

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, 92<sup>nd</sup> Congress) as amended,

Permit No. MO-0119580

Owner: Gilster-Mary Lee Corporation  
Address: PO Box 227, Chester, IL 62233

Continuing Authority: Same as above  
Address: Same as above

Facility Name: Gilster-Mary Lee Corporation, McBride Plant  
Facility Address: Highway 51 North, McBride, MO 63776

Legal Description: NW ¼, Sec. 9, T36N, R11E, Perry County  
UTM Coordinates: X=779267; Y=4193245

Receiving Stream: Unnamed Tributary to Boise Brule Ditch (U)  
First Classified Stream and ID: Tributary to Boise Brule Ditch (P)(01783)  
USGS Basin & Sub-watershed No.: (07140105-070001)

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

**FACILITY DESCRIPTION**

Outfall #001 – Industrial/Domestic Wastewater - SIC #2043/2099/4952

One earthen aerated basin/one earthen settling basin/one earthen holding basin/wastewater irrigation/sludge retained in lagoon.

Design population equivalent is 11,125.

Design flow is 42,000 gallons per day (1-in 10 year design including net rainfall minus evaporation).

Design flow is 25,000 gallons per day (dry weather flows).

Actual flow is 14,600 gallons per day.

Design sludge production is 200 dry tons/year.

Wastewater includes sanitary and process flows from manufacture of cereal, popcorn, and cardboard box assembly.

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.

January 6, 2011

Effective Date

Sara Parker Pauley, Acting Director, Department of Natural Resources

January 5, 2016

Expiration Date

Gary L. Gaines, P.E., Director, Southeast Regional Office

Outfall #001 – Irrigation System Design

**Receiving Stream Watershed:** A gaining stream setting

**Facility Type:** No-discharge Storage and Irrigation System for year round flows into lagoon system.

<b><u>Design Basis:</u></b>	<b><u>Avg Annual</u></b>
Design dry weather flows	<u>25,000</u> gpd
Design with 1-in-10 year flows	<u>42,000</u> gpd
Design PE	11,125

**Storm Water Flows: ( Perry County)**

Average Annual Rainfall.	<u>42</u> inches	
1-in-10 Year Annual Rainfall.	<u>54</u> inches	25-year-24-hour storm: <u>6</u> inches

1-in-10 year Flows:	<u>Annual</u>
Runoff earth areas (lagoon berm, lots, etc)	<u>2.5</u> ft.
Rainfall minus Evaporation (R-E) on lagoon water surface	<u>1.8</u> ft.

<b><u>Lagoon Dimensions:</u></b>	<b><u>Surface Area</u></b>	<b><u>Depth from Bottom</u></b>	<b><u>Pump down depth</u></b> <b><u>(from top of berm)</u></b>
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**Basin 1**

Center Line Top Berm:	<u>267,334</u> sq.ft. by <u>10.5</u> feet depth
Inside Top Berm:	<u>256,624</u> sq.ft. by <u>10.5</u> feet depth
Aerobic BOD design basis	<u>3.0</u> feet depth

**Basin 2**

Center Line Top Berm:	<u>48,830</u> sq.ft. by <u>10.5</u> feet depth
Inside Top Berm:	<u>44,470</u> sq.ft. by <u>10.5</u> feet depth

**Basin 3**

Center Line Top Berm:	<u>77,800</u> sq.ft. by <u>10.5</u> feet depth
Inside Top Berm:	<u>72,000</u> sq.ft. by <u>10.5</u> feet depth

(Due to design the following items are applicable to all three lagoons.)

Freeboard (top berm to max. operating level)	<u>2.0</u> feet depth	
Maximum operating level	<u>9.5</u> feet depth	
Minimum operating level	<u>4.0</u> feet depth	<u>6.5</u> feet

Storage volume (minimum to maximum water levels) 12.0 MGD

Berm top width: 10 feet Berm runoff area (Centerline to emergency spillway) 59,800 sq.ft.

1-in-10 year Annual Storm water flows into lagoon (R-E): 821,000 cu.ft. (6,139,300 gallons)

<b><u>Storage Capacity:</u></b>	<b><u>Avg Annual</u></b>
Design for Dry weather Flows:	480
Design with 1-in 10 year flows:	286

**FACILITY DESCRIPTION (continued)**

**Land Application:**

Irrigation Volume /year: 15,280,500 gallons (including 1-in-10 year flows)

Irrigation areas: 47 acres at design loading (68 acres total available)

Application rates/acre: 0.16 inch/hour; 0.2 inches/day; 0.4 inches/week; 9.25 inches/year

Field slopes: less than 5 percent

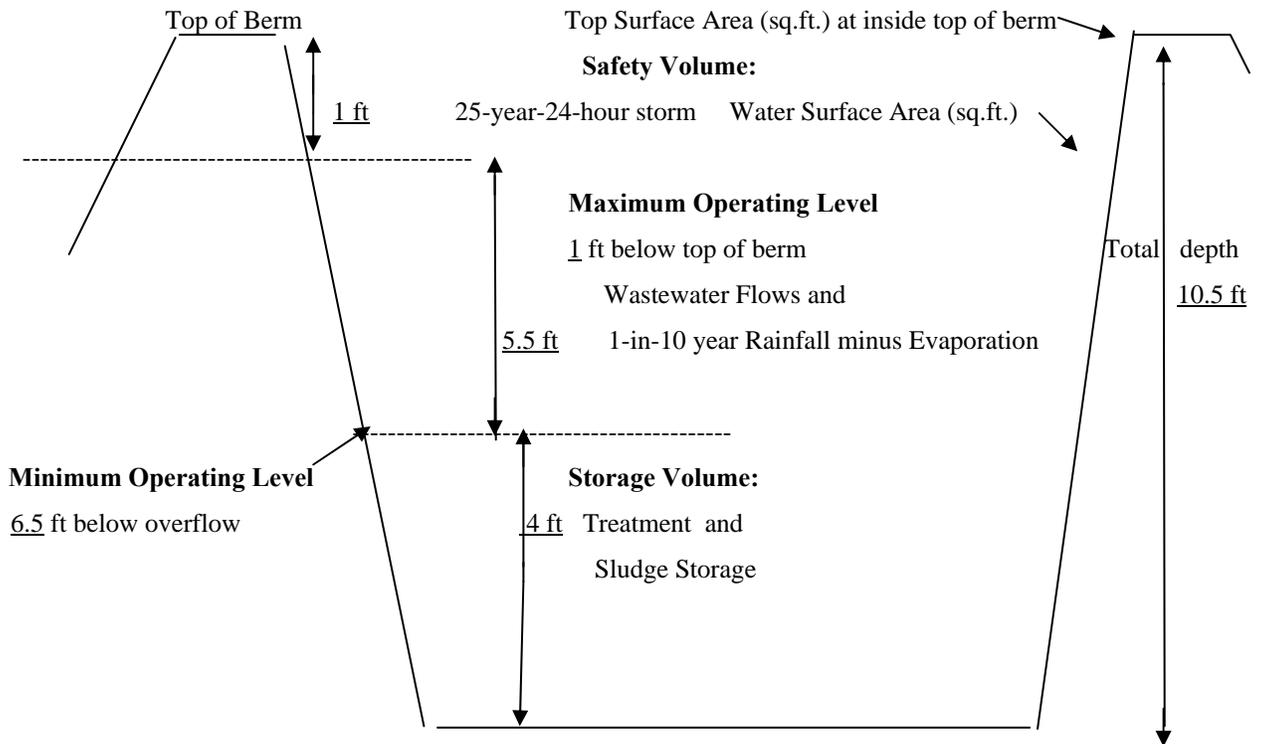
Equipment type: sprinklers

Vegetation: row crops

Application rate is based on: X hydraulic loading rate  
X plant available nitrogen loading rate

**Additional Comments:**

**TYPICAL LAGOON PROFILE**



A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS						PAGE NUMBER 4 of 8	
						PERMIT NUMBER MO-0119580	
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:							
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS		
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE	
<u>Outfall #001</u> – Emergency discharge from lagoon (Note 1, 2, &3)							
Lagoon Freeboard	feet	*			once/month	measured	
Rainfall	inches	*			daily	total	
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>January 28, 2012</u> .							
<u>Outfall #001</u> – Land Application Operational Monitoring (Notes 2 & 3)							
Irrigation Period	hours	*			daily	total	
Volume Irrigated	gallons	*			daily	total	
Application Area	acres	*			daily	total	
Application Rate	gallons/acre	*			daily	total	
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>January 28, 2012</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.							
<u>Outfall #001</u> – Irrigated Wastewater (Notes 4 and 5)							
Biological Oxygen Demand <sub>5</sub>	mg/L	*			once/quarter	grab	
Total Suspended Solids	mg/L	*			once/quarter	grab	
Total Kjeldahl Nitrogen as N	mg/L	*			once/quarter	grab	
Oil and Grease	mg/L	*			once/quarter	grab	
Chlorides	mg/L	250			once/quarter	grab	
Total Sodium	mg/L	250			once/quarter	grab	
Sodium Adsorption Ratio (SAR)	ratio	5			once/quarter	grab	
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>January 28, 2012</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.							
<u>Outfall #001</u> – Soil Monitoring (Note 6)							
Total Kjeldahl Nitrogen as N	mg/kg	*			once/year	Composite	
Ammonia Nitrogen as N	mg/kg	*			once/year	Composite	
Nitrate/Nitrite as N	mg/kg	*			once/year	Composite	
Chlorides	mg/kg	*			once/year	Composite	
Available Phosphorus as P (Bray 1-P method)	mg/kg	75			once/year	Composite	
Total Sodium	mg/kg	*			once/year	Composite	
Exchangeable Sodium Percentage	%	10			once/year	Composite	
pH Units	SU	**			once/year	Composite	
Cation Exchange Capacity	CEC	*			once/year	Composite	
Organic Matter	%	*			once/year	Composite	
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>January 28, 2012</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.							
<b>B. STANDARD CONDITIONS</b>							
IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>Parts I &amp; III</u> STANDARD CONDITIONS DATED <u>October 1, 1980 and August 15, 1994</u> , AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.							

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

- \* Monitor and report.
- \*\* Soil pH shall be maintained between 6.0 and 7.5 standard units.

Note 1 – No-discharge facility requirements. Wastewater shall be stored and land applied during suitable conditions so that there is no-discharge from the lagoon or irrigation site. An emergency discharge may occur when excess wastewater has accumulated above feasible irrigation rates due to precipitation exceeding the 1-in-10 year 365 day rainfall or the 25-year 24-hour storm event.

Note 2 – Records shall be maintained and summarized into an annual operating report, which shall be submitted by January 28<sup>th</sup> of each year for the previous calendar year period. The report shall include the following:

- (a) Record of maintenance and repairs performed during the year, average number of times per month the facility is checked to see if it is operating properly, and description of any unusual operating conditions encountered during the year;
- (b) The number of days the lagoon has discharged during the year, the discharge flow, the reasons discharge occurred and effluent analysis performed; and
- (c) A summary of the irrigation operations including freeboard at the start and end of the irrigation season, the number of days of irrigation for each month, the total gallons irrigated, the total acres used, crops grown, crop yields per acre, the application rate in inches/acre per day and for the year, the monthly and annual precipitation received at the facility and summary of testing results.

Note 3 – Lagoon freeboard shall be reported as lagoon water level in feet below the overflow level. See Special Conditions for Wastewater Irrigation System requirements.

Note 4 - Wastewater that is irrigated shall be sampled at the irrigation pump or wet well.

Note 5 - Monitor once per quarter in the months of March, June, September, and October.

Note 6 - Sample the top 6 to 12 inches of soil. Composite samples shall be collected from each land application site and each soil type in accordance with University of Missouri publication G9110, Sampling Your Soil for Testing. Testing shall conform to Soil Testing Procedures for North Central Region (North Dakota Agricultural Experiment Bulletin 499-Revised); Methods of Soil Analysis, American Society of Agronomy, Inc; Soil Testing and Plant Analysis, Soil Science Society of America Inc; EPA Methods; or other methods approved by the department.

C. SPECIAL CONDITIONS

1. Emergency Discharge. Outfall 001 may only discharge if rainfall exceeds the 1 in 10 year (Data taken from the Missouri Climate Atlas) or the 24 hour, 25 year (Data taken from NRCS Urban Hydrology for Small Watersheds) rainfall events. **Discharge for any other reason shall constitute a permit violation and shall be recorded in accordance with Standard Conditions, Part 1, Section B.2.b.** Monitoring shall take place once per day while discharging. Test results are due on the 28<sup>th</sup> day of the month after the cessation of the discharge. Permittee shall monitor for the following constituents:

Constituent	Units
Flow	MGD
Biochemical Oxygen Demand <sub>5</sub>	mg/L
Total Suspended Solids	mg/l
Total Ammonia Nitrogen	mg/L
Temperature	°C
Nitrate/Nitrite as N	mg/L
Escherichia Coliform (E. coli)	Colonies/100ml
pH – Units	Standard Units

2. 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 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.

C. SPECIAL CONDITIONS (continued)

(c) 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 then applicable.

3. All outfalls must be clearly marked in the field.

4. Permittee will cease discharge by connection to area-wide wastewater treatment system within 90 days of notice of its availability.

5. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

(a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"

(1) One hundred micrograms per liter (100 µg/L);

(2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;

(3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;

(4) The level established in Part A of the permit by the Director.

(b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.

6. Report as no-discharge when a discharge does not occur during the report period.

7. Lagoons and earthen basins shall have a liner that is designed, constructed and maintained in accordance with 10 CSR 20-8.020(13)(A)4. If operating records indicate, excessive percolation, the department may require a water balance test in accordance with 10 CSR 20-8.020(16) or other investigations to evaluate adequacy of the lagoon seal. The department may require corrective action as necessary to eliminate excess leakage.

8. Water Quality Standards

(a) 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.

9. Wastewater Irrigation System.

a. Discharge Reporting. Any unauthorized discharge from the lagoon or irrigation system shall be reported to the department as soon as possible but always within 24 hours. Discharge is allowed only as described in the Facility Description and Effluent Limitations sections of this permit.

C. SPECIAL CONDITIONS (continued)

- b. Irrigation Design. Permittee shall operate the land application system in accordance with the design parameters listed in the Facility Description section of this permit:
  - (1) No-Discharge System. When the Facility Description is “No-Discharge”, wastewater must be stored and irrigated at appropriate times. There shall be no-discharge from the irrigation site or storage lagoon except due to precipitation exceeding either the 1-in-10 year rainfall event for the design storage period or the 25-year-24-hour rainfall event.
- c. Lagoon Operating Levels - No-discharge Systems. The minimum and maximum operating water levels for the storage lagoon shall be clearly marked. Each lagoon shall be operated so that the maximum water elevation does not exceed one foot below the overflow point except due to exceedances of the 1-in-10 year or 25-year-24 hour storm events. Wastewater shall be land applied whenever feasible based on soil and weather conditions and permit requirements. Storage lagoon(s) shall be lowered to the minimum operating level prior to each winter by November 30.
- d. Emergency Spillway. Lagoons and earthen storage basins should have an emergency spillway to protect the structural integrity of earthen structures during operation at near full water levels and in the event of overflow conditions. The department may waive the requirement for overflow structures on small existing basins.
- e. General Irrigation Requirements. The wastewater irrigation system shall be operated so as to provide uniform distribution of irrigated wastewater over the entire irrigation site. A complete ground cover of vegetation shall be maintained on the irrigation site unless the system is approved for row crop irrigation. Wastewater shall be land applied only during daylight hours. The wastewater irrigation system shall be capable of irrigating the annual design flow during an application period of less than 100 days or 800 hours per year.
- f. Saturated/Frozen Conditions. There shall be no irrigation during frozen, snow covered, or saturated soil conditions. There shall be no irrigation on days when more than 0.2 inches of precipitation is received or when there is observation by the operator of an imminent or impending rainfall event.
- g. Buffer Zones. There shall be no irrigation within 300 feet of any down gradient pond, lake, sinkhole, losing stream or water supply withdrawal; 100 feet of gaining streams or tributaries; 150 feet of dwelling; or 50 feet of the property line.
- h. Public Access Restrictions. Public access shall not be allowed to the irrigation site(s).
- i. Equipment Checks during Irrigation. The irrigation system and application site shall be visually inspected at least once/hour during wastewater irrigation to check for equipment malfunctions and runoff from the irrigation site.
- j. The application rate of Biochemical Oxygen Demand<sub>5</sub> (BOD<sub>5</sub>) shall not exceed 50 lb/acre/day once every 4 days. (The application site must rest 3 days between applications to prevent the soil from plugging).

10. Plant Available Nitrogen (PAN) Loading Rates

- a. Wastewater, sludge and fertilizer nitrogen applications shall not exceed the crop nitrogen requirements based on realistic crop yield goals and the Plant Available Nitrogen (PAN) method. The wastewater application rate shall be calculated as follows:

$$\text{PAN} = \text{CNR} - \text{SRN} - \text{CFN}$$

WHERE: CFN = Commercial Fertilizer Nitrogen applied  
CNR = Crop Nitrogen Requirement  
PAN = Plant Available Nitrogen in wastewater and sludges  
SRN = Soil Residual Nitrogen

- b. Plant Available Nitrogen(PAN) in pounds/acre for wastewater is calculated as follows:

$$\text{PAN} = [\text{mg/L Total N}] \times [0.226] \times [\text{inch/acre/year}] \times [\text{Availability Factor}].$$

WHERE: Total N = [Ammonia as N] + [Organic Nitrogen as N] + [Nitrate as N]. Organic Nitrogen = [Total Kjeldahl Nitrogen as N] - [Ammonia as N].

C. SPECIAL CONDITIONS (continued)

10. Plant Available Nitrogen (PAN) Loading Rates (continued)

c. Plant Available Nitrogen (PAN) Availability factors for wastewater and sludges are as follows:

<u>Type of Nitrogen</u>	<u>Surface Application</u>	<u>Immediate Incorporation or Subsurface Injection</u>
Ammonia	0.6	0.9
Organic	0.4 - 0.7*	0.4 - 0.7*
Nitrate	0.9	0.9

**\*Note:** For primary/secondary wastewater treatment sludges and anaerobic stored biosolids, the organic nitrogen availability based on time after land application is: 0.4 for year 0-1, 0.2 for year 1-2 and 0.1 for year 2-3. When applied each year, the constant for year 3 and thereafter is 0.7.

d. Soil Residual Nitrogen (SRN).

For Annual Crops, the nitrogen availability from soil organic matter must be included based on soil CEC and crop season as follows:

$$\text{SRN in pound N/acre*} = [\text{percent organic mater}] \times \text{Soil Availability Factor}$$

<u>Soil Availability Factor</u> <u>by Soil CEC Ranges and Organic Matter</u>				
<u>Growing Season</u>	<u>Organic Matter</u>	<u>CEC</u>	<u>CEC</u>	<u>CEC</u>
		<u>10</u>	<u>10-18</u>	<u>&gt;18</u>
<b>Summer</b>	1%	40*	20	10
<b>Winter</b>	1%	20*	10	5

**\*Note:** If CEC is less than 10 and organic matter is 1.5% or greater, the total SRN is constant at 60 pounds nitrogen for summer and 30 pounds for winter.

For Perennial Crops the SRN is considered zero(0) for purposes of these calculations because the SRN has already been considered in the crop fertilization recommendations in the referenced publications under the paragraph below.

- e. Denitrification Factors. Allowance for about 10% denitrification for moderate to well drained soils is already included within the PAN and SRN tables above. Additional soil denitrification factors for nitrogen may be considered for poorly drained soils based on site specific soil conditions in accordance with NRCS standards. See National Engineering Handbook, Part 651 (AWMFH),Table 11-8.
- f. Crop nitrogen requirements shall be based on University of Missouri publication, Soil Test Interpretations and Recommendations Handbook, as revised. PAN calculations, crop yields and crop removal rates shall be listed in the annual report.
- g. If a crop is not harvested, the PAN rate shall not exceed 40 lbs/acre/year.

**Missouri Department of Natural Resources**  
**FACT SHEET**  
**FOR THE PURPOSE OF RENEWAL**  
**OF**  
**MO-0119580**  
**Gilster-Mary Lee Corporation**

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 a Major , Minor , Industrial Facility ; Variance ; Master General Permit ; General Permit Covered Facility ; and/or permit with widespread public interest .

**Part I – Facility Information**

Facility Type: IND/Domestic Waste  
 Facility SIC Code(s): 2043/2099/4952

**Facility Description:**

**Outfall #001** – Industrial/Domestic Wastewater - SIC #2043/2099/4952

One earthen aerated basin/one earthen settling basin/one earthen holding basin/wastewater irrigation/sludge retained in lagoon. Design population equivalent is 11,125.

Design flow is 42,000 gallons per day (1-in 10 year design including net rainfall minus evaporation).

Design flow is 25,000 gallons per day (dry weather flows).

Actual flow is 14,600 gallons per day.

Design sludge production is 200 dry tons/year.

Wastewater includes sanitary and process flows from manufacture of cereal, popcorn, and cardboard box assembly.

Application Date: 06/11/2010  
 Expiration Date: 01/05/2011  
 Last Inspection: 09/03/2008 In Compliance ; Non-Compliance

**OUTFALL(S) TABLE:**

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	.039	Storage	No-discharge spray irrigation	.25

Outfall #001

Legal Description: NW ¼, Sec. 9, T36N, R11E, Perry County  
 UTM Coordinates: X=779267; Y=4193245

Receiving Stream: Unnamed Tributary to Boise Brule Ditch (U)  
 First Classified Stream and ID: Tributary to Boise Brule Ditch (P)(01783)  
 USGS Basin & Sub-watershed No.: (07140105-070001)

Receiving Water Body's Water Quality & Facility Performance History:

No Problems noted. Facility operates as no-discharge.

Comments:

None.

**Part II – Operator Certification Requirements**

As per [10 CSR 20-6.010(8) Terms and Conditions of a Permit], permittees shall operate and maintain facilities to comply with the Missouri Clean Water Law and applicable permit conditions and regulations. Operators or supervisors of operations at regulated wastewater treatment facilities shall be certified in accordance with [10 CSR 20-9.020(2)] and any other applicable state law or regulation. As per [10 CSR 20-9.010(2)(A)], requirements for operation by certified personnel shall apply to all wastewater treatment systems, if applicable, as listed below:

Not Applicable ; This facility is not required to have a certified operator.

**Part III – Receiving Stream Information**

**APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:**

As per Missouri's Effluent Regulations [10 CSR 20-7.015], the waters of the state are divided into the below listed seven (7) categories. Each category lists effluent limitations for specific parameters, which are presented in each outfall's Effluent Limitation Table and further discussed in the Derivation & Discussion of Limits section.

- Missouri or Mississippi River [10 CSR 20-7.015(2)]:
- Lake or Reservoir [10 CSR 20-7.015(3)]:
- Losing [10 CSR 20-7.015(4)]:
- Metropolitan No-Discharge [10 CSR 20-7.015(5)]:
- Special Stream [10 CSR 20-7.015(6)]:
- Subsurface Water [10 CSR 20-7.015(7)]:
- All Other Waters [10 CSR 20-7.015(8)]:

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 1<sup>st</sup> 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(3)].

**RECEIVING STREAM(S) TABLE:**

WATERBODY NAME	CLASS	WBID	DESIGNATED USES*	8-DIGIT HUC	EDU**
Unnamed Trib to Boise Brule Ditch(u)	U	---	General Criteria	07140105	Ozark/Apple/Joachim
Boise Brule Ditch	P	1783	LWW, AQL, WBC(B)***		

\* - 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).

\*\* - Ecological Drainage Unit

\*\*\* - UAA has not been conducted.

**RECEIVING STREAM(S) LOW-FLOW VALUES TABLE:**

RECEIVING STREAM (U, C, P)	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Unnamed Trib to Boise Brule Ditch	0	0	0

**MIXING CONSIDERATIONS TABLE:**

Mixing Zone: Not Allowed [10 CSR 20-7.031(4)(A)4.B.(I)(a)].

Zone of Initial Dilution: Not Allowed [10 CSR 20-7.031(4)(A)4.B.(I)(b)].

**RECEIVING STREAM MONITORING REQUIREMENTS:**

No receiving water monitoring requirements recommended at this time.

## **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.

- All limits in this operating permit are at least as protective as those previously established; therefore, backsliding does not apply.

### **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.

- Renewal no degradation proposed and no further review necessary.

### **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.

### **BIO-SOLIDS, SLUDGE, & SEWAGE SLUDGE:**

Bio-solids are solid materials resulting from wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sludge is any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility or any other such waste having similar characteristics and effect. 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.

Applicable ;

This facility has been approved to land apply as per Permit Standard Conditions III and a Department approved bio-solids 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.

### **PRETREATMENT PROGRAM:**

The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a Publicly Owned Treatment Works [40 CFR Part 403.3(q)].

Pretreatment programs are required at any POTW (or combination of POTW operated by the same authority) and/or municipality with a total design flow greater than 5.0 MGD and receiving industrial wastes that interfere with or pass through the treatment works or are otherwise subject to the pretreatment standards. Pretreatment programs can also be required at POTWs/municipals with a design flow less than 5.0 MGD if needed to prevent interference with operations or pass through.

Several special conditions pertaining to the permittee's pretreatment program may be included in the permit, and are as follows:

- Implementation and enforcement of the program,
- Annual pretreatment report submittal,
- Submittal of list of industrial users,
- Technical evaluation of need to establish local limitations, and
- Submittal of the results of the evaluation

Not Applicable ;

The permittee, at this time, is not required to have a Pretreatment Program or does not have an approved pretreatment program.

**REASONABLE POTENTIAL ANALYSIS (RPA):**

Federal regulation [40 CFR Part 122.44(d)(1)(i)] requires effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above narrative or numeric water quality standard.

In accordance with [40 CFR Part 122.44(d)(iii)] if the permit writer determines that any give pollutant has the reasonable potential to cause, or contribute to an in-stream excursion above the WQS, the permit must contain effluent limits for that pollutant.

Not Applicable ;

A RPA was not conducted for this facility.

**REMOVAL EFFICIENCY:**

Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD<sub>5</sub>) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. Please see the United States Environmental Protection Agency's (EPA) website for interpretation of percent removal requirements for National Pollutant Discharge Elimination System Permit Application Requirements for Publicly Owned Treatment Works and Other Treatment Works Treating Domestic Sewage @ [www.epa.gov/fedrgstr/EPA-WATER/1999/August/Day-04/w18866.htm](http://www.epa.gov/fedrgstr/EPA-WATER/1999/August/Day-04/w18866.htm).

Not Applicable ;

Influent monitoring is not being required to determine percent removal.

**SANITARY SEWER OVERFLOWS (SSOs), BYPASSES, INFLOW & INFILTRATION (I&I) – PREVENTION/REDUCTION:**

Sanitary Sewer Systems (SSSs) are municipal wastewater collection systems that convey domestic, commercial, and industrial wastewater, and limited amounts of infiltrated groundwater and storm water (i.e. I&I), to a POTW. SSSs are not designed to collect large amounts of storm water runoff from precipitation events.

Untreated or partially treated discharges from SSSs are commonly referred to as SSOs. SSOs have a variety of causes including blockages, line breaks, sewer defects that allow excess storm water and ground water to overload the system, lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. A SSOs is defined as an untreated or partially treated sewage release from a SSS. SSOs can occur at any point in an SSS, during dry weather or wet weather. SSOs include overflows that reach waters of the state. SSOs also include overflows out of manholes and onto city streets, sidewalks, and other terrestrial locations. SSSs can back up into buildings, including private residences. When sewage backups are caused by problems in the publicly-owned portion of an SSS, they are considered SSOs.

Not Applicable ;

This facility is not required to develop or implement a program for maintenance and repair of the collection system; however, it is a violation of Missouri State Environmental Laws and Regulations to allow untreated wastewater to discharge to waters of the state.

**SCHEDULE OF COMPLIANCE (SOC):**

A schedule of remedial measures included in a permit, including 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.

Not Applicable ;

This permit does not contain a SOC.

**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. Company does not store materials outside.

**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.

**WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:**

As per [10 CSR 20-2.010(78)], the amount of pollutant each discharger is allowed by the Department to release into a given stream after the Department has determined total amount of pollutant that may be discharged into that stream without endangering its water quality.

Not Applicable ;

Wasteload allocations were not calculated.

**WLA MODELING:**

There are two general types of effluent limitations, technology-based effluent limits (TBELs) and water quality based effluent limits (WQBELs). If TBELs do not provide adequate protection for the receiving waters, then WQBEL must be used.

Not Applicable ;

A WLA study was either not submitted or determined not applicable by Department staff.

**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.

**WHOLE EFFLUENT TOXICITY (WET) TEST:**

A WET test is a quantifiable method of determining if a discharge from a facility may be causing toxicity to aquatic life by itself, in combination with or through synergistic responses when mixed with receiving stream water.

Not Applicable ;

At this time, the permittee is not required to conduct WET test for this facility. Facility operates with no-discharge to the stream.

**303(d) LIST & TOTAL MAXIMUM DAILY LOAD (TMDL):**

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.

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. 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

Not Applicable ;

This facility does not discharge to a 303(d) listed stream.

## Part V – Effluent Limits Determination

### Outfall #001

#### EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
<b>STORAGE BASIN MONITORING</b>							
FLOW	GPD	1	*		*	NO	
BOD <sub>5</sub>	MG/L	1	*		*	YES	65/45
TSS	MG/L	1	*		*	YES	110/70
pH	SU	1	*		*	YES	ABOVE 6
AMMONIA AS N	MG/L	5	*		*	NO	
TEMPERATURE	°C	5/9	*		*	NO	
NITRATE/NITRITE AS N	MG/L	9	*		*	NO	
FECAL COLIFORM	#/100ML	9	*		*	YES	REPLACED WITH ECOLI
ESCHERICHIA COLI (E-COLI)	#/100ML	9	*		*	YES	***
<b>LAND APPLICATION MONITORING</b>							
LAGOON FREEBOARD	FEET	9	*		*	NO	
RAINFALL	INCHES	9	*		*	NO	
IRRIGATION PERIOD	HOURS	9	*		*	NO	
VOLUME IRRIGATED	GALLONS	9	*		*	NO	
APPLICATION AREA	ACRES	9	*		*	NO	
APPLICATION RATE	GALLONS /ACRE	9	*		*	NO	
<b>IRRIGATED WASTEWATER MONITORING</b>							
CHEMICAL OXYGEN DEMAND	MG/L	9	*			YES	REPLACED WITH BOD
BIOLOGICAL OXYGEN DEMAND	MG/L	9	*			YES	***
TOTAL SUSPENDED SOLIDS	MG/L	9	*			NO	
TOTAL KJELDAHL NITROGEN AS N	MG/L	9	*			NO	
OIL AND GREASE	MG/L	9	*			NO	
CHLORIDES	MG/L	9	250			NO	
TOTAL SODIUM	MG/L	9	250			NO	
SODIUM ADSORPTION RATIO	RATIO	9	5			NO	
<b>SOIL MONITORING – LAND APPLICATION AREA</b>							
TOTAL KJELDAHL NITROGEN AS N	MG/KG	9	*			NO	
AMMONIA NITROGEN AS N	MG/KG	9	*			NO	
NITRATE/NITRITE AS N	MG/KG	9	*			NO	
CHLORIDES	MG/KG	9	*			NO	
AVAILABLE PHOSPHORUS AS P	MG/KG	9	75			NO	
TOTAL SODIUM	MG/KG	9	*			NO	
EXCHANGEABLE SODIUM %	%	9	10			NO	
pH UNITS	SU	9	6.0-7.5			NO	
CATION EXCHANGE CAPACITY	CEC	9	*			NO	
ORGANIC MATTER	%	9	*			NO	
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

\* - Discharge for reasons other than those allowed in the permit will constitute a violation. Monitoring requirement only.

N/A - Not applicable

\*\*\* - Parameter not previously established in previous state operating permit.

N/A – Not applicable

Basis for Limitations Codes:

- |  |                                    |
|--|------------------------------------|
| 1. State or Federal Regulation/Law       | 7. Antidegradation Policy          |
| 2. Water Quality Standard (includes RPA) | 8. Water Quality Model             |
| 3. Water Quality Based Effluent Limits   | 9. Best Professional Judgment      |
| 4. Lagoon Policy                         | 10. TMDL or Permit in lieu of TMDL |
| 5. Ammonia Policy                        | 11. WET Test Policy                |
| 6. Dissolved Oxygen Policy               |                                    |

**OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:**

- **Flow.** In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the department, which may require the submittal of an operating permit modification.
- **Biochemical Oxygen Demand (BOD<sub>5</sub>).** No-Discharge Facility. Overflows shall be in accordance with 10 CSR 20-6.015. Please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**
- **Total Suspended Solids (TSS).** No-Discharge Facility. Overflows shall be in accordance with 10 CSR 20-6.015. Please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**
- **pH.** No-Discharge Facility. Overflows shall be in accordance with 10 CSR 20-6.015. Please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**
- **Temperature.** No-Discharge Facility. Overflows shall be in accordance with 10 CSR 20-6.015. Please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**
- **Total Ammonia Nitrogen.** No-Discharge Facility. Overflows shall be in accordance with 10 CSR 20-6.015. Please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**
- **Nitrate/Nitrite as N.** No-Discharge Facility. Overflows shall be in accordance with 10 CSR 20-6.015. Please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**
- **Escherichia coli (E. coli).** No-Discharge Facility. Overflows shall be in accordance with 10 CSR 20-6.015. Please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**
- **Rainfall, Lagoon Freeboard, Irrigation Period, Volume Irrigated, Irrigation Area. No-Discharge Facility.** Necessary parameters to determine compliance with No-Discharge Requirements in 10 CSR 20-6.015.
- **Irrigated Wastewater Testing and Soil Monitoring.** Parameters of concern that characterize the wastewater strength. Soil monitoring is to ensure build up of nutrients does not occur in the land application area. Monitoring requirements have been retained from previous state operating permit with the exception of chemical oxygen demand (COD) testing. COD testing is being replaced with BOD testing to ensure compliance with special condition 9.j.
- **Minimum Sampling and Reporting Frequency Requirements** Sampling and reporting frequency requirements have been retained from previous state operating permit.

Monitoring frequencies has been established in accordance with best professional judgement and knowledge of understanding operation of a no-discharge system. Daily flow and rainfall frequency has been established to determine compliance with meeting the definition of no discharge. No discharge facilities are designed, constructed and operated to hold or irrigate , or otherwise dispose without discharge to surface or subsurface waters of the state, all process wastes and associated storm water flows except for discharges that are caused by catastrophic and chronic storm events. These storm events are the 1-in-10 year storm event and the 25 year 24 hour storm event. No discharge facilities are allowed to discharge excess water caused by these storm events in accordance with the emergency discharge limits when these storm events are exceeded. Daily records for land application are being required to determine if wastewater is being properly land applied. Reports are summarized and submitted annually for review. The monitoring frequencies are being retained from the previous permit.

## **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.

### **PUBLIC NOTICE:**

As per the Missouri Clean Water Law, the Missouri Clean Water Commission, and the federal Clean Water Act, persons wishing to comment on Missouri State Operating Permits are directed to do so by a department approved Public Notice coversheet. This Public Notice coversheet is attached to a Missouri State Operating Permit during the Public Notice period.

**DATE OF FACT SHEET:** JULY 6, 2010

**COMPLETED BY:**

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