annual manure generation and that excess manure nutrients will not build up at the dairy, the NMP should **clarify off-site manure transport practices, including the frequency and amount of off-site transfers, and contingency plans** in the event that third party receivers are not able to take all excess manure in a given year.

Based on the June 10 discussion, PG understands that the amount of manure transferred varies from year to year, depending primarily on the crops grown. The producer and planner should determine the best means of clarifying off-site transport practices in the NMP; this could include, for example, specifying an average or range of manure volume transferred annually, along with the existing statement in the NMP, "Any excess manure generated by the facility will be exported to third party receivers."

3. *Identify conservation practices*

Purpose: To demonstrate compliance with sections II.B.4, II.B.8, and III.A.2.f of the Region 10 CAFO general permit requiring identification of site-specific conservation practices, including "appropriate site-specific conservation practices to be implemented, including as appropriate buffers or equivalent practices, to control runoff of pollutants to waters of the United States."

The NMP maps appear to show land application sites in close proximity to surface drainages, and includes language copied from section II.B of the CAFO general permit indicating that conservation practices including land application setbacks, are required. However, to meet the requirement to identify <u>site-specific</u> conservation practices, the NMP should **specify where setbacks or equivalent practices will be implemented and what additional conservation practices are used to control pollutant runoff**, as well as where those additional practices are implemented. Locations of setbacks and other practices may be shown on field maps and/or described in narrative format. Where a field map shows a surface water or potential conduit to surface water located adjacent to or within a pivot-irrigated field, it is recommended that the NMP describe how the required setbacks are maintained when wastewater is being irrigated.

4. *Include a field-specific nutrient budget*

Purpose: To demonstrate use of the methodology described in the NMP for calculating land application rates.

Section III.A.2.h of the Region 10 CAFO general permit requires that the NMP "[e]stablish protocols to land apply manure, litter, or process wastewater in accordance with site specific nutrient management practices that ensure appropriate agricultural utilization of the nutrients in the manure, litter, or process wastewater." Furthermore, the permit requires that the NMP include an annual nutrient budget and that the NMP submitted to USEPA Region 10 for review include all necessary calculations for the annual nutrient budget. As discussed, this information demonstrates the use of the methodology described in the NMP for calculating accurate application rates. In addition, some of the information will be used by USEPA to identify terms of the NMP to be incorporated into the permit. The NMP reviewed includes detailed descriptions of how application rates are calculated, but does not include the necessary information to demonstrate use of the methodology. The NMP should **include a field-specific annual nutrient budget and all associated calculations** to comply with this permit requirement.

The specific land application information that must be included to meet the federal regulatory requirements for a plan developed using the narrative rate approach is identified in the Code of Federal Regulations (CFR) at 40 CFR 122.42(e)(5) and (e)(5)(ii). For reference, these are summarized below.

<u>Site-specific terms of the NMP for Narrative Rate Approach plans</u>

- ✓ Fields available for land application (e.g., including any fields recently added and planned to be developed during the permit term)
- ✓ Timing limitations for land application (e.g., the permit prohibition on land application to frozen, snow-covered and saturated soils)
- ✓ Outcome of the field-specific assessment of the potential for nitrogen and phosphorus transport from each field (i.e., the results of the Idaho Phosphorus Index or Idaho Nutrient Transport Risk Assessment (INTRA) evaluations for each field)
- ✓ Planned crops or other use for each field
- ✓ Realistic annual crop yield goal for each field (as discussed, if the yield goal is the same for all fields, it is recommended that be clearly stated in the NMP.)
- ✓ Total nitrogen and phosphorus recommendations per crop (e.g., per University of Idaho Fertilizer Guides or Crop Production Guides, appropriate guidance from another Pacific Northwest Land Grant University, or other "best available data.")
- ✓ Maximum amount of nitrogen and phosphorus to be land applied from all sources for each field
- ✓ Alternative crops and associated nitrogen and phosphorus recommendations (optional)
- ✓ Methodology used to account for:
    - Soil test results
    - Credits for plant available nitrogen in the field
    - The amount of nitrogen and phosphorus in the manure, litter, and process wastewater to be applied
    - Consideration of multi-year phosphorus application
    - Accounting for all other additions of plant available nitrogen and phosphorus to the field

- Form and source of manure, litter, and process wastewater
- Timing and method of land application (including clarifying what land application methods are used)
- Volatilization of nitrogen and mineralization of organic nitrogen (including the mineralization rates used for various manure sources and volatilization rates used for various land application methods and timing of incorporation, if applicable)

<u>Required projections to demonstrate use of the methodology</u>

Note: These are not terms of the NMP but should be included in the nutrient budget and associated calculations.

- Planned crop rotations for each field for the period of permit coverage
- Projected amount of manure, litter, or process wastewater to be applied
- Projected credits for all nitrogen in the field that will be plant available
- Consideration of multi-year phosphorus application
- Accounting for all other additions of plant available nitrogen and phosphorus to the field
- The predicted form, source, and method of application of manure, litter, and process wastewater for each crop

Additional Recommended Clarifications

1. Clarify handling practices for corral manure and calf manure.

Purpose: To demonstrate that all waste streams are accounted for in the NMP.

The NMP includes detailed descriptions of generation, handling, and storage for washwater/process water and runoff and mentions that solid manure is removed from corrals and composted. It is not clear, however, that this practice includes the manure deposited near the perimeter of the corrals along the feed lane(s). At many dairies this manure is handled as a slurry or it becomes part of the wastewater stream. Based on the June 10 discussion, PG understands that Four Brothers Dairy scrapes this manure into the corrals to dry before being removed to a composting site. PG recommends that the NMP **describe how wet manure deposited in the corrals along the feed lanes is handled**. In addition, the NMP states that calves are housed in hutches or covered sheds and describes runoff management for the calf area but does not specify handling practices for bedding and solid manure from the calf hutches and covered sheds. PG recommends that the NMP **describe how solid manure and bedding from the calf housing area is handled.** Adding this information might avoid any potential concerns during the public review of the NMP about whether the NMP accounts for all manure generated at the dairy.

2. *Clarify which liquid waste impoundments include 25-year, 24-hour storm capacity, and how the required storage volume is maintained.*

Purpose: To demonstrate that depth markers are included in all impoundments as necessary to demonstrate maintenance of the required storm storage capacity.

Mr. Thompson requested clarification from USEPA Region 10 on the requirements for installing depth markers and documenting weekly wastewater levels where multiple impoundments function as a single system. PG recommends **providing additional information on any potential outlets from each of the ponds**, including which ponds the facility pumps from, particularly any that rely on pumping to maintain adequate storage capacity, and which ponds have overflow lines to other units. Some of this information on how wastewater moves between ponds is included in the NMP beginning on page 23 of the PDF. The site maps in the NMP also show connections between certain ponds. Finally, Mr. Thompson provided additional information to EPA in an email dated March 11, 2021. However, it appears that these various sources of information are slightly inconsistent. PG recommends **ensuring the information in the NMP accurately clearly describes the operation of the pond systems** including pump-down levels for each pond that includes design storm storage capacity, either in the NMP or separately, to support EPA's consideration and guidance regarding placement of depth markers at Four Brothers Dairy.

As a reminder, information demonstrating that the production area has been operated and maintained as required (e.g., to contain all manure, litter, and process wastewater including the runoff and the direct precipitation from a 25-year, 24-hour rainfall event) is needed in the event of a discharge. Without this information, a discharge to a water of the U.S. from Four Brothers Dairy is not permitted. Therefore, it is critical to ensure depth markers are placed appropriately (i.e., in every pond that includes storage capacity for the 25-year, 24-hour storm) so that weekly records of wastewater levels will adequately demonstrate that any potential discharge is covered under the permit, provided the storage capacity was maintained as required.