WPDES Nutrient Management Plan

Prepared for

Burr Oak Heifers, LLC
1812 First Dr.
Coloma, WI 54930

Jeff Opitz, Owner
Sebastiaan Jooste, Site Manager

T.18N. R.7E., Sec 36
Adams County

Crop Years: 2013-2017

CROPTECH Agronomics LLC
Crop Management Services

WPDES Nutrient Management Plan

Prepared for

Burr Oak Heifers, LLC
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Coloma, WI 54930

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NMP Section 1

Nutrient Management Plan
Burr Oak Heifers, LLC
February 2013

Background

This Nutrient Management Plan (NMP) is prepared for the Burr Oak Heifers, LLC located at 1812 First Dr. Coloma, WI 54930 in the Township of Richfield in Adams County, Wisconsin for the crop year of 2013 -2017 from harvest to harvest (November 1 to October 31). The goal of this NMP is to ensure that Burr Oak Heifers, LLC maintains compliance with all applicable criteria contained in Ch. NR 243, Wis. Admin. Code and Wisconsin Nutrient Management Standard Code 590 and its companion Technical Note.

Burr Oak Heifers, LLC is a dairy enterprise with the main business as custom growing dairy heifers for other dairy businesses throughout Wisconsin.

As the nutrient management planner for the producer, Paul Sturgis of Croptech Agronomics LLC, 5944 Maplewood Rd, Vesper, WI 54489 will develop the required information for the producer to submit to the appropriate WDNR offices.

This narrative will demonstrate compliance with nutrient management plan requirements contained in Administrative Code NR 243, WPDES permit, and NRCS Technical Standard 590. Specifically, the nutrient management plan will document how the producer will manage organic manures, nutrients, and contaminated runoff through sound land management practices. It is the intent of the producer to follow best management practices to safeguard the environment and to maximize the nutrient value of the animal manures.

Wisconsin NR 243 Requirements and Criteria

Animal units – 2013 to 2017.

Table 1 provides the current and projected animal numbers for the dairy over the term of the upcoming WPDES permit cycle. See Section 3.0 for DNR Form 340025a. The producer will house approximately 3,100 custom raised dairy heifers. The average 45 day continuous animal units is 2,675 (NRCS calculation) or 3,100 DNR calculation.

Table 1. Total animals and animal units

Year	Total Herd Size (600 # heifer +1090 # Heifer)	Total Animal Units(WDNR)
2013	3,100 (1470+1630)	3,100
2014	3,100 (1470+1630)	3,100
2015	3,100 (1470+1630)	3,100
2016	3,100 (1470+1630)	3,100
2017	3,100 (1470+1630)	3,100

Amount of manure and process wastewater to be land applied.

Engineering calculations indicate that the facility will collect 1,661,115 ft^3 of manure and waste water from the heifers. With consultation from the engineers we believe that the vast majority of manure will be of a solid to semi solid type that would be expressed in tons. Of the manure generated by the heifers, we estimate that 85% would be of this type. That would equal approximately 45,900 tons per year. The remaining 15% of the heifer manure would be in a liquid state. This would be equal to 1,868,753 gallons per year. The annual first flush from the feed storage is 75,000 gallons per year. The total amount of liquid from storage is calculated to be 1,943,753 gallons per year. Additionally the facility is being required by DNR to collect the remaining water "second flush" exiting from the feed storage area. This is calculated by the engineers to be 1,387,500 gallons per year. This will be collected in a separate storage basin and field applied as needed.

Please refer to section 3.4 of this NMP for the calculations used to arrive at these quantities.

Starting for the 2014 crop year, the facility will need to apply approximately 45,900 tons of solid type manure and approximately 1,943,753 gallons of liquid manure, wastewater, leachate, and first flush from the feed storage facility in addition to 1,387,500 gallons of "second flush" waste water will be applied to cropland controlled by the operation or in agreements.

We have characterized three separate waste streams being applied to the fields in the NMP. Again these are; the liquid portion of the waste storage facility, the semi-solid portion of the waste storage facility, and the "second flush" liquid collected exiting the feed storage area. The nutrient analysis for the "second flush" feed pad water was derived from research done by the Discovery Farms on feed pad run off. Information provided by the Discovery Farms is attached in section 4.0 of this NMP.

The process we used to plan organic nutrient applications allows the producer maximum flexibility in that we plan to apply the appropriate amount of organic nutrients to every field which can receive these nutrients in a given year. By using this process, it may appear that we are using every available acre each year to apply organic nutrients; however this is not the case. By examining the Manure Tracking Report in Section 3.0 and the chart below, the reviewer will realize that in every year we have more liquid waste applications planned than liquid waste generated. A negative number in the "Balance" row indicates there is more manure planned than generated. **This clearly demonstrates that the operation has adequate acreage available to make nutrient applications.** This process also allows the flexibility to make application changes to fields while complying with all applicable recommendations, rules and regulations. This is a common and accepted practice among nutrient management planners because it does demonstrate the adequacy of acreage for a producer and allows flexibility in applications and timing.

Manure Distribution by Cooperator **Solid**

Producer	2013	2014	2015	2016	2017
Church Farms	0	10,404	11,936	11,838	10,043

Revised 3-30-13

Flyte Farms	0	34,254	26,044	33,582	37,634
Frozene Farms	0	3,688	3,688	3,688	3,688
Hooks Cal	0	0	0	0	0
Jacobs Lois	0	0	0	0	0
Wagner Farms Inc	0	5,096	5,258	4,852	5,258
Total Planned Applied		**53,442**	**46,926**	**53,960**	**56,623**
Total Collected		45,900	45,900	45,900	45,900
Balance		-7,542	-1,026	-8,060	-10,723

Manure Distribution by Cooperator **Liquid**

Producer	**2013**	**2014**	**2015**	**2016**	**2017**
Church Farms	0	0	0	0	0
Flyte Farms	0	1,462,500	1,493,300	1,628,500	1,282,500
Frozene Farms	0	0	0	0	0
Hooks Cal	0	102,000	102,000	102,000	102,000
Jacobs Lois	0	565,000	565,000	526,500	729,000
Wagner Farms Inc	0	0	0	0	0
Total Planned Applied	0	**2,129,500**	**2,160,300**	**2,257,000**	**2,113,500**
Total Collected		2,000,000	2,000,000	2,000,000	2,000,000
Balance		-129,500	-160,300	-257,000	-113,500

Manure Distribution by Cooperator **"Second Flush"**

Producer	**2013**	**2014**	**2015**	**2016**	**2017**
Church Farms	0	0	0	0	0
Flyte Farms	0	1,200,000	1,260,000	1,320,000	1,320,000

Revised 3-30-13

Frozene Farms	0	0	0	0	0
Hooks Cal	0	0	0	0	0
Jacobs Lois	0	600,000	600,000	600,000	600,000
Wagner Farms Inc	0	0	0	0	0
Total Planned Applied	0	1,800,000	1,860,000	1,920,000	1,920,000
Total Collected	0	1,387,500	1,387,500	1,387,500	1,387,500
Balance	0	-412,500	-472,500	-532,500	-532,500

Other sources of nutrients to be land applied (NRCS 590 requirement)

The producer does not plan to use other sources of organic nutrients in this NMP.

Anticipated frequency and method(s) of land application

The producer anticipates applying manure according to the following schedule: anytime in April, May, July, August and October, November, December. Application will occur in spring before planting and during the summer and fall after harvest. In this area there are numerous short season crops such as canning peas, snap beans and sweet corn. Generally this is sixty to ninety days. These crops may be planted and/or harvested at various times during the normal growing season. The producer also utilizes cereal grains planted in the fall to harvest as silage late in fall or early spring. They plan on applying manure ahead of such plantings. The small amount of liquid manure which is generated may be topdressed on alfalfa fields during the summer months. These applications may occur within SWQMA's however the producer will follow Table 1 of Code 590 with regard to rates and allowable residue cover. The producer will not apply manure during the months of February and March.

The producer anticipates using box type or slinger type manure spreaders and liquid tankers to surface apply manure and then properly incorporate the manure with tillage equipment when and/or where required. Within SWQMA areas the application will be incorporated immediately. At this time the producer plant to hire a custom manure applicator to apply the manure.

Table 1

Surface Texture Class[1]	Max Application Rate *gal/acre*		Allowable Soil Moisture Description for Applications
	*< 30%**	*≥ 30%**	
Fine	3000	5000	Easily ribbons out between fingers, has a slick feel.
Medium	5000	7500	Forms a ball, is very pliable, slicks readily with clay.
Coarse	7000	10000	Forms a weak ball, breaks easily.

[1] Fine – clay, silty clay, silty clay loam, clay loam
Medium – sandy clay, sandy clay loam, loam, silt loam, silt
Coarse – loamy sand, sandy loam, sand. This category also includes peat and muck based on their infiltration capacity.

* Crop residue or vegetative cover on the soil surface after manure application.

Other methods of distribution or treatment of manure or process wastewater

The producer does not plan on any other methods of use, disposal, or distribution of manure or process wastewater at this time.

Total acreage available (by landowner) for land application owned, rented or in 'agreements'.

The farm has a total of approximately 2,982 acres of available land for liquid waste applications AFTER prohibited areas are subtracted. The cooperating producers have leases or have contracts which may be written or verbal with access to all of the land in their NMP at this time.

Burr Oak Heifers, LLC has contracted with four area producers to provide access to land to apply manure other than the land operated by Burr Oak Heifers. The area producers are: Church Farms, Flyte Farms, Frozene Farms, & Wagner Farms. Please refer to section 3.9 for a list of fields, operators, & owners.

Tillage and crop rotation information.

Please refer to Section 3.0 of plan for tillage, crop rotation and land application schedules for specific fields.

Nutrient crediting requirements

When selecting manure and process wastewater application rates for all fields, the producer has taken into account the following factors:
a. Soil nutrient levels prior to land spreading
b. Nutrient applications from other sources such as commercial fertilizers, bio-solids, first and second year manure and legume credits.
c. Commercial fertilizer may be used to supplement any nutrient shortfalls encountered after organic nutrient credits are applied.
Adjustments may be made to assumed nutrient credits based upon actual crop yields.

SWQMA application restriction option for each field AND procedures

For all fields, except for specific years with alfalfa, the producer will follow SWQMA option 1 - no application of manure or process wastewater within 25 feet of a navigable water, conduit to navigable water or wetland; and inject or immediately incorporate manure and process wastewater in all other areas within the SWQMA. For fields with alfalfa crops in a given crop year, the producer will follow SWQMA option 5 – No application of manure or process wastewater within 100 feet of navigable water or conduit to navigable water. The producer will surface apply manure on alfalfa fields. When surface applications are to be done, the producer will follow the application guidelines in Table 5 of Code 590 and all appropriate setbacks and restrictions will be adhered to on a situational basis as needed and documented as notes in the application records.

Phosphorus delivery method (Soil Test P or P Index) and P management procedures for each field

The producer will use the P Index for all fields within the NMP. Please refer to Section 3.0 of plan for appropriate reports.

Identification of sites for winter (frozen or snow covered ground) spreading

Once approved, the operation will be constructing waste storage which will give the operation 231 days of liquid storage. No liquid manure will need to be applied to frozen and/or snow covered fields. However multiple fields have been identified which could receive an application of liquid manure in the event the facility must apply manure to frozen and/or snow covered ground. These fields are: D1, D2, E1, E2 of the North Farm of Frozene Farms. All applicable setbacks and/or restrictions will be followed if applications occur. Please see section 4.0 for applicable Winter Spreading Maps.

Manure Stacking

The producer does not wish to headland stack any manure at this time.

Documentation of 180 days storage and methods for maintaining storage - NR 243.14(9) and NR 243.17(3)

Please refer to the information submitted by Roach and Associates at this time for documentation of 180 days of storage. In subsequent annual reports the producer will have more precise information of documentation of the 180 day storage requirement.

General Manure and process wastewater application requirements – NR 243.14(2)(b)(1-13)&(c-f).

The producer will take several actions to ensure all manure and process wastewater is land applied in compliance following general land spreading requirements of NR 243.14:

No ponding on application site

During dry weather, no runoff from the application site, nor discharge to waters of the state through subsurface drains

No causing fecal contamination of water in a well

Unless rain event is greater than 25 yr/24 hr event and farm complies with NMP and WPDES permit, no runoff from the application site, nor discharge to waters of the state through subsurface drains due to precipitation or snowmelt

No application on saturated soils

Maximize use of available nutrients, prevent delivery of manure and process wastewater to waters of the state, and minimize the loss of nutrients and other contaminants to waters of the state to prevent exceedence of groundwater and surface water quality standards and to prevent impairment of wetland functional values

Retain nutrients in the soil with minimal movement

No application within 100 feet of direct conduits to groundwater

No applications within 100 feet of private well and 1000 feet of commercial well

No application on fields with soils that are 60 inch thick or less over fractured bedrock when ground is frozen or where snow is present.

No application when snow is actively melting such that water is flowing off a field.

Please refer to Section 2.0 of plan for spreading maps that visually describe how the farm will meet many of these general spreading requirements.

To demonstrate compliance with the NR 243.14 general land application requirements above, the producer and/or their agent will complete, on an ongoing basis, map and field verification procedures (listed below) to ensure spreading maps are accurate (including soil types, slopes and slope lengths), SWQMA or well setback distances are followed and prohibited conditions/features on fields are identified and avoided when spreading manure or process wastewater to NMP fields. The procedures demonstrate how land application activities will be in compliance with NR 243.14 or NRCS 590 restrictions throughout the permit term. The prohibited conditions/features that the producer and/or their agent will evaluate for on each field include: ephemeral erosion or concentrated flow channels, saturated soils, intermittent and perennial streams, grassed waterways, wetlands, lakes, drinking wells, areas of field with bedrock or groundwater within 24 inches of field surface, wells and other direct conduits to groundwater - NR 243.14(2)(b)(3),(5),(6), (7-12). These areas have been inventoried and marked on restriction maps (see Section 2.0 of plan). The producer will maintain written and/or visual records of ongoing field and map verification actions to demonstrate compliance with NR 243.14 requirements. Please refer to Section 5.0 of plan for an example of the required record keeping log. All records will be maintained at the farm office.

Field and Map Verification Procedures.

Prior to spreading manure onto fields, the producer and/or their agent will complete the following map and field verification procedures to ensure all manure spreading will be in compliance with NR 243 and 590 criteria:

Spreading maps will be reviewed by manure applicator's foreman to identify all restricted or prohibited features and setback distances on fields.

Fields will be inspected for restricted or prohibited features; any new conditions/features will be identified.

Once identified, prohibited field features will be avoided and setback distances (as depicted on spreading maps or in NR 243 or NRCS 590) will be measured and followed during manure spreading.

Spreading maps will be updated with any new prohibited/restricted field features or conditions.

A log will be kept with the NMP to track the map and field verification procedures listed above. The log will track:

- date(s) review took place
- person(s) involved.
- fields verified
- any new field features or conditions identified on fields
- photos or other documentation of field features or conditions reviewed

Avoiding manure or process wastewater field runoff or ponding– NR 243.14(2)(b)(1), (2)&(6).

Please refer to field and map verification procedures and NRCS 590 requirements for runoff and ponding.

Surface applications & precipitation forecast for runoff within 24 hours – NR 243.14(2)(b)(13).

For this NMP, ***surface*** applications of manure will not be completed when rain events above 1 ½ inches are forecasted within 24 hours of the time of planned applications. Surface application means manure that is applied and left on the surface of the field. Surface application does not mean manure that is surface applied and then incorporated into the soil within any allowable time periods.. Prior to manure applications to fields, www.accuweather.com or any other recognized weather information source, will be used to track weather forecast data. This information will be used determine the risk for forecasted precipitation to cause run-off from fields. Weather forecast data will be printed or saved to disc and kept with the NMP. All weather forecast data will be submitted with annual reports as an attachment.

Drain tile fields & tile discharges to surface waters -NR 243.14(2)(b)(2),(4)&(6) and NRCS 590 (V.

To the best of our knowledge there are no fields with internal drainage tile. In the event that drain tiles are discovered or installed, the following procedures will be considered.

Drain tile discharges from fields to surface waters are not allowed under NR 243. Such discharges will be prevented or responded to by the producer via the following procedures:

Prior to spreading manure onto fields with drain tiles:

- UW extension Guidelines for Preferential Flow of Manure in Tile Drainage will be reviewed by the producer:
  http://www.extension.org/pages/Preferential_Flow_of_Manure_in_Tile_Drainage

- The following UW Discovery Farm Drain Tiles documents will be reviewed by the producer:

  Understanding and Locating Drain Tiles
  http://www.uwdiscoveryfarms.org/pdf/pubsnewsres/DF-TD1.pdf
  Tile Talk With Discovery Farms, Third Edition, Pages 4-5
  http://www.uwdiscoveryfarms.org/pdf/pubsnewsres/newsltr1006.pdf

- Spreading maps will be reviewed to identify know drain tile locations

- Fields will be inspected for drain tile presence or outlets; any new tile outlets/subsurface drainage systems will be identified

- All tile outlets will be visually checked for flow and water conditions (e.g., clear, colored, foam, odor, etc).

- Results of all visual tile monitoring will be tracked – using form in Appendix B - and kept with NMP

- Planned manure spreading (rates and locations) on fields will be evaluated and then limited or adjusted, as necessary, according to the following criteria:

  1. Available water holding capacity of the soil
  2. Depth of injection
  3. Clay soil considerations
  4. Concentration of Application from spreading equipment type used
  5. Are known tile drains flowing?
  6. Shallow tillage (3 to 5 inch depth) used or not used prior to application to disrupt the continuity of worm holes, macropores and root channels (preferential pathways) to reduce the risk of manure reaching drain lines.
  7. Perennial Crop and No Till precautions

During and after manure spreading on fields with drain tiles, best management practices will be followed:

- Visual inspection of tile outlets for flow and water conditions (e.g., clear, colored, foam, odor, etc.)

- Containing manure or process wastewater tile discharges from release into waterway(s)

- Notifying DNR of any spills/discharges to waterways from tiles

- Reducing application rates or delaying application(s) to tiled fields

- Setbacks from tiled areas

- Immediate tillage/ incorporation of applied manure

- Use of other manure application equipment (e.g., sweeps)
- Update NMP spreading maps or narrative
- Results of visual inspections of tiles will be tracked – using form in Appendix B of this narrative and kept with NMP.

Manure applications to areas of fields with shallow groundwater or bedrock – NR 243.14(2)(b)(7).

NR 243 prohibits manure applications on areas of fields that have groundwater or bedrock within 24 inches of the field surface at time of application. The producer will demonstrate compliance with this prohibition by implementing DNR guidance, "Nutrient Management - CAFO Applications on Shallow Groundwater Soils" dated March 2009.

Daily Spreading Log and Annual Reports for DNR – NR 243.19

The producer will maintain daily spreading log for all manure or process wastewater applications to NMP fields for compliance with NR 243.19. The daily spreading log will also be used to complete required annual reports for DNR. The producer recognizes that the daily spreading log and annual reports are essential to document actual management practices used by the producer and the resulting soil erosion and water quality impacts on specific fields. The producer will use a newer version log sheet developed by Croptech Agronomics LLC which allows for documentation of field verifications and soil temperatures, where required. An example of this form is in Section 5.0 of this plan. The actual application logs will be maintained at the farm's office. Please also refer to NRCS 590 requirements for Annual Updates to NMP.

Manure spreading equipment calibration and Manure concentration testing – NR 243.19.

The producer shall conduct or require periodic inspections and ongoing calibration of landspreading equipment to detect leaks and ensure accurate application rates for manure and process wastewater. Initial calibrations shall be followed by additional calibration after any equipment modification or after changes in manure or process wastewater consistency and/or source. At a minimum, calibration of all manure spreading equipment used by the producer shall be completed annually. The producer will follow UW extension web page guidance for Calibration of Manure Application Equipment. : http://www.extension.org/pages/Calibration_of_Manure_Application_Equipment

The producer shall analyze manure and process wastewater applied to fields in accordance with WPDES permit conditions. Sampling shall be completed for all sources of manure and process wastewater. All sources of manure and process wastewater shall be analyzed on at least an annual basis for Nitrogen, Phosphorus, and percent solids in years where manure and process wastewater is applied. Samples collected shall be representative of the manure or process wastewater applied to fields. The producer will follow sampling methods found in UW publication A3769, Recommended Methods of Manure Analysis: http://learningstore.uwex.edu/Assets/pdfs/A3769.pdf

Mortality Management

Employees are instructed to follow these steps:

1. Contact farm manager

2. Remove animal from pen or barn and place in designated location.

The farm manager will contact Red Granite to pick up any animal mortalities.

Red Granite Mink Ranch
W4391 Cumberland Rd.
Red Granite, WI 54970
920-566-2563

Mortality records are kept in the farm office.

Monitoring and Inspection Program

Within 90 days of the effective date of the permit, the permittee shall submit a proposed monitoring program, that includes information on the use of models, visual inspections, rainfall records, or other proposed methods to determine compliance with the effluent limitation specified in the General Discharge Limitations and Performance Standards subsection. The proposed monitoring program shall also address compliance with groundwater standards. Visual inspections shall be completed by the permittee or designee beginning on the effective date of the permit and in accordance with the following frequencies:

- Daily inspections for leakage of all water lines that potentially come into contact with pollutants or drain to
  storage or containment structures or runoff control systems, including drinking or cooling water lines.
- Weekly inspections to ensure proper operation of storm water diversions and devices that channel contaminated runoff to storage or containment structures.
- Weekly inspections of storage and containment structures (e.g., composting and leachate containment systems and manure storage structures). For liquid storage and containment facilities, the berms must be inspected for leakage, seepage, erosion, cracks and corrosion, rodent damage, excessive vegetation and other signs of structural weakness. In addition, the level of material in liquid storage and containment facilities shall be measured and recorded in feet or inches above or below the freeboard level. This measurement shall be based on a depth gauge, if available, or estimated if a depth gauge is not available. The permittee shall also record the date, time and estimated volume of any overflows of liquid storage or containment facilities.
- Quarterly inspections of outdoor animal lots, raw material storage areas, manure and process wastewater handling devices and practices.
- Periodic inspections of land application equipment for leaks. Frequency of land application equipment inspections shall be specified in the monitoring program.

Corrective Actions: Corrective actions shall be taken as soon as practicable to address any equipment, structure or system malfunction, failure or other problem identified as a result of monitoring or inspections. The permittee shall contact the Department if the permittee fails to or is unable to take corrective actions within 30 days of identifying a malfunction, failure or other problem.

Records: The permittee shall maintain records on site of all completed monitoring and inspections for Department review. In addition, the permittee shall maintain records associated with mortality

management. Summaries of these records shall be submitted to the Department in accordance with requirements for Annual Reports in the Standard Requirements. Refer to the Schedules section and the Standard Requirements section for additional details. Any discharges to surface water shall be reported as outlined in ch. NR 205.07(1), Wis. Adm. Code.

The producer will utilize the CAFO Calendar distributed by the WDNR each year as the daily and weekly inspection form. Information from the calendar will then be used to compile the Quarterly Summary reports which will be sent with the Annual Report to the Regional DNR office. This will be kept in the farm office area.

Other Record Keeping

The producer is required to keep other records which include:

- Manure Spill Logs
- Manure Transfer Logs
- Employee Training Logs
- Weather Information
- Manure spreader maintenance & calibration

This information will be kept in the farm's office along with the other required field record keeping requirements.

Wisconsin NRCS 590 Requirements

Dominant Critical Soil

Each field in this NMP is managed to meet NRCS dominant critical soil criteria:
http://www.datcp.state.wi.us/arm/agriculture/land-water/conservation/nutrient-mngmt/pdf/ChoosingCriticalSoilType.pdf
The dominant critical soil is the most erosive soil that covers at least 10% of the field area. The dominant critical soil type was selected for all fields listed in the NMP to ensure corresponding rotational T – tolerable soil loss - values for each field are accurate for compliance with NRCS 590 requirements. Please refer to Section 2.0 for field soil maps and Section 3.0 for the Snap Plus Field Data/590 Assessment Report of plan for this information.

T – Tolerable soil loss

Each field in this NMP is managed to meet T – tolerable soil loss - over the crop rotation. T values were calculated using NRCS RUSLE 2 model. No nutrient applications (manure, fertilizer) are allowed on fields that fail to meet T. Erosion controls shall be implemented so that tolerable soil loss (T) over crop rotation will not be exceeded on fields that receive nutrients. Please refer to Section 3.0 of plan for information showing each field's tolerable and actual soil loss.

Soil & Manure Analysis

Croptech Agronomics L.L.C. utilizes Ag Source Soil and Forage Laboratory, 106 North Cecil Street, Bonduel, Wisconsin 54107, 715-758-2178. Ag Source is an approved soil testing labs certified by the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP).

Each field in the NMP is managed for compliance with NRCS A2100 soil testing criteria: http://www.datcp.state.wi.us/arm/agriculture/land-water/conservation/nutrient-mngmt/pdf/uwex-a2100.pdf. The producer has completed and retained records showing recent soil testing and manure testing results. Soils tests are completed at a maximum of every four years. Accordingly, not all fields in this NMP either meet or are managed to meet A2100 criteria over time. Please refer to Section 4.0 Soil Test Summary, of plan for this information. Sometimes field boundaries change or are more accurately mapped resulting in small changes in acreage. This may result in a field requiring one more sample to meet the 5 acres per sample recommendation set forth in UW A2100. If you refer to section 4.1 you will a number of fields for Flyte Farms require additional samples per field. These additional samples will be collected during 2013 and amended to this NMP BEFORE any manure applications happen to such fields.

Application and budgeting of nutrients – consistent with NRCS 590 standard and soil fertility recommendations found in A2809

Each field in the NMP is managed to address the source, rate, timing, form and method of application and budgeting ***of all*** nutrient sources (i.e., including soil reserves, commercial fertilizer, manure, organic byproducts –animal mortality and composting materials - legume crops and crop residues) generated or accepted by the farm and applied to fields. The spring NMP update to DNR will include the field specific nutrient applications with regard to any commercial nutrient applications. Please refer to Section 3.0 of plan for this information.

Other sources of nutrients to be land applied (NRCS 590 requirement)

Please refer to Section 3.0 of plan for calculations/analysis for specific fields land application amounts and schedules (e.g., spring, summer or fall). The spring NMP update to DNR will include the field specific nutrient applications with regard to any commercial nutrient applications.

Crop Yield Goals

Each field in the NMP is managed according to yield goals that are attainable by the farm under average growing conditions and established using multi-year documented yields kept by the farm. Farm yield goals in this NMP shall not be set higher than 15% above the previous 3-5 year average. Absent field/farm specific yield goals data, yield goals in this NM plan will be set using Wisconsin county average crop yields found at National Agricultural Statistics Service: http://www.nass.usda.gov/Data_and_Statistics/index.asp Please refer to the reports in Section 3.0 of this NMP for yield goal information.

Fields with concentrated flow channels resulting in reoccurring gullies or ephemeral erosion

The producer will evaluate fields on an ongoing basis each year for presence or flow channels or other types of ephemeral soil erosion. If fields show evidence of concentrated flow channels resulting in re-occurring gullies or ephemeral erosion, the following actions will be taken by the farm:

- Spreading maps will be updated to reflect areas with concentrated flow channels;

- Manure will not be spread on fields with concentrated flow channels, until perennial vegetative cover is established in all areas of concentrated flow;
- A schedule for establishing perennial vegetative cover in all areas of concentrated flow as well as implementation dates will be recorded and kept with this NMP.
- One or more NRCS 590 runoff reducing practices for crop fields with ephemeral erosion will be selected and implemented. Practices selected and implementation dates will be recorded and kept with this NMP.
- Once vegetated flow channels/grassed waterways established within fields, such areas will be maintained to perform their intended function and manure will not be applied within these areas.

Nutrient Restriction/Prohibition Maps

The maps contained in section 2.0 were either obtained from various sources or developed by ***CROPTECH Agronomics L.L.C.*** Generally each map gives a view of a particular farm or field group. Field level information is continually verified and updated. Any and all changes will be made as soon as practical and the producer and the appropriate regulating agency will receive the updated map(s).

The *Proximity Maps* are for informational purposes only, with regard to this agricultural operation and are not to be used for any other purpose. The general property outline of tracts and/or fields is highlighted in red.

The *Production Site Map* shows the general layout of the production site with buildings, lots, wells etc. labeled.

The *Field Maps* give the field outlines set on the 2010 FSA NAIP photography.

The *Restriction/Prohibition Maps* are to be used for spreading restrictions during the spring, summer, and fall. Please note that these restriction zone maps were developed using commercially available GIS software program. GIS layers were obtained from NRCS and WDNR. These maps are a conservative representation of potential restrictions. These maps show nutrient restricted or setback areas such as waterways, ground water protection areas, excessive slopes, Surface Water Quality Management Areas (SWQMA) wetland buffers, well or gravel pits. Restriction maps also identify fields where no manure applications are allowed. We believe these maps to be correct to the best of our knowledge however, we reserve the right to make changes as the producer performs ongoing field verification procedures as described below. Any updated maps will be distributed with appropriate annual updates and/or reports.

We have assumed that each residence adjacent to a field in the NMP contains a private well. We have marked these residences with a well symbol and appropriate prohibitions and setbacks on the restriction maps. Red circles within field boundaries are verified well locations.

When confirming well locations, the producer cannot trespass on other land owner's property. As such, a visual observation will be taken from the field edge and marked on an air photo, then transferred to the restriction map.

The *Winter Restriction/Prohibition Maps* are to be used for Emergency Winter Spreading of liquid manure on frozen and/or snow covered ground or the application of solid type manure during the allowable months. The individual field(s) may change from year to year depending upon previous and

future crop and tillage which may have or have not occurred. These maps will be updated during the annual planning process.

The *Soils Maps* are based upon information gathered from the USDA NRCS Soil Data Mart SURRGO data sets for the appropriate counties..

The *Topographic Maps* are based upon information gathered from USDA NRCS Soil Data Mart SURRGO data sets for the appropriate counties.

590 Compliance Check Report Explanations

With regard to the 590 Compliance Check Report in section 3.0. Flyte Farms has a number of fields which either of the follow comments. "Unincorporated or grazing applications upslope of conduits to groundwater: well within 200 feet" and/or "Excess fertilizer P2O5. More than the entire P2O5 recommendation for the planned rotation on this field has already been applied as manure or fertilizer". The first comment occurs because a given field may be tagged as no-till for its tillage option. Adam Flyte has indicated that he would properly incorporate any manure which may be upslope of a well. These wells will have the slope field verified within the 200 foot radius before manure applications occur. This will be documented in section 8.0 and updated in the annual NMP update. The second comment occurs because there are starter fertilizer applications being made to fields to be planted to corn grain or sweet corn. This is an allowable practice which the Snap Plus software can not differentiate from other fertilizer applications.

A number of irrigated fields with highly permeable sand or loamy sand soils have the following message in Snap Plus: "This is an irrigated field with a high leaching potential soil. Use one of the following N application strategies: a) Split N applications with the majority applied after crop establishment, or b) use a nitrification inhibitor with ammonium forms of N. On irrigated fields, apply a majority of N after crop establishment or use a nitrification inhibitor with ammonium forms of N".

When any nutrients are applied to such fields the previously quoted message appears. According to NRCS Code 590 which states:

B. Criteria to Minimize Entry of Nutrients to Groundwater

To minimize N leaching to groundwater on *high permeability soils*, or soils with less than 20 inches to bedrock, or soils with less than 12 inches to *apparent water table,* or within 1000 feet of a municipal well, apply the following applicable management practices:

Note: A list of soils with a high potential for N leaching to groundwater is provided in Appendix 1 of the Wisconsin Conservation Planning Technical Note WI-1.

1. Where sources of N are applied:

   a. No fall commercial N applications except for establishment of fall-seeded crops. Commercial N application rates, where allowed, shall not exceed 30 pounds of available N per acre.

   b. On irrigated fields, including irrigated manure, apply one of the following management strategies:

      (1) A split or delayed N application to apply a majority of crop N requirement after crop establishment.

      (2) Utilize a nitrification inhibitor with ammonium forms of N.

2. When manure is applied in late summer or fall to meet the fertility needs of next year's crop and soil temperatures are greater than 50°F, apply one of the following options:

a. Use a nitrification inhibitor with liquid manure and limit N rate to 120 pounds available N per acre.

b. Delay applications until after September 15 and limit available N rate to 90 pounds per acre.

c. Apply to fields with perennial crops or fall-seeded crops. N application shall not exceed 120 pounds available N per acre or the crop N requirement, whichever is less.

3. When manure is applied in the fall and soil temperatures are 50°F or less, limit available N from manure application to 120 pounds per acre or the crop N requirement, whichever is less.

Note: The restrictions in B. 2. and 3. do not apply to spring manure applications prior to planting. The balance of the crop N requirements may be applied the following spring or summer.

4. Where P enrichment of groundwater is identified as a conservation planning concern, implement practices to reduce delivery of P to groundwater.

The producer appears to be complying with the above sections 2 and 3.

Fields with high potential for N leaching to groundwater - soil temperature, application rate and timing restrictions.

Fields in this NMP have been evaluated for soils with high potential for N leaching to groundwater for compliance with NRCS 590 requirements. Please refer to Section 2.0 and 3.0 of plan for this information. When manure is applied fields with soils classified as having a high potential for N leaching to groundwater and the soils are > 50 degrees F, the potential exists for rapid N mineralization. The risk for N mineralization and loss (via leaching to groundwater) is a concern the farm will manage for. As such, the producer will measure soil temperatures prior to field applications in late summer or early fall. Soil temperature logs will be kept with manure spreading records/reports and maintained over time for compliance recordkeeping requirements. The farm will follow the following procedures for compliance with NRCS 590 soil temperature, application rate and timing restrictions:

If any fields are found to be > 50 degrees F, the facility will strictly follow section V, B, 2 of NRCS 590 standard.

If any fields are found to be < 50 degrees F, the facility will strictly follow section V, B, 3 of NRCS 590 standard.

Field Inspection and Response Procedures for manure ponding, runoff from fields or drainage to subsurface tiles

The producer will evaluate field and weather conditions prior to and during mechanical applications of **manures, organic byproducts and fertilizer** to ensure that applied material(s) do not cause ponding, runoff, or drainage to subsurface tiles. The following response procedures will be followed by the producer if/when ponding, runoff or drainage to subsurface tiles occurs during and/or after applications to fields:

Stop application immediately (if field application not finished)

Containment measures (e.g., earth berms, pumps, temporary pits, tillage, & incorporation) will be implemented immediately to prevent off-site movement from field.

Changes in application rate, method, depth of injection or timing to the field shall be implemented during any future application to eliminate ponding, runoff or drainage to subsurface tiles.

Farm shall notify DNR of any spills or accidental release to comply with Ag Spill Law (289.11).

Annual Updates

This NMP will be updated annually. Each NMP annual update for the producer shall include: records/documentation of all soil or manure analyses as well as crops, tillage, nutrient application rates, and methods actually implemented on each field that receives nutrients. Annual updates are essential to document actual management practices and resulting soil erosion and water quality impacts on specific fields.

Changes to the operation that are planned to occur during upcoming permit term

Once constructed, no other changes are known at this time.

Changes to the operation that will be necessary to comply with NR 243.14 Nutrient Management land application requirements (e.g., general requirements – 243.14.(2)(b)1-13, fields with drain tiles, 180 days storage)

Once constructed, no other changes are known at this time.

Description of permanent spray irrigation systems AND any other land spreading or treatment systems

The producer does not employ any spray irrigation or any other land spreading or treatments systems at this time other than already discussed.

NR 243 CAFO NUTRIENT MANAGEMENT PLAN CHECKLIST

Farm Name and Permit No.: Burr Oak Heifers, LLC Date Plan Submitted: February 2013
Initial Plan / Annual Update / Permit Renewal (circle one) Applicable growing season: 2013-2017
Planner Name and Contact Information: Paul Sturgis, Croptech Agronomics LLC, 5944 Maplewood Rd. Vesper, WI 54489 (715) 572-3625
Cropland acres, owned: 0 Agreement or Rented Acres: 3,014 Total spreadable acreage: 2,982.8
Total acreage used for land application in previous 12 months: ~300
Total animals at facility in previous 12 months: 2500 a.u.

		NMP Yes	No	Section
1.	**Does plan meet Wisconsin's NRCS 590 nutrient management standard, including nutrient budgeting, soil test recommendations and selecting dominant critical soil unit criteria?** (NRCS soil unit criteria: http://www.wi.nrcs.usda.gov/technical/consplan/rusle.html)	X		3
a.	If yes, does plan contain a copy of NRCS 590 checklist?	X		1
2.	**Does plan have a narrative that describes:**			
a.	Expected numbers of animal units on site at end of first year of permit coverage and also expected numbers for remaining permit term (next 4 yrs). – NR 243.12(2)(6).	X		1
b.	Expected amounts and types of manure and process wastewater produced on annual basis.	X		1
c.	Amount of manure and process wastewater to be land applied.	X		1
d.	Anticipated frequency and method(s) of land application.	X		1
e.	Other methods of use, disposal, distribution or treatment of manure or process wastewater.	X		1
f.	Tillage and crop rotation information for all fields owned or rented or in 'agreements'.	X		1
g.	Total acreage available (by landowner) for land application owned, rented or in 'agreements'.	X		1
h.	General manure and process wastewater application requirements - NR 243.14(2)(b)(1-13) & (c-f) AND methods explaining how they will be met on all fields in plan *(e.g., field and map verification procedures, applicable best management practices and recordkeeping procedures to track actions taken).*	X		1
i.	Nutrient crediting requirements - NR 243.14(3) - and how they will be met.	X		1
j.	SWQMA application restriction option for each field AND methods explaining how restriction(s) will be met - NR 243.14(4).	X		1
k.	Phosphorus delivery method (P Index or Soil Test P) for each field AND management strategy for fields with soil test P above 100 ppm and 200 ppm - NR 243.14(5).	X		1
l.	Fields adjacent to or with high potential to drain to impaired or outstanding/exceptional waters (see DNR impaired waters map tool: http://dnrmaps.wisconsin.gov/imf/imf.jsp?site=SurfaceWaterViewer).	X		2
m.	Identification of sites for winter (frozen or snow covered ground) applications that meet criteria in tables 4 and 5 for manure - NR 243.14(6-8) - AND methods explaining how they will be met. (NOTE: Fields selected for winter application must have the lowest risk of pollutant delivery to waters of the state and have winter acute loss index value of 4 or less using the Wisconsin Phosphorus Index).	X		1,2
n.	Documentation of adequate storage (180 days) and methods of maintaining adequate storage - NR 243.14(9) and NR 243.17(3).	X		1
3.	**Are the following field features identified as restricted or high risk areas on spreading maps:** (NOTE: **Checking yes requires plan narrative to describe methods or procedures to identify, avoid, eliminate or minimize the surface or ground water quality risk each feature represents).**			2
a.	Private, non-community drinking water well (100ft setback).	X		2
b.	Community drinking water well (1,000ft setback).	NA		2
c.	Soils within 24 inches of apparent water table or bedrock at time of application (NOTE: water table depth may vary over time and requires field investigation to determine actual depth to groundwater before application).	X		2
d.	Fields over 200 ppm soil test phosphorus (manure spreading prohibited unless department approval).	X		
e.	Direct conduits to groundwater (100ft setback).	X		2
f.	SWQMA areas and 100ft prohibition, or equivalent. (NOTE: maps must identify all conduits to navigable waters. These include: ditches, concentrated flow channels, sinkholes, agricultural well heads, open tile line intake structures or open vent pipes in fields that discharge to navigable waters and ***grassed waterways that drain directly*** to a navigable water). See DNR navigable waters fact sheet: http://www.dnr.state.wi.us/org/water/fhp/waterway/factsheets/index.html.	X		2
g.	Wetlands and 25ft setback OR start of the SWQMA if connected to navigable water - NR 243.14 (4)(a)(2)	X		2
h.	Fields adjacent to or with high potential to drain to impaired or outstanding/exceptional waters (see DNR impaired waters map tool: http://dnrmaps.wisconsin.gov/imf/imf.jsp?site=SurfaceWaterViewer).	X		2

NR 243 CAFO NUTRIENT MANAGEMENT PLAN CHECKLIST

		Yes	No	NMP Section
i.	Soils with: (1) High Permeability; (2) Within 20 inches to bedrock; or (3) Within 12 inches to apparent water table. (see Appendix 1, WI Tech Note WI-1 http://www.wi.nrcs.usda.gov/technical/technotes.html).	X		2
j.	Fields with ephemeral erosion, reoccurring gullies or concentrated flow channels. (NOTE: fields with such soil erosion features do not meet 'T' and cannot receive manure until stabilized with perennial vegetation or other runoff reducing practices. Once established, manure cannot be applied within vegetated flow channels/grassed waterways. If detected, please describe in narrative how and when such areas will be stabilized before any manure is applied to the field.)	X		3
k.	Fields exceeding T – tolerable soil loss - over the crop rotation.	NA		
l.	Subsurface drainage systems **(e.g., drain tiles and their outlets).**	NA		
4.	**Does field size and planned manure spreading to all fields reflect acreage lost to SWQMA or other required setbacks?**	X		3
5.	**Is phosphorus being correctly managed:**	X		3
a.	Fields 50-100ppm P: Balance P needs over a maximum 8 year rotation?	X		3
b.	Fields 100-200ppm P: Drawdown P by 50% cumulative crop removal over a maximum 4 year rotation AND P Index ≤ 6?	X		3
c.	Is commercial P above 20lbs in starter being added to fields over 50 ppm P?		X	3
6.	**Are manure analyses being taken, at least annually, for every sample point in the permit and being used to develop the plan?** If not completed yet, provide schedule when manure testing will be completed in narrative when plan will be updated with this information.	X		4
7.	**Is all manure produced by the farm allocated over the entire rotation or five year permit term?** (NOTE: A rotation may be longer or shorter than a five year permit term. If shorter than 5-years, the rotation must repeat or be amended to reflect, at least, the 5 year permit term).	X		3
8.	**Are all commercial fertilizers and off-farm nutrients included for every year of rotation?**	X		3
9.	**Are all fields owned, rented or in agreements with farm that have, or are planned to, receive manure or process wastewater included in plan?** (NOTE: Once a field is included in the plan it must remain so regardless of use/status for the 5-year permit term or rotation – this includes fields used only once during permit term or a rotation. For such fields, projecting what nutrients may be applied is required.)	X		3
10.	**Are all fields in plan managed for the entire rotation? Managed for the entire rotation means:** Planning for the sequence of crops, tillage, budgeting and application of nutrients for up to an 8-year period in order to determine field rotational soil loss, rotation avg. P Index, and applicable manure or legume credits for each rotation year.	X		3
11.	**If any fields in plan do not receive manure during the rotation, do they follow UW A2809 crop recommendations for other applied nutrients?**	X		3
12.	**Are calibrations provided in plan for all manure hauling equipment (including equipment not owned by the farm)?** If no, provide schedule when calibrations will be completed in narrative.		X	1
13.	**Does plan include copies of soil testing for all NMP fields and manure testing results?** If not completed yet, provide in narrative a schedule when testing for soil for specific fields or manure will be completed and when plan will be updated with this information.	X		4
14.	**Does plan contain fields with high potential for N leaching to groundwater? If yes, do these fields meet NRCS 590 soil temperature, application rate and timing restrictions?**	X		3
15.	**Does plan contain NRCS 590 response procedures for manures, organic byproducts and fertilizer applications that cause drainage to subsurface tiles, ponding or runoff?** (NOTE: Such procedures must include methods to prevent offsite movement of nutrients - via subsurface tile discharge or surface runoff - to waterways and notify DNR of spills or accidental release).	X		1
16.	**If available, have prior year(s) records (e.g., crop, tillage, nutrients applied) been included in NMP calculations to reflect what actually happened on each field vs. what was planned?**	X		3
17.	**Are any fields receiving over-applications of nitrogen based on UW Publication A2809?**	X		3

By signing below I certify the CAFO nutrient management plan criteria listed above is: (1) in compliance with all NR 243.14 and applicable NRCS 590 criteria, and (2) all plan requirements have been, or will be, reviewed with farm operator/owner.

Paul Sturgis – Croptech Agronomics LLC — February 8th, 2013

Signature of qualified nutrient management planner — *Date*

Additional comments or clarifications on checklist items (if necessary, use additional pages):

ARM-LWR-480 (06/10)

Wisconsin Department of Agriculture, Trade & Consumer Protection
Division of Agricultural Resource Management
Bureau of Land and Water Resources
PO Box 8911, Madison WI 53708-8911, Phone: 608-224-4605

Nutrient Management Plan Checklist

Sec. 92.05(3)(k), Wis. Stats.
ATCP 50.04(3) Wis. Admin. Code

Use this form to check nutrient management (NM) plans for compliance with the WI NRCS 590 Standard (Sept. 2005).

County name: Adams
Township : T.18N. R.7E.

Date Plan Submitted: February 2013
Initial Plan or Updated Plan (circle one)

Growing season year NM plan is written for: 2013
(from harvest to harvest)

Name of qualified nutrient management planner		Planner's business name, address, phone:
Paul Sturgis		Croptech Agronomics LLC 5944 Maplewood Rd., Vesper WI 54489 715.572.3625
Circle the planner's qualification: 1. NAICC-CPCC 2. ASA-CCA #11614 3. ASA-Professional Agronomist 4. SSSA-Soil Scientist 5. DATCP approved training course 6. Other credentials approved by DATCP	Cropland Acres (owned & rented) 3,014	Name of farm operator receiving nutrient management plan: Burr Oak Heifers, LLC
	Rented farm(s) landowner name(s) and acreage: See attachment in NMP	
Circle relevant program requirement or regulation the plan was developed for: Ordinance, USDA, DATCP, DNR, NR 243 – NOD or WPDES		

		Yes	No	NA
1.	**Are the following field features identified on maps or aerial photos in the plan?**			
a.	Field location, soil survey map unit(s), field boundary, acres and field identification number	X		
b.	Areas prohibited from receiving nutrient applications: Surface water, established concentrated flow channels with perennial cover, permanent non-harvested vegetative buffer, non-farmed wetlands, sinkholes, lands where established vegetation is not removed, nonmetallic mines, and fields eroding at a rate exceeding tolerable soil loss (T)	X		
c.	Areas within 50 feet of a potable drinking water well where mechanically-applied manure is prohibited	X		
d.	Areas prohibited from receiving winter nutrient applications: Slopes > 9% (12% if contour-cropped); Surface Water Quality Management Area (SWQMA) defined as land within 1,000 ft of lakes and ponds or within 300 ft of perennial streams draining to these waters, unless manure is deposited through winter gleaning/pasturing of plant residue and not exceeding the N and P requirements of this standard; Additional areas identified within a conservation plan as contributing runoff to surface or groundwater	X		
e.	Areas where winter applications are restricted unless effectively incorporated within 72 hours: Land contributing runoff within 200 feet upslope of direct conduits to groundwater such as a well, sinkhole, fractured bedrock at the surface, tile inlet, or nonmetallic mine	X		
f.	Sites vulnerable to N leaching: Areas within 1,000 feet of a municipal well, and soils listed in Appendix 1 of the Conservation Planning Technical Note WI-1	X		
2.	**Are erosion controls implemented so the crop rotation will not exceed T on fields that receive nutrients according to the conservation plan or WI P Index model?**	X		
3.	**Were soil samples collected and analyzed within the last 4 years according to UW Publication A2100 recommendations?**		X	
4.	**Using the field's predominant soil series and realistic yield goals, are planned nutrient application rates, timing, and methods of all forms of N, P, and K listed in the plan and consistent with UW Publication A 2809,** *Soil Test Recommendations for Field, Vegetable and Fruit Crops,* **and the 590 standard?**	X		
5.	**Do manure production and collection estimates correspond to the acreage needed in the plan? Are manure application rates realistic for the calibrated equipment used?**	X		
6.	**Is a single phosphorus (P) assessment of either the P Index or soil test P management strategy uniformly applied to all fields within a tract?**	X		
7.	**Are areas of concentrated flow, resulting in reoccurring gullies, planned to be protected with perennial vegetative cover?**	X		
8.	**Will nutrient applications on non-frozen soil within the SWQMA comply with the following?**			
a.	Unincorporated liquid manure on unsaturated soils will be applied according to Table 1 of the 590 standard to minimize runoff	X		
b.	One or more of the following practices will be used: 1) Install/maintain permanent vegetative buffers, or 2) Maintain greater than 30% crop residue or vegetative coverage on the surface after nutrient application, or 3) Incorporate nutrients leaving adequate residue to meet tolerable soil loss, or 4) Establish fall cover crops promptly following application	X		

I certify that the nutrient management plan represented by this checklist complies with Wisconsin's NRCS 590 nutrient management standard.

Signature of qualified nutrient management planner ***Paul Sturgis – Croptech Agronomics LLC***

ARM-LWR-480 (06/10)

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Nutrient Management Plan Checklist

Use this form to check nutrient management (NM) plans for compliance with the WI NRCS 590 Standard (Sept. 2005).

Notes: 3. See narrative in NMP Section 1.0 for explanation.

1.4 WPDES Permit

When the new WPDES Permit is issued, a copy will be in this location.