



Animal Confinement Feedlot Conditional Use Permit Application

www.co.redwood.mn.us

Permit #: 10-17 Date: 4/19/2017

Proposed Location of Feedlot Operation:

Address: City: Lamberton State: MN Zip: 56152
House # Street Name
Parcel #: 75-031-3020 Township: Willow Lake Section: 31 Twp #: T-110-N Range: R-36-W

Information about the Operation:

General description of feedlot operation (including type and number of animal units, barns, and manure storage plan):

2400 unit hog finishing barn

Legal Description of Proposed Feedlot Location:

The Southeast Quarter of the Southwest Quarter (SE1/4 SW1/4)

Information about the Land Owner:

First Name: Darold & Sharon Last Name: Coulter Phone: 507-752-7017

Address: City: Lamberton State: MN Zip: 56152

If the applicant is not the owner of the land, please specify the type of agreement the applicant has with the owner of the land at the proposed site: transfer the site in my name

Site / Plan Information:

Zoning District: Agricultural

Soil Type 1: Ves-Estherville-Storden comp., 3-6% slopes, eroded

Soil Type 2: Canisteo clay loam, 0 to 2 percent slopes

Water source for the site: Well Water If other, please explain: new well to be drilled

Drainage System: Perimeter Tile If other, please explain: _____

Estimated water use:

Animal 1

Animal Type: Hog
 gallons/day/animal x number of animals on site x number of days present
= gallons/yr/site

Animal 2

Animal Type: _____
 gallons/day/animal x number of animals on site x number of days present
= gallons/yr/site

Animal 3

Animal Type: _____
 gallons/day/animal x number of animals on site x number of days present
= gallons/yr/site

Total Gallons:

Proposed Building(s) Information: (Please enter dimensions in feet)

Building 1:	Width:	Length:	Height:	Sidewall Height:	Sidewall Thickness:
Building 2:	Width:	Length:	Height:	Sidewall Height:	Sidewall Thickness:
Building 3:	Width:	Length:	Height:	Sidewall Height:	Sidewall Thickness:
Building 4:	Width:	Length:	Height:	Sidewall Height:	Sidewall Thickness:

Each building will have a minimum setback from every road right-of-way of: 92 feet

Estimated date for beginning construction: 8/1/17 Estimated completion date: 10/15/17

General Contractor:

Name: Pals / Redwood Building Center City: Redwood State: MN

Feedlot Operator:

Complete this section only if the feedlot operator will be different from the "applicant". If the operator is not a natural person(s), you must also provide documentation of the operator's legal identity.

First Name: _____ Last Name: _____ Phone: _____
 Address: _____ City: _____ State: MN Zip: _____

Applicant Information:

Note: If the applicant is not one natural person, requested information and signature(s) must be provided for each partner/associate/co-applicant and must include documentation of each co-applicant's legal identity and the legal relationship between them. Each partner/associate/co-applicant must sign or affirm the application before it will be accepted for consideration.

First Name: Mark Last Name: Coulter

Business: _____

Address: 26433 US Hwy 14 City: Lamberton State: MN Zip: 56152

Home Phone: _____ Cell Phone: 507-430-6149

List any additional applicants:

I affirm that the forgoing information is true and accurate. I understand that if any portion of this information is false or materially misleading, any conditional use permit issued in reliance upon this information is voidable at the election of Redwood County.

Applicant(s) Signature(s): Mark Coulter Date: 4/24/17
David H. Coulter 5-1-17

Office Use Only * The section below is to be filled out by the Environmental Office Staff

CUP permit fee: \$700.00 Receipt #: 381893

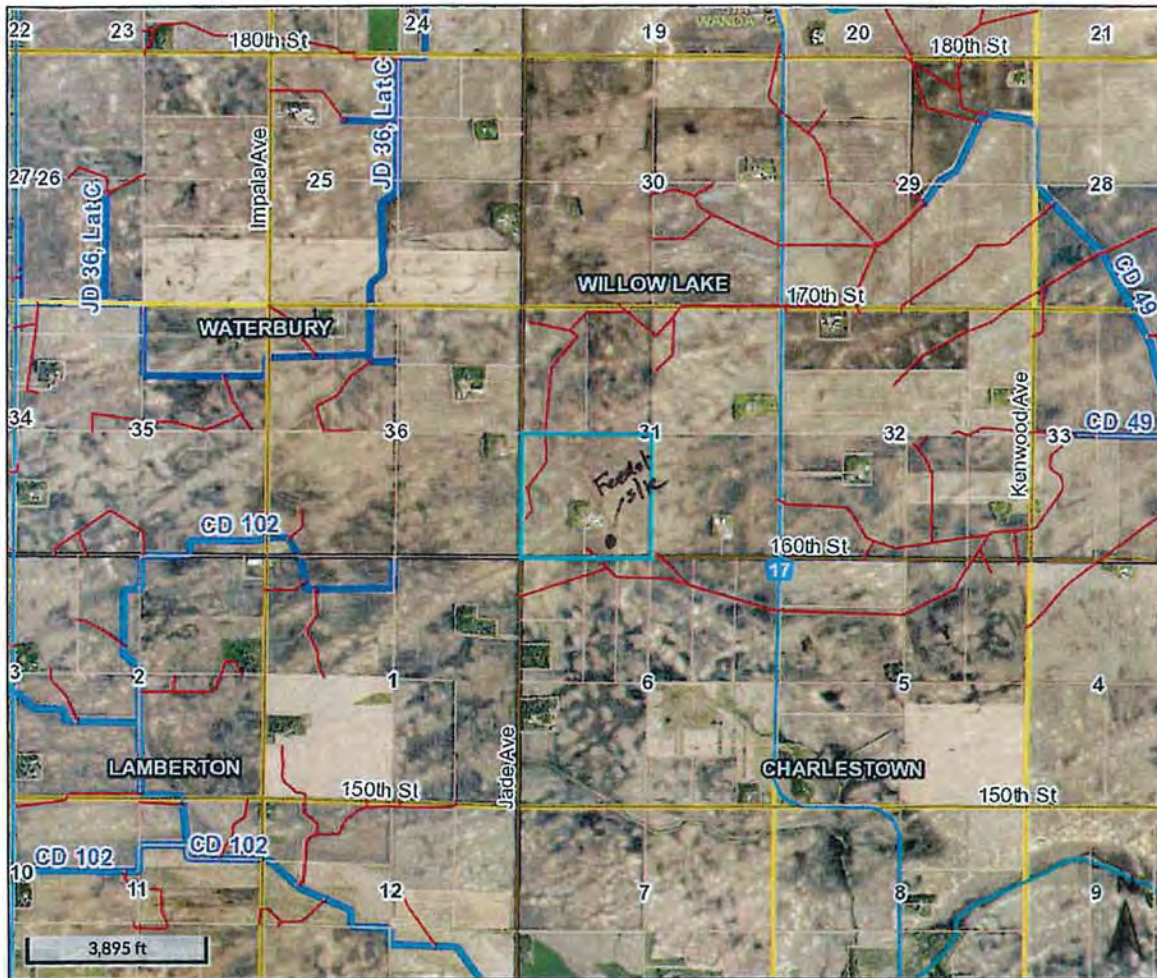
Completed Application Acceptance Date: 4-26-17 Date Approved:

Commission Action:

County Board Action:

Approved: _____ Date: _____ Approved: _____ Date: _____

Disapproved: _____ Date: _____ Disapproved: _____ Date: _____



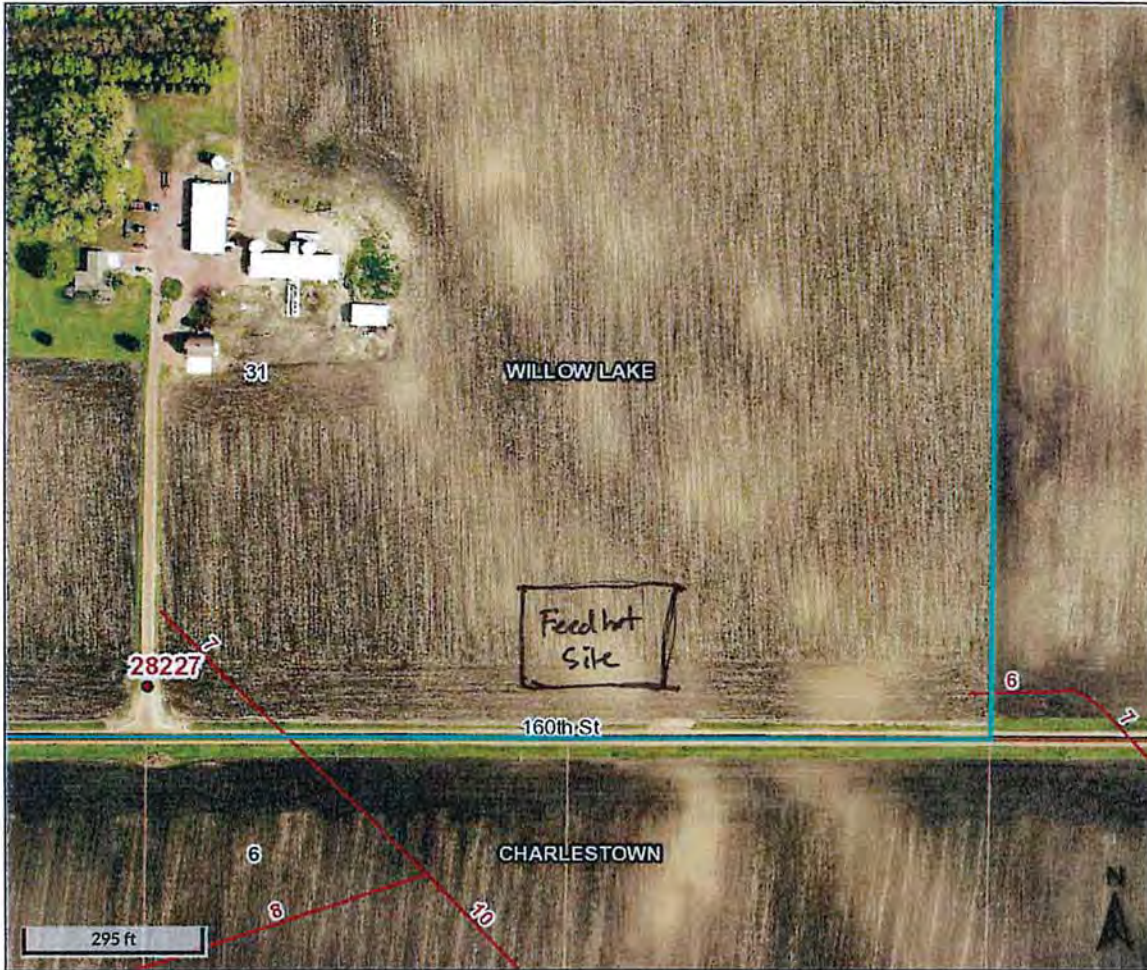
Legend

-  Municipal Boundaries
-  Sections
-  Surrounding Counties
-  Townships
-  Open Ditch
-  Drain Tile
-  Lakes
-  Rivers
-  Address points
-  Parcels
- Major Roads**
-  County/Twp/City
-  State/Federal
-  County
-  Minor Roads

Parcel ID	75-031-3020	Alternate ID	n/a	Owner Address	COULTER/DAROLD A & SHARON K
Sec/Twp/Rng	31-110-36	Class	AGRICULTURE		28227 160 ST
Property Address	28227 160 ST LAM	Acreage	160.07		LAMBERTON MN 56152
	56152				

District n/a
 Brief Tax Description SW1/4, 160.07A
 (Note: Not to be used on legal documents)

Date created: 5/16/2017
 Last Data Uploaded: 5/16/2017 10:12:40 AM



Overview



Legend

-  Municipal Boundaries
-  Sections
-  Townships
-  Open Ditch
-  Drain Tile
-  Lakes
-  Rivers
-  Address points
-  Parcels
- Shoreland**
-  <all other values>
-  150 ft
-  300 ft
-  300 ft LW
-  1000 ft
-  Flood Plain
- Major Roads**
-  County/Twp/City
-  State/Federal
-  County
-  Minor Roads

Parcel ID 75-031-3020
 Sec/Twp/Rng 31-110-36
 Property Address 28227 160 ST LAM
 56152

Alternate ID n/a
 Class AGRICULTURE
 Acreage 160.07

Owner Address COULTER/DAROLD A & SHARON K
 28227 160 ST
 LAMBERTON MN 56152

District n/a
 Brief Tax Description SW1/4, 160.07A
 (Note: Not to be used on legal documents)

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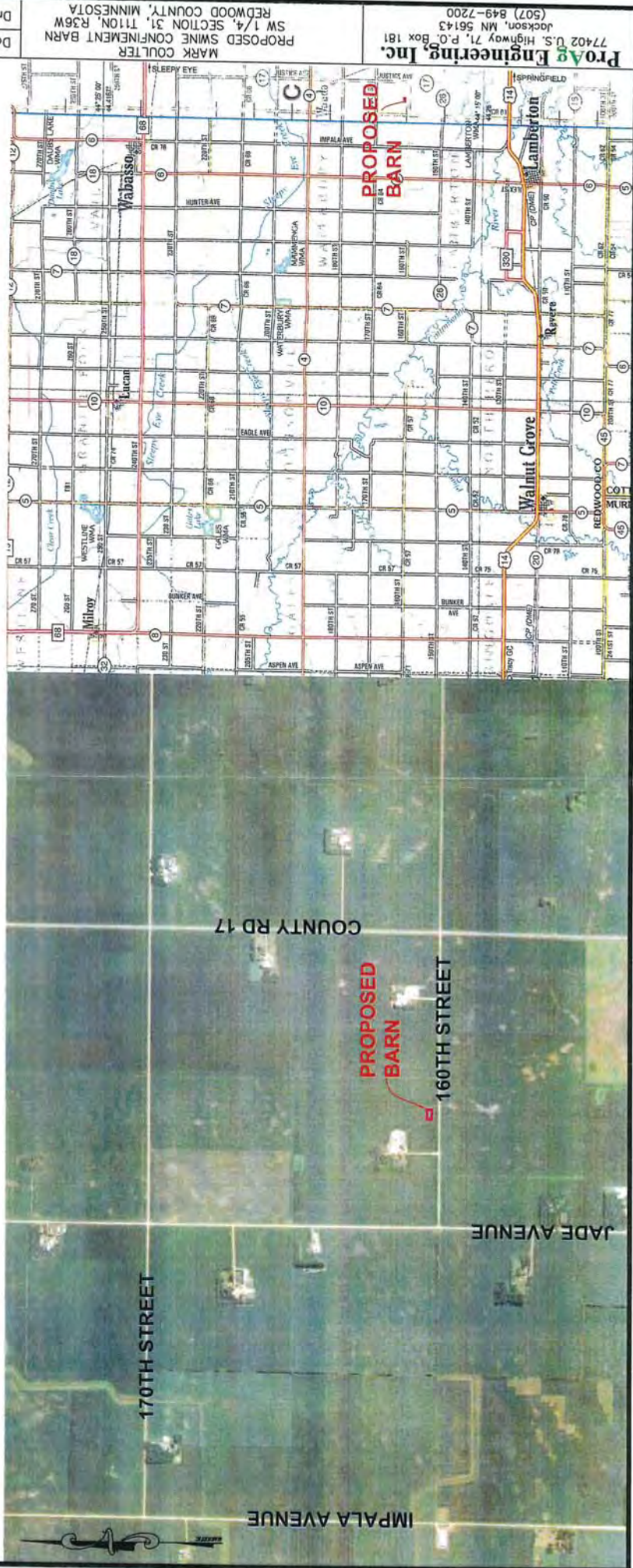
 Developed by
 The Schneider Corporation

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I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Nicholaus J. Rowe Date 4/21/17
 Nicholaus J. Rowe, P.E.
 License number 46735
 My license renewal date is June 30, 2018
 Pages or sheets covered by this seal:



ProAg Engineering, Inc.
 77402 U.S. Highway 71, P.O. Box 181
 Jackson, MN 56143
 (507) 849-7200

MARK COLLIER
 PROPOSED SWINE CONFINEMENT BARN
 SW 1/4, SECTION 31, T110N, R36W
 REDWOOD COUNTY, MINNESOTA

Date 4/21/17
 Drawn D.D.A.
 Checked By N.J.R.

Project No. 17-058
 SHEET 1/7



PROPOSED DESIGN VOLUMES PER BARN
1.) 2,400 HEAD FINISHING SWINE = 0.14 C.F./HEAD/DAY @ 365 DAYS = 122,640 C.F.
2.) PIT VOLUME = (162'-8" x 119'-8" x 6.5') = 126,533 C.F.
3.) DAYS STORAGE = 376 DAYS per barn = 126,533 / 122,640 X 365

PROPOSED CONSTRUCTION WILL DISTURB LESS THAN 3 ACRES AND WILL CREATE LESS THAN 1 ACRE OF IMPERVIOUS AREA (BARN 20,088 S.F. + DRIVEWAY-22,000 S.F. = 42,088 S.F.) NO STORMWATER PERMIT IS REQUIRED BUT A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) HAS BEEN DEVELOPED USING CONSTRUCTION BEST MANAGEMENT PRACTICES

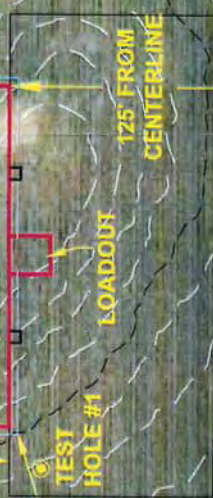
2136' TO NEAREST WATER SOURCE

PROPOSED 2,400 HEAD SWINE FINISHING CONFINEMENT BARN (164'-0" X 122'-0") WITH 8" CONCRETE PIT BELOW THE SLATTED BARN FLOOR, BARN FLOOR ELEVATION 1098, BOTTOM OF PIT ELEVATION 1090.

PROPOSED PERIMETER TILE TO CONNECT TO EXISTING FIELD TILE, LOCATE OUTLET PRIOR TO CONSTRUCTION

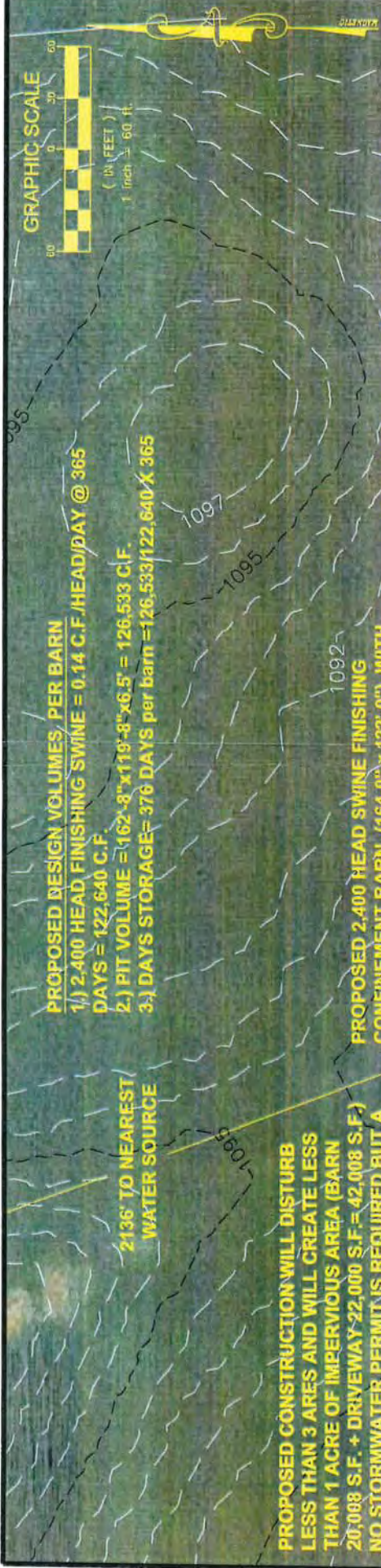
1976' TO NEAREST RESIDENCE

PROPOSED HIGH POINT OF PERIMETER DRAIN TILE PLACED AROUND THE PIT FOOTING, SLOPE TILE @ 0.1% TO NE CORNER OF PIT



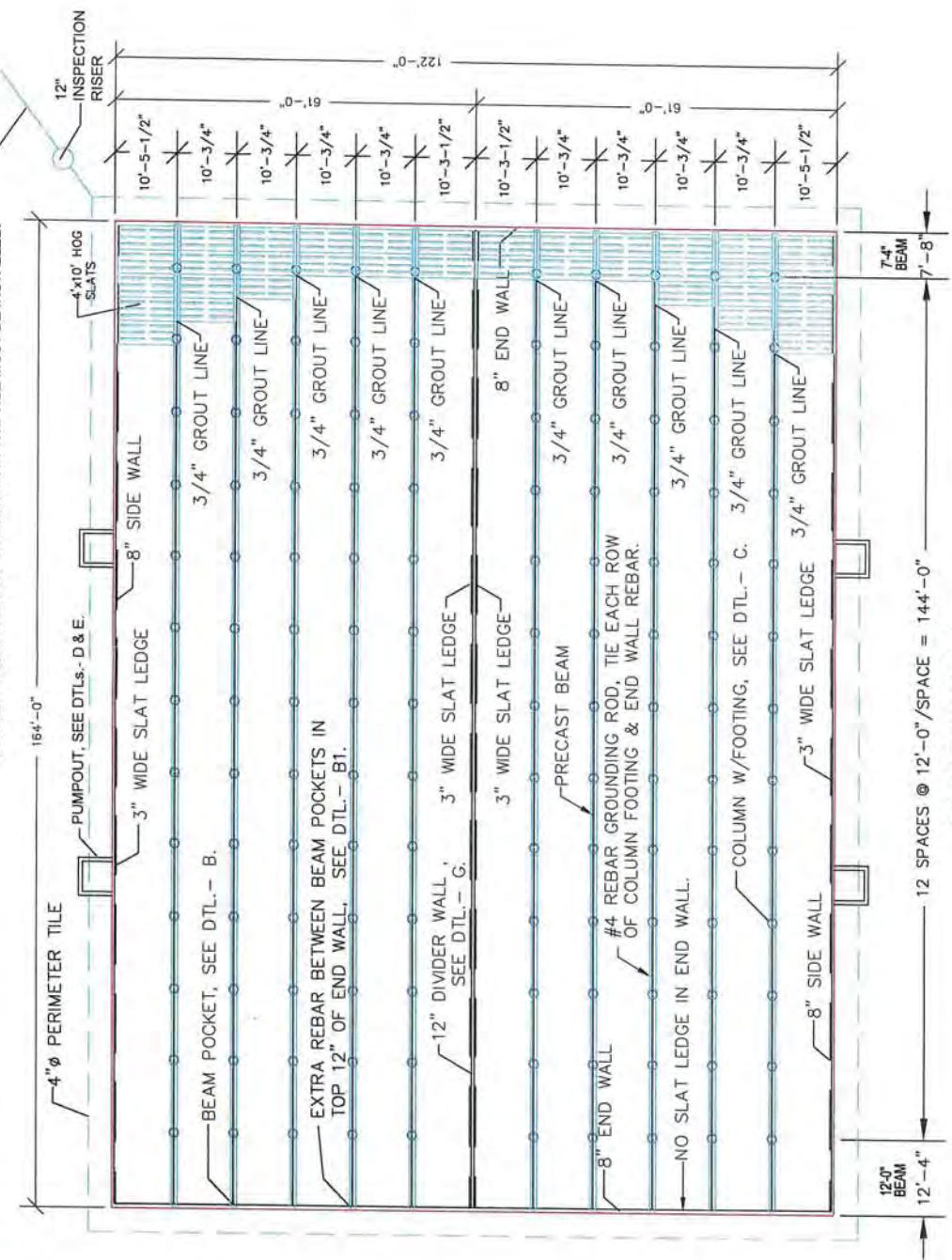
ASSUMED SOUTH LINE OF SECTION 34, T-110-N, R-36-W, R36E REDWOOD COUNTY, MINNESOTA

109TH STREET +1094



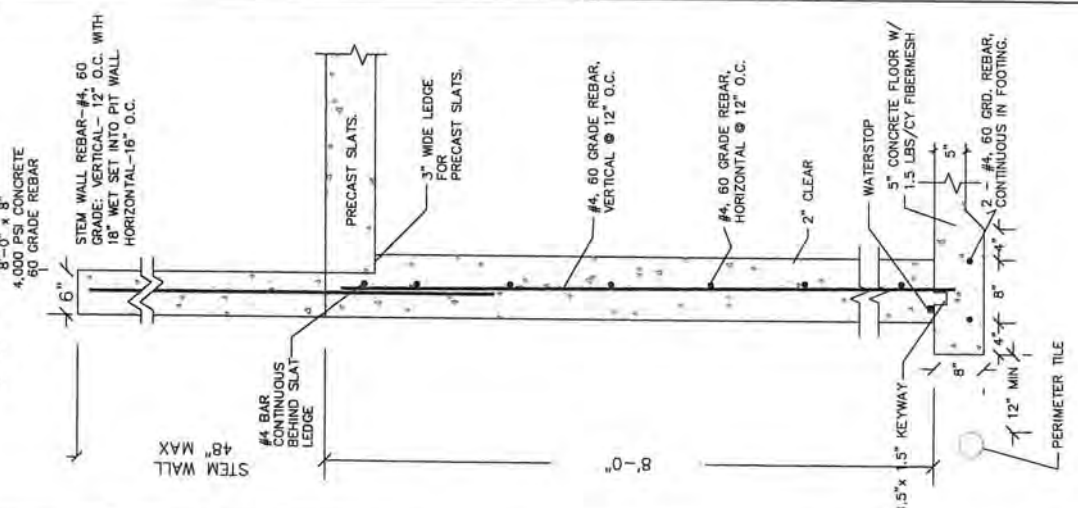
IF AN EXISTING FARM TILE IS FOUND, THE PERIMETER TILE OF THE PIT MAY BE CONNECTED. IF THE PERIMETER TILE IS CONNECTED TO AN EXISTING FARM TILE THAT DOES NOT HAVE A SURFACE OUTLET ON THE SAME PROPERTY, A DEVICE TO ALLOW MONITORING OF THE WATER IN THE TILE MUST BE INSTALLED.

***NOTE-NUMBER OF PUMPOUTS & LOCATIONS DETERMINED BY OWNERS DISCRETION**

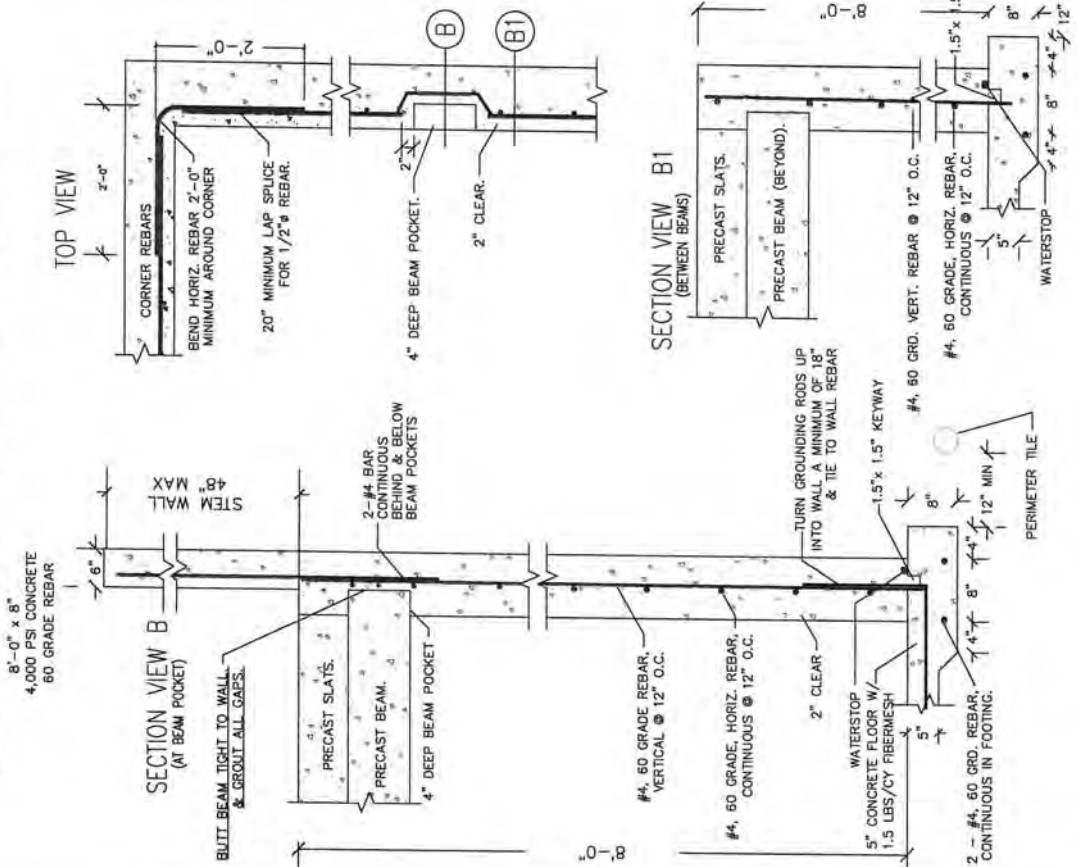


PIT FLOOR PLAN
(OUTSIDE DIMENSIONS 164'-0" x 122'-0")
NOT TO SCALE

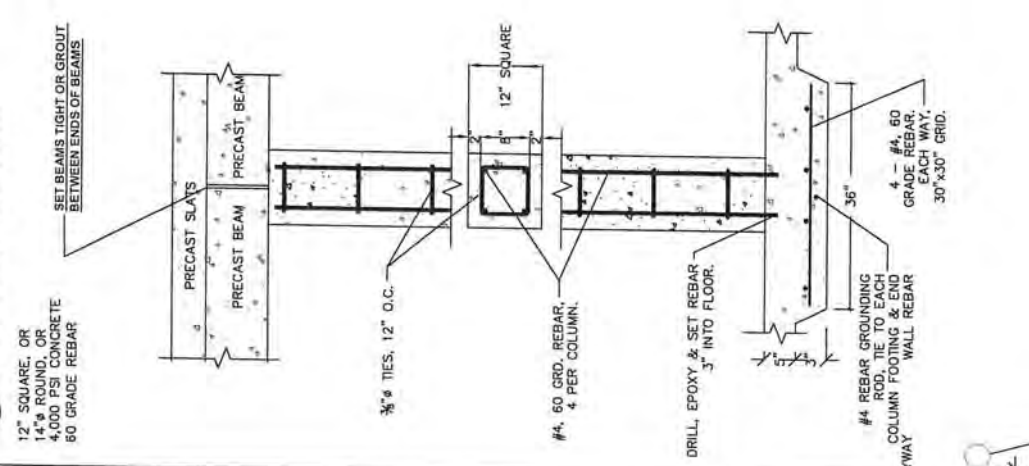
(A) SIDE WALL



(B) END WALL BRACING & BEAM POCKET



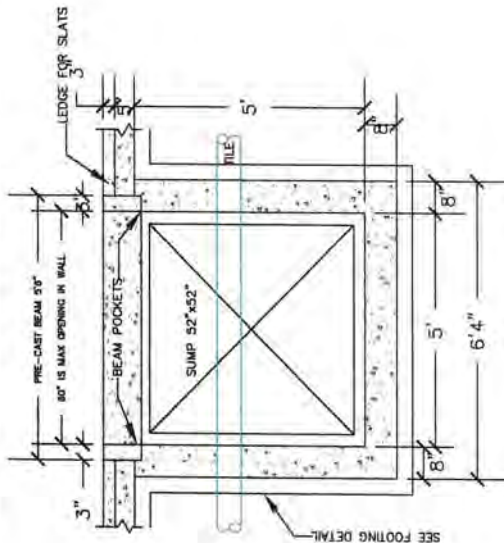
(C) COLUMN DETAIL



(D) PUMP OUT PLAN

BEAM MAY BE CAST-IN-PLACE WITH STEM WALL. MINIMUM OF 2-#4, 60 GRADE REBARS IN BOTTOM OF BEAM. PUMPOUT FOOTINGS AND FLOOR SHALL BE POURED WITHOUT CONSTRUCTION JOINTS—SEE DETAIL 1. KEYWAY UNDER WALLS SHALL BE CONTINUOUS AROUND CORNERS AND PUMPOUTS. CONSTRUCTION JOINTS ARE NOT TO BE WITHIN THREE (3) FEET OF A PUMPOUT.

CAUTION: DO NOT DRIVE STAKES THRU PERIMETER TILE.

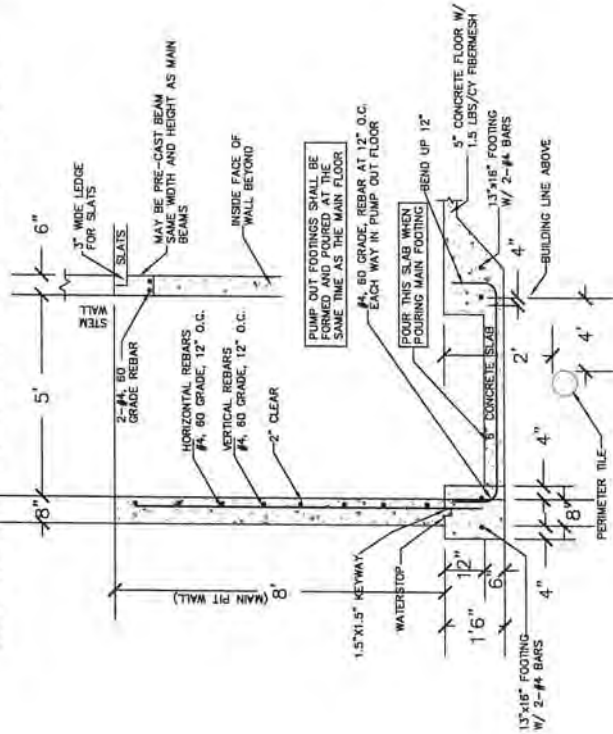


(E) PUMP OUT SECTION

8" THICK WALLS FOR 8'-0" DEEP PITS.

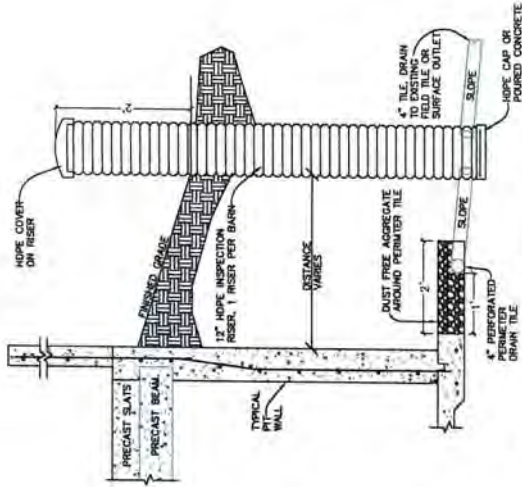
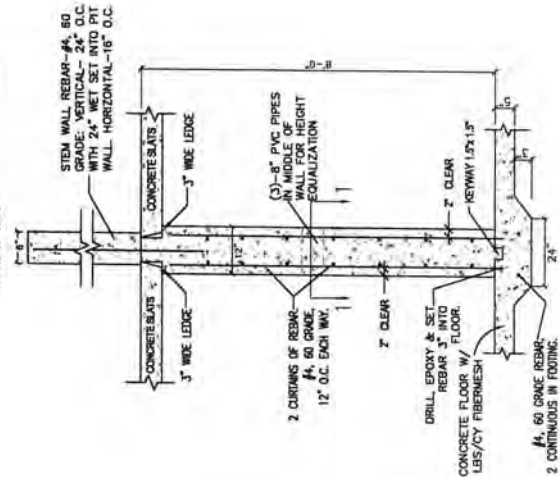
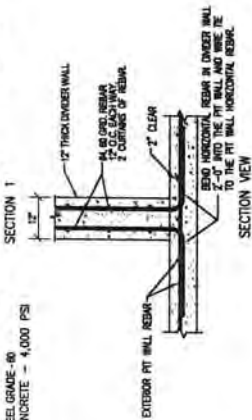
LOCATE PERIMETER TILE SO SIDE OF TRENCH BECOMES SIDE OF GENERAL EXCAVATION FOR PIT.

TO DEWATER THE SITE IN ADVANCE OF GENERAL EXCAVATION SHALL BE DECIDED BY THE OWNER, ENGINEER AND CONTRACTOR AT TIME OF THE PRECONSTRUCTION MEETING. IF THE TILE IS INSTALLED IN ADVANCE OF EXCAVATION, IT SHOULD BE INSTALLED 4 FT OUT FROM THE PIT WALL AND AT LEAST 2 FT BELOW THE TOP OF THE PIT FLOOR (IN ORDER TO GO UNDER PUMPOUT SUMP). SLOPE THE TILE AT 0.2 FT PER 100 FT TO THE SUMP OR DAYLIGHT OUTLET. PLOW TYPE MACHINES SHALL NOT BE USED WHEN INSTALLING PERIMETER TILE AROUND CONCRETE MANURE STORAGE STRUCTURES PRIOR TO GENERAL EXCAVATION, BECAUSE IT WILL LOOSEN SOIL UNDER WALL FOOTING. USE ONLY A BACKHOE OR TRENCHER.

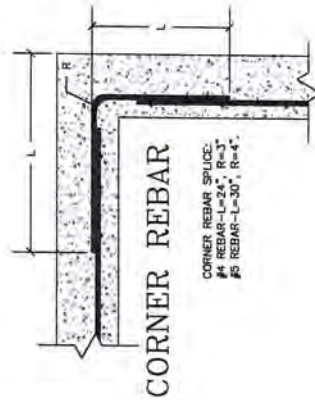


12" DIVIDER WALL

STEEL GRADE-60
CONCRETE - 4,000 PSI



INSPECTION RISER DETAIL-SECTION VIEW



CORNER REBAR

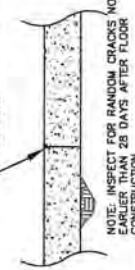
CORNER REBAR SPLICE:
#4 REBAR-L=24", R=3"
#5 REBAR-L=30", R=4"

CONSTRUCTION JOINTS

3/4" CHAMFER STRIP,
CLEAN AND FILL W/
BITUMINOUS/MASTIC

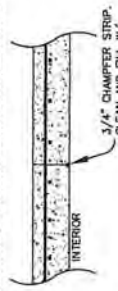


ROUTER OUT CRACK WITH "CRACK CHASER"
CONCRETE SAW. BLOW OUT CRACK WITH
COMPRESSED AIR. FILL WITH BITUMINOUS
SEALANT.



NOTE: INSPECT FOR RANDOM CRACKS NO
EARLIER THAN 28 DAYS AFTER FLOOR
CONSTRUCTION
(NOT TO SCALE)

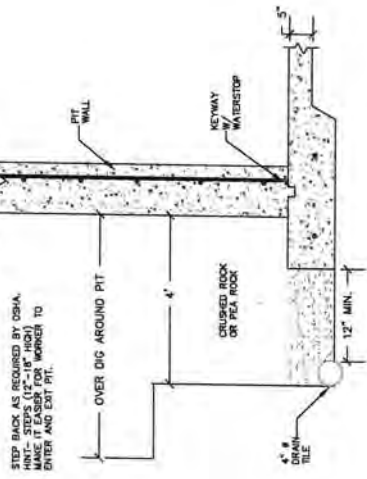
REINFORCING CONTINUOUS THROUGH ALL JOINTS



PERIMETER TILE

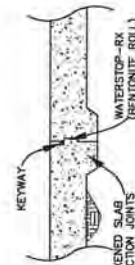
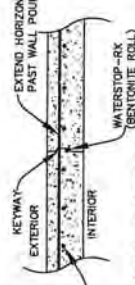
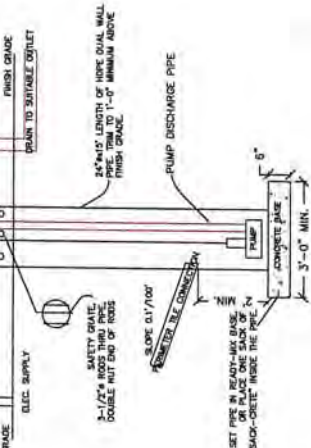
PERIMETER TILE WITH PEVA ROCK COVER INSTALLED BY
CONCRETE CONTRACTOR BEFORE POURING FLOOR SLAB.

STEP BACK AS REQUESTED BY CSMA.
HINT- STOPS (12"-14" HIGH)
MAKE IT EASIER FOR WORKERS TO
ENTER AND EXIT PIT.



PERIMETER TILE SUMP

PERIMETER TILE SYSTEM
WHERE A LIMITED TILE IS REQUIRED
TO CONTROL THE ELEVATION OF THE WATER
TABLE OR SATURATED SOILS, IT MUST LOWER
BELOW THE BOTTOM OF THE STORAGE TANK.
PERIMETER DRAINAGE TILE SHALL BE LOCATED
IN AN AREA OF CONCRETE-PAVED MANURE STORAGE AREAS.
SUMP SLABS SHALL BE REQUIRED. MECHANICAL A
GRAVITY OUTLET IS NOT AVAILABLE.



CONCRETE & STRUCTURAL NOTES:

A. GENERAL

- NOTES AND DETAILS ON THE STRUCTURAL DRAWINGS TAKE PRECEDENCE OVER THESE STRUCTURAL NOTES.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, AND SITE CONDITIONS PRIOR TO STARTING WORK. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES.
- IN NO CASE SHALL DIMENSIONS BE SCALED FROM PLANS, SECTIONS, OR DETAILS ON THE STRUCTURAL DRAWINGS.
- DESIGN CHANGES MUST BE APPROVED IN WRITING BY BOTH THE OWNER AND ENGINEER BEFORE PROCEEDING WITH THE WORK. SOME DESIGN CHANGES MAY ALSO REQUIRE MPCA, COUNTY FEEBID OFFICER AND/OR MPCA APPROVAL.
- ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE REQUIREMENTS OF THE FOLLOWING CODES:
 - UNIFORM BUILDING CODE (UBC)
 - MINNESOTA STATE BUILDING CODE
 - AMERICAN CONCRETE INSTITUTE (ACI)
 - CONCRETE REINFORCING STEEL INSTITUTE (CRS) MANUAL OF STANDARD PRACTICE

B. DRAIN TILE

- BEFORE ANY PIT CONSTRUCTION, TRENCH AND INSTALL DRAIN AROUND THE PROPOSED PIT. THE DRAIN TILE FLOW LINE MUST BE A MINIMUM OF 12" BELOW THE TOP OF THE DRAIN TILE TO BE HEAVY DUTY PERFORATED POLYETHYLENE TUBING 4" TILE WITH PEA ROCK COVER OR 4" TILE W/ FABRIC SLEEVE AND SAND/GRAVEL COVER.
- CONNECT THE DRAIN TILE TO AN EXISTING FARM TILE IF AVAILABLE; DISCHARGE TO SURFACE DRAINAGE, OR DRAIN TO A PUMP AND PUMP TO SURFACE.

C. TEMPORARY BRACING AND BACKFILL

- PROVIDE TEMPORARY LATERAL SUPPORT FOR ALL WALLS WHERE GRADE VARIES ON THE TWO SIDES UNTIL THE PERMANENT STRUCTURAL SUPPORT SYSTEM IS IN PLACE.
- BACKFILL ONLY AFTER THE FLOOR SLATS OR SOLID FLOOR HAS BEEN INSTALLED.
- DO NOT BACKFILL AGAINST WALL UNTIL SLATS ARE INSTALLED AND CROUTED.
- CONCRETE IN ALL WALLS SHALL BE ALLOWED TO CURE FOR A MINIMUM OF 14 DAYS BEFORE BACKFILL IS PLACED AGAINST WALLS. EXERCISE CAUTION WHEN BACKFILLING TO BRING UP THE LEVEL UNIFORMLY ON ALL SIDES OF TANKS AND PITS.

D. FOOTINGS, FOUNDATIONS, & SUBGRADE

- SOIL BEARING DESIGN VALUE: 3000 PSF (ASSUMED) ON VIRGIN SOIL OR COMPACTED FILL FOR FOOTINGS.
- PROTECT FOUNDATION EXCAVATIONS FROM FROST. DO NOT PLACE CONCRETE ON FROZEN GROUND.
- EXISTING UNDISTURBED SUBGRADE SHALL BE RECOMPACTED TO 95% OF STANDARD PROCTOR DENSITY.
- ALL FILL UNDER FOOTINGS AND SLAB SHALL BE COMPACTED TO A DRY DENSITY OF AT LEAST 93% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASHTO T-180.
- SAND FILL AS REQUIRED FOR LEVELING SUBGRADES SHALL BE PROVIDED AT ALL SLAB ON GRADE AREAS.

E. REINFORCED CONCRETE

- ALL CONCRETE AND REINFORCING WORK SHALL CONFORM TO AMERICAN CONCRETE INSTITUTE'S STANDARD BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, (ACI 318-05).
- CONCRETE WORK SHALL CONFORM TO ALL THE REQUIREMENTS OF ACI 307.
- CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 70-3500 PSI FLOOR, 4000 PSI WALLS
- WATER CEMENT RATIO SHALL BE 0.45 MAXIMUM
- CONCRETE SHALL BE TYPE I
- COARSE AGGREGATE SHALL BE 1"
- READY-MIX CONCRETE SHALL BE MIXED & DELIVERED IN ACCORDANCE WITH ASTM C94.
- SUMP SHALL BE MAXIMUM OF 5"
- AIR CONTENT SHALL BE 5% TO 7%
- CONCRETE TO BE CURED WITH SONOBORN CURE AND SEAL OR EQUAL.
- ADMITTRES MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER FOR THE PURPOSE OF INCREASING THE WORKABILITY BUT NOT TO REDUCE THE SPECIFIED MINIMUM CEMENT FIBERS.
- FLOORS SHALL BE 5" THICK WITH 1-1/2" CY OF 3/4" FIBRILLATED POLYPROPYLENE FIBERS.
- REINFORCING STEEL SHALL BE PLACED IN THE CENTER OF CONCRETE UNLESS NOTED OTHERWISE. STEEL MUST BE SUPPORTED WITH APPROPRIATE CHAIRS OR CONCRETE BLOCKS.
- IF CONSTRUCTION JOINTS NECESSARY, COORDINATE LOCATION WITH ENGINEER.
- CONSTRUCTION JOINTS ARE NOT PERMITTED IN THE END WALLS OR WITHIN 3 FT. OF A PUMP-OUT. THE PUMP-OUT FLOOR AND FOOTING MUST BE FORMED AND POURED WITH THE PIT FLOOR. THE PUMP-OUT WALLS MUST BE FORMED AND POURED WITH THE PIT WALLS.

F. STEEL

- TY = GRADE 60 (60,000 PSI) DEFORMED STEEL.
- REINFORCING SHALL BE CONTINUOUS AND LAP A MINIMUM OF 40 BAR DIAMETER UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL BE LAPPED A MINIMUM OF EIGHT INCHES.
- MINIMUM BENDING RADIUS SHALL BE 6 BAR DIAMETERS.
- ALL CONCRETE IS REINFORCED UNLESS SPECIFICALLY CALLED OUT AS "NOT REINFORCED". REINFORCE ALL CONCRETE NOT OTHERWISE SHOWN WITH THE SAME STEEL AS IN SIMILAR SECTIONS OR AREAS.
- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT UNLESS OTHERWISE NOTED:
WHERE CAST AGAINST EARTH 3 INCHES
WALLS AND SLABS (EXPOSED TO EARTH OR WEATHER) 2 INCHES
OTHER.....

G. TOLERANCES & QUALITY CONTROL

- COLUMN FINISH ELEVATIONS SHALL BE + OR - 1/4" FROM DESIGN ELEVATION.
- WALL ALIGNMENT (HORIZONTAL) SHALL DEVIATE NO MORE THAN 1/4" IN 10 FT. NO MORE THAN 3/4" OVER THE FULL LENGTH OF WALL.
- WALL BEARING LEDGE ELEVATIONS SHALL DEVIATE NO MORE THAN 1/2" OVER THE FULL LENGTH OF WALL.
- ALL CONCRETE SHALL BE PLACED WITHIN 1/2" OF PLAN DIMENSIONS.
- CONCRETE SHALL BE PLACED WITHIN 48 HOURS WITH CEMENT GROUT SLURRY MOPPED INTO THE JOINTS. DO THE GROUTING OF FLOOR CRACKS BEFORE DIRT AND EQUIPMENT ARE BROUGHT ON THE FLOOR.

H. ELECTRICAL GROUNDING

- REINFORCING BARS AS PER ELECTRICAL CODE GROUND AT A MINIMUM LOCATIONS AS PER ELECTRICAL CODE NOTIFY THE LOCAL ELECTRICAL INSPECTOR FOR INSPECTION PRIOR TO PLACING CONCRETE.
- COLD WEATHER CONCRETING
1. WHEN, FOR MORE THAN 3 CONSECUTIVE DAYS, THE MEAN DAILY TEMPERATURE DROPS BELOW 40° F., THE CONTRACTOR SHALL PLACE AND PROTECT THE CONCRETE IN ACCORDANCE WITH ACI 308.
- HOT WEATHER CONCRETING
1. WHEN IT IS LIKELY THAT TEMPERATURE BETWEEN 75° F AND 100° F WILL BE APPROACHED OR EXCEEDED; THAT LOW RELATIVE HUMIDITY IS PRESENT; OR WIND VELOCITY WILL EXCEED 10 MPH, THE CONTRACTOR SHALL PLACE & PROTECT THE CONCRETE IN ACCORDANCE WITH CHAPTERS 4 & 5 OF ACI 308.

I. WATERSTOPS & SEALANTS

- WATERSTOP TO BE RIBBED PVC, OR BENTONITE ROLL, AT CONTRACTORS OPTION.
- 3/8" x 3/4" BENTONITE/RUBBYL RUBBER STOP-ROCK BY AMERICAN CALLED COMPANY WATERSTOPS SHALL BE PLACED IN ALL CONSTRUCTION JOINTS ON THE FLOOR AND IN THE WALLS. LOCATION AND NUMBER OF CONSTRUCTION JOINTS ARE TO BE DETERMINED BY THE CONTRACTOR. WATERSTOPS SHALL BE SUITABLE FOR USE WITH MANURE.
- MAKE PVC WATERSTOP SPLICES WITH SPLICING IRON.
- SEALANT TO BE ELASTOMERIC POLYURETHANE OR BITUMINOUS ASPHALT BASED.

SLAT LEDGES & STEM WALL CONCRETE NOTES

- ANY SLAB ON GRADE WHICH WILL HAVE A VERTICAL WALL ON TOP SHALL HAVE A KEYWAY AND WATERSTOP AT SLAB/WALL INTERFACE.
- WATERSTOP TO BE BENTONITE ROLL OR RIBBED PVC @ CONTRACTORS OPTION.
- SLAT LEDGES MUST BE 3" WIDE x 5 1/2" HIGH.
- 12" CENTER DIVIDER WALLS: THE 3" WIDE x 5 1/2" LEDGE ON BOTH SIDES OF THE 12" WALL MUST BE FORMED AND POURED WITH THE WALL.
- 8" OUTSIDE WALLS: THE 3" WIDE x 5 1/2" LEDGE ON INSIDE SIDE OF 8" WALL MUST BE FORMED AND POURED WITH WALL.
DO NOT POUR WALL AND SET SLATS ON TOP. DO NOT EVEN ASK, BECAUSE THE 5 1/2" HIGH STEM IS NEEDED FOR SLATS BRACING THE TOP OF WALL

- A CONSTRUCTION JOINT IS PERMITTED BETWEEN THE PIT WALL AND STEM WALL, BUT THE CONSTRUCTION JOINT MUST BE EQUAL OR HIGHER THAN THE TOP OF THE PRE-CAST SLATS.

This is an official copy of a portion of the above referenced flood map. It was prepared using FIRM's CH-Link. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

FIRM
FLOOD INSURANCE RATE MAP
REDWOOD COUNTY,
MINNESOTA
AND INCORPORATED AREAS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

Panel 500 OF 700
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

COMMUNITY NUMBER: 270644
REDWOOD COUNTY
MINNESOTA

MAP NUMBER: 2712C0500C
EFFECTIVE DATE: JULY 16, 2013

Federal Emergency Management Agency

Notes to User: The Map Number shown below should be used with zoning map orders. The Community Number shown above should be used on insurance applications for the subject community.

PANEL 0500C

MAP SCALE 1" = 2000'

0 2000 4000 FEET

0 2000 4000 METERS



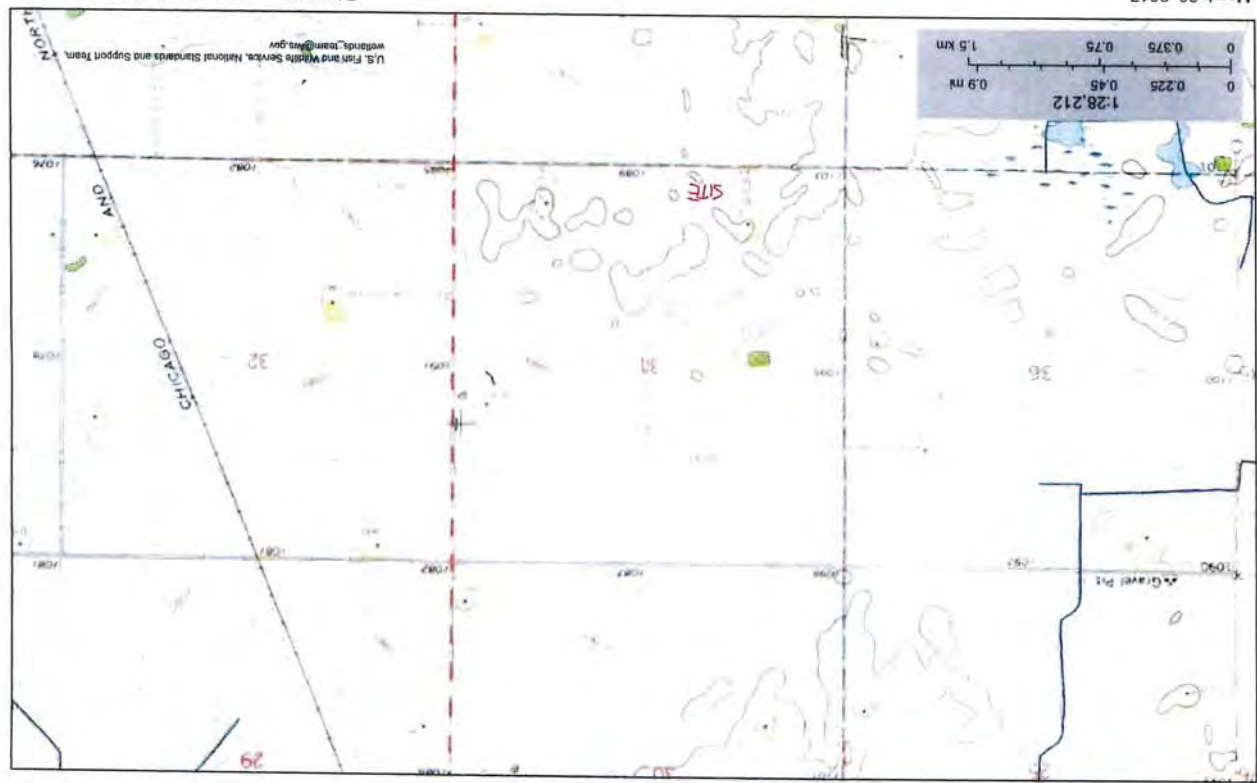
Redwood County
Unincorporated Areas
270644

MANAGEMENT

National Wetlands Inventory (NWI)

- Freshwater Emergent Wetland
- Estuarine and Marine Wetland
- Freshwater Forested/Shrub Wetland
- Lake
- Freshwater Pond
- Other
- Riverine

March 30, 2017



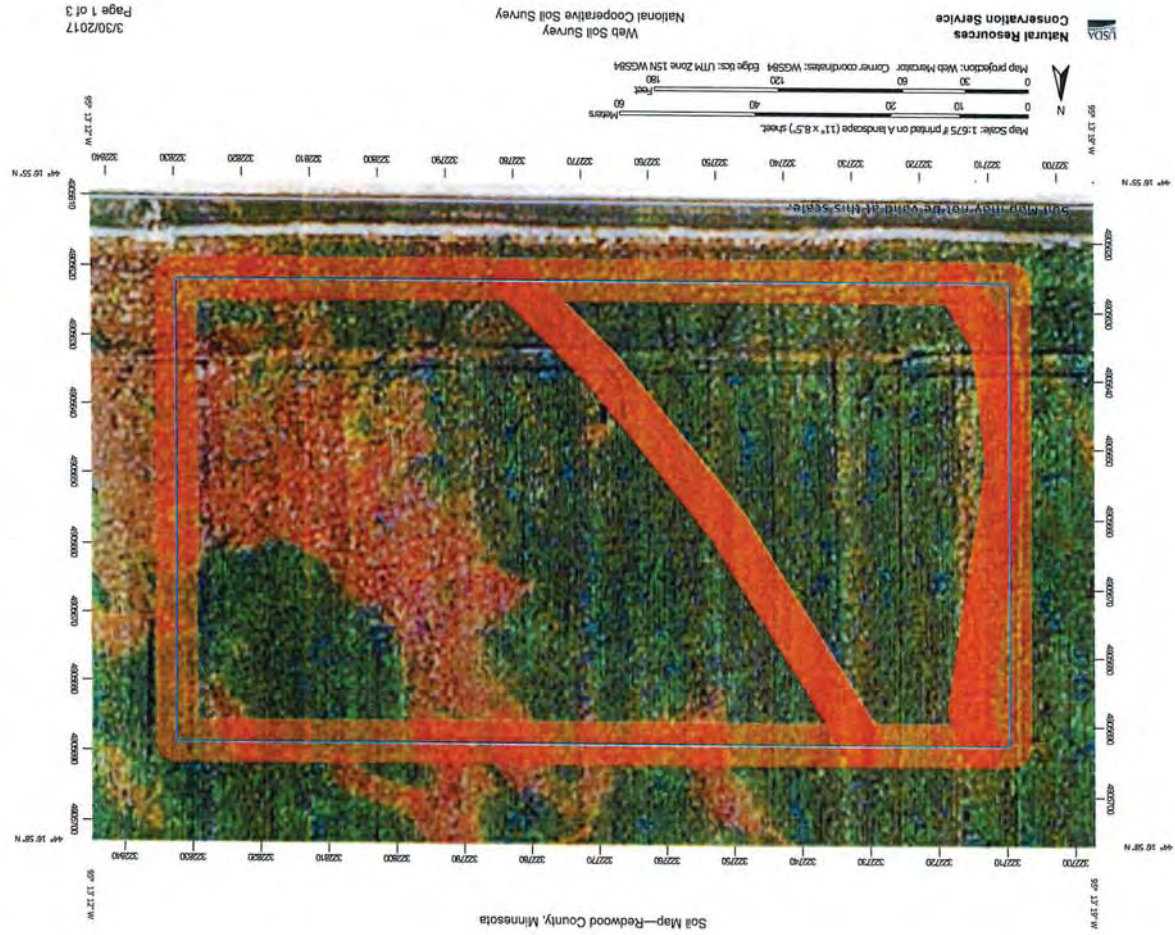
Mark Coulter

U.S. Fish and Wildlife Service
National Wetlands Inventory



Map Unit Legend

Redwood County, Minnesota (MN127)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
86	Capitaseo clay loam, 0 to 2 percent slopes	0.7	33.8%
99852	Ves-Estherville-Storden complex, 3 to 6 percent slopes, eroded	1.3	63.8%
L163A	Okoboji silty clay loam, 0 to 1 percent slopes	0.1	2.8%
Totals for Area of Interest		2.0	100.0%



Depth to Water Table

Depth to Water Table—Summary by Map Unit — Redwood County, Minnesota (MN127)				
Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
86	Castles clay loam, 0 to 2 percent slopes	0 to 0	0.7	33.8%
999B2	Ves-Esterville-Storden complex, 3 to 6 percent slopes, eroded	110	1.3	63.6%
L163A	Okoboji silty clay loam, 0 to 1 percent slopes	0	0.1	2.6%
Totals for Area of Interest			2.0	100.0%

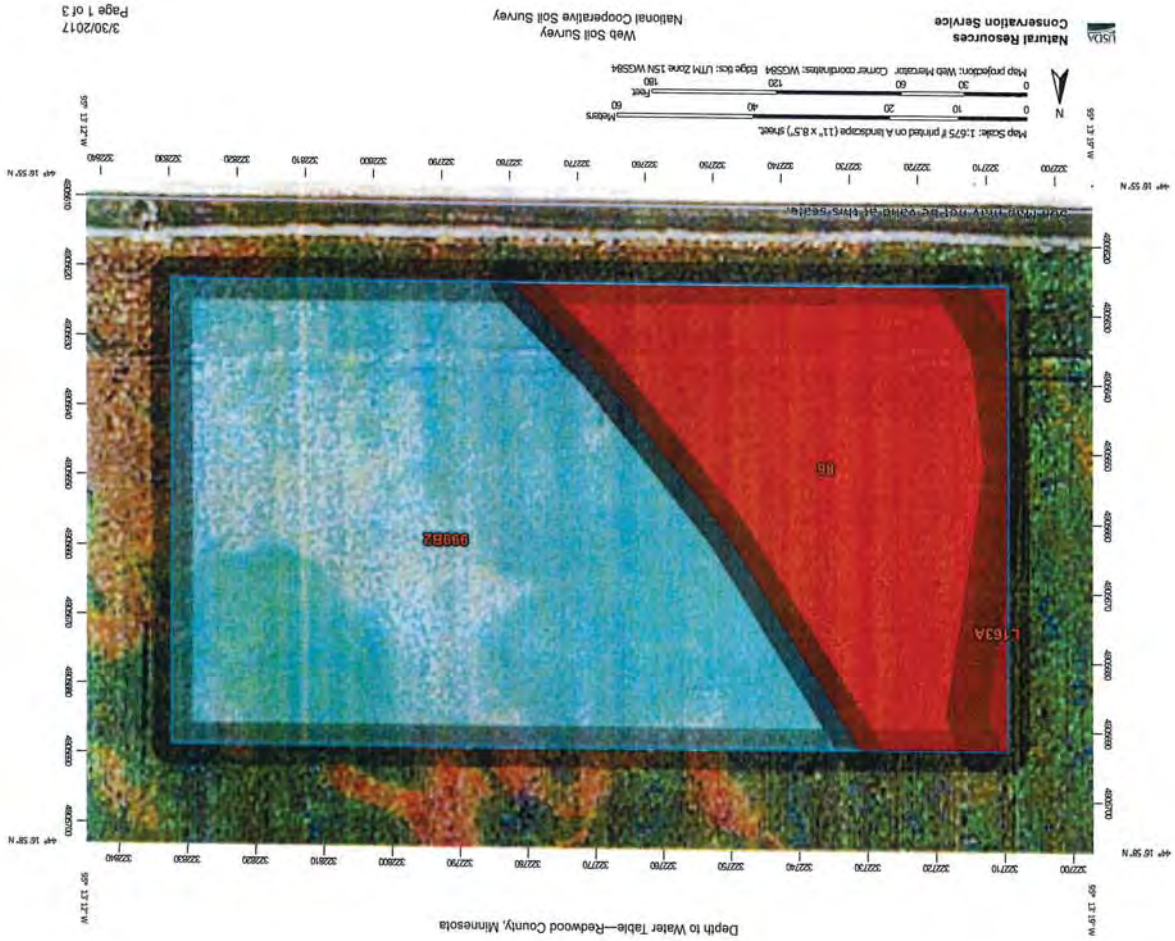
Description

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

- Units of Measure: centimeters
- Aggregation Method: Dominant Component
- Component Percent Cutoff: None Specified
- Tie-break Rule: Lower
- Interpret Nulls as Zero: No
- Beginning Month: January
- Ending Month: December





ENGINEERING, INC.
 77402 U.S. Hwy 71
 P.O. Box 181
 Jackson, MN 56143
 507-841-3269
 nric@proageng.com

TO: OWNER

**INSTRUCTIONS FOR OWNER TO FOLLOW
 BEFORE—DURING—AFTER
 CONSTRUCTION OF MANURE STORAGE**

1. Distribute only complete sets of plans and specifications. Keep a record of who gets plans because you may need to retrieve them later. Please call if you need more copies.
2. Ask your feedlot officer to send a copy of your feedlot permit to ProAg Engineering, Inc.. We need this so we know who issued the permit and where reports should be sent.
3. Each Contract for construction of the liquid manure storage (Concrete, tiling earthen basins) should include the following statement:
 - 10% of the contract amount will be held back until the MPCA Construction Inspection of Liquid Manure Area form has been signed by the Contractor and returned to the Engineer and Engineer certifies that the contract work is complete.
4. **A Pre-Construction Meeting shall be held before you start construction.** The pre-construction meeting must include the Owner, Engineer, Excavating Concrete Contractors, and County Feedlot Officer. If you start construction without a pre-construction meeting, we reserve the right to cancel our contract
5. You must notify ProAg Engineering, Inc. and the Permitting Agency:
 1. Three days before you start construction.
 2. Three days before you backfill.
 3. Within three days of completion.
6. Pictures should be taken as the work progresses. This is good protection for you because if problems develop later, you will have a record of what was done. If the Engineer finds problems during inspection, he may request copies of the pictures. Close up pictures showing details are more important than panoramic views. Suggest using single use or digital cameras.
7. MPCA requires that the design engineer submit a written construction report. We cannot do our final inspection and impact hammer test until the concrete is at least 28 days old and all accessory details shown on plans and specs are completed. Then allow at least 2 weeks for us to inspect and write our report.
8. **DO NOT** make a final payment to contractor until the Engineer's certifies that work is complete.
9. **DO NOT put manure in the structure until you have received Engineer's Construction Report.**

INSPECTIONS: *ProAg Engineering, Inc. must inspect before pouring concrete

Owner: _____

Location: _____

Barn or Tank Identification: _____
 Date: _____ Comment: _____
 Subgrade (No standing water or mud, forms set for proper floor thickness) Initials: _____

Floor Reinforcement (Grade, size, clean, location) _____

*Pouring Floor (Concrete, quality, take test cylinder) _____

Floor (Cracks sealed) _____

Perimeter Tile, Monitoring Port or Sump & Pump, Tile Outlet (Functional before forming walls) _____

Wall Forms and Reinforcement (Grade of steel, spacing, vertical reinforcement secured) _____

*Pouring Walls (Concrete quality, take test cylinders) _____

Water Supply Lines (None permitted through pit floor or walls below the HW line) _____

Outside of Walls (Honeycomb patched prior to backfilling) _____

Inside of Walls (Honeycomb patched) _____

Walls (Do Impact hammer test) _____

Columns (Honeycomb patched) _____

Beams Grouted (First 3 beams at end walls and each side of solid divider walls) _____

Slats Grouted (Prior to backfilling) _____

Backfill (Height and slope to drain roof away from barns) _____

Finish Grading (Roads, drives, storm water catch basins & drainage) _____

PRE-CONSTRUCTION MEETING CHECK LIST

OW-Owner, OR-Owner's Representative, CC-Concrete Contractor,
 EC-Electrical Contractor, EN-Engineer, EX-Excavator, PC-Precast Supplier
 RESPONSIBILITY

- 1) Telephone directory _____
- 2) Port-a-potty or Johnny-on-the-spot _____
- 3) Storm Water Pollution Prevention Plan, SWPPP, weekly inspections. _____
- 4) Stake out buildings and pits _____
- 5) Locate underground utilities _____
- 6) Call UTILITIES CALL CENTER _____
- 7) Notify Engineer three days before starting _____
- 8) Notify Engineer three days before backfilling _____
- 9) Notify Electrical Inspector for grounding inspections _____
- 10) Notify Engineer four hours before each concrete pour _____
- 11) Temporary electrical power _____
- 12) Temporary Water _____
- 13) Telephone service _____
- 14) Layout worksite, limits of worksite _____
- 15) Equipment and employee parking _____
- 16) Dirt stockpile area _____
- 17) Construction materials stockpile area(s) _____
- 18) Keep traffic off septic drainfield area(s) _____
- 19) Security (daytime, night time) _____
- 20) Bio-security _____
- 21) Refuse disposal dumpster/burn pit _____
- 22) Concrete truck wash-out area _____
- 23) Does everyone have correct plans? _____
- 24) At completion of construction, notify Engineer for final inspection _____
- 25) Contractor sign MPCA Construction Report _____

ENGINEERING, INC.
 Nicholas J. Rowe, P.E.
 77402 U.S. Hwy 71
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 507-841-3269
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PRE-CONSTRUCTION MEETING

PROJECT: _____ **DATE:** _____

LOCATION: _____ 1/4, SECTION _____ TWP. _____ CTY

OWNER: _____ **PHONE:** _____
 Owner's Representative _____ **PHONE:** _____ (to
 conduct weekly inspections for SWPPP and notify Engineer and Feedlot Officer.)

GENERAL CONTRACTOR _____ **PHONE:** _____
 Contact _____

EXCAVATION CONTRACTOR _____ **PHONE:** _____
 Contact _____
 Date to start excavation work _____

CONCRETE CONTRACTOR _____ **PHONE:** _____
 Contact _____
 Date to start concrete work _____

CONCRETE READY MIX _____ **PHONE:** _____
 Contact _____

PRE-CAST CONCRETE _____ **PHONE:** _____
 Contact _____

GROUTS, BEAMS AND SLATS _____ **PHONE:** _____
 Contact _____

FEEDLOT OFFICER _____ **PHONE:** _____

ELECTRICAL INSPECTOR _____ **PHONE:** _____

ENGINEER _____ **PHONE:** _____

SPECIFICATIONS for Concrete Lined Manure Storage Areas

01001 QUALITY ASSURANCE AND CONTROL PLAN

Work under these specifications is subject to County and MPCA inspection and review.

- A. BEFORE STARTING CONSTRUCTION**, Owner shall:
1. Consult the feedlot permit for required submittals, notifications and approvals.
 2. Arrange for pre-construction meeting with engineer, owner and contractors.
 3. Notify engineer, 3 days before starting construction.
 4. Notify permitting agency (MPCA or County) 3 days before starting construction.
- B. DURING CONSTRUCTION**, Concrete Contractor shall:
1. Notify Engineer, minimum 4 hrs before each concrete pour.
 2. Wait for Engineer's inspection before pouring concrete.
 3. Concrete testing will occur at a minimum of one sample per 100 yards of placed concrete. Testing will include: Air/Sump/Strength per ASTM standards. Sampled concrete will be later tested at a certified testing facility to determine PSI strength requirements and quality assurance.
 4. If concrete is provided by different supplier or with different mixes, additional testing will be done on the first truck according to ASTM standards. Engineer must be notified immediately if any change does occur.
- C. BEFORE POURING CONCRETE PIT FLOORS**; the following must be completed:
1. Contractor give Engineer & Electrical Inspector advance notice.
 2. Engineer inspect subgrade and floor slab thickness (full 5" thick).
 3. Engineer inspect grade and placement of reinforcing steel.
Steel shall be supported on chairs and tied.
 4. Perimeter tile shall be laid at least 12 inches from pit wall and covered with pea rock or 1/4" - 1/2" crushed rock.
 5. Grounding inspection by Electrical Inspector.

Placement of the perimeter tile and rock cover shall be done by the Concrete Contractor. Tile and rock provided by Owner.

- D. BEFORE POURING CONCRETE PIT WALLS**; the following must be completed:
1. Contractor give Engineer & Electrical Inspector advance notice.
 2. Engineer inspect forms, reinforcing steel, waterstop and tile.
 3. Tile system shall be working with (temporary or permanent) automatic sump pump or daylight outlet.
 4. Grounding inspection by Electrical Inspector.
- E. BEFORE BACKFILLING**; items 1 thru 4 must be complete, then Owner notify Engineer, and MPCA or CFO and allow 3 work days for inspection.
1. Concrete contractor shall have patched all cracks and honeycomb.
 2. Pre-cast concrete beams, slats and slabs in place and grouted.
 3. Permanent tile sump pump or inspection port set in-place, (braced if necessary) and ready for backfilling.
 4. All organic debris shall be removed from the overdig area.
 5. Engineer must inspect items 1 thru 4 and approve before backfilling.

SPECIFICATIONS for Concrete Lined Manure Storage Areas

- F. UPON COMPLETION**, Owner shall notify Engineer when all of these items are done.
1. Backfilling and finish grading completed.
 2. Pumpout covers and safety signs installed.
 3. Concrete Contractor sign MPCA Construction Inspection Form.
- G. ENGINEER** shall conduct inspections as specified in Section 03001.B. and submit construction report to Owner and Permitting agency.

01301 DESIGN CHANGES

Design changes must be approved in writing by both the Owner and the Engineer before proceeding with the work. Some design changes may also require MPCA, COUNTY and/or NRCS approval.

01401 SITE SURVEY

The Contractor shall be responsible for layout of the work. Bidders must visit the site and acquaint themselves with existing conditions. Contractor shall CALL GOPHER-1 and be responsible for location of existing utilities in areas of work.

01501 SUBSURFACE INFORMATION

All available data relating to the subsurface material and conditions that are based upon test borings has been obtained by the Engineer for his/her own use in designing the project. Its accuracy or completeness is not guaranteed by the Owner or Engineer and in no event is it to be considered a part of the contract plans or specifications.

02101 EARTHWORK

- A.** This section applies to earthwork (excavation and backfill) for concrete lined manure storage pits and tanks.
- B.** Remove one foot (1') of topsoil under all concrete lined manure tanks. Save topsoil for finish grading.
- C.** Removal of water: All excavations, fill, grading and embankments shall be maintained in a well drained condition at all times. The Contractor shall have temporary pumping equipment on site to remove water from trenches and excavations until the perimeter tile system is working.
- D.** Any over-excavation for concrete footings and slabs on grade shall be backfilled with compacted sand/gravel.
- E. WARNING Engineer must inspect outside of wall and tile and give approval before backfilling.**
See Section 01001.
- F. CLEAN BACKFILL TRENCH.** All organic material, cardboard, wood, paper, straw, etc. shall be removed from trench before backfilling. These materials will decay and contaminate the perimeter tile system.

SPECIFICATIONS for Concrete Lined Manure Storage Areas

- G. Do not backfill against concrete walls until the concrete has cured at least 7 days and all slat and slab floors and beams are in place and grouted to properly brace the walls. Exercise caution when backfilling to bring up the level uniformly on all sides of tanks and pits. Keep all heavy equipment back from the pit and tank walls a distance equal to the depth of the fill. Top off backfill with one foot (1') of topsoil, disk and leave smooth for planting grass.

02401 PERIMETER TILE SYSTEM

MPCA Rules: Where a perimeter tile system is required to control the elevation of the water table or saturated soils, it must lower the water table or saturated soils to below the bottom of the storage liner. Perimeter drainage tile shall be located at least one foot outside of the footing of the concrete-lined manure storage areas. Each manure storage area shall have a dedicated drain tile system with a dedicated riser, manhole or other access for collection of tile-water samples.

- A. PERIMETER TILE shall be 4 inch (unless otherwise shown on plans) heavy duty perforated corrugated polyethylene plastic agricultural drain pipe. Tile shall be bedded and covered with pea rock or 1/4" - 1/2" crushed rock.
- B. EXISTING TILE LINES intercepted during trenching for the perimeter tile system shall be removed back 10 feet from the tank wall. Existing tiles shall be connected to a suitable by-pass tile system. Do NOT connect existing area tile lines to the perimeter tile system, unless authorized by the Engineer.

- C. GRAVITY OUTLET FOR PERIMETER TILE shall not be used where flood water may backup into the tile and contaminate the dedicated sampling port. The tile outlet shall have a rodent guard. The tile outlet may serve as dedicated sampling port, when it is easily accessible and will never be inundated and contaminated by flood water.

- D. SUMP PUMPS shall be required whenever a gravity outlet is not available. On sites with more than one below ground manure storage structure, only one common sump pump system is required, but each structure must have an individual sampling port.

- E. PUMP shall be submersible type with 20 feet heavy duty electrical cord. Pump shall have an adjustable piggy back float switch. Pump shall be capable of 25 GPM at 15 feet head. Pump shall be fitted with a discharge hose or pipe equal or larger than the discharge of the pump. Furnish and install fused weatherproof disconnect switch, plug and receptacle for each pump. Plug type connections should be used for quick exchange of pumps by farm workers.

- F. ALTERNATE PLAN to dewater the site in advance of general excavation shall be decided by the owner, engineer and contractor at time of the pre-construction meeting. If the tile is installed in advance of excavation, it should be installed 4 feet out from the pit wall and at least 2 feet below the top of the pit floor. Slope the tile at 0.2 feet per 100 feet to the sump or daylight outlet. Plow type machines shall NOT be used when installing perimeter tile around concrete manure storage structures prior to general excavation, because it will loosen soil under wall footing. Use only a backhoe or trencher.

- G. CLEAN BACKFILL TRENCH. All organic material, cardboard, wood, paper, straw, etc. shall be removed from trench before backfilling. These materials will decay and contaminate the perimeter tile system.

SPECIFICATIONS for Concrete Lined Manure Storage Areas

02601 SEWER SYSTEM

- A. Sewer system consists of drains from the barns, cleanouts, sewer main, sewer outlet into concrete tanks and earthen basins, and level control between lagoon cells.
- B. Gravity sewer pipe (non-pressurized) shall be PVC SDR-35 with gasket or glued joints. Sewer cleanouts (CO) shall be located as shown on the plan.
- C. All holes for pipes passing through floors and walls shall be sealed water tight.

02701 FENCE AND GATES

All open top concrete tanks less than 4 feet of wall above ground and earthen manure storage basins shall be fenced. Fence and gates shall be child and livestock proof to prevent unsupervised access.

02801 SIGNS

The Owner shall post warning signs every 100-150 feet around open top tanks and earthen basins: "DANGER, DEEP WATER, KEEP OUT". Post warning sign at each manure pit, reception pit, pumping station and manhole where a 'confined space' may contain manure gases: "DANGER, POISONOUS GAS IN PIT, KEEP OUT".

02901 OTHER WORK

The Owner shall be responsible for putting child-proof fences around open top tanks and child-proof covers on all sumps, pump out ports and providing and utilizing safety guard fences around pump covers when open.

03000 PRECAST CONCRETE

- A. The Precast manufacturer shall submit design data for checking load capacity of the precast system or an Engineer's Certification that the pre-cast components meet the following design loads. For design of beams, slabs and slats refer to Concrete Manure Storage Handbook, MWPS-36, by Midwest Plan Service.

Type of barn	Solid slabs & beams	Slats
Hog nursery barns	35 psf	50 plf
Hog finishing barns	60 psf	125 plf
Sow & boar barns	85 psf	150 plf
Add an additional 180 plf on the edge(s) of slabs that support farrowing stalls.		
Dairy free-stall barns	100 psf	250 plf
Dairy holding & handling pens	125 psf	312 plf

- B. To properly brace pit or tank walls, space between ends of beams, slats and slabs shall be filled with grout and allowed to set 3 days before backfilling.

03001 CAST IN PLACE CONCRETE

- A. READY MIX CONCRETE shall meet requirements of ASTM C-94

CONTRACTOR shall give copy of this page to Ready Mix Plant prior to bidding.

Concrete 28 day compressive strength, f _c , psi	Aggregate, max.	Fiber/mesh
Footings & Floors	2"	1.5 lb/cu yd
Walls	1.5"	none
Columns	1.5"	none
Slump	3" - 6"	
Air entrained	5% - 7%	
Water/cement ratio	0.5	

Fly Ash, maximum 20% of cementitious material. Silica Fume, maximum 20% of cementitious material. The combination of fly ash and silica fume shall not exceed 35% of total cementitious materials. Fly ash and silica fume will increase resistance to sulfates and reduce permeability. CAUTION: fly ash slows curing, especially in cold weather.

To minimize shrinkage cracks in floors, minimize the amount of cement-water paste and maximize the amount of large aggregate. The use of water reducing plasticizers is encouraged. Contractor may order water reducing or other admixtures, except calcium chloride shall not be used.

B. INSPECTIONS AND TESTING.

1. Inspection before each concrete pour shall include evaluation of subgrade, forms, waterstop, placement and grade of reinforcing steel.
2. Concrete shall be sampled and tested for temperature, entrained air, slump and strength (test cylinders) as per ASTM C-94. Minimum of one sample per 100 yards placed.
3. The Inspector shall forward the inspection report including results of the ASTM tests to the Engineer.
4. The Engineer may request core samples be taken for any concrete of questionable strength or quality. All such concrete found to be defective shall be removed and replaced by the Contractor. If concrete is provided by different supplier or with different mixes, additional testing will be done on the first truck according to ASTM standards. Engineer must be notified immediately if any change does occur.

C. WATERSTOP shall be 3/4" x 3/8" Waterstop RX; 3/4" x 1" Swellstop; Snyko-Flex; Hydro-Flex waterstop; Green-streak, Con-Seal CS-231, 220 or 102, or approved equal. These materials come in paper-backed coil or strips and shall be applied as per manufacturer's instructions.

D. All steel in the concrete floors and walls in livestock buildings must form an EQUIPOTENTIAL PLANE and be bonded to the electrical system. This must be coordinated with the Electrical Contractor and will require inspection by the Electrical Inspector prior to each pour of concrete.

E. REINFORCING STEEL shall be deformed bars, f_y = 60,000 psi (Grade 60)

Steel details for deformed rebar	#4 bars	#5 bars
Bar bending radius, minimum	4"	
Lap splices, minimum	20"	25"
Bend around corner, minimum	24"	30"
Rods through construction joints	30"	36"

F. Steel reinforcement shall be tied and supported on chairs, bolsters, spacers and other devices. Dowels and rods extending through construction joints shall be secured in positions against displacement before concrete is placed and shall be cleaned before subsequent pouring.

G. Preparation of Forms and Subgrade: Prior to placement of concrete, the forms and subgrade shall be free of wood chips, sawdust, debris, standing water, ice, snow, extraneous oil, mortar and other harmful substances or coatings. Placement of concrete on mud, dried earth, un-compacted fill or frozen subgrade will not be permitted.

H. Excavations shall be made to the dimensions and elevations indicated on the drawings. Should excavation through error be carried to a greater depth or size than indicated or required, such additional depth or size shall be filled with concrete at the CONTRACTOR'S EXPENSE.

I. Tolerances: Elevations of floor slabs, top of walls, slab ledges, beam pockets and top of columns ± 1/4". Horizontal length and width of top of wall, location of beam pockets and columns ± 1/2". Straightness of top of wall ± 1/4". Anchor bolt spacing ± 1", centered in stem wall ± 1/2". Thickness of floor slab shall not be less than 5 inches at any point.

J. Shrinkage cracks and honeycomb areas shall be filled with a mixture of masonry cement and water of medium consistency and brushed into the cracks with a stiff brush. Honeycomb areas shall: 1) have loose stones hammered out, 2) be wetted by brushing in a watery paste of masonry cement, 3) and filled and sealed with mixture of masonry cement with sand.

K. COLD WEATHER. When for more than 3 consecutive days the mean daily temperature drops below 40°F, the contractor shall place and protect the concrete in accordance with ACI 306.

L. HOT WEATHER CONSTRUCTION. When it is likely that temperature between 80°F and 100°F will be approached or exceeded; that low relative humidity is present; or wind velocity will exceed 10 mph, the contractor shall place and protect the concrete in accordance with Chapters 4 & 5 of ACI 305.

M. Freezer/Thaw & Non-Use Protection, Long & Short Term After Construction: After the concrete pit is constructed and prior to its use or during non-use, the concrete floor and subgrade must be protected from freezing. If the pit is empty when the ground surface around the pit begins to freeze, a minimum liquid depth of 2 feet must be added to the pit to prevent freezing the subgrade below the floor. If the barn and pit are not being used for any extended period of time throughout the year (minimum of 60 days), a minimum liquid depth of 2 feet must be maintained in the pit to prevent freezing, groundwater pressure heaving, etc. The barn can also be heated during non-use times during cold weather to prevent freezing in the bottom of the pit instead of placing or leaving additional liquid in the pit.

OPERATION, INSPECTION AND MAINTENANCE PLAN

NEED FOR OPERATION, INSPECTION AND MAINTENANCE PLAN

Although this Waste Storage Structure has been designed in accordance with MPCA recommendations and its based upon the best available technical knowledge, it must be recognized that any Waste Storage Structure needs to be properly maintained, including periodic inspection. You, the Owner, are responsible for this Waste Storage Structure. The following guidelines for safe operation and maintenance are recommended.

- (1) routine inspections, maintenance and record keeping to be completed to identify and document damage to the liner.
- (2) methods to be used to repair areas of damaged liner.
- (3) methods used to monitor the liquid level in the basin to evaluate proper operation and adequate available storage capacity; and
- (4) routine inspections of perimeter tile line outlets and inspection manholes to ensure proper operation of the system.

Annually, the liquid will be mixed and removed for land application. Liquid level in the pit(s) shall be monitored quarterly (4 times per year) and after any water line breaks or abnormal additions to the pit. The level shall be measured using a rod or wood stick and the depth recorded.

SEMI-ANNUAL INSPECTION OF LIQUID STORAGE AND HANDLING SYSTEMS

Establish a time each spring and fall for a thorough inspection of the liquid storage and handling systems. DO NOT ENTER COVERED PITS & TANKS.

All concrete storage tanks and reception pits shall be inspected to evaluate the outside of structures for cracks and deterioration of concrete. Any cracks showing discharge of liquid shall be inspected by an engineer and repairs done as prescribed by the engineer.

Maintain the following in proper working order:

- 1) Finish earthwork around the structure should be designed to carry runoff away from the foundation. Rainwater diversions to direct 'clean' water away and 'dirty' water into storage facilities. Grass should be established in those areas not covered by concrete and gravel.
- 2) Childproof covers must be placed upon the pumpouts. Open pumpouts should never be left unattended.
- 3) Warning signs shall be posted to prevent children and others from using the pit other than the intended use.
- 4) Animal wastes shall be handled and utilized as specified in the Manure Management Plan.
- 5) The Waste Storage Structure requires continuous ventilation to safely remove poisonous and noxious gases. Manure agitation will release large amounts of gas and may create a hazardous situation. Ensure that the ventilation fans are operating before agitation and, if possible, evacuate the building.
- 6) Manure pits that contain bearing divider walls should be emptied using a modified pumping plan. All manure sections should be partially emptied to prevent possible divider wall failure. Removal of about 3' of manure is recommended from each section before complete emptying of any one section is undertaken.
- 7) No person should enter a Waste Storage Structure without proper training and without wearing a self-contained breathing device. A second person should remain outside of the structure and should have an immediate means of removing the person inside the structure in an emergency.
- 8) Regular quarterly inspections should be made of the structure and its surroundings for leaks, concrete deterioration and pumpout cover conditions. Inspection of the slats for signs of deterioration is advised.
- 9) Concrete should be inspected for large cracks and exposed reinforcing steel. Joints should be checked for unusual openings.
- 10) Concrete surfaces should be quarterly inspected for erosion, scaling and exposed reinforcing steel.

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- 11) Perimeter tile, sump pumps, sampling ports and rodent guards at outlets.
- 12) The structure walls are designed to resist earth loads only. Do not operate any equipment on this surface.
- 13) The beam and flooring system is designed for animal loads only. Do not operate any equipment on this surface.
- 14) If, during the inspection, serious defects are discovered, remedial actions may be required. The County Feedlot Officer and Engineer should be contacted and possible the MPCA.

RECORDS

Record the inspections, evaluations and maintenance done in a spiral bound notebook. Also take and date pictures before and after any maintenance work is done on cover and liquid storage and handling facilities.

PERIMETER TILE MONITORING AND CONTINGENCY PLAN

INSPECT PERIMETER TILE AT LEAST ONE WEEK BEFORE EMPTYING STORAGE

All below ground waste storage structures require perimeter tile to relieve the hydrostatic pressures which would otherwise damage the sides of the concrete tanks and manure storage pits under barns. There is a serious problem if the water level in the sump or inspection port is above the pit floor.

It is very important that the ground water level be lowered prior to emptying the manure storage pit. It may take a week or more for the system to lower the ground water pressure once the problem has been corrected.

BASE LINE SAMPLING

It is recommended that base line sampling be done before manure is put in the storage facility to document any pre-existing contamination that may be in the soil. This is especially important if the site is in an old barn-yard area or has received heavy applications of manure for many years.

Base line samples should be collected at least two (2) times prior to the addition of manure into the waste storage structure. If there is no flow from the tile, sampling shall begin as soon as water is available for sampling. Each 'base line' sampling event shall be scheduled at least two (2) weeks apart.

1. The Owner shall contract with an independent laboratory to collect and analyze the samples. The laboratory must be certified. The laboratory report shall include: Chain of custody record, date, parameter, method used, results, units.

2. The water quality parameters to be monitored are:

Total Kjeldahl Nitrogen	Nitrate Nitrogen
Nitrite Nitrogen	Ammonium Nitrogen
Dissolved Oxygen	Chloride
Sulfate	Total Phosphorus
Fecal Coliform	pH
Temperature	Specific Conductivity
Flow (as determined by lime to fill 5 gallon pail)	

CHANGE IN TILE WATER COLOR OR ODOR

If visual observation of the tile water indicates a change in color or odor, then a more urgent response is necessary. A change in color or odor may be caused by either soil and/or manure water. If this should occur, immediately stop all discharge to field tile. Notify the MPCA or Engineer immediately.

Install a sump pump and discharge the tile water onto a vegetated filter strip area. If necessary, plug the line going to field tile with bentonite 'chips'. Bentonite chips may be obtained from your well driller.

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STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

*These are recommendations and are not intended to meet the requirements of a site specific SWPPP for an NPDES Storm Water Discharge Permit.

Description of the site:

The site is currently cropland. The project consists of construction of a swine confinement operation with multiple deep pits. After construction, the area surrounding pit will be planted to grass.

Construction Sequence and Best Management Practices (BMP's)

1. The construction site shall be planted to grass (or cover crop) prior to commencement of construction. See Grass Seeding Guidelines.
2. Areas not to be disturbed during construction shall be staked and marked. Considerable rain water and sediment can be trapped on areas planted to grass and not compacted by construction traffic.
3. Install silt fence as shown on the site plan as needed to prevent erosion.
4. All drive entrances shall be protected with rock. Install road culvert(s) as per highway department specifications.
5. Build a berm to prevent field water from entering the construction site. Make berm 18-24" high with 3:1 side slopes. Use loose top soil from the berm area. A berm is an alternative to using silt fence. The loose soil will absorb a lot of water. Construct the berm on the contour with no channel on the up-hill side of the berm.
6. Temporary stockpiles shall have silt fence or other effective sediment controls and cannot be placed in stormwater conveyances, ditches or grass waterways.
7. Dewatering of pits and basins shall be done in a manner that does not cause nuisance conditions or discharge onto down-slope property. Rain and ground water in pit excavations shall not be allowed to flow direct into open tile, unless the tile inlet has silt fence or other protection or the perimeter tile is installed and covered with pea rock or crushed rock.
8. After backfilling and final grading is done, those areas shall be planted to grass. Slopes steeper than 5:1 shall be mulched. All seeding and mulching operations shall commence within 1 week after completion of each portion of the construction or as soon as soil conditions permit. See Grass Seeding Guidelines.
9. After berms are removed and backfill around barns is re-graded (the following spring) those areas shall be re-seeded to grass.
10. Final stabilization is achieved when soils have been stabilized by a uniform perennial vegetative cover over at least 70% of the previous area, and all drainage ditches and grass waterways have been stabilized, then the silt fence may be removed.
11. The Owner shall keep the plans and records on file for a minimum of six (6) years.

Maintenance of BMP's

1. Owner shall inspect all BMP's weekly and within 24 hours after each rain event of 1/2" or more in 24 hours.
2. Silt shall be removed from behind silt fences within 24 hours of when the depth reaches 1/3 the height of the fence.
3. Mud and crushed rock are tracked onto public roads, it shall be removed within 24 hours.
4. If sediment escapes the site, off-site accumulations must be removed in a manner and frequency sufficient to minimize off-site impacts.

Assignment of Responsibilities for Execution of the SWPPP

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

1. Owner shall be responsible for execution, inspection, record keeping and up-dating The SWPPP as required in Appendix C of the NPDES Feedlot Permit. See form for the Storm Water Pollution Prevention Plan Record.
2. Owner shall inspect all BMP's weekly and within 24 hours after each rain event of 1/2" or more in 24 hours and supervise proper maintenance of erosion and sediment control practices.
3. Earthwork Contractor shall be responsible for implement, manage and maintain both temporary and permanent erosion and sediment control BMP's (except seeding) until final grading has been completed on site.
4. Owner shall be responsible for seedbed preparation, planting and mulching operations prescribed by the SWPPP.
5. Changes to the SWPPP shall be approved and recorded by Owner prior to implementation.

Grass Seeding Guidelines

All in place topsoil shall be salvaged to the maximum extent possible. It is ideal to place 6 inches of top soil in areas to be seeded. Harrowing before and packing with roller after planting will help germination, make the ground smoother and easier to mow. Seeding mixture and rates are recommendations based on DOT specs. Fertilizer is important for quick growth. Mixtures 250 and 280 can be mowed.

Temporary seeding: Fertilizer 10-10-20 at 200 lbs/acre.

- Oats at 100 lbs/ac for spring/summer seeding of areas that will be left undisturbed for 21 days or more.
- Winter wheat at 100 lbs/ac for fall seeding of areas that will be disturbed again in the spring, such as backfill around barns.

Turf and agricultural grasses: Fertilizer 20-10-20 at 350 lbs/acre.

General Roadside mix.	9.8 lbs/ac	14.0%
Brome grass, smooth	20.3	29.0
Bluegrass, Kentucky "Certified Park"	9.8	14.0
Bluegrass, Canada	2.1	3.0
Switch grass	2.8	4.0
Wheat-grass, slender	14.7	21.0
Rye-grass, perennial	2.1	3.0
Timothy	2.1	3.0
Redtop	4.2	6.0
Alfalfa, creeping	2.1	3.0
White clover	2.1	3.0
Total	70	lb/ac
Agricultural Roadside mix.	15	lb/ac
Alfalfa, creeping	10	20.0%
Brome grass, smooth	3	6.0
Redtop	15	30.0
Rye-grass, perennial	2	4.0
Switch grass	2	4.0
Timothy	3	6.0
Wheat-grass, slender	50	lb/ac
Total		



Minnesota Pollution Control Agency

520 Lafayette Road North
St. Paul, MN 55155-4194

Animal Feedlot or Manure Storage Area Permit Application

CSF and Interim Permit Program

Doc Type: Permit Application

Applicability: To obtain a construction short form (CSF) or interim permit, you must complete and submit this form to the Minnesota Pollution Control Agency (MPCA), or to the County Feedlot Officer (CFO) in delegated counties.

Keep a copy of this application form and all submittals for your records.

Feedlot Registration Number: TBD

I. Permit type and reason for application

Please indicate which type of feedlot permit you are applying for (choose only one)

- Construction Short Form
Interim (correcting a pollution hazard)

Please indicate the reason for the permit application (choose only one)

- New Permit (No existing CSF or interim permit)
Permit Modification (Changes to sites with an existing CSF or interim permit)
Permit Extension - Current CSF or Interim Permit Number: (Work not completed prior to permit expiration)
Indicate below the reason(s) the work may not be completed prior to permit expiration

Estimated amount of time required to complete the work: days months
Note: The length of the extension is limited to 24 months for CSF permits and 90 days for interim permits

A permit extension request only requires completion of pages 1 and 6 of this application form (the remaining pages can be left blank).
Note: When the notice to neighbors and property owners is applicable (page 6) the content of the notice must include the date the original permit was issued and the new proposed completion date as well as the normally required information.

II. Owner's name(s) and address(es) - (All partners of a Limited Liability Partnership (LLP) must be listed.)

Primary owner - Will be used as the mailing address
Additional owner - attach additional sheets as necessary
Name: Mark Coulter
Address: 26433 US Highway 14
City: Lamberton State: MN
Phone: 507-430-6149 Zip: 56152
Email:

Note: The term owner includes all persons having possession, control, or title to an animal feedlot or manure storage area (including lessees or renters). All owners must be listed. Attach to this application the names, addresses, and phone numbers of all additional owners.

III. Facility name and site address

Contact person for day-to-day activities

Site Name: Mark Coulter - Sec. 31
Name: Mark Coulter
Facility is a MN Ag Water Quality Certified Farm (MAWQCP)
Street: 26433 US Highway 14
Complete if facility address is different than the primary owner address:
City: Lamberton State: MN
Street: TBD Phone: 507-430-6149 Zip: 56152
City: Lamberton State: MN
Phone: 507-430-6149 Zip: 56152
Cell phone:
Email:

(General letters/notices may be sent by e-mail where one is indicated.)

IV. Facility location

County: Redwood

Township name: Willow Lake

Township (26 – 71 or 101 – 168)	Range (1 – 51)	Section (1 – 36)	¼ Section (160 acre) (NW, NE, SW, SE)	¼ of ¼ Section (40 acre) (NW, NE, SW, SE)
T 110 N	R 36 W	31	SW	SE

V. Sensitive features

- Is any part of the facility within 1,000 feet of any type of surface waters? Yes No
 If Yes, complete a. and b. below:
 - List the name of the surface water feature: _____
 - Select the type of surface water feature below:

 Lake/Pond larger than 25 acres Wetland Drainage ditch Other

 River/Stream Is any part of the facility within 300 feet of the river/stream? Yes No
- Is any part of the facility located within a delineated flood plain (100 year flood)? Yes No
- Is any part of the facility located within designated shoreland? Yes No
- Is any part of the facility located within 1,000 feet of a karst feature? (sinkholes, caves, disappearing springs, resurgent springs, karst windows, dry valleys, or blind valleys) Yes No
 If Yes, complete a. and b. below:
 - Are there 4 or more sinkholes within 1,000 feet? Yes No
 - Is any part of the facility within 300 feet of a known sinkhole? Yes No
- Is any part of the facility located within 1,000 feet of the following types of wells: Yes No
 If Yes, select the applicable well type below:
 - a community water supply well
 - a well serving a public school as defined under Minn. Stat. § 120A.05
 - a well serving a private school excluding home school sites
 - a well serving a licensed child care center where the well is vulnerable (Minn. R. 4720.5550, subp. 2)
- Is any part of the facility located within 1,000 feet of an open tile intake? Yes No

VI. Environmental Review (complete when construction or expansion is proposed)

Mandatory environmental review is required when the addition of 1,000 or more animal units (AU) is proposed as part of the construction/expansion at any facility. The threshold when environmental review is mandatory is reduced to 500 AU when any part of the facility is located within a "sensitive area". The facility is within a sensitive area when any of the following apply.

- Any part of the facility is within a delineated floodplain (yes to question 2 above)
- Any part of the facility is within designated shoreland (yes to question 3 above)
- Any part of the facility is within 1,000 feet of a karst feature (yes to question 4 above)
- Any part of the facility is within a vulnerable drinking water supply management area
- Any part of the facility is within a federal, state, or local wild and scenic river district
- Any part of the facility is located within the Minnesota River Project Riverbend area or the Mississippi headwaters area

Additionally mandatory environmental review is required for "Phased actions". Phased actions are defined under Minnesota law (Minn. R. ch. 4410) as two or more projects located in the same geographic area and constructed sequentially within three years of each other by the same proposer. When this is the case, the animal units from all projects are combined to determine if environmental review is required. The following will assist the MPCA to evaluate if your project qualifies as a "phased action".

Do you have ownership interest in another livestock operation that was constructed/expanded within the past three years or are you substantially certain you will be constructing/expanding another livestock operation within the next three years?

Yes No

If Yes, how far away (straight-line distance) is it located from the project proposed in this application? _____ miles

There are also rule provisions to require completion of the environmental review process in the event of a citizen petition or upon the discretion of the MPCA. Please see the MPCA fact sheet entitled "When is Environmental Review Required for Feedlots" (available on the MPCA website at <http://www.pca.state.mn.us/publications/wq-f1-10.pdf>) and/or Minn. R. 4410 for further details.

VII. Animal numbers and animal unit (AU) calculation

Complete the table below to identify the **maximum** number of animals housed at that facility. All animal numbers and animal sizes used to complete this table should reflect the animal holding **capacity** of the facility even if the facility does not currently house or propose to house that number of animals. At no time is the number of animals at the facility allowed to exceed the capacity provided below without first obtaining a permit or permit modification.

Current Capacity - List the current head count **capacity** for each animal type in column 3 below. For sites with a permit, this should match the currently permitted number of animals. Next, multiply the AU Factor in column 2 by the number of animals listed in column 3 to get the *Current AU Capacity* for each animal type (column 4). Finally, add together all AU's in column 4 to get a total at the bottom of the chart. *If this application is for a brand-new feedlot site leave columns 3 and 4 blank. (ie. bare piece of ground)*

Final Capacity - List the final head count **capacity** for each animal type in column 5 below. This number should include current animals plus or minus any expansion or reduction in each animal type. This should reflect the maximum AU capacity requested with this permit application. Next, multiply the AU Factor in column 2 by the number of animals listed in column 5 to get the *Final AU Capacity* for each animal type (column 6). Finally, add together all AU's in column 6 to get a total at the bottom of the chart.

1. Animal type	2. Animal unit factor	Current facility capacity		Final facility capacity (Current +/- Changes)	
		3. Head count	4. Animal units = column 2 x column 3	5. Head count	6. Animal units = column 2 x column 5
A. Dairy cattle					
Mature cow (milked or dry) over 1,000 lbs.	1.4				
Mature cow (milked or dry) under 1,000 lbs.	1.0				
Heifer	0.7				
Calf	0.2				
B. Veal					
Veal	0.2				
C. Beef cattle					
Slaughter steer/heifer, stock cow, or bull	1.0				
Feeder cattle (stocker or backgrounding), heifer	0.7				
Cow and calf pair	1.2				
Calf (weaned)	0.2				
D. Swine					
Over 300 lbs.	0.4				
Between 55 and 300 lbs.	0.3	0	0	2400	720
Under 55 lbs.	0.05				
E. Horses					
Horse	1.0				
F. Sheep					
Sheep or Lamb	0.1				
G. Chickens with a liquid manure system					
Layer Hens or Broilers	0.033				
H. Chickens with a dry manure system					
Broilers over 5 lbs.	0.005				
Broilers under 5 lbs.	0.003				
Layer Hens over 5 lbs.	0.005				
Layer Hens under 5 lbs.	0.003				
I. Turkeys					
Over 5 lbs.	0.018				
Under 5 lbs.	0.005				
J. Ducks					
Duck (with a liquid manure handling system)	0.01				
Duck (with a dry manure handling system)	0.01				
K. Animals not listed in A to J (AU factor in column 2 = average weight of the animal type divided by 1,000 lbs.)					
Animal type:					
Total animal unit capacity			Current AU capacity		Final AU capacity
Add all numbers in column 4 for Current AU total			0		720
Add all numbers in column 6 for Final AU total					

VIII. Animal holding areas

Complete the table below for all your animal holding areas.

If you have more than six animal holding areas on your site, continue your list on an additional copy of this page.

Animal holding area ID

List each animal holding area in a separate column

Facility Site Sketch ID (i.e., #1, A, Barn 1)	1					
Status: (check one box only) Proposed - not permitted previously Approved - permitted but not yet operational Existing - current operational component Modifying - change to a permitted component	<input checked="" type="checkbox"/> Proposed <input type="checkbox"/> Approved <input type="checkbox"/> Existing <input type="checkbox"/> Modifying <input type="checkbox"/> Eliminating	<input type="checkbox"/> Proposed <input type="checkbox"/> Approved <input type="checkbox"/> Existing <input type="checkbox"/> Modifying <input type="checkbox"/> Eliminating	<input type="checkbox"/> Proposed <input type="checkbox"/> Approved <input type="checkbox"/> Existing <input type="checkbox"/> Modifying <input type="checkbox"/> Eliminating	<input type="checkbox"/> Proposed <input type="checkbox"/> Approved <input type="checkbox"/> Existing <input type="checkbox"/> Modifying <input type="checkbox"/> Eliminating	<input type="checkbox"/> Proposed <input type="checkbox"/> Approved <input type="checkbox"/> Existing <input type="checkbox"/> Modifying <input type="checkbox"/> Eliminating	<input type="checkbox"/> Proposed <input type="checkbox"/> Approved <input type="checkbox"/> Existing <input type="checkbox"/> Modifying <input type="checkbox"/> Eliminating
Distance to nearest well (ft.)	110 ft					
Pasture Access	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No

Type of animal holding areas

Write approximate dimensions in feet in the space below

(indicate dimensions and floor type)

(width x length or area with units for irregular shapes)

Total confinement barn (slatted floor)	192' x 102'					
Total confinement barn (solid floor)						
Partial confinement barn						
Open lot with runoff controls						
Open lot without runoff controls						
Animal Holding Area Floor Type (check all that apply)	<input checked="" type="checkbox"/> Concrete <input type="checkbox"/> Asphalt <input type="checkbox"/> Soil <input type="checkbox"/> Other	<input type="checkbox"/> Concrete <input type="checkbox"/> Asphalt <input type="checkbox"/> Soil <input type="checkbox"/> Other	<input type="checkbox"/> Concrete <input type="checkbox"/> Asphalt <input type="checkbox"/> Soil <input type="checkbox"/> Other	<input type="checkbox"/> Concrete <input type="checkbox"/> Asphalt <input type="checkbox"/> Soil <input type="checkbox"/> Other	<input type="checkbox"/> Concrete <input type="checkbox"/> Asphalt <input type="checkbox"/> Soil <input type="checkbox"/> Other	<input type="checkbox"/> Concrete <input type="checkbox"/> Asphalt <input type="checkbox"/> Soil <input type="checkbox"/> Other

Indicate the maximum capacity (number of animals) of each animal holding area

Animal numbers

The total number of all animals listed should match the final animal numbers listed on page 3

Mature dairy cows (over 1,000 lbs.)					
Mature dairy cows (under 1,000 lbs.)					
Dairy heifers					
Dairy calves					
Veal					
Slaughter steer/heifer, stock cow or bull					
Feeder cattle-stocker/background/heifer					
Cow and calf pair					
Beef calves (weaned)					
Swine over 300 lbs.					
Swine between 55 and 300 lbs.	2400				
Swine under 55 lbs.					
Horses					
Sheep or lamb					
All chickens with liquid manure system					
Broiler chickens over 5 lbs. - dry system					
Broiler chickens under 5 lbs. - dry system					
Laying hens over 5 lbs. - dry system					
Laying hens under 5 lbs. - dry system					
Turkeys - over 5 lbs.					
Turkeys - under 5 lbs.					
Ducks					
Other:					

IX. Manure handling, feed storage, and dead animal areas

Complete the table below for your manure storage, feed/silage storage areas and dead animal disposal areas on your site. If you have more than six manure storage, feed/silage storage, and dead animal management areas on your site, continue your list on an additional copy of this page.

Manure, feed, or dead animal areas *List each manure handling, feed storage, and dead animal area in a separate column*

Facility Site Sketch ID (i.e., #1, A, Basin 1)	1	2				
Status: (check one box only) Proposed - not permitted previously Approved - permitted but not yet operational Existing - current operational component Modifying - change to a permitted component	<input checked="" type="checkbox"/> Proposed <input type="checkbox"/> Approved <input type="checkbox"/> Existing <input type="checkbox"/> Modifying <input type="checkbox"/> Eliminating	<input checked="" type="checkbox"/> Proposed <input type="checkbox"/> Approved <input type="checkbox"/> Existing <input type="checkbox"/> Modifying <input type="checkbox"/> Eliminating	<input type="checkbox"/> Proposed <input type="checkbox"/> Approved <input type="checkbox"/> Existing <input type="checkbox"/> Modifying <input type="checkbox"/> Eliminating	<input type="checkbox"/> Proposed <input type="checkbox"/> Approved <input type="checkbox"/> Existing <input type="checkbox"/> Modifying <input type="checkbox"/> Eliminating	<input type="checkbox"/> Proposed <input type="checkbox"/> Approved <input type="checkbox"/> Existing <input type="checkbox"/> Modifying <input type="checkbox"/> Eliminating	<input type="checkbox"/> Proposed <input type="checkbox"/> Approved <input type="checkbox"/> Existing <input type="checkbox"/> Modifying <input type="checkbox"/> Eliminating
Distance to nearest well (ft.)	110 ft	240 ft				

Type of liquid manure or process wastewater storage/treatment areas (indicate dimensions) *Write approximate top dimensions in feet in the space below (width x length x depth or volume with units for irregular shapes)*

Earthen or GCL lined basin						
Below barn concrete tank	192' x 102' x 8'					
In-ground concrete tank/basin (outdoor)						
Above-ground concrete tank						
Synthetic lined (HDPE, EPDM, etc.) basin						
Steel tank (i.e., slurry-store)						
Composite lined (2 liner types) basin/tank						
Vegetated Infiltration Area						
Other (describe):						

Type of solid manure, feed storage, and dead animal areas (indicate dimensions and floor type) *Write approximate dimensions in feet in the space below (width x length or area with units for irregular shapes)*

Permanent Stockpile						
Dead Animal Management Area		10' x 10'				
Covered Feed Storage Area	Bulk Bins					
Uncovered Feed Storage Area						
Sweet Corn Silage Storage Storage Pad Area						
Tonnage on site at any one time						
Other (describe):						
Stockpile, Feed Storage, or Mortality Area Floor/Liner Type (check all that apply)	<input type="checkbox"/> Concrete <input type="checkbox"/> Asphalt <input type="checkbox"/> Soil <input type="checkbox"/> Other	<input type="checkbox"/> Concrete <input type="checkbox"/> Asphalt <input checked="" type="checkbox"/> Soil <input type="checkbox"/> Other	<input type="checkbox"/> Concrete <input type="checkbox"/> Asphalt <input type="checkbox"/> Soil <input type="checkbox"/> Other	<input type="checkbox"/> Concrete <input type="checkbox"/> Asphalt <input type="checkbox"/> Soil <input type="checkbox"/> Other	<input type="checkbox"/> Concrete <input type="checkbox"/> Asphalt <input type="checkbox"/> Soil <input type="checkbox"/> Other	<input type="checkbox"/> Concrete <input type="checkbox"/> Asphalt <input type="checkbox"/> Soil <input type="checkbox"/> Other

X. Changes to groundwater monitoring plan (complete only if applicable)

If groundwater monitoring is required at the facility, this application can request changes to the MPCA-approved groundwater monitoring plan. In order to request changes to the groundwater monitoring plan, please indicate the type of change requested.

- Elimination of monitoring Change to sampling frequency
 Change to sample testing protocol Other

When a change is requested, please include with this permit application documentation from a qualified professional that provides a technical analysis and justification for the requested changes.

XI. Non-delegated county public meeting minutes (complete only if applicable)

A county which has not accepted delegation of the feedlot program must hold a public meeting prior to issuance of a feedlot permit by the MPCA for an animal feedlot with a capacity of 300 or more animal units.

Date meeting has occurred or is scheduled to occur: _____

Verification of public meeting.

A copy of the meeting minutes must be provided to the MPCA for verification of completion prior to permit issuance.

XII. 500 or more AU: Notice to residents and property owners within 5,000 feet

When required. A notice is required in *either* of the following situations:

- **Construction of a new** feedlot, or manure storage area, which will have a capacity of 500 AU or more.
- **Expansion of an existing** feedlot, or manure storage area, which currently has, or will have upon completion of the expansion, a capacity of 500 AU or more.

Notice methods. The owner shall not less than 20 business days before the anticipated issuance date of the permit, provide notice to each resident and each owner of real property within 5,000 feet of the perimeter of the proposed facility. This notice *must* include, at a minimum, the information provided in Minn. R. 7020.2000, subp.4.

An example notice can be found in the factsheet *Permit Notification Requirements – Feedlots with more than 500 Animal Units* available on the MPCA website <http://www.pca.state.mn.us/feedlots>.

Verification of notice. The MPCA must verify that this notice has been completed prior to permit issuance. Documentation that this notice has been completed can be provided with the permit application (preferred) or submitted at a later date, prior to permit issuance.

When the notice has been completed prior to this application

Please include with this application one of the following to provide verification that the required notice has been completed:

- An affidavit of publication from a newspaper of general circulation used to provide this notification.
- A list of all parties, with their location, that were notified by certified mail and copies of all signed mail return receipts.
- A list of all parties, with their location, that were personally visited with a date and signature from each party and certification signed by a notary public indicating in detail what was discussed.

When the notice has not been completed prior to this application

Please include with this permit application both of the following:

- A copy of the content of the notification
- Date notification is scheduled to occur: 4/6/2017

Note: The permit cannot be issued prior to receiving verification that the notice has actually taken place. This verification must be one of the three items listed above.

XIII. Certifications and signature

Notification to local officials

The Applicant certifies that, if the application includes construction of a new facility or expansion of an existing facility, all local zoning authorities have been notified in accordance with Minn. R. 7020.2000 subp. 5.

Construction Stormwater (CSW) Requirements

The Applicant certifies that, if construction will disturb 5 or more acres, they have made a separate application for a CSW permit. For construction activities that disturb at least 1 acre but less than 5 acres, the Applicant certifies to comply with the requirements of the current CSW NPDES general permit (Minn. R. 7090.2020 provides permit coverage even though no application has been made).

Need for NPDES or SDS permit

If the MPCA determines that a NPDES or SDS permit is required, the Applicant certifies that this application will serve as an application for a NPDES or SDS permit, as appropriate. The Applicant agrees to submit additional information, as requested by the MPCA, in order to complete the NPDES or SDS permit application process including payment of the applicable permit application fee.

Applicant Signature

I hereby certify that the design, construction, and operation of the facility will be in accordance with this application and plans, specifications, reports, and related communications approved by the MPCA, and in accordance with applicable permit conditions or regulations/standards of the MPCA. I also certify under penalty of law that this document and all attachments were prepared under my direction or supervision and the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

The person that signs this application must be one of the following:

- For a corporation, a principal executive officer of at least the level of vice president
- For a partnership, a general partner
- For a sole proprietorship, the proprietor

Print name: Mark Coulter Print official title: _____

Office phone: _____ Cell phone: 507-430-6149

Signature: Mark Coulter Date: 4-3-17

A "wet signature" is required. No reproductions (i.e., copies or scans) of the signature will be accepted

To sign up for electronic communications including the MPCA feedlot newsletters, please go to the MPCA website at <https://public.govdelivery.com/accounts/MNP/CA/subscriber/new>.

Required enclosures (Permit applications submitted without all required enclosures are incomplete.)

- A. A site sketch/aerial photograph indicating the location of the existing and proposed facility components.
- B. A Manure/Nutrient Management Plan (MMP) The following are optional forms to assist with MMP development:
 When **all** manure is transferred to another entity for utilization, complete a MMP using the optional form below:
 Transferred Ownership MMP: <http://www.pca.state.mn.us/index.php/view-document.html?gid=3763>
 When **any** portion of manure is applied to land owned, rented, or leased by the applicant(s), or applied to other land where nutrient application decisions are made by the applicant(s), complete a MMP using the optional spreadsheet form below:
 MPCA Manure Management Planner: <http://www.pca.state.mn.us/index.php/view-document.html?gid=3548>
Notes: The transferred ownership MMP form is incorporated into the spreadsheet to account for instances when only some of the manure is transferred.
 A paper version is available at: <http://www.pca.state.mn.us/index.php/view-document.html?gid=23197>
- C. Plans and Specifications for construction, modification, or expansion of any liquid manure storage area.
- D. **Conditional** - Environmental Assessment Worksheet (EAW) Fee
 When the project requires environmental review **and** is located in a county that has not accepted delegation of the county feedlot program, there is a fee of \$4,650 for processing of an Environmental Assessment Worksheet (EAW) that must be included with this permit application. (Check payable to: Minnesota Pollution Control Agency)
- E. **Optional** – Verification of the notifications required in part XII of this application. If not submitted with the application, the MPCA must receive the verification prior to permit issuance. It is strongly recommended that the applicable verifications be included with the permit application.

Permit application submittal

Please mail the completed permit application and all necessary attachments to either the County Feedlot Officer (CFO) or the MPCA as indicated in the chart below. Mailing addresses for the MPCA offices are below.

County	Mail To:	County	Mail To:	County	Mail To:
Aitkin	MPCA – Rochester	Isanti	MPCA – Rochester	Pipestone	CFO – County
Anoka	MPCA – Rochester	Itasca	MPCA – Rochester	Polk	CFO – County
Becker	MPCA – Mankato	Jackson	CFO – County	Pope	CFO – County
Beltrami	MPCA – Mankato	Kanabec	MPCA – Rochester	Ramsey	MPCA – Rochester
Benton	MPCA – Rochester	Kandiyohi	CFO – County	Red Lake	CFO – County
Big Stone	CFO – County	Kittson	CFO – County	Redwood	MPCA – Rochester
Blue Earth	CFO – County	Koochiching	MPCA – Rochester	Renville	CFO – County
Brown	CFO – County	Lac Qui Parle	CFO – County	Rice	CFO – County
Carlton	MPCA – Rochester	Lake	MPCA – Rochester	Rock	CFO – County
Carver	CFO – County	Lake Of The Woods	CFO – County	Roseau	MPCA – Mankato
Cass	MPCA – Rochester	Le Sueur	CFO – County	St. Louis	MPCA – Rochester
Chippewa	MPCA – Rochester	Lincoln	CFO – County	Scott	MPCA – Rochester
Chisago	MPCA – Rochester	Lyon	CFO – County	Sherburne	MPCA – Rochester
Clay	CFO – County	Mahnomen	MPCA – Mankato	Sibley	CFO – County
Clearwater	MPCA – Mankato	Marshall	CFO – County	Stearns	CFO – County
Cook	MPCA – Rochester	Martin	CFO – County	Steele	CFO – County
Cottonwood	CFO – County	McLeod	CFO – County	Stevens	CFO – County
Crow Wing	MPCA – Rochester	Meeker	CFO – County	Swift	CFO – County
Dakota	MPCA – Rochester	Mille Lacs	MPCA – Rochester	Todd	CFO – County
Dodge	CFO – County	Morrison	CFO – County	Traverse	CFO – County
Douglas	CFO – County	Mower	CFO – County	Wabasha	MPCA – Rochester
Faribault	CFO – County	Murray	CFO – County	Wadena	CFO – County
Fillmore	CFO – County	Nicollet	CFO – County	Waseca	CFO – County
Freeborn	CFO – County	Nobles	CFO – County	Washington	MPCA – Rochester
Goodhue	CFO – County	Norman	CFO – County	Watsonwan	CFO – County
Grant	MPCA – Mankato	Olmsted	MPCA – Rochester	Wilkin	MPCA – Mankato
Hennepin	MPCA – Rochester	Otter Tail	MPCA – Mankato	Winona	CFO – County
Houston	CFO – County	Pennington	CFO – County	Wright	CFO – County
Hubbard	MPCA – Mankato	Pine	MPCA – Rochester	Yellow Medicine	CFO – County

MPCA – Rochester Mailing Address

MPCA Feedlot Permit Coordinator
 18 Woodlake Drive SE
 Rochester, MN 55904

MPCA – Mankato Mailing Address


MPCA Feedlot Permit Coordinator
 12 Civic Center Plaza, Suite 2165
 Mankato, MN 56001

Willow Lake 31, SW1/4 Site Map

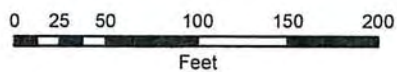


NOTES:

Legend

-  Barns
-  Waterway
-  300ft Buffer
-  Known Well
-  Known Tile Intake

Imagery Courtesy of Bing.





Andrew Nesseth
507 Milwaukee St.
Lakefield, MN 56150
507.662.5005 phone
507.662.5105 fax
andy@extendedag.com

March 27, 2017

Melody Altermatt
Willow Lake Twp.
31203 180th Street
Sanborn, MN 56083

Dear Melody,

This letter is to inform you that Mark Coulter has proposed to construct a new feedlot in the SW1/4 of Section 31, Willow Lake Township. The feedlot will be owned by Mark Coulter. This notification is required by Minnesota State Feedlot rules. A notice was also put in the Redwood Falls Gazette. A copy of the contents of that notice is as follows:

NOTICE OF APPLICATION FOR LIVESTOCK FEEDLOT PERMIT

Notice is hereby given per Minnesota Statutes 116.07, subd. 7(a), that Mark Coulter will be applying to Redwood County and the Minnesota Pollution Control Agency for a permit to construct a new feedlot of 720 animal units.

The proposed feedlot will be located in the SW1/4 of Section 31 of Willow Lake Township, T101N, R46W, of Redwood County, Minnesota. The feedlot will consist of one 2400 head total confinement barn housing finishing swine. The barn will have an under-floor reinforced concrete pit to hold manure generated by the swine. The final animal unit capacity will be 720 animal units after the construction. The feedlot will be owned by Mark Coulter.

This publication shall constitute as notice to each resident and each owner of real property within 5,000 feet of the perimeter of the proposed feedlot as required by Minnesota State Law.

Published at the request of Mark Coulter.

If you have questions, please give me a call. Thanks.

Sincerely,

Andrew Nesseth
EXTended Ag Services, Inc.

Manure Storage, Handling, and Testing Information

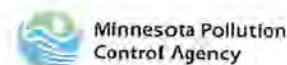
Facility Name: Mark Coulter - Sec. 31 NPDES or SDS Permit? No Permit Number: TBD
 Owner/Operator Name: Mark Coulter Date Last Revised: 3/27/2017 Registration Number: TBD

Version 7.05 Last Updated: 10/12/16

Manure Sources	Manure Source #1	Manure Source #2	Manure Source #3	Manure Source #4
Description of Manure Source <small>Group sources with similar nutrient content if they have identical animal type, water usage, feed rations, and manure storage</small>	Finisher			
Livestock Information				
Predominate Animal Type <small>(Contributing to Manure Source)</small>	Swine- Grow/Finish (wet/dry feed)			
Average Animal Weight	150 lbs	lbs	lbs	lbs
Animal Number	2,400			
Length of Time Livestock Spend In Facility <small>(Contributing to Manure Source)</small>	330 days/yr	days/yr	days/yr	days/yr
Average Animal Weight	lbs	lbs	lbs	lbs
Animal Number	days/yr	days/yr	days/yr	days/yr
Storage Information				
Storage Type	Underfloor Concrete Pit			
Capacity	952,174 gals			
Storage Length	12 months			
Application Methods				
Commercial Applicator (Yes/No or Name)				
Spreader Type	Liquid Tanker			
How Volume/Tonnage Determined per Load	Commercial Applicator			
How Application Rate is Calibrated	Flowmeter			
Manure Analysis - Existing facilities should use actual manure test results				
Sampling Frequency	Every Year			
Sampling Methods	MPCA or U of MN Guidelines			
Date Last Analyzed				
Basis for N, P, & K Values Below	Book Value			
Total N - (do not enter lab estimated availability)	75 lbs/1000 gal			
Total P ₂ O ₅ - (do not enter lab estimated availability)	54 lbs/1000 gal			
Total K ₂ O - (do not enter lab estimated availability)	40 lbs/1000 gal			
Annual Generation - Existing facilities should use actual production values				
Total Manure Produced per Year (Estimated)	707,110 gals			
Total Manure Produced per Year (Actual)	gals			
Annual N Produced	53,033 lbs	lbs	lbs	lbs
Annual P ₂ O ₅ Produced	38,184 lbs	lbs	lbs	lbs
Annual K ₂ O Produced	28,284 lbs	lbs	lbs	lbs

Average Book Values		Average Book Values		Average Book Values	
N	75	N		N	
P ₂ O ₅	54	P ₂ O ₅		P ₂ O ₅	
K ₂ O	40	K ₂ O		K ₂ O	

MMP for Transferred Manure Ownership



Please answer the following questions:

- 1) Is the portion of manure that is transferred from the feedlot facility applied onto land that is owned, leased, or rented by the feedlot owner/operator?
 Yes No
- 2) For manure application sites not owned, leased, or rented by the feedlot owner/operator; have you as the feedlot owner/operator or employees working under your direction been given control of the field and nutrient planning decisions, including planning for manure application rates, timing, and methods?
 Yes No

Name of feedlot facility or operator: Mark Coulter

Registration No.: TBD

Permit No.: TBD

Describe the manure storage and handling system and the expected amount of manure and nutrients that will need to be land applied.

- a) How is the manure stored and handled? What happens to the manure from the time it is generated to the time it is either sold or land applied? Where is it kept? For how long?
This information is found on the Manure Storage, Handling, and Testing Information worksheet
- b) How many months can manure be stored before the storage capacity is exceeded?
This information is found on the Manure Storage, Handling, and Testing Information worksheet
- c) When will manure be provided to the recipient? Fall and Spring
Which months do you expect that manure will be applied? March, April, Sept, Oct, Nov
- d) How much manure is removed from barns or storage areas per year and will need to be land-applied?
This information is found on the Manure Storage, Handling, and Testing Information worksheet
- e) How much of this manure will be transferred ownership?
The amount of manure remaining as identified within the table at the bottom of the Nutrient Application worksheet
- f) How much nitrogen and phosphorus will need to be land applied per year?
This information is found on the Manure Storage, Handling, and Testing Information worksheet
- g) For new or expanding feedlot facilities, how will you ensure that there is enough land available for spreading manure in accordance with allowable rates; and that land owners are willing to accept/purchase the manure?

Signed Agreements - 733.7 acres

Describe the manure application methods and equipment.

- a) What are the anticipated methods of manure application? (check all that apply)
 Broadcast with Incorporation Broadcast without Incorporation Injection Unknown

Describe your nutrient testing methods, the frequency of testing, and the expected nutrient content of the manure.

- a) How often will manure be sampled and sent to a laboratory for nutrient analysis?
*At a minimum, annually for the first three years and once every four years thereafter.
Sampling will also be done when conditions change that may alter the nutrient content of the manure.*
- b) How will manure samples be collected to ensure that representative samples are obtained for nutrient analysis?
In accordance with University of Minnesota Extension Guidelines
- c) What is the expected nutrient content of manure to be collected?
This information is found on the Manure Storage, Handling, and Testing Information worksheet

Describe how Minnesota's manure application requirements will be provided to manure recipients.

- a) Attach a copy of the manure application requirements that you will provide to all recipients of your transferred manure.
I will use the MPCA developed guidance in Attachment A or an equivalent form that I have attached.
- b) How will you, as a feedlot owner/operator, maintain records associated with the manure transfer and land application sites/rates?
I will use the MPCA developed guidance in Attachment B or an equivalent form that I have attached.
- c) How will you provide the manure recipient with manure nutrient test results and expected nutrient content?
I will use the MPCA developed guidance in Attachment B or an equivalent form that I have attached.

Attachment A – Summary of State Requirements for Recipients of Transferred Manure and Table for Rate Calculation

I. Rate Limits

Match N needs - Limit rates so that estimated plant-available N from all manure and fertilizer sources combined does not exceed expected crop N needs for the upcoming crop unless rates are limited by P (see section II)

Legumes - Crop-available manure N applied to legumes can not exceed 3.5 lbs N per bushel of soybeans; 50 lbs N per ton of alfalfa; 27 lbs N per ton grass hay or pasture; 43 lbs N per ton grass/legume; 45 lbs N per ton red clover.

Base on Univ. of Minn. recommendations – Determine crop nitrogen needs and the amount of nitrogen available from manure or legumes from most recent published recommendations of the University of Minnesota Extension Service or another land grant college in a contiguous state. Contact MPCA staff if you need the most recent Univ. of Minn. recommendations.

Base rates on: crop sequence, expected yields and soil organic matter category when applicable, previous year manure credits, method of application, and manure analysis nutrient levels.

Calibrate equipment – Calibrate equipment regularly and apply evenly to ensure that the intended rates of application are consistent with actual rates of application.

Summer applications – Plant a cover crop where manure is applied in June, July or August to harvested fields that would otherwise remain without crop cover for the rest of the growing season. Use a soil nitrate test during the following spring to credit remaining nutrients.

II. Soil Phosphorus (P) Management

Soil P Testing – Test soils for P at least once every four years.

Avoid P Build-Up Along Waters – Manage manure additions (crop P removal can be used as a guide, don't exceed removal over time) so that soil P levels do not show increase within 300 feet of certain waters*, except where soil P is insufficient for crop growth (less than 21 Bray P-1 or 16 Olsen), or where a 50-100' vegetative buffer is established along waters.

Avoid Extremely High P Soils – Avoid manure application onto fields where soils exceed P levels in the table below, unless a plan is submitted to the MPCA or County Feedlot Officer that describes how water pollution will be prevented when applying manure to these soils.

Soil Test Method	Outside of 300 ft from waters*	Within 300 ft from waters* and open tile intakes
Bray P1	150 ppm	75 ppm
Olsen	120 ppm	60 ppm

* "waters" refers to lakes, streams, intermittent streams, wetlands over 10 acres, and drainage ditches without protective berms.

III. Setbacks When Applying Manure in Sensitive Areas

Feature	Surface Application	Incorporation Within 24 hrs
Lakes, Streams	300'	25'
Wetlands (10+ ac)	300'	25'
Ditches w/o Berms	300'	25'
Open Tile Intakes	300'	0'
Sinkholes w/o Berms		
Downslope	50'	50'
Upslope	300'	50'
Wells and Quarries	50'	50'

* 100' vegetated buffer can be used instead of 300' setback for non-winter applications (50' buffer for wetlands/ditches)

IV. Keeping records

The cropland manager where manure is applied must keep records for at least three years (six years if applying manure near waters):

- Manure nutrient test results (provided by feedlot owner), Field locations and acreage, Dates of application and timing of incorporation, Amount of manure applied per acre, Total N and P applied on each field, and Soil nutrient test results.
- If manure is applied in during the winter, record the land slopes, distance to nearest water, and field conservation practices in place.

V. Short-Term Stockpiling Practices

Follow all stockpiling setbacks for waters and conduits to waters (ranging from 50 to 300 feet); avoid sandy soils and high water table soils (<2'); avoid slopes over 6%; use diversions if slopes exceed 2%; and keep records as required in Minn. R. ch. 7020.2125. The stockpile size must not exceed the amount of manure needed to supply nutrient needs to the tract of land where applied.

VI. Spills

If manure spills occur that have the potential to pollute waters, immediately contact the state duty officer at 1-800-422-0798.

VII. Manure Rate Calculator

If the P management requirements (see Section II) are being met, the calculator can be used at the time of application to determine the manure rate to apply at N-based rates.

Field Location: Twnsp _____ Sec 1/4 _____

	N	Example
Step 1. N needs of crop (lb/acre) (base the N needs as described in Sec I)		130 lb/a
Step 2. Total N in manure (lb/ton or lb/1000 gallons)		50 lb/1000 gal
Step 3. Take step 2 value & multiply by applicable % factor from table 2 below. (% ranges from .20 to .80)		50 X .80 = 40
Step 4: Divide the number from step 1 by the number in Step 3.		130/40 = 3.25
Step 4 is in tons/acre or 1000 gal/acre		3,250 gal/a

Table 2. Manure nitrogen availability and loss as affected by method of application and animal species.

	Surface broadcast – incorporation ¹			Injection	
	None	< 4 days	< 12 hours	Sweep	Knife
	% Total N				
Beef					
Year 1	25	45	60	60	50
Year 2	25	25	25	25	25
Lost ²	40	20	5	5	10
Dairy					
Year 1	20	40	55	55	50
Year 2	25	25	25	25	25
Lost ²	40	20	10	5	10
Swine					
Year 1	35	55	75	80	70
Year 2	15	15	15	15	15
Lost ²	50	30	10	5	15
Poultry					
Year 1	45	55	70	NA	NA
Year 2	25	25	25	NA	NA
Lost ²	30	20	5	NA	NA

For more detailed information on these specific requirements contact MPCA or go to the link:

<http://www.pca.state.mn.us/index.php/topics/feedlots/feedlot-nutrient-and-manure-management.html?menuid=&redirect=1>

Attachment B - Records when manure ownership is transferred - 300 or more animal units
Records for feedlot owners (manure generator) and commercial applicators

Pads of triplicate carbon copies of this form, along with instructions, are available from the MPCA.

- Copy 1: Kept by feedlot owner where manure is generated after completion of step #1.*
- Copy 2: Kept by applicator after completion of step #3.*
- Copy 3: Returned to feedlot owner where manure was generated after completion of step #3.*

Step 1: Manure Generation. Completed by feedlot owner where manure is generated.

Name of facility where manure generated: _____
 Mailing address: _____
 City: _____ State: _____ Zip code: _____
 Phone: _____ Fax: _____ E-mail: _____
 Date(s) of transfer (mm/dd/yyyy): _____ Total quantity transferred: _____ tons gallons

Manure analysis results (must be representative of manure transferred):

Manure source: _____ Date analyzed (mm/dd/yyyy): _____
 N: _____ P₂O₅: _____ K₂O: _____ Units: lb/ton lb/1000 gallons

Name of company or individual taking manure from feedlot: _____
 Mailing address: _____
 City: _____ State: _____ Zip code: _____
 Phone: _____ Fax: _____ E-mail: _____

Step 2: Short-Term Stockpiling. Completed by owner of the stockpile – Provide form to person applying manure.
If no stockpile, go to step 3.

Stockpile location(s)				Quantity stockpiled (tons)	Date stockpile established	Date land applied
County	Township	Section	Quarter			

Step 3: Manure Application. Completed by individual applying the manure at the time of application. Return a copy to the feedlot owner where manure was generated within 60 days after applying manure. See the back of this form for manure spreading requirements when manure is from a facility with 300 or more animal units.

Name of company or individual that applied manure: _____
 Mailing address: _____
 City: _____ State: _____ Zip code: _____
 Phone: _____ Fax: _____ E-mail: _____
 Minnesota Department of Agriculture license number of commercial applicator: _____

Field ID	County	Township	Section	Application Rate (tons or gallons/ac)

Barley - Barley - Barley - Barley - Barley - Barley - Barley - Barley - Barley - Barley - Barley - Barley - Barley - Barley - Barley - Barley

Nitrogen Recommendations

Crop Grown Last Year	Organic Matter	Expected Yield (bu/acre)							
		0-50	50-59	60-69	70-79	80-89	90-99	100+	
ALFALFA 4+ plants per sq ft	low	0	0	10	25	40	55	70	
ALFALFA 2-3 plants per sq ft	med/high	0	0	0	0	20	35	50	
Soybeans, small grains, ALFALFA 1 or less plants per sq ft	low	0	0	15	30	45	60	75	
Edible beans, field peas	med/high	0	0	0	10	25	40	55	
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg. pasture, etc.	low	30	50	65	80	95	110	125	
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	med/high	0	30	45	60	75	90	105	
	low	40	60	75	90	105	120	135	
	med/high	0	40	55	70	85	100	115	
	low	0	20	35	50	65	80	95	
	med/high	0	0	15	30	45	60	75	
	low	50	70	85	100	115	130	145	
	med/high	30	50	65	80	95	110	125	

Phosphorus Recommendations

Calculated Phosphorus Recommendations
 $P2O5 = [W - (X)](Bray P ppm)](Expected Yield)$
 $P2O5 = [Y - (Z)](Olsen P ppm)](Expected Yield)$

$W = 0.785$ $X = 0.039$
 $Y = 0.785$ $Z = 0.05$

Potassium Recommendations

Calculated Potassium Recommendations
 $K2O = [A - (B)](K ppm)](Expected Yield)$

$A = 1.286$ $B = 0.009$

Second Year Legume Credits

Legume Crop	Credit
Alfalfa-Good (4+ plants)	35
Alfalfa-Fair (2-3 plants)	25
Red Clover	20

Oats - Oats - Oats - Oats - Oats - Oats - Oats - Oats - Oats - Oats - Oats - Oats - Oats - Oats - Oats - Oats

Nitrogen Recommendations

Crop Grown Last Year	Organic Matter	Expected Yield (bu/acre)						
		40-60	61-80	81-100	101-120	121+		
ALFALFA 4+ plants per sq ft	low	0	0	0	0	0	0	
ALFALFA 2-3 plants per sq ft	med/high	0	0	0	0	0	0	
Soybeans, small grains, ALFALFA 1 or less plants per sq ft	low	0	0	20	40	60	80	
Edible beans, field peas	med/high	0	0	10	30	50	70	
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg. pasture, etc.	low	20	40	60	80	100	120	
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	med/high	10	30	50	70	90	110	

Phosphorus Recommendations

Calculated Phosphorus Recommendations
 $P2O5 = [W - (X)](Bray P ppm)](Expected Yield)$
 $P2O5 = [Y - (Z)](Olsen P ppm)](Expected Yield)$

$W = 0.644$ $X = 0.032$
 $Y = 0.644$ $Z = 0.041$

Potassium Recommendations

Calculated Potassium Recommendations
 $K2O = [A - (B)](K ppm)](Expected Yield)$

$A = 1.277$ $B = 0.009$

Buckwheat - Buckwheat - Buckwheat - Buckwheat - Buckwheat - Buckwheat - Buckwheat - Buckwheat - Buckwheat - Buckwheat

Nitrogen Recommendations

Crop Grown Last Year	Expected Yield (lb/acre)			
	1200-1450	1451-1700	1701-1950	1951-2200
Organic Matter				
low	0	0	0	0
med/high	0	0	0	0
ALFALFA 4+ plants per sq ft				
low	0	0	0	0
med/high	0	0	0	0
ALFALFA 2-3 plants per sq ft				
low	0	0	0	0
med/high	0	0	0	0
Soybeans, small grains, ALFALFA 1 or less plants per sq ft				
low	0	10	20	30
med/high	0	0	0	0
Eddible beans, field peas				
low	20	30	40	50
med/high	0	10	20	30
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg, pasture, etc.				
low	0	0	0	0
med/high	0	0	0	0
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.				
low	40	50	60	70
med/high	20	30	40	50

Phosphorus Recommendations

Calculated Phosphorus Recommendations

$$P2O5 = [W - (X)(\text{Bray P ppm})](\text{Expected Yield})$$

$$P2O5 = [Y - (Z)(\text{Olsen P ppm})](\text{Expected Yield})$$

$$W = \frac{0.028}{X} = \frac{0.001}{0.001}$$

$$Y = \frac{0.028}{Z} = \frac{0.002}{0.002}$$

Potassium Recommendations

Calculated Potassium Recommendations

$$K2O = [A - (B)(K ppm)](\text{Expected Yield})$$

$$A = \frac{0.036}{B} = \frac{0.023}{0.023}$$

Canola - Canola - Canola - Canola - Canola - Canola - Canola - Canola - Canola - Canola - Canola

Nitrogen Recommendations

Crop Grown Last Year	Expected Yield (cwt/acre)			
	10-15	16-20	21-25	25+
Organic Matter				
low	0	0	0	0
med/high	0	0	0	0
ALFALFA 4+ plants per sq ft				
low	0	0	0	0
med/high	0	0	0	0
ALFALFA 2-3 plants per sq ft				
low	0	0	0	0
med/high	0	0	0	0
Soybeans, small grains, ALFALFA 1 or less plants per sq ft				
low	0	10	20	30
med/high	0	0	0	0
Eddible beans, field peas				
low	20	30	40	50
med/high	0	10	20	30
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg, pasture, etc.				
low	0	0	0	0
med/high	0	0	0	0
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.				
low	40	50	60	70
med/high	20	30	40	50

Phosphorus Recommendations

Calculated Phosphorus Recommendations

$$P2O5 = [W - (X)(\text{Bray P ppm})](\text{Expected Yield})$$

$$P2O5 = [Y - (Z)(\text{Olsen P ppm})](\text{Expected Yield})$$

$$W = \frac{3.6}{X} = \frac{0.17}{0.17}$$

$$Y = \frac{3.6}{Z} = \frac{0.22}{0.22}$$

Potassium Recommendations

Calculated Potassium Recommendations

$$K2O = [A - (B)(K ppm)](\text{Expected Yield})$$

$$A = \frac{5.4}{B} = \frac{0.034}{0.034}$$

Edible Beans - Edible Beans - Edible Beans - Edible Beans - Edible Beans - Edible Beans - Edible Beans - Edible Beans - Edible Beans

Nitrogen Recommendations

Crop Grown Last Year	Organic Matter	Expected Yield (lb/acre)				
		1401-1900	1901-2400	2401-2900	2901+	
ALFALFA 4+ plants per sq ft	low	0	0	0	0	0
	med/high	0	0	0	0	0
ALFALFA 2-3 plants per sq ft	low	0	20	40	60	60
	med/high	0	0	10	30	30
Soybeans, small grains, ALFALFA 1 or less plants per sq ft	low	0	20	60	80	80
	med/high	0	0	30	50	50
Edible beans, field peas	low	20	40	80	100	100
	med/high	0	20	50	70	70
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg, pasture, etc.	low	0	0	25	45	45
	med/high	0	0	0	0	25
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	low	60	80	100	120	120
	med/high	30	50	70	90	90

Phosphorus Recommendations

Calculated Phosphorus Recommendations
 $P2O5 = [W - (X) \cdot (\text{Bray P ppm})] \cdot (\text{Expected Yield})$
 $P2O5 = [Y - (Z) \cdot (\text{Olsen P ppm})] \cdot (\text{Expected Yield})$

W= 0.023 X= 0.001
 Y= 0.023 Z= 0.001

Potassium Recommendations

Calculated Potassium Recommendations
 $K2O = [A - (B) \cdot (K \text{ ppm})] \cdot (\text{Expected Yield})$

A= 0.035 B= 0.002

Millet - Millet - Millet - Millet - Millet - Millet - Millet - Millet - Millet - Millet - Millet - Millet - Millet - Millet - Millet - Millet

Nitrogen Recommendations

Crop Grown Last Year	Organic Matter	Expected Yield (lb/acre)					
		1500-1900	1901-2300	2301-2700	2701-3000	3100+	
ALFALFA 4+ plants per sq ft	low	0	0	0	0	0	0
	med/high	0	0	0	0	0	0
ALFALFA 2-3 plants per sq ft	low	0	0	0	20	40	40
	med/high	0	0	0	0	20	20
Soybeans, small grains, ALFALFA 1 or less plants per sq ft	low	0	10	20	40	60	60
	med/high	0	0	0	20	40	40
Edible beans, field peas	low	20	30	40	60	80	80
	med/high	0	10	20	40	60	60
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg, pasture, etc.	low	0	0	0	0	25	25
	med/high	0	0	0	0	0	0
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	low	40	50	60	80	100	100
	med/high	20	30	40	60	80	80

Phosphorus Recommendations

Calculated Phosphorus Recommendations
 $P2O5 = [W - (X) \cdot (\text{Bray P ppm})] \cdot (\text{Expected Yield})$
 $P2O5 = [Y - (Z) \cdot (\text{Olsen P ppm})] \cdot (\text{Expected Yield})$

W= 0.017 X= 0.009
 Y= 0.017 Z= 0.0011

Potassium Recommendations

Calculated Potassium Recommendations
 $K2O = [A - (B) \cdot (K \text{ ppm})] \cdot (\text{Expected Yield})$

A= 0.03 B= 2E-04

Rye - Rye

Nitrogen Recommendations

Crop Grown Last Year	Organic Matter	Expected Yield (bu/acre)					
		40-49	50-59	60-69	70-79	80+	
ALFALFA 4+ plants per sq ft	low	0	0	35	60	95	
ALFALFA 2-3 plants per sq ft	med/high	0	0	0	40	75	
Soybeans, small grains, ALFALFA 1 or less plants per sq ft	low	0	0	40	65	90	
Edible beans, field peas	med/high	0	0	20	45	70	
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg. pasture, etc.	low	40	65	90	115	140	
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	med/high	20	45	70	95	120	
	low	50	75	100	125	150	
	med/high	30	55	80	105	130	
	low	0	35	60	85	110	
	med/high	0	0	40	65	90	
	low	60	85	110	135	160	
	med/high	40	65	90	115	140	

Phosphorus Recommendations

Calculated Phosphorus Recommendations
 $P2O5 = [W - (X) \cdot (\text{Bray P ppm})] \cdot (\text{Expected Yield})$
 $P2O5 = [Y - (Z) \cdot (\text{Olsen P ppm})] \cdot (\text{Expected Yield})$

W= 1.071 X= 0.054
 Y= 1.071 Z= 0.067

Potassium Recommendations

Calculated Potassium Recommendations
 $K2O = [A - (B) \cdot (K \text{ ppm})] \cdot (\text{Expected Yield})$

A= 2.71 B= 0.17

Sunflowers - Sunflowers

Nitrogen Recommendations

Crop Grown Last Year	Organic Matter	Expected Yield (lb/acre)					
		1400-1900	1901-2400	2401-2900	2901-3300	3300+	
ALFALFA 4+ plants per sq ft	low	0	0	0	0	0	
ALFALFA 2-3 plants per sq ft	med/high	0	0	0	0	0	
Soybeans, small grains, ALFALFA 1 or less plants per sq ft	low	0	20	40	60	80	
Edible beans, field peas	med/high	0	0	10	30	50	
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg. pasture, etc.	low	30	50	70	90	110	
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	med/high	0	20	40	60	80	
	low						
	med/high						
	low	0	15	25	45	65	
	med/high	0	0	0	25	45	
	low	70	90	110	130	150	
	med/high	40	60	80	100	120	

Phosphorus Recommendations

Calculated Phosphorus Recommendations
 $P2O5 = [W - (X) \cdot (\text{Bray P ppm})] \cdot (\text{Expected Yield})$
 $P2O5 = [Y - (Z) \cdot (\text{Olsen P ppm})] \cdot (\text{Expected Yield})$

W= 0.023 X= 0.001
 Y= 0.023 Z= 0.001

Potassium Recommendations

Calculated Potassium Recommendations
 $K2O = [A - (B) \cdot (K \text{ ppm})] \cdot (\text{Expected Yield})$

A= 0.041 B= 3E-04

Alfalfa - Alfalfa - Alfalfa - Alfalfa - Alfalfa - Alfalfa - Alfalfa

Phosphorus Recommendations

Calculated Phosphorus Recommendations
 $P2O5 = [W - (X)(Bray P ppm)](Expected Yield)$
 $P2O5 = [Y - (Z)(Olsen P ppm)](Expected Yield)$

W= 18.57 X= 0.93
 Y= 18.57 Z= 1.16

Potassium Recommendations

Calculated Potassium Recommendations
 $K2O = [A - (B)(K ppm)](Expected Yield)$

A= 55.7 B= 0.38

Grass/Legume - Grass/Legume - Grass/Legume - Grass/Legume

Phosphorus Recommendations

Calculated Phosphorus Recommendations
 $P2O5 = [W - (X)(Bray P ppm)](Expected Yield)$
 $P2O5 = [Y - (Z)(Olsen P ppm)](Expected Yield)$

W= 20 X= 1
 Y= 20 Z= 1.4

Potassium Recommendations

Calculated Potassium Recommendations
 $K2O = [A - (B)(K ppm)](Expected Yield)$

A= 53.28 B= 0.333

Sugar Beets - Sugar Beets - Sugar Beets - Sugar Beets

Phosphorus Recommendations (Broadcast)

	Soil Test P (ppm)				
	Very Low	Low	Medium	High	Very High
Expected Yield	Bray: 0-5	6-10	11-15	16-20	21+
	Olsen: 0-3	4-7	8-11	12-15	16+
All	80	55	35	10	0
Expected Yield	Soil Test K (ppm)				
	0-40	41-80	81-120	121-160	161+
All	110	80	50	15	0

Nitrogen Recommendations are set to a flat rate of 100 lb/acre

Soybeans - Soybeans - Soybeans - Soybeans - Soybeans

Phosphorus Recommendations

Calculated Phosphorus Recommendations
 $P2O5 = [W - (X)(Bray P ppm)](Expected Yield)$
 $P2O5 = [Y - (Z)(Olsen P ppm)](Expected Yield)$

W= 1.752 X= 0.084
 Y= 1.752 Z= 0.111

Potassium Recommendations

Calculated Potassium Recommendations
 $K2O = [A - (B)(K ppm)](Expected Yield)$

A= 2.2 B= 0.183

Grass/Hay - Grass/Hay - Grass/Hay - Grass/Hay - Grass/Hay

Phosphorus Recommendations

Calculated Phosphorus Recommendations
 $P2O5 = [W - (X)(Bray P ppm)](Expected Yield)$
 $P2O5 = [Y - (Z)(Olsen P ppm)](Expected Yield)$

W= 19.12 X= 0.732
 Y= 19.12 Z= 1.012

Potassium Recommendations

Calculated Potassium Recommendations
 $K2O = [A - (B)(K ppm)](Expected Yield)$

A= 40.43 B= 0.286

Clover/Trefoil - Clover/Trefoil - Clover/Trefoil - Clover/Trefoil

Phosphorus Recommendations

Calculated Phosphorus Recommendations
 $P2O5 = [W - (X)(Bray P ppm)](Expected Yield)$
 $P2O5 = [Y - (Z)(Olsen P ppm)](Expected Yield)$

W= 20 X= 1
 Y= 20 Z= 1.4

Potassium Recommendations

Calculated Potassium Recommendations
 $K2O = [A - (B)(K ppm)](Expected Yield)$

A= 53.28 B= 0.333

The Following Data is from University of MN Publication DG-05886-GO (1996)

SWEET CORN - SWEET CORN - SWEET CORN - SWEET CORN - SWEET CORN - SWEET CORN - SWEET CORN - SWEET CORN

Nitrogen Recommendations

Crop Grown Last Year	Organic Matter	Expected Yield (tons/acre)				
		<6	6-7	8-9	10+	
ALFALFA 4+ plants per sq ft	low	10	30	50	70	
ALFALFA 4+ plants per sq ft	med/high	0	0	20	40	
ALFALFA 2-3 plants per sq ft	low	80	100	120	140	
ALFALFA 2-3 plants per sq ft	med/high	50	70	90	110	
Soybeans, small grains, ALFALFA 1 or less plants per sq ft	low	80	100	120	140	
Soybeans, small grains, ALFALFA 1 or less plants per sq ft	med/high	50	70	90	110	
Edible beans, field peas	low	80	100	120	140	
Edible beans, field peas	med/high	50	70	90	110	
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg. pasture, etc.	low	70	90	110	130	
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg. pasture, etc.	med/high	40	60	80	100	
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	low	110	130	150	170	
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	med/high	80	100	120	140	

Phosphorus Recommendations

Calculated Phosphorus Recommendations

$$P2O5 = [W - (X)(\text{Bray P ppm})](\text{Expected Yield})$$

$$P2O5 = [Y - (Z)(\text{Olsen P ppm})](\text{Expected Yield})$$

$$W = \frac{11}{11} \quad X = \frac{0.533}{0.7}$$

$$Y = \frac{11}{11} \quad Z = \frac{0.7}{0.7}$$

Potassium Recommendations

Calculated Potassium Recommendations

$$K2O = [A - (B)(K \text{ ppm})](\text{Expected Yield})$$

$$A = \frac{22}{22} \quad B = \frac{0.13}{0.13}$$

PEAS - PEAS - PEAS - PEAS - PEAS - PEAS - PEAS - PEAS - PEAS - PEAS - PEAS - PEAS - PEAS - PEAS - PEAS - PEAS

Nitrogen Recommendations

Crop Grown Last Year	Organic Matter	Expected Yield (lbs/acre)			
		<1000	1000-1900	2000-3900	4000+
ALFALFA 4+ plants per sq ft	low	0	0	0	0
ALFALFA 4+ plants per sq ft	med/high	0	0	0	0
ALFALFA 2-3 plants per sq ft	low	0	0	10	20
ALFALFA 2-3 plants per sq ft	med/high	0	0	0	0
Soybeans, small grains, ALFALFA 1 or less plants per sq ft	low	0	0	10	20
Soybeans, small grains, ALFALFA 1 or less plants per sq ft	med/high	0	0	0	0
Edible beans, field peas	low	0	0	10	20
Edible beans, field peas	med/high	0	0	0	0
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg. pasture, etc.	low	0	0	0	10
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg. pasture, etc.	med/high	0	0	0	0
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	low	0	10	20	40
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	med/high	0	0	0	0

Phosphorus Recommendations

Calculated Phosphorus Recommendations

$$P2O5 = [W - (X)(\text{Bray P ppm})](\text{Expected Yield})$$

$$P2O5 = [Y - (Z)(\text{Olsen P ppm})](\text{Expected Yield})$$

$$W = \frac{0.017}{0.017} \quad X = \frac{9E-04}{0.001}$$

$$Y = \frac{0.017}{0.017} \quad Z = \frac{0.001}{0.001}$$

Potassium Recommendations

Calculated Potassium Recommendations

$$K2O = [A - (B)(K \text{ ppm})](\text{Expected Yield})$$

$$A = \frac{0.03}{0.03} \quad B = \frac{2E-04}{2E-04}$$

POTATOES - POTATOES - POTATOES - POTATOES - POTATOES - POTATOES - POTATOES - POTATOES - POTATOES - POTATOES

Nitrogen Recommendations

Crop Grown Last Year	Organic Matter	Expected Yield (cwt/acre)								
		<200	200-249	250-299	300-349	350-399	400-449	450-499	500+	
ALFALFA 4+ plants per sq ft	low	0	0	25	50	75	100	125	150	
ALFALFA 2-3 plants per sq ft	med/high	0	0	0	30	55	80	105	130	
Soybeans, small grains, ALFALFA 1 or less plants per sq ft	low	55	80	105	130	155	180	205	230	
Eddible beans, field peas	med/high	35	60	85	110	135	160	185	210	
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg, pasture, etc.	low	55	80	105	130	155	180	205	230	
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	med/high	35	60	85	110	135	160	185	210	

Phosphorus Recommendations

Calculated Phosphorus Recommendations

$$P2O5 = [W - (X)(Bray P ppm)]^{0.5} \times (\text{Expected Yield})$$

$$P2O5 = [Y - (Z)(Olsen P ppm)]^{0.5} \times (\text{Expected Yield})$$

Potassium Recommendations

Calculated Potassium Recommendations

$$K2O = [A - (B)(K ppm)]^{0.85} \times (\text{Expected Yield})$$

The Following Data is derived from North Dakota State University Publication SF-882 (2010)

SORGHUM (forage) - SORGHUM (forage) - SORGHUM (forage) - SORGHUM (forage) - SORGHUM (forage) - SORGHUM (forage) - SORGHUM (forage)

Nitrogen Recommendations

Crop Grown Last Year	Organic Matter	Expected Yield (tons/acre)			
		<4	5-6	7-8	9+
ALFALFA 4+ plants per sq ft	low	0	0	25	75
ALFALFA 2-3 plants per sq ft	med/high	0	0	25	75
Soybeans, small grains, ALFALFA 1 or less plants per sq ft	low	0	25	75	125
Eddible beans, field peas	med/high	0	25	75	125
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg, pasture, etc.	low	35	85	135	185
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	med/high	35	85	135	185

Phosphorus Recommendations

Calculated Phosphorus Recommendations

$$P2O5 = [W - (X)(Bray P ppm)]^{0.5} \times (\text{Expected Yield})$$

$$P2O5 = [Y - (Z)(Olsen P ppm)]^{0.5} \times (\text{Expected Yield})$$

Potassium Recommendations

Calculated Potassium Recommendations

$$K2O = [A - (B)(K ppm)]^{0.85} \times (\text{Expected Yield})$$

Table B - Nitrogen availability and loss as affected by method of manure application and animal species

Adapted From: *Manure Planning and Record Keeping Guide, BU-6957, U of M Extension 2001*

Year Available ¹	Broadcast Incorporation Timing ²			Injection	
	None to 96 hrs.	12 to 96 hrs.	<12 hrs.	Sweep	Knife
	% of Total Nitrogen Available Per Year				
Beef					
Year 1	25	45	60	60	50
Year 2	25	25	25	25	25
Lost	40	20	5	5	10
Dairy					
Year 1	20	40	55	55	50
Year 2	25	25	25	25	25
Lost	40	20	10	5	10
Swine					
Year 1	35	55	75	80	70
Year 2	15	15	15	15	15
Lost	50	30	10	5	15
Poultry					
Year 1	45	55	70	70	70
Year 2	25	25	25	25	25
Lost	30	20	5		

Horse and Sheep are assumed to have the same Nitrogen availability as Dairy

1. Third year available N is not listed but can be computed by adding 1st and 2nd year and lost percentages and subtracting this sum from 100.
2. Timing categories refer to the length of time between manure application and incorporation.

Table C - Nutrient removal in the harvested portion of the crop.

Adapted From: USDA Plants Database (<http://plants.usda.gov/plants/index.html>)

Crop	Yield Units	Crop Nutrient Removal (lbs. per unit)		
		N	P ₂ O ₅	K ₂ O
Alfalfa	tons (air dry)	51	12	49
Alsike clover	tons (air dry)	41	11	54
Barley (grain) ¹	bushels	0.99	0.4	0.32
Barley (grain & straw) ¹	bushels	1.39	0.56	1.52
Birdsfoot trefoil	tons (air dry)	45	11	42
Buckwheat (grain) ¹	bushels	0.83	0.25	0.22
Buckwheat (grain & straw) ¹	bushels	14.86	1.95	46.67
Canola	cwt.	1.6	0.8	0.4
Corn (grain)	bushels	0.67	0.35	0.25
Corn silage	tons (as fed)	9.7	3.1	7.3
Edible beans	pounds	0.05	0.013	0.015
Grass hay or pasture	tons (air dry)	27.06	3.9	25.83
Grass/legume	tons (air dry)	40.17	4.07	25.11
Millet	pounds	1.4	0.4	0.4
Oats (grain) ¹	bushels	0.77	0.28	0.19
Oats (grain & straw) ¹	bushels	1.08	0.44	1.13
Peas	pounds		0.01	0.01
Potatoes	cwt.	0.3	0.15	0.65
Red clover	tons (air dry)	45	12	42
Rye (grain) ¹	bushels	1.4	0.46	0.31
Rye (grain & straw) ¹	bushels	2.2	0.67	1.81
Soybeans	bushels	3.5	0.82	1
Sugar beets	tons	3.7	2.2	7.3
Sunflowers	pounds	2.7	0.97	0.9
Sweet corn	tons		11	13.9
Wheat (grain) ¹	bushels	1.35	0.53	0.31
Wheat (grain & straw) ¹	bushels	2.05	0.69	1.51

1. Nutrient removal, used in calculations in this spreadsheet, is based on the average of grain only and grain and straw numbers from this table

Table D - Estimated nutrient content of liquid and solid manure

Adapted from the following sources:

Manure Management in Minnesota, WW-03553, U of M Extension 2012

Manure Characteristics, MWPS-18 Section 1, MidWest Plan Service 2004

Liquid Swine Manure Nutrients, ASL-R 1596, Iowa State University

Animal Type	Liquid Manure			Solid Manure		
	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O
	lbs/1,000 gallons			lbs/ton		
Beef						
Feeder Cattle High Forage	29	18	26	11	7	11
Feeder Cattle High Energy	29	18	26	11	7	11
Cow	20	16	24	7	4	7
Calf	27	18	24	9	4	8
Dairy						
Milk Cow	31	15	19	10	3	6
Dry Cow	31	15	19	10	3	6
Heifer	32	14	28	10	3	7
Calf	27	14	24	10	3	5
Swine						
Swine - Nursery	25	19	22	13	8	4
Swine - Wean/Finish ¹	42	34	24	14	6	4
Swine- Wean/Finish (wet/dry feed) ²	57	46	34	14	6	4
Swine - Grow/Finish ¹	58	44	40	16	9	5
Swine- Grow/Finish (wet/dry feed) ²	75	54	40	22	22	17
Swine - Gestating Sow	25	25	24	9	7	5
Swine - Lactating Sow	15	12	11	14	6	4
Swine - Boar	25	25	24	9	7	5
Poultry						
Layers	57	52	33	34	51	26
Broilers	63	40	29	46	53	36
Turkey	56	39	31	40	50	30
Horse						
Sheep				14	4	14
				18	11	26
Open Lot Runoff *	4	1	4			
Milkhouse Waste *	1	0.5	1			

* MPCA Estimated Values

1. Deep-pit system with nipple waters.

2. Dry feeders used in conjunction with cup or swinging waters have similar results as wet/dry feeders.

Table E. Manure production and characteristics, as excreted

Adapted From: Manure Characteristics, MWPS-18 Section 1, MidWest Plan Service 2004

Animal Type	Manure Production per 1,000 lbs. of Animal Weight		Excreted Nutrients in Manure per 1,000 lbs. of Animal Weight		
	Solid (tons/year)	Liquid (gallons/year)	N (lbs per year)	P ₂ O ₅ (lbs per year)	K ₂ O (lbs per year)
Beef cattle					
Calf	19.4	4592.1	162.5	73.0	129.5
Feeder (High forage diet)	9.0	2142.4	132.1	39.4	82.8
Feeder (High energy diet)	9.0	2142.4	132.1	39.4	82.8
Cow	16.8	3982.2	127.8	65.7	105.9
Dairy cattle					
Calf	14.6	3358.0	153.3	26.8	126.5
Heifer	11.0	2536.1	110.7	37.7	112.5
Milk cow	20.2	4875.9	263.1	135.3	147.3
Dry cow	9.3	2242.3	109.5	39.3	86.5
Swine					
Nursery	13.8	3367.1	282.9	118.6	164.3
Wean-Finish ¹	10.0	2411.4	225.4	84.6	116.1
Wean-Finish(wet/dry feed) ²	10.0	2411.4	225.4	84.6	116.1
Grow-Finish ¹	9.0	2172.5	211.0	76.1	104.0
Grow-Finish(wet/dry feed) ²	9.0	2172.5	211.0	76.1	104.0
Gestating sow	4.1	1000.5	58.0	36.5	46.0
Lactating sow	8.5	2026.6	163.4	108.7	128.6
Boar	3.8	903.0	51.5	42.0	42.0
Poultry					
Layer	9.1	2068.3	316.3	97.3	146.0
Broiler	17.3	4197.5	383.3	255.5	182.5
Turkey	7.7	1825.0	243.6	160.6	105.9
Horse	10.0	2420.0	87.6	38.3	52.9
Sheep	7.5	1825.0	146.0	73.0	146.0

1. Deep-pit system with nipple waters.

2. Dry feeders used in conjunction with cup or swinging waters have similar results as wet/dry feeders.

Table F. Summary of evaporative losses of solid manure for the storage types identified.*

Adapted From: MPCA Estimates

Animal Type	Daily Scrape and Haul, Stockpile, and Underfloor Dry Storage	Manure Pack	Litter
Dairy Milk Cow	0.76	0.71	
Dairy Dry Cow	0.60	0.56	
Dairy Heifer	0.41	0.38	
Dairy Calf	0.68	0.64	
Beef Feeder (High Forage)	0.68	0.64	
Beef Feeder (High Energy)	0.68	0.64	
Beef Cow	0.68	0.64	
Beef Calf	0.59	0.55	
Chickens - Layer	0.59	0.55	
Chickens - Broiler	0.42	0.39	
Turkeys	0.48	0.45	0.46

*These numbers are multiplied by the manure generation numbers in Table E to account for volume losses due to evaporation.



Manure Application Agreement

by and between Mark Cousten and Dalems Beranek.
producer name Field owner name

Field Name	Legal Description	Acres Available for Application
North of Dalems	NE 1/4 of Charlestown T	153 a
West of Wanda	S 80 of SE 1/4 Waterbury 24	76 a
North of Tom	S 40 of NW 1/4 Willow Lake, 32	40 a
Homeplace	SE 1/4 of Willow Lake, 31	151 a
East of Homeplace	NW 1/4 of Willow Lake, 33	163 a

All Redwood County

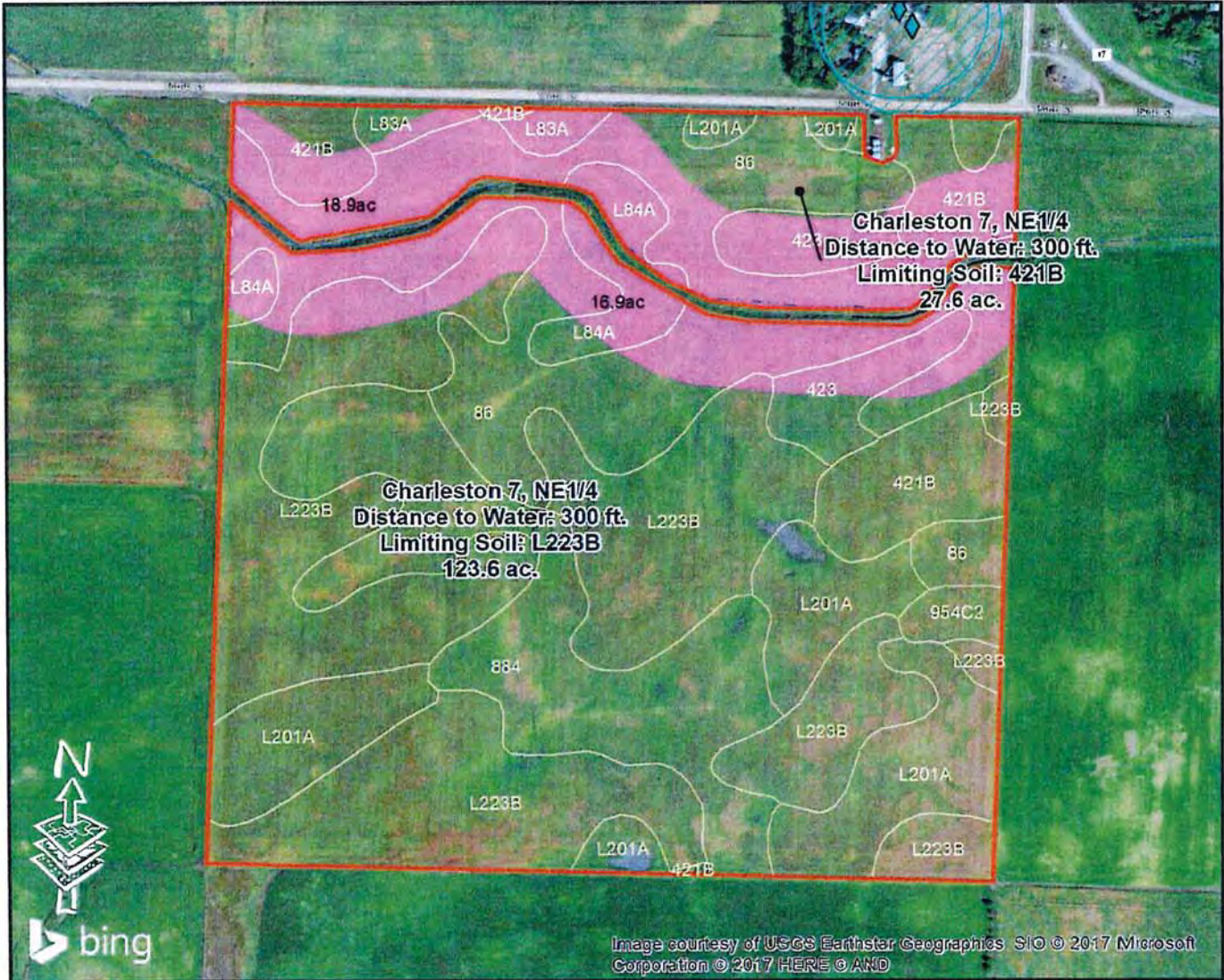
The undersigned hereby authorizes _____
to spread manure on the above referenced land for a period of ____ year(s). This agreement will renew
year to year unless canceled 30 days prior to the anniversary date of the agreement. Cancellation of this
agreement will be made in writing to the above listed person.

Land Owner (Printed): Galen Beranek

(Signature): Galen Beranek

Date: _____

Field Map Charleston 7, NE1/4



MANURE APPLICATION NOTES:

Winter application is NOT permitted within 300' Buffer or slopes greater than 6%.

Non-Winter application within 300' Buffer needs 100' grass buffer on rivers and lakes, or 50' grass buffer on all other waterways. If insufficient buffer or within Tile Intake Buffer you must incorporate immediately.

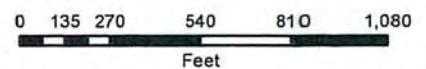
There is NO application within 25' of any waterway and within 100' of all wells.

If soil tests exceed 21ppm Bray/16ppm Olsen in 300' Buffer, Phosphorus must be applied at crop removal rates.

Legend

- Field Boundary
- Stream (Intermittent)
- Soils
- 300' Buffer
- ◆ CWI - Known Wells
- Well 300' Buffer
- Known Tile Intake

Imagery Courtesy of Bing.



Field Map Waterbury 24, S1/2 of SE1/4



MANURE APPLICATION NOTES:

Winter application is NOT permitted within 300' Buffer or slopes greater than 6%.

Non-Winter application within 300' Buffer needs 100' grass buffer on rivers and lakes, or 50' grass buffer on all other waterways. If insufficient buffer or within Tile Intake Buffer you must incorporate immediately.

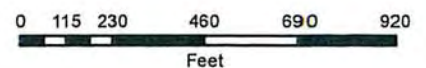
There is NO application within 25' of any waterway and within 100' of all wells.

If soil tests exceed 21ppm Bray/16ppm Olsen in 300' Buffer, Phosphorus must be applied at crop removal rates.

Legend

- Field Boundary
- Stream (Intermittent)
- Soils
- 300' Buffer
- ◆ CWI - Known Wells
- Known Tile Intake

Imagery Courtesy of Bing.



Field Map

Willow Lake 32, S2 of S2 of NW4

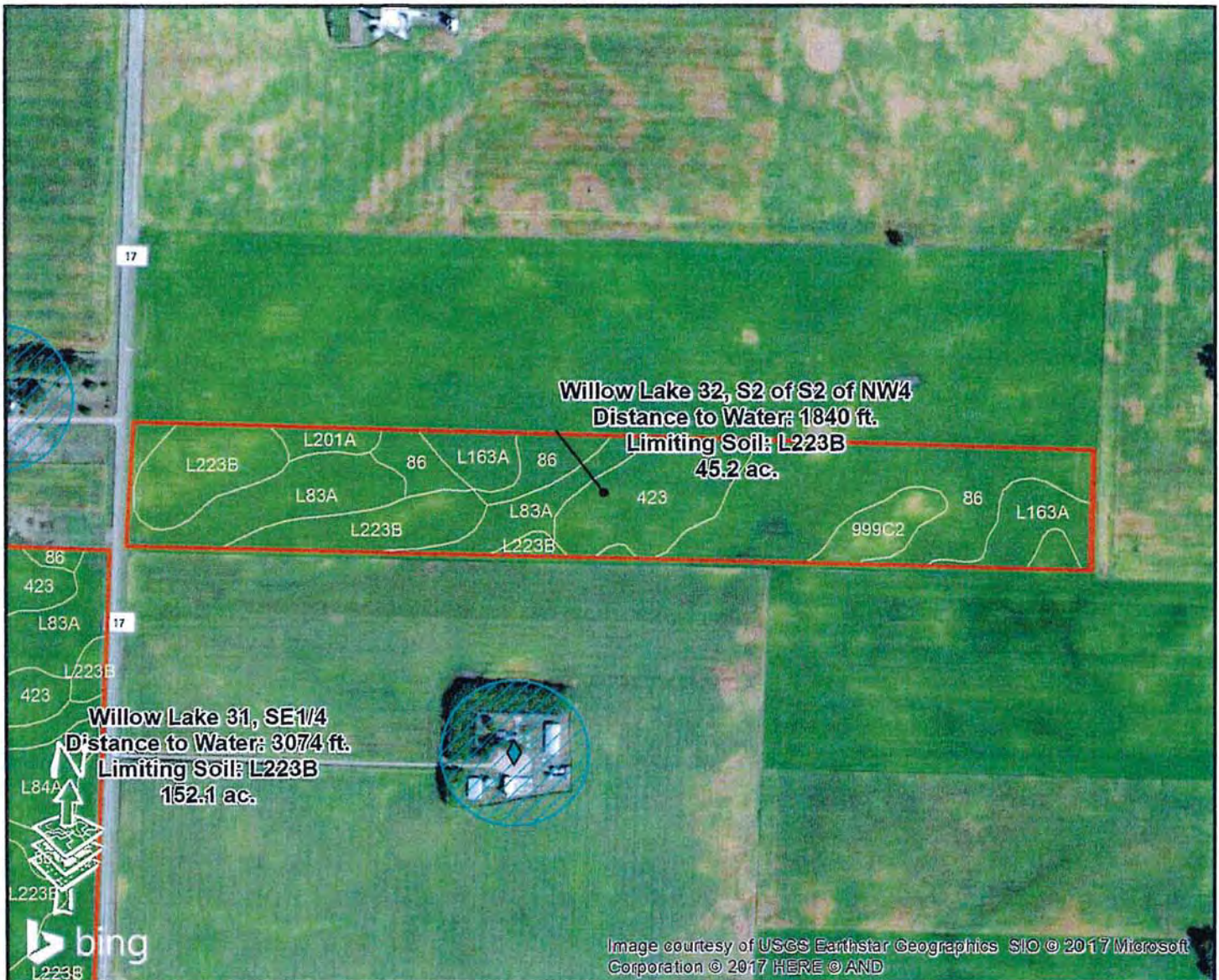


Image courtesy of USGS Earthstar Geographics SIO © 2017 Microsoft Corporation © 2017 HERE © AND

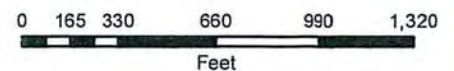
MANURE APPLICATION NOTES:

Winter application is NOT permitted within 300' Buffer or slopes greater than 6%.
 Non-Winter application within 300' Buffer needs 100' grass buffer on rivers and lakes, or 50' grass buffer on all other waterways. If insufficient buffer or within Tile Intake Buffer you must incorporate immediately.
 There is NO application within 25' of any waterway and within 100' of all wells.
 If soil tests exceed 21ppm Bray/16ppm Olsen in 300' Buffer, Phosphorus must be applied at crop removal rates.

Legend

- Field Boundary
- Soils
- 300' Buffer
- ◆ CWI - Known Wells
- Well 300' Buffer
- Known Tile Intake

Imagery Courtesy of Bing.



Field Map Willow Lake 31, SE1/4



MANURE APPLICATION NOTES:







Winter application is NOT permitted within 300' Buffer or slopes greater than 6%.

Non-Winter application within 300' Buffer needs 100' grass buffer on rivers and lakes, or 50' grass buffer on all other waterways. If insufficient buffer or within Tile Intake Buffer you must incorporate immediately.

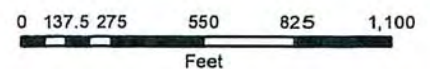
There is NO application within 25' of any waterway and within 100' of all wells.

If soil tests exceed 21ppm Bray/16ppm Olsen in 300' Buffer, Phosphorus must be applied at crop removal rates.

Legend

-  Field Boundary
-  Soils
-  300' Buffer
-  CWI - Known Wells
-  Well 300' Buffer
-  Known Tile Intake

Imagery Courtesy of Bing.



Field Map Willow Lake 33, NW1/4



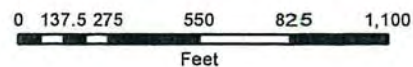
MANURE APPLICATION NOTES:

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 Non-Winter application within 300' Buffer needs 100' grass buffer on rivers and lakes, or 50' grass buffer on all other waterways. If insufficient buffer or within Tile Intake Buffer you must incorporate immediately.
 There is NO application within 25' of any waterway and within 100' of all wells.
 If soil tests exceed 21ppm Bray/16ppm Olsen in 300' Buffer, Phosphorus must be applied at crop removal rates.

Legend

- | | | | |
|---|-----------------------|---|-------------------|
|  | Field Boundary |  | CWI - Known Wells |
|  | Connector (Wetland) |  | Known Tile Intake |
|  | Stream (Intermittent) | | |
|  | Stream (Perennial) | | |
| | Soils | | |
|  | 300' Buffer | | |

Imagery Courtesy of Bing.



Field Map




Willow Lake 33, N2 of N2 of SE4



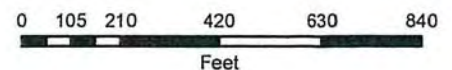
MANURE APPLICATION NOTES:

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 Non-Winter application within 300' Buffer needs 100' grass buffer on rivers and lakes, or 50' grass buffer on all other waterways. If insufficient buffer or within Tile Intake Buffer you must incorporate immediately.
 There is NO application within 25' of any waterway and within 100' of all wells.
 If soil tests exceed 21ppm Bray/16ppm Olsen in 300' Buffer, Phosphorus must be applied at crop removal rates.

Legend

- | | | | |
|---|-----------------------|---|-------------------|
|  | Field Boundary |  | CWI - Known Wells |
|  | Connector (Wetland) |  | Known Tile Intake |
|  | Stream (Intermittent) | | |
|  | Stream (Perennial) | | |
| | Soils | | |
|  | 300' Buffer | | |

Imagery Courtesy of Bing.





Manure Application Agreement

by and between Mark Coulter and Donald Coulter
producer name Field owner name

Field Name	Legal Description	Acres Available for Application
<u>Home Place</u>	<u>SW$\frac{1}{4}$ of Willow Lake, 31</u>	<u>147</u>
<u>Grandpas</u>	<u>NE$\frac{1}{4}$ minus the NE$\frac{1}{8}$ Lamerton 24</u>	<u>91</u>
<u>Redwood County</u>		

The undersigned hereby authorizes Mark Coulter to spread manure on the above referenced land for a period of ___ year(s). This agreement will renew year to year unless canceled 30 days prior to the anniversary date of the agreement. Cancellation of this agreement will be made in writing to the above listed person.

Land Owner (Printed): Donald A. Coulter

(Signature): Donald A. Coulter

Date: 3-27-17

Field Map Willow Lake 31, SW1/4



MANURE APPLICATION NOTES:







Winter application is NOT permitted within 300' Buffer or slopes greater than 6%.

Non-Winter application within 300' Buffer needs 100' grass buffer on rivers and lakes, or 50' grass buffer on all other waterways. If insufficient buffer or within Tile Intake Buffer you must incorporate immediately.

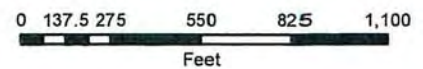
There is NO application within 25' of any waterway and within 100' of all wells.

If soil tests exceed 21ppm Bray/16ppm Olsen in 300' Buffer, Phosphorus must be applied at crop removal rates.

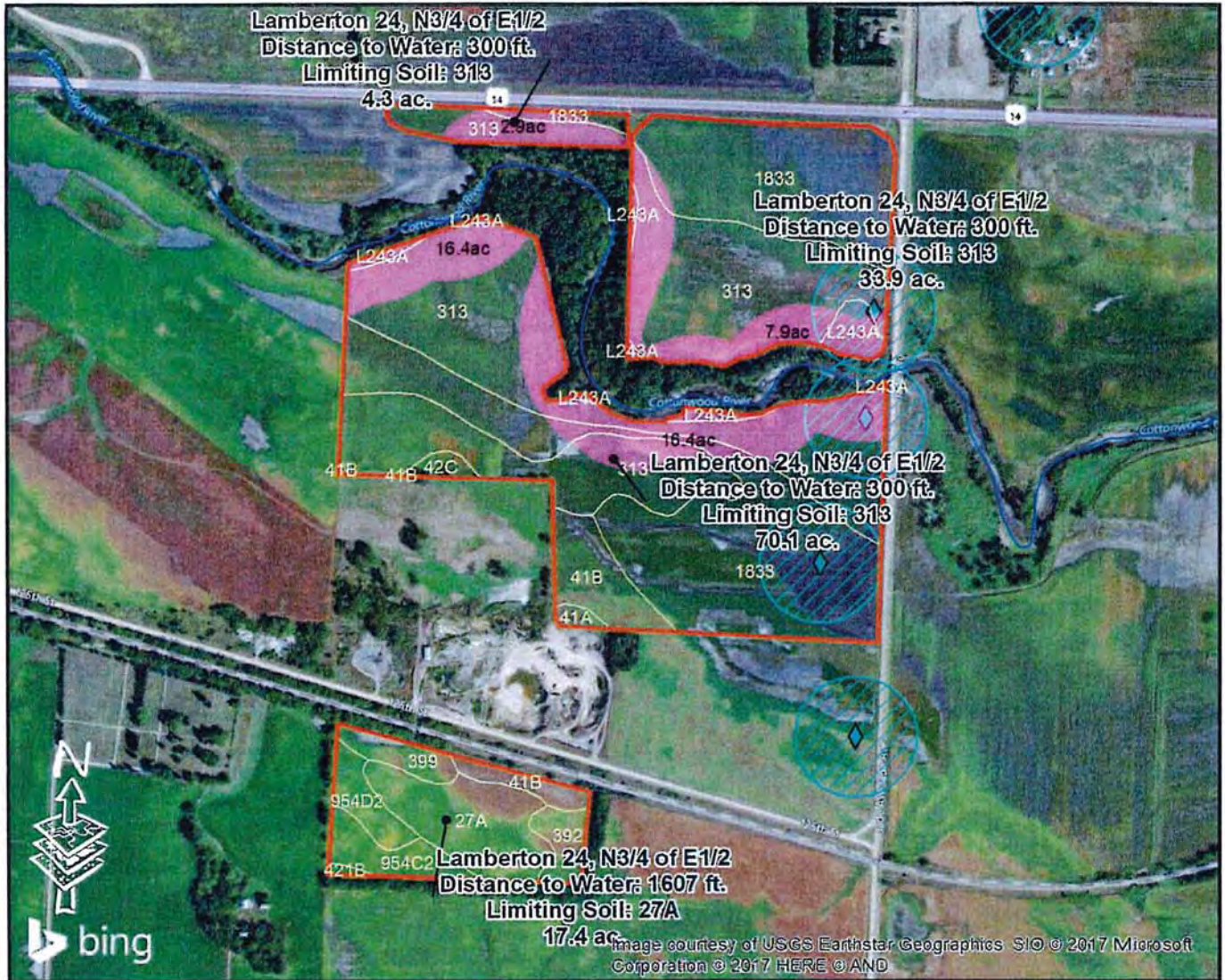
Legend

-  Field Boundary
-  Soils
-  300' Buffer
-  CWI - Known Wells
-  Well 300' Buffer
-  Known Tile Intake

Imagery Courtesy of Bing.



Field Map Lamberton 24, N3/4 of E1/2



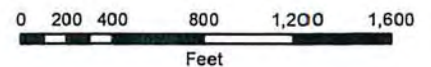
MANURE APPLICATION NOTES:

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 Non-Winter application within 300' Buffer needs 100' grass buffer on rivers and lakes, or 50' grass buffer on all other waterways. If insufficient buffer or within Tile Intake Buffer you must incorporate immediately.
 There is NO application within 25' of any waterway and within 100' of all wells.
 If soil tests exceed 21ppm Bray/16ppm Olsen in 300' Buffer, Phosphorus must be applied at crop removal rates.

Legend

- Field Boundary
- <all other values>
- Soils
- 300' Buffer
- ◆ CWI - Known Wells
- Well 300' Buffer
- Known Tile Intake

Imagery Courtesy of Bing.



OFFSET Summary and Results

OFFSET Ver 2.0
University of Minnesota
1/21/2017

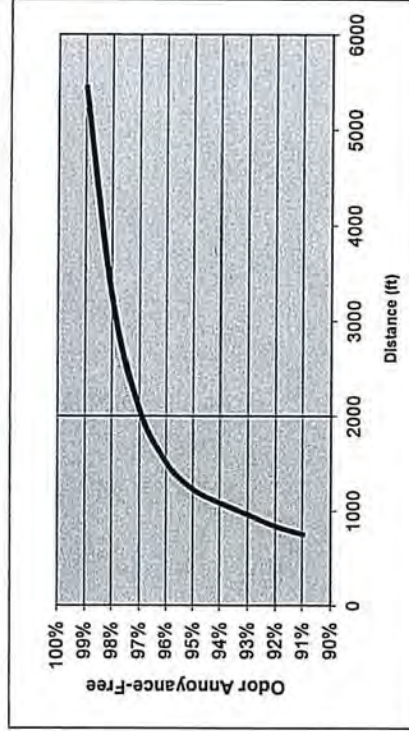
Farm Name: Mark Coulter
County: to Beranek site
Evaluator: NB
Date: 5-15-17

Source Characteristics Summary				Flux Rates (with control technology)				Source Emission Rates*			
Buildings	Similar Sources	Emit. Area sq ft	Control Technology Type	Percent Treated	Odor ou/s/m2	OFF-SET OER	H2S ug/s/m2	Ammonia ug/s/m2	Odor ou/s	H2S ug/s	Ammonia ug/s
Swine Finishing - deep pit	1	20008	None	0%	10.5	34.2	6.0	99.0	19527	11159	184116
Dairy - free stall	0	0	None	0%	1.8	6	0.7	31.0	0	0	0
Dairy - loose housing	0	0	None	0%	1.8	6	0.9	13.0	0	0	0
Area Sources											
Earthen manure storage		0	None		14.0	13	25.3	107.0	0	0	0
User added		0	None		0.0	0.0	0.0	0.0	0	0	0

*includes control technologies

Site Emissions	
Total Site Area (ft2)	20,008
Total Odor Emission Factor (TOEF)	68
Total Site H2S Emissions (mg/s)	11
Total Site H2S Emission AVERAGE (lbs/day)	2
Total Site H2S Emission MAX (lbs/day)	4
Total Site H2S Emissions (tons/yr)	0
Total Site Ammonia Emissions (mg/s)	184
Total Site Ammonia Emission AVERAGE (lbs/day)	35
Total Site Ammonia Emissions MAX (lbs/day)	70
Total Site Ammonia Emissions (tons/yr)	6

Source Edge to Nearest Neighbor (ft): 2000
OFF-SET Annoyance-free frequency: 97%



OFFSET Summary and Results

OFFSET Ver 2.0
University of Minnesota
1/21/2017

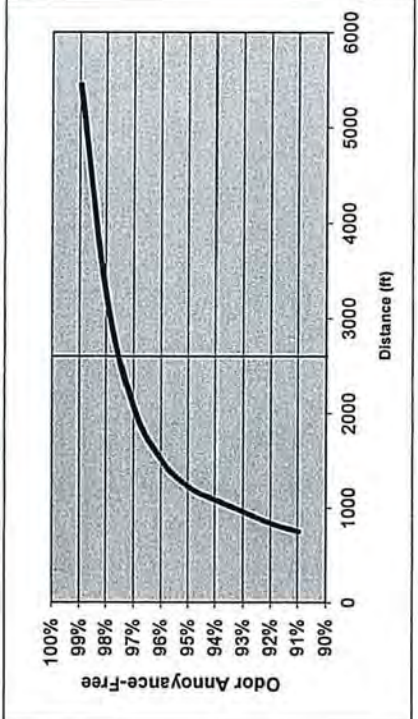
Farm Name: Mark Coulter to Donaghue site
 County: NB
 Evaluator: 5-15-17
 Date: 5-15-17

Source Characteristics Summary				Flux Rates (with control technology)			Source Emission Rates*				
Buildings	Similar Sources	Emit Area sq ft	Control Technology Type	Percent Treated	Odor ou/s/m2	OFFSET OER	H2S ug/s/m2	Ammonia ug/s/m2	Odor ou/s	H2S ug/s	Ammonia ug/s
Swine Finishing - deep pit	1	20008	None	0%	10.5	34.2	6.0	99.0	19527	11159	184116
Dairy - free stall	0	0	None	0%	1.8	6	0.7	31.0	0	0	0
Dairy - loose housing	0	0	None	0%	1.8	6	0.9	13.0	0	0	0
Area Sources											
Earthen manure storage		0	None		14.0	13	25.3	107.0	0	0	0
User added		0	None		0.0	0.0	0.0	0.0	0	0	0

*includes control technologies

Site Emissions	
Total Site Area (ft2)	20,008
Total Odor Emission Factor (TOEF)	68
Total Site H2S Emissions (mg/s)	11
Total Site H2S Emission AVERAGE (lbs/day)	2
Total Site H2S Emission MAX (lbs/day)	4
Total Site H2S Emissions (tons/yr)	0
Total Site Ammonia Emissions (mg/s)	184
Total Site Ammonia Emission AVERAGE (lbs/day)	35
Total Site Ammonia Emissions MAX (lbs/day)	70
Total Site Ammonia Emissions (tons/yr)	6

Source Edge to Nearest Neighbor (ft)	2600
OFFSET/Ammonia-free/frequency	97%



OFFSET Summary and Results

OFFSET Ver 2.0
University of Minnesota
1/21/2017

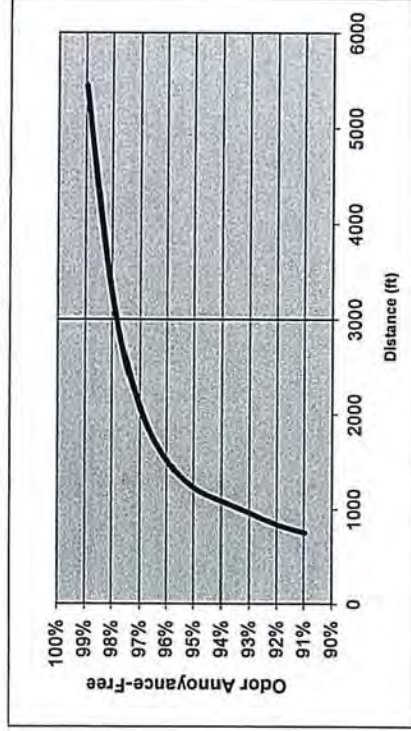
Farm Name: Mark Coulter
County: to Dauer site
Evaluator: NB
Date: 5-15-17

Source Characteristics Summary		Flux Rates (with control technology)				Source Emission Rates*					
Buildings	Similar Sources	Emit Area sq.ft	Control Technology Type	Percent Treated	Odor ou/s/m2	OFFSET	H2S ug/s/m2	Ammonia ug/s/m2	Odor ou/s	H2S ug/s	Ammonia ug/s
Swine Finishing - deep pit	1	20008	None	0%	10.5	34.2	6.0	99.0	19527	11159	184116
Dairy - free stall	0	0	None	0%	1.8	6	0.7	31.0	0	0	0
Dairy - loose housing	0	0	None	0%	1.8	6	0.9	13.0	0	0	0
Area Sources:											
Earthen manure storage	0	0	None		14.0	13	25.3	107.0	0	0	0
User added	0	0	None		0.0	0.0	0.0	0.0	0	0	0

*includes control technologies

Site Emissions	
Total Site Area (ft2)	20,008
Total Odor Emission Factor (TOEF)	68
Total Site H2S Emissions (mg/s)	11
Total Site H2S Emission AVERAGE (lbs/day)	2
Total Site H2S Emission MAX (lbs/day)	4
Total Site H2S Emissions (tons/yr)	0
Total Site Ammonia Emissions (mg/s)	184
Total Site Ammonia Emission AVERAGE (lbs/day)	35
Total Site Ammonia Emissions MAX (lbs/day)	70
Total Site Ammonia Emissions (tons/yr)	6

Source Edge to Nearest Neighbor (ft)	3000
OFFSET Annoyance-free frequency	98%



OFFSET Summary and Results

OFFSET Ver 2.0
University of Minnesota
1/21/2017

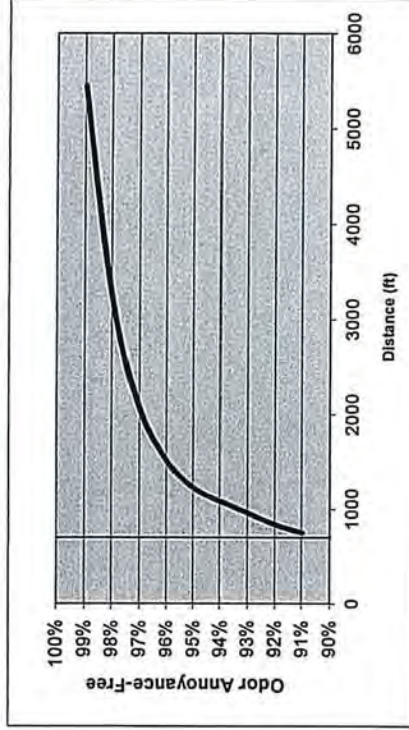
Farm Name: Mark Coulter to Coulter site
 County: NB
 Evaluator: 5-15-17
 Date:

Source Characteristics Summary

	Similar Sources	Emit Area sq ft	Control Technology Type	Percent Treated	Flux Rates (with control technology)			Source Emission Rates*			
					Odor ou/s/m2	OFFSET	H2S ug/s/m2	Ammonia ug/s/m2	Odor ou/s	H2S ug/s	Ammonia ug/s
Buildings											
Swine Finishing - deep pit	1	20008	None	0%	10.5	34.2	6.0	99.0	19527	11159	184116
Dairy - free stall	0	0	None	0%	1.8	6	0.7	31.0	0	0	0
Dairy - loose housing	0	0	None	0%	1.8	6	0.9	13.0	0	0	0
Area Sources											
Earthen manure storage		0	None		14.0	13	25.3	107.0	0	0	0
User added		0	None		0.0	0.0	0.0	0.0	0	0	0

*includes control technologies

Site Emissions	
Total Site Area (ft2)	20,008
Total Odor Emission Factor (TOEF)	68
Total Site H2S Emissions (mg/s)	11
Total Site H2S Emission AVERAGE (lbs/day)	2
Total Site H2S Emission MAX (lbs/day)	4
Total Site H2S Emissions (tons/yr)	0
Total Site Ammonia Emissions (mg/s)	184
Total Site Ammonia Emission AVERAGE (lbs/day)	35
Total Site Ammonia Emissions MAX (lbs/day)	70
Total Site Ammonia Emissions (tons/yr)	6
Source Edge to Nearest Neighbor (ft)	700
OFFSET/Annoyance-free frequency	90%



Conditions for Permit No. 10-17 (Mark Coulter)

1. The permit holder shall comply with all applicable laws, rules, and regulations, including but not limited to Redwood County Ordinance, as hereafter amended from time to time.
2. The permit holder shall allow the Redwood County Environmental Office to inspect the site for all purposes permitted by law whenever deemed necessary by the Redwood County Environmental Office.
3. All waste, refuse, and the like generated by or from the conditional use must be disposed of in the manner provided by the applicable local, state, and federal statutes, rules, and regulations. A copy of all disposal records and receipts must be kept on file for no less than five (5) years and shall be provided to the Redwood County Environmental Office upon request.
4. The permit holder shall contact all relevant local, state, and federal authorities/entities and inquire as to whether a permit and/or license is required. If a permit and/or license is required, the permit holder shall apply for and obtain any and all required permits and/or licenses. A copy of all such permits and/or licenses shall be provided to the Redwood County Environmental Office upon request.
5. The permit holder shall take appropriate and reasonable measures to assure that all surface water runoff satisfies all applicable local, state, and federal discharge standards.
6. The permit holder shall not allow the conditional use to be injurious to the use and enjoyment of other property in the immediate vicinity for the purposes already permitted.
7. The permit holder shall not allow the conditional use to impede the normal and orderly development and improvement of surrounding vacant property for uses predominant to the area.
8. Adequate utilities, access roads, drainage, and other necessary facilities will be provided and continue to be provided by the permit holder now and in the future.
9. Adequate measures shall be taken to prevent or control offensive odor, fumes, dust, and vibration, so that none of the foregoing will constitute a nuisance now or in the future.
10. The manner in which manure is stored and disposed of shall comply with all applicable local, state, and federal laws, rules, and regulations. If manure is applied to land, it shall be applied to land at agronomic rates. When applied to land, manure will be injected or incorporated within 24 hours. The permit holder shall retain a record of all locations where manure is applied to land. Such records shall be maintained for a period of no less than five (5) years, measured from the date the manure is applied to land. Such records shall be submitted to the Redwood County Environmental Office upon request.
11. The permit holder shall report any changes in spread agreements or spread areas to the Redwood County Environmental Office within thirty (30) days subsequent to any such change.
12. The County Board of Commissioners may at any time impose additional conditions as necessary and appropriate including but not limited to: the planting of trees and shrubs for use as a windbreak

for the feedlot operation; the furnishing and placing in a dedicated account, to be administered by the County, an annual payment for reclamation purposes based upon the number of Animal Units involved; and restrictions on the days on which a manure storage structure may be disturbed or manure may be transferred, applied, incorporated, or injected.

13. Dead livestock shall be stored and rendered in such a manner as to not create a nuisance. Disposal of dead livestock by burial is strictly prohibited. Dead hogs may be composted according to the Redwood County Swine Composting Protocol.
14. The permit holder shall construct the manure storage structure/concrete pit(s) to meet or exceed the minimum requirements set forth in the plans and specifications prepared by Nicholaus J. Rowe and signed by him on 4-21-17, attached to the permit holder's application.
15. A perimeter tile line shall be installed around the outside of the base of the pit(s) walls and an inspection manhole shall be provided where the perimeter tile branches out into the local drain tile system.
16. The permit holder shall install a warning sign at all entrances to the concrete pits. These signs shall warn the reader of the dangers of entering the pits.
17. The Redwood County Environmental Office shall be contacted for two on-site inspections during the construction of the pits: once when the floor is ready to be poured, and once when the walls are ready to be poured.
18. No construction on the pit shall be done between October 15th and April 15th, except by approval of the Zoning Administrator.
19. The Redwood County Planning Commission shall review the conditional use permit and shall be authorized to take any and all necessary action(s), including but not limited to revoking the conditional use permit and/or requiring the permit holder to reapply for a conditional use permit, if: 1) The Redwood County Environmental Office acquires information previously unavailable that indicates the terms and conditions of the permit do not accurately represent the actual circumstances of the permitted facility or the conditional use; 2) It is discovered subsequent to the issuance of the permit the permit holder failed to disclose all facts relevant to the issuance of the permit or submitted false or misleading information to the Redwood County Environmental Office, the Redwood County Planning Commission, or the Redwood County Board of Commissioners; 3) The Redwood County Environmental Office determines the permitted facility or conditional use endangers human health or the environment; and/or (4) The permit holder violates any of the herein described conditions, the Redwood County Ordinances, State statutes, or Federal laws.



REDWOOD COUNTY ENVIRONMENTAL OFFICE

*Planning & Zoning • Parks & Trails • GIS
Aquatic Invasive Species • Septic Inspector
Drainage Inspector • Agricultural Inspector*

PO BOX 130
REDWOOD FALLS
MINNESOTA 56283
PH: 507-637-4023

NOTICE OF PUBLIC HEARING

An *Animal Confinement Feedlot Conditional Use Permit Application* has been filed by Mark Coulter o/b/o landowner Darold & Sharon Coulter for the construction and operation of a new swine feedlot pursuant to Minnesota Statute 116.07 Subd. 7(a) and Section 17, Subd. 3 and Section 25 of Redwood County Zoning Ordinance. The proposed feedlot will consist of one 2400 head (960 County animal units, or 720 State animal units) total confinement barn housing finishing swine, with under-floor reinforced concrete pit to hold manure. The proposed feedlot will be located on the following described property, situated in the County of Redwood, State of Minnesota, to wit:

The Southwest Quarter (SW1/4) of Section 31, Township 110 North, Range 36 West, Willow Lake Township.

A public hearing thereon will be held before the Redwood County Planning Commission at the regularly scheduled Planning Commission meeting starting at 1:00 o'clock p.m. on Monday, the 22nd day of May, 2017, at the Board Room of the Redwood County Government Center located at 403 South Mill Street, Redwood Falls, MN 56283.

If you have any comments or questions regarding this matter, please contact the Redwood County Environmental Office by telephone at (507) 637-4023 or in writing at *Redwood County Environmental Office, P.O. Box 130, Redwood Falls, MN 56283.*

DATED: April 25th, 2017

Nicholas W. Brozek
Land Use & Zoning Supervisor
Redwood County Environmental Office



BERANEK/PATRICIA

ANDERSON/DONNA

BERANEK/GALEN O & CHRISTINE E

SCHILLING/THOMAS

SCHILLING/THOMAS J & SUSAN

SCHILLING/THOMAS

TRAXLER/DAMON M & ANGELA

IRLBECK/DIANE A

WEBER/BARRY & JIANN

EVANS/A JAMES & DONNA

Willow Lake

BERANEK/GALEN O & CHRISTINE E

BERANEK/MICHAEL J & LOUISE M

CHRISTIANSON/PATRICIA I

Charlestown

GLD PROPERTIES LLC

COULTER/DAROLD A & SHARON K

ROGOTZKE/ERWIN R & BRADLEY L

CHRISTIANSON/PATRICIA I

CHRISTIANSON/PATRICIA I

DONAGHUE/THOMAS & MARY LOU

RADACH/WILBUR L

ALTERMATT/MARK F & BARBARA J

ALTERMATT/TAMMY J

Waterbury

ALTERMATT/MARK

ALTERMATT/MARK & BARBARA J

Lamberton

DAUER/DENNIS/ET AL

LBECK/RONALD LIREV TRUST

RISTENSE/HOWARD W/IS
ARRAMILLARD
E/ET AL

County Hwy 17

160th St

Jade Ave

31

32

6

36

1



CUP Notification Area = 1/3 Mile From CUP Parcel

Legend



Township

CUP Parcel

Parcel

Section

Road

0

0.075

0.15

0.3

Miles



REDWOOD COUNTY ENVIRONMENTAL OFFICE

*Planning & Zoning • Parks & Trails • GIS
Aquatic Invasive Species • Septic Inspector
Drainage Inspector • Agricultural Inspector*

PO BOX 130
REDWOOD FALLS
MINNESOTA 56283
PH: 507-637-4023

REDWOOD COUNTY PLANNING COMMISSION

Mark Coulter

Conditional Use Permit Application #10-17

May 22, 2017

FINDINGS OF FACT

ORDINANCE CRITERIA – The Planning Commission may recommend the granting of a Conditional Use Permit in any district provided the proposed use is listed as a conditional use for the district and upon a showing that the standards and criteria stated in this Ordinance will be satisfied and that the use is in harmony with the general purposes and intent of this Ordinance and the Comprehensive Plan.

In determining whether the proposed use is in harmony with the general purposes and intent of the Ordinance and the Comprehensive Plan, the Planning Commission shall consider and make findings on the following questions:

- 1) Will the proposed use have an adverse impact on the health, safety, and general welfare of the residents in the surrounding neighborhood?

Yes _____ No _____

Why?: _____

- 2) Has evidence been presented that shows the proposed use will cause material injury to the use and enjoyment of other property in the surrounding neighborhood for land uses that are already permitted?

Yes _____ No _____

Why?: _____

3) Will the proposed use have a substantial adverse effect on property values or future development of land in the surrounding neighborhood for uses common to the area?

Yes _____ No _____

Why?: _____

4) Are there, or will there be provided, adequate utilities, access roads, drainage, off-street parking and loading areas, and other necessary facilities to support the proposed use of the property?

Yes _____ No _____

Why?: _____

5) Have adequate measures been taken, or will adequate measures be taken, to prevent or control offensive odor, fumes, dust, noise, lights, and vibration, so that no disturbance to neighboring properties will result?

Yes _____ No _____

Why?: _____

6) Is the proposed use of the property consistent with the general purpose and intent of the Zoning Ordinance and the goals and policies adopted in the Comprehensive Plan?

Yes _____ No _____

Why?: _____

NAME: _____

DATE: _____