

# **Bradshaw Enterprises – Newman Farm**

## **Section 8 - NMP AMENDMENT**

### **NARRATIVE RATE NUTRIENT MANAGEMENT PLAN**

**Illinois General NPDES Permit ILA010100**

**Prepared for:**

**Bradshaw Enterprises – Newman Farm**

**Prepared by:**



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**Date:**

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**The terms of the NMP with respect to rates of application of manure, litter, and process wastewater include the following:**

- The outcome of the field-specific assessment of the potential for nitrogen and phosphorus transport from each field.
- The crops to be planted in each field or any other uses such as pasture or fallow fields (including alternative crops identified in accordance with 40 CFR part 122.42(e)(5)(ii)(B).
- The realistic yield goal for each crop or use identified for each field.
- The nitrogen and phosphorus recommendations from sources specified by the Director for each crop or use identified for each field.
- The methodology by which the NMP accounts for the following factors when calculating the amounts of manure, litter, and process wastewater to be land applied:
  - Results of soil tests conducted in accordance with protocols identified in the NMP, as required by 40 CFR part 122.42(e)(1)(vii).
  - Credits for all nitrogen in the field that will be plant available.
  - The amount of nitrogen and phosphorus in the manure, litter, and process wastewater to be applied.
  - Consideration of multiyear phosphorus application.
  - Accounting for all other additions of plant-available nitrogen and phosphorus to the field.
  - The form and source of manure, litter, and process wastewater.
  - The timing and method of land application.
  - Volatilization of nitrogen and mineralization of organic nitrogen.
- Alternative crops that are not in the planned crop rotation but that are listed, by CMU, where the plan includes the realistic crop yield goals and the nitrogen and phosphorus recommendations for each such crop.

**The following projections in the NMP are not terms of the NMP:**

- The planned crop rotations for each field for the period of permit coverage.
- The projected amount of manure, litter, or process wastewater to be applied.
- Projected credits for all nitrogen in the field that will be plant available.
- Consideration of multiyear phosphorus application.
- Accounting for all other additions of plant-available nitrogen and phosphorus to the field.
- The predicted form, source, and method of application of manure, litter, and process wastewater for each crop.

Timing of application for each field, as far as it concerns the calculation of rates of application.

**Executive Summary**

The purpose of this amendment to the manure management plan is to present a Narrative Rate Plan for Bradshaw Enterprises – Newman Farms.

This amendment contains provisions for a narrative rate nutrient management plan and updates to facility contacts in the Section 1 General Information and Section 3 Emergency spill recovery plan.

For the number of animals at the facility, refer to the manure management plan submitted September 2012.

The facility is managed by Brian Bradshaw.

Manure nutrient content has been determined from laboratory analysis. Application rates will be based on the annual agronomic nitrogen of the crops to be grown. Furthermore, manure application will not cause phosphorus levels in the soil to increase.

Manure Source	Amount	Units	PAN	P2O5	K2O
			lb/unit	l b / u n i t	lb/unit
Swine Waste Holding Pond Manure is Injected	1,600	1000 gal	2	2	5

\* Nutrient values above are based on fall 2012 manure analysis.

Approximately 256 acres are identified for use by the 3<sup>rd</sup> party who transfers manure from this facility for land application of manure and process wastewater. Based on facility manure and process wastewater production volumes and planned crop rotations, approximately 45 acres are needed each year for land application to a field with continuous grain corn crop or 68 acres are needed each year for land application to a field with soybeans.

All manure applications will be injected or surface applied and incorporated within 24 hours. No field will receive more of any nutrient than will be taken up by the next crop.

**Application Methods**

All manure applications will be injected or surface applied and incorporated within 24 hours. No field will receive more nitrogen than will be taken up in the next corn grain crop and no second year application of manure will be made.

Bradshaw Enterprises – Newman Farm plans to continue to sample and lab test manure. Using historical lab test results and verifying the consistency of nutrient content to specific containments, we are planning future applications based on updated historical data.

**SECTION I. GENERAL INFORMATION****Owner Information**

Site Name	Bradshaw Enterprises – Newman Farm
Owner Name	Bradshaw Enterprises
Address	46619 Co. Hwy. 2
City, State, Zip	Griggsville, IL 62340
Phone #	(217) 833-2111

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**Manager/Operator Information**

Manager	Brian Bradshaw
Certification #	
Address	46619 Co. Hwy. 2
City, State, Zip	Griggsville, IL 62340
Phone #	(217) 833-2111

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**Facility Information**

Address

Plat Location                      Section 12, T15N, R10E, Douglas County, IL

Directions from nearest post office                      From the Post Office at Newman drive west one block on West Green Street to Broadway. Drive south on Broadway 4 ½ blocks to U.S. Hwy. 136. Drive west on U.S. Hwy. 136 approximately 2 ¾ miles to North Co. Rd. 2360 East. Drive south on Co. Rd. 2360 East approximately 2 miles to Co. Rd. 790 North. Drive west on Co. Rd. 790 North approximately ½ mile to the site – on the right.

Phone #                                      (217) 833-2111

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**Emergency Contacts**

State Agency	IEPA thru IL Emergency Management
Phone #	1-800-782-7860
Spill Recovery Personnel	Brian Bradshaw
Phone #	(217) 833-2111

## **Section 2. Site Specific Information**

### **Fields available for land Application**

CMU #	Sub Id	Fields ID	Total Spreadable Acres
1 43.89 Ac	F225-T1229	1	36.01
2 52.53 Ac	F397-T4418	1	51.44
3 96.33 Ac	F181-T2209	1	94.30
4 39.39 Ac	F5545-T3875	1	39.39
5 35.57 Ac	F5545-T3874	1	35.57

**Total Spreadable Acres = 256.71**

**Nutrient Management Plan – Narrative Rate**

(Insert Narrative Rate Table)



Fields available for land application			Timing & Limitations for a land application	Outcome of the assessment of the potential for nutrient transport		Crop year	Planned crops or other use	Realistic annual yield goal	Max lbs N/Ac derived from all sources	Max lbs P2O5/Ac derived from all sources	Max lbs K2O/Ac derived from all sources	Alternative crop				
Field	Sub-field	Total acres		Allowable manure application rate	Alternative crop							Yield goal	Total N/Ac recommendation	Total P2O5/Ac recommendation	Total K2O/Ac recommendation	
CMU 1	F225 - T1229	36.01	Liquids shall be injected in a manner that prevents runoff and odor. Surface application may only be applied per notes 1-7 Below	Manure shall not be applied in excess of any of the nutrient (N, P or K) needs of the next crop.	2013	Corn Grain	160 bu/ac	1 Year Corn Grain	1 Year Corn Grain	1 Year Corn Grain	Soybeans	50 bu/ac	257	48	120	
					2014	Corn Grain	160 bu/ac	192 lb/ac	68 lb/ac	45 lb/ac	Corn Grain	160 bu/ac	192	68	45	
					2015	Corn Grain	160 bu/ac				Alternate Crop for All Years					
					2016	Corn Grain	160 bu/ac									
					2017	Corn Grain	160 bu/ac									
					2018	Corn Grain	160 bu/ac									
CMU 2	F5397 - T4418	51.44	Liquids shall be injected in a manner that prevents runoff and odor. Surface application may only be applied per notes 1-7 Below	Manure shall not be applied in excess of any of the nutrient (N, P or K) needs of the next crop.	2013	Corn Grain	160 bu/ac	1 Year Corn Grain	1 Year Corn Grain	1 Year Corn Grain	Soybeans	50 bu/ac	257	48	120	
					2014	Corn Grain	160 bu/ac	192 lb/ac	68 lb/ac	45 lb/ac	Corn Grain	160 bu/ac	192	68	45	
					2015	Corn Grain	160 bu/ac				Alternate Crop for All Years					
					2016	Corn Grain	160 bu/ac									
					2017	Corn Grain	160 bu/ac									
					2018	Corn Grain	160 bu/ac									
CMU 3	F5181 - T2209	94.3	Liquids shall be injected in a manner that prevents runoff and odor. Surface application may only be applied per notes 1-7 Below	Manure shall not be applied in excess of any of the nutrient (N, P or K) needs of the next crop.	2013	Corn Grain	160 bu/ac	1 Year Corn Grain	1 Year Corn Grain	1 Year Corn Grain	Soybeans	50 bu/ac	257	48	120	
					2014	Corn Grain	160 bu/ac	192 lb/ac	68 lb/ac	45 lb/ac	Corn Grain	160 bu/ac	192	68	45	
					2015	Corn Grain	160 bu/ac				Alternate Crop for All Years					
					2016	Corn Grain	160 bu/ac									
					2017	Corn Grain	160 bu/ac									
					2018	Corn Grain	160 bu/ac									
CMU 4	F5545 - T3875	39.39	Liquids shall be injected in a manner that prevents runoff and odor. Surface application may only be applied per notes 1-7 Below	Manure shall not be applied in excess of any of the nutrient (N, P or K) needs of the next crop.	2013	Corn Grain	160 bu/ac	1 Year Corn Grain	1 Year Corn Grain	1 Year Corn Grain	Soybeans	50 bu/ac	257	48	120	
					2014	Corn Grain	160 bu/ac	192 lb/ac	68 lb/ac	45 lb/ac	Corn Grain	160 bu/ac	192	68	45	
					2015	Corn Grain	160 bu/ac				Alternate Crop for All Years					
					2016	Corn Grain	160 bu/ac									
					2017	Corn Grain	160 bu/ac									
					2018	Corn Grain	160 bu/ac									
CMU 5	F5545 - T3874	35.57	Liquids shall be injected in a manner that prevents runoff and odor. Surface application may only be applied per notes 1-7 Below	Manure shall not be applied in excess of any of the nutrient (N, P or K) needs of the next crop.	2013	Corn Grain	160 bu/ac	1 Year Corn Grain	1 Year Corn Grain	1 Year Corn Grain	Soybeans	50 bu/ac	257	48	120	
					2014	Corn Grain	160 bu/ac	192 lb/ac	68 lb/ac	45 lb/ac	Corn Grain	160 bu/ac	192	68	45	
					2015	Corn Grain	160 bu/ac				Alternate Crop for All Years					
					2016	Corn Grain	160 bu/ac									
					2017	Corn Grain	160 bu/ac									
					2018	Corn Grain	160 bu/ac									

Notes:

- 1) at a rate that does not exceed the soil intake rate and to preclude runoff
- 2) when ground is not frozen, saturated, or ice/snow covered
- 3) when the soil surface has a minimum 50% vegetation or crop residue
- 4) when wind is not in the direction of neighboring residence within 1/2 mile of the field
- 5) when precipitation is not forecasted within 24 hours
- 6) within 100 feet of an open surface intake or other conduit to surface water except 35 feet is allowed when protected by a minimum 35 foot vegetative buffer
- 7) and provisions o through u for 8 IAC 900.803 found in section 7

Potential Rotation	Potential Crop	Yield		N	P2O5	K2O
		Goal	Unit/Acre	(lbs/ac)	(lbs/ac)	(lbs/ac)
Continuous Corn	Corn Grain	160	bu/ac	192	68	45
Alternate Crop - Soybeans	Soybeans	50	bu/ac	257	48	120

Manure Source	Amount	Units	Nitrogen			
			NH3	Org. N	TOTAL N	1YR PAN
			lb/unit	lb/unit	lb/unit	lb/unit
Swine Effluent Waste Holding Pond	1600	1000 gal	2.00	1.00	3.0	2.30

Manure Source	Amount	Units	P2O5	K2O
			lb/unit	lb/unit
Swine Effluent Waste Holding Pond	1600	1000 gal	1.80	9.3

Manure Application Rates	Units	CR1		CR2			
		N-Based	P-Based	N-Based	P-Based		
Swine Effluent Waste Holding Pond	1000 gal/ac	83	38	112	27		

\* Maximum recommended application rate for corn is 32,000 gallons per acre.

Supplement with N and P as per Illinois Agronomy Handbook

\* Maximum recommended application rate for soybeans is 24,000 gallons per acre.

Minimum Manure Application Acres	Amount	CR1		CR2			
		N-Based	P-Based	N-Based	P-Based		
Swine Effluent Waste Holding Pond	1600	19	42	14	60		

Manure Source	Amount	Units	PAN	P2O5	K2O	PAN	P2O5	K2O
			lb/unit	lb/unit	lb/unit	lb	lb	lb
Swine Effluent Waste Holding Pond	1600	1000 gal	2.3	1.8	9.3	3680	2880	14880
						3680	2880	14880

Potential Rotation	Potential Crop	Acres	N	P2O5	K2O	N	P2O5	K2O
			(lbs/ac)	(lbs/ac)	(lbs/ac)	(lbs/ac)	(lbs/ac)	(lbs/ac)
Corn Grain	Corn	256.7	192	68	45	49286	17456	11552
Alternate Crop - Soybeans	Soybeans	0	257	48	120	0	0	0
		0				49286	17456	11552
						-45606	-14576	3329

\*\*\* Recommend spreading before corn on 50 acres at 32,000 gallons per acre.

\*\*\* Recommend spreading before Soybeans on 67 acres at 24,000 gallons per acre.

## **Methodology**

The NMP accounts for the following factors when calculating the amounts of manure, litter, and process wastewater to be land applied:

- Results of soil tests conducted in accordance with protocols identified in the NMP, as required by 40 CFR part 122.42(e)(1)(vii).
- Credits for all nitrogen that will be plant available as per laboratory analysis.
- The amount of nitrogen, phosphorus and potassium in the manure, litter, and process wastewater to be applied. Consideration of multiyear phosphorus application. Accounting for all other additions of plant-available nitrogen and phosphorus to the field. The form and source of manure, litter, and process wastewater. The timing and method of land application.

## Example Manure Application Rate Calculation:

**Step 1: Estimate the Available Nutrients (NPK) from manure source.**

### **Step 1 (a) Liquid Manure Source**

Manure Tests Results:

Nutrients	lb/1000 gal
Total N	2.91
Ammonium N	1.52
Organic N	1.29
P	0.83
K	4.15

Estimated Plant Available Nutrients:

Ammonium N =  $1.62 \times 0.75 = 1.23$  lb/1000 gal

Organic N =  $1.29 \times 0.60 = 0.77$  lb/1000 gal

Total PAN = 2.0 lb/1000 gal

Total P<sub>2</sub>O<sub>5</sub> =  $0.83 \times 2.3 = 2$  lb/1000 gal

Total K<sub>2</sub>O =  $4.15 \times 1.2 = 5$  lb/1000 gal

**Step 2 Determine Required Nutrients for planned crop.**

Crop	N	P2O5	K2O
Corn	256	96	192
Soybeans	257	48	120

**Note:** See section 2 Narrative rate nutrient management plans for planned crops.

**Step 3 Estimate Manure Application Rate.**

Selected Crop: Corn (See Step 2)

Selected Manure Source: Liquid manure (See Step 1)

Nitrogen Based:

$$\frac{\text{Crop lb N/ac}}{\text{Available lb PAN/1000 gal}} = \text{Appl. rate (1000 gal/ac)}$$

$$\frac{256 \text{ lb N/ac}}{2 \text{ lb PAN/1000 gal}} = 128,000 \text{ gal/ac}$$

Phosphorus Based:

$$\frac{\text{Crop P}_2\text{O}_5 \text{ lb/ac}}{\text{Available P}_2\text{O}_5 \text{ lb/1000 gal}} = \text{Appl. rate (1000 gal/ac)}$$

$$\frac{96 \text{ lb P}_2\text{O}_5 / \text{ac}}{2 \text{ lb P}_2\text{O}_5 / 1000 \text{ gal}} = 48,000 \text{ gal/ac}$$

Potassium Based:

$$\frac{\text{Crop lb K}_2\text{O/ac}}{\text{Available lb K}_2\text{O/1000 gal}} = \text{Appl. rate (1000 gal/ac)}$$

$$\frac{192 \text{ lb K}_2\text{O} / \text{ac}}{5 \text{ lb K}_2\text{O/1000 gal}} = 38,400 \text{ gal/ac}$$

Maximum application rate:

32,000 gal/ac (Potassium Based)

## **Land Application Regulations & Recommendations**

### **Provisions for Waste Application**

Bradshaw Enterprises, Newman Farms does not own or operate fields where manure may be applied. A third party applicator accepts all the liquid from the waste holding ponds and obtains agreements from adjacent (generally) landowners to apply waste water to fields they own., A listing of the fields the waste applicator may use is attached with the application rate calculations for each source type. It is recommended that no manure will be applied on fields unless the soil phosphorus test (Bray 1 or Mechlich) is 300 lb/acre or less.

The provisions of 35 IAC 506.303 (o) through (u) shall be met or exceeded by the applicator when applying waste. These and other restrictions are identified on the attached aerial photos or other field maps.

- o) Waste applied within 1320' of any residence not owned by the field owner/operator shall be injected or incorporated on the day of application.
- p) Waste shall not be applied within:
  - 1. 200' of surface water unless the water is up-gradient or there is adequate diking to prevent runoff, and
  - 2. 150' of a potable water supply well.
- q) Waste shall not be applied in a 10-year flood plain unless the injection or incorporation method of application is used.
- r) Livestock waste shall not be applied in waterways.
- s) Waste that is spread on frozen or snow-covered land shall be limited to areas which:
  - 1. Land slope is 5% or less, or
  - 2. Adequate erosion control practices exist
- u) Livestock waste shall not be applied during a rainfall or to saturated soil and conservative application rates shall be used in the case of a high water table or shallow earth cover to fractured bedrock. Caution shall be exercised in applying livestock waste, particularly on porous soils, so as not to cause contamination of the groundwater.
- v) Professional waste applicators retained by the Defendant shall handle all wastes. All land application of waste shall be performed in a manner that prevents runoff and odor and in accordance with all applicable regulations and NPDES Permit.

### **Waste Application Records**

Records of waste transfer shall be kept and include all of the information on the attached forms including:

- 1. Field I.D.
  - 2. Date of transfer
  - 3. Waste source and type
  - 4. Total amount of waste transferred
  - 5. Important notes or comments

### Section 3. Emergency Spill Recovery Plan and Reporting Protocol

#### *Emergency Response Personnel*

Name	Home Phone	Cell Phone	Pager
Brian Bradshaw	(217) 833-2111	N/A	N/A

#### **Spill Reporting**

If there is a release of more than 25 gallons or if waste **HAS ENTERED** surface or ground water, notify the Illinois Emergency Management Agency within 24 hours by calling **800-782-7860 or 217-782-7860**.

Also notify the following persons ASAP.

Name	Office	Cell Phone	Pager/Mob.
Brian Bradshaw	(217) 833-2111	N/A	N/A
Terry L. Feldmann, PE	309-693-7615	309-251-6962	N/A

#### ***Attached Maps***

1. Locations of all supply lines used to transport manure to fields
2. Local road map showing all routes used to transport manure on public use roadways.

#### ***Custom Applicator***

*“I have received and agree to follow this emergency spill recovery plan and reporting protocol. I will land apply the manure from this facility using Best Management Practices. I agree to monitor all application equipment and prevent runoff due to the application process. In the event of a spill I will follow the procedures outlined by this plan.”*

Custom Applicator \_\_\_\_\_ Date \_\_\_\_\_

Owner/Operator \_\_\_\_\_ Date \_\_\_\_\_

### ***Written Reports***

All spills must be reported to management personnel and include the following information.

1. Spill Reporter Name and phone number
2. Date, time, and duration of release
3. Location of spill (County, distance and direction from the nearest town, village or municipality)
4. Estimate of the quantity in gallons of the release and the flow rate in gallons per minute if the release is ongoing
5. Area to which the release occurred (field, ditch, stream, or other description) and description of the apparent environmental impacts
6. Names and phone numbers of those who may be contacted for further information
7. Dangers to health or the environment resulting from the release
8. What action was taken to respond to, contain, and mitigate the release?

Name and mailing address of the facility.