



October 11, 2017

File Ref: R-2017-0154A
WD PES Permit # WI-0059315

Todd Tuls
Emerald Sky Dairy
2670 D Road
Rising City, NE 68658

Subject: Conditional Approval of Plans & Specifications for Two Waste Storage Facilities,
a Manure Stacking Area & Waste Transfer Pipes, Abandonment of a Waste Storage Facility
& Abandonment of a Waste Transfer System, at Emerald Sky Dairy, 2487 County Rd. G,
Emerald, Sec. 22, NE¼ of NE¼, T30N, R16W, Town of Emerald, St. Croix County

Dear Mr. Tuls:

The Division of External Services of the Wisconsin Department of Natural Resources (DNR) hereby issues a partial conditional approval of the above-referenced plans and specifications, submitted by Ronnie Williams, P.E., Williams Engineering Services, LLC (WES) received August 14, 2017. The plans and specifications were deemed to be substantially complete as of the received date. DNR also reviewed additional information requested by St. Croix County, received by DNR October 5, 2017.

Construction is approved to commence for a period of two years from the approval date. If work will commence later, or will occur over a longer period without continuous work (other than due to weather) a new written approval must be obtained. Questions may be directed to DNR animal waste specialist Leah Nicol, or DNR review engineer Gretchen Wheat. (Contact information is at the end of this letter.)

The reason for a partial approval is to allow the following (approved) facilities and systems to be constructed yet this fall.

- Two waste storage facilities (WSF 1 & WSF 2) that are considered emergency replacements for an existing WSF that must be abandoned (listed below).
- A manure stacking area.
- A reception manhole for the new WSF1, and waste transfer pipes to route waste to the new manhole or directly into WSF1.
- Abandonment of an existing WSF that has a heavily damaged geomembrane liner (not repairable).
- Abandonment of existing waste transfer pipes (heifer barn collection tank to solids separation building; and solids separator collection tank to the existing WSF).

The following facilities and systems were also proposed, to be constructed in 2018, that are not yet approved, and will be addressed in separate correspondence as DNR project R-2017-0154B.

- Relocation and improvement of a calf hutch area, to add an impervious surface and runoff collection.
- Feed storage area expansion.
- Runoff controls for the proposed feed storage expansion area and for an existing feed storage area.
- Runoff controls for an existing heifer lot.
- Associated remaining portions of waste transfer systems, including tanks for collection or pumping.

Compliance & Project Summary: DNR review was in accordance with s. 281.41 Wis. Stats., ch. NR 243, Wis. Adm. Code, and applicable NRCS Standards. NRCS Standards and Construction Specifications, are referenced in the plans and specifications, and are therefore part of this approval, although only primary NRCS Standards may be referenced herein. Runoff calculations are based on the 25-yr, 24-hr rainfall of 5.1 inches, and an MSE3 storm type, for St. Croix County, as listed in Atlas 14. Clean stormwater will be routed around waste handling areas.

Proposed Waste Storage Facilities (WSF 1 & WSF 2) & Manure Stacking Area: Two impoundment style waste storage facilities (WSF1 & WSF2) are proposed. WSF1 and WSF2 will be connected together by an overflow pipe and concrete channel crossover to allow for the liquid fraction of the manure to flow from the concrete pond to the HDPE lined pond. Around the floor of each WSF1 and WSF2, a perimeter drain tile and observation manhole will also be installed, providing a method to monitor for and collect leakage, if it would occur. However, the drain tiles will gravity flow to a surface outlet. A concrete load out spill containment area is also proposed adjacent to each of the WSFs. These added features, along with the added clay sub-liner for WSF 1, and added clay liner thickness for WSF2, provide improved groundwater protection, as compared to the minimum design criteria, and is warranted due to permeable soil and shallow bedrock that exists at the site (also see Site Assessment, below).

- WSF 2 will be 3.3 million gallons (to top of berm) and 2.9 million gallons to the maximum operating level (MOL). The liner will be water-tight reinforced concrete (with embedded waterstop in all joints) and an additional 12 inch thick clay sub-liner in intimate contact with the concrete. The clay sub-liner will have a minimum 20% fines and a plasticity index of at least 7.
- WSF 2 will be 29.8 million gallons (to the top of berm) and 27.1 million gallons to the MOL. The liner will be 60 mil HDPE with the normally specified 2 feet thick clay sub-liner and vent tile network, plus an additional 1 foot thickness of clay sub-liner.

A manure stacking area for storage of manure solids and contaminated bedding will be constructed immediately north of WSF1, and gravity drain directly into WSF1. The area will have a water-tight reinforced concrete liner (with embedded waterstop in all joints)

WSF 1, WSF2 and the manure stacking area are each designed in accordance with NRCS 313 (1/14), and comply with s. NR 243.15(3), Wis. Adm. Code. The additional proposed liner provisions of WSF1 and WSF2, and perimeter drain tiles, also comply with s. NR 243.15(3)(c), Wis. Adm. Code, which calls for an assessment of the need for leak collection, monitoring or secondary containment, based on potential impacts to surface water or groundwater quality.

Abandonment of an Existing Waste Storage Facility: The existing HDPE pond will be abandoned. (Existing transfer pipes that discharge into the WSF will also be abandoned, as described below.) The submittal includes a closure plan for abandonment of the WSF, which references NRCS 360 (3/13). This complies with s. NR 243.15(7)(a) and (b), Wis. Adm. Code.

Proposed Reception Manhole for WSF1, & Waste Transfer Pipes: With the exception of the reception manhole for WSF1, proposed tanks are not approved, and will be reviewed in the subsequent part of the proposed project. (Runoff for the calf hutch area and feed storage area will flow into an existing modified tank in the solids separation area, such that a dedicated transfer pipe is not needed.) Transfer pipes are approved herein. If a new tank is to be installed later, the pipe will be installed and capped for later connection to a new tank. The transfer pipes will be PE ASTM F 714 (DR 21) which meet NRCS 634 (1/14) and therefore also comply with s. NR 243.15(4), Wis. Adm. Code.

- Reception Manhole for WSF1: Adjacent to the new WSF1 will be a new reception manhole to receive most wastes prior to discharge into WSF1. The manhole will also prevent backflow from WSF1.
- Transitional Management Facility (TMF) Barn Collection Tank to WSF1: The existing piping from the TMF barn collection tank to the solids separation area will be removed, and a replacement transfer pipe will be installed to route manure from the TMF barn collection tank directly to the proposed WSF1. (This original system was the source of the December 2016 manure spill.)
- Solid Separator Collection Tank to WSF1: The existing piping from solid separator collection tank to the existing WSF will be removed, and a replacement transfer pipe will be installed to route manure from the solid separator collection tank to the proposed WSF1.
- Heifer Lot Collection Tank to WSF1: There is currently no collection from the heifer lot. A new transfer pipe will be installed into the proposed reception manhole for WSF1, and stubbed for connection when the heifer lot collection system is constructed in 2018.

Abandonment of Existing Transfer Systems: Existing transfer pipes (two) that discharge into the existing WSF will be abandoned. Where existing transfer pipes extend through areas where the new WSFs will be constructed, the transfer pipes will be removed. Otherwise the pipe outlet will be encased in concrete.

The existing TMF barn transfer system (from the TMF barn collection tank to the solids separation area) will be abandoned. The submittal includes a closure plan for abandonment of these existing transfer systems, which references NRCS 360 (3/13). This complies with s. NR 243.15(7)(a), Wis. Adm. Code.

Days of Storage for Manure & Co-Mingled Wastewater: After completion of the part of the project approved herein, the farm will have a minor increase in waste collection (runoff collection from the new solids stacking area) and will have two WSFs totaling 33.1 million gallons to the top, and 30.0 million gallons to the maximum operating level (MOL). The subsequent part of the project (not yet approved) includes increased manure and wastewater collection (described immediately below) which is expected to result in a total waste generation of 30.0 million gallons per year. Based on this total waste generation, it is reported that the farm will have 378 days storage.

The increased manure and wastewater collection in the subsequent part of this project is due to the increased runoff collection from certain existing areas (existing and expanded feed storage area; the heifer lot; and the calf hutch area which will also be relocated).

DNR did not confirm the specific reported days of storage, but did confirm the farm will have far greater than 180 days of storage. This complies with s. NR 243.15(3)(i) to (k), Wis. Adm. Code.

Background: This is an existing livestock operation that houses greater than 1,000 Animal Units, and has a Concentrated Animal Feed Operation (CAFO) WPDES Permit which was re-issued July 1, 2015. The farm recently came under new ownership. Currently the site has 1,500 milking cows, 200 dry cows, 250 heifers and 350 calves. A minor expansion is under consideration, but the previously proposed significant expansion is no longer being planned at this time. The plans and specifications are primarily intended to address compliance concerns at the site, and improve overall operation. The production area is an approximately 310 acre site that currently consists of the following.

- Three freestall barns bedded with recycled manure solids.
- Milking parlor.
- Feed pad which has only a first flush leachate collection system.
- WSF that has a geombrane liner (HDPE) that has reached its anticipated service life, and has been greatly damaged, and temporarily repaired. The WSF cover has also been partially removed.
- Virginia style open front heifer shed with failed and poorly performing runoff collection. This houses all 250 heifers at the site.
- Calf hutch area on dirt, that lacks runoff collection. This houses all 350 calves at the site.
- Stormwater runoff pond, that receives contaminated runoff.
- Portions of a digester system, a methane collection and bottling system (ECO Fuel project) and a sand recovery system. Most of the components of these systems have been abandoned, or no longer in use. Tanks from the sand recovery system and parts of the digester system are still in use.

The submittal states, “Existing DNR permits for the Bio digester and ECO Fuels project shall be maintained, although they are not intended to be used at this time.” DNR provides this clarification.

CAFO digesters and other facilities are normally addressed in a CAFO WPDES Permit, and plans and specifications must be approved prior to construction of new or modified reviewable facilities or systems. The DNR CAFO Program is unsure if another DNR Permit applied to the ECO Fuel equipment, but it is likely that engineering plans would need to be approved prior to construction of similar new or modified equipment. Permits may also have specific requirements for notification if the permitted equipment is taken out of service. The CAFO WPDES Permit contact is Leah Nicole. Questions about other permits may be directed to the DNR Program that issued the permit.

Stormwater runoff from the site flows to an existing stormwater runoff pond located in the most southern part of the facility via swales and constructed embankments. The stormwater pond currently receives contaminated runoff from the feed pad and calf hutch area, which does not comply with ch. NR 243, Wis. Adm. Code.

Site Assessment: Site surface water drains primarily to the southwest. The submittal reports no karst or sinkhole features were located during field observation, or upon review of available geological maps and GIS maps produced by WES utilizing current DNR and St. Croix County ArcGIS layers.

There are two on-site groundwater supply wells, both of which are greater than 250 feet from the proposed facilities and systems.

A wetland delineation of the site was completed by a DNR Assured Wetland Delineator (Timothy D. King). There are mapped wetlands immediately west and southwest of production area, and this influenced the choice to locate the proposed facilities within the eastern portion of the site. The submittal reports one mapped wetland within the production area was filled somewhat recently (by the previous owner) without a permit to do so. The proposed facilities are not within the filled wetland area, and this approval letter does not resolve or further address the wetland filling issue.

Soil Investigations: In July 2017, WES performed approximately 35 test pits in the area of proposed WSF1 and WSF2, and the proposed transfer systems. (Additional test pits were also performed in the central and western portion of the site, and borrow materials were identified, but the proposed facilities are not in those areas.) Bedrock was not observed in any of the test pits, with the deepest test pit being 24.5 feet below existing ground surface (b.g.s.). After 24 hours, perched groundwater from sand pockets was observed in 1 test pit at a depth of 7.5 feet b.g.s., and drain tile has been included in the design due to this observation.

With the perched water to be drained, the soils investigation demonstrates sufficient separation from saturation and bedrock for WSF1 (minimum 2 feet) and WSF2 (minimum 4 feet), and from bedrock for the proposed waste transfer pipes (minimum 6 inches). Transfer tanks are also proposed in the subsequent part of this project, not approved herein.

Although the site topsoil is quite consistently silt loam, subsoils are varied and occur at inconsistent depths. To approximately 5-6 feet immediately below the proposed floors of the WSFs, the soils are primarily coarse grained (SC and GP). At other depths and in other areas, suitable soils were found for construction of the proposed clay sub-liners for WSF1 and WSF2.

Conditions of Approval: The plans and specifications for project number R-2017-0154A are hereby approved and subject to chs. NR 151 and NR 243, Wis. Adm. Code, and the conditions listed below.

1. **Notification:** Prior to construction and when construction is complete, notify the DNR regional contact and county contact. (Contact information is in the cc list at the end of this letter.)
2. **Inspection:** During the construction of critical components, inspection shall be performed by a Wisconsin registered professional engineer or other qualified third party (excludes the owner and construction contractor and their employees). NRCS Standards and Wisconsin Construction Specifications contain certain third party inspection requirements.
3. **Post-Construction Documentation:** Within 60 days of completing construction, submit to the DNR e-Permit website (<http://dnr.wi.gov/permits/water>) the post-construction report, and send one paper copy to the DNR regional contact. The report shall comply with s. NR 243.15(10), Wis. Adm. Code, and document compliance with 1.-2. (above) and a.-d. (below).
 - a. A statement certifying that construction conforms with s. NR 243.15, Wis. Adm. Code, NRCS 313 (1/14), NRCS 634 (1/14), NRCS 360 (3/13) and applicable Wisconsin Construction Specifications.
 - b. The inspector's certification that inspection conformed with the approved inspection plan, NRCS Standards and Wisconsin Construction Specifications in a. (above), along with a copy of the Inspection Log showing each inspection date and corresponding items inspected.
 - c. A complete final as-built drawing package that identifies any changes from the approved design.
 - d. Documentation required in either i. or ii. (below).
 - i. If no changes from approved plans, certification for a. above shall be accompanied by the following statement: Construction fully conforms with the approved plans and specifications.

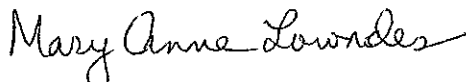
- ii. If changes from approved plans, certification for a. (above) shall be accompanied by the following.
- Summary of changes and description of how design conditions were met, if any.
 - A statement that construction substantially conforms with the approved plans and specifications.
 - Documentation of DNR approved design changes. (Design change without prior approval is a violation of ch. NR 243 and the WPDES Permit. Direct questions to the review engineer.)

Limitation of Approval: The DNR reserves the right to order changes or additions should conditions arise making this necessary. This approval is not to be construed as a DNR determination on the issuance of a Wisconsin Pollutant Discharge Elimination System Permit or opinion as to the ability of the proposed system to comply with effluent limitations in such a permit, approval of an Environmental Impact Statement that may be prepared, or approval for any activities requiring a permit under chs. 30 or 31, Wis. Stats. Where necessary, plans and specifications should be submitted to the Department of Safety and Professional Services or other state or local agencies to ensure conformance with their requirements.

Tax Treatment: Tangible personal property, that becomes part of a waste treatment of pollution abatement plant or equipment, may be exempt from sales tax under s. 77.45(26), Wis. Stats. Similarly, property purchased or constructed as a waste treatment facility and used for industrial waste treatment may be exempt from general property taxes under s. 70.11(21), Wis. Stats. A prerequisite to exemption is filing a statement on prescribed forms. To obtain forms and information, please contact the Department of Revenue, P.O. Box 8933, Madison, WI 53708, or check their website <http://www.revenue.wi.gov/>.

Appeal Notice: If you believe that you have a right to challenge this decision, you should know that the Wisconsin statutes and Administrative rules establish time periods within which requests to review Department decisions must be filed. For judicial review of a decision pursuant to ss. 227.52 and 227.53, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review must name the Department of Natural Resources as the respondent. To request a contested case hearing pursuant to s. 227.42, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. All requests for contested case hearings must be made in accordance with s. NR 2.05(5), Wis. Adm. Code, and served on the Secretary in accordance with s. NR 2.03, Wis. Adm. Code. The filing of a request for a contested case hearing does not extend the 30 day period for filing a petition for judicial review.

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
FOR THE SECRETARY



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