STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.	MO-0131067
Owner:	DM Farms
Address:	1801 W. Austin, PO Box 556, Nevada, MO 64772
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Murphy Family Ventures, LLC Bellamy Pyramid
Address:	Weltmer at CR 2625, Sheldon, MO 64784
Legal Description:	See page 2
Latitude/Longitude:	See page 2
Receiving Stream:	See page 2
First Classified Stream and ID:	See page 2
USGS Basin & Sub-watershed No:	See page 2

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

Operation of this facility shall not cause a violation of water quality standards.

FACILITY DESCRIPTION

Outfalls #001 - #003, #008 - #011 – Class IA Concentrated Animal Feeding Operation - SIC #0213
Class IA CAFO; No discharge of process waste. One anaerobic lagoon and two 2-stage lagoons with secondary containment structures, mortality refrigeration units, and a nutrient reduction system
Design flow is 48,255,920 gallons/year. (.132mgd)
Design number of animals is 8,750 animal units of swine over 55 pounds and swine under 55 pounds.

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

February 1, 2017
Effective Date

Steven Feeler, Acting Director, Division of Environmental Quality

September 30, 2021
Expiration Date

David J. Lamb, Acting Director, Water Protection Program

FACILITY DESCRIPTION (continued)

The Bellamy Pyramid has three sow farrow-to-wean sites with onsite nursery and finisher. Two of the sow sites are served by a two-stage anaerobic lagoon and the third with a single stage anaerobic lagoon. One nutrient reduction system is on site at this pyramid. Secondary containments are in place at all three sites. All sites utilize a recycle pump system at the lagoon. Two of the sow sites have flush systems and the third utilizes a pull plug system. Mortalities are held in refrigeration units until removed off site for rendering.

Permitted Feature #001 – Arrowhead Sow Farm – 2-stage lagoon and secondary containment
Legal Description: NW ¼, SE ¼, Sec. 13, T34N, R30W, Vernon County
UTM Coordinate: X = 396922, Y = 4172394
Receiving Water: Tributary to Walnut Creek
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) 3960
USGS Basin & Sub-watershed No: 1029105-0102
Design Waste Volume: 12,703,825 gallons/year
Design Storage: 299 days
Upper Operating Level: 1 foot below overflow level
Lower Operating Level: 10.3 feet below overflow level

Permitted Feature #002 – Wolfpack Sow Farm - 2-stage lagoon and secondary containment
Legal Description: SW ¼, SE ¼, Sec. 13, T34N, R30W, Vernon County
UTM Coordinate: X = 396844, Y = 4172034
Receiving Water: Tributary to Walnut Creek
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) 3960
USGS Basin & sub-watershed No: 1029105-0102
Design Waste Volume: 13,062,985 gallons/year
Design Storage: 290 days
Upper Operating Level: 1 foot below overflow level
Lower Operating Level: 10.3 feet below overflow level
Nutrient Reduction System: One artificially lined earthen basin, 1,076,800 gallon capacity, one earthen basin 2,346,000 gallon capacity, one earthen basin 5,001,227 gallon capacity

Permitted Feature #003 – Hawkeye Sow Farm - Anaerobic lagoon and secondary containment
Legal Description: SE ¼, NW ¼, Sec. 23, T34N, R29W Vernon County
UTM Coordinate: X = 397660, Y = 4171103
Receiving Water: Tributary to McCarty Creek
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) 3960
USGS Basin & Sub-watershed No: 10290105-0102
Design Waste Volume: 22,489,110 gallons/year
Design Storage: 290 days
Upper Operating Level: 1 foot below overflow level
Lower Operating Level: 8.1 feet below overflow level

Permitted Feature #004 – Deleted – Storm Water

Permitted Feature #005 – Deleted – Stream Monitoring

Permitted Feature #006 – Deleted – Stream Monitoring

Permitted Feature #007 – Deleted – Stream Monitoring

Permitted Feature # 008 – Mortality Holding Station. Refrigeration units for temporary storage of mortalities.
Legal Description: NE ¼, NW ¼, Sec 24, T34 N, R30W, Vernon County
UTM Coordinate: X = 396408, Y = 4171721
Receiving Water: Tributary to Walnut Creek
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) 3960
USGS Basin & sub-watershed No: 1029105-0102

Permitted Feature #009 – Deleted – Stream Monitoring

Permitted Feature #010 – Deleted – Stream Monitoring

A. STANDARD CONDITIONS

In addition to other conditions stated herein, this permit is subject to the attached Part I STANDARD CONDITIONS dated August 1, 2014 and hereby incorporated as though fully set forth herein.

B. GENERAL CONDITIONS

1. Emergency or Unauthorized Discharge. Wastewater shall be stored and land applied during suitable conditions so that there is no discharge from the storage structures or land application sites. An emergency discharge from wastewater storage structures may only occur in accordance with Special Condition #2 of this permit. **Discharges for any other reason from production or land application areas shall constitute a permit violation and shall be reported in accordance with Standard Conditions, Part I, Section B.2.b.** Monitoring shall take place once per day while discharging. Test results are due on the 28th day of the following month after the cessation of the discharge. Permittee shall monitor for the following constituents:

Constituent	**Units**
Flow	MGD
Biochemical Oxygen Demand$_5$	mg/L
Ammonia as N	mg/L
pH – Units	SU
Dissolved Oxygen	mg/L
Duration	Hours

2. Reporting of Non-Detects:
   a. An analysis conducted by the permittee or their contracted laboratory shall be conducted in such a way that the precision and accuracy of the analyzed result can be enumerated.
   b. The permittee shall not report a sample result as "Non-Detect" without also reporting the detection limit of the test. Reporting as "Non-Detect" without also including the detection limit will be considered failure to report, which is a violation of this permit.
   c. The permittee shall report the "Non-Detect" result using the less than sign and the minimum detection limit (e.g. <10).
   d. Where the permit contains a Minimum Level (ML) and the permittee is granted authority in the permit to report zero in lieu of the < ML for a specified parameter (conventional, priority pollutants, metals, etc.), then zero (0) is to be reported for that parameter.
   e. See Standard Conditions Part I, Section A, #4 regarding proper detection limits used for sample analysis.
   f. When calculating monthly averages, one-half of the minimum detection limit (MDL) should be used instead of a zero. Where all data are below the MDL, the "<MDL" shall be reported as indicated in item (C).

3. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).

4. Definitions

   Definitions are as listed in the "Missouri Concentrated Animal Feeding Operation Nutrient Management Technical Standard" and in State Regulations in 10 CSR 20 Chapter 2, Chapter 6.300, Chapter 8.300, and Chapter 14.

5. Construction Permit Requirements

   a. A construction permit is required for any point source that proposes to construct an earthen storage structure to hold, convey, contain, store or treat domestic, agricultural, or industrial process wastewater.
   b. Any point source system designed to hold, convey, contain, store or treat domestic, agricultural or industrial process waste shall be designed by a professional engineer registered in Missouri in accordance with 10 CSR 20-8.300 and constructed according to the design plans.

6. Water Quality Standards

   a. To the extent required by law, discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
   b. General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:

GENERAL CONDITIONS (continued)

(1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
(2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
(3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
(4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
(5) There shall be no significant human health hazard from incidental contact with the water;
(6) There shall be no acute toxicity to livestock or wildlife watering;
(7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
(8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247 RSMo.

7. Reopener Clause

This permit may be reopened and modified, or alternatively revoked and reissued, to:

a. Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
   (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
   (2) controls any pollutant not limited in the permit.
b. Incorporate new or modified State of Missouri Statutes or Regulations.
c. Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
d. Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act as applicable.

C. SPECIAL CONDITIONS

1. Effluent Limitations

The permittee is authorized to discharge process wastewater and storm water in accordance with the effluent limitations in this permit and 40 CFR 412. The effluent limitations shall become effective upon issuance and remain in effect until such time this permit is no longer effective. Such discharges shall be managed, controlled, limited and monitored by the permittee as specified below.

2. CAFO Production Area Requirements

Requirements applicable to all CAFO production area(s) as defined in 10 CSR 20-6.300:

a. There shall be no discharge of manure, litter, or process wastewater into waters of the state from production area point sources except as provided in subsection e. below.
b. A chronic weather event is a series of wet weather events and conditions that can delay planting, harvesting, and prevent land application and dewatering practices at wastewater storage structures. When wastewater storage structures are in danger of an overflow due to a chronic weather event, CAFO owners shall take reasonable steps to lower the liquid level in the structure through land application, or other suitable means, to prevent overflow from the storage structure. Reasonable steps may include, but are not limited to; following the Department's current guidance (PUB2422) entitled "Wet Weather Management Practices for CAFOs." The chronic weather determination will be based upon an evaluation of the 1 in 10 year return rainfall frequency over a 10-day, 90-day, 180-day, and 365-day operating period.
c. Manure, litter or wastewater management activities occurring outside the production area but upon land controlled by the permittee shall be addressed in the permittee's Nutrient Management Plan (NMP). Activities that should be addressed include, but are not limited to, stockpiling of raw materials, manure, or litter or other animal feeding related items that have the potential to contribute pollutants to waters of the state. As necessary, the NMP shall identify controls, measures or BMPs to manage stormwater runoff and meet applicable water quality standards. This paragraph applies only to activities on land that is under the control of the CAFO owner or operator, whether it is owned, rented, or leased.

SPECIAL CONDITIONS (continued)

d. Stockpiling of uncovered dry process waste within the production area without runoff collection is not allowed.

e. Additional Requirements for Uncovered Liquid Storage Structures:
Whenever a precipitation related event causes an overflow of manure, litter, or process wastewater; pollutants may be discharged through the emergency spillway of the lagoon or uncovered storage structure provided:

(1) The storage structure is properly designed, constructed, operated and maintained to contain all manure, litter, process wastewater plus the runoff and direct precipitation from the 25-year, 24-hour design storm event for the location of the CAFO.

(2) The design storage volume is adequate to contain all manure, litter, and process wastewater accumulated during the storage period including the following:

(a) The volume of manure, litter, process wastewater, and other wastes accumulated during the storage period;
(b) 1 in 10 year 365 day annual rainfall minus evaporation during the storage period;
(c) 1 in 10 year 365 day normal runoff during the storage period;
(d) The direct precipitation from the 25-year, 24-hour storm;
(e) The runoff from the 25-year, 24-hour storm event;
(f) A minimum treatment volume for treatment lagoons.

(3) Discharge is allowed via overflow through the emergency spillway of the lagoon or uncovered storage structure when caused by a storm event that exceeds the design storm event(s). Only that portion of storm water flow, which exceeds the design storm event(s) may be discharged. Process wastewater discharge is not allowed by pumping, siphoning, cutting of berms, or by any other method, except as authorized herein, unless prior approval is obtained from the department.

(4) If a discharge occurs, monitor the discharge at the point immediately prior to entering the receiving stream or at the property boundary, whichever occurs first.

(5) All open storage impoundments shall maintain a visual reference gauge showing the depth of liquids in the structure, the lower operating level, and the upper operating level.

(6) Upper and Lower Storage Operating Levels:

(a) During normal weather conditions, the liquid level in the storage structure shall be maintained below the upper operating level, as identified in the FACILITY DESCRIPTION, so that adequate storage capacity is available for use during adverse weather periods when conditions are not suitable for proper land application. The lower operating level shall be used as an operational guideline; however, under normal operating conditions the level should not be lower than two feet above the lagoon floor.
(b) The liquid level in the storage structure should be lowered on a routine schedule based on the design storage period and Nutrient Management Plan. Typically this should be accomplished prior to expected seasonal wet and winter climate periods.
(c) The upper operating level for uncovered storage structures is one foot below the emergency overflow level unless specified otherwise in the FACILITY DESCRIPTION.
(d) The operation shall be managed so that the level of liquids in the storage structure does not exceed the upper operating level except when a 25-year, 24-hour storm or a 1 in 10-year chronic storm occurs.

(7) Storage Safety Volume:

(a) When a chronic or catastrophic design storm event occurs, the “safety volume” may be used to contain the stormwater until conditions are suitable for land application.
(b) The required safety volume shall be maintained between the overflow level and the upper operating level.

3. CAFO Land Application Areas

These requirements are applicable to all land application areas as defined in 10 CSR 20-6.300:

a. There shall be no discharge of manure, litter, process wastewater, or mortality by-products to surface waters of the state or that crosses property boundaries from a CAFO as a result of the land application of manure, litter, process wastewater, or mortality-by-products to land application areas, except where it is an agricultural storm water discharge. When manure, litter, process wastewater, or mortality by-products has been land applied in accordance with the CAFOs Nutrient Management Plan (NMP), and the *Missouri Concentrated Animal Feeding Operation Nutrient Management Technical Standard* (NMTS), a precipitation related discharge of manure, litter, process wastewater, or mortality-by-products from land application is considered to be an agricultural storm water discharge.

b. The permittee is responsible for all land application areas. All land application areas must be included in the CAFO’s nutrient management plan before any land application of manure, litter or process wastewater can occur. When manure litter or process wastewater generated by the permitted CAFO is sold, given away, or applied to agricultural lands that do not meet the land application area definition, the permittee shall comply with the requirement of Special Condition #6.

c. Temporary stockpiling of dry process waste within the land application areas shall be in accordance with 10 CSR 20-8.300(10)B. No location shall be used for stockpiling for more than two weeks unless the stockpile is covered. Runoff from a stockpile shall not cause a violation of water quality standards.

SPECIAL CONDITIONS (continued)

d. Land application shall only occur during daylight hours unless written authorization is obtained from the department.

4. Nutrient Management Technical Standard

The permittee shall follow Attachment A - *Missouri Concentrated Animal Feeding Operation Nutrient Management Technical Standard* (NMTS), except where otherwise stipulated in this permit. The NMTS, dated March 4, 2009, is hereby incorporated as though fully set forth herein.

5. Nutrient Management Plan

a. In accordance with 10 CSR 20-6.300(3)(G), the permittee shall implement a Nutrient Management Plan (NMP) that at a minimum addresses the following.
   (1) Ensures adequate storage of manure, litter and process wastewater, including procedures to ensure proper operation and maintenance of the storage facilities.
   (2) Ensures proper management of mortalities.
   (3) Ensures that clean water is diverted from the production area.
   (4) Prevents direct contact of confined animals with waters of the state.
   (5) Ensures that chemicals and other contaminants handled on site are not disposed of in any manure, litter, process wastewater, or storm water storage or treatment system unless specifically designed to treat such chemicals and other contaminants.
   (6) Identifies appropriate site specific conservation practices to be implemented, including as appropriate buffers or equivalent practices, to control runoff of pollutants to waters of the state.
   (7) Identifies protocols for appropriate testing of manure, litter, process wastewater, and soil.
   (8) Establishes 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.
   (9) Identifies specific records that will be maintained.
b. The permittee shall maintain the NMP in accordance with 10 CSR 20-6.300(3)(G)2. Revisions of the NMP made after the effective date of this permit must be submitted to the department for review and approval prior to implementing those revisions.

6. Transfer of Manure, Litter, and Process Wastewater

In cases where manure, litter, or process wastewater generated by the permitted CAFO is sold, given away, or applied on lands that do not meet the land application area definition, the permittee shall comply with the following conditions:

a. Maintain records showing the date and amount of manure, litter, and/or process wastewater that leaves the permitted operation.
b. Record the name and address of the recipient. (The recipient is the broker or end user, not merely the truck driver.)
c. Provide the recipient(s) with representative information on the nutrient content of the manure, litter, and/or process wastewater.
d. Provide the recipient(s) with a copy of the NMTS.
e. These records must be retained on-site, for a period of five (5) years.

7. Mortality Management

a. Mortalities must not be disposed of in any liquid manure or process wastewater system that is not specifically designed to treat animal mortalities. Animals shall be disposed of in a manner to prevent contamination of waters of the state or creation of a public health hazard. Class I operations may not use burial as their primary mortality management method to dispose of routine mortalities.
b. There shall be no-discharge from dead animal collection areas or holding areas (dumpsters, holding tanks, stockpiles within livestock production buildings, refrigeration units, etc.).
c. Operations shall first receive approval from the Department before burying significant numbers of unexpected mortalities and shall conduct the burial in accordance with the Missouri Department of Agriculture requirements. Rendering, composting, incineration, or landfilling, in accordance with Chapter 269.020 RSMo., shall be considered acceptable options and do not require prior approval.

SPECIAL CONDITIONS (continued)

8. Inspections

The following minimum visual inspections shall be conducted by the CAFO operator.

a. For confinement buildings that utilize wet handling flush system, a visual inspection shall be conducted once per week of the gravity outfall lines, recycle pump stations; recycle force mains, and appurtenances for any release to secondary containment structure. A daily visual inspection shall be also be conducted of any process wastewater impoundment that serves a wet handling flush system when the liquid level is less than twelve (12) inches from the emergency spillway.
b. Daily inspections must be conducted of water lines including wastewater, drinking water, and cooling water lines that can be visually observed within the production area. The inspection of the drinking water and cooling water lines shall be limited to the lines that possess the ability to leak or drain to wastewater storage structures or may come in contact with any process waste.
c. Weekly inspections of all storm water diversion devices, runoff diversion structures, and devices channeling contaminated storm water to the process wastewater storage.
d. Weekly inspections of the manure, litter, and process wastewater impoundments. The inspection will note the level in liquid impoundments as indicated by the depth marker
e. Weekly inspections of the collection or holding areas for dead animals. Equipment and devices used for the transfer of dead animal for delivery and disposal off-site are not considered a collection or holding area, therefore, are not required to be part of the daily inspection requirement.
f. Quarterly inspections, prior to use, of equipment used for land application of manure or process wastewater.
g. Inspections during land application as follows:
   (1) Monitor the perimeter of the application fields to insure that applied wastewater does not run off the fields where applied.
   (2) Monitor for drifting of spray during spray irrigation.
   (3) Hourly inspections of aboveground irrigation pipelines when in use.
   (4) Twice daily inspections of pressurized underground lines including one inspection that should be completed immediately following startup.

Any deficiencies found as a result of inspections shall be documented and corrected as soon as practicable.

9. Record Keeping

The following records shall be kept on-site by the CAFO operator. The records for inspections for Special Condition 8.a. shall be maintained for a period of three (3) years from the date they are created, all other records shall be maintained for a period of five (5) years from the date they are created. All records shall be made available to the department upon request:

a. A copy of this permit including a current copy of the facility's Nutrient Management Plan and documentation of changes/modifications made to the Nutrient Management Plan.
b. The daily and weekly visual inspections required in Special Condition #8, shall be recorded once per week. This includes the depth of the process wastewater in liquid impoundments as indicated by the depth marker. Report the liquid level as feet below the emergency overflow level.
c. Records documenting any actions taken to correct deficiencies. Deficiencies not corrected within thirty (30) days shall be accompanied by an explanation of the factors preventing immediate correction.
d. Records of mortalities management used by the operation.
e. Records of the date, time, location, duration and estimated volume of any emergency or unauthorized process waste overflow from a lagoon or any spill exceeding 1000 gallons. Report flow as cubic feet per second (CFS) based on an instantaneous estimate of the flow at the time of sampling. CFS = flow width in feet x flow depth in feet x flow velocity in feet per second. Estimates of stream channel width and depth may be used and flow velocity can be measured by timing how many feet a floating object moves within a one-second interval. Small flows may also be estimated based on gallons per minute (GPM) measurement using a container and stop watch; 450 gpm = 1.0 CFS. Other similar means of estimating may also be used.
f. Additional record keeping requirements are found in the NMTS that document implementation of appropriate Nutrient Management Plan protocols. In addition to the requirements found in the Nutrient Management Technical Standard, the CAFO shall also test and record the potassium levels in the soils while testing nitrogen and phosphorus.
g. The inches of precipitation received at the production site with an uncovered liquid impoundment, recorded daily and reported for daily amounts, monthly totals, and cumulative total.

10. Reporting Requirements

a. Any wastewater discharge into waters of the state or a release that crosses property boundaries shall be reported to the Department as soon as practicable but no later than 24 hours after the start of the discharge.

SPECIAL CONDITIONS (continued)

b. Spills or leaks that are contained on the property shall also be reported to the Department within 24 hours, if the spill or leak exceeds 1,000 gallons per day. This includes leaks from sewer lines; recycle lines, flushing systems, lagoons, irrigation systems etc. Spills or leaks that are entirely contained in a secondary containment listed in the "Facility Description" of this permit are excluded from this reporting requirement, but not recordkeeping requirements, provided there is no discharge from the secondary containment prior to the wastewater being removed in accordance with Special Condition 11.

c. Within seven (7) days of the date that a lagoon's level comes within four (4) inches of the upper operating level, the permittee shall notify the department with information that identifies the lagoon(s), the lagoon level in inches below the emergency spillway and actions taken to reduce the lagoon levels.

d. The permittee shall notify the Water Protection Program as soon as practicable but no less than 24 hours in advance of implementing the department's "Wet Weather Management Practices for CAFOs" during a chronic weather event.

e. An Annual Report shall be submitted by January 28 of each year for the previous growing season from October 1 through September 30 or an alternate 12 month period approved by the Department. The report shall include:
   (1) The number and type of animals confined at the operation.
   (2) The estimated amount of manure, litter, and process wastewater generated in the previous twelve months.
   (3) The estimated amount of manure, litter, and process wastewater transferred to other persons in the previous twelve months.
   (4) The total number of acres for land application covered by the Nutrient Management Plan.
   (5) The total number of acres under control of the operation that were used for land application of manure, litter and process wastewater in the previous twelve months.
   (6) A summary of all manure, litter, and process wastewater discharges from the production area that have occurred in the previous twelve months, including date, time, and approximate volume. Report as no-discharge, if a discharge did not occur during the monitoring period.
   (7) A statement indicating whether the current Nutrient Management Plan was developed or approved by a certified nutrient management planner.
   (8) The crops planted and expected yields, the amount and nutrient content of the manure, litter, and process wastewater applied to the land application area(s) and the results of any soil testing from the previous twelve months.
   (9) The daily and weekly records of the wastewater depth in the liquid impoundments as required in Special Condition #8d.
   (10) The actual operation numbers compared to the permitted design parameters described in Special Condition #12.
   (11) All monitoring results from an emergency or unauthorized discharge as required in General Condition #1.

h. The reports shall include a cover sheet with an original signature of a company representative. The reports may be printed or, saved as .pdf files or locked spreadsheets on compact disc (CDs) and shall be submitted to the Southwest Regional Office and the Water Protection Program, Industrial Permits Unit.

11. Secondary Containment Structures

The following requirements are applicable to secondary containments that may capture process wastewater;

a. Containment structures or earthen dams shall be maintained down gradient of all confinement buildings with a wet handling flush system to retain wastewater discharges from spills or pipeline breaks. The containment structure shall be able to collect a minimum volume equal to the maximum pumping capacity of flushing in any 24-hour period from all gravity outfall lines, recycle pump stations and recycle force mains.

b. Containment structures that do not serve confinement buildings with a wet handling flush system are not required, but are subject to the requirements of this section.

c. Any wastewater or stormwater that has been contaminated by coming into contact with manure, litter, wastewater, feed or silage captured in secondary containments shall be pumped into the lagoon or directly land applied in accordance with the NMP and the NMTS.

d. Stormwater captured in secondary containment structures that have not come into contact with manure, litter, feed, or silage may be released. Best Management Practices should be implemented to prevent stormwater from being contaminated.

e. Existing storm water flows from areas that drain potential releases from gravity outfall lines, recycle pump stations, recycle force mains and appurtenances shall not be diverted around or allowed to bypass the secondary containment structure, even when the flush system is not in use, without the prior approval of the Water Protection Program. Additional storm water may be directed to the secondary containment if desired by the permittee.

f. If the wet handling flush system has been replaced or is no longer used, a secondary containment is no longer required. The permittee may request a permit modification to remove the secondary containments from the permit. Secondary containments, that are left in place whether required or not, are subject to the requirements of this section.

SPECIAL CONDITIONS (continued)

12. Design Parameters

The facility's design flow in the Facility Description is an estimated parameter that is used to help predict nutrient generation and storage periods. The design flow is based on the maximum annual flows including storm water flows during the one-in-ten year return frequency for annual or 365 day rainfall minus evaporation. The design flow is based on the time period when the flows are generated at the production site and not when flows are land applied. Permittee may exceed the design flow when precipitation in any 365 day period exceeds the one-in-ten year annual precipitation amount. Any proposed increases may require a permit modification prior to the proposed change. Portions of the design flow may be stored and carried over into the following year for land application, as necessary.

13. Domestic sludge shall be removed as needed and land applied in accordance with 40 CFR 503 sludge standards for septage and University of Missouri Water Quality Guide publication #WQ422.

14. Underground tile inlets for field terraces or subsurface field drainage tiles shall be shown on the site maps for all land application sites.

15. Operating Capacity

This permit authorizes operation of the CAFO waste management system as described in the "FACILITY DESCRIPTION" along with the permit application and associated engineering plans. The Facility Description lists a total design capacity in animal units. The CAFOs animal unit operating level at any given time shall be based on a "rolling 12 month average". The rolling 12 month average is determined by averaging the weekly facility wide inventory for the last 12 months. The CAFO may change animal numbers and weights, and the rolling 12 month average may exceed the total design capacity in the Facility Description but shall not subsequently violate applicable effluent limitations in 10 CSR 20-6.300(4) or adversely impact the storage and handling capacities of the waste management system. If the waste management system is adversely impacted by increased animal units or animal weight, the facility shall increase storage capacity, increase land application, or reduce the animal unit operating level.

16. Sample Collection, Preservation and Testing Methods

Testing shall be in accordance with the most current version of *Standard Methods for the Examination of Waters and Wastewaters* or other approved methods listed in 10 CSR 20-7.015(9)(A).

17. Closure of Waste Storage Structures

Class I CAFOs which cease operation shall continue to maintain a valid operating permit until all lagoons and waste storage structures are properly closed according to a closure plan approved by the Department. CAFOs that plan to close a lagoon or other liquid waste storage structure shall submit for Department review and approval a closure plan that complies with the following minimum closure requirements:

a. Lagoons and waste storage structures shall be closed by removal and land application of wastewater and sludge.
b. The removed wastewater and sludge shall be land applied at agricultural rates for fertilizer not to exceed the maximum nutrient utilization of the land application site and vegetation grown and shall be applied at controlled rates so that there will be no discharge to waters of the state; and
c. After removal and proper land application of wastewater and sludge, the earthen basins may be demolished by removing the berms, grading, and revegetation of the site so as to provide erosion control, or the basin may be left in place for future use as a farm pond or similar uses when water quality monitoring shows such uses are attainable.

18. Terms of the NMP

a. 40 CFR 122.23 requires portions of the NMP pertaining to land application protocols to be incorporated into the operating permit as terms of the NMP. Revisions of the NMP after the effective date of this permit that result in significant changes to the terms of the NMP as outlined in 40 CFR 122.23 require a modification of the permit prior to implementing those revisions.

TERMS OF THE NUTRIENT MANAGEMENT PLAN								
					Crop #1		Crop #2	
Field Name	Legal Description	Spreadable Acres	P Loss Risk [2]	N or P Based Application	Crop	Yield Goal[3]	Crop	Yield Goal[3]
A	Sec. 13 Twn. 34N Rng. 30W	150	Low	N	Bermuda	5 T/a		
A1	Sec. 13 Twn. 34N Rng. 30W	15	Very low	N	Fescue	3 T/a		
B	Sec. 24 Twn. 34N Rng. 30W	97	Medium	N	Corn	130 bu/a	Soybeans	40 bu/a
B1	Sec. 24 Twn. 34N Rng. 30W	81	Medium	N	Corn	130 bu/a	Soybeans	40 bu/a
B2	Sec. 24 Twn. 34N Rng. 30W	25	Low	N	Fescue	3 T/a		
B3	Sec. 24 Twn. 34N Rng. 30W	25	Medium	N	Fescue	3 T/a		
C	Sec. 13 Twn. 34N Rng. 30W	17	Medium	N	Corn	130 bu/a	Soybeans	40 bu/a
C1	Sec. 13 Twn. 34N Rng. 30W	41	Low	N	Fescue	3 T/a		
D	Sec. 19 Twn. 34N Rng. 30W	17	Medium	N	Bermuda	5 T/a	Corn	130 bu/a
F	Sec. 19 Twn. 34N Rng. 30W	12	Medium	N	Fescue	3 T/a		
H	Sec. 24 Twn. 34N Rng. 30W	87	Medium	N	Corn	130 bu/a	Soybeans	40 bu/a
H1	Sec. 24 Twn. 34N Rng. 30W	29	Medium	N	Corn	130 bu/a	Soybeans	40 bu/a
H2	Sec. 24 Twn. 34N Rng. 30W	21	Medium	N	Corn	130 bu/a	Soybeans	40 bu/a
I	Sec. 25 Twn. 34N Rng. 30W	61.7	Low	N	Corn	130 bu/a	Soybeans	40 bu/a
J	Sec. 13 Twn. 34N Rng. 30W	81.2	Medium	N	Corn	130 bu/a	Soybeans	40 bu/a

b. The table below lists alternative crops and yield goals. These crops may be planted in any field in the Terms of the Nutrient Management Plan table in Special Condition 18a.

Crop	Yield Goal
Corn	130 bu/a
Corn	150 bu/a
Corn silage	12 t/a
Corn silage	15 t/a
Soybeans	40 bu/a
Alfalfa	4 t/a
Fescue	3 t/a
Fescue	2 t/a
Matua	4 t/a
Bermuda	5 t/a
Bermuda	3 t/a
Orchard grass	4 t/a
Rye	3 t/a
Sudan grass	5 t/a
Wheat	60 bu/a
Cool season grass	3 t/a
Warm season grass	3 t/a

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FACT SHEET
FOR THE PURPOSE OF RENEWAL
OF
MO-0131067
MURPHY FAMILY VENTURES, LLC BELLAMY PYRAMID

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollution Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States, and the release of storm water from certain point sources. All such discharges are unlawful without a permit (Section 301 of the "Clean Water Act"). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. Missouri State Operating Permits (MSOPs) are issued by the Director of the Missouri Department of Natural Resources (Department) under an approved program, operating in accordance with federal and state laws (Federal "Clean Water Act" and "Missouri Clean Water Law" Section 644 as amended). MSOPs are issued for a period of five (5) years unless otherwise specified.

As per [40 CFR Part 124.8(a)] and [10 CSR 20-6.020(1)2.] a Factsheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the Missouri State Operating Permit (operating permit) listed below.

A Factsheet is not an enforceable part of an operating permit.

This Factsheet is for Industrial Land Application

Part I – Facility Information

Facility Type: No-discharge Concentrated Animal Feeding Operation/land application– SIC 0213

Facility Description:
The Bellamy Pyramid has three sow farrow-to-wean sites with onsite nursery and finisher. Two of the sow sites are served by a two-stage anaerobic lagoon and the third with a single stage anaerobic lagoon. One nutrient reduction system is on site at this pyramid. Secondary containments are in place at all three sites. All sites utilize a recycle pump system at the lagoon. Two of the sow sites have flush systems and the third utilizes a pull plug system. Mortalities are held in refrigeration units until removed off site for rendering.

Have any changes occurred at this facility or in the receiving water body that effects effluent limit derivation?
- ✓ No.

Application Date: 2/18/16
Expiration Date: 8/18/16

PERMITTED FEATURE(S) TABLE:

PERMITTED FEATURE	TREATMENT LEVEL	EFFLUENT TYPE
All	Land Application	Animal wastewater

Facility Performance History:
This facility was last inspected on June 22, 2016 and was found to be in compliance.

Water Quality Monitoring:
Previous permits for the Murphy Family Ventures, LLC Ozark-Osage Pyramid have required stormwater, and in-stream monitoring. This monitoring was required by 10 CSR 20-6.300 and was used to help determine if the operation of the CAFO and land application of manure had any impacts on water quality. Technical staff from the Permits and Water Quality Monitoring Sections has reviewed the results of the past water quality monitoring data and generally conclude there is no indication that a reasonable potential exists for the Murphy Family Ventures, LLC Ozark-Osage Pyramid to violate water quality standards when it is managed and operated in accordance with permit requirements. As a result, the April 30, 2012 revision of 10 CSR 20-6.300 removed stormwater and stream monitoring requirements. As a result of this change the stormwater and stream outfalls #009, #010 and associated monitoring requirements were removed with this permit renewal.

Secondary Containment Structures:
State statutes and regulations require production sites with flush systems to have secondary containments for the production area. The secondary containment structures collect accidental spills as well as stormwater. Any wastewater captured in secondary containment as a result of accidents or spill must be pumped into a lagoon or land applied. Stormwater that comes into contact with manure, litter, feed, or silage either prior to or after entering a secondary containment is considered process wastewater. Stormwater captured in secondary containment may be released. No monitoring of stormwater release is required but shall not violate water quality standards.

While the department recommends continued use of secondary containment after the flush system has been replaced or is no longer used, the permittee may request a modification of the permit to remove the secondary containments. As long as the secondary containments are in place, their operational requirements in the permit will remain in effect.

Inspections, Record Keeping, and Reporting Requirements:
Revisions to Chapter 640 RSMo. that became effective August 28, 2013, changed the inspection frequency of operations with a flush system to once per week. It also added an inspection requirement that any lagoon whose water level is less than twelve inches from the emergency spillway be visually inspected once per day and a keep a record of those inspections. These changes of inspection requirements have been incorporated in this permit renewal.

Nutrient Management:
The 2008 EPA CAFO regulation requires portions of the operations NMP be incorporated into the permit as terms of the NMP. These terms of the NMP are shown in Special Condition 18. In addition, any revisions to the operation NMP must be submitted to the department for review. If any of the proposed revisions result in significant changes to the terms of the NMP the permit must be modified prior to implementing the revisions. Because the operation used field specific crop history to estimate yield goals, some alternative crops listed in the table in Special Condition 18.b have multiple yield goals for the same crop.

Part II – Operator Certification Requirements

✓ This facility is required to have a certified operator.

Operators or supervisors of CAFO waste management systems shall be certified in accordance with 10 CSR 20-14.010. This facility currently requires a CAFO supervisor with an A Certification Level or a CAFO operator with a B Certification Level.

Operator's Name: Kurt Strauch
Certification Number: 5490
Certification Level: A

Part III – Receiving Stream Information

10 CSR 20-7.031 Missouri Water Quality Standards, the Department defines the Clean Water Commission water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and/or 1st classified receiving stream's beneficial water uses to be maintained, are located in the Receiving Stream Table located below in accordance with [10 CSR 20-7.031(4)].

RECEIVING STREAM(S) TABLE:

WATERBODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC**
Tributary to McCarty Creek	N/A	N/A	General Criteria	10290105-0102
Tributary to Walnut Creek	N/A	N/A	General Criteria	
8-20-13 MUDD V1.0	C	3960	AQL, IRR, LWW, SCR, WBCB, HHP	

n/a not applicable
WBID Waterbody ID: Missouri Use Designation Dataset 8-20-13 MUDD V1.0 data can be found as an ArcGIS shapefile on MSDIS at ftp://msdis.missouri.edu/pub/Inland_Water_Resources/MO_2014_WQS_Stream_Classifications_and_Use_shp.zip
* As per 10 CSR 20-7.031 Missouri Water Quality Standards, the department defines the Clean Water Commission's water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and 1st classified receiving stream's beneficial water uses to be maintained are in the receiving stream table in accordance with [10 CSR 20-7.031(1)(C)].

Uses which may be found in the receiving streams table, above:

10 CSR 20-7.031(1)(C)1.:
AQL = Protection of aquatic life (Current narrative use(s) are defined to ensure the protection and propagation of fish shellfish and wildlife, which is further subcategorized as: WWH = Warm Water Habitat; CLH = Cool Water Habitat; CDH = Cold Water Habitat; EAH = Ephemeral Aquatic Habitat; MAH = Modified Aquatic Habitat; LAH = Limited Aquatic Habitat. This permit uses AQL effluent limitations in 10 CSR 20-7.031 Table A for all habitat designations unless otherwise specified.)
10 CSR 20-7.031(1)(C)2.: Recreation in and on the water
WBC = Whole Body Contact recreation where the entire body is capable of being submerged;
WBC-A = Whole body contact recreation that supports swimming uses and has public access;
WBC-B = Whole body contact recreation that supports swimming;
SCR = Secondary Contact Recreation (like fishing, wading, and boating).
10 CSR 20-7.031(1)(C)3. to 7.:
HHP (formerly HHF) = Human Health Protection as it relates to the consumption of fish;
IRR = Irrigation for use on crops utilized for human or livestock consumption;
LWW = Livestock and wildlife watering (Current narrative use is defined as LWP = Livestock and Wildlife Protection);
DWS = Drinking Water Supply;
IND = Industrial water supply
10 CSR 20-7.031(1)(C)8-11.: Wetlands (10 CSR 20-7.031 Table A currently does not have corresponding habitat use criteria for these defined uses)
WSA = Storm- and flood-water storage and attenuation; WHP = Habitat for resident and migratory wildlife species;
WRC = Recreational, cultural, educational, scientific, and natural aesthetic values and uses; WHC = Hydrologic cycle maintenance.
10 CSR 20-7.031(6): GRW = Groundwater

303(d) List:
Section 303(d) of the federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs.

- ✓ Applicable. Clear Creek is listed on the 2006 Missouri 303(d) List for low dissolved oxygen.

- ✓ This facility is not considered to be a source of the above listed pollutant(s) or considered to contribute to the impairment of Horse Creek.

Total Maximum Daily Load (TMDL):
A TMDL is a calculation of the maximum amount of a given pollutant that a body of water can absorb before its water quality is affected; hence, the purpose of a TMDL is to determine the pollutant loading a specific waterbody can assimilate without exceeding water quality standards. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan will be developed that shall include the TMDL calculation.

- ✓ Applicable. Clear Creek is associated with the 2006 EPA Approved TMDL for total suspended solids. Permitted Feature #010 is the only permitted feature associated with this TMDL.

- ✓ This facility is not considered to be a source of the above listed pollutant(s) or considered to contribute to the impairment of Clear Creek.

Part IV – Rationale and Derivation of Effluent Limitations & Permit Conditions

ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:
As per [10 CSR 20-7.015(4)(A)], discharges to losing streams shall be permitted only after other alternatives including land application, discharges to a gaining stream and connection to a regional wastewater treatment facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons.

- ✓ Not Applicable; The facility does not discharge to a Losing Stream as defined by [10 CSR 20-2.010(36)] & [10 CSR 20-7.031(1)(N)], or is an existing facility.

ANTI-BACKSLIDING:
A provision in the Federal Regulations [CWA §303(d)(4); CWA §402(c); 40 CFR Part 122.44(I)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

- ✓ Limitations in this operating permit for the reissuance of this permit conform to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, and 40 CFR Part 122.44.

- ✓ The Department determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(b). The requirements for stormwater and in-stream monitoring were removed from state regulations in 2012 and therefore not included with this permit renewal. Stormwater runoff and in-stream monitoring conducted by the facility from 2001 to 2012 was reviewed and shows no indication that a reasonable potential exists for the Murphy Family Ventures, LLC Bellamy Pyramid to violate water quality standards when it is managed and operated in accordance with permit requirements.

ANTIDEGRADATION:
In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(2)], the Department is to document by means of Antidegradation Review that the use of a water body's available assimilative capacity is justified. Degradation is justified by documenting the socio-economic importance of a discharging activity after determining the necessity of the discharge.

- ✓ No degradation proposed and no further review necessary. Facility did not apply for authorization to increase pollutant loading or to add additional pollutants to their discharge.

AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:
As per [10 CSR 20-6.010(3)(B)], …An applicant may utilize a lower preference continuing authority by submitting, as part of the application, a statement waiving preferential status from each existing higher preference authority, providing the waiver does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or any other regional sewage service and treatment plan approved for higher preference authority by the Department.

BIOSOLIDS & SEWAGE SLUDGE:
Biosolids are solid materials resulting from domestic wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sewage sludge is solids, semi-solids, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works. Additional information regarding biosolids and sludge is located at the following web address: http://extension.missouri.edu/main/DisplayCategory.aspx?C=74, items WQ422 through WQ449.

- ✓ Permittee land applies biosolids in accordance with Standard Conditions III and a Department approved biosolids management plan.

COMPLIANCE AND ENFORCEMENT:
Enforcement is the action taken by the Water Protection Program (WPP) to bring an entity into compliance with the Missouri Clean Water Law, its implementing regulations, and/or any terms and conditions of an operating permit. The primary purpose of the enforcement activity in the WPP is to resolve violations and return the entity to compliance.

- ✓ Not Applicable; The permittee/facility is not currently under Water Protection Program enforcement action.

NUTRIENT MANAGEMENT AND LAND APPLICATION
The agronomic rate is the amount of wastewater applied to a field to supply the amount of nutrients needed to meet the fertilizer recommendation. For more information on nutrient management, soil sampling, PAN calculations, and land application best management practices, consult the following University of Missouri Extension Guides:

G9112 Interpreting Missouri Soil Test Reports
G9215 Soil Sampling Pastures
G9217 Soil Sampling Hayfields and Row Crops
EQ0215 Laboratory Analysis of Manure
G9177 Preplant Nitrogen Test for Adjusting Corn Nitrogen Recommendations
G9186 Calculating Plant-Available Nitrogen and Residual Nitrogen Fertilizer Value in Manure
G9180 Phosphorus in Missouri Soils
EQ0202 Land Application Considerations for Animal Manure
EQ327 Calibration of Lagoon Irrigating Equipment
G1270 Calibrating Field Sprayers

SCHEDULE OF COMPLIANCE (SOC):
Per 644.051.4 RSMo, a permit may be issued with a Schedule of Compliance (SOC) to provide time for a facility to come into compliance with new state or federal effluent regulations, water quality standards, or other requirements. Such a schedule is not allowed if the facility is already in compliance with the new requirement, or if prohibited by other statute or regulation. A SOC includes an enforceable sequence of interim requirements (actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit. *See also* Section

502(17) of the Clean Water Act, and 40 CFR §122.2. For new effluent limitations, the permit includes interim monitoring for the specific parameter to demonstrate the facility is not already in compliance with the new requirement. Per 40 CFR § 122.47(a)(1) and 10 CSR 20-7.031(10), compliance must occur as soon as possible. If the permit provides a schedule for meeting new water quality based effluent limits, a SOC must include an enforceable, final effluent limitation in the permit even if the SOC extends beyond the life of the permit.

A SOC is not allowed:

- For effluent limitations based on technology-based standards established in accordance with federal requirements, if the deadline for compliance established in federal regulations has passed. 40 CFR § 125.3.
- For a newly constructed facility in most cases. Newly constructed facilities must meet applicable effluent limitations when discharge begins, because the facility has installed the appropriate control technology as specified in a permit or antidegradation review. A SOC is allowed for a new water quality based effluent limit that was not included in a previously public noticed permit or antidegradation review, which may occur if a regulation changes during construction.
- To develop a TMDL, UAA, or other study associated with development of a site specific criterion. A facility is not prohibited from conducting these activities, but a SOC may not be granted for conducting these activities.

In order to provide guidance to Permit Writers in developing SOCs, and attain a greater level of consistency, on October 25, 2012 the department issued a policy on development of SOCs. This policy provides guidance to Permit Writers on the standard time frames for schedules for common activities, and guidance on factors that may modify the length of the schedule such as an affordability analysis.

✓ Not Applicable; This permit does not contain a SOC.

SPILL REPORTING:
Per 10 CSR 24-3.010, any emergency involving a hazardous substance must be reported to the department's 24 hour Environmental Emergency Response hotline at (573) 634-2436 at the earliest practicable moment after discovery. The department may require the submittal of a written report detailing measures taken to clean up a spill. These reporting requirements apply whether or not the spill results in chemicals or materials leaving the permitted property or reaching waters of the state. This requirement is in addition to the Noncompliance Reporting requirement found in Standard Conditions Part I.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP):
In accordance with 40 CFR 122.44(k) *Best Management Practices (BMPs)* to control or abate the discharge of pollutants when: (1) Authorized under section 304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities: (2) Authorized under section 402(p) of the CWA for the control of storm water discharges; (3) Numeric effluent limitations are infeasible; or (4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

In accordance with the EPA's *Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators*, (Document number EPA 833-B-09-002) [published by the United States Environmental Protection Agency (USEPA) in February 2009], BMPs are measures or practices used to reduce the amount of pollution entering (regarding this operating permit) waters of the state. BMPs may take the form of a process, activity, or physical structure.

Additionally in accordance with the Storm Water Management, a SWPPP is a series of steps and activities to (1) identify sources of pollution or contamination, and (2) select and carry out actions which prevent or control the pollution of storm water discharges.

✓ Not Applicable; At this time, the permittee is not required to develop and implement a SWPPP.

VARIANCE:
As per the Missouri Clean Water Law § 644.061.4, variances shall be granted for such period of time and under such terms and conditions as shall be specified by the commission in its order. The variance may be extended by affirmative action of the commission. In no event shall the variance be granted for a period of time greater than is reasonably necessary for complying with the Missouri Clean Water Law §§644.006 to 644.141 or any standard, rule or regulation promulgated pursuant to Missouri Clean Water Law §§644.006 to 644.141.

✓ Not Applicable; This operating permit is not drafted under premises of a petition for variance.

WATER QUALITY STANDARDS:
Per [10 CSR 20-7.031(3)], General Criteria shall be applicable to all waters of the state at all times including mixing zones. Additionally, [40 CFR 122.44(d)(1)] directs the Department to establish in each NPDES permit to include conditions to achieve water quality established under Section 303 of the Clean Water Act, including State narrative criteria for water quality.

40 CFR 122.41(M) - BYPASSES:
The federal Clean Water Act (CWA), Section 402 prohibits wastewater dischargers from "bypassing" untreated or partially treated sewage (wastewater) beyond the headworks. A bypass is defined as an intentional diversion of waste streams from any portion of a treatment facility, [40 CFR 122.41(m)(1)(i)]. Additionally, Missouri regulation 10 CSR 20-2.010(11) defines a bypass as the diversion of wastewater from any portion of wastewater treatment facility or sewer system to waters of the state. Only under exceptional and specified limitations do the federal regulations allow for a facility to bypass some or all of the flow from its treatment process. Bypasses are prohibited by the CWA unless a permittee can meet all of the criteria listed in 40 CFR 122.41(m)(4)(i)(A), (B), & (C). Any bypasses from this facility are subject to the reporting required in 40 CFR 122.41(l)(6) and per Missouri's Standard Conditions I, Section B, part 2.b. Additionally, Anticipated Bypasses include bypasses from peak flow basins or similar devices designed for peak wet weather flows.

✓ Not Applicable; This facility does not anticipate bypassing.

Part V – Permit Limits Determination

All Permitted Features and Land Application Areas – Emergency Discharge

There are no effluent limits associated with all Permitted Features and land application areas for the no-discharge facility. However, the following is required for an emergency discharge. Monitoring requirement only based on best professional judgment.

EMERGENCY DISCHARGE TABLE:

PARAMETER	UNIT	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
Flow	MGD	*			NO	*
Biochemical Oxygen Demand$_5$	mg/L	*			NO	*
Ammonia as N	mg/L	*			NO	*
pH	SU	*			NO	*
Dissolved Oxygen	mg/L	*			NO	*
Duration	hours	*			NO	*
Temperature	^oC	removed			YES	*
Monitoring Frequency	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.					

* - Monitoring requirement only

- **Minimum Sampling and Reporting Frequency Requirements**.

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
Flow	once/day while discharging	Test results are due on the 28th day of the month after the cessation of the discharge
Biochemical Oxygen Demand$_5$	once/day while discharging	
Ammonia as N	once/day while discharging	
pH	once/day while discharging	
Dissolved Oxygen	once/day while discharging	
Duration	once/day while discharging	

Part VI – Administrative Requirements

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the operating permit. The proposed determinations are tentative pending public comment.

PERMIT SYNCHRONIZATION:
The Department of Natural Resources is currently undergoing a synchronization process for operating permits. Permits are normally issued on a five-year term, but to achieve synchronization many permits will need to be issued for less than the full five years allowed by regulation. The intent is that all permits within a watershed will move through the Watershed Based Management (WBM) cycle together will all expire in the same fiscal year. This will allow further streamlining by placing multiple permits within a smaller geographic area on public notice simultaneously, thereby reducing repeated administrative efforts. This will also allow the department to explore a watershed based permitting effort at some point in the future. Renewal applications must continue to be submitted within 180 days of expiration, however, in instances where effluent data from the previous renewal is less than 4 years old, that data may be re-submitted to meet the requirements of the renewal application. If the permit provides a schedule of compliance for meeting new water quality based effluent limits beyond the expiration date of the permit, the time remaining in the schedule of compliance will be allotted in the renewed permit.

PUBLIC NOTICE:
The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing.

The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit.

For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

- ✓ The Public Notice period for this operating permit was from November 4, 2016 to December 5, 2016 no were responses received.

DATE OF FACT SHEET: DECEMBER 21, 2016

COMPLETED BY:

GREG CALDWELL, ENVIRONMENTAL SCIENTIST
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
OPERATING PERMITS SECTION – INDUSTRIAL PERMITS UNIT
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STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
REVISED
AUGUST 1, 2014

These Standard Conditions incorporate permit conditions as required by 40 CFR 122.41 or other applicable state statutes or regulations. These minimum conditions apply unless superseded by requirements specified in the permit.

Part I – General Conditions
Section A – Sampling, Monitoring, and Recording

1. **Sampling Requirements.**
   a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
   b. All samples shall be taken at the outfall(s) or Missouri Department of Natural Resources (Department) approved sampling location(s), and unless specified, before the effluent joins or is diluted by any other body of water or substance.

2. **Monitoring Requirements**.
   a. Records of monitoring information shall include:
      i. The date, exact place, and time of sampling or measurements;
      ii. The individual(s) who performed the sampling or measurements;
      iii. The date(s) analyses were performed;
      iv. The individual(s) who performed the analyses;
      v. The analytical techniques or methods used; and
      vi. The results of such analyses.
   b. If the permittee monitors any pollutant more frequently than required by the permit at the location specified in the permit using test procedures approved under 40 CFR Part 136, or another method required for an industry-specific waste stream under 40 CFR subchapters N or O, the results of such monitoring shall be included in the calculation and reported to the Department with the discharge monitoring report data (DMR) submitted to the Department pursuant to Section B, paragraph 7.

3. **Sample and Monitoring Calculations.** Calculations for all sample and monitoring results which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.

4. **Test Procedures**. The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 unless alternates are approved by the Department. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure that the selected methods are able to quantify the presence of pollutants in a given discharge at concentrations that are low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031 or effluent limitations unless provisions in the permit allow for other alternatives. A method is "sufficiently sensitive" when; 1) the method minimum level is at or below the level of the applicable water quality criterion for the pollutant or, 2) the method minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility's discharge is high enough that the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015. These methods are also required for parameters that are listed as monitoring only, as the data collected may be used to determine if limitations need to be established. A permittee is responsible for working with their contractors to ensure that the analysis performed is sufficiently sensitive.

5. **Record Retention.** Except for records of monitoring information required by the permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 40 CFR part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.

6. **Illegal Activities.**
   a. The Federal Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under the permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than two (2) years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than four (4) years, or both.
   b. The Missouri Clean Water Law provides that any person or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than six (6) months, or by both. Second and successive convictions for violation under this paragraph by any person shall be punished by a fine of not more than $50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

Section B – Reporting Requirements

1. **Planned Changes.**
   a. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility when:
      i. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
      ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42;
      iii. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;
      iv. Any facility expansions, production increases, or process modifications which will result in a new or substantially different discharge or sludge characteristics must be reported to the Department 60 days before the facility or process modification begins. Notification may be accomplished by application for a new permit. If the discharge does not violate effluent limitations specified in the permit, the facility is to submit a notice to the Department of the changed discharge at least 30 days before such changes. The Department may require a construction permit and/or permit modification as a result of the proposed changes at the facility.

2. **Non-compliance Reporting.**
   a. The permittee shall report any noncompliance which may endanger health or the environment. Relevant information shall be provided orally or via the current electronic method approved by the Department, within 24 hours from the time the permittee becomes aware of the circumstances, and shall be reported to the appropriate Regional Office during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. A written submission shall also be provided within five (5) business days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

b. The following shall be included as information which must be reported within 24 hours under this paragraph.
   i. Any unanticipated bypass which exceeds any effluent limitation in the permit.
   ii. Any upset which exceeds any effluent limitation in the permit.
   iii. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit required to be reported within 24 hours.
c. The Department may waive the written report on a case-by-case basis for reports under paragraph 2. b. of this section if the oral report has been received within 24 hours.

3. **Anticipated Noncompliance**. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. The notice shall be submitted to the Department 60 days prior to such changes or activity.

4. **Compliance Schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date. The report shall provide an explanation for the instance of noncompliance and a proposed schedule or anticipated date, for achieving compliance with the compliance schedule requirement.

5. **Other Noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs 2, 3, and 6 of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph 2. a. of this section.

6. **Other Information**. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.

7. **Discharge Monitoring Reports.**
   a. Monitoring results shall be reported at the intervals specified in the permit.
   b. Monitoring results must be reported to the Department via the current method approved by the Department, unless the permittee has been granted a waiver from using the method. If the permittee has been granted a waiver, the permittee must use forms provided by the Department.
   c. Monitoring results shall be reported to the Department no later than the 28th day of the month following the end of the reporting period.

Section C – Bypass/Upset Requirements

1. **Definitions.**
   a. *Bypass*: the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending.
   b. *Severe Property Damage*: substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
   c. *Upset*: an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

2. **Bypass Requirements.**
   a. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2. b. and 2. c. of this section.
   b. Notice.
      i. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.
      ii. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section B – Reporting Requirements, paragraph 5 (24-hour notice).
   c. Prohibition of bypass.
      i. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:
         1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
         2. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
         3. The permittee submitted notices as required under paragraph 2. b. of this section.
      ii. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three (3) conditions listed above in paragraph 2. c. i. of this section.

3. **Upset Requirements.**
   a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 3. b. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
   b. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
      i. An upset occurred and that the permittee can identify the cause(s) of the upset;
      ii. The permitted facility was at the time being properly operated; and
      iii. The permittee submitted notice of the upset as required in Section B – Reporting Requirements, paragraph 2. b. ii. (24-hour notice).
      iv. The permittee complied with any remedial measures required under Section D – Administrative Requirements, paragraph 4.
   c. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

Section D – Administrative Requirements

1. **Duty to Comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Missouri Clean Water Law and Federal Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.
   a. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
   b. The Federal Clean Water Act provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $25,000 per day for each violation. The Federal Clean Water Act provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement

imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

c. Any person may be assessed an administrative penalty by the EPA Director for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.

d. It is unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law, or any standard, rule or regulation promulgated by the commission. In the event the commission or the director determines that any provision of sections 644.006 to 644.141 of the Missouri Clean Water Law or standard, rules, limitations or regulations promulgated pursuant thereto, or permits issued by, or any final abatement order, other order, or determination made by the commission or the director, or any filing requirement pursuant to sections 644.006 to 644.141 of the Missouri Clean Water Law or any other provision which this state is required to enforce pursuant to any federal water pollution control act, is being, was, or is in imminent danger of being violated, the commission or director may cause to have instituted a civil action in any court of competent jurisdiction for the injunctive relief to prevent any such violation or further violation or for the assessment of a penalty not to exceed $10,000 per day for each day, or part thereof, the violation occurred and continues to occur, or both, as the court deems proper. Any person who willfully or negligently commits any violation in this paragraph shall, upon conviction, be punished by a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or both. Second and successive convictions for violation of the same provision of this paragraph by any person shall be punished by a fine of not more than $50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

2. **Duty to Reapply.**
   a. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.
   b. A permittee with a currently effective site-specific permit shall submit an application for renewal at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Department. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
   c. A permittees with currently effective general permit shall submit an application for renewal at least 30 days before the existing permit expires, unless the permittee has been notified by the Department that an earlier application must be made. The Department may grant permission for a later submission date. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

3. **Need to Halt or Reduce Activity Not a Defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

4. **Duty to Mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

5. **Proper Operation and Maintenance**. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

6. **Permit Actions.**
   a. Subject to compliance with statutory requirements of the Law and Regulations and applicable Court Order, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:
      i. Violations of any terms or conditions of this permit or the law;
      ii. Having obtained this permit by misrepresentation or failure to disclose fully any relevant facts;
      iii. A change in any circumstances or conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
      iv. Any reason set forth in the Law or Regulations.
   b. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

7. **Permit Transfer.**
   a. Subject to 10 CSR 20-6.010, an operating permit may be transferred upon submission to the Department of an application to transfer signed by the existing owner and the new owner, unless prohibited by the terms of the permit. Until such time the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.
   b. The Department may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Missouri Clean Water Law or the Federal Clean Water Act.
   c. The Department, within 30 days of receipt of the application, shall notify the new permittee of its intent to revoke or reissue or transfer the permit.

8. **Toxic Pollutants.** The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the Federal Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

9. **Property Rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.

10. **Duty to Provide Information.** The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.

11. **Inspection and Entry.** The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:
    a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
    b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
    c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
    d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Federal Clean Water Act or Missouri Clean Water Law, any substances or parameters at any location.

12. **Closure of Treatment Facilities.**
    a. Persons who cease operation or plan to cease operation of waste, wastewater, and sludge handling and treatment facilities shall close the facilities in accordance with a closure plan approved by the Department.
    b. Operating Permits under 10 CSR 20-6.010 or under 10 CSR 20-6.015 are required until all waste, wastewater, and sludges have been disposed of in accordance with the closure plan approved by the Department and any disturbed areas have been properly stabilized. Disturbed areas will be considered stabilized when perennial vegetation, pavement, or structures using permanent materials cover all areas that have been disturbed. Vegetative cover, if used, shall be at least 70% plant density over 100% of the disturbed area.

13. **Signatory Requirement.**
    a. All permit applications, reports required by the permit, or information requested by the Department shall be signed and certified. (See 40 CFR 122.22 and 10 CSR 20-6.010)
    b. The Federal Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six (6) months per violation, or by both.
    c. The Missouri Clean Water Law provides that any person who knowingly makes any false statement, representation or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for not more than six months, or by both.

14. **Severability.** The provisions of the permit are severable, and if any provision of the permit, or the application of any provision of the permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of the permit, shall not be affected thereby.

RECEIVED
FEB 18 2016
Water Protection Program

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

FORM W - CONCENTRATED ANIMAL FEEDING OPERATION (CAFO) OPERATING PERMIT APPLICATION

FOR OFFICE USE ONLY	
CHECK NUMBER:	
DATE RECEIVED 2/18/16	FEE SUBMITTED

Complete all applicable sections. Instructions for completing the form are located at the end of the form. Sign, date and return the form and all requested documents along with a check for the appropriate permit fee to the Missouri Department of Natural Resources. Make a copy of this completed form and keep it with your nutrient management plan.

PART 1 – PERMIT OWNERSHIP AND CONTACT INFORMATION

1.1 OPERATION NAME Murphy Family Ventures, LLC Bellamy Pyramid	CURRENT PERMIT NUMBER MO- 0131067	COUNTY Vernon
PHYSICAL ADDRESS Weltmer at CR 2625	LEGAL DESCRIPTION Sec.: 13 Twn.: 34N Rng.: 30W	TELEPHONE NUMBER WITH AREA CODE (417) 667-7337
CITY Sheldon	STATE MO	ZIP CODE 64784
1.2 OWNER (PROVIDE LEGAL NAME) DM Farms	EMAIL ADDRESS	
MAILING ADDRESS 1801 W. Austin, PO Box 566		TELEPHONE NUMBER WITH AREA CODE (417) 667-7337
CITY Nevada	STATE MO	ZIP CODE 64772
1.3 CONTINUING AUTHORITY (IF DIFFERENT THAN THE OWNER)		
MAILING ADDRESS		TELEPHONE NUMBER WITH AREA CODE
CITY	STATE	ZIP CODE

PART 2 – PERMIT TYPE AND PERMIT ACTION

2.1 PERMIT TYPE

☑ NPDES Site Specific Permit
Request review of draft permit prior to public notice. ☑ Yes ☐ No

☐ NPDES General Permit (MOG01)

☐ State No-Discharge General Permit (MOGS1)

2.2 PERMIT ACTION*

☐ New Permit ☑ Renewal
☐ Modification ☐ Ownership Transfer

PREVIOUS OWNERS NAME

ADRESS

CITY STATE ZIP CODE

SIGNATURE DATE

*See instructions for additional requirements and documents for the request permit action.

PART 3 – DESIGN CAPACITY FOR MANURE STORAGE AND ANIMALS OF EACH CAFO FEATURE

3.1 STORAGE STRUCTURE TYPES, AMOUNT OF STORAGE, AND AMOUNT OF MANURE GENERATED PER YEAR.

List All Manure Storage Structures at each CAFO Feature		Dry Manure Handling System		Wet Manure Handling System			
CAFO Feature	Storage Structure Type(s)	Design Dry Process Waste (tons/yr.)	Days of Storage	Total Storage Capacity (gal)	Design Wastewater per Year (gal./yr.)	Days of Storage	Design Flow MGD
001	Arrowhead Sow Farm Anaerobic Lagoon (E)				12,703,825	299	.035
002	Wolfpack Sow Farm Anaerobic Lagoon (E)				13,062,985	290	.036
003	Hawkeye Sow Farm Anaerobic Lagoon (E)				22,489,110	290	.062
004							
005							

3.2 LIST EACH TYPE OF ANIMAL IN CONFINEMENT AND THE NUMBER OF EACH ANIMAL TYPE.

CAFO Feature	Animal Category #1	Animal Numbers	Animal Category #2	Animal Numbers	Animal Category #3	Animal Numbers
001	Arrowhead Sow Farm (5)	5,574	Arrowhead Sow Farm (4)	416		
002	Wolfpack Sow Farm (5)	5,574	Wolfpack Sow Farm (4)	416		
003	Hawkeye Sow Farm (5)	10,337	Hawkeye Sow Farm (4)	728		
004						
005						

PART 4 – OPERATIONAL INFORMATION

4.1 OPERATIONAL INFORMATION (SEE INSTRUCTIONS)
SIC Code(s) 0213 CAFO Class Size 1A

4.2 Is this an export-only operation? ☐ Yes ☑ No

Completing PARTS 5 - 11 will meet the requirements of a Nutrient Management Plan (NMP) for an export only operation.

PART 5 – MANURE STORAGE

5.1 Do all manure storage structures have adequate storage, and operated and maintained as no discharge? ☑ Yes ☐ No

PART 6 – ANIMAL MORTALITY

6.1 PEMANENT METHOD OF DISPOSING OF ROUTINE ANIMAL MORTALITIES.

☐ Composting ☑ Rendering ☐ Send to a Landfill ☐ Incineration ☐ Other (Describe)

6.2 DESCRIBE METHOD OF MORTALITY HANDLING AND STORAGE THROUGH ALL PHASES TO FINAL DISPOSAL. (EXAMPLE: MORTALITIES ARE COMPOSTED WITHIN 24 HOURS OF DEATH AND FINISHED COMPOST PRODUCT IS STORED UNDER ROOF UNTIL LAND APPLIED). ALSO DESCRIBE THE TYPE OF COMPOST STRUCTURE USED, IF APPLICABLE.

See Section 3 of Nutrient Management Plan and Permit Requirements document.

PART 7 – DIVERSION OF CLEAN WATER

7.1 Is clean stormwater diverted from the production area? ☑ Yes ☐ No

7.2 IF YES, DESCRIBE CONTROLS AND MEASURES USED TO DIVERT STORMWATER.

See Section 4 of Nutrient Management Plan and Permit Requirements document.

7.3 IF NO, DESCRIBE HOW CONTAMINATED STORMWATER IS CONTAINED AND INCLUDE THE STORAGE CAPACITY OF THE CONTAINMENT IF NOT PREVIOUSLY PROVIDED.

PART 8 – PREVENT DIRECT CONTACT OF ANIMALS WITH SURFACE WATERS

8.1 Do the animals have access to waters of the state within the production area? ☐ Yes ☑ No

8.2 LIST MEASURES USED TO PREVENT CONFINED ANIMAL FORM HAVING DIRECT CONTACT WITH WATERS OF THE STATE.

See Section 4 of Nutrient Management Plan and Permit Requirements document.

PART 9 – CHEMICAL HANDLING

9.1 Check the appropriate boxed below to indicate method for handling and disposal of chemicals used by the operation:

☑ Chemicals are stored, handled, and disposed of according to manufacturer labels.

☑ Chemical storage and handling areas are protected from precipitation and runoff, and any spillage is contained within these areas.

☑ Emergency procedures and equipment are in place to contain and clean up chemical spills.

☑ Equipment wash areas are designed and constructed to prevent contamination of surface waters.

☐ No chemicals are stored or handled in the production area.

PART 10 – MANURE ANALYSIS TESTING

10.1 LIST EACH TYPE OF MANURE SOURCE. (i. e. MANURE, LITTER, COMPOST, WASTE WATER.)

Swine Effluent Manure

10.2 DESCRIBE PROCEDURES FOR ENSURING EACH MANURE SOURCE IS TESTED ANNUALLY.

See Section 7 of Nutrient Management Plan and Permits Requirements document and attached NMTS.

PART 11 – RECORD KEEPING

11.1 Are records of all inspections, manure transfers, discharges and land application maintained? ☑ Yes ☐ No

PART 12 – SIGNATURE

NAME Kurt L. Strauch	TITLE MO Environmental Manager
SIGNATURE [signature]	DATE 2-17-16

Part 13 - Engineer Certification

House Bill 28, which became effective Aug 28, 2013, contained provisions that changed construction permitting requirements. Construction permits are required for the construction of an earthen storage structure to hold, convey, contain, store, or treat domestic, agricultural, or industrial process wastewater. Construction of all other point source systems designed to hold, convey, contain, store, or treat domestic, agricultural, or industrial process waste must be designed by a professional engineer registered in Missouri in accordance with design regulations.

Operation Name Address City	Engineer Firm Address City State Zip Code
I, Project Engineer, certify that above described systems have been designed in accordance with Missouri CAFO design regulations in 10 CSR 20-8.300 PROJECT ENGINEER SIGNATURE	ENGINEER SEAL

BELLAMY PYRAMID

PERMIT # MO-0131067

NUTRIENT MANAGEMENT PLAN AND PERMIT REQUIREMENTS DOCUMENT

02-01-16

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Bellamy Nutrient Management Plan and Permit Requirements

Section 1-Pyramid Overview

Bellamy Pyramid Overview

This pyramid has three sow farrow to wean farms with onsite nursery and finisher. Two of the sow farms are served by a two-stage anaerobic lagoon and the third with a single stage anaerobic lagoon. One nutrient reduction system is on site at this pyramid. Secondary containments are in place at all farms. All farms have a recycle pump at the lagoon. Two of the sow farms have flush systems and the third a pit-recharge (pull plug) system.

This pyramid has a total of 1255 owned acres and 415 acres in effluent easements. Of the total acreage, there are 935.8 owned application acres and 280.7 application easement acres in the 0-10% slope range. Hay and row crops are planted and harvested on this pyramid for nutrient management.

Permitted Numbers

	Design/Permit Numbers/Animals	Design/Permit Numbers/AU's	Actual Operation Numbers/Animals	Actual Operation Numbers/AU's
Sows, Litters, Boars	16,857	6,743	14,954	5,982
Nursery Pigs	1,560	156	-	-
Finishing Hogs	4,628	1,851	1,920	768
Totals	**23,045**	**8,750**	**16,874**	**6,750**

2015 Actual Numbers

Land Application Equipment

The equipment listed is shared and managed between this pyramid and the Doylesport, Ozark-Osage, and Dover pyramids for land application except the onsite center pivots.

- Four 1000 GMP dragline systems.
- Three 250 GMP traveling guns.
- Two 800 GPM center pivots
- Two 600 GPM center pivots.

Nutrient Management Plan

The nutrient management plan was prepared in accordance with the new Missouri CAFO Nutrient Management Technical Standard. Planned crop rotations over the next five years could change due to weather, cropping, or nutrient management constraints. Owners of the land application easement acres could also change their plan due to these constraints as well. Crops are listed in Table 4. with the nutrient management plan that could be substituted in place of the planned crop. If a change is made, our nutrient management plan will be updated with correct information for that crop. These changes will be noted in our annual reports submitted for the current year of the change.

Section 2- Management of Lagoons

Lagoon management activities are listed below.

- Lagoons are inspected twice per day per permit requirements.
- Lagoon levels are managed through pumping effluent on agricultural fields and transfer of effluent to other lagoons to maintain appropriate liquid levels below the safety level down to pumpdown.
- Lagoons volumes are maintained so that the most storage volume is reached by fall to ensure enough storage for winter months.
- Mowing is conducted throughout the summer to maintain grass heights of 8"-12" inches while also ensuring no woody vegetation is present.
- If rodent holes or minor erosion is found during an inspection, then appropriate steps are taken to fill in or regrade the erosion and reseed the area.

Section 3- Mortalities Management

Mortality disposal is in accordance with the Dead Animal Disposal Law and state regulations. Mortalities are collected daily and stored in refrigerated holding sites for a rendering company to pick up multiple times weekly. Each refrigerated holding site is inspected daily. Rendering is our primary disposal method. Burial is used only in emergency cases where there is a constraint with rendering or refrigeration units. Incineration and composting are options we have looked at but have not implemented on this pyramid.

Section 4- Clean and Storm water Diversions

Clean storm water is diverted away from confinement buildings and manure storage structures. All confinement buildings are backfilled and graded to create a slope that directs storm water away from these buildings. Areas around manure storage structures are sloped and graded to ensure diversion of storm water away from these structures. Animals are housed at all times in confinement buildings and have no contact with waters of the state.

Section 5- Chemical Handling and Disposal

Chemicals are stored in the farm office or barn offices of the farm in their original containers. Disposal of empty containers and expired chemicals are per label instructions. If for some reason label instructions are unavailable, then farm employees have available a posted 1-800 MSDS number to call for obtaining proper disposal methods for a chemical. All storage areas are contained and have no direct contact with surface water, storm water, or wastewater. Absorption material and proper PPE are on the farm to clean up any chemical spills.

Section 6- Site Specific Conservation Practices

Below is a list of the specific conservation practices that are current on the permitted land. These practices are maintained to ensure reduced erosion on agricultural lands. When erosion areas are found, one of the practices is used below to reduce that erosion or eliminate it.

- Grassed Waterways
- Terraces
- Grassed Field Borders
- Minimum Till or No Till Plantings
- Cross Slope Plantings

Section 7- Protocols for Testing

Sample Collection and Preservation

The Analytical Laboratory used by Murphy Family Ventures LLC is Midwest Laboratories.

In general, all samples should be packed on ice in an ice chest immediately after collection. Samples are refrigerated until they are shipped on ice for delivery to the laboratory for analysis. Certain analytical tests may require samples to be specially preserved. Preservatives used are in compliance with EPA Standards.

Holding times for samples vary by required tests.

- Dissolved Oxygen - in field
- PH– in field
- Temperature- in field
- Ammonia Nitrogen as N- 28 days
- BOD-48 hours
- Chloride-28 days
- TKN-28 days
- Nitrate & Nitrite as N-28 days
- Total Phosphorus-28 days
- Total Suspended Solids-7 days

The laboratory provides new sampling bottles, preservative, labels, and chains of custody for each event. Laboratory instructions should be followed carefully when using preservatives. The laboratory should be consulted to determine how many samples must be collected at each location to enable the completion of the full range of analyses required.

Midwest Laboratories implement a quality control/quality assurance program to check their work. Laboratories can also be 'checked' by sending in blind or split samples. Blind samples can be anything from a sample from a lagoon, to a sample of tap water. The object of sending a blind sample (especially one that may vary significantly from the other samples sent) is to see if the laboratory results bear out the difference in samples. Conversely, a split sample is one sample that had been taken and split into two different samples. The analysis for these samples should be identical.

Sampling

Lagoons: In order to develop the best overall estimate of nutrient concentration in a lagoon, the lagoon must be carefully sampled at least once every year. When possible, additional lagoon manure samples may be taken just prior to land application of manure so current results are available for calculating manure application rates. Lagoons will be tested for total nitrogen, ammonia nitrogen, total phosphorus, total Potassium, and nitrate nitrogen. Samples shall be collected and handled following the guidelines outlined in MU Guide Publications EQ215 and G9340.

Sludges: If sludges are used in Murphy Family Ventures LLC land application program they must be a composite sample tested for Total Kjeldahl Nitrogen as N, Ammonia Nitrogen as N, Total Phosphorus as P, Total Potassium and Total solids(moisture content) .

Sample Location Criteria:

- Each sample shall be a composite sample consisting of 7 grab samples.
- Samples should be collected from the lagoon, irrigation pump or wet well, irrigation equipment, recycle pump or flush tank.
- Samples collected directly from the lagoon shall be taken from two feet below the lagoon water surface, at least fifteen feet from the water's edge and at least at seven different locations spaced about equally around the perimeter of the lagoon.
- When sampling at the recycle pump, the seven grab samples shall be taken at two to three minute intervals or longer.
- For sampling flush tanks, one or more grab samples shall be taken from each tank.

Soil Monitoring

In order to correctly estimate the available nutrients in the soil, soil tests are re-sampled before manure application when; the soil test is greater than five years old; or phosphate surplus (actual applied phosphate minus actual removed phosphate) for the field has exceeded 500lbs/acre since the last soil test. Sampling locations on all company-owned farms have been determined based on soil type and statistically sound sampling methods. Soil types on the farm have been catalogued and entered into a GPS database, so each sampling event can target the different soil types located in the fields. Soils samples on MFV farms are collected by a professional agronomist and his staff, or LNM Personnel. Soil sampling shall be in accordance with the University of Missouri (MU) Guides G9215 (for pastures) and G9217 (for row crops)

1. Follow Sampling Protocol, Guides G9215 (for pastures) and G9217 (for row crops)
2. The average field area represented by soil sample should be approximately 20 acres or less.
3. Each soil sample should be comprised of a well-mixed subsample derived from as least 15 representative cores.
4. Collect soil sampling depth should be six to eight inches
5. Deliver properly preserved samples to a Missouri Soil Testing Association accredited laboratory for analysis.

Constituent	Unit	Type
Nitrate Nitrogen as N	mg/kg	Composite
Soil pH	Std. Unit	Composite
Percent Organic Matter	%	Composite
Cation Exchange Capacity	Std. Unit	Composite
Potassium as K	mg/kg	Composite
Available Phosphorus as P (Bray-1) test method)	mg/kg	Composite

STREAM MONITORING

PERSONNEL: LNM PERSONNEL
FREQUENCY: Two times per year, once during April, and October on the first Friday of the month. If no flow then alternative dates can be used.
EQUIPMENT: 500ml bottles with labels-2 per identified stream outfall; one for samples with preservative, one for sample without preservative plus1 to use for blind sample for quality control; ice cooler, ice, pH meter, thermometer, Tape measure, Timer
DATA SHEET: Stream monitoring sheet, Analysis Request Form

Samples shall be collected on a pre-determined sampling date during April, and October on the first Friday of the month so sampling dates are unbiased by flow conditions.
Samples shall be only collected from flowing water. Samples from riffles are preferred. Do not collect a sample from pools that do not have water flowing into or out of the pool.

1. Take temperature at each sample point-using thermometer. Hold thermometer in water for at least two minutes for temperature reading to be accurate. Record temperature of each location on **Stream Monitoring Sheet.**

2. Using pH meter, take pH at each sample point. Hold pH meter in water until meter has stabilized. Record measurement on **Stream Monitoring Sheet.**

3. Using two bottles per site (one with preservative, one without—per lab's instructions) collect grab sample at each identified sample point. Label each bottle with sample location point. Place sample immediately in ice cooler.

4. Measure the depth, width, and velocity of water flow and record measurement on **Stream Monitoring Sheet** to calculate flow rate of water.

5. Fill out the **Stream Sampling Sheet** and **Analysis Request Form**. Include the **Analysis Request Form** with samples.

6. Deliver samples directly to LNM office for refrigeration, or Deliver them to office for overnight shipment on ice.

Stream Water Sample Analysis Requirements

Constituent	Unit	Frequency	Type
Flow	MGD	2/year	24 hr. estimate
pH	Std. Units	2/year	grab
Ammonia Nitrogen as N	mg/L	2/year	grab
N Total	mg/L	2/year	grab
Total-Phosphorus as P	mg/L	2/year	grab
Temperature	°C	2/year	grab

MONITORING EMERGENCY OR UNATHORIZED DISCHARGES

Samples shall be collected once/day during discharge

1. Sample points shall include the following:
   - At down gradient property boundary
   - Receiving waters above and below the discharge point. If receiving drainage is dry above the discharge point, report as no stream flow above the discharge point.
   - If access is available, at points farther downstream until no effects of discharge are noted
   - If discharge does not reach property line, monitor at most downstream point on property possible, or until effects of discharge are not noted

2. Complete "Emergency Discharge Record Sheet," including the following:
   - Time
   - Date
   - Location
   - Duration of the discharge
   - Estimate of the Discharge Volume
   - Reason (if known) for Discharge

Emergency/Unauthorized Discharge Analysis Requirements

Constituent	Unit	Frequency
Flow	MGD	once/day during discharge -24 hr. estimate
Dissolved Oxygen	mg/L	once/day during discharge —grab
Ammonia Nitrogen as N	mg/L	once/day during discharge —grab
BOD	mg/L	once/day during discharge—grab
pH - units	std. Units	once/day during discharge – grab
Temperature	°C	once/day during discharge – grab
Duration	hours	

REQUIRED NOTIFICATION OF RELEASES

In the event of any emergency or unauthorized discharge, it is imperative that actions be taken in a timely manner. Notification of the DNR is required under the following circumstances:

a) Any wastewater discharge into waters of the state shall be reported to the MDNR as soon as possible and no later than 24 hours after the start of the discharge.
b) Spills or leaks that are contained on the property shall also be reported to the MDNR within 24 hours, **if the spill or leak exceeds 1000 gallons per day.** This includes leaks from sewer lines; recycle lines, flushing systems, lagoons, or irrigation systems.

c) Monitoring results of the discharge must be submitted to the MDNR within 30 days.

Section 8- Land Application Limits, Hydraulic Rates, and Proper Agricultural Utilization

Land applications limits

- Manure will not be applied while it is raining.
- Manure will not be applied on frozen, snow covered, or saturated soils.
- If Manure is being applied and it starts to rain, application will cease.
- Process wastes will be land applied as close as practicable to when plants will utilize nutrients. Fall application for the spring crop will be used when appropriate but is not the primary application period.
- Application will be avoided during an imminent storm event that is likely to produce runoff
- Land application equipment will be operated in such a manner that wastes do not reach adjoining property lines, public use areas, or into waters of the state.

Hydraulic Rates

- Application rates in inches/application pass and inches/day shall not exceed the soil infiltration capacity and soil moisture holding capacity of the soil. In no case shall the application result in the runoff of applied waste during or immediately following application.
- For field slopes less than or equal to ten percent (0-10%), surface application rates other than tool bar application shall not exceed 0.5 inches/application pass and 1.0 inch/day depending on soil conditions.
- For field slopes greater than ten percent (10%), but less than or equal to twenty percent (20%), surface application rates shall bed reduced to one-half the rate for slopes of then percent (10%) or less.
    - This site has no fields with a slope greater than ten percent (10%), but less than or equal to twenty percent (20%).

- Fields with slopes greater than twenty percent (20%) shall not be used for land application.
    - This site has no fields with a slope greater than twenty percent (20%)
- For subsurface injection, application rates shall be based on soil adsorption capacity during land application so that there are no puddles of wastewater on the soil surface. In no case shall the applications rate exceed 1.0 inch/day (27,154 gallons/acre).

Proper Application for Neighbor Considerations

- As part of Murphy Family Ventures LLC ongoing commitment to good neighbor relations, the following program is in place to insure that pumping activities do not unduly impose on neighbors.
    - No pumping is conducted over Holidays/Holiday weekends unless absolutely necessary to meet lagoon management standards.
    - Pumping should be minimized on lands upwind of neighbors on those days when winds are excessively strong.

Proper Agricultural Utilization

Manure is a by-product of any type of livestock operation. Efficient removal of the manure from the barns and subsequent treatment and disposal of the effluent are critical components in ensuring an environmentally sound operation. On the Ozark-Osage Pyramid, barns utilize flush and pit recharge systems to flush waste collection pits to maintain clean barns free of animal waste and to ensure a healthy environment for the animals. Manure and associated wastewater (including flush water) is transported via buried PVC pipe to an anaerobic lagoon.

Anaerobic lagoons provide basic treatment to the animal waste, breaking it down (via the activity of anaerobic bacteria) into its primary components. These components, namely, nitrogen, phosphorus, and potassium, (as well as other trace minerals and nutrients) are beneficial to crops and can be effectively used as replacements for chemical fertilizer in normal farming activities.

The primary responsibility of the LNM personnel is to ensure proper management and operation of the wastewater treatment systems and the timely application of the lagoon water onto farmland. Lagoon water is used to raise conventional crops and to irrigate pasture on farmland within the Murphy Family Ventures LLC Missouri operation.

The goal of Murphy Family Ventures LLC Nutrient Management program is to operate a scientifically sound, agronomically correct, sustainable farming program using treated hog manure as fertilizer for crops. Several factors are considered in the development of a sound nutrient management plan, including: lagoon water volumes, lagoon water nutrient analyses, the amount of fertilizer needed for the crop, amount of land available, soil nutrient analyses, cropping program, and application procedures. Maximum lagoon pumpdown levels are also used to determine the volume of water to be moved.

Section 9- Records and Reporting

RECORDKEEPING

Murphy Family Ventures LLC will record and keep the following information for five years from the date created.

- A copy of this permit including a current copy of the facility's Nutrient Management Plan and documentation of changes/modifications made to the Nutrient Management Plan.
- The daily visual inspections required in Special conditions #2, shall be logged and recorded once per week. Included is once per week lagoon level showing feet below emergency overflow level.
- Records documenting any actions taken to correct deficiencies.
- Records of mortalities management.
- Records of the date, time, location, durations and estimated volume of any emergency or unauthorized process waste overflow from a lagoon or any spill exceeding 1000 gallons.
- Inches of precipitation received at the production site, recorded daily and reported for daily amounts, monthly totals, and cumulative total.
- Manure nutrient monitoring for each unique source of manure; date(s) for manure sampling, for each sample date report total N, ammonium N, total phosphate, total potash, percent moisture and dry matter and nitrate N when appropriate.
- Report or identify the actual manure nutrient concentration used for calculating manure application rates.
- Record the year of the last soil test
- Current soil test results reporting at a minimum soil test phosphorus, cation-exchange capacity (CEC) and soil organic matter.
- Fertilizer N and phosphate recommendations.
- Record Transfers
- Record Pumping events
- Any additional record keeping requirements found in Attachment B, "Nutrient Management Technical Standard," not listed above.

REPORTING

Murphy Family Ventures LLC will report the following to Missouri Department of Natural Resources:

- Any wastewater discharge into waters of the state as soon as possible and no later than 24 hours after the start of the discharge.

- Spills or leaks that are contained on the property within 24 hours, if the spill or leak exceeds 1,000 gallons per day.
- A lagoon's level coming within (4) inches of the upper operating level within (7) days of the occurrence and actions taken to reduce the level of the lagoon(s).
- An annual report each year for the previous growing season. The report shall include:

    - Number and type of animals confined at the operation
    - Estimated amount of manure, litter, and process wastewater generated in the past twelve months.
    - Estimated amount of manure, litter, and process wastewater transferred to other persons in the previous twelve months.
    - Total number of acres for land application covered by the Nutrient Management Plan.
    - Total number of acres under control of the operation that were used for land application of manure, litter and process wastewater in the previous twelve months.
    - Summary of all manure, litter, and process wastewater discharges from the production area that have occurred in the previous twelve months, including date, time, and approximate volume. Report as non-discharge if a discharge did not occur during the monitoring period.
    - A statement indicating whether the current Nutrient Management Plan was developed or approved by a certified nutrient management planner.
    - Crops planted and expected yields, amount and nutrient content of the manure, litter, and process wastewater applied on the land application area(s) and the results of any soil testing from the previous twelve months.
    - Weekly records of the wastewater depth in the liquid impoundments as required.
    - Actual operation numbers compared to the permitted design parameters described in Special Condition #6 of current Permit.
    - All monitoring results from Section A. Effluent Limitations and Monitoring Requirements of Permit.

- Reports shall include a cover sheet with an original signature of a company representative. The reports may be printed or alternatively, may be saved as pdf files or locked spreadsheets and burned onto two compact discs. The CDs may be sent via mail with the coversheet to the Southwest and Jefferson City offices.

Section 10- Inspections

MONITORING FARM FACILITIES

The farm/farm manager is responsible for a twice per day inspection of the facility inside the fence of the farm. The LNM personnel is responsible for a twice per day inspection of the facility of everything located outside of the farm fence.

PERSONNEL: Farm Manager, LNM Personnel or trained employee
FREQUENCY: Twice per day, unless noted.
DATA SHEET USED: Facilities Inspection Sheet

1. Inspector should document date of inspection, time and their initials

2. Walk around the barns check for leaks or unusual conditions. If you see a potential environmental problem, follow the Emergency Action Procedure & Contact List posted in the farm office.

3. Check recycle lines to be sure that they are not broken, cracked or leaking.

4. Check Cleanouts to be sure that they are visibly marked, proper height to prevent release, capped, not cracked or broken and no sign of leaks

5. Inspect barn exterior to be sure that there are no foundation cracks larger than a pencil diameter or daylight can be seen or no leaks.

6. Farms with lift stations must inspect them to be sure it is free of trash build up, covered with protection from entry and no leaks.

7. Farms with flush tanks must inspect them to be sure there are no leaks, the tank is filling properly, and overflows are in place.

8. Inspect the recycle lines and pump to be sure they are operating properly.

9. Record findings of the inspection on the "Farm Facilities Inspection sheet." For maintenance problems report to manager and insure a service call is created.

10. Once per day, check general conditions around the dead animal facility. Look for the presence of discharge from the facility into the secondary containment and/or holding tank (where applicable). Check to see that the float system appears intact and is operating correctly. If a problem is noted, contact the LNM Manager for appropriate remedial actions.

11. Once per day, inspect all fresh water lines for leaks that have the potential to impact wastewater storage.

12. Each sheet holds a weeks worth of daily inspection notes. Every Monday, fax a copy of the previous weeks Farm facilities Inspection Sheet to the LNM Data Coordinator at the main office. Store the original in a file at the farm office.

MONITORING LAGOONS

PERSONNEL: LNM Personnel or other trained employee

FREQUENCY: Twice per day
DATA SHEET USED: Lagoon Level and Rainfall Monitoring sheet, Pyramid Facilities Inspection Sheet

1. Visually inspect lagoons for condition and berm integrity. Grass cover on the lagoon berm shall be evaluated to ensure the following:
    a. Adequate coverage—no bare spots
    b. Grass is of appropriate height (under 12")
    c. The presence of rodent burrows/ signs of rodent activities
    d. The presence of encroaching woody species
    e. Signs of erosion (inside and outside slopes)

2. Inspect emergency spillway to be sure that is clear and free from obstruction

3. Check for the presence of debris in the lagoon.

4. Record all results of the inspection on the **Pyramid Facilities Inspection Sheet**. Each sheet holds a week's worth of daily inspection notes. If a problem is found a service call must be requested. If a potential environmental problem is found, use the Emergency Action Procedure & Contact List posted in the farm offices.

5. As part of the lagoon inspection procedure, record the daily rainfall on the **Lagoon Level and Rainfall Monitoring Sheet** by reading the Pyramid's rain gauge. At the end of each week, total the daily rainfall and record the weekly rainfall for the Pyramid.

6. **On A Weekly Basis:** Record lagoon level on the **Lagoon Level and Rainfall Monitoring Sheet**. Read level from the permanent measuring markers in each lagoon. Measure the level to the nearest ½ foot below the bottom of the emergency spillway. Level should be read in terms of number of blocks showing on the post, which indicate how far the water has been pumped down below the full pool level (i.e. bottom of spillway).

7. Every Monday, fax a copy of the previous week's **Lagoon Level and Rainfall Monitoring sheet & Pyramid Facilities Inspection Sheet,** to the LNM Data Coordinator at the main office. Store the original in a file at the LNM field office.

Secondary Containment Monitoring Sheet

1. Check secondary containments for each farm for the presence of water. If water is present follow the secondary containment protocol.

Land application inspections

1. LNM personnel responsible for pumping are required to monitor above ground irrigation, pipelines and equipment at least once 45 minutes to one hour to insure wastewater is contained within the system.

2. The perimeter of the application fields shall be monitored frequently to insure that applied wastewater does not run off the fields where applied.

3. Sections of underground irrigation lines not in use shall be checked after startup each day to verify no pressure is in the lines not being used. Underground lines in use or pressurized shall be checked immediately after start up and twice per day thereafter to insure wastewater is contained within the system.

4. Application sites shall be monitored for drifting spray irrigation.

Land Application Inspection Procedure

1. Initially before irrigation startup, radio control pump shutoffs or murphy switches should be checked for proper operation.

2. During start up of equipment there should be two inspections of equipment. One during initial startup and one after pump is pressured to desired setting. Inspections should verify that all equipment is operating correctly, that there are no leaks, and water is coming out of equipment correctly.
3. After startup then inspections of risers, lines, equipment operation, water coming out of equipment, spray drift, and field for runoff where irrigating should be done every 45 minutes to one hour until equipment is shutdown.

Land application equipment

Equipment used for land application of manure or process wastewater shall be inspected quarterly prior to use. Any deficiencies or repairs needed shall be corrected before equipment is used for land application.

Section 11- Secondary Containments

MONITORING SECONDARY CONTAINMENTS

Secondary containment structures have been constructed and shall be maintained down gradient of all confinement buildings and sewer lines, recycle lines, recycle pump stations to collect and retain discharges from spills or pipeline breaks. The containments have been constructed by placement of an earthen dam (to create a shallow impoundment), or through the excavation of a reservoir. Secondary containments are designed to hold a minimum volume equal to the maximum pumping capacity of the recycle pump in any 24-hour period. There shall be no release of process wastewater from secondary containment structures. Any wastewater spills or leaks collected in the containment structure shall be pumped into the lagoon or directly land applied so there is no discharge of process waste. Storm water maybe released only after being tested for ammonia-N. Storm water containing 2.5mg/L ammonia-N or less may be released through a valve.

PERSONNEL: LNM Personnel or other trained employee

FREQUENCY: Once per day.
EQUIPMENT: Colorimetric testing or other approved testing methods for testing Ammonia Nitrogen as N, Sample bottle.
DATA SHEET USED: Secondary Containment Monitoring Sheet

2. Check secondary containments for each farm in the Pyramid for the presence of water.

3. If water is present, use field-monitoring kit to test for Ammonia Nitrogen as N. Test according to training and kit instructions. Ensure test kit meets manufactures recommendations for calibration. Record all findings on **Secondary Containment Monitoring Sheet**

4. If Ammonia Nitrogen as N is 2.4 mg/L, then water must be retested.

5. If the water exceeds the 2.5 mg/L criteria, then it must be pumped back into the lagoon, or land-applied according to normal practices, so that no runoff occurs.

6. When the 2.5 mg/L or less reading is achieved, release containment water through valve.

7. Ensure that containment is closed after it is emptied or before the end of the work day.

8. Record all actions on **Secondary Containment Monitoring Sheet**

10. Failure to complete the daily reports shall result in disciplinary action.

Section 12- Transfers of Manures, Litter, or Processed Wastes

When manure, litter, or processed wastes is sold, given away, or land applied on land not under our direct control, then the permit requirements in special condition # 7 will be followed listed below.

- Records will be maintained for five years on site.
- Records will include the date, amount removed from the operation, name and address of recipient.
- The recipient will be provided the nutrient analysis and a copy of the Nutrient Management Technical Standard.

Section 13- Nutrient Management Technical Standard (NMTS)

Development of the Nutrient Management Plan was in accordance with the requirement of the Nutrient Management Technical Standard. The requirements in the NMTS shall be followed in accordance with the following activities. The NMTS is attachment B in this document to provide the methods and protocols for the listed activities.

- Soil sampling and testing.
- Manure sampling and testing.
- Fertilizer recommendations.
- Field specific manure nutrient application criteria.
- Field specific phosphorus loss assessment.
- Missouri P Index use.
- Criteria for the timing, soil conditions, and placement of manure applications.
- Manure application setbacks
- Manure Storage Operational Monitoring
- Manure Nutrient Monitoring
- Field Testing Monitoring
- Land Application Operational Monitoring

Section 14- Nutrient Management Plan

Attachment A contains the following tables for the nutrient management plan.

- Table 1. -Planned crop, fertilizer requirements, and estimated nutrient removal for years 2017-2021.
- Table 2. - Field nutrient balance based on estimated manure applications and crop removal for years 2017-2021.
- Table 3. - Field Soil analysis information, phosphorus rating, and planned nutrient base management.
- Table 4. -List of crops that could be planted in place of planned crop due to weather, cropping, or NMP constraints.
- Table 5. - Planned Transfers, Imports, or Exports.
- Table 6. -Summary of projected manure generation, imports, exports, transfers and end of year totals.

Section 15- Maps

Aerial maps identifying application fields, lagoon locations, and building locations are located in Attachment C of this document.

Attachment A

BELLAMY PYRAMID NMP

Table 1. Planned crop, crop fertilizer requirements, and crop nutrient removal.

Field ID	Sub Field ID	Legal Description	Year	Acres	P Loss Risk	N or P Based Appl.	Planned Crop	Projected Yield	Tons or Bushels	N Rec. Lbs/A	P2O5 Rec. Lbs/A	K20 Rec. Lbs/A	N Removed Lbs/A	P2O5 Removed Lbs/A	K20 Removed Lbs/A
A		T34N,R30W,Sec. 13	2017	150	L	N	Bermuda	5	Tons	250	60	170	250	60	170
		T34N,R30W,Sec. 13	2018	150	L	N	Bermuda	5	Tons	250	60	170	250	60	170
		T34N,R30W,Sec. 13	2019	150	L	N	Bermuda	5	Tons	250	60	170	250	60	170
		T34N,R30W,Sec. 13	2020	150	L	N	Bermuda	5	Tons	250	60	170	250	60	170
		T34N,R30W,Sec. 13	2021	150	L	N	Bermuda	5	Tons	250	60	170	250	60	170
	A1	T34N,R30W,Sec. 13	2017	15	VL	N	Fescue	2	Tons	108	24	68	108	24	68
		T34N,R30W,Sec. 13	2018	15	VL	N	Fescue	2	Tons	108	24	68	108	24	68
		T34N,R30W,Sec. 13	2019	15	VL	N	Fescue	2	Tons	108	24	68	108	24	68
		T34N,R30W,Sec. 13	2020	15	VL	N	Fescue	2	Tons	108	24	68	108	24	68
		T34N,R30W,Sec. 13	2021	15	VL	N	Fescue	2	Tons	108	24	68	108	24	68
B		T34N,R30W,Sec. 24	2017	97	M	N	Corn	130	Bushel	159	58.5	39	189	58.5	39
		T34N,R30W,Sec. 24	2018	97	M	N	Corn	130	Bushel	189	58.5	39	189	58.5	39
		T34N,R30W,Sec. 24	2019	97	M	N	Soybeans	40	Bushel	160	33.6	57.6	160	33.6	57.6
		T34N,R30W,Sec. 24	2020	97	M	N	Corn	130	Bushel	159	58.5	39	189	58.5	39
		T34N,R30W,Sec. 24	2021	97	M	N	Corn	130	Bushel	189	58.5	39	189	58.5	39
	B1	T34N,R30W,Sec. 24	2017	81	M	N	Soybeans	40	Bushel	160	33.6	57.6	160	33.6	57.6
		T34N,R30W,Sec. 24	2018	81	M	N	Corn	130	Bushel	159	58.5	39	189	58.5	39
		T34N,R30W,Sec. 24	2019	81	M	N	Corn	130	Bushel	189	58.5	39	189	58.5	39
		T34N,R30W,Sec. 24	2020	81	M	N	Soybeans	40	Bushel	160	33.6	57.6	160	33.6	57.6
		T34N,R30W,Sec. 24	2021	81	M	N	Corn	130	Bushel	159	58.5	39	189	58.5	39
	B2	T34N,R30W,Sec. 24	2017	25	L	N	Fescue	2	Tons	108	24	68	108	24	68
		T34N,R30W,Sec. 24	2018	25	L	N	Fescue	2	Tons	108	24	68	108	24	68
		T34N,R30W,Sec. 24	2019	25	L	N	Fescue	2	Tons	108	24	68	108	24	68
		T34N,R30W,Sec. 24	2020	25	L	N	Fescue	2	Tons	108	24	68	108	24	68
		T34N,R30W,Sec. 24	2021	25	L	N	Fescue	2	Tons	108	24	68	108	24	68
	B3	T34N,R30W,Sec. 24	2017	25	M	N	Fescue	2	Tons	108	24	68	108	24	68
		T34N,R30W,Sec. 24	2018	25	M	N	Fescue	2	Tons	108	24	68	108	24	68
		T34N,R30W,Sec. 24	2019	25	M	N	Fescue	2	Tons	108	24	68	108	24	68
		T34N,R30W,Sec. 24	2020	25	M	N	Fescue	2	Tons	108	24	68	108	24	68
		T34N,R30W,Sec. 24	2021	25	M	N	Fescue	2	Tons	108	24	68	108	24	68

C		T34N,R30W,Sec. 13	2017	17	M	N	Corn	130	Bushel	189	58.5	39	189	58.5	39
		T34N,R30W,Sec. 13	2018	17	M	N	Soybeans	40	Bushel	160	33.6	57.6	160	33.6	57.6
		T34N,R30W,Sec. 13	2019	17	M	N	Corn	130	Bushel	159	58.5	39	189	58.5	39
		T34N,R30W,Sec. 13	2020	17	M	N	Corn	130	Bushel	189	58.5	39	189	58.5	39
		T34N,R30W,Sec. 13	2021	17	M	N	Soybeans	40	Bushel	160	33.6	57.6	160	33.6	57.6
	C1	T34N,R30W,Sec. 13	2017	41	L	N	Fescue	3	Tons	162	36	102	162	36	102
		T34N,R30W,Sec. 13	2018	41	L	N	Fescue	3	Tons	162	36	102	162	36	102
		T34N,R30W,Sec. 13	2019	41	L	N	Fescue	3	Tons	162	36	102	162	36	102
		T34N,R30W,Sec. 13	2020	41	L	N	Fescue	3	Tons	162	36	102	162	36	102
		T34N,R30W,Sec. 13	2021	41	L	N	Fescue	3	Tons	162	36	102	162	36	102
D		T34N,R29W,Sec. 19	2017	17	M	N	Corn	130	Bushel	189	58.5	39	189	58.5	39
		T34N,R29W,Sec. 19	2018	17	M	N	Bermuda	3	Tons	150	36	102	150	36	102
		T34N,R29W,Sec. 19	2019	17	M	N	Bermuda	5	Tons	250	60	170	250	60	170
		T34N,R29W,Sec. 19	2020	17	M	N	Bermuda	5	Tons	250	60	170	250	60	170
		T34N,R29W,Sec. 19	2021	17	M	N	Bermuda	5	Tons	250	60	170	250	60	170
F		T34N,R29W,Sec. 19	2017	12	M	N	Fescue	3	Tons	162	36	102	162	36	102
		T34N,R29W,Sec. 19	2018	12	M	N	Fescue	3	Tons	162	36	102	162	36	102
		T34N,R29W,Sec. 19	2019	12	M	N	Fescue	3	Tons	162	36	102	162	36	102
		T34N,R29W,Sec. 19	2020	12	M	N	Fescue	3	Tons	162	36	102	162	36	102
		T34N,R29W,Sec. 19	2021	12	M	N	Fescue	3	Tons	162	36	102	162	36	102
G		T34N,R30W,Sec. 13	2017	87.2	M	N	Fescue	3	Tons	162	36	102	162	36	102
		T34N,R30W,Sec. 13	2018	87.2	M	N	Fescue	3	Tons	162	36	102	162	36	102
		T34N,R30W,Sec. 13	2019	87.2	M	N	Fescue	3	Tons	162	36	102	162	36	102
		T34N,R30W,Sec. 13	2020	87.2	M	N	Fescue	3	Tons	162	36	102	162	36	102
		T34N,R30W,Sec. 13	2021	87.2	M	N	Fescue	3	Tons	162	36	102	162	36	102
H		T34N,R30W,Sec. 24	2017	87	M	N	Soybeans	40	Bushel	160	33.6	57.6	160	33.6	57.6
		T34N,R30W,Sec. 24	2018	87	M	N	Corn	130	Bushel	159	58.5	39	189	58.5	39
		T34N,R30W,Sec. 24	2019	87	M	N	Soybeans	40	Bushel	160	33.6	57.6	160	33.6	57.6
		T34N,R30W,Sec. 24	2020	87	M	N	Corn	130	Bushel	159	58.5	39	189	58.5	39
		T34N,R30W,Sec. 24	2021	87	M	N	Soybeans	40	Bushel	160	33.6	57.6	160	33.6	57.6
	H1	T34N,R30W,Sec. 24	2017	29	M	N	Soybeans	40	Bushel	160	33.6	57.6	160	33.6	57.6
		T34N,R30W,Sec. 24	2018	29	M	N	Corn	130	Bushel	159	58.5	39	189	58.5	39
		T34N,R30W,Sec. 24	2019	29	M	N	Soybeans	40	Bushel	160	33.6	57.6	160	33.6	57.6
		T34N,R30W,Sec. 24	2020	29	M	N	Corn	130	Bushel	159	58.5	39	189	58.5	39
		T34N,R30W,Sec. 24	2021	29	M	N	Soybeans	40	Bushel	160	33.6	57.6	160	33.6	57.6

	H2	T34N,R30W,Sec. 24	2017	21	M	N	Soybeans	40	Bushel	160	33.6	57.6	160	33.6	57.6
		T34N,R30W,Sec. 24	2018	21	M	N	Corn	130	Bushel	159	58.5	39	189	58.5	39
		T34N,R30W,Sec. 24	2019	21	M	N	Soybeans	40	Bushel	160	33.6	57.6	160	33.6	57.6
		T34N,R30W,Sec. 24	2020	21	M	N	Corn	130	Bushel	159	58.5	39	189	58.5	39
		T34N,R30W,Sec. 24	2021	21	M	N	Soybeans	40	Bushel	160	33.6	57.6	160	33.6	57.6
I		T34N,R30W,Sec. 25	2017	61.7	L	N	Soybeans	40	Bushel	160	33.6	57.6	160	33.6	57.6
		T34N,R30W,Sec. 25	2018	61.7	L	N	Corn	130	Bushel	159	58.5	39	189	58.5	39
		T34N,R30W,Sec. 25	2019	61.7	L	N	Soybeans	40	Bushel	160	33.6	57.6	160	33.6	57.6
		T34N,R30W,Sec. 25	2020	61.7	L	N	Corn	130	Bushel	159	58.5	39	189	58.5	39
		T34N,R30W,Sec. 25	2021	61.7	L	N	Soybeans	40	Bushel	160	33.6	57.6	160	33.6	57.6
J		T34N,R30W,Sec. 13	2017	81.2	M	N	Corn	130	Bushel	159	58.5	39	189	58.5	39
		T34N,R30W,Sec. 13	2018	81.2	M	N	Soybeans	40	Bushel	160	33.6	57.6	160	33.6	57.6
		T34N,R30W,Sec. 13	2019	81.2	M	N	Corn	130	Bushel	159	58.5	39	189	58.5	39
		T34N,R30W,Sec. 13	2020	81.2	M	N	Soybeans	40	Bushel	160	33.6	57.6	160	33.6	57.6
		T34N,R30W,Sec. 13	2021	81.2	M	N	Corn	130	Bushel	159	58.5	39	189	58.5	39

Planned crops could be substituted for other crops listed in Table 4 due to weather, cropping , or nutrient management constraints.

References:

MWPS-18
Soil Test Interpretations and Recommendations Handbook
Agricultural Waste Management Field Handbook Part 651
MU Guide G9120
Managing Nitrogen For Groundwater Quality & Farm Profitability

BELLAMY PYRAMID NUTRIENT BALANCE

Table 2. Field nutrient balance based on estimated manure applications and crop removal.

Field ID	Sub Field ID	Year	Acres	Planned Crop	Projected Yield	Tons or Bushels	Total Applied Nutrients Lbs/A			Crop Removal Lbs/A			N Balance/yr. Lbs/A	P2O5 Balance/yr. Lbs/A
							N	P2O5	K20	N	P2O5	K20		
A		2017	150	Bermuda	5	Tons	250	43.2	517.8	250	60	170	0	-16.8
		2018	150	Bermuda	5	Tons	250	43.2	517.8	250	60	170	0	-16.8
		2019	150	Bermuda	5	Tons	250	43.2	517.8	250	60	170	0	-16.8
		2020	150	Bermuda	5	Tons	250	43.2	517.8	250	60	170	0	-16.8
		2021	150	Bermuda	5	Tons	250	43.2	517.8	250	60	170	0	-16.8
												Total	**0**	**-84**
	A1	2017	15	Fescue	2	Tons	108	18.64	223.7	108	24	68	0	-5.36
		2018	15	Fescue	2	Tons	108	18.64	223.7	108	24	68	0	-5.36
		2019	15	Fescue	2	Tons	108	18.64	223.7	108	24	68	0	-5.36
		2020	15	Fescue	2	Tons	108	18.64	223.7	108	24	68	0	-5.36
		2021	15	Fescue	2	Tons	108	18.64	223.7	108	24	68	0	-5.36
												Total	**0**	**-26.8**
B		2017	97	Corn	130	Bushel	159	38.7	464.1	189	58.5	39	-30	-19.8
		2018	97	Corn	130	Bushel	189	46	551.7	189	58.5	39	0	-12.5
		2019	97	Soybeans	40	Bushel	160	38.9	467.0	160	33.6	57.6	0	5.3
		2020	97	Corn	130	Bushel	159	38.7	464.1	189	58.5	39	-30	-19.8
		2021	97	Corn	130	Bushel	189	46	551.7	189	58.5	39	0	-12.5
												Total	**-60**	**-59.3**
	B1	2017	81	Soybeans	40	Bushel	160	38.9	467.0	160	33.6	57.6	0	5.3
		2018	81	Corn	130	Bushel	159	38.7	464.1	189	58.5	39	-30	-19.8
		2019	81	Corn	130	Bushel	189	46	551.7	189	58.5	39	0	-12.5
		2020	81	Soybeans	40	Bushel	160	38.9	467.0	160	33.6	57.6	0	5.3
		2021	81	Corn	130	Bushel	159	38.7	464.1	189	58.5	39	-30	-19.8
												Total	**-60**	**-41.5**
	B2	2017	25	Fescue	2	Tons	108	18.64	223.7	108	24	68	0	-5.36
		2018	25	Fescue	2	Tons	108	18.64	223.7	108	24	68	0	-5.36
		2019	25	Fescue	2	Tons	108	18.64	223.7	108	24	68	0	-5.36
		2020	25	Fescue	2	Tons	108	18.64	223.7	108	24	68	0	-5.36
		2021	25	Fescue	2	Tons	108	18.64	223.7	108	24	68	0	-5.36
												Total	**0**	**-26.8**
	B3	2017	25	Fescue	2	Tons	108	18.64	223.7	108	24	68	0	-5.36
		2018	25	Fescue	2	Tons	108	18.64	223.7	108	24	68	0	-5.36
		2019	25	Fescue	2	Tons	108	18.64	223.7	108	24	68	0	-5.36
		2020	25	Fescue	2	Tons	108	18.64	223.7	108	24	68	0	-5.36
		2021	25	Fescue	2	Tons	108	18.64	223.7	108	24	68	0	-5.36
												Total	**0**	**-26.8**
C		2017	17	Corn	130	Bushel	189	32.6	391.5	189	58.5	39	0	-25.9
		2018	17	Soybeans	40	Bushel	160	27.6	331.4	160	33.6	57.6	0	-6
		2019	17	Corn	130	Bushel	159	27.4	329.3	189	58.5	39	-30	-31.1
		2020	17	Corn	130	Bushel	189	32.6	391.5	189	58.5	39	0	-25.9
		2021	17	Soybeans	40	Bushel	160	27.6	331.4	160	33.6	57.6	0	-6
												Total	**-30**	**-94.9**
	C1	2017	41	Fescue	3	Tons	162	28	335.5	162	36	102	0	-8
		2018	41	Fescue	3	Tons	162	28	335.5	162	36	102	0	-8
		2019	41	Fescue	3	Tons	162	28	335.5	162	36	102	0	-8
		2020	41	Fescue	3	Tons	162	28	335.5	162	36	102	0	-8
		2021	41	Fescue	3	Tons	162	28	335.5	162	36	102	0	-8
												Total	**0**	**-40**

D		2017	17	Corn	130	Bushel	189	32.6	391.5	189	58.5	39	0	-25.9
		2018	17	Bermuda	3	Tons	150	25.9	310.7	150	36	102	0	-10.1
		2019	17	Bermuda	5	Tons	250	43.2	517.8	250	60	170	0	-16.8
		2020	17	Bermuda	5	Tons	250	43.2	517.8	250	60	170	0	-16.8
		2021	17	Bermuda	5	Tons	250	43.2	517.8	250	60	170	0	-16.8
												Total	**0**	**-86.4**
F		2017	12	Fescue	3	Tons	162	28	335.5	162	36	102	0	-8
		2018	12	Fescue	3	Tons	162	28	335.5	162	36	102	0	-8
		2019	12	Fescue	3	Tons	162	28	335.5	162	36	102	0	-8
		2020	12	Fescue	3	Tons	162	28	335.5	162	36	102	0	-8
		2021	12	Fescue	3	Tons	162	28	335.5	162	36	102	0	-8
												Total	**0**	**-40**
G		2017	87.2	Fescue	3	Tons	162	28	335.5	162	36	102	0	-8
		2018	87.2	Fescue	3	Tons	162	28	335.5	162	36	102	0	-8
		2019	87.2	Fescue	3	Tons	162	28	335.5	162	36	102	0	-8
		2020	87.2	Fescue	3	Tons	162	28	335.5	162	36	102	0	-8
		2021	87.2	Fescue	3	Tons	162	28	335.5	162	36	102	0	-8
												Total	**0**	**-40**
H		2017	87	Soybeans	40	Bushel	160	27.6	331.4	160	33.6	57.6	0	-6
		2018	87	Corn	130	Bushel	159	27.4	329.3	189	58.5	39	-30	-31.1
		2019	87	Soybeans	40	Bushel	160	27.6	331.4	160	33.6	57.6	0	-6
		2020	87	Corn	130	Bushel	159	27.4	329.3	189	58.5	39	-30	-31.1
		2021	87	Soybeans	40	Bushel	160	27.6	331.4	160	33.6	57.6	0	-6
												Total	**-60**	**-80.2**
	H1	2017	29	Soybeans	40	Bushel	160	27.6	331.4	160	33.6	57.6	0	-6
		2018	29	Corn	130	Bushel	159	27.4	329.3	189	58.5	39	-30	-31.1
		2019	29	Soybeans	40	Bushel	160	27.6	331.4	160	33.6	57.6	0	-6
		2020	29	Corn	130	Bushel	159	27.4	329.3	189	58.5	39	-30	-31.1
		2021	29	Soybeans	40	Bushel	160	27.6	331.4	160	33.6	57.6	0	-6
												Total	**-60**	**-80.2**
	H2	2017	21	Soybeans	40	Bushel	160	27.6	331.4	160	33.6	57.6	0	-6
		2018	21	Corn	130	Bushel	159	27.4	329.3	189	58.5	39	-30	-31.1
		2019	21	Soybeans	40	Bushel	160	27.6	331.4	160	33.6	57.6	0	-6
		2020	21	Corn	130	Bushel	159	27.4	329.3	189	58.5	39	-30	-31.1
		2021	21	Soybeans	40	Bushel	160	27.6	331.4	160	33.6	57.6	0	-6
												Total	**-60**	**-80.2**
I		2017	61.7	Soybeans	40	Bushel	160	27.6	331.4	160	33.6	57.6	0	-6
		2018	61.7	Corn	130	Bushel	159	27.4	329.3	189	58.5	39	-30	-31.1
		2019	61.7	Soybeans	40	Bushel	160	27.6	331.4	160	33.6	57.6	0	-6
		2020	61.7	Corn	130	Bushel	159	27.4	329.3	189	58.5	39	-30	-31.1
		2021	61.7	Soybeans	40	Bushel	160	27.6	331.4	160	33.6	57.6	0	-6
												Total	**-60**	**-80.2**
J		2017	81.2	Corn	130	Bushel	159	27.4	329.3	189	58.5	39	-30	-31.1
		2018	81.2	Soybeans	40	Bushel	160	27.6	331.4	160	33.6	57.6	0	-6
		2019	81.2	Corn	130	Bushel	159	27.4	329.3	189	58.5	39	-30	-31.1
		2020	81.2	Soybeans	40	Bushel	160	27.6	331.4	160	33.6	57.6	0	-6
		2021	81.2	Corn	130	Bushel	159	27.4	329.3	189	58.5	39	-30	-31.1
												Total	**-90**	**-105.3**

Table 3. Field Soil analysis information, phosphorus rating, and planned nutrient management.

Farm	Field ID	Sub Field ID	OM	P1	K	CEC	MO Soil Test Rating	MO Phosphorus Index Rating	P or N management
Bellamy	A		3.07	28.89	602.44	7.43	H	L	N
	A1		3.60	8.00	423.00	10.80	VL		N
	B		3.28	30.80	1122.00	9.00	VH	M	N
		B1	2.45	36.25	1022.00	7.43	VH	M	N
		B2	2.55	7.50	317.00	7.70	L		N
		B3	2.65	14.00	544.00	7.50	M		N
	C		2.60	17.00	726.00	7.90	M		N
		C1	3.70	8.33	333.00	9.97	L		N
	D		3.70	19.00	523.00	7.55	M		N
	F		4.00	16.00	379.00	9.40	M		N
	G		4.62	25.60	560.00	11.20	H	M	N
	H		3.18	22.80	592.60	9.90	H	M	N
		H1	3.65	38.50	610.50	9.40	VH	M	N
		H2	3.10	26.50	522.00	8.45	H	M	N
	I		3.40	10.20	121.60	10.80	L		N
	J		4.27	16.00	215.00	11.80	M		N

VL = Very Low
L = Low
M = Medium
H = High
VH = Very High

Table 4. List of crops that could be planted in place of planned crop due to weather, cropping, or NMP constraints.

Crops	Yield bu./tons
Corn grain	130 bu.
Corn grain	150 bu.
Corn silage	12 tons
Corn silage	15 tons
Soybeans	40 bu.
Alfalfa	4 tons
Fescue	3 tons
Fescue	2 tons
Matua	4 tons
Bermuda	5 tons
Bermuda	3 tons
Orchardgrass	4 tons
Rye	3 tons
Sudangrass	5 tons
Wheat	60 bu.
Cool season grass	3 tons
Warm season grass	3 tons

Table 5. Planned Transfers, Imports, or Exports.

Month	Year	Manure Source Storage ID or Operation	Target Import Amount	Target Export Amount	Target Transfer Amount	Units	Receiving Storage ID or Operation	Manure Type
	2017		None	None	None			
	2018		None	None	None			
	2019		None	None	None			
	2020		None	None	None			
	2021		None	None	None			

Table 6. Summary of projected manure generation, imports, exports, transfers and end of year totals.

Manure Source ID	Plan Period	Estimated Total Gals. Generated	Total Gals. Imported	Total Gals. Transferred In	Total Gals. Applied	Total Gals. Exported	Total Gals. Transferred Out	Total Gals. Left At Period End
Arrowhead	Jan. 2017-Dec. 2017	12,703,825	None	None		None	None	
Wolfpack	Jan. 2017-Dec. 2017	13,062,985	None	None		None	None	
Hawkeye	Jan. 2017-Dec. 2017	22,489,110	None	None		None	None	

Attachment B

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Missouri Concentrated Animal Feeding Operation Nutrient Management Technical Standard

March 4, 2009

Division of Environmental Quality

Water Protection Program

I Introduction

A. Authority and Purpose

Missouri statutory requirements for Concentrated Animal Feeding Operations (CAFOs), located within 640.700 to 640.758 RSMo., grants the Missouri Department of Natural Resources and the Missouri Clean Water Commission authority and jurisdiction to promulgate rules regulating the establishment, permitting, design, construction, operation and management of Class I CAFOs. The department's CAFO regulations require the development and implementation of a field specific Nutrient Management Plan (NMP), meeting the criteria prescribed in 10 CSR 20-6.300(5)(A)-(I), at all Class I CAFOs.

In accordance with 10 CSR 20-6.300(3)(G)3., this Nutrient Management Technical Standard (NMTS) has been developed to provide a framework for the protocol(s) and method(s) that CAFOs should utilize when determining the form, source, amount, timing, and method of application on individual land application fields. Furthermore, this NMTS represents the department's best professional judgment regarding how to satisfy and/or implement the specific NMP criteria G, H and I within 10 CSR 20-6.300(5)(A). This framework seeks to achieve realistic production goals while ensuring appropriate agricultural utilization of the nutrients in the manure, litter, or process wastewater while also minimizing movement of nitrogen, phosphorus, and other potential water contaminants into surface and/or ground water.

This NMTS will be used by the department and partnering federal agencies as a guide for determining when precipitation-related discharges from CAFO land application fields are exempted as "Agriculture Stormwater Discharge" as allowed within 10 CSR 20-6.300(2)(B)7. CAFOs will qualify for the Agriculture Stormwater Discharge exemption when they can demonstrate compliance with this NMTS at the time of a precipitation-related discharge from land application areas.

B. Applicability

In Missouri, all confinement operations with 1,000 animal units or greater are Class I CAFOs and must follow the requirements set forth in this NMTS in accordance with the regulations found in 10 CSR 20-6.300. New and expanding CAFOs that apply for a construction permit after February 26, 2009 must have a nutrient management plan that complies with this NMTS developed prior to issuance of an operating permit. For purposes of this paragraph, an expanding CAFO is a CAFO that is adding a manure storage structure or confinement barn and expanding the total animal capacity of the operation. All other CAFOs must develop nutrient management plans that meet this NMTS prior to renewal of their permit.

NOTE: An operation may choose to use alternative protocols other than those established in this standard, however, it must be able to demonstrate that such alternative protocols provide both a reliable and a technically valid basis for achieving the nutrient management objectives.

II. Definitions

Manure - For the purposes of this document the term "manure" will refer to any form of litter, manure, wastewater, animal mortality byproduct or other organic residuals collected from the production areas of animal feeding operations.

Missouri Phosphorus (P) Index – The Missouri P-index is designed to help identify fields that have a high probability of phosphorus loss from the combined effects of erosion and high soil test phosphorus. The Missouri P-index integrates field information including current soil test phosphorus level, tillage type, anticipated land cover, soil hydrologic category, distance of the field from a receiving body of water along with an estimate of soil loss derived from the NRCS erosion prediction software, RUSLE2 (Revised Universal Soil Loss Equation Version 2). The Missouri P-index may be utilized when the soil test phosphorus level is "High" or "Very High" and must be conducted in accordance with the University of Missouri (MU) Guide G9184. The Missouri P-index is currently distributed as a Microsoft Office Excel spreadsheet available on the Web at *www.nmplanner.missouri.edu*

Missouri Soil Test Phosphorus Rating - The soil test phosphorus rating is found on a Missouri Soil Test laboratory report and indicates the relative level of plant-available phosphorus in the soil for a particular field. The soil test rating will indicate the probability that an application of phosphate on a particular field is likely to result in an increase in crop yield. A soil test phosphorus rating must be obtained from a lab accredited by the Missouri Soil Testing Association (list of accredited labs can be found at *http://soilplantlab.missouri.edu/soil/mstacertified.htm*) using procedures recommended by the University of Missouri Soil Testing Laboratory.

Surface Application – Land application method by which manure is broadcast or sprayed via mechanical equipment onto the ground surface. Surface application does not include manure that is injected into the soil profile.

Vegetated Buffer - A permanent strip of dense perennial vegetation established parallel to the contours of and perpendicular to the dominant slope of the field for the purposes of effectively slowing water runoff, enhancing water infiltration, and minimizing the risk of any potential nutrients or pollutants from leaving the field and reaching surface waters.

III. Nutrient Management Requirements:

Objective A. Land application fields in the nutrient management plan shall use the following protocols to determine the field-specific placement, timing and rate of manure application so that (a) they do not exceed the annual plant available nitrogen need of the crop, and (b) they are in accordance with the results of a field-specific phosphorus assessment.

A1. Soil and manure testing and fertilizer recommendation protocols.

(1) Soil sampling protocols to determine soil test phosphorus, cation exchange capacity (CEC) and soil organic matter should be based on the following criteria:

a. MU Guides G9215 (for pastures) and G9217 (for row and hay crops);
b. The average field area represented by a soil sample should be approximately 20 acres or less;
c. Each soil sample should be comprised of a well-mixed subsample derived from at least 15 representative cores from the sampled field area; more cores are recommended on pastures or where phosphorus has been band applied;
d. As an alternative to the conventional soil sampling approach in A1(1)c., operations may elect to use a geo-referenced grid soil sampling method instead. Grid size should be less than three acres and at least 10 cores should be obtained from within 15 feet of the central grid point;
e. Soil sampling depth should be six to eight inches;
f. Fields should be re-sampled before manure application when:
   i. The soil test is greater than five years old; or
   ii. Phosphate surplus (actual applied phosphate minus actual removed phosphate) for the field has exceeded 500 lbs/acre since the last soil test;
g. Soil samples should be analyzed at soil testing laboratories accredited by the Missouri Soil Testing Association (see a current list of accredited labs at *http://soilplantlab.missouri.edu/soil/mstacertified.htm*) using procedures recommended by the University of Missouri Soil Testing Laboratory.

Note: Soil sample results that meet all of the above criteria shall be considered "current soil test results".

(2) Fertilizer recommendations should be based on the following:

a. Justified field-specific yield goals. Yield goals should be based on crop yield records from multiple years for the field. Good judgment should be used to adjust yield goals to counteract unusually low or high yields. When a field's yield history is not available another referenced source may be used to estimate yield goal;
b. Current soil test results;
c. University of Missouri fertilizer recommendations should be utilized. University of Missouri recommendations can be obtained on-line using current soil sample results at *http://soilplantlab.missouri.edu/soil/scripts/manualentry.aspx*;
d. When necessary, nutrient removal rates should be based on MU Guide G9120 or alternatively can be based on measured plant analysis records from the farm. If nutrient removal rates are based on

plant analysis records, document how the crop is sampled and how plant analysis records are used to estimate nutrient removal for a crop;

e. Published nutrient removal estimates from other land grant universities in adjoining states are also acceptable.

f. Field-Level Fertilizer Applications – Fertilizer recommendations used to develop nutrient budgets shall be based on 20-acre field areas. When fertilizer recommendations are similar (within 10% or 10 pounds per acre, whichever is greater) for adjoining 20-acre field areas, they may be combined for purposes of fertilizer application and nutrient budgeting. Field areas of up to 80 acres may be combined using this guidance. Larger field areas may be combined if justification for this decision in documented in the nutrient management plan.

(3) The following protocols describe how and when sources of manure should be sampled and how manure testing results will be used to estimate nutrient concentration in manure.

a. CAFOs are required to sample each unique source of land-applied manure at least once per year;

b. All manure samples should be tested for total nitrogen, ammonium nitrogen, total phosphorus, and total potassium. When lab results are reported on a dry basis manure samples should also be tested for dry matter or total solids (moisture content). Nitrate nitrogen is typically not present in manure samples but should be tested for if an innovative manure handling system is likely to create aerobic conditions where nitrate will persist in manure;

c. Samples should be collected and handled following the guidelines outlined in MU Guide Publications EQ215 and G9340 (for poultry litter);

d. When possible, sample and analyze manure just prior to the time for land application of manure so current results are available for calculating manure application rates.

A2. All manure applications on land application area(s) shall meet all three of the following criteria:

(1) Annual nitrogen application from all sources should not exceed the recommended nitrogen application rate for non-legume crops and the nitrogen removal capacity of legume crops by more than 10 pounds per acre or 10 percent, whichever is greater.

a. The recommended nitrogen application rate for non-legume crops should be based on University of Missouri nitrogen fertilizer recommendations derived from a current soil test result for the field and a realistic yield goal. The nitrogen fertilizer recommendation must be adjusted using nitrogen credits for a preceding legume crop, residual fertilizer nitrogen value of manure applications from the previous year and, when appropriate, excessive residual inorganic nitrogen in the soil profile as quantified by the preplant soil nitrogen test. If University of Missouri does not provide a specific nitrogen recommendation for a non-legume crop, recommendations from other land grant universities should be used. Information on calculating residual fertilizer value of manure applications is available in MU Guide Publication G9186. Information on the appropriate use of the preplant soil nitrogen test is in MU Guide Publication G9177;

b. The nitrogen removal capacity of legume crops should be based on the estimated nitrogen content of the harvested crop as defined in MU Guide G9120 and a realistic yield goal. The estimated nitrogen content of the crop must be adjusted using nitrogen credits for residual fertilizer nitrogen value of manure applications from the previous year and, when appropriate, excessive residual

inorganic nitrogen in the soil profile as quantified by the preplant soil nitrogen test. If MU Guide G9120 does not provide an estimate of the nitrogen content of legume crop, recommendations from other land grant universities should be used. Information on calculating residual fertilizer value of manure applications is available in MU Guide Publication G9186. Information on the appropriate use of the preplant soil nitrogen test is in MU Guide Publication G9177;

c. The nitrogen contribution of manure should be based on a calculation of plant-available nitrogen (PAN). Plant-available nitrogen is calculated by adjusting the inorganic and organic nitrogen concentrations using procedures outlined in MU Guide Publication G9186, and is available on the Web at *http://nmplanner.missouri.edu/tools/pan_calculator.asp*

(2) Manure application rates must comply with the results of a field-specific phosphorus loss assessment.

a. Manure application rates can be based solely on nitrogen criteria (nitrogen-based management) if:
   i. The Missouri soil test phosphorus rating from a current soil test is very low, low, medium or optimum; or
   ii. The Missouri P-Index rating is low or medium.

b. Manure application rates cannot exceed the annual planned phosphate removal capacity of the crop by more than 10 pounds per acre or 10 percent, whichever is greater (phosphorus-based management) if:
   i. The Missouri P-index rating is high; or
   ii. The Missouri soil test phosphorus rating from a current soil test is high and the field has not been assessed using the Missouri P-index.

c. Multi-year phosphorus application – When phosphorus-based management is necessary, manure applications can exceed the annual planned phosphate removal capacity of the crop. However, application rates must comply with the following conditions:
   i. Rates shall not exceed the recommended nitrogen application rate during the year of application, or estimated nitrogen removal capacity in the harvested crop during the year of application when there is no recommended nitrogen application, and
   ii. the amount of phosphorus banked in the soil will not exceed four years of crop removal for the planned rotation using the criteria found in section A1.(2) above, and
   iii. the actual application rate shall not exceed 10 pounds per acre or 10 percent of the planned multi-year phosphorus application rate, whichever is greater.

d. No manure will be applied on a land application field if:
   i. The Missouri P-index rating for the field is very high; or
   ii. the University of Missouri soil test phosphorus rating from a current soil test is very high or excess and the field has not been assessed using the Missouri P-index.

The Missouri P Index is described in MU Guide Publication G9184 and is available as a Microsoft Office Excel spreadsheet at *http://nmplanner.missouri.edu/tools/pindex.asp*

(3) The timing, soil conditions and placement of all manure applications shall meet the following criteria:

a. Manure applications shall comply with all manure application setbacks defined in Table A1;

b. No surface application of manure is allowed if precipitation, likely to create runoff, is forecasted to occur within 24 hours of the planned application;

c. Manure will not be applied on land with a slope greater than 20 percent;
d. Manure will not be surface applied to frozen, snow-covered or saturated soils;
e. Manure applications must be monitored such that target application rates are met and any malfunction in the operation of the equipment is detected and corrected before any over-application of manure occurs on the land-application site;
   i. Wastewater and liquid manure applications must be conducted so as to prevent surface runoff of wastewater and liquid manure beyond the edge of the field during land application. Steps to insure no runoff of manure during land application include:
      1. Adjusting surface application rates to meet infiltration rate and water holding capacity of the soil;
      2. Irrigation systems must have automatic shut-off devices in case of pressure loss and/or an operator on-site at all times during operation to monitor application equipment.
   ii. All land application equipment should be calibrated at least annually;
   iii. The perimeter of all fields receiving manure should be checked regularly during operation of land application equipment to confirm manure is not running off the field or entering waters of the state.

Table A1. Manure application setback distances. For streams, lakes and wetlands the setback distance is measured from the defined edge of the water feature.

Setback Feature	Application Conditions	Setback Distance (feet)
Public or private drinking water well or other wells including un-plugged abandon wells	All applications methods	300
Public or private drinking water lake or impoundment	All applications methods	300
Public or private drinking water intake structure	All applications methods	300
Classified waters of the state not used as a water supply as defined in 10 CSR 20-7.031(1)F	Permanently vegetated buffer[1]	35
	No or insufficient vegetated buffer	100
Other public and privately owned lakes and impoundments not used as a water supply including impoundments with no outlet	Permanently vegetated buffer[1]	35
	Up-gradient, no or insufficient vegetated buffer	100
	Down-gradient, no or insufficient vegetated buffer	35
Other perennial streams, other intermittent streams, canals, drainage ditches and wetlands	Permanently vegetated buffer[1]	35
	Up-gradient, no or insufficient vegetated buffer	100
	Down-gradient, no or insufficient vegetated buffer	35
Tile line inlet (if left un-plugged during manure application)	Up-gradient, permanently vegetated buffer[1]	35
	Up-gradient, no or insufficient vegetated buffer	100
	Down-gradient	0
Losing stream	All applications methods	300
Cave entrance	All applications methods	300
Spring	All applications methods	300
Active sinkhole	All applications methods	300
Non-owned occupied residence	Spray irrigation only	150
Public use area including non-owned businesses	Spray irrigation only	150
Public road	All applications methods	50
Property boundary	All applications methods	50

[1] See definition of vegetative buffer in the definitions section of this document.

Objective B. Operations shall maintain the following records to document implementation of appropriate nutrient management plan protocols.

B1. Annual nutrient management monitoring and record keeping requirements.

(1) **Manure Storage Operational Monitoring**– Record the following information for each manure storage structure:

a. Weekly records of the depth of manure and process wastewater in liquid storage structure(s).
b. The date, time, and estimated volume (gallons) of any overflow(s) from the storage structure.
c. Record the following information for every manure application event from a manure storage structure:
   i. Date of manure application
   ii. Source of manure (indentify the storage structure)
   iii. Weather and soil condition at time of application
   iv. Field ID receiving manure
   v. Rate of manure application per acre (tons/acre, gallons/acre, or acre-inch).
   vi. Plant Available Nitrogen (PAN) and phosphate in manure applied to field (pounds/acre).
   vii. Method of application (injection, surface applied, etc)
   viii. Acres receiving manure
   ix. Total tonnage or volume of manure applied (tons or gallons)

d. For all manure transfers (sales or giveaway) off the farm record the following:
   i. Date of transfer
   ii. Name and address of recipient
   iii. Storage source of manure transferred
   iv. Amount of manure transferred (tons or gallons)

(2) **Manure Nutrient Monitoring** - For each unique source of manure.

a. Date(s) for manure sampling
b. For each sampling date report total nitrogen, ammonium nitrogen, total phosphate (P_2O_5), total potash (K_2O); report percent moisture or dry matter and nitrate nitrogen when appropriate and relevant
c. Report or identify the actual manure nutrient concentration used for calculating manure application rates. If different manure sampling results were used for different parts of the year then provide the range of dates when each sample result was used. If estimates are used, provide information as needed to justify the use of estimate(s) of manure nutrient concentrations

(3) **Field Soil Test Monitoring** - For each individual field in the land application area that receives manure record the following:

a. Year of the last soil test
b. Current soil test results reporting at a minimum soil test phosphorus, cation exchange capacity (CEC) and soil organic matter (%)

c. Fertilizer nitrogen and phosphate recommendations (pounds/acre)

(4) **Land Application Operational Monitoring** - For each individual field in the land application area that receives manure record the following:

a. Field ID receiving manure
b. Total acres in each field receiving manure
c. Planned crop(s) (corn, soybeans, fescue, pasture,...etc)
d. Projected yield
e. Actual yield
f. For each field complete an annual nitrogen inventory including:
   i. Total Planned Fertilizer Nitrogen Requirement for the crop in pounds/acre (fertilizer nitrogen for non-legumes or the nitrogen removal capacity for legumes as described in section A2 (1) of this standard)
   ii. Plant Available Nitrogen (PAN) from manure applied to field (lbs N/acre)
   iii. Nitrogen applied from other sources (lbs N/acre)
   iv. Total applied plant available nitrogen from all sources (lbs N/acre)
   v. Difference between total applied plant available nitrogen from all sources and planned crop nitrogen requirement (lbs N/acre)

g) For each field complete an annual phosphate inventory including:
   i. The soil test phosphorus rating for the field
   ii. The Missouri Phosphorus Index (P-index) rating, if applicable
   iii. Actual phosphate applied as manure (lbs phosphate/acre)
   iv. Actual phosphate applied from other sources (lbs phosphate/acre)
   v. Planned phosphate removal from crops harvested this year (lbs phosphate /acre)
   vi. Actual phosphate removal from crops harvested this year (lbs phosphate /acre)
   vii. Phosphate balance for the year (actual applied minus planned removal; lbs phosphate /acre)
   viii. On fields where "multi-year phosphorus application" is utilized, report the cumulative phosphate balance for the multi-year planning period. (the cumulative balance equals the actual phosphate applied minus planned phosphate removed in lbs phosphate /acre)

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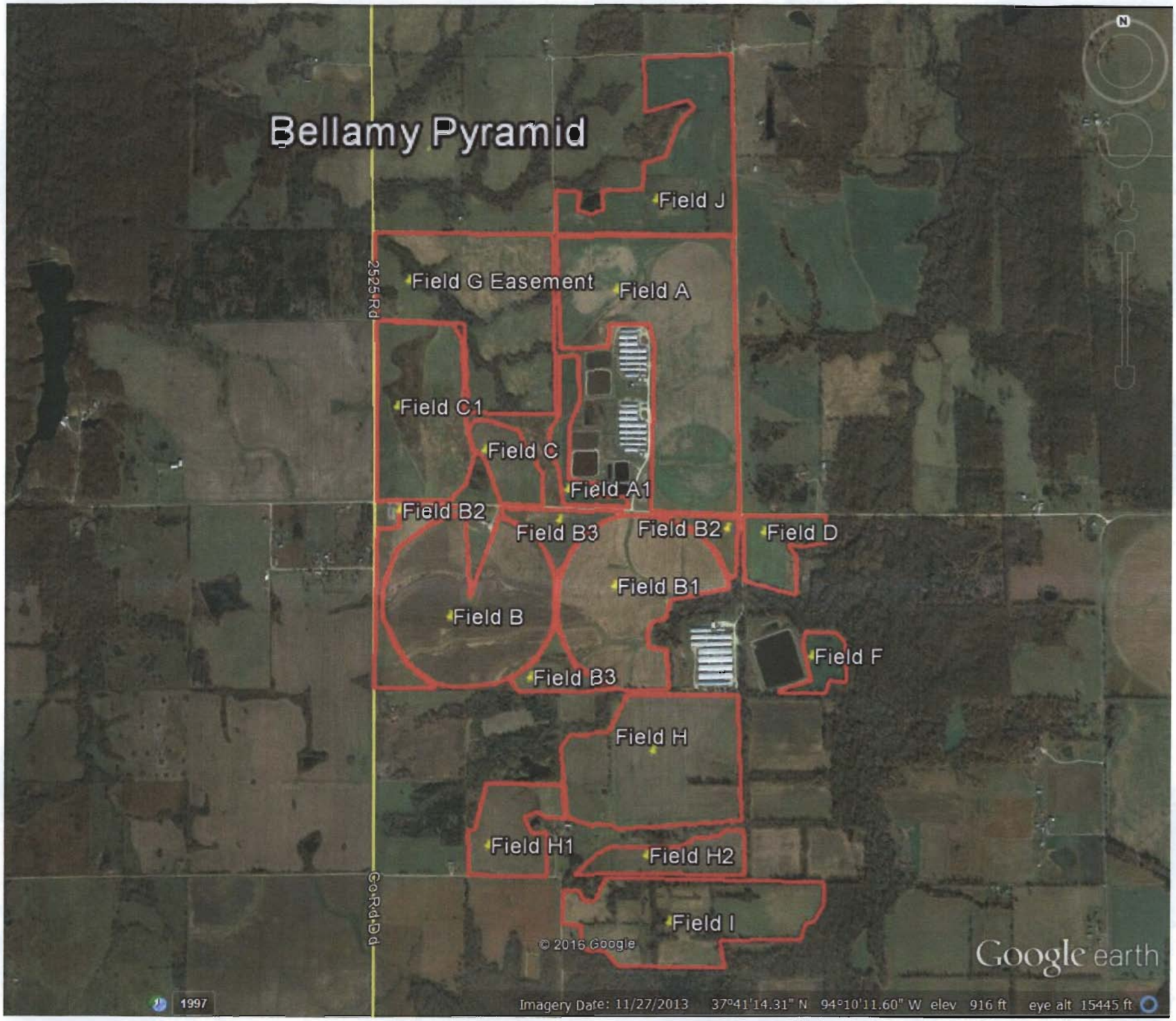
Attachment C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Field G Easement
Field A
2525 Rd
Field C1
Field C
Field A1
Field B2
Field B3
Field B2
Field D
Field B1
Field B
Field F
Field B3
Field H
Field H1
Field H2
Field I
Go Rd D d
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Google earth
1997
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