Permit No. CPCF00164

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

CONSTRUCTION PERMIT

The Missouri Department of Natural Resources hereby issues a permit to:

DM Farms of Rose Hill, LLC
1801 W Austin Suite F
P.O. Box 566
Nevada, MO 64772

for the construction of (described facilities):

See attached.

Permit Conditions:

See attached.

Construction of such proposed facilities shall be in accordance with the provisions of the Missouri Clean Water Law, Chapter 644, RSMo, and regulation promulgated thereunder, or this permit may be revoked by the Department of Natural Resources (department).

As the department does not examine structural features of design or the efficiency of mechanical equipment, the issuance of this permit does not include approval of these features.

A representative of the department may inspect the work covered by this permit during construction. Issuance of a permit to operate by the department will be contingent on the work substantially adhering to the approved plans and specifications.

This permit applies only to the construction of water pollution control components; it does not apply to other environmentally regulated areas.

December 6, 2023
Effective Date

December 5, 2025
Expiration Date

John Hoke, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

The purpose of this project is to install cover systems on six lagoons within this pyramid for the ability to capture gas production from under the covers. The installation of the covers require modifications to the lagoon berms and the existing recycle and discharge systems. This project will not change the permitted animal capacity for this facility.

This project will also include general site work appropriate to the scope and purpose of the project and all necessary appurtenances to make a complete and usable wastewater treatment facility.

II. COST ANALYSIS FOR COMPLIANCE

Pursuant to Section 644.145, RSMo, when issuing permits under this chapter that incorporate a new requirement for discharges from publicly owned combined or separate sanitary or storm sewer systems or publicly owned treatment works, or when enforcing provisions of this chapter or the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq., pertaining to any portion of a publicly owned combined or separate sanitary or storm sewer system or [publicly owned] treatment works, the Department of Natural Resources shall make a "finding of affordability" on the costs to be incurred and the impact of any rate changes on ratepayers upon which to base such permits and decisions, to the extent allowable under this chapter and the Federal Water Pollution Control Act. This process is completed through a cost analysis for compliance. Permits that do not include new requirements may be deemed affordable.

The department is not required to complete a cost analysis for compliance because the facility is not a combined or separate sanitary sewer system for a publically-owned treatment works.

III. CONSTRUCTION PERMIT CONDITIONS

The permittee is authorized to construct subject to the following conditions:

1. This construction permit does not authorize discharge.

2. All construction shall be consistent with plans and specifications signed and sealed by Christopher M. Sander, P.E., with McClure Engineering and Mark D. Cowell, P.E., Roeslein & Associates, Inc. and as described in this permit.

3. State and federal law does not permit bypassing of raw wastewater, therefore steps must be taken to ensure that raw wastewater does not discharge during construction. If a sanitary sewer overflow or bypass occurs, report the appropriate information to the department's Southwest Regional Office per 10 CSR 20-7.015(9)(G).

4. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of one acre or more to obtain a Missouri state operating permit to discharge stormwater. The permit requires best management practices sufficient to control runoff and sedimentation to protect waters of the state. Land disturbance permits will only be obtained by means of the department's ePermitting system available online at https://dnr.mo.gov/data-e-services/missouri-gateway-environmental-management-mogem. See https://dnr.mo.gov/data-e-services/water/electronic-permitting-epermitting for more information.

5. A United States Army Corps of Engineers (USACE) Clean Water Act Section 404 Department of the Army permit and a Section 401 Water Quality Certification issued by the department may be required for the activities described in this permit. This permit is not valid until these requirements are satisfied or notification is provided that no Section 404 permit is required by the USACE. You must contact your local USACE district since they determine what waters are jurisdictional and which permitting requirements may apply. You may call the department's Water Protection Program, Operating Permits Section at 573-522-4502 for more information. See https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/section-401-water-quality for more information.

6. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements listed below.

    - Manure storage structures, confinement buildings, open lots, composting pads, and other manure storage areas in the production area shall be protected from inundation or damage due to the 100 year flood. 10 CSR 20-8.300(4)(A).

    - Minimum setback distances from manure storage structures, manure storage areas, confinement buildings, open lots, or mortality composters shall be as follows:

        - Ten feet (10') to public water supply pipelines; 10 CSR 20-8.300(4)(B)1;
        - Fifty feet (50') to property lines; 10 CSR 20-8.300(3)(B)2;
        - Fifty feet (50') to public roads; 10 CSR 20-8.300(3)(B)3;
        - One hundred feet (100') to wetlands, ponds, or lakes not used for human water supply; 10 CSR 20-8.300(3)(B)4;
        - One hundred feet (100') to gaining streams (classified or unclassified; perennial or intermittent); 10 CSR 20-8.300(3)(B)5;
        - Three hundred feet (300') to human water supply lakes or impoundments; 10 CSR 20-8.300(3)(B)6;and
        - Three hundred feet (300') to losing streams (classified or unclassified; perennial or intermittent) and sinkholes. 10 CSR 20-8.300(3)(B)7.

    - Distances from earthen basins shall be measured from the outside edge of the top of the berm. 10 CSR 20-8.300(4)(C).

- Outer berm slopes shall not be steeper than three to one (3:1), horizontal to vertical, and inner slopes not be flatter than four to one (4:1) or steeper than three to one (3:1) for uncovered lagoons or two and one-half to one (2.5:1) for covered lagoons. 10 CSR 20-8.300(6)(D).

- Construction specifications shall include the following:

    - Compact soil used in constructing the basin floor (not including clay liner) and berm cores to between 2 percent below the 4 percent above the optimum water content and to at least 90 percent standard proctor density; 10 CSR 20-8.300(6)(E)1;
    - Use lifts for berm construction not exceeding 12 inches with a maximum rock size not exceeding 1/2 the thickness of the compacted lift; 10 CSR 20-8.300(6)(E)2; and
    - Construct the top width of the berm a minimum of 8 feet for fill heights from 15–20 feet, use minimum top widths of 10 feet and for fill heights from 20–25 feet, use minimum top widths of 12 feet; 10 CSR 20-8.300(6)(E)3.

- A permanent depth measurement gauge or marker shall be installed and maintained in the basin that is easily readable at one-foot or smaller increments and clearly displayed lower, upper, and emergency spillway levels. 10 CSR 20-8.300(5)(J).

- Design of pipelines shall be based on the following requirements:

    - Ensure the storage/treatment facilities can be emptied within the time limits stated in the nutrient management plan; 10 CSR 20-8.300(9)(A)1;
    - Convey the required flow without plugging, based on the type of material and total solids content; 10 CSR 20-8.300(9)(A)2;
    - Install at a depth sufficient to protect against freezing; 10 CSR 20-8.300(9)(A)3.
    - Install with appropriate connection devices to prevent contamination of private or public water supply distribution systems and groundwater; 10 CSR 20-8.300(9)(A)4;
    - Size pumps to transfer material at the required system head and volume; 10 CSR 20-8.300(9)(A)5;
    - Install a minimum of three feet below the natural stream floor and as nearly perpendicular to the stream flow as possible; 10 CSR 20-8.300(9)(A)6;
    - Encase when buried under public roads; 10 CSR 20-8.300(9)(A)7; and
    - Separation from potable water lines. Pipelines shall be located at least 10 feet horizontally from and at least 18 inches below the base of any potable water line; 10 CSR 20-8.300(9)(A)8.

- Design of pipelines shall be based on the following requirements:

    - Use a minimum slope of 1 percent for 4 inch pipe, 0.6 percent for 6 inch pipe, and 0.4 percent for 8 inch pipe; 10 CSR 20-8.300(9)(B)1;

  - Design with clean-outs at a maximum interval of 300 feet and with maximum horizontal curves of 10 degrees at pipe joints; 10 CSR 20-8.300(9)(B)2; and
  - Design gravity discharge pipes used for emptying a storage/treatment structure with a minimum of two valves in series. 10 CSR 20-8.300(9)(B)3.

- Design velocities for force mains and pressure pipes shall be between three and six feet per second. 10 CSR 20-8.300(9)(C).

- Hydro-pressure tests shall be made only after the completion of backfilling operations and for a minimum of one hour using a minimum test pressure of the maximum system operating pressure. 10 CSR 20-8.300(9)(D).

- Pump Stations:

  - Water supply protection. Manure pump stations shall not be connected to a potable water supply and shall be located at least 300 feet from any potable water supply well. 10 CSR 20-8.300(9)(E)1.
  - Alarm systems. Alarm systems are required for pumping stations that are activated in cases of power failure, pump failure, or any cause of high water in the wet well. 10 CSR 20-8.300(9)(E)2.

- Mechanical equipment shall be used and installed in accordance with manufacturers' recommendations and specifications and major mechanical units installed under the supervision of the manufacturer's representative. 10 CSR 20-8.300(10)(A).

- No piping or other connections shall exist in any part of the concentrated animal feeding operation system, which under any conditions, might cause the contamination of a potable water supply. 10 CSR 20-8.300(10)(B).

7. Upon completion of construction:

   A. Submit an electronic copy of the as builts if the project was not constructed in accordance with previously submitted plans and specifications; and

   B. Submit the Statement of Work Completed form to the department in accordance with 10 CSR 20-6.010(5)(N) (https://dnr.mo.gov/document-search/wastewater-construction-statement-work-completed-mo-780-2155).

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

The purpose of this project is to install cover systems to six lagoons within this pyramid for the ability to capture gas production from under the covers.

2. FACILITY DESCRIPTION

This is a no discharge Class IA Confined Animal Feeding Operation (CAFO). The facility consists of eleven anaerobic lagoons with secondary containment structures and a dead animal refrigeration unit.

The Murphy Family Ventures, LLC Dover Pyramid is located at 28969 S. 2775 Road, Sheldon, in Vernon County, Missouri. The facility has a design average flow of 117,224,279 gallons per year (0.32 million gallons per day). Design number of animals is 23,553 animal units of swine over 55 pounds and swine under 55 pounds.

3. COMPLIANCE PARAMETERS

These construction activities do not change the effluent limits or conditions of the current operating permit. The facility is required to meet final effluent limits and conditions established in Operating Permit MO-0131032.

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

Construction will cover the following items:

- Lagoon Cover – Installation of six 80-mil high-density polyethylene (HDPE) floating cover system over six lagoons including Driftwood, Sawgrass, Springview, Bluestem, Tenmile, and Chestnut lagoons. Components of each of the lagoon cover systems include:
  - Perimeter piping – Eight-inch advanced drainage systems (ADS) N-12 double-wall factory perforated gas collection pipe that runs along the perimeter of the inside of the lagoon at the top of the slope.
  - Ballast piping – Six-inch HDPE SDR 17 pipe filled with flowable fill and capped on each end.
  - Rainwater removal pipes – Six-inch HDPE SDR 17 pipes that are placed next to the center ballast pipes to remove rainwater.
  - Emergency vents – Six-inch HDPE SDR 17 specification flange adapters that are connected to a tee that runs in-line with the perimeter piping.
  - Sludge management ports – Six-inch HDPE SDR 17 ports that penetrate the cover to allow operators the ability to measure sludge levels.

- Lagoon Berm Modification – When the cover is added to each of the six lagoons the following modifications to the existing berm will be made.
  - Anchor trench – An anchor trench will be excavated to allow the installation of the lagoon cover.
    - A smooth bucket is used to dig a 36-inch wide and 48-inch-deep trench around the perimeter of the lagoon.
    - A 2-inch nominal / 1/2-inch minimum bentonite layer of bentonite powder is evenly spread at the bottom of the anchor trench.

        - Refer to the engineering and technical specifications and plans for more details of description of trench preparation, backfilling, and compaction requirements.
    - Pipe penetrations – Piping that will penetrate the lagoon's clay liner will be sleeved in bentonite clay, extending 36 inches back from the top of the pipe penetration. All backfill pipe in the anchor trenches will be compacted to 95 percent standard proctor density.
    - Modifications to existing piping –
        - The existing piping at the covered lagoon will be excavated outside the toe of the berm to allow for the installation of a sewer cleanout.
        - All pipes to be abandoned will get a cap glued onto each open end.
    - New piping penetrating the lagoon
        - Forced sewer – 8-inch to 10-inch HDPE SDR 11 pipe will be utilized for locations at that require sewage to be pumped from the barns to the lagoons.
        - Powerflush – A powerflush is installed to keep blockages from occurring at the end of the gravity sewer, wet well lateral, and gravity transfer piping.
        - Rainwater under cover return – 4-inch HDPE SDR 11 pipe that will transport pumped rainwater from the top of the lagoon cover and will run beneath the cover to discharge just above the sludge layer. This will only be utilized in case the lagoon cover has a leak.
        - Wet well lateral – 12-inch HDPE SDR 17 pipe that allows water to gravity transfer line will be installed.

- **Recycle System, Discharge Piping, and Lagoon Level Monitoring Modifications** – When the cover is added to each of the six lagoons, the following modifications will be made:

    - The existing floating dock and pump will be removed.
    - Wet wells with pumps will be installed within the lagoon berm to provide recycle water to flush gutter barns for the farm for flushing.
    - Pit recharge barns for a farm will receive recycle water from uncovered lagoons.
    - Discharge piping penetrations of a farm's lagoon will be lowered when covered to ensure a column of water is over the pipe at all times to ensure a gas seal at low pumpdown levels.
    - Manure from existing farms that have lagoons that will remain uncovered will be rerouted to the nearest covered lagoon to maximize the farm's renewable natural gas production. Modifications to be made include:
        - Rerouting gravity sewers to covered lagoons where elevations allow.
        - Adding lift stations where manure cannot gravity flow to the nearest covered lagoon.
    - A new level indicator will be installed in a wet well.
    - Transfer pumps and fixed pipe will be installed to allow for balancing of water between covered and uncovered lagoons to manage lagoon levels and for land application from uncovered lagoons.

- Refer to the engineering and technical specifications and design plans for pumps and piping details.

5. OPERATING PERMIT

These construction activities do not change the effluent limits or conditions of the current operating permit. The department will conduct an internal modification to reflect the current facility description upon receipt of the Statement of Work Completed form.

V. NOTICE OF RIGHT TO APPEAL

If you were adversely affected by this decision, you may be entitled to an appeal before the Administrative Hearing Commission (AHC) pursuant to Section 621.250 RSMo. To appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC. Any appeal should be directed to:

Administrative Hearing Commission
U.S. Post Office Building, Third Floor
131 West High Street, P.O. Box 1557
Jefferson City, MO 65102-1557
Phone: 573-751-2422
Fax: 573-751-5018
Website: https://ahc.mo.gov

Sieu T. Dang, P.E.
Engineering Section
sieu.dang@dnr.mo.gov

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

FORM F- APPLICATION FOR CONSTRUCTION PERMIT FOR CONCENTRATED ANIMAL FEEDING OPERATION (CAFO)

FOR OFFICE USE ONLY	
CHECK NUMBER:	
DATE RECEIVED	FEE SUBMITTED

FOR OFFICE USE ONLY		
PERMIT NUMBER	APPLICATION NUMBER	TRACKING NUMBER

PART 1 – PERMIT ACTION

1.1 PERMIT ACTION

☐ NEW OPERATION ☑ SYSTEM MODIFICATION ☐ IRRIGATION PIPELINE ☐ OTHER

2.0 REQUIRED INFORMATION (If any questions below are answered NO, this application may be considered incomplete and returned)

2.1	Is the appropriate fee included with the application?	☑ YES ☐ NO
2.2	Facility layout drawings on aerial and topographic maps?	☑ YES ☐ NO
2.3	Construction plan drawings?	☑ YES ☐ NO
2.4	Technical Specifications?	☑ YES ☐ NO
2.5	Engineering report includes:	
2.5.1	Narrative project summary?	☑ YES ☐ NO
2.5.2	Project location map?	☑ YES ☐ NO
2.5.3	Operation and Maintenance Plan?	☑ YES ☐ NO
2.5.4	Soils Report for production area?	☐ YES ☐ NO ☑ NA
2.5.5	Technical information and design data and calculations?	☑ YES ☐ NO
2.6	Geohydrological Evaluation by the Division of Geology and Land Survey (Earthen Manure Storage Basin)?	☐ YES ☐ NO ☑ NA
2.7	Neighbor notice documentation?	☐ YES ☐ NO ☑ NA
2.8	Emergency response plan?	☐ YES ☐ NO ☑ NA
2.9	Nutrient Management Plan that meets the requirements of 10 CSR 20-6.300 (5)?	☐ YES ☐ NO ☑ NA
2.10	Has an engineer sealed the engineering documents?	☑ YES ☐ NO
2.11	Has a Form W – CAFO Operating Permit Application with fee been included in the submittal?	☐ YES ☐ NO ☑ NA

PART 3.0 – APPLICANT INFORMATION

3.1 OPERATION NAME	OPERATING PERMIT NUMBER IF CURRENTLY PERMITTED	EXPIRATION DATE
Murphy Family Ventures, LLC Ozark-Osage Pyramid	MO-0131032	9/30/2023

PHYSICAL ADDRESS	TELEPHONE NUMBER WITH AREA CODE
28969 S. 2775 Rd.	(417) 667-7337

CITY	STATE	ZIP CODE
Sheldon	MO	64784

LOCATION	COUNTY
¼, ¼, Sec. 20 , TWP 34N , RGE 29W	Vernon

3.2 OWNER (PROVIDE LEGAL NAME)	E-MAIL ADDRESS
DM Farms of Rose Hill, LLC/ Ironside Investment Management LLC	kstrauch@murfam.com

MAILING ADDRESS	TELEPHONE NUMBER WITH AREA CODE
1801 W. Austin Suite F, PO Box 566	

CITY	STATE	ZIP CODE
Nevada	MO	64772

3.3 CONTINUING AUTHORITY (IF DIFFERENT THAN THE OWNER)

MAILING ADDRESS	TELEPHONE NUMBER WITH AREA CODE

CITY	STATE	ZIP CODE

PART 4.0 – OPERATIONAL INFORMATION

4.1 BRIEF DESCRIPTION OF OPERATION

See Current Permit and NMP. Placing lagoon covers systems on seven lagoons. Adding new lagoon penetrations for discharge lines. Adding wet wells for lagoon effluent transfer and recycle systems.

4.2.1 IF CURRENTLY PERMITTED, HAVE THERE BEEN ANY CHANGES TO THE SYSTEM SINCE THE CURRENT PERMIT? Yes ☐ No ■

4.2.2 ATTACH PERTINENT INFORMATION (SEE INSTRUCTIONS)

4.3OPERATIONAL INFORMATION (SEE INSTRUCTIONS)

SIC Code(s) 0213 Class Size 1A

4.4 WILL THIS BE OR IS THIS AN "EXPORT ONLY" OPERATION? ☐ Yes ☑ No

PART 5.0 – SIGNATURE

NAME	TITLE
MIKE WYANT	V.P.
SIGNATURE	DATE
Mike Wyant	7/10/23