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-0117421
Owner:	Murphy-Brown of Missouri LLC d/b/a Smithfield Hog Production
Address:	17999 U.S. Highway 65, Princeton, MO 64673
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Smithfield Hog Production, Whitetail Farm
Address:	14392 U.S. Highway 129, Unionville, MO 63565
Legal Description:	See pages 2 - 4
Latitude/Longitude:	See pages 2 - 4
Receiving Stream:	See pages 2 - 4
First Classified Stream and ID:	See pages 2 - 4
USGS Basin & Sub-watershed No:	See pages 2 - 4

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 - #008, #010, #013, - Concentrated Animal Feeding Operation SIC #0213
No-discharge of process wastewater from production areas or land application areas.
Nine anaerobic lagoons and an Advanced Nitrification De-nitrification system. Wastewater is land applied. No-discharge domestic wastewater lagoon, wastewater is land applied.
Design flow is 53,046,780 gallons per year. (0.145 mgd)
Design number of animals is 79,488 swine over 55 pounds (31,795 animal units).

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.

July 1, 2016
Effective Date

Sara Parker Pauley, Director, Department of Natural Resources

March 31, 2021
Expiration Date

John Madras, Director, Water Protection Program

FACILITY DESCRIPTION (continued)

This swine finishing facility consists of nine complexes designated as Farms #1-8, and #10. Each complex is consists of eight confinement buildings with shallow concrete pits, an anaerobic lagoon and a secondary containment. Buildings utilize a scraper system to transfer manure to the lagoon. Domestic wastes from production office are flushed to a domestic waste lagoon.

Advanced Nitrification/Denitrification (A.N.D.) Waste Water Decentralized Treatment System: This system is designed to reduce total nitrogen before land application.

Permitted Feature #001 - Farm #1 eight confinement buildings with an anaerobic lagoon and secondary containment.
Legal Description: NE ¼, NE ¼, Sec. 17, T66N, R18W, Putnam County
UTM Coordinate: X=505103; Y=4486179
Receiving Water: Tributary to Willow Branch
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No: (10280201-0502)
Design Number of Animals: 8,832 Swine over 55 pounds
Design Waste Volume: 6,162,660 gallons per year
Design Lagoon Storage 365 days
Lagoon Upper Operating Level: one foot below overflow level
Lagoon Lower Operating Level: 5.0 feet below overflow level
a) Aeration Basin – Artificial liner
b) Settling Basin – Artificial liner

Permitted Feature #002 - Farm #2 eight confinement buildings with an anaerobic lagoon and secondary containment.
Legal Description: SW ¼, NE ¼, Sec. 17, T66N, R18W, Putnam County
UTM Coordinate: X=504583; Y=4485905
Receiving Water: Tributary to North Blackbird Creek
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No: (10280201-0502)
Design Number of Animals: 8,832 Swine over 55 pounds
Design Waste Volume: 6,309,260 gallons per year
Design Lagoon Storage: 365 days
Lagoon Upper Operating Level: one foot below overflow level
Lagoon Lower Operating Level: 4.9 feet below overflow level
a) Irrigation storage basin
   Upper Operating Level: 2.0 feet below top of berm
   Lower Operating Level: 6.0 feet below top of berm
b) Equalization Basin – Artificial liner
   Upper Operating Level: 1.0 foot below overflow level
   Lower Operating Level: 10.0 feet below overflow level
   Storage Capacity: 460,080 gallons (lower operating level to overflow level)

Permitted Feature #003 - Farm #3 eight confinement buildings with an anaerobic lagoon and secondary containment.
Legal Description: NE ¼, SE ¼, Sec. 17, T66N, R18W, Putnam County
UTM Coordinate: X=504911; Y=4485772
Receiving Water: Tributary to Willow Branch
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No: (10280201-0502)
Design Number of Animals: 8,832 Swine over 55 pounds
Design Waste Volume: 5,267,680 gallons per year
Design Storage: 365 days
Upper Operating Level: one foot below overflow level
Lower Operating Level: 4.8 feet below overflow level

Permitted Feature #004 - Farm #4 eight confinement buildings with an anaerobic lagoon and secondary containment.
Legal Description: SE ¼, SE ¼, Sec. 17, T66N, R18W, Putnam County
UTM Coordinate: X=505003; Y=4485343
Receiving Water: Tributary to Willow Branch
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No: (10280201-0502)
Design Number of Animals: 8,832 Swine over 55 pounds
Design Waste Volume: 6,187,480 gallons per year
Design Lagoon Storage: 365 days
Lagoon Upper Operating Level: one foot below overflow level
Lagoon Lower Operating Level: 4.8 feet below overflow level
a) Complete Mix Aeration basin – Artificial liner
b) Anoxic Basin - Artificial liner
c) Settling Basin – Artificial liner

Permitted Feature #005 - Farm #5 eight confinement buildings with an anaerobic lagoon and secondary containment.
Legal Description: NW ¼, NW ¼, Sec. 21, T66N, R18W, Putnam County
UTM Coordinate: X=505387; Y=4484641
Receiving Water: Tributary to North Blackbird Creek
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No: (10280201-0502)
Design Number of Animals: 8,832 Swine over 55 pounds
Design Waste Volume: 5,273,155 gallons per year
Design Storage: 365 days
Upper Operating Level: one foot below overflow level
Lower Operating Level: 4.8 feet below overflow level

Permitted Feature #006 - Farm #6 eight confinement buildings with an anaerobic lagoon and secondary containment.
Legal Description: S ½, NW ¼, Sec. 16, T66N, R18W, Putnam County
UTM Coordinate: X=505590; Y=4486029
Receiving Water: Tributary to Willow Branch
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No: (10280201-0502)
Design Number of Animals: 8,832 Swine over 55 pounds
Design Waste Volume: 6,168,135 gallons per year
Design Lagoon Storage: 365 days
Lagoon Upper Operating Level: one foot below overflow level
Lagoon Lower Operating Level: 4.8 feet below overflow level
a) Aeration basin – Artificial liner
b) Settling basin – Artificial liner

Permitted Feature #007 - Farm #7 eight confinement buildings with an anaerobic lagoon and secondary containment.
Legal Description: NW ¼, SE ¼, Sec. 16, T66N, R18W, Putnam County
UTM Coordinate: X=506181; Y=4485619
Receiving Water: Tributary to Willow Branch
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No: (10280201-0502)
Design Number of Animals: 8,832 Swine over 55 pounds
Design Waste Volume: 6,210,840 gallons per year
Design Lagoon Storage: 365 days
Lagoon Upper Operating Level: one foot below overflow level
Lagoon Lower Operating Level: 4.8 feet below overflow level
a) Earthen basin for bio-solids storage
Upper Operating Level: 1.0 feet below top of berm
Lower Operating Level: 6.0 feet below top of berm

Permitted Feature #008 - Farm #8 eight confinement buildings with an anaerobic lagoon and secondary containment.
Legal Description: SW ¼, SE ¼, Sec. 16, T66N, R18W, Putnam County
UTM Coordinate: X=506372; Y=4485175
Receiving Water: Tributary to Willow Branch
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No: (10280201-0502)
Design Number of Animals: 8,832 Swine over 55 pounds
Design Waste Volume: 5,289,580 gallons per year
Design Storage: 365 days
Upper Operating Level: one foot below overflow level
Lower Operating Level: 4.8 feet below overflow level

Permitted Feature #010 – Farm #10 eight confinement buildings, anaerobic lagoon with Nitrification/De-nitrification system and secondary containment.
Legal Description: SW ¼, NW ¼, Sec. 9, T66N, R18W, Putnam County
UTM Coordinate: X=505375, Y=4487623
Receiving Water: Tributary to Little Shoal Creek
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No: (10280201-0302)
Design Number of Animals: 8,832 Swine over 55 pounds
Design Waste Volume: 6,177,990 gallons per year
Design Lagoon Storage: 365 days
Lagoon Upper Operating Level: one foot below overflow level
Lagoon Lower Operating Level: 4.8 feet below overflow level
a) Aeration basin – Artificial liner
b) Settling basin – Artificial liner
c) North nutrient reduction basin
Upper Operating Level: 2.0 feet below top of berm
Lower Operating Level: 7.0 feet below top of berm

Permitted Feature #013 - No-discharge domestic wastewater lagoon. Wastewater is land applied. SIC Code # 4952
Legal description is NW ¼, NW ¼, Sec. 16, T66N, R18W, Putnam County
UTM Coordinate: X=505588, Y=4486426
Receiving Water: Tributary to North Blackbird Creek
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No: (10280201-0502)

Outfall #015 – Deleted

Outfall #016 – Deleted

Outfall #017 – Deleted

Outfall #018 – Deleted

Outfall #019 – Deleted

Outfall #021 – Deleted

Outfall #022 – Deleted

Outfall #023 – Deleted

Outfall #SM1 – Deleted

Outfall #SM2 – Deleted

A. STANDARD CONDITIONS

In addition to other conditions stated herein, this permit is subject to the attached Part I and Part III STANDARD CONDITIONS dated August 1, 2014 and March 1, 2015 respectively, 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:

(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. 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.
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. <u>CAFO Land Application Areas</u>

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.

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.

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. Quarterly inspections, prior to use, of equipment used for land application of manure or process wastewater.
f. 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 maintained on-site by the CAFO operator for a period of five (5) years from the date they are created and 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.
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 Northeast 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, whether required or not, are subject to the requirements of this section.

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 Nutrient Management Plan

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

Field Name	Legal Description	Spreadable Acres	P Loss Risk	N or P Based Application	Crop #1		Crop #2		Crop #3		Crop #4		Crop #5	
					Crop	Yield Goal	Crop	Yield Goal	Crop	Yield Goal	Crop	Yield Goal	Crop	Yield Goal
1	Sec. 3 Twn. 66N Rng. 18W	51.51	L	N	Soybeans	50 Bu./a	Corn	170 Bu./a	Oats	70 Bu./a	Alfalfa	4 T./a	Wheat	70 Bu./a
2	Sec. 3 Twn. 66N Rng. 18W	25.80	M	N	Soybeans	50 Bu./a	Corn	170 Bu./a	Oats	70 Bu./a	Alfalfa	4 T./a	Wheat	70 Bu./a
4	Sec. 2 Twn. 66N Rng. 18W	33.99	VL	N	Mixed Grasses	4 T./a	Brome	4 T./a	Fescue	4 T./a	Orchard Grass	4 T./a	Clover	4 T./a
5	Sec. 10, 11 Twn. 66N Rng. 18W	114.89	VL	N	Soybeans	50 Bu./a	Corn	170 Bu./a	Oats	70 Bu./a	Alfalfa	4 T./a	Wheat	70 Bu./a
6	Sec. 10 Twn. 66N Rng. 18W	21.00	L	N	Soybeans	50 Bu./a	Corn	170 Bu./a	Oats	70 Bu./a	Alfalfa	4 T./a	Wheat	70 Bu./a

TERMS OF THE NUTRIENT MANAGEMENT PLAN

Field Name	Legal Description	Spreadable Acres	P Loss Risk	N or P Based Application	Crop #1		Crop #2		Crop #3		Crop #4		Crop #5	
					Crop	Yield Goal	Crop	Yield Goal	Crop	Yield Goal	Crop	Yield Goal	Crop	Yield Goal
8	Sec. 2, 3, 10, 11 Twn. 66N Rng. 18W	133.00	L	N	Soybeans	50 Bu./a	Corn	170 Bu./a	Oats	70 Bu./a	Alfalfa	4 T./a	Wheat	70 Bu./a
13	Sec. 10 Twn. 66N Rng. 18W	39.25l	VL	N	Soybeans	50 Bu./a	Corn	170 Bu./a	Oats	70 Bu./a	Alfalfa	4 T./a	Wheat	70 Bu./a
16	Sec. 3 Twn. 66N Rng. 18W	37.02	VL	N	Soybeans	50 Bu./a	Corn	170 Bu./a	Oats	70 Bu./a	Alfalfa	4 T./a	Wheat	70 Bu./a
18	Sec. 3 Twn. 66N Rng. 18W	14.27	VL	N	Mixed Grasses	4 T./a	Brome	4 T./a	Fescue	4 T./a	Orchard Grass	4 T./a	Clover	4 T./a
19B	Sec. 4 Twn. 66N Rng. 18W	31.36	VL	N	Mixed Grasses	4 T./a	Brome	4 T./a	Fescue	4 T./a	Orchard Grass	4 T./a	Clover	4 T./a
20	Sec. 8, 9 Twn. 66N Rng. 18W	244.69	L	N	Soybeans	50 Bu./a	Corn	170 Bu./a	Oats	70 Bu./a	Alfalfa	4 T./a	Wheat	70 Bu./a
24	Sec. 9 Twn. 66N Rng. 18W	152.18	L	N	Soybeans	50 Bu./a	Corn	170 Bu./a	Oats	70 Bu./a	Alfalfa	4 T./a	Wheat	70 Bu./a
29	Sec. 9 Twn. 66N Rng. 18W	22.60	VL	N	Soybeans	50 Bu./a	Corn	170 Bu./a	Oats	70 Bu./a	Alfalfa	4 T./a	Wheat	70 Bu./a
30	Sec. 16 Twn. 66N Rng. 18W	51.60	VL	N	Mixed Grasses	4 T./a	Brome	4 T./a	Fescue	4 T./a	Orchard Grass	4 T./a	Clover	4 T./a
31	Sec. 16 Twn. 66N Rng. 18W	99.14	L	N	Mixed Grasses	4 T./a	Brome	4 T./a	Fescue	4 T./a	Orchard Grass	4 T./a	Clover	4 T./a
32	Sec. 16 Twn. 66N Rng. 18W	33.42	VL	N	Mixed Grasses	4 T./a	Brome	4 T./a	Fescue	4 T./a	Orchard Grass	4 T./a	Clover	4 T./a
33	Sec. 10 Twn. 66N Rng. 18W	27.49	VL	N	Mixed Grasses	4 T./a	Brome	4 T./a	Fescue	4 T./a	Orchard Grass	4 T./a	Clover	4 T./a
34	Sec. 17 Twn. 66N Rng. 18W	62.34	VL	N	Mixed Grasses	4 T./a	Brome	4 T./a	Fescue	4 T./a	Orchard Grass	4 T./a	Clover	4 T./a
35	Sec. 17 Twn. 66N Rng. 18W	69.75	VL	N	Mixed Grasses	4 T./a	Brome	4 T./a	Fescue	4 T./a	Orchard Grass	4 T./a	Clover	4 T./a
36	Sec. 16 Twn. 66N Rng. 18W	19.96	VL	N	Mixed Grasses	4 T./a	Brome	4 T./a	Fescue	4 T./a	Orchard Grass	4 T./a	Clover	4 T./a
37	Sec. 16 Twn. 66N Rng. 18W	19.40	VL	N	Mixed Grasses	4 T./a	Brome	4 T./a	Fescue	4 T./a	Orchard Grass	4 T./a	Clover	4 T./a
38	Sec. 16 Twn. 66N Rng. 18W	75.41	VL	N	Mixed Grasses	4 T./a	Brome	4 T./a	Fescue	4 T./a	Orchard Grass	4 T./a	Clover	4 T./a
39	Sec. 16 Twn. 66N Rng. 18W	17.60	VL	N	Mixed Grasses	4 T./a	Brome	4 T./a	Fescue	4 T./a	Orchard Grass	4 T./a	Clover	4 T./a
40	Sec. 21 Twn. 66N Rng. 18W	15.83	VL	N	Mixed Grasses	4 T./a	Brome	4 T./a	Fescue	4 T./a	Orchard Grass	4 T./a	Clover	4 T./a
41	Sec. 20 Twn. 66N Rng. 18W	42.41	VL	N	Mixed Grasses	4 T./a	Brome	4 T./a	Fescue	4 T./a	Orchard Grass	4 T./a	Clover	4 T./a
42	Sec. 2, 11 Twn. 66N Rng. 18W	43.08	VL	N	Mixed Grasses	4 T./a	Brome	4 T./a	Fescue	4 T./a	Orchard Grass	4 T./a	Clover	4 T./a
43	Sec. 9 Twn. 66N Rng. 18W	18.20	L	N	Soybeans	50 Bu./a	Corn	170 Bu./a	Oats	70 Bu./a	Alfalfa	4 T./a	Wheat	70 Bu./a
44	Sec. 10 Twn. 66N Rng. 18W	26.65	L	N	Soybeans	50 Bu./a	Corn	170 Bu./a	Oats	70 Bu./a	Alfalfa	4 T./a	Wheat	70 Bu./a
45	Sec. 8, 9 Twn. 66N Rng. 18W	59.10	VL	N	Soybeans	50 Bu./a	Corn	170 Bu./a	Oats	70 Bu./a	Alfalfa	4 T./a	Wheat	70 Bu./a
46	Sec. 9 Twn. 66N Rng. 18W	15.58	VL	N	Mixed Grasses	4 T./a	Brome	4 T./a	Fescue	4 T./a	Orchard Grass	4 T./a	Clover	4 T./a

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FACT SHEET
FOR THE PURPOSE OF RENEWAL
OF
MO-0117421
SMITHFIELD HOG PRODUCTION, WHITETAIL FARM

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:
This swine finishing facility consists of nine complexes designated as Farms #1-8, and #10. Each complex is consists of eight confinement buildings with shallow concrete pits, an anaerobic lagoon and a secondary containment. Buildings utilize a scraper system to transfer manure to the lagoon. Domestic wastes from production office are flushed to a domestic waste lagoon.

Advanced Nitrification/Denitrification (A.N.D.) Waste Water Decentralized Treatment System: This system is designed to reduce total nitrogen before land application.

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

Application Date: 05/29/15
Expiration Date: 11/28/15

PERMITTED FEATURE(S) TABLE:

PERMITTED FEATURE	TREATMENT LEVEL	EFFLUENT TYPE
#001-008, #010	Land Application	Animal wastewater
#013	Land Application	Domestic wastewater

Facility Performance History:
This facility was last inspected on February 25, 2015 and was found to be in compliance.

Water Quality Monitoring:
Previous permits dating back to 1996 for the Murphy-Brown, Whitetail Farm have required various amounts of water quality monitoring. More the 50 different sites have been required for stormwater, lake, 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-Brown, Whitetail Farm 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 #015, #016, SM1 and SM2 and the 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.

This facility no longer utilized a wet handling flush system and the secondary containments have been removed from the "Facility Description" of the permit. The secondary containment operational requirements in the permit are applicable as long as the secondary containments are in place that may capture process wastewater.

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.

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:	James D. Perkins
Certification Number:	2615
Certification Level:	CAFO A

The listing of the operator above only signifies that staff drafting this operating permit have reviewed appropriate Department records and determined that the name listed on the operating permit application has the correct and applicable Certification Level.

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*	DISTANCE TO CLASSIFIED SEGMENT	12-DIGIT HUC**
Tributary to Willow Branch	N/A	N/A	General Criteria	0.15 - .03 mi.	10280201-0302
Tributary to Little Shoal Creek	N/A	N/A	General Criteria	0.5 mi.	10280201-0502
8-20-13 MUDD V1.0	C	3960	AQL, IRR, LWW, SCR, WBCB, HHP		

* - Irrigation (IRR), Livestock & Wildlife Watering (LWW), Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL), Cool Water Fishery(CLF), Cold Water Fishery (CDF), Whole Body Contact Recreation (WBC), Secondary Contact Recreation (SCR), Drinking Water Supply (DWS), Industrial (IND), Groundwater (GRW). ** - Hydrologic Unit Code

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 1997 to 2012 was reviewed and shows no indication that a reasonable potential exists for the Murphy-Brown, Whitetail Farm 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 and/or sludge 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.

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.

☒ Not applicable. Willow Branch and was listed on the 2002 Missouri 303(d) List for unknown pollutant and Blackbird Creek was listed on the 2002 Missouri 303(d) List for sediment. Both were removed from the 303(d) List when a TMDL was approved. This facility is not considered to be a source of the above listed pollutants or considered to contribute to the impairment of Willow Branch or Blackbird 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. Willow Branch is associated with the 2010 EPA Approved TMDL for unknown pollutant. Blackbird Creek is associated with the 2006 EPA Approved TMDL for sediment. Chariton River is associated with the 2010 EPA Approved TMDL for E. coli.
AND
☒ This facility is not considered to be a source of the above listed pollutant(s) or considered to contribute to the impairment of Willow Branch, Blackbird Creek, or Chariton River.

Part V – Permit Limits Determination

All Permitted Features and Land Application Areas – Emergency Discharge

There are no effluent limits associated with Permitted Features #001 - #008, #010 and #013 or for land application areas for this 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
** - # of colonies/100mL; the Monthly Average for E. coli is a geometric mean.
*** - Parameter not established in previous state operating permit.

- **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 March 25, 2016 to April 25, 2016, one response received.

DATE OF FACT SHEET: MAY 16, 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.

STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
March 1, 2015

PART III – SLUDGE AND BIOSOLIDS FROM DOMESTIC AND INDUSTRIAL WASTEWATER TREATMENT FACILITIES

SECTION A – GENERAL REQUIREMENTS

1. This permit pertains to sludge requirements under the Missouri Clean Water Law and regulation for domestic wastewater and industrial process wastewater. This permit also incorporates applicable federal sludge disposal requirements under 40 CFR 503 for domestic wastewater. The Environmental Protection Agency (EPA) has principal authority for permitting and enforcement of the federal sludge regulations under 40 CFR 503 for domestic wastewater. EPA has reviewed and accepted these standard sludge conditions. EPA may choose to issue a separate sludge addendum to this permit or a separate federal sludge permit at their discretion to further address the federal requirements.
2. These PART III Standard Conditions apply only to sludge and biosolids generated at domestic wastewater treatment facilities, including public owned treatment works (POTW), privately owned facilities and sludge or biosolids generated at industrial facilities.
3. Sludge and Biosolids Use and Disposal Practices:
    a. The permittee is authorized to operate the sludge and biosolids treatment, storage, use, and disposal facilities listed in the facility description of this permit.
    b. The permittee shall not exceed the design sludge volume listed in the facility description and shall not use sludge disposal methods that are not listed in the facility description, without prior approval of the permitting authority.
    c. The permittee is authorized to operate the storage, treatment or generating sites listed in the Facility Description section of this permit.
4. Sludge Received from other Facilities:
    a. Permittees may accept domestic wastewater sludge from other facilities including septic tank pumpings from residential sources as long as the design sludge volume is not exceeded and the treatment facility performance is not impaired.
    b. The permittee shall obtain a signed statement from the sludge generator or hauler that certifies the type and source of the sludge
5. These permit requirements do not supersede nor remove liability for compliance with county and other local ordinances.
6. These permit requirements do not supersede nor remove liability for compliance with other environmental regulations such as odor emissions under the Missouri Air Pollution Control Law and regulations.
7. This permit may (after due process) be modified, or alternatively revoked and reissued, to comply with any applicable sludge disposal standard or limitation issued or approved under Section 405(d) of the Clean Water Actor under Chapter 644 RSMo.
8. In addition to STANDARD CONDITIONS, the Department may include sludge limitations in the special conditions portion or other sections of a site specific permit.
9. Alternate Limits in the Site Specific Permit.
   Where deemed appropriate, the Department may require an individual site specific permit in order to authorize alternate limitations:
    a. A site specific permit must be obtained for each operating location, including application sites.
    b. To request a site specific permit, an individual permit application, permit fee, and supporting documents shall be submitted for each operating location. This shall include a detailed sludge/biosolids management plan or engineering report.
10. Exceptions to these Standard Conditions may be authorized on a case-by-case basis by the Department, as follows:
    a. The Department will prepare a permit modification and follow permit notice provisions as applicable under 10 CSR 20-6.020, 40 CFR 124.10, and 40 CFR 501.15(a)(2)(ix)(E). This includes notification of the owner of the property located adjacent to each land application site, where appropriate.
    b. Exceptions cannot be granted where prohibited by the federal sludge regulations under 40 CFR 503.

SECTION B – DEFINITIONS

1. Best Management Practices include agronomic loading rates, soil conservation practices and other site restrictions.
2. Biosolids means organic fertilizer or soil amendment produced by the treatment of domestic wastewater sludge.
3. Biosolids land application facility is a facility where biosolids are spread onto the land at agronomic rates for production of food or fiber. The facility includes any structures necessary to store the biosolids until soil, weather, and crop conditions are favorable for land application.
4. Class A biosolids means a material that has met the Class A pathogen reduction requirements or equivalent treatment by a Process to Further Reduce Pathogens (PFRP) in accordance with 40 CFR 503.
5. Class B biosolids means a material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PFRP) in accordance with 40 CFR 503.
6. Domestic wastewater means wastewater originating from the sanitary conveniences of residences, commercial buildings, factories and institutions; or co-mingled sanitary and industrial wastewater processed by a (POTW) or a privately owned facility.
7. Industrial wastewater means any wastewater, also known as process water, not defined as domestic wastewater. Per 40 CFR Part 122, process water means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.
8. Mechanical treatment plants are wastewater treatment facilities that use mechanical devices to treat wastewater, including septic tanks, sand filters, extended aeration, activated sludge, contact stabilization, trickling filters, rotating biological discs, and other similar facilities. It does not include wastewater treatment lagoons and constructed wetlands for wastewater treatment.
9. Operating location as defined in 10 CSR 20-2.010 is all contiguous lands owned, operated or controlled by one (1) person or by two (2) or more persons jointly or as tenants in common.
10. Plant Available Nitrogen (PAN) is the nitrogen that will be available to plants during the growing seasons after biosolids application.
11. Public contact site is land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.
12. Sludge is the solid, semisolid, or liquid residue removed during the treatment of wastewater. Sludge includes septage removed from septic tanks or equivalent facilities. Sludge does not include carbon coal byproducts (CCBs)
13. Sludge lagoon is part of a mechanical wastewater treatment facility. A sludge lagoon is an earthen basin that receives sludge that has been removed from a wastewater treatment facility. It does not include a wastewater treatment lagoon or sludge treatment units that are not a part of a mechanical wastewater treatment facility.
14. Septage is the material pumped from residential septic tanks and similar treatment works (with a design population of less than 150 people). The standard for biosolids from septage is different from other sludges.

SECTION C – MECHANICAL WASTEWATER TREATMENT FACILITIES

1. Sludge shall be routinely removed from wastewater treatment facilities and handled according to the permit facility description and sludge conditions of this permit.
2. The permittee shall operate the facility so that there is no sludge discharged to waters of the state.
3. Mechanical treatment plants shall have separate sludge storage compartments in accordance with 10 CSR 20, Chapter 8. Failure to remove sludge from these storage compartments on the required design schedule is a violation of this permit.

SECTION D – SLUDGE DISPOSED AT OTHER TREATMENT FACILITY OR CONTRACT HAULER

1. This section applies to permittees that haul sludge to another treatment facility for disposal or use contract haulers to remove and dispose of sludge.
2. Permittees that use contract haulers are responsible for compliance with all the terms of this permit including final disposal, unless the hauler has a separate permit for sludge or biosolids disposal issued by the Department; or the hauler transports the sludge to another permitted treatment facility.
3. Haulers who land apply septage must obtain a state permit.
4. Testing of sludge, other than total solids content, is not required if sludge is hauled to a municipal wastewater treatment facility or other permitted wastewater treatment facility, unless it is required by the accepting facility.

SECTION E – INCINERATION OF SLUDGE

1. Sludge incineration facilities shall comply with the requirements of 40 CFR 503 Subpart E; air pollution control regulations under 10 CSR 10; and solid waste management regulations under 10 CSR 80.
2. Permittee may be authorized under the facility description of this permit to store incineration ash in lagoons or ash ponds. This permit does not authorize the disposal of incineration ash. Incineration ash shall be disposed in accordance with 10 CSR 80; or if the ash is determined to be hazardous with 10 CSR 25.
3. In addition to normal sludge monitoring, incineration facilities shall report the following as part of the annual report, quantity of sludge incinerated, quantity of ash generated, quantity of ash stored, and ash used or disposal method, quantity, and location. Permittee shall also provide the name of the disposal facility and the applicable permit number.

SECTION F – SURFACE DISPOSAL SITES AND SLUDGE LAGOONS

1. Surface disposal sites of domestic facilities shall comply with the requirements in 40 CFR 503 Subpart C; air pollution control regulations under 10 CSR 10; and solid waste management regulations under 10 CSR 80.
2. Sludge storage lagoons are temporary facilities and are not required to obtain a permit as a solid waste management facility under 10 CSR 80. In order to maintain sludge storage lagoons as storage facilities, accumulated sludge must be removed routinely, but not less than once every two years unless an alternate schedule is approved in the permit. The amount of sludge removed will be dependent on sludge generation and accumulation in the facility. Enough sludge must be removed to maintain adequate storage capacity in the facility.
    a. In order to avoid damage to the lagoon seal during cleaning, the permittee may leave a layer of sludge on the bottom of the lagoon, upon prior approval of the Department; or
    b. Permittee shall close the lagoon in accordance with Section H.

SECTION G – LAND APPLICATION

1. The permittee shall not land apply sludge or biosolids unless land application is authorized in the facility description or the special conditions of the issued NPDES permit.
2. Land application sites within a 20 miles radius of the wastewater treatment facility are authorized under this permit when biosolids are applied for beneficial use in accordance with these standard conditions unless otherwise specified in a site specific permit. If the permittee's land application site is greater than a 20 mile radius of the wastewater treatment facility, approval must be granted from the Department.
3. Land application shall not adversely affect a threatened or endangered species or its designated critical habitat.
4. Biosolids shall not be applied unless authorized in this permit or exempted under 10 CSR 20, Chapter 6.
    a. This permit does not authorize the land application of domestic sludge except for when sludge meets the definition of biosolids.
    b. This permit authorizes "Class A or B" biosolids derived from domestic wastewater and/or process water sludge to be land applied onto grass land, crop land, timber or other similar agricultural or silviculture lands at rates suitable for beneficial use as organic fertilizer and soil conditioner.
5. Public Contact Sites:

    Permittees who wish to apply Class A biosolids to public contact sites must obtain approval from the Department after two years of proper operation with acceptable testing documentation that shows the biosolids meet Class A criteria. A shorter length of testing will be allowed with prior approval from the Department. Authorization for land applications must be provided in the special conditions section of this permit or in a separate site specific permit.
    a. After Class B biosolids have been land applied, public access must be restricted for 12 months.
    b. Class B biosolids are only land applied to root crops, home gardens or vegetable crops whose edible parts will not be for human consumption.
6. Agricultural and Silvicultural Sites:

    Septage – Based on Water Quality guide 422 (WQ422) published by the University of Missouri
    a. Haulers that land apply septage must obtain a state permit
    b. Do not apply more than 30,000 gallons of septage per acre per year.
    c. Septage tanks are designed to retain sludge for one to three years which will allow for a larger reduction in pathogens and vectors, as compared to other mechanical type treatment facilities.
    d. To meet Class B sludge requirements, maintain septage at 12 pH for at least thirty (30) minutes before land application. 50 pounds of hydrated lime shall be added to each 1,000 gallons of septage in order to meet pathogen and vector stabilization for septage biosolids applied to crops, pastures or timberland.
    e. Lime is to be added to the pump truck and not directly to the septic tanks, as lime would harm the beneficial bacteria of the septic tank.

Biosolids - Based on Water Quality guide 423, 424, and 425 (WQ423, WQ424, WQ425) published by the University of Missouri;

a. Biosolids shall be monitored to determine the quality for regulated pollutants

b. The number of samples taken is directly related to the amount of sludge produced by the facility (See Section I of these Standard Conditions). Report as dry weight unless otherwise specified in the site specific permit. Samples should be taken only during land application periods. When necessary, it is permissible to mix biosolids with lower concentrations of biosolids as well as other suitable Department approved material to reach the maximum concentration of pollutants allowed.

c. Table 1 gives the maximum concentration allowable to protect water quality standards

TABLE 1

Biosolids ceiling concentration [1]	
Pollutant	Milligrams per kilogram dry weight
Arsenic	75
Cadmium	85
Copper	4,300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7,500

[1] Land application is not allowed if the sludge concentration exceeds the maximum limits for any of these pollutants

d. The low metal concentration biosolids has reduced requirements because of its higher quality and can safely be applied for 100 years or longer at typical agronomic loading rates. (See Table 2)

TABLE 2

Biosolids Low Metal Concentration [1]	
Pollutant	Milligrams per kilogram dry weight
Arsenic	41
Cadmium	39
Copper	1,500
Lead	300
Mercury	17
Nickel	420
Selenium	36
Zinc	2,800

[1] You may apply low metal biosolids without tracking cumulative metal limits, provided the cumulative application of biosolids does not exceed 500 dry tons per acre.

e. Each pollutant in Table 3 has an annual and a total cumulative loading limit, based on the allowable pounds per acre for various soil categories.

TABLE 3

Pollutant	CEC 15+		CEC 5 to 15		CEC 0 to 5	
	Annual	Total [1]	Annual	Total [1]	Annual	Total [1]
Arsenic	1.8	36.0	1.8	36.0	1.8	36.0
Cadmium	1.7	35.0	0.9	9.0	0.4	4.5
Copper	66.0	1,335.0	25.0	250.0	12.0	125.0
Lead	13.0	267.0	13.0	267.0	13.0	133.0
Mercury	0.7	15.0	0.7	15.0	0.7	15.0
Nickel	19.0	347.0	19.0	250.0	12.0	125.0
Selenium	4.5	89.0	4.5	44.0	1.6	16.0
Zinc	124.0	2,492.0	50.0	500.0	25.0	250.0

[1] Total cumulative loading limits for soils with equal or greater than 6.0 pH (salt based test) or 6.5 pH (water based test)

TABLE 4 - Guidelines for land application of other trace substances [1]

Cumulative Loading	
Pollutant	Pounds per acre
Aluminum	4,000[2]
Beryllium	100
Cobalt	50
Fluoride	800
Manganese	500
Silver	200
Tin	1,000
Dioxin	(10 ppt in soil)[3]
Other	[4]

[1] Design of land treatment systems for Industrial Waste, 1979. Michael Ray Overcash, North Carolina State University and Land Treatment of Municipal Wastewater, EPA 1981.)

[2] This applies for a soil with a pH between 6.0 and 7.0 (salt based test) or a pH between 6.5 to 7.5 (water based test). Case-by-case review is required for higher pH soils.

[3] Total Dioxin Toxicity Equivalents (TEQ) in soils, based on a risk assessment under 40 CFR 744, May 1998.

[4] Case by case review. Concentrations in sludge should not exceed the 95th percentile of the National Sewage Sludge Survey, EPA, January 2009.

Best Management Practices – Based on Water Quality guide 426 (WQ426) published by the University of Missouri

a. Use best management practices when applying biosolids.
b. Biosolids cannot discharge from the land application site
c. Biosolid application is subject to the Missouri Department of Agriculture State Milk Board concerning grazing restrictions of lactating dairy cattle.
d. Biosolid application must be in accordance with section 4 of the Endangered Species Act.
e. Do not apply more than the agronomic rate of nitrogen needed.
f. The applicator must document the Plant Available Nitrogen (PAN) loadings, available nitrogen in the soil, and crop removal when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) When biosolids are land applied at an application rate greater than two dry tons per acre per year.
    i. PAN can be determined as follows and is in accordance with WQ426
    (Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor[1]).
    [1] Volatilization factor is 0.7 for surface application and 1 for subsurface application.
g. Buffer zones are as follows:
    i. 300 feet of a water supply well, sinkhole, lake, pond, water supply reservoir or water supply intake in a stream;
    ii. 300 feet of a losing stream, no discharge stream, stream stretches designated for whole body contact recreation, wild and scenic rivers, Ozark National Scenic Riverways or outstanding state resource waters as listed in the Water Quality Standards, 10 CSR 20-7.031;
    iii. 150 feet if dwellings;
    iv. 100 feet of wetlands or permanent flowing streams;
    v. 50 feet of a property line or other waters of the state, including intermittent flowing streams.
h. Slope limitation for application sites are as follows;
    i. A slope 0 to 6 percent has no rate limitation
    ii. Applied to a slope 7 to 12 percent, the applicator may apply biosolids when soil conservation practices are used to meet the minimum erosion levels
    iii. Slopes > 12 percent, apply biosolids only when grass is vegetated and maintained with at least 80 percent ground cover at a rate of two dry tons per acre per year or less.
i. No biosolids may be land applied in an area that it is reasonably certain that pollutants will be transported into waters of the state.
j. Do not apply biosolids to sites with soil that is snow covered, frozen or saturated with liquid without prior approval by the Department.
k. Biosolids / sludge applicators must keep detailed records up to five years.

SECTION H – CLOSURE REQUIREMENTS

1. This section applies to all wastewater facilities (mechanical, industrial, and lagoons) and sludge or biosolids storage and treatment facilities and incineration ash ponds. It does not apply to land application sites.
2. Permittees of a domestic wastewater facility who plan to cease operation must obtain Department approval of a closure plan which addresses proper removal and disposal of all residues, including sludge, biosolids. Mechanical plants, sludge lagoons, ash ponds and other storage structures must obtain approval of a closure plan from the Department. Permittee must maintain this permit until the facility is closed in accordance with the approved closure plan per 10 CSR 20 – 6. 010 and 10 CSR 20 – 6.015.
3. Residuals that are left in place during closure of a lagoon or earthen structure or ash pond shall not exceed the agricultural loading rates as follows:
    a. Residuals shall meet the monitoring and land application limits for agricultural rates as referenced in Section H of these standard conditions.
    b. If a wastewater treatment lagoon has been in operation for 15 years or more without sludge removal, the sludge in the lagoon qualifies as a Class B biosolids with respect to pathogens due to anaerobic digestion, and testing for fecal coliform is not required. For other lagoons, testing for fecal coliform is required to show compliance with Class B biosolids limitations. In order to reach Class B biosolids requirements, fecal coliform must be less than 2,000,000 colony forming units or 2,000,000 most probable number. All fecal samples must be presented as geometric mean per gram.
    c. The allowable nitrogen loading that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. For a grass cover crop, the allowable PAN is 300 pounds/acre.
        i. PAN can be determined as follows:

        (Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor[1]).

        [1] Volatilization factor is 0.7 for surface application and 1 for subsurface application.
4. When closing a domestic wastewater treatment lagoon with a design treatment capacity equal or less than 150 persons, the residuals are considered "septage" under the similar treatment works definition. See Section B of these standard conditions. Under the septage category, residuals may be left in place as follows:
    a. Testing for metals or fecal coliform is not required
    b. If the wastewater treatment lagoon has been in use for less than 15 years, mix lime with the sludge at a rate of 50 pounds of hydrated lime per 1000 gallons (134 cubic feet) of sludge.
    c. The amount of sludge that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. 100 dry tons/acre of sludge may be left in the basin without testing for nitrogen. If 100 dry tons/acre or more will be left in the lagoon, test for nitrogen and determine the PAN using the calculation above. Allowable PAN loading is 300 pounds/acre.
5. Residuals left within the domestic lagoon shall be mixed with soil on at least a 1 to 1 ratio, the lagoon berm shall be demolished, and the site shall be graded and contain ≥70% vegetative density over 100% of the site so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion.
6. Lagoons and/or earthen structure and/or ash pond closure activities shall obtain a storm water permit for land disturbance activities that equal or exceed one acre in accordance with 10 CSR 20-6.200
7. When closing a mechanical wastewater and/or industrial process wastewater plant; all sludge must be cleaned out and disposed of in accordance with the Department approved closure plan before the permit for the facility can be terminated.
    a. Land must be stabilized which includes any grading, alternate use or fate upon approval by the Department, remediation, or other work that exposes sediment to stormwater per 10 CSR 20-6.200. The site shall be graded and contain ≥70% vegetative density over 100% of the site, so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion.
    b. Per 10 CSR 20-6.015(4)(B)6, Hazardous Waste shall not be land applied or disposed during industrial and mechanical plant closures unless in accordance with Missouri Hazardous Waste Management Law and Regulations under 10 CSR 25.
    c. After demolition of the mechanical plant / industrial plant, the site must only contain clean fill defined in RSMo 260.200 (5) as uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinderblocks, brick, minimal amounts of wood and metal, and inert solids as approved by rule or policy of the Department for fill or other beneficial use. Other solid wastes must be removed.
8. If sludge from the domestic lagoon or mechanical treatment plant exceeds agricultural rates under Section G and/or H, a landfill permit or solid waste disposal permit must be obtained if the permittee chooses to seek authorization for on-site sludge disposal under the Missouri Solid Waste Management Law and regulations per 10 CSR 80, and the permittee must comply with the surface disposal requirements under 40 CFR 503, Subpart C.

SECTION I – MONITORING FREQUENCY

1. At a minimum, sludge or biosolids shall be tested for volume and percent total solids on a frequency that will accurately represent sludge quantities produced and disposed. Please see the table below.

TABLE 5

Design Sludge Production (dry tons per year)	Monitoring Frequency (See Notes 1, 2, and 3)			
	Metals, Pathogens and Vectors	Nitrogen TKN [1]	Nitrogen PAN [2]	Priority Pollutants and TCLP [3]
0 to 100	1 per year	1 per year	1 per month	1 per year
101 to 200	biannual	biannual	1 per month	1 per year
201 to 1,000	quarterly	quarterly	1 per month	1 per year
1,001 to 10,000	1 per month	1 per month	1 per week	--[4]
10,001 +	1 per week	1 per week	1 per day	--[4]

[1] Test total Kjeldahl nitrogen, if biosolids application is 2 dry tons per acre per year or less.
[2] Calculate plant available nitrogen (PAN) when either of the following occurs: 1) when biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.
[3] Priority pollutants (40 CFR 122.21, Appendix D, Tables II and III) and toxicity characteristic leaching procedure (40 CFR 261.24) is required only for permit holders that must have a pre-treatment program.
[4] One sample for each 1,000 dry tons of sludge.

Note 1: Total solids: A grab sample of sludge shall be tested one per day during land application periods for percent total solids. This data shall be used to calculate the dry tons of sludge applied per acre.
Note 2: Total Phosphorus: Total phosphorus and total potassium shall be tested at the same monitoring frequency as metals.
Note 3: Table 5 is not applicable for incineration and permit holders that landfill their sludge.

2. If you own a wastewater treatment lagoon or sludge lagoon that is cleaned out once a year or less, you may choose to sample only when the sludge is removed or the lagoon is closed. Test one composite sample for each 100 dry tons of sludge or biosolids removed from the lagoon during the year within the lagoon at closing. Composite sample must represent various areas at one-foot depth.
3. Additional testing may be required in the special conditions or other sections of the permit. Permittees receiving industrial wastewater may be required to conduct additional testing upon request from the Department.
4. At this time, the Department recommends monitoring requirements shall be performed in accordance with, "POTW Sludge Sampling and Analysis Guidance Document," United States Environmental Protection Agency, August 1989, and the subsequent revisions.

SECTION J – RECORD KEEPING AND REPORTING REQUIREMENTS

1. The permittee shall maintain records on file at the facility for at least five years for the items listed in these standard conditions and any additional items in the Special Conditions section of this permit. This shall include dates when the sludge facility is checked for proper operation, records of maintenance and repairs and other relevant information.
2. Reporting period
   a. By January 28th of each year, an annual report shall be submitted for the previous calendar year period for all mechanical wastewater treatment facilities, sludge lagoons, and sludge or biosolids disposal facilities.
   b. Permittees with wastewater treatment lagoons shall submit the above annual report only when sludge or biosolids are removed from the lagoon during the report period or when the lagoon is closed.
3. Report Forms. The annual report shall be submitted on report forms provided by the Department or equivalent forms approved by the Department.
4. Reports shall be submitted as follows:

   Major facilities (those serving 10,000 persons or 1 million gallons per day) shall report to both the Department and EPA. Other facilities need to report only to the Department. Reports shall be submitted to the addresses listed as follows:

   DNR regional office listed in your permit
   (see cover letter of permit)
   ATTN: Sludge Coordinator

   EPA Region VII
   Water Compliance Branch (WACM)
   Sludge Coordinator
   11201 Renner Blvd.
   Lenexa, KS 66219

5. Annual report contents. The annual report shall include the following:
    a. Sludge and biosolids testing performed. Include a copy or summary of all test results, even if not required by the permit.
    b. Sludge or biosolids quantity shall be reported as dry tons for quantity generated by the wastewater treatment facility, the quantity stored on site at the end of the year, and the quantity used or disposed.
    c. Gallons and % solids data used to calculate the dry ton amounts.
    d. Description of any unusual operating conditions.
    e. Final disposal method, dates, and location, and person responsible for hauling and disposal.
        i. This must include the name, address for the hauler and sludge facility. If hauled to a municipal wastewater treatment facility, sanitary landfill, or other approved treatment facility, give the name of that facility.
        ii. Include a description of the type of hauling equipment used and the capacity in tons, gallons, or cubic feet.
    f. Contract Hauler Activities:
    If contract hauler, provide a copy of a signed contract from the contractor. Permittee shall require the contractor to supply information required under this permit for which the contractor is responsible. The permittee shall submit a signed statement from the contractor that he has complied with the standards contained in this permit, unless the contract hauler has a separate sludge or biosolids use permit.
    g. Land Application Sites:
        i. Report the location of each application site, the annual and cumulative dry tons/acre for each site, and the landowners name and address. The location for each spreading site shall be given as a legal description for nearest ¼, ¼, Section, Township, Range, and county, or UTM coordinates. The facility shall report PAN when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.
        ii. If the “Low Metals” criteria are exceeded, report the annual and cumulative pollutant loading rates in pounds per acre for each applicable pollutant, and report the percent of cumulative pollutant loading which has been reached at each site.
        iii. Report the method used for compliance with pathogen and vector attraction requirements.
        iv. Report soil test results for pH, CEC, and phosphorus. If none was tested during the year, report the last date when tested and results.

RECEIVED

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

MAY 29 2015
AP21471
WATER PROTECTION PROGRAM

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

FOR OFFICE USE ONLY	
CHECK NUMBER:	
DATE RECEIVED	FEE SUBMITTED
5-29-15	-0- D.S.

Complete all applicable sections for type of permit being applied for. 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 MBM, Whitetail Farm	CURRENT PERMIT NUMBER MO-0117421	COUNTY Putnam
PHYSICAL ADDRESS 14392 US Highway 129	LEGAL DESCRIPTION Sec.: 16 Twn.: 66N Rng.: 18W	TELEPHONE NUMBER WITH AREA CODE (660) 947-2810
CITY Unionville	STATE Missouri	ZIP CODE 63565
1.2 OWNER (PROVIDE LEGAL NAME) Murphy-Brown of Missouri LLC	EMAIL ADDRESS	
MAILING ADDRESS 17999 US Highway 65		TELEPHONE NUMBER WITH AREA CODE 660-748-4647
CITY Princeton	STATE MO	ZIP CODE 64673
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

☐ 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	E			5,232,994	6,162,660	365	0.0169
002	E			5,294,409	6,309,260	365	0.0173
003	E			5,240,877	5,267,680	365	0.0144
004	E			5,294,409	6,187,480	365	0.0170
005	E			5,242,384	5,273,255	365	0.0145

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	5	8,832				
002	5	8,832				
003	5	8,832				
004	5	8,832				
005	5	8,832				

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? ☑ No

MO 780-2112 (06-14)

NE Putnam

MBM, Whitetail Farm
Part 3, page 2

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
006	E			5,232,994	6,168,135	365	0.0169
007	E			5,366,137	6,210,840	365	0.0170
008	E			5,232,994	5,289,580	365	0.0145
010	E			5,263,226	6,177,990	365	0.0170
013	D						

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
006	5	8,832				
007	5	8,832				
008	5	8,832				
010	5	8,832				

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**

PART 6 – ANIMAL MORTALITY

6.1 PEMANENT METHOD OF DISPOSING OF ROUTINE ANIMAL MORTALITIES.

[√] Rendering

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.

Mortalities are collected and removed from buildings on a daily basis. The carcasses are removed from each farm and hauled to the rendering plant. The carcasses are kept from public view. The planned method of catastrophic disposal is by rendering. In the event the nearby rendering plant would be incapable due to breakdown or excess loading another rendering plant would be used.

PART 7 – DIVERSION OF CLEAN WATER

7.1 Is clean storm water diverted from the production area? [√] Yes

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

THE PRODUCTION AREAS HAVE CONTAINMENT OR EARTHEN DAMS INSTALLED AND MAINITAINED DOWN GRADIENT OF ALL CONFINEMENT BUILDINGS AND SEWER LINES, GRAVITY OUT FALL LINES, RECYCLE PUMP STATIONS AND RECYCLE FORCE MAINS IN ORDER TO COLLECT AND RETAIN WASTEWATER DISCHARGES FROM SPILLS OR PIPELINE BREAKS. LAGOON BERMS ENSURE THAT CLEAN WATER IS DIVERTED FROM THE PRODUCTION AREA.

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? [√] No

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

THE WHITETAIL UNIT IS A CONFINED ANIMAL FEEDING OPERATION AND THE ANIMALS AT THIS FACILITY ARE CONFINED INSIDE THE BARNS.

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.
- [x] 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.)

Waste water

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

Lagoons are sampled in accordance with our SOP that is located in our Nutrient Management Plan.

PART 11 – RECORD KEEPING

11.1 Are records of all inspections, manure transfers, discharges and land application maintained? [√] Yes

PART 12 – SIGNATURE

NAME	TITLE
Michael Rainwater	General Manager
SIGNATURE	DATE
MRt	May 28, 2015

Part 13 - Engineer Certification

House Bill (HB) 28, which became effective on August 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

LAND APPLICATION INFORMATION TABLE (REQUIRED FOR NPDES PERMTS ONLY)

Operation Name: **MBM, Whitetail Farm** Class Size: **1A** Permit #: **MO-0117421** County: **Putnam**

Field Name	Legal Description	Spreadable Acres	P Loss Risk [2]	N or P Based Application	Crop #1		Crop #2		Crop #3		Crop #4		Crop #5[1]	
					Crop	Yield Goal[3]	Crop	Yield Goal[3]	Crop	Yield Goal[3]	Crop	Yield Goal[3]	Crop	Yield Goal[3]
1	Sec. 3 Twn. 66N Rng. 18W	51.51	L	N	Soybeans	50 bu/a	Corn	170 bu/a	Oats	70 bu/a	Alfalfa	4 t/a	Wheat	70 bu/a
2	Sec. 3 Twn. 66N Rng. 18W	25.8	M	N	Soybeans	50 bu/a	Corn	170 bu/a	Oats	70 bu/a	Alfalfa	4 t/a	Wheat	70 bu/a
4	Sec. 2 Twn. 66N Rng. 18W	33.99	VL	N	Mixed Grasses	4 t/a	Brome	4 t/a	Fescue	4 t/a	Orchard Grass	4 t/a	Clover	4 t/a
5	Sec. 10 & 11 Twn. 66N Rng. 18W	114.89	VL	N	Soybeans	50 bu/a	Corn	170 bu/a	Oats	70 bu/a	Alfalfa	4 t/a	Wheat	70 bu/a
6	Sec. 10 Twn. 66N Rng. 18W	21.00	L	N	Soybeans	50 bu/a	Corn	170 bu/a	Oats	70 bu/a	Alfalfa	4 t/a	Wheat	70 bu/a
8	Sec. 2,3,10, 11 Twn. 66N Rng. 18W	133.00	L	N	Soybeans	50 bu/a	Corn	170 bu/a	Oats	70 bu/a	Alfalfa	4 t/a	Wheat	70 bu/a
13	Sec. 10 Twn. 66N Rng. 18W	39.25	VL	N	Soybeans	50 bu/a	Corn	170 bu/a	Oats	70 bu/a	Alfalfa	4 t/a	Wheat	70 bu/a
16	Sec. 3 Twn. 66N Rng. 18W	37.02	VL	N	Soybeans	50 bu/a	Corn	170 bu/a	Oats	70 bu/a	Alfalfa	4 t/a	Wheat	70 bu/a
18	Sec. 3 Twn. 66N Rng. 18W	14.27	VL	N	Mixed Grasses	4 t/a	Brome	4 t/a	Fescue	4 t/a	Orchard Grass	4 t/a	Clover	4 t/a
19B	Sec. 4 Twn. 66N Rng. 18W	31.36	VL	N	Mixed Grasses	4 t/a	Brome	4 t/a	Fescue	4 t/a	Orchard Grass	4 t/a	Clover	4 t/a
20	Sec. 8 & 9 Twn. 66N Rng. 18W	244.69	L	N	Soybeans	50 bu/a	Corn	170 bu/a	Oats	70 bu/a	Alfalfa	4 t/a	Wheat	70 bu/a
24	Sec. 9 Twn. 66N Rng. 18W	152.18	L	N	Soybeans	50 bu/a	Corn	170 bu/a	Oats	70 bu/a	Alfalfa	4 t/a	Wheat	70 bu/a
29	Sec. 9 Twn. 66N Rng. 18W	22.60	VL	N	Soybeans	50 bu/a	Corn	170 bu/a	Oats	70 bu/a	Alfalfa	4 t/a	Wheat	70 bu/a
30	Sec. 16 Twn. 66N Rng. 18W	51.60	VL	N	Mixed Grasses	4 t/a	Brome	4 t/a	Fescue	4 t/a	Orchard Grass	4 t/a	Clover	4 t/a
31	Sec. 16 Twn. 66N Rng. 18W	99.14	L	N	Mixed Grasses	4 t/a	Brome	4 t/a	Fescue	4 t/a	Orchard Grass	4 t/a	Clover	4 t/a
32	Sec. 16 Twn. 66N Rng. 18W	33.42	VL	N	Mixed Grasses	4 t/a	Brome	4 t/a	Fescue	4 t/a	Orchard Grass	4 t/a	Clover	4 t/a
33	Sec. 10 Twn. 66N Rng. 18W	27.49	VL	N	Mixed Grasses	4 t/a	Brome	4 t/a	Fescue	4 t/a	Orchard Grass	4 t/a	Clover	4 t/a
34	Sec. 17 Twn. 66N Rng. 18W	62.34	VL	N	Mixed Grasses	4 t/a	Brome	4 t/a	Fescue	4 t/a	Orchard Grass	4 t/a	Clover	4 t/a
35	Sec. 17 Twn. 66N Rng. 18W	69.75	VL	N	Mixed Grasses	4 t/a	Brome	4 t/a	Fescue	4 t/a	Orchard Grass	4 t/a	Clover	4 t/a
36	Sec. 16 Twn. 66N Rng. 18W	19.96	VL	N	Mixed Grasses	4 t/a	Brome	4 t/a	Fescue	4 t/a	Orchard Grass	4 t/a	Clover	4 t/a
37	Sec. 16 Twn. 66N Rng. 18W	19.40	VL	N	Mixed Grasses	4 t/a	Brome	4 t/a	Fescue	4 t/a	Orchard Grass	4 t/a	Clover	4 t/a
38	Sec. 16 Twn. 66N Rng. 18W	75.41	VL	N	Mixed Grasses	4 t/a	Brome	4 t/a	Fescue	4 t/a	Orchard Grass	4 t/a	Clover	4 t/a
39	Sec. 16 Twn. 66N Rng. 18W	17.60	VL	N	Mixed Grasses	4 t/a	Brome	4 t/a	Fescue	4 t/a	Orchard Grass	4 t/a	Clover	4 t/a
40	Sec. 21 Twn. 66N Rng. 18W	15.83	VL	N	Mixed Grasses	4 t/a	Brome	4 t/a	Fescue	4 t/a	Orchard Grass	4 t/a	Clover	4 t/a

[1] If more than five planned or alternative crops per field continue on next line.
[2] Soil Test P Rating or P Index Rating may be used.
[3] Express yield in Bu=Bushels or T=Tons per acre.

Page 2

LAND APPLICATION INFORMATION TABLE (REQUIRED FOR NPDES PERMTS ONLY)

Operation Name: **MBM, Whitetail Farm** Class Size: **1A** Permit #: **MO-0117421** County: **Putnam**

Field Name	Legal Description	Spreadable Acres	P Loss Risk [2]	N or P Based Application	Crop #1		Crop #2		Crop #3		Crop #4		Crop #5[1]	
					Crop	Yield Goal[3]	Crop	Yield Goal[3]	Crop	Yield Goal[3]	Crop	Yield Goal[3]	Crop	Yield Goal[3]
41	Sec. 20 Twn. 66N Rng. 18W	42.41	VL	N	Mixed Grasses	4 t/a	Brome	4 t/a	Fescue	4 t/a	Orchard Grass	4 t/a	Clover	4 t/a
42	Sec. 2 & 11 Twn. 66N Rng. 18W	43.08	VL	N	Mixed Grasses	4 t/a	Brome	4 t/a	Fescue	4 t/a	Orchard Grass	4 t/a	Clover	4 t/a
43	Sec. 9 Twn. 66N Rng. 18W	18.20	L	N	Soybeans	50 bu/a	Corn	170 bu/a	Oats	70 bu/a	Alfalfa	4 t/a	Wheat	70 bu/a
44	Sec. 10 Twn. 66N Rng. 18W	26.65	L	N	Soybeans	50 bu/a	Corn	170 bu/a	Oats	70 bu/a	Alfalfa	4 t/a	Wheat	70 bu/a
45	Sec. 8 & 9 Twn. 66N Rng. 18W	59.10	VL	N	Soybeans	50 bu/a	Corn	170 bu/a	Oats	70 bu/a	Alfalfa	4 t/a	Wheat	70 bu/a
46	Sec. 9 Twn. 66N Rng. 18W	15.58	VL	N	Mixed Grasses	4 t/a	Brome	4 t/a	Fescue	4 t/a	Orchard Grass	4 t/a	Clover	4 t/a

[1] If more than five planned or alternative crops per field continue on next line.
[2] Soil Test P Rating or P Index Rating may be used.
[3] Express yield in Bu=Bushels or T=Tons per acre.

Murphy-Brown LLC

Nutrient Management Plan

Dated: May 1, 2015

Whitetail Farm

Murphy-Brown LLC

Signature Page

Nutrient Management Plan

Dated: May 1, 2015

Prepared for:

Whitetail Farm

Prepared by:

Signature: _____ Date: 5/27/2015

Robert Whitacre
Murphy-Brown LLC
CCA

Murphy-Brown LLC
Whitetail Farm
Nutrient Management Plan
Enterprise Overview

Description of the existing enterprise

The enterprise consists of 9 farms located together, with each farm having a separate anaerobic lagoon. Each farm has 8 buildings for swine production. Each farm has 8,832 head of finish/grower animals greater then 55 lbs., which equates to 31,795 animal units. There are buried pipelines connecting the anaerobic lagoons, so that the levels can be manipulated by pumping. The lagoons are pumped to an AND system and from there land applied primarily by a toolbar applicator. Other methods of application may include Aerway or subsurface injection and Center Pivots.

The Whitetail Farm has 1,641.58 company owned acres that are available for land application of manure. The owned application land consists of cropland, pasture and hay land.

Animal mortality is handled by rendering. Animals are collected daily and kept from pubic view.

All production buildings all have under slat gutters equipped with scrapers. Recycled water is introduced into the collection pit to convey manure by gravity flow through a buried pipeline to the lagoon.

The production areas have containment or earthen dams installed and maintained down gradient of all confinement buildings and sewer lines, gravity outfall lines, recycle pump stations and recycle force mains in order to collect and retain wastewater discharges from spills or pipeline breaks. Lagoon berms ensure that clean water is diverted from production areas.

The Whitetail Farm is a confined animal feeding operation and the animals at this facility are confined inside the barns.

Contact information:

White Tail
14392 Hwy 129
Unionville, MO 63565
(p) 660-947-7314
(f) 660-947-7317

Murphy-Brown LLC
Whitetail Farm
Nutrient Management Plan

Table of Contents

A. Ensures adequate storage of manure, litter and process wastewater, including procedures to ensure proper operation and maintenance of the storage facilities.
   1. Table 1: Lagoon Level Design Storage
   2. SOP – DEHS-0028, Monitoring – Lagoon Levels
   3. SOP – DEHS-0012, Maintenance – Erosion Control
   4. Document: Lagoon Inspection Report

B. Ensures proper management of mortalities.
   1. Mortality Management: General Information, Procedures and Catastrophic loss

C. Ensures that clean water is diverted from the production area.

D. Prevents direct contact of confined animals with waters of the state.

E. 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.

F. 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.
   1. Table 2: White Tail Conservation Practices
   2. SOP - DEHS – 0022 Land Application Buffers

G. Identifies protocols for appropriate testing of manure, litter, process wastewater, and soil.
   1. SOP – DEHS-0033 Sampling - Soil
   2. SOP – DEHS-0035 Sampling – Lagoons

H. 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.
   1. SOP – DEHS-0013 Nutrient Management - Database
   2. SOP – DEHS-0014 Nutrient Management – PAN Planning
   3. SOP – DEHS-0015 Nutrient Management for Cow/Calf Grazing
   4. SOP – DEHS-0016 Nutrient Management-Work Order System
   5. SOP – DEHS-0017 Nutrient Management-Yield Monitoring
   6. SOP – DEHS-0021 Land Application – Checklist and Daily Run Sheet

I. Identifies specific records that will be maintained.

J. Miscellaneous.

1. SOP – DEHS-0029 Monitoring – Secondary Containment Release
2. Land Application Map
3. Land Application Limitations listed in the MDNR Permit shall be implemented as part of a Standard Operation Procedure. All employees will be given a copy of the SOP's and trained as part of implementation.
4. SOP – DEHS-0018 Land Application – Soil Moisture and Climate Conditions.
5. SOP – DEHS-0023 Land Application – Slopes Greater Than 10%
6. Table 3: Animal Inventory
7. Table 4: Five Year Crop History
8. Table 5: Five Year Crop Projection

Murphy-Brown LLC
Whitetail Farm
Nutrient Management Plan

Requirements:

In accordance with 10CSR 20-6.300(l) (G), the permittee shall implement a Nutrient Management Plan that at a minimum addresses the following.

A. Ensures adequate storage of manure, litter and process wastewater, including procedures to ensure proper operation and maintenance of the storage facilities.

Supporting Documents, Procedures and General Information:

1. Table 1: Lagoon Level Design Storage
2. SOP – DEHS-0028, Monitoring – Lagoon Levels
3. SOP – DEHS-0012, Maintenance – Erosion Control
4. Document: Lagoon Inspection Report

Table 1: Lagoon Level Design Storage

Site Name	Pumpdown Level	Top Length (ft)	Top Width (ft)	Maximum Depth (ft)	Capacity @ Spillway (gal)	Capacity @ Pumpdown (gal)	Treatment Volume	Design Waste Volume
Whitetail 1*	60.0	395.9	395.9	24.00	19,764,292	14,531,298	5,232,994	6,162,660
Whitetail 2	58.8	504.1	315.1	24.00	19,788,043	14,493,633	5,294,409	6,309,260
Whitetail 3	57.6	434.1	361.7	24.00	19,762,346	14,521,469	5,240,877	5,267,680
Whitetail 4	57.6	315.1	504.1	24.00	19,788,043	14,493,633	5,294,409	6,187,480
Whitetail 5*	57.6	434.1	361.8	24.00	19,768,847	14,526,463	5,242,384	5,273,155
Whitetail 6	57.6	395.9	395.9	24.00	19,764,292	14,531,298	5,232,994	6,168,135
Whitetail 7	57.6	284.0	568.0	24.00	19,807,519	14,441,382	5,366,137	6,210,840
Whitetail 8	57.6	395.9	395.9	24.00	19,764,292	14,531,298	5,232,994	5,289,580
Whitetail 10	57.6	335.7	470.0	24.00	19,771,722	14,508,496	5,263,226	6,177,990
Domestic	108.0	113.8	165.3	12.00	754,740	66,300	688,440	

* Impermeable cover in place; all stormwater is pumped off and not stored in the lagoon. Design flow will vary.

Murphy-Brown LLC

Monitoring - Lagoon Levels

Department:	EHS
Person(s) Accountable:	Land Application Associates
When:	Weekly
Goal / Purpose:	To ensure that lagoon levels remain between the minimum and maximum pumpdown levels.

PPE Assessment:

- Appropriate Footwear
- Helmet-if using ATV
- Safety Glasses-if using ATV

Hazards Associated with Task:

- Slips, Trips, and Falls
- Vehicle Accidents

***Preparation / Supplies*:**

- Weekly Inspection Checklist
- Lagoon Level Report
- Transportation (ATV, Truck, Tractor)

***Procedure Steps*:**

1. The lagoon level report details the minimum and maximum operating levels for each lagoon per MDNR operating permits. Members of the land application team will report the level of each lagoon weekly.
2. EHS Management personnel will use weekly readings to monitor lagoon levels and for MDNR operating permit reporting. They will also average the level of all lagoons on each tract of land.
3. Annually, land application associates will verify that pumpdown markers are correct by using a transit. If a pumpdown marker is found to be incorrect, the marker will be reset.

Murphy-Brown LLC

Annual Pumpdown

Minimum pumpdown levels are indicated on the Lagoon Level Report. The minimum operating level shall be achieved each year to maintain DNR permit requirements. Lagoons shall be managed as to reach this minimum pumpdown level during the calendar year.

- Weekly lagoon level readings shall be taken and recorded on the Weekly Inspection Checklist

Procedure for recording a lagoon level reading:

1. Locate the pumpdown stake at each lagoon: normally located at the spillway.
2. Count the number of holes in the pvc pipe and multiply this number by six (6) (the distance between each hole).
3. Take this number and add 12" (this represents the metal rod above the pvc)
   NOTE: This rod represents the maximum level; should the lagoon level reach this point, immediate steps should be taken to ensure the maximum level of 12" is maintained.
4. Lastly, add the number of inches the lagoon level is below the last hole to the number obtained from step #3. This final addition gives the lagoon level which is to be recorded on the Weekly Inspection Checklist.

Follow-up:

1. Lagoon level reports should be turned in to the LNM Department.

Murphy-Brown LLC

Maintenance – Erosion Control

Department:	EHS
Person(s) Accountable:	EHS, LNM, and R&M Utility Crew
When:	According to inspection specification
Goal / Purpose:	To minimize soil loss from our property and ensure structural integrity of the lagoons and secondary containment structures.

PPE Assessment:

- Appropriate footwear

Hazards Associated with Task:

- Slip/Trip/Falls associated with wet, uneven, and or icy terrain.

Preparation /Supplies:

- Weekly inspection checklist
- Monthly inspection checklist

Procedure Steps:

1. LNM personnel continuously look for erosion problems. Deficiencies are documented on the weekly and monthly inspections. Land application associates should always be looking for potential erosion problems and do a thorough review of lagoons, secondary containment structures and farms to identify any erosion or location with potential for erosion.
2. Inspectors and the person(s) who do monthly inspections have a location on their respective checklists to identify erosion problems. If either of these entities identifies erosion the Environmental Systems Manager should be notified. A work order will then be issued to the Utility Crew by the EHS Administrative Assistant through the work order system.
3. Personnel should continue to monitor locations that have been reported to ensure that corrective actions are taken. Continue to report and document if repairs are not made within a reasonable time.

Follow-up:

1. The EHS Department can, at any time, print a work order progress report and monitor the progress being made. The work order system also serves as a reference point to detail any work that has been done to minimize erosion on any specific farm.

SITE: WHITETAIL

NAME: _____

DATE: _____

Weekly Inspection Checklist

	WT 1	WT 2	WT 2 (2)	WT 3	WT 4	WT 5	WT 6	WT 7	WT 8	WT 10	WT 10 (2)	Domestic
Emergency Spillway												
Pump Down Stake												
Damage/Erosion to Berm												
Trash in Lagoon												
Trash on Lagoon Bank												
Lagoon Level												
Is storm water diversion in good working order?												
Would an effluent release from production areas be contained?												
Lake Level	Middle:			East:								

Comments: _____

_____

_____

_____

Murphy-Brown LLC
Whitetail Farm
Nutrient Management Plan

Requirements:

In accordance with 10CSR 20-6.300(l) (G), the permittee shall implement a Nutrient Management Plan that at a minimum addresses the following.

B. Ensures proper management of mortalities.

Supporting Documents, Procedures and General Information:

1. Mortality Management: General Information, Procedures and Catastrophic loss

Mortality Management

General

Mortalities are collected and removed from buildings on a daily basis. The mortalities are picked up, transferred to a dead haul trailer and taken to the rendering plant daily.

Procedures

Carcasses are moved to a location designated for carcass pickup. The carcasses are picked up and hauled to a transfer station. A dead haul trailer will collect the carcasses and transport them the rendering plant daily. The carcasses are kept from public view.

Catastrophic loss

The planned method of catastrophic disposal is by rendering. In the event the nearby rendering plant would be incapable due to breakdown or excess loading another rendering plant would be used.

Murphy-Brown LLC
Whitetail Farm
Nutrient Management Plan

Requirements:

In accordance with 10CSR 20-6.300(l) (G), the permittee shall implement a Nutrient Management Plan that at a minimum addresses the following.

C. Ensures that clean water is diverted from the production area.

Supporting Documents, Procedures and General Information:

1. The production areas have containment or earthen dams installed and maintained down gradient of all confinement buildings and sewer lines, gravity outfall lines, recycle pump stations and recycle force mains in order to collect and retain wastewater discharges from spills or pipeline breaks. Lagoon berms ensure that clean water is diverted from the production areas.

Murphy-Brown LLC
Whitetail Farm
Nutrient Management Plan

Requirements:

In accordance with 10CSR 20-6.300(l) (G), the permittee shall implement a Nutrient Management Plan that at a minimum addresses the following.

D. Prevents direct contact of confined animals with waters of the state.

Supporting Documents, Procedures and General Information:

1. The Whitetail Farm is a confined animal feeding operation and the animals at this facility are confined inside the barns.

Murphy-Brown LLC
Whitetail Farm
Nutrient Management Plan

Requirements:

In accordance with 10CSR 20-6.300(l) (G), the permittee shall implement a Nutrient Management Plan that at a minimum addresses the following.

E. 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.

Supporting Documents, Procedures and General Information:

1. General Information: Chemicals & Containments
    - Containments are in place for all fuel storage. A Spill Prevention Control and Countermeasure Plan have been written and are in place at the facility.
    - Oil and used oil is placed on containments in the LRM pole barn.
    - Hydraulic fluid, antifreeze, and all other chemicals (herbicides & pesticides) are also stored in the LRM pole barn.
    - Chemical storage and handling areas are protected from precipitation and runoff, and any spillage is contained within these areas.

Murphy-Brown LLC
Whitetail Farm
Nutrient Management Plan

Requirements:

In accordance with 10CSR 20-6.300(l) (G), the permittee shall implement a Nutrient Management Plan that at a minimum addresses the following.

F. 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.

Supporting Documents, Procedures and General Information:

1. Table 2: White Tail Conservation Practices
2. SOP - DEHS – 0022 Land Application Buffers

Table 2: Whitetail Conservation Practices

Field	Acres	Crop	Soil Test Results			Conservation Practices
			Date	Phos (ppm)	Rating	
1	51.51	Corn	5/12/2010	16	M	No-Till planting, Grass buffers & proper manure application rate
2	25.80	Corn	5/12/2010	25	PI-M	No-Till planting, Grass buffers & proper manure application rate
4	33.99	Fe/Br/Or	5/12/2010	8	VL	Maintain good stand of grass & proper manure application rates
5	135.41	Pasture	5/12/2010	10	L	Maintain good stand of grass & proper manure application rates
6	21.00	Alfalfa	5/12/2010	19	M	Maintain good stand of Alfalfa & proper manure application rates
8	133.00	Soybeans	5/12/2010	12	L	No-Till planting, Grass buffers & proper manure application rate
13	39.25	Alfalfa	5/12/2010	9	L	Maintain good stand of Alfalfa & proper manure application rates
16	37.02	Alfalfa	5/12/2010	11	L	Maintain good stand of Alfalfa & proper manure application rates
18	14.27	Pasture	5/12/2010	7	VL	Maintain good stand of grass & proper manure application rates
19B	31.36	Pasture	5/12/2010	8	VL	Maintain good stand of grass & proper manure application rates
20	244.69	Small Grain	5/12/2010	16	M	No-Till planting, Grass buffers & proper manure application rate
24	152.18	Soybeans	5/12/2010	13	L	No-Till planting, Grass buffers & proper manure application rate
29	22.60	Alfalfa	5/12/2010	11	L	Maintain good stand of Alfalfa & proper manure application rates
30	51.60	Fescue	5/12/2010	7	VL	Maintain good stand of grass & proper manure application rates
31	99.14	Pasture	5/12/2010	17	M	Maintain good stand of grass & proper manure application rates
32	33.42	Fescue	5/12/2010	7	VL	Maintain good stand of grass & proper manure application rates
33	27.49	Pasture	5/12/2010	4	VL	Maintain good stand of grass & proper manure application rates
34	62.34	Fescue	5/12/2010	9	L	Maintain good stand of grass & proper manure application rates
35	69.75	Fescue	5/12/2010	7	VL	Maintain good stand of grass & proper manure application rates
36	19.96	Fescue	5/12/2010	8	VL	Maintain good stand of grass & proper manure application rates
37	19.40	Fescue	5/12/2010	6	VL	Maintain good stand of grass & proper manure application rates
38	75.41	Fescue	5/12/2010	9	L	Maintain good stand of grass & proper manure application rates
39	17.60	Fescue	5/12/2010	10	L	Maintain good stand of grass & proper manure application rates
40	15.83	Fescue	5/12/2010	10	L	Maintain good stand of grass & proper manure application rates
41	42.41	Pasture	5/12/2010	8	VL	Maintain good stand of grass & proper manure application rates
42	22.57	Fescue	5/12/2010	4	VL	Maintain good stand of grass & proper manure application rates
43	18.20	Alfalfa	5/12/2010	17	M	Maintain good stand of Alfalfa & proper manure application rates
44	26.65	Alfalfa	5/12/2010	15	M	Maintain good stand of Alfalfa & proper manure application rates
45	59.10	Small Grain	5/12/2010	6	VL	No-Till planting, Grass buffers & proper manure application rate
46	15.58	Fescue	5/12/2010	5	VL	Maintain good stand of grass & proper manure application rates

PI Indicates a P-Index was completed and the rating is shown as a letter. VL-Very Low, L-Low, M-Medium

Murphy-Brown LLC

LAND APPLICATION – BUFFERS

DEPARTMENT: EHS
PERSON(S) ACCOUNTABLE: Land Application Associates
WHEN: Buffers are applicable during all land application processes.
GOAL / PURPOSE: To ensure that the potential for run-off is minimized and to protect the natural resources and neighbors' property.

PPE Assessment:

- Helmet
- Safety glasses
- Appropriate footwear

Hazards Associated with Task:

- Slips, trips and falls
- Vehicle accidents

***Preparation / Supplies*:**

- Range finder or measuring wheel
- Flags/marking tape

***Procedure Steps*:**

1. Separation distances (buffer zones) shall be maintained between the land application site and other features as follows:

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

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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 NMTS

- Tanker Wagons or Tanker Trucks
    1. One-fourth (1/4) mile of a residence which is not owned by Missouri Operations of Murphy-Brown LLC or not within the property boundaries of a spreading agreement*
    2. 300 feet from a property line*
    3. 100 feet from surface water drainages* and classified gaining streams for Class P and Class C streams listed in 10 CSR 20-7.031

- Land application equipment shall be operated in such a manner that wastes will not reach an adjoining property line, public use area or into waters of the state. There shall be no visual spray drifts across public roads or property boundaries or into waters of the state. If the employee detects wind blown mist within 100 feet of an adjoining property line or public use areas or waters of the state the application equipment shall be either moved farther away or shut down.

- Continuous monitoring of the buffers is required.

Irrigation equipment operators shall shut down equipment if the proper buffer distance is not being maintained and corrective action shall be taken before land application recommences.

* These operating conditions are required by a Consent Decree with the U.S. Environmental Protection Agency and CLEAN. They are not state NPDES permit requirements nor conditions of the Operation and Maintenance Manual required to be maintained by PSF's and CGC's NPDES operating permits. This requirement is only included in this SOP for the convenience of Murphy-Brown LLC Missouri Operations associates.

Murphy-Brown LLC
Whitetail Farm
Nutrient Management Plan

Requirements:

In accordance with 10CSR 20-6.300(l) (G), the permittee shall implement a Nutrient Management Plan that at a minimum addresses the following.

G. Identifies protocols for appropriate testing of manure, litter, process wastewater, and soil.

Supporting Documents, Procedures and General Information:

1. SOP – DEHS-0033 Sampling - Soil
2. SOP – DEHS-0035 Sampling – Lagoons

Murphy-Brown LLC

Sampling – Soils

Department:	EHS
Person(s) Accountable:	Land Application Associates
When:	Soil samples will be collected in the spring before planting. Samples are collected at least once every 5 years.
Goal / Purpose:	To collect a representative soil sample from the land application field.

PPE Assessment:

- Appropriate footwear
- Safety Glasses (ATV use)
- Helmet (ATV use)

Hazards Associated with Task:

- Slips, trips and falls associated with wet and/or uneven terrain
- Vehicle accidents

***Preparation / Supplies*:**

- Soil probe or auger
- Clean plastic pail
- Soil sampling boxes and soil bags
- Chain-of-Custody form
- Soil Sampling Map

***Procedure Steps*:**

SAMPLING (GENERAL):

1. The average field area represented by a soil sample should be approximately 20 acres or less.

2. Each soil sample should be comprised of a well-mixed subsample derived from at least 15 representative cores from the sampled field area; collect each core in a random zigzag pattern across the field. Thoroughly mix the cores in the plastic pail and retain approximately 1-2 cups for analysis.

3. Soil sampling should be at a depth of 6 to 8 inches.

4. Fields should be re-sampled before manure application when:
    a. The soil test is greater than five years old
    b. Phosphate surplus for the field has exceeded 500 lbs/acre since the last soil test

Murphy-Brown LLC

RECORDING OF DATA:

For each sample collected, record on the Chain-of-Custody form and the sample label the following information:

1. Tract/Field name and number
2. Date and time of sampling
3. Person(s) who performed the sampling

Follow-up:

SAMPLE HANDLING AND SHIPMENT:

1. Always use proper sampling equipment. Visually inspect containers used for sampling and the sample supplies provided by Midwest Laboratories, Inc. for cleanliness.

2. Return samples to the central office where samples will be transported to Midwest Labs.

   Midwest Laboratories, Inc.
   13611 "B" Street
   Omaha, NE 68144-3693
   (402) 334-7770 Fax (402) 334-9121

3. Responsibility for proper packaging, labeling and transferring of possessions of the sample lies with the person collecting it or the last person to sign off on the Chain-of-Custody.

4. A completed, signed and dated chain-of-custody record must accompany all sample shipments. A copy of the chain-of-custody should be retained by the originator.

5. When transferring possession of the samples, the transferee must sign and record the date and time on the chain-of-custody record. In general, custody transfers are made for each sample, although samples may be transferred as a group. Each person who takes custody must fill in the appropriate section of the chain-of-custody record.

6. Soil samples should be analyzed at soil testing laboratories accredited by the Missouri Soil Testing Association, using procedures recommended by the University of Missouri Soil Testing Laboratory

Murphy-Brown LLC

Sampling - Lagoons

Department:	EHS
Person(s) Accountable:	Land Application Associates
When:	At least once per year prior to land application
Goal / Purpose:	To collect a representative lagoon sample for nutrient analysis to determine land application rates.

PPE Assessment:

- Appropriate footwear

Hazards Associated with Task:

- Slips, trips and falls associated with wet, uneven and/or icy terrain
- Vehicle Accidents

***Preparation / Supplies*:**

- Sample bottles from lab
- Hose
- Clean pitcher (plastic)
- Stop watch
- Grab sampling pole
- Transportation (truck or ATV)

***Procedure Steps*:**

SAMPLE COLLECTION:

One composite sample should be collected from the by-pass line at the recycle pump-house using the following procedure:

1. Fill out the labels on the sample bottles prior to filling the bottles.
2. Attach the hose to the valve.
3. Turn on the valve and allow effluent to run for a few minutes to clear the line of old effluent.
4. Rinse a plastic pitcher with effluent to be sampled from the recycle pump.
5. Turn on the valve and collect effluent for a few seconds leaving the valve open, wait for 2 minutes.
6. Every two minutes, repeat the above step 6 more times until a total of 7 grab samples have been collected.
7. Use swirling motion while filling pitcher to ensure a well-mixed sample.
8. Take a pH and temperature from the pitcher.
9. Make sure valve is shut off completely before leaving the pump-house.

Murphy-Brown LLC

10. Divide the pitcher between the sample collection bottles provided, taking special care not to overfill the bottle containing the acid.

11. Ensure all effluent not collected is returned to the lagoon.

*If the recycle pump is not working or when sampling a treatment cell, take 7 grab samples with the grab sampling pole, from 7 different locations around the lagoon.

RECORDING OF DATA:

1. For each sample taken record the date, time of sampling and who performed the sampling on the chain-of-custody form and the sample label.

Follow-up:

SAMPLE HANDLING AND SHIPMENT:

1. Always use proper sampling equipment. Visually inspect containers used for sampling and the sample bottles provided by Midwest Laboratories, Inc. for cleanliness.
2. Refrigerate samples immediately to maintain sample integrity.
3. Return samples to the central office where samples will be repackaged and transported, to Midwest Laboratories.

Midwest Laboratories, Inc.
13611 "B" Street
Omaha, NE 68144-3693
(402) 334-7770 fax (402) 334-9121

4. Responsibility for proper packaging, labeling and transferring of possession of the sample lies with the person taking it or the last person to sign off on the chain of custody.
5. A completed, signed and dated chain-of-custody record must accompany all sample shipments. A copy of the chain-of-custody should be retained by the originator.

When transferring possession of the samples, the transferee must sign and record the date and time on the chain-of-custody record. In general, custody transfers are made for each sample, although samples may be transferred as a group. Each person who takes custody must fill in the appropriate section of the chain-of-custody record.

Murphy-Brown LLC
Whitetail Farm
Nutrient Management Plan

Requirements:

In accordance with 10CSR 20-6.300(l) (G), the permittee shall implement a Nutrient Management Plan that at a minimum addresses the following.

H. 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.

Supporting Documents, Procedures and General Information:

1. SOP – DEHS-0013 Nutrient Management - Database
2. SOP – DEHS-0014 Nutrient Management – PAN Planning
3. SOP – DEHS-0015 Nutrient Management for Cow/Calf Grazing
4. SOP – DEHS-0016 Nutrient Management-Work Order System
5. SOP – DEHS-0017 Nutrient Management-Yield Monitoring
6. SOP – DEHS-0021 Land Application – Checklist and Daily Run Sheet

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Nutrient Management – Database

Department:	EHS
Person(s) Accountable:	Environmental Systems Manager and Environmental Analysts
When:	Continuously
Goal / Purpose:	To provide a centralized system that manages all sampling data and day-to-day events of the land application department.

PPE Assessment:

- None needed

Hazards Associated with Task:

- None

***Preparation / Supplies*:**

- Nutrient Management Database

***Procedure Steps*:**

1. Missouri Operations of Murphy-Brown LLC have developed a comprehensive nutrient management database to manage the day-to-day operations of the EHS and LNM Departments.
2. This database manages all sample results, and prints quarterly and annual reports. The database also manages information pertaining to PAN Planning, Lagoon Levels, Work Orders, Rainfall and the Land Application daily run data as detailed in related procedures.
3. The nutrient management database is managed by the EHS and is password protected to prevent unauthorized use or changes to information in the database.
4. The PAN equation has been programmed into the nutrient management database. Each land application field is identified by number and includes the number of acres, soil type and intended crop. The Work Order provides LNM field crews instruction on the number of gallons of effluent to apply to a specific field and from which lagoon to draw the effluent.
5. All computer programs are kept on a secure company computer network and all information is backed up nightly.

Follow-up:

6. A hard copy of all information stored in the database is retained by the Princeton Office.

Murphy-Brown LLC

NUTRIENT MANAGEMENT – PAN PLANNING

DEPARTMENT:	EHS
PERSON(S) ACCOUNTABLE:	EHS Management
WHEN:	The process begins in the late summer for October 1st application and is reevaluated during the winter months as more yields are received.
GOAL / PURPOSE:	To ensure that there is a nutrient balance on each tract of land based on estimated volumes, lagoon nutrient data, yield predictions, and soil test data and to use that data to best manage land application timing.

PPE Assessment:

- None Needed

Hazards Associated with Task:

- None

Preparation / Supplies:

- Nutrient Management Database
- Lagoon Levels
- Lagoon Analysis
- Soil Analysis
- Yield averages per field
- Field Acreage and Crops

Procedure Steps:

Annual Planning

1. Within the nutrient management database, there is a nutrient application planner. The program compiles data from the lagoon analysis, soil analysis, yield data, field acres and crops to calculate the allowable nitrogen application for each field. The total nitrogen capacity of each facility is also totaled. The program compiles the PAN that can be applied based on the formulas detailed in the MDNR Operating Permits. All tracts are managed using the PAN approach.
2. The program is operated using an application year of October 1 – September 30.
3. Using the current lagoon levels and volumes calculated from the as-built lagoon drawings, the EHS staff projects the total gallons available for land application. This tool is used to manage water use on the farms, land application processes, land resources, etc. This tool also makes it possible to compare the gallons of effluent and total pounds of PAN that needs to be land applied versus the pounds of PAN that can be applied on the available land.
4. The initial planning for individual field PAN goals is done in the late summer in preparation of the October 1st year beginning. The initial numbers are typically conservative, allowing for

safe fall application where feasible. These numbers are then finalized over the winter months, as the final yields are collected and current sample results are received. Reference: NMTS-Nutrient Management Technical Standard.

5. Using the information above, Missouri Operations of Murphy-Brown LLC strives to manage land application practices to best achieve a balance between:
   - Optimizing the timing of nutrient applications to match crop uptake.
   - Maintaining adequate storage in the lagoons to handle extreme rainfall events without overtopping.
   - Conducting land application at rates and amounts so that no runoff occurs from land application fields.
6. Land application typically occurs during the period of March through November when climatic conditions are favorable.

Alternate Volatilization Rate

This section is included for MDNR review and approval of an alternate volatilization rate as provided for in the Special Conditions of the current operating permits.

The following tables detail the calculations and methodology for determining inorganic nitrogen availability based on site specific soil conditions using the table below. An appendix of the soil drainage classifications for each field is maintained by the EHS Department in Princeton.

Table 1 below lists the percent organic N remaining in the soil after denitrification. The table values are the median of the values listed in Table 11-8 of the USDA-NRCS, National Engineering Handbook, Part 651(AWMFH).

Table 1

Manure N Denitrification Estimates by Soil Drainage Classification					
Soil Organic Matter %	Excessively well drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained
% of inorganic N available					
< 2	94	88	82	74	60
2-5	88	80	74	65	40
> 5	84	74	65	50	25
Median values used from USDA-NRCS, National Engineering Handbook, Part 651(AWMFH), Table 11-8.					

Murphy-Brown LLC

Table 2 below lists the volatilization rates for the different land application methods used by the company.

Table 2

Volatilization Rates by Equipment Type	
% of inorganic N available	
Injection/Incorporation	95*
Spray Application	75*
• From USDA-NRCS, National Engineering Handbook, Part 651(AWMFH), Table 11-6.	

Table 3 below shows the resulting total inorganic nitrogen available after considering volatilization and denitrification losses. The values listed below were calculated by multiplying values in Table 1 by the spray application value in Table 2.

Table 3

Alternate VR for Spray Application					
Soil Organic Matter %	Excessively well drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained
% of inorganic N available					
< 2	71	66	62	56	45
2-5	66	60	56	49	30
> 5	63	56	49	38	19
Alternate VR equals denitrification factor multiplied by the equipment specific volatilization rate.					

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Table 4 below shows the resulting total inorganic nitrogen available after considering volatilization and denitrification losses. The values listed below were calculated by multiplying values in Table 1 by the injection/incorporation in Table 2.

Table 4

Alternate VR for Injection/Incorporation					
Soil Organic Matter %	Excessively well drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained
% of inorganic N (manure., precip.) available					
< 2	89	84	78	70	57
2-5	84	76	70	62	38
> 5	80	70	62	48	24
Alternate VR equals denitrification factor multiplied by the equipment specific volatilization rate.					

The alternate VR factor will be used on a field and equipment specific basis. The factors will be used for the entire land application season (Oct 1 – Sept 30). When assigning an effluent application rate for each field, the nutrient management database has input fields for equipment type, soil organic matter, and soil drainage classification. Based on these three variables, a site specific alternate VR rate will be selected and used in calculating the allowable gallons of effluent that can be applied to meet the PAN requirements of the crop.

Murphy-Brown LLC

Nutrient Requirements for Cow/Calf Grazing

Department:	EHS
Person(s) Accountable:	Environmental Analysts
When:	Annually, when figuring yields
Goal / Purpose:	To set an application rate based the cow day formula taking into account the nitrogen supplied by the cattle.

PPE Assessment:

- None Needed

Hazards Associated with Task:

- None

***Preparation / Supplies*:**

- Information pertaining to nutrient requirements of cattle, forage analysis, stocking rate and days grazed.

***Procedure Steps*:**

Pasture Nitrogen Needs

1. Calculate the average cattle weight (CW) while on pasture.
2. Determine the average stocking ratio (SR) per acre.
3. Determine the average consumption of dry matter (DM) per head per day (3% of body weight)
4. Determine by the number of days of grazing (DAYS).
5. Determine the average percent protein (PP) found in pasture for the grazing period.
6. Assume protein is 16% nitrogen.
7. The nitrogen requirement for the pasture is:
    - Pasture Nitrogen Requirement (lbs PAN/acre) = CW*SR*DM*DAYS*PP*0.16

Cattle Contribution

1. Cattle contribute .396 lbs. of Nitrogen per day at 1200 lbs. of animal (CC). (NRCS Agricultural Waste Management Field Handbook, Table 4-8 Beef Waste Characterization using average of Feeder, Yearling on a high forage diet).
2. Volatilization Rate of 37.5% (VR) (NRCS Agricultural Waste Management Field Handbook, Table 11-5).
3. De-nitrification rate of 20% (DN) (NRCS Agricultural Waste Management Field Handbook, Table 11-8).
4. The cattle nitrogen remaining available to the pasture is:
    Cattle contribution (lbs PAN/acre) = CC*SR*DAYS*(1-VR)*(1-DN)

Set the application rate at the pasture nitrogen requirement minus the cattle contribution.

Murphy-Brown LLC

Nutrient Management-Work Order System

Department:	EHS
Person(s) Accountable:	Environmental Analysts
When:	As needed throughout the land application season.
Goal / Purpose:	To manage and track all land application for each field.

PPE Assessment:

- None Needed

Hazards Associated with Task:

- None

***Preparation / Supplies*:**

- Nutrient Management Database

***Procedure Steps*:**

1. A nutrient management database has been developed for use in collecting and analyzing data on all tracts, fields, crops, nitrogen requirements, and permit required analysis. A work order is issued by an Environmental Analyst to a specific crew, from a specific lagoon, using a specified type of equipment to apply a given amount of effluent. The program calculates gallons of effluent to apply based on the lagoon analysis from the specified lagoon, the volatilization rate for the given piece of equipment, soil type, and the nitrogen or phosphorus requirements from the specified field.
2. An EHS Environmental Analyst can produce a work order only at the request of a Land Application Superintendent, or acting Supervisor.
3. After the work order is created, it is sent to the specified crew foreman. The crews apply according to the details of the work order and log all of the application data on a daily run sheet. (See Land Application Checklist and Daily Run Sheet).
4. At the completion of the work order, the crew foreman turns the work order in, along with all of the daily checklists and daily run sheets, to their supervisor. At this point, each individual application run is entered by EHS staff into the database, and the work order is then closed. The database tracks application amounts for each field and reports are printed periodically. If a field is shown to have remaining nitrogen capacity, a new work order can be issued to complete application. Typically one open work order is produced for a field at any given time.

Murphy-Brown LLC

NUTRIENT MANAGEMENT – YIELD MONITORING

DEPARTMENT:	EHS
PERSON(S) ACCOUNTABLE:	Land Application Associates
WHEN:	As crops are removed from field where land application has occurred
GOAL / PURPOSE:	To collect accurate yield information for nutrient management planning the following year(s).

PPE Assessment:

- None Needed

Hazards Associated with Task:

- None

***Preparation / Supplies*:**

- Yield Monitoring Worksheet

***Procedure Steps*:**

1. As crops are removed from a field, yield information should be documented on the following pages.
2. Previous season crop yields should be obtained, documented, and turned into the EHS Department before December 1st.

Follow-up:

1. EHS keeps a hard copy of all information in the Princeton office.

Murphy-Brown LLC

Hay Progress Report

Tenant Name:_____

Date	Farm	Cutting	Field #	# of Bales	lbs/Bale	*Office Use*

Please submit this form by August 1st and December 1st

Murphy-Brown LLC
RR 2 Box 300D
Princeton, MO 64673
Attn: LNM Department

Fax #: 660-748-7186

Murphy-Brown LLC

Pasture Stocking Report

Tenant Name:_____

Farm	Field #	Type *	# of Head IN	Date IN	Weight IN	Date OUT	# Head OUT	Weight OUT

Please submit this form August 1st and December 1st

* Type: (Cows, Calves, Bulls, or Heifers)

Murphy-Brown LLC
RR 2 Box 300D
Princeton, MO 64673
Attn: LNM Department

Fax #: 660-748-7186

Murphy-Brown LLC

Instructions to tenants for completing the Pasture Stocking Report:

Column 1: Farm
Enter the Farm name on which cattle are placed.

Column 2: Field
Enter the field number(s) on which cattle are placed. You may include multiple fields if cattle are allowed to run in more than 1 field. List all fields that apply.

Column 3: Type *
Enter the type of cattle (cows, calves, bulls, heifers). Use a separate line for each type.

Column 4: # of Head
Enter the number of head moved to this field(s).

Column 5: Date IN
Enter date cattle were placed on this field(s).

Column 6: Weight IN
Provide the average weight per head.

Column 7: Date OUT
Enter date cattle were moved from the field(s).

Column 8: # of Head OUT
Enter number of head moved from field(s) on the date in Column 5

Column 9: Weight OUT
Enter the average weight of the cattle moved from this field(s) on the date in Column 5.

Murphy-Brown LLC

Planting and Harvest Report

Tenant Name:_____

Date	Farm	Field #	Crop Type	Yield	*Office Use*

Please submit this form by December 1st

Murphy-Brown LLC
RR 2 Box 300D
Princeton, MO 64673
Attn: LNM Department
Fax #: 660-748-7186

Murphy-Brown LLC

Checklist and Daily Run Sheet

Date:		Field #:		Tract #:	
Work Order #:		Lagoon #:		Crew #:	

Crew Members: _____, _____, _____, _____

Pre-Start Up:	YES	NO
Does the information on the work order (i.e. Lagoon ID, Tract, Field, Acres, Crop and Equipment) match the work being done?		
Are weather conditions favorable for land application?		
Are soil conditions such that you can land apply and prevent runoff from entering a buffer area?		
Are all valves in secondary containments that protect land application areas closed with cap in place?		
Do you have functional radios for appropriate personnel?		
Has Crew Leader checked the field notes for field-specific precautions and reviewed with crew members?		
Has the distribution system and risers to be charged during the day been inspected for defects or problems and have all lines not needed in the system you are using been properly closed off at the appropriate valves?		
Has someone checked underground line pressure maps and checked all pumps, hoses, etc. to ensure all are in proper working condition?		
Is all land application equipment in good working condition?		
Has Crew Leader determined the applicable buffer distance for the application equipment?		
Field notes, Pre-Startup distribution system, Equipment, Pumps, Hoses and Buffer Distances checked. Crew Leader's initial:_____		
Post-Start Up (After reaching operating pressure):		
Has the pump(s) Murphy Switch been set? (before leaving pump)		
Have buffer areas been checked to ensure that effluent/effluent mist is not entering designated area?		
Has Crew Leader inspected the charged distribution system at least once/day to ensure proper operation?		
Buffer areas and Distribution System checked. Crew Leader's initial:_____		
Shut-down:		
After shutdown, have the pumps been shut down and the field been checked for delayed runoff?		
Were all deficiencies recorded?		

Daily Run Sheet

Complete Run Columns for each run.

Type of Equipment *(i.e. CP, INJ, AER, TKRS & TB)*				
Machine Number:				
Application Rate (Inches/Acre):				
Start Time: *(All equipment)*				
Stop Time: *(All equipment)*				
Total Minutes:				
Ending Meter Reading:				
Beginning Meter Reading:				
Total Gallons per run:				
GPM:				

Has map been colored for the daily application? Yes ☐ No ☐

Crew Leader's Signature: _____ Certification #:_____
I certify that all information is correct.

Supervisor's Signature: _____
I certify that all information is correct.

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Date:		Field #:		Tract #:	
Work Order #:		Lagoon #:		Crew #:	

Daily Run Sheet – Continued

Complete Run Columns for each run.

Type of Equipment *(i.e. CP, INJ, AER, TNKS & TB)*				
Machine Number:				
Application Rate (Inches/Acre):				
Start Time: *(All equipment)*				
Stop Time: *(All equipment)*				
Total Minutes:				
Ending Meter Reading:				
Beginning Meter Reading:				
Total Gallons per run:				
GPM:		-		

Note any deficiencies that occur during land application

Date	Equipment *(i.e. hose, toolbar, tractor)*	Deficiency	Corrective Action

Crew Leader's Signature: _____ Certification #: _____

I certify that all information is correct.

Supervisor's Signature: _____

I certify that all information is correct.

Murphy-Brown LLC

Checklist and Daily Run Sheet

Date:		Field #:		Tract #:	
Work Order #:		Lagoon #:		Crew #:	

Crew Members: _____, _____, _____, _____

Pre-Start Up:	YES	NO
Does the information on the work order (i.e. Lagoon ID, Tract, Field, Acres, Crop and Equipment) match the work being done?		
Are weather conditions favorable for land application?		
Are soil conditions such that you can land apply and prevent runoff from entering a buffer area?		
Are all valves in secondary containments that protect land application areas closed with cap in place?		
Do you have functional radios for appropriate personnel?		
Has Crew Leader checked the field notes for field-specific precautions and reviewed with crew members?		
Has the distribution system and risers to be charged during the day been inspected for defects or problems and have all lines not needed in the system you are using been properly closed off at the appropriate valves?		
Has someone checked underground line pressure maps and checked all pumps, hoses, etc. to ensure all are in proper working condition?		
Is all land application equipment in good working condition?		
Has Crew Leader determined the applicable buffer distance for the application equipment?		
Field notes, Pre-Startup distribution system, Equipment, Pumps, Hoses and Buffer Distances checked. Crew Leader's initial:_____		
Post-Start Up (After reaching operating pressure):		
Has the pump(s) Murphy Switch been set? (before leaving pump)		
Have buffer areas been checked to ensure that effluent/effluent mist is not entering designated area?		
Has Crew Leader inspected the charged distribution system at least once/day to ensure proper operation?		
Buffer areas and Distribution System checked. Crew Leader's initial:_____		
Shut-down:		
After shutdown, have the pumps been shut down and the field been checked for delayed runoff?		
Were all deficiencies recorded?		

Daily Run Sheet

Complete Run Columns for each run.

Type of Equipment *(i.e. CP, INJ, AER, TKRS & TB)*				
Machine Number:				
Application Rate (Inches/Acre):				
Start Time: *(All equipment)*				
Stop Time: *(All equipment)*				
Total Minutes:				
Ending Meter Reading:				
Beginning Meter Reading:				
Total Gallons per run:				
GPM:				

Has map been colored for the daily application? Yes ☐ No ☐

Crew Leader's Signature: _____ Certification #:_____
I certify that all information is correct.

Supervisor's Signature: _____
I certify that all information is correct.

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Date:		Field #:		Tract #:	
Work Order #:		Lagoon #:		Crew #:	

Daily Run Sheet – Continued

Complete Run Columns for each run.

Type of Equipment *(i.e. CP, INJ, AER, TNKS & TB)*				
Machine Number:				
Application Rate (Inches/Acre):				
Start Time: *(All equipment)*				
Stop Time: *(All equipment)*				
Total Minutes:				
Ending Meter Reading:				
Beginning Meter Reading:				
Total Gallons per run:				
GPM:		-		

Note any deficiencies that occur during land application

Date	Equipment *(i.e. hose, toolbar, tractor)*	Deficiency	Corrective Action

Crew Leader's Signature: _____ Certification #: _____

I certify that all information is correct.

Supervisor's Signature: _____

I certify that all information is correct.

Murphy-Brown LLC
Whitetail Farm
Nutrient Management Plan

Requirements:

In accordance with 10CSR 20-6.300(l) (G), the permittee shall implement a Nutrient Management Plan that at a minimum addresses the following.

I. Identifies specific records that will be maintained.

Record Keeping Requirements:

The following records shall be maintained on-site by the CAFO operator for a period of five (5) years from the date they are created:

a. A copy of the MDNR permit.
b. A current copy of the NMP
c. Visual Inspection Records:
   Morning and Evening Recycle System inspections
   Production area freshwater line inspections
   Dead animal holding facility inspections
   Storm water diversion device inspections
   Lagoon inspections
   Land application equipment inspections
   Land application inspections
d. Records documenting any actions taken to correct deficiencies.
e. Records of mortalities management
f. Discharge records
g. Precipitation records

Murphy-Brown LLC
Whitetail Farm
Nutrient Management Plan

Requirements:

In accordance with 10CSR 20-6.300(l) (G), the permittee shall implement a Nutrient Management Plan that at a minimum addresses the following.

J. **Misc.**

1. SOP – DEHS-0029 Monitoring – Secondary Containment Release.
2. Land Application Map
3. Land Application Limitations listed in the MDNR Permit shall be implemented as part of a Standard Operation Procedure. All employees will be given a copy of the SOP's and trained as part of implementation.
4. SOP – DEHS-0018 Land Application – Soil Moisture and Climate Conditions.
5. SOP – DEHS-0023 Land Application – Slopes Greater Than 10%.
6. Table 3: Animal Inventory
7. Table 4: Five Year Crop History
8. Table 5: Five Year Crop Projection

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Monitoring – Secondary Containment Release

Department:	EHS
Person(s) Accountable:	Land Nutrient Management Associate
When:	As required after storm events.
Goal / Purpose:	To maintain secondary containment structures designed to capture 24 hours of flow from the recycle flushing to prevent a release to waters of the state.

PPE Assessment:

- Appropriate Footwear
- Chemical Goggles
- Chemical Resistant Gloves

Hazards Associated with Task:

- Slips, Trips, and Falls
- Contact with Nessler Reagent

***Preparation / Supplies*:**

- NI-8 Ammonia Test Kit
- Containment Release Form

***Procedure Steps*:**

Secondary Containment Valves – Draining Stormwater

1. The valves in all containments that could receive a discharge from the recycle system or gravity sewers must be closed and the discharge line from the containment shall be capped at all times, except when draining.

2. Collect two 5 ml grab samples just above the containment's drain pipe using the sample tubes from the NI-8 Ammonia Test Kit.

3. Add three drops of Nessler Reagent to one tube and swirl to mix.

4. Insert the tube of the prepared sample into the right top opening of the color comparator. Insert the sample tube containing the untreated sample into the left top opening of the comparator. Hold the comparator up to a light source and view the openings in the front. Rotate the disc to obtain a color match. Read the mg/L ammonia nitrogen through the scale window. Document the reading on the containment release form.

5. If the ammonia reading is less than or equal to 2.0 mg/L, you may release the containment by opening the containment valve. Record the time the valve was opened on the Containment Release Form.

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6. Once the containment has been drained, close the containment valve and record the time on the Containment Release Form. The valve must remain closed at all times, except when draining.

7. While the containment is being drained, the containment shall be monitored on a periodic basis to ensure that the containment is not contaminated by effluent from a barn or recycle line while the containment is being drained.

8. **If the sample has an ammonia reading of greater than 2.0 mg/L, DO NOT DRAIN THE CONTAINMENT.**

9. If a secondary containment has collected effluent or storm water that has an ammonia level above 2.0 mg/L, the containment valve should be tagged and the contaminated water must be pumped into the lagoon or directly land applied so that there is no discharge. The tag serves as a warning to others that the containment has tested outside of permitted parameters and it is not to be opened. Document the ammonia level reading, the action taken and the suspected reason why the containment tested greater than 2.0mg/L on the Containment Release Form. The tag should be removed when the containment tests less than 2.0mg/L.

10. All containments that are greater than 2.0 mg/L ammonia using the NI-8 test kit must have an outside lab analysis to verify the ammonia level prior to the release of the containment water.

11. Containments with an ammonia reading of greater than 2.0 mg/L must be evaluated by EHS staff. EHS staff shall consult the laboratory analysis.

Follow-up:

Document all readings on Containment Release Form and turn in to the EHS staff and kept on file in the Murphy-Brown LLC Princeton office.

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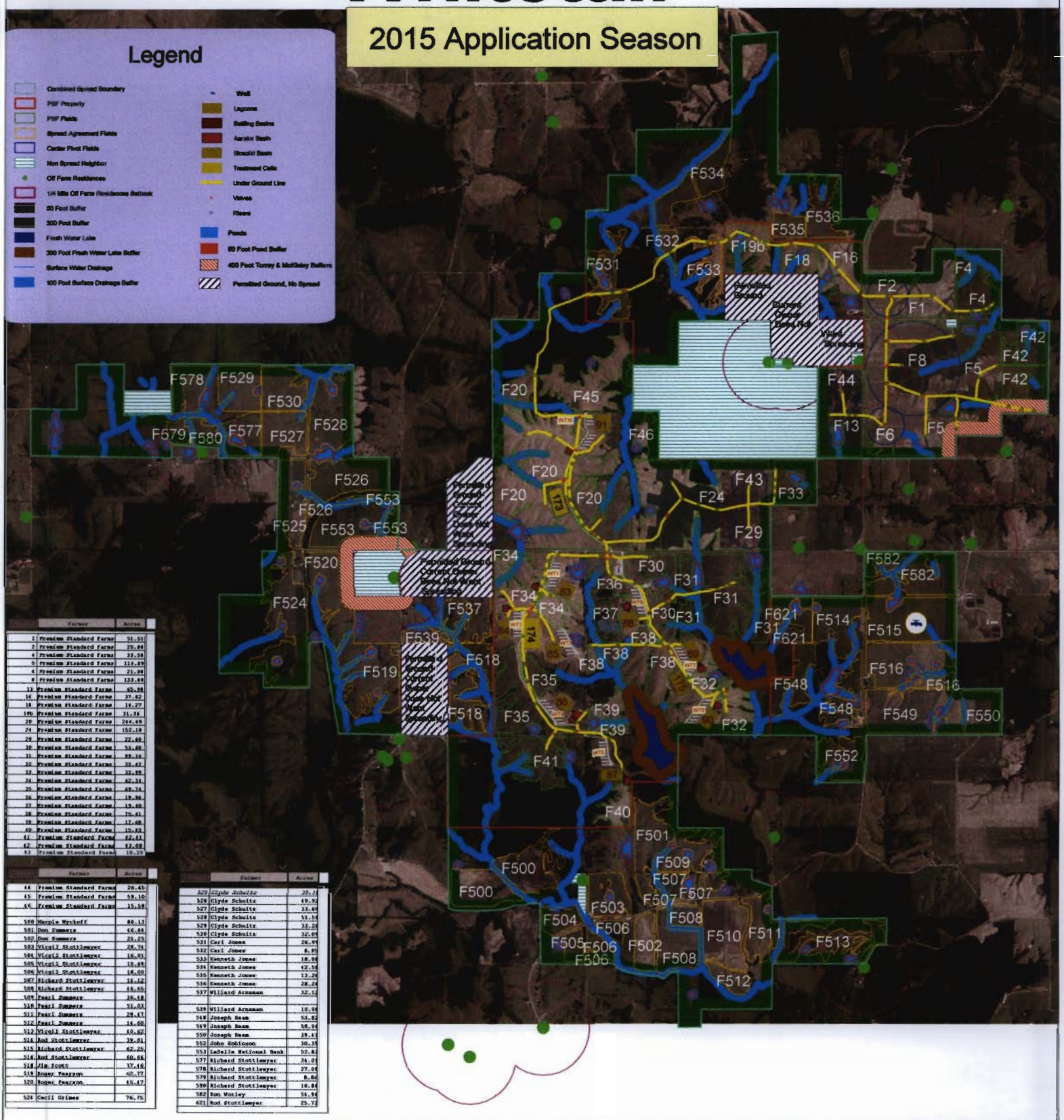
CONTAINMENT RELEASE FORM

CONTAINMENTS DRAINED

Containment ID	Outfall ID	Initials	Time Opened	NH3 Ammonia Reading	Time Closed	Initials	Action Taken: Pumped back to lagoon, Land applied or Waiting analysis

Whitetail

2015 Application Season



	Farmer	Acres
1	Premium Standard Farms	51.51
2	Premium Standard Farms	25.88
4	Premium Standard Farms	23.58
5	Premium Standard Farms	114.89
6	Premium Standard Farms	21.00
8	Premium Standard Farms	133.49
13	Premium Standard Farms	65.39
16	Premium Standard Farms	37.82
18	Premium Standard Farms	14.27
19b	Premium Standard Farms	31.36
20	Premium Standard Farms	244.69
24	Premium Standard Farms	152.18
29	Premium Standard Farms	22.60
30	Premium Standard Farms	51.60
31	Premium Standard Farms	89.16
32	Premium Standard Farms	33.62
33	Premium Standard Farms	33.99
34	Premium Standard Farms	62.36
35	Premium Standard Farms	69.74
36	Premium Standard Farms	19.96
37	Premium Standard Farms	19.40
38	Premium Standard Farms	75.41
39	Premium Standard Farms	17.60
40	Premium Standard Farms	15.83
41	Premium Standard Farms	62.41
42	Premium Standard Farms	12.08
43	Premium Standard Farms	18.20

	Farmer	Acres
44	Premium Standard Farms	26.65
45	Premium Standard Farms	59.10
46	Premium Standard Farms	15.58
500	Marple Wyckoff	80.13
501	Don Summers	46.84
502	Don Summers	23.23
503	Virgil Stottlemyer	28.76
504	Virgil Stottlemyer	18.03
505	Virgil Stottlemyer	18.69
506	Virgil Stottlemyer	18.09
507	Richard Stottlemyer	16.12
508	Richard Stottlemyer	46.65
509	Pearl Summers	26.48
510	Pearl Summers	51.03
511	Pearl Summers	29.47
512	Pearl Summers	14.60
513	Virgil Stottlemyer	10.82
514	Rod Stottlemyer	39.81
515	Richard Stottlemyer	62.25
516	Rod Stottlemyer	60.66
518	Jim Scott	37.46
519	Roger Pearson	42.77
520	Roger Pearson	45.47
524	Cecil Grimes	76.75

	Farmer	Acres
525	Clyde Schultz	35.71
526	Clyde Schultz	49.92
527	Clyde Schultz	33.65
528	Clyde Schultz	51.56
529	Clyde Schultz	33.26
530	Clyde Schultz	32.05
531	Carl Jones	26.99
532	Carl Jones	8.95
533	Kenneth Jones	18.96
534	Kenneth Jones	42.58
535	Kenneth Jones	13.24
536	Kenneth Jones	28.24
537	Willard Arneman	32.12
539	Willard Arneman	10.96
548	Joseph Ream	53.82
549	Joseph Ream	58.94
550	Joseph Ream	39.61
552	John Robinson	30.35
553	LaSalle National Bank	52.82
577	Richard Stottlemyer	24.01
578	Richard Stottlemyer	27.05
579	Richard Stottlemyer	8.86
580	Richard Stottlemyer	18.84
582	Ron Worley	54.96
621	Rod Stottlemyer	25.72

NO LAND APPLICATION OF ANY TYPE IN THE 400 FOOT TORREY & McKINLEY BUFFERS

1/4 Mile Setback, 300 Foot Buffer and 100 Foot Surface Water Drainage Buffer for Traveling Guns, Tanker Wagons, and Tanker Trucks.

2 Miles

This map has been prepared from public data and private gps. It should not be used for legal documents.

MAP UNDER REVIEW-THIS IS NOT THE FINAL RELEASE

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Murphy-Brown LLC

August 27, 2014

N W E

Murphy-Brown LLC

Land Application – Soil Moisture and Climatic Conditions

Department:	EHS
Person(s) Accountable:	Land Application Associates.
When:	Before initiating and throughout the land application process.
Goal / Purpose:	To ensure that effluent is land applied during acceptable soil moisture and climatic conditions

PPE Assessment:

- Appropriate footwear

Hazards Associated with Task:

- Slips, Trips, and Falls associated with wet, uneven and/or icy terrain

***Preparation / Supplies*:**

- Paperwork (or a working knowledge) detailing the "Feel Method"
- Soil Moisture Probe (if available)
- Startup Checklist

***Procedure Steps*:**

SOIL MOISTURE CONDITIONS

1. All employees will use the "Feel Method" as outlined in the "Certification Training for Operators of Animal Waste Management Systems" by the North Carolina State University Cooperative Extension Service and visual inspection procedures to minimize potential runoff. The feel method provides a method of estimating soil moisture by feeling the soil and comparing the soil texture and behavior to the established guidelines. These guidelines provide an estimate of the amount of moisture that can be applied.
2. To use the feel method, collect a small soil sample from the upper few inches of the field and place the soil between your fingers. Roll the soil between your fingers and attempt to shape it into a ball or thin ribbon. The shape and texture of the soil can be used to estimate moisture conditions and a land application amount can be estimated using Table 5-2 "Feel guidelines for estimating the amount of plant-available water to be replaced with wastewater irrigation as a function of soil texture." Table 5-2 is provided at the end of this section.
3. Land Application Superintendents, Supervisors, and Crew Foreman should utilize the feel method before the start of all land application. The amount of land application for a particular field will generally follow the estimated allowable land application as determined by the feel method. After completion of land application, conduct the feel method again to obtain another estimate of soil moisture. If conditions are acceptable, additional land application may be conducted.

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CLIMATIC CONDITIONS

4. The Land Application Supervisor(s) will check the weather each morning and decide if conditions are favorable for land application.
5. Avoid surface application when there is a local, applicable weather forecast or observation by staff of an imminent or impending storm event that is likely to produce runoff. No surface application of manure is allowed if precipitation, likely to create runoff, is forecasted to occur within 24 hours of the planned application. Manure will not be surface applied to frozen, snow-covered or saturated soils.
6. Cease land application when LNM associates observe an imminent or impending storm event likely to produce runoff.
7. Anytime land application is stopped or postponed due to rainfall, the feel method must be used again to monitor soil moisture conditions and decide when to resume land application. In the event of rainfall, the land application crews must remain at their assigned locations until released by the Supervisor. There may be times when rainfall occurs for only a few minutes and does not significantly affect soil moisture conditions. In these situations, after conducting a feel method check of soil conditions, the Land Application Supervisor may direct application to resume.

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Table 5-2. "Feel" guidelines for estimating the amount of plant-available water to be replaced with wastewater irrigation as a function of soil texture.

Available Water Remaining in The Soil	Sands Loamy Sand	Sandy Loam	Clay, Clay Loam Sandy Clay Loam	All Other Textures
	Maximum Recommended Wastewater Irrigation (per foot of effective root zone depth)			
100 percent (I.e., field capacity)	When ball is squeezed, no free water appears on soil but wet outline of ball is left in hand.			
Wastewater Irrigation	None	None	None	None
75 to 100%	Sticks together only slightly	Forms a ball that breaks easily	Forms a ball: very pliable	Easily ribbons between thumb and forefinger; feels slick
Wastewater Irrigation	0.1 to 0.2 inch	0.2 to 0.3 inch	0.2 to 0.4 inch	0.2 to 0.4 inch
50 to 75%	Appears dry, will not form a ball	Forms a weak ball that falls apart	Forms ball; slightly plastic; slightly sticky	Forms ball; forms ribbon
Wastewater Irrigation	0.2 to 0.3 inch	0.3 to 0.4 inch	0.3 to 0.5 inch	0.3 to 0.6 inch
25 to 50%	Appears dry, will not form a ball	Appears dry, will not form a ball	Somewhat crumbly but holds under pressure	Forms ball; under pressure; somewhat pliable
Wastewater Irrigation	0.3 to 0.5 inch	0.3 to 0.6 inch	0.3 to 0.6 inch	0.3 to 0.7 inch
0 to 25%	Dry, loose, single-grained, flows through fingers	Dry, loose, flows through fingers	Powdery, dry; easily breaks into powdery condition	Hard, cracked; may have lose crumbs on the soil surface
Wastewater Irrigation	0.3 to 0.5 inch	0.3 to 0.6 inch	0.3 to 0.7 inch	0.3 to 0.7 inch

North Carolina Cooperative Extension Service

Murphy-Brown LLC

Land Application – Slopes Greater Than 10%

Department:	EHS
Person(s) Accountable:	Land Application Associates
When:	When land applying on slopes greater than 10% but less than or equal to 20%.
Goal / Purpose:	To ensure that the application process remains safe on slopes where the potential for run-off is greater.

PPE Assessment:

- None

Hazards Associated with Task:

- None

Preparation / Supplies:

- Topographic Map (NMP)

Procedure Steps:

1. For slopes greater than 10% but less than or equal to 20%, reduce the surface application rate to ½ the rate for slopes less than 10%.
2. Verify field slopes by using the average slope per USGS topography maps.
3. At least one hour after the first application of the day, you may perform a soil moisture check to decide if a second application can be made on the same field so long as you do not exceed the daily application amount referenced in the MDNR permit.

Table 3: Animal Inventory

Location	Animal Type	Production Phase	Number of Animals	Average Weight (Lbs)	Confinement Period	Manure Collected (%)	Type of manure storage
White Tail 1	Swine	Grow-finish	8832	150	Year round	100	Anaerobic Lagoon
White Tail 2	Swine	Grow-finish	8832	150	Year round	100	Anaerobic Lagoon
White Tail 3	Swine	Grow-finish	8832	150	Year round	100	Anaerobic Lagoon
White Tail 4	Swine	Grow-finish	8832	150	Year round	100	Anaerobic Lagoon
White Tail 5	Swine	Grow-finish	8832	150	Year round	100	Anaerobic Lagoon
White Tail 6	Swine	Grow-finish	8832	150	Year round	100	Anaerobic Lagoon
White Tail 7	Swine	Grow-finish	8832	150	Year round	100	Anaerobic Lagoon
White Tail 8	Swine	Grow-finish	8832	150	Year round	100	Anaerobic Lagoon
White Tail 10	Swine	Grow-finish	8832	150	Year round	100	Anaerobic Lagoon

Table 4: Five Year Crop History

Tract Name	Field	Year	Crop	Acres	Crop Rmvl	N Uptake
Whitetail	1	2010	Not Planted	51.51	0.00	0.00
Whitetail	1	2011	Al/Br	51.51	2.48	133.92
Whitetail	1	2012	Soybeans	51.51	31.00	127.10
Whitetail	1	2013	Corn	51.51	84.00	126.00
Whitetail	1	2014	Soybeans	51.51	45.69	187.33
Whitetail	2	2010	Not Planted	25.80	0.00	0.00
Whitetail	2	2011	Al/Br	25.80	2.89	156.06
Whitetail	2	2012	Hay/Pasture	25.80	3.10	142.60
Whitetail	2	2013	Corn	25.80	84.00	126.00
Whitetail	2	2014	Soybeans	25.80	45.69	187.33
Whitetail	4	2010	Fe/Br/Or	33.99	2.47	128.44
Whitetail	4	2011	Fe/Br/Or	33.99	5.72	297.44
Whitetail	4	2012	Fe/Br/Or	33.99	2.52	131.04
Whitetail	4	2013	Fe/Br/Or	33.99	2.32	120.64
Whitetail	4	2014	Fe/Br/Or	33.99	1.48	76.96
Whitetail	5	2010	Soybeans	135.41	37.00	151.70
Whitetail	5	2011	Corn & Hay	135.41	5.14	236.44
Whitetail	5	2012	Soybeans	135.41	31.00	127.10
Whitetail	5	2013	Soybeans	135.41	32.30	132.43
Whitetail	5	2014	Corn	135.41	159.68	239.52
Whitetail	6	2010	Soybeans	21.00	37.00	151.70
Whitetail	6	2011	Corn	21.00	66.20	99.30
Whitetail	6	2012	Soybeans	21.00	31.00	127.10
Whitetail	6	2013	Soybeans	21.00	28.00	114.80
Whitetail	6	2014	Corn	21.00	159.68	239.52
Whitetail	8	2010	Corn	133.00	60.00	90.00
Whitetail	8	2011	Alfalfa	133.00	4.85	271.60
Whitetail	8	2012	Soybeans	133.00	31.00	127.10
Whitetail	8	2013	Soybeans	133.00	32.30	132.43
Whitetail	8	2014	Corn	133.00	159.68	239.52
Whitetail	13	2010	Corn	39.25	60.00	90.00
Whitetail	13	2011	Fescue	39.25	3.72	171.12
Whitetail	13	2012	Silage	39.25	9.00	64.80
Whitetail	13	2013	Triticale	39.25	20.00	40.00
Whitetail	13	2014	Alfalfa	39.25	1.37	76.72
Whitetail	16	2010	Soybeans	37.02	32.00	131.20
Whitetail	16	2011	Corn	37.02	66.20	99.30
Whitetail	16	2012	Soybeans	37.02	31.00	127.10
Whitetail	16	2013	Soybeans	37.02	25.00	102.50
Whitetail	16	2014	Alfalfa	37.02	1.00	56.00
Whitetail	18	2010	Hay/Pasture	14.27	3.70	170.20
Whitetail	18	2011	Hay/Pasture	14.27	3.42	157.32
Whitetail	18	2012	Hay/Pasture	14.27	1.35	62.10
Whitetail	18	2013	Hay/Pasture	14.27	1.89	86.94
Whitetail	18	2014	Hay/Pasture	14.27	1.08	49.68

Table 4: Five Year Crop History

Tract Name	Field	Year	Crop	Acres	Crop Rmvl	N Uptake
Whitetail	019B	2010	Hay/Pasture	31.36	1.00	46.00
Whitetail	019B	2011	Hay/Pasture	31.36	1.35	62.10
Whitetail	019B	2012	Hay/Pasture	31.36	1.00	46.00
Whitetail	019B	2013	Hay/Pasture	31.36	1.83	84.18
Whitetail	019B	2014	Hay/Pasture	31.36	1.00	46.00
Whitetail	20	2010	Fe/Br	244.69	2.02	98.98
Whitetail	20	2011	Fe/Br	244.69	4.02	196.98
Whitetail	20	2012	Fe/Br	244.69	2.53	123.97
Whitetail	20	2013	Fe/Br	244.69	2.58	126.42
Whitetail	20	2014	Soybeans	244.69	33.00	135.30
Whitetail	24	2010	Alfalfa	152.18	1.79	100.24
Whitetail	24	2011	Alfalfa	152.18	3.91	218.96
Whitetail	24	2012	Alfalfa	152.18	2.55	142.80
Whitetail	24	2013	Alfalfa	152.18	2.23	124.88
Whitetail	24	2014	Corn	152.18	142.00	213.00
Whitetail	29	2010	Corn	22.60	60.00	90.00
Whitetail	29	2011	Soybeans	22.60	22.60	92.66
Whitetail	29	2012	Silage	22.60	9.00	64.80
Whitetail	29	2013	Triticale	22.60	20.00	40.00
Whitetail	29	2014	Corn	22.60	142.00	213.00
Whitetail	30	2010	Fe/Br	51.60	2.64	129.36
Whitetail	30	2011	Fe/Br	51.60	3.95	193.55
Whitetail	30	2012	Fe/Br	51.60	1.02	49.98
Whitetail	30	2013	Fe/Br	51.60	2.73	133.77
Whitetail	30	2014	Fe/Br	51.60	1.71	83.79
Whitetail	31	2010	Hay/Pasture	99.14	3.74	172.04
Whitetail	31	2011	Hay/Pasture	99.14	2.38	109.48
Whitetail	31	2012	Hay/Pasture	99.14	2.30	105.80
Whitetail	31	2013	Hay/Pasture	99.14	No report	0.00
Whitetail	31	2014	Hay/Pasture	99.14	2.19	100.74
Whitetail	32	2010	Fe/Br	33.42	1.28	62.72
Whitetail	32	2011	Fe/Br	33.42	1.92	94.08
Whitetail	32	2012	Fe/Br	33.42	1.10	53.90
Whitetail	32	2013	Fe/Br	33.42	2.15	105.35
Whitetail	32	2014	Fe/Br	33.42	1.51	73.99
Whitetail	33	2010	Hay/Pasture	27.49	3.38	155.48
Whitetail	33	2011	Hay/Pasture	27.49	1.96	90.16
Whitetail	33	2012	Hay/Pasture	27.49	1.62	74.52
Whitetail	33	2013	Hay/Pasture	27.49	1.51	69.46
Whitetail	33	2014	Hay/Pasture	27.49	1.09	50.14
Whitetail	34	2010	Fe/Br	62.34	3.43	168.07
Whitetail	34	2011	Fe/Br	62.34	4.32	211.68
Whitetail	34	2012	Fe/Br	62.34	2.04	99.96
Whitetail	34	2013	Fe/Br	62.34	2.99	146.51
Whitetail	34	2014	Fe/Br	62.34	3.18	155.82

Table 4: Five Year Crop History

Tract Name	Field	Year	Crop	Acres	Crop Rmvl	N Uptake
Whitetail	35	2010	Fe/Br	69.75	2.83	138.67
Whitetail	35	2011	Fe/Br	69.75	3.87	189.63
Whitetail	35	2012	Fe/Br	69.75	1.33	65.17
Whitetail	35	2013	Fe/Br	69.75	2.37	116.13
Whitetail	35	2014	Fe/Br	69.75	1.63	79.87
Whitetail	36	2010	Fescue	19.96	1.00	46.00
Whitetail	36	2011	Fescue	19.96	1.96	90.16
Whitetail	36	2012	Fescue	19.96	1.88	86.48
Whitetail	36	2013	Fescue	19.96	2.36	108.56
Whitetail	36	2014	Fescue	19.96	1.93	88.78
Whitetail	37	2010	Hay/Pasture	19.40	1.00	46.00
Whitetail	37	2011	Hay/Pasture	19.40	1.94	89.24
Whitetail	37	2012	Hay/Pasture	19.40	1.00	46.00
Whitetail	37	2013	Hay/Pasture	19.40	1.27	58.42
Whitetail	37	2014	Hay/Pasture	19.40	1.05	48.30
Whitetail	38	2010	Fe/Br	75.41	2.38	116.62
Whitetail	38	2011	Fe/Br	75.41	3.32	162.68
Whitetail	38	2012	Fe/Br	75.41	1.45	71.05
Whitetail	38	2013	Fe/Br	75.41	2.63	128.87
Whitetail	38	2014	Fe/Br	75.41	1.87	91.63
Whitetail	39	2010	Fescue	17.60	3.30	151.80
Whitetail	39	2011	Fescue	17.60	2.05	94.30
Whitetail	39	2012	Fescue	17.60	2.64	121.44
Whitetail	39	2013	Fescue	17.60	3.14	144.44
Whitetail	39	2014	Fescue	17.60	2.51	115.46
Whitetail	40	2010	Fescue	15.83	4.41	202.86
Whitetail	40	2011	Fescue	15.83	2.68	123.28
Whitetail	40	2012	Fescue	15.83	1.16	53.36
Whitetail	40	2013	Fescue	15.83	1.59	73.14
Whitetail	40	2014	Fescue	15.83	1.02	46.92
Whitetail	41	2010	Pasture	42.41	1.24	57.04
Whitetail	41	2011	Pasture	42.41	1.26	57.96
Whitetail	41	2012	Pasture	42.41	1.00	46.00
Whitetail	41	2013	Pasture	42.41	No report	0.00
Whitetail	41	2014	Pasture	42.41	1.00	46.00
Whitetail	42	2010	Fescue	22.57	2.82	129.72
Whitetail	42	2011	Fescue	22.57	1.85	85.10
Whitetail	42	2012	Fescue	22.57	2.64	121.44
Whitetail	42	2013	Fescue	22.57	1.97	90.62
Whitetail	42	2014	Fescue	22.57	3.08	141.68
Whitetail	43	2010	Corn	18.20	60.00	90.00
Whitetail	43	2011	Soybeans	18.20	42.10	172.61
Whitetail	43	2012	Silage	18.20	9.00	64.80
Whitetail	43	2013	Triticale	18.20	20.00	40.00
Whitetail	43	2014	Corn	18.20	142.00	213.00

Table 4: Five Year Crop History

Tract Name	Field	Year	Crop	Acres	Crop Rmvl	N Uptake
Whitetail	44	2010	Corn	26.65	60.00	90.00
Whitetail	44	2011	Soybeans	26.65	42.10	172.61
Whitetail	44	2012	Silage	26.65	9.00	64.80
Whitetail	44	2013	Triticale	26.65	20.00	40.00
Whitetail	44	2014	Corn	26.65	142.00	213.00
Whitetail	45	2011	Fescue	59.10	2.38	109.48
Whitetail	45	2012	Fescue	59.10	1.45	66.70
Whitetail	45	2013	Fescue	59.10	1.89	86.94
Whitetail	45	2014	Soybeans	59.10	33.00	135.30
Whitetail	46	2011	Fescue	15.58	3.47	159.62
Whitetail	46	2012	Fescue	15.58	1.00	46.00
Whitetail	46	2013	Fescue	15.58	1.00	46.00
Whitetail	46	2014	Fescue	15.58	1.00	46.00

Table 5: Five Year Crop Projections

Tract Name	Field	Year	Crop	Acres	N Limit
Whitetail	1	2015	Corn	51.51	225.00
Whitetail	1	2016	Soybeans	51.51	184.50
Whitetail	1	2017	Small grains	51.51	100.00
Whitetail	1	2018	Corn	51.51	225.00
Whitetail	1	2019	Soybeans	51.51	184.50
Whitetail	2	2015	Corn	25.80	225.00
Whitetail	2	2016	Soybeans	25.80	184.50
Whitetail	2	2017	Small grains	25.80	100.00
Whitetail	2	2018	Corn	25.80	225.00
Whitetail	2	2019	Soybeans	25.80	184.50
Whitetail	4	2015	Pasture	33.99	161.00
Whitetail	4	2016	Pasture	33.99	161.00
Whitetail	4	2017	Pasture	33.99	161.00
Whitetail	4	2018	Pasture	33.99	161.00
Whitetail	4	2019	Pasture	33.99	161.00
Whitetail	5	2015	Alfalfa	135.41	224.00
Whitetail	5	2016	Alfalfa	135.41	224.00
Whitetail	5	2017	Alfalfa	135.41	224.00
Whitetail	5	2018	Alfalfa	135.41	224.00
Whitetail	5	2019	Alfalfa	135.41	224.00
Whitetail	6	2015	Alfalfa	21.00	224.00
Whitetail	6	2016	Alfalfa	21.00	224.00
Whitetail	6	2017	Alfalfa	21.00	224.00
Whitetail	6	2018	Alfalfa	21.00	224.00
Whitetail	6	2019	Alfalfa	21.00	224.00
Whitetail	8	2015	Soybeans	133.00	184.50
Whitetail	8	2016	Small grains	133.00	100.00
Whitetail	8	2017	Corn	133.00	225.00
Whitetail	8	2018	Soybeans	133.00	184.50
Whitetail	8	2019	Small grains	133.00	100.00
Whitetail	13	2015	Alfalfa	39.25	224.00
Whitetail	13	2016	Alfalfa	39.25	224.00
Whitetail	13	2017	Alfalfa	39.25	224.00
Whitetail	13	2018	Alfalfa	39.25	224.00
Whitetail	13	2019	Alfalfa	39.25	224.00
Whitetail	16	2015	Alfalfa	37.02	224.00
Whitetail	16	2016	Alfalfa	37.02	224.00
Whitetail	16	2017	Alfalfa	37.02	224.00
Whitetail	16	2018	Alfalfa	37.02	224.00
Whitetail	16	2019	Alfalfa	37.02	224.00

Table 5: Five Year Crop Projections

Tract Name	Field	Year	Crop	Acres	N Limit
Whitetail	18	2015	Fescue	14.27	161.00
Whitetail	18	2016	Fescue	14.27	161.00
Whitetail	18	2017	Fescue	14.27	161.00
Whitetail	18	2018	Fescue	14.27	161.00
Whitetail	18	2019	Fescue	14.27	161.00
Whitetail	019B	2015	Fescue	31.36	161.00
Whitetail	019B	2016	Fescue	31.36	161.00
Whitetail	019B	2017	Fescue	31.36	161.00
Whitetail	019B	2018	Fescue	31.36	161.00
Whitetail	019B	2019	Fescue	31.36	161.00
Whitetail	20	2015	Small grains	244.69	100.00
Whitetail	20	2016	Corn	244.69	225.00
Whitetail	20	2017	Soybeans	244.69	184.50
Whitetail	20	2018	Small grains	244.69	100.00
Whitetail	20	2019	Alfalfa	244.69	224.00
Whitetail	24	2015	Soybeans	152.18	184.50
Whitetail	24	2016	Small grains	152.18	100.00
Whitetail	24	2017	Alfalfa	152.18	224.00
Whitetail	24	2018	Corn	152.18	225.00
Whitetail	24	2019	Soybeans	152.18	184.50
Whitetail	29	2015	Alfalfa	22.60	224.00
Whitetail	29	2016	Alfalfa	22.60	224.00
Whitetail	29	2017	Corn	22.60	225.00
Whitetail	29	2018	Soybeans	22.60	225.00
Whitetail	29	2019	Small grains	22.60	100.00
Whitetail	30	2015	Fescue	51.60	161.00
Whitetail	30	2016	Fescue	51.60	161.00
Whitetail	30	2017	Fescue	51.60	161.00
Whitetail	30	2018	Fescue	51.60	161.00
Whitetail	30	2019	Fescue	51.60	161.00
Whitetail	31	2015	Pasture	99.14	161.00
Whitetail	31	2016	Pasture	99.14	161.00
Whitetail	31	2017	Pasture	99.14	161.00
Whitetail	31	2018	Pasture	99.14	161.00
Whitetail	31	2019	Pasture	99.14	161.00
Whitetail	32	2015	Fescue	33.42	161.00
Whitetail	32	2016	Fescue	33.42	161.00
Whitetail	32	2017	Fescue	33.42	161.00
Whitetail	32	2018	Fescue	33.42	161.00
Whitetail	32	2019	Fescue	33.42	161.00

Table 5: Five Year Crop Projections

Tract Name	Field	Year	Crop	Acres	N Limit
Whitetail	33	2015	Pasture	27.49	161.00
Whitetail	33	2016	Pasture	27.49	161.00
Whitetail	33	2017	Pasture	27.49	161.00
Whitetail	33	2018	Pasture	27.49	161.00
Whitetail	33	2019	Pasture	27.49	161.00
Whitetail	34	2015	Fescue	62.34	161.00
Whitetail	34	2016	Fescue	62.34	161.00
Whitetail	34	2017	Fescue	62.34	161.00
Whitetail	34	2018	Fescue	62.34	161.00
Whitetail	34	2019	Fescue	62.34	161.00
Whitetail	35	2015	Fescue	69.75	161.00
Whitetail	35	2016	Fescue	69.75	161.00
Whitetail	35	2017	Fescue	69.75	161.00
Whitetail	35	2018	Fescue	69.75	161.00
Whitetail	35	2019	Fescue	69.75	161.00
Whitetail	36	2015	Fescue	19.96	161.00
Whitetail	36	2016	Fescue	19.96	161.00
Whitetail	36	2017	Fescue	19.96	161.00
Whitetail	36	2018	Fescue	19.96	161.00
Whitetail	36	2019	Fescue	19.96	161.00
Whitetail	37	2015	Fescue	19.40	161.00
Whitetail	37	2016	Fescue	19.40	161.00
Whitetail	37	2017	Fescue	19.40	161.00
Whitetail	37	2018	Fescue	19.40	161.00
Whitetail	37	2019	Fescue	19.40	161.00
Whitetail	38	2015	Fescue	75.41	161.00
Whitetail	38	2016	Fescue	75.41	161.00
Whitetail	38	2017	Fescue	75.41	161.00
Whitetail	38	2018	Fescue	75.41	161.00
Whitetail	38	2019	Fescue	75.41	161.00
Whitetail	39	2015	Fescue	17.60	161.00
Whitetail	39	2016	Fescue	17.60	161.00
Whitetail	39	2017	Fescue	17.60	161.00
Whitetail	39	2018	Fescue	17.60	161.00
Whitetail	39	2019	Fescue	17.60	161.00
Whitetail	40	2015	Fescue	15.83	161.00
Whitetail	40	2016	Fescue	15.83	161.00
Whitetail	40	2017	Fescue	15.83	161.00
Whitetail	40	2018	Fescue	15.83	161.00
Whitetail	40	2019	Fescue	15.83	161.00

Table 5: Five Year Crop Projections

Tract Name	Field	Year	Crop	Acres	N Limit
Whitetail	41	2015	Pasture	42.41	161.00
Whitetail	41	2016	Pasture	42.41	161.00
Whitetail	41	2017	Pasture	42.41	161.00
Whitetail	41	2018	Pasture	42.41	161.00
Whitetail	41	2019	Pasture	42.41	161.00
Whitetail	42	2015	Fescue	22.57	161.00
Whitetail	42	2016	Fescue	22.57	161.00
Whitetail	42	2017	Fescue	22.57	161.00
Whitetail	42	2018	Fescue	22.57	161.00
Whitetail	42	2019	Fescue	22.57	161.00
Whitetail	43	2015	Alfalfa	18.20	224.00
Whitetail	43	2016	Alfalfa	18.20	224.00
Whitetail	43	2017	Corn	18.20	225.00
Whitetail	43	2018	Soybeans	18.20	184.50
Whitetail	43	2019	Small grains	18.20	100.00
Whitetail	44	2015	Alfalfa	26.65	224.00
Whitetail	44	2016	Alfalfa	26.65	224.00
Whitetail	44	2017	Corn	26.65	225.00
Whitetail	44	2018	Soybeans	26.65	184.50
Whitetail	44	2019	Small grains	26.65	100.00
Whitetail	45	2015	Small grains	59.10	100.00
Whitetail	45	2016	Corn	59.10	225.00
Whitetail	45	2017	Soybeans	59.10	184.50
Whitetail	45	2018	Small grains	59.10	100.00
Whitetail	45	2019	Alfalfa	59.10	224.00
Whitetail	46	2015	Fescue	15.58	161.00
Whitetail	46	2016	Fescue	15.58	161.00
Whitetail	46	2017	Fescue	15.58	161.00
Whitetail	46	2018	Fescue	15.58	161.00
Whitetail	46	2019	Fescue	15.58	161.00