Comprehensive Nutrient Management Plan (CNMP)

The Comprehensive Nutrient Management Plan (CNMP) is an important part of the conservation management system (CMS) for your Animal Feeding Operation (AFO). This CNMP documents the planning decisions and operation and maintenance for the animal feeding operation.

Farm/Facility: Sample Dairy Farm
c/o
123 Cow Drive
Holstein, TN 30000
555-555-5555

Owner/Operator: John Doe

Plan Period: Sep 2007 - Aug 2010

Certified Comprehensive Nutrient Management Plan (CNMP) Planner

As a Certified Comprehensive Nutrient Management Plan (CNMP) Planner, I certify that I have reviewed both the *Comprehensive Nutrient Management Plan* for technical adequacy and that the elements of the documents are technically compatible, reasonable and can be implemented.

Signature: _____ Date: _____
Name:
Title: Certification Credentials:

Conservation District (Optional)

As a Soil and Water Conservation District employee, I have reviewed both the *Comprehensive Nutrient Management Plan* and concur that the plan meets the District's conservation goals.

Signature: _____ Date: _____
Name:
Title:

Owner/Operator

As the owner/operator of this CNMP, I, as the decision maker, have been involved in the planning process and agree that the items/practices listed in each element of the CNMP are needed. I understand that I am responsible for keeping all the necessary records associated with the implementation of this CNMP. It is my intention to implement/accomplish this CNMP in a timely manner as described in the plan.

Signature: _____ Date: _____
Name:

Conservation Plan Map.

This may consist of several map documents to account for the entire planning area.

The plan map would include as a minimum the following:

1. Title block showing the following:
   - Title, “Plan Map”
   - Client’s name (individual or business)
   - "Prepared with assistance from USDA – Natural Resources Conservation Service"
   - and “ASSISTED BY [planners name]”
   - Name of the applicable conservation district, county, and State
   - Date prepared
2. Scale of the map
3. Information needed to locate the planning area, such as geographic coordinates, public land survey coordinates, etc.
4. North arrow
5. Appropriate map symbols and a map symbol legend on the map or as an attachment
   a. Boundary lines for the PLUs with labels (name, number, or both)
   b. Land-use designation and applicable land use modifiers for each PLU
   c. Acreage for each PLU
   d. *Designated buffer & no manure application areas*
6. Location of planned and applied conservation practices, using NRCS map symbols (see Title 170, National Map Symbol Handbook, Part 601)

1*Sample Soils Map from Web Soil Survey*

Soils Report (This is only an EXAMPLE – the soils do not match this plan):

Minor map unit components are excluded from this report.

Morgan County, Tennessee

Map Unit: LlB—Lily loam, 2 to 6 percent slopes

Component: Lily (85%)

The Lily component makes up 85 percent of the map unit. Slopes are 2 to 6 percent. This component is on interfluves on plateaus. The parent material consists of fine-loamy residuum weathered from sandstone. Depth to a root restrictive layer, bedrock, lithic, is 21 to 39 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria.

Component: Ramsey (5%)

Generated brief soil descriptions are created for major components. The Ramsey soil is a minor component.

Component: Lonewood (5%)

Generated brief soil descriptions are created for major components. The Lonewood soil is a minor component.

Component: Gilpin (5%)

Generated brief soil descriptions are created for major components. The Gilpin soil is a minor component.

Map Unit: LlC—Lily loam, 6 to 12 percent slopes

Component: Lily (85%)

The Lily component makes up 85 percent of the map unit. Slopes are 6 to 12 percent. This component is on interfluves on plateaus. The parent material consists of fine-loamy residuum weathered from sandstone. Depth to a root restrictive layer, bedrock, lithic, is 21 to 39 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Component: Ramsey (5%)

Generated brief soil descriptions are created for major components. The Ramsey soil is a minor component.

Component: Lonewood (5%)

Generated brief soil descriptions are created for major components. The Lonewood soil is a minor component.

Component: Gilpin (5%)

Generated brief soil descriptions are created for major components. The Gilpin soil is a minor component.

Map Unit: RrD—Ramsey-Rock outcrop complex, 12 to 20 percent slopes

Component: Ramsey (70%)

The Ramsey component makes up 70 percent of the map unit. Slopes are 12 to 20 percent. This component is on hillslopes on plateaus. The parent material consists of loamy residuum weathered from sandstone. Depth to a root restrictive layer, bedrock, lithic, is 7 to 20 inches. The natural drainage class is somewhat excessively drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

Component: Rock outcrop (20%)

Generated brief soil descriptions are created for major soil components. The Rock outcrop is a miscellaneous area.

Component: Minor component (10%)

Generated brief soil descriptions are created for major components. The Minor component soil is a minor component.

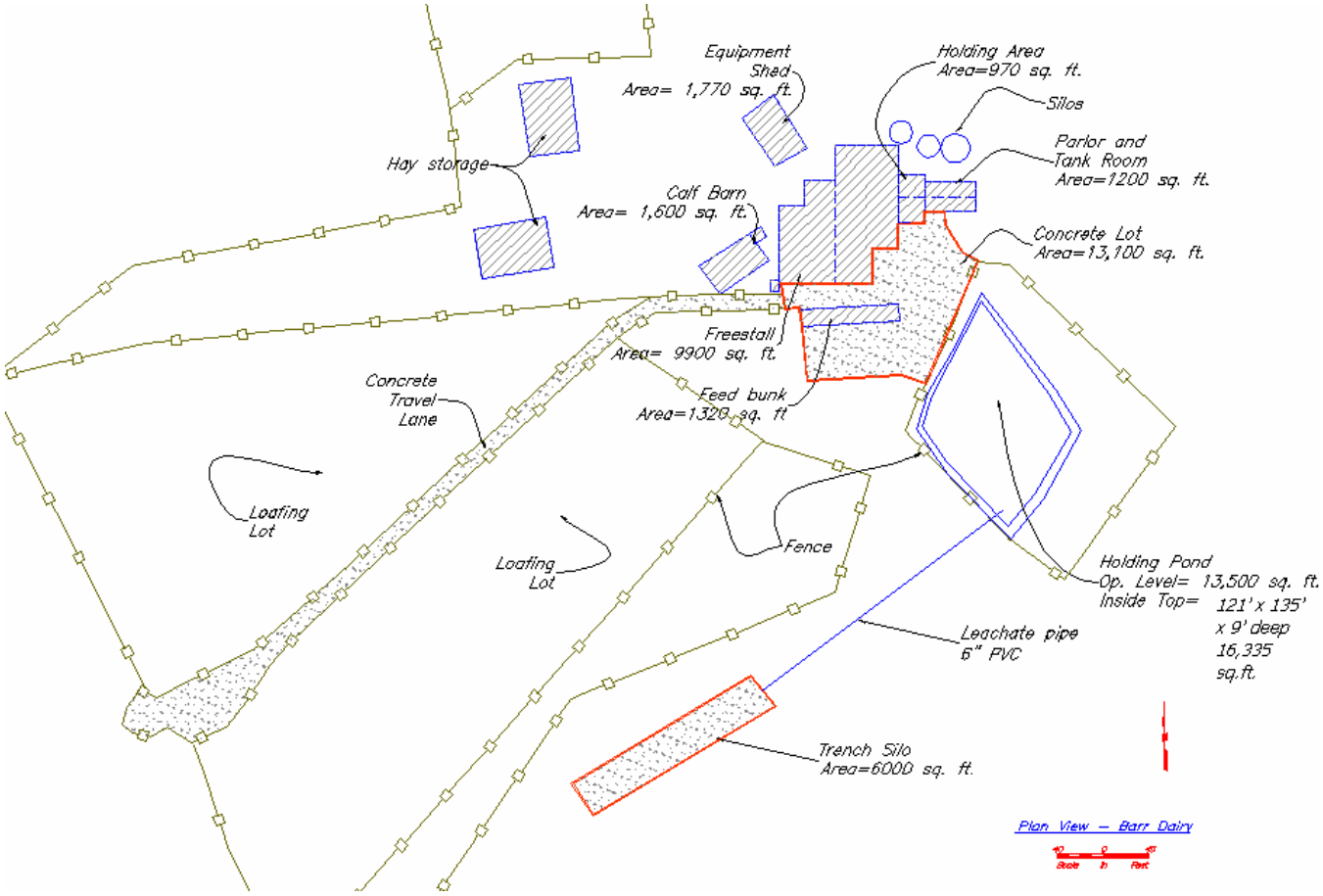
Map Unit: W—Water

Component: Water (100%)

Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

Production Area

Production Area Map (showing existing and planned structures)



Production Area Conservation Practices – Record of Decisions
(This would be a Printout from CST)

Composting Facility (Code 317)
A composting facility is a structure or device that uses controlled aerobic decomposition to transform waste organic material into a biologically stable product that can be used as a soil amendment. **Implementation Requirements** will be prepared by NRCS for the installation of this practice.

Tract	Land Unit	Planned Amount	Planned Date	Applied Amount	Applied Date
2345	HQ 1	1	April 2008		

Waste Storage Facility (Code 313)
A waste storage facility is an agricultural waste storage impoundment/containment made by constructing an embankment and/or excavating a pit or dugout, or fabricating a structure. **Implementation Requirements** will be prepared by NRCS for the installation of this practice.

Tract	Land Unit	Planned Amount	Planned Date	Applied Amount	Applied Date
2345	HQ 1	1	July 2008		

All NRCS conservation practices shall be installed, operated and maintained according to NRCS conservation practice standards and associated technical specifications contained in the **Implementation Requirements**.

Animal Inventory

Animal Group	Type or Production Phase	Number of Animals	Average Weight (Lbs)	Confinement Period	Manure Collected (%)	Storage Where Manure Will Be Stored
Lactating cows	Milk cow (dairy)	175	1,300	Jan Early - Dec Late	50	Holding pond
Dry cows & close ups	Dry cow (dairy)	60	1,300	Jan Early - Dec Late	0	
Heifers	Growing heifer/steer (dairy)	75	1,000	Jan Early - Dec Late	0	
New calves	Calf (dairy)	75	200	Jan Early - Dec Late	100	Calf shed
Young heifers	Weaned heifer/steer (dairy)	75	500	Jan Early - Dec Late	0	

(1) Number of Animals is the average number of animals that are present in the production facility at any one time.
(2) If Manure Collected is less than 100%, this indicates that the animals spend a portion of the day outside of the production facility or that the production facility is unoccupied one or more times during the confinement period.

Manure Storage

Waste Management System.
The current earthen storage facility (holding pond) has the capacity to store 50 percent of the manure and 100 percent of the runoff from the lot during the wettest period of winter. The other 50 percent of the manure is presumed to be deposited in the loafing lots by the cattle. The existing earthen storage structure top dimensions are 135 ft. x 121 ft. with a total depth of 9 ft. The system must be operated with two storage periods during the year; however, during these periods waste levels may enter into emergency storm storage depending on weather conditions.

Storage ID	Type of Storage	Pumpable or Spreadable Capacity	Annual Manure Collected	Maximum Days of Storage
Holding pond	Holding pond	503,800 Gal	1,244,000 Gal	147
Calf shed	Manure pack	300 Tons	264 Tons	415

Waste Storage Pond

Storage Type	Storage Volume (gallon)
Freeboard	118,400
25-yr 24-hr	121,500
Available Storage	503,800
Permanent	74,800
Total	818,500

	Storage Period 1 November – March (151 Days)	**Storage Period 2** April – October (214 Days)	**Yearly Storage Totals**
	Gallons	Gallons	Gallons
Manure (50% of 175 lactating cows)	167,062	236,765	403,827
Bedding (Sawdust)	18,865	26,735	45,600
Wash water (249 gal./day)	37,724	53,470	91,194
Silage leachate	7,630	7,630	15,260
Runoff From silage bunker and 13,000 ft^2 concrete lot	269,280	312,984	582,264
Direct rainfall (precip-evap)	142,494	-39,414	103,080
Total	**~ 644,000**	**~ 598,000**	**~ 1,244,000**

** Table does not include permanent storage, 25yr-24hr storm storage, or freeboard volume.

Land Treatment Conservation Practices – Record of Decisions

(This would be a Printout from CST)

Conservation Crop Rotation (Code 328)

Conservation crop rotation is growing a planned sequence of various crops on the same piece of land for a variety of conservation purposes. See the attached Implementation Requirements document for 328 Conservation Crop Rotation for the planned rotation and tillage system.

Tract	Land Unit	Planned Amount	Planned Date	Applied Amount	Applied Date
1234	1	28.6 ac	2007-09-01		
1234	2	20.8 ac	2007-09-01		
1234	3	54.2 ac	2007-09-01		
1234	4	33.9 ac	2007-09-01		
1234	5	26.8 ac	2007-09-01		
1234	6	22.8 ac	2007-09-01		
1234	6	17.5 ac	2007-09-01		

Contour Farming (Code 330)

Contour farming is using ridges and furrows formed by tillage, planting and other farming operations to change the direction of runoff from directly downslope to around the hillslope. See the attached Implementation Requirements for the Contour Farming.

Tract	Land Unit	Planned Amount	Planned Date	Applied Amount	Applied Date
1234	1	28.6 Acres			Prior 2007
1234	2	20.8 Acres			Prior 2007

Cover Crop (Code 340)

Cover crop is growing a crop of grass, small grain, or legumes primarily for seasonal protection and soil improvement. See the attached Implementation Requirements for the Cover Crops.

Tract	Land Unit	Planned Amount	Planned Date	Applied Amount	Applied Date
1234	1	28.6 ac	9/2008		
1234	2	20.8 ac	9/2009		
1234	3	54.2 ac	9/2008		
1234	4	33.9 ac	9/2008		
1234	5	26.8 ac	9/2008		
1234	6a	22.8 ac	9/2008		
1234	6b	17.5 ac	9/2010		

Field Border (Code 386)

Field borders are strips of permanent vegetation (grasses, legumes, forbs, or shrubs) established on one or more sides of a field. See the attached Implementation Requirements for the Field Border.

Tract	Land Unit	Planned Amount	Planned Date	Applied Amount	Applied Date
1234	6	0.6 Acres	May 2009		

Residue and Tillage Management, No Till (Code 329)
The residue and tillage management no-till/strip till/direct seed practice addresses the amount, orientation, and distribution of crop and other plant residue on the soil surface year-round. Crops are planted and grown in narrow slots or tilled strips established in the untilled seedbed of the previous crop. See the attached Implementation Requirements document for 345 Residue and Tillage Management (reduced till) for the planned rotation and tillage system.

Tract	Land Unit	Planned Amount	Planned Date	Applied Amount	Applied Date
1234	1	28.6 ac	2007-09-01		
1234	2	20.8 ac	2007-09-01		
1234	3	54.2 ac	2007-09-01		
1234	4	33.9 ac	2007-09-01		
1234	5	26.8 ac	2007-09-01		
1234	6	22.8 ac	2007-09-01		
1234	6	17.5 ac	2007-09-01		

Filter Strip (Code 393)
A filter strip is an area of vegetation established for removing sediment, organic material, and other pollutants from runoff and wastewater. See the attached Implementation Requirements for the Field Border.

Tract	Land Unit	Planned Amount	Planned Date	Applied Amount	Applied Date
1234	1	1.3 Acres	May 2009		
1234	7	1.9 Acres	May 2009		

Grassed Waterway (Code 412)
A grassed waterway is a shaped or graded channel that is established with suitable vegetation to convey surface water at a non-erosive velocity using a broad and shallow cross section to a stable outlet. Maintain the Grassed Waterway per Operation and Maintenance specified in the Implementation Requirements attached.

Tract	Land Unit	Planned Amount	Planned Date	Applied Amount	Applied Date
1234	3			3.1 ac	May 2003

Nutrient Management (Code 590)
Nutrient management involves managing the amount, placement, and timing of plant nutrients to obtain optimum yields and minimize the risk of surface and groundwater pollution. See the attached Nutrient Management Implementation Requirements for application and maintenance.

Tract	Land Unit	Planned Amount	Planned Date	Applied Amount	Applied Date
1234	1	28.6 ac	2007-09-01		
1234	2	20.8 ac	2007-09-01		
1234	3	54.2 ac	2007-09-01		
1234	4	33.9 ac	2007-09-01		
1234	5	26.8 ac	2007-09-01		
1234	6a	22.8 ac	2007-09-01		
1234	6b	17.5 ac	2007-09-01		
1234	7	49.4 ac	2007-09-01		

All NRCS conservation practices shall be installed, operated and maintained according to NRCS conservation practice standards and associated technical specifications contained in the **Implementation Requirements**.

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

328 - Conservation Crop Rotation Implementation Requirements

Producer: John Doe
Project or Contract: _____
Location: Holstein, TN
County: Morgan
Farm Name: _____
Tract Number: 1234

Practice Location Map

(showing detailed aerial view of where practice is to be installed on farm/site, showing all major components, stationing, relative location to any landmarks, and survey benchmarks)

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- ✓ Cover Sheet
- ___ Specifications
- ___ RUSLE2 or WEPS Printouts
- ___ Operation & Maintenance

Utility Safety / One-Call System Information

Description of work:

Establish and maintain the planned rotation to achieve the identified purposes.

NRCS Review Only

Designed By:	Norman Widman	**Date:**	2/26/2015
Checked By:	J Roberts	**Date:**	2/26/2015
Approved By:	Norman Widman	**Date:**	2/26/2015

328 - Conservation Crop Rotation
Implementation Requirements

The Practice Purpose(s):

✓ Reduce erosion from wind and water.

✓ Improve soil health.

✓ Manage the balance of plant nutrients.

___ Supply nitrogen through biological nitrogen fixation to reduce energy use.

___ Manage saline seeps.

___ Manage plant pests (weeds, insects, and diseases).

___ Conserve water.

✓ Provide feed for domestic livestock.

___ Provide annual crops for bioenergy feedstocks.

___ Provide food and cover for wildlife, including pollinator forage, cover, and nesting.

Complete the following table displaying the crop rotation design - or, attach a RUSLE2 or WEPS printout that shows rotation sequence by field.

___ Printouts Attached

Field (s)	*Acres*	*Purpose(s) #'s From Above*	*Crops to be grown*	*Length each crop grown in the rotation*	*Crop Sequence*	*Total Length of Rotation (years)*
1, 2, 6b	66.9	All Checked	Corn Silage, Wheat Cover Crop, Fescue Hay	1Yr Corn silage w/cover crop, 3 yea	Corn silage w/cover crop 0 3 year fesc	4
3, 4, 5, 6a	137.7	All Checked	Corn silage w/Cover Crop	Continuous	Continuous Corn silage w/Cover Crop	1

328 - Conservation Crop Rotation
Implementation Requirements

If tillage is used, specify time and type of primary tillage for each crop - OR, attach a RUSLE2 or WEPS printout that shows rotation sequence by field.

___ Printouts Attached

Field (s)	*Type of Primary Tillage* (for this crop)	*Time of Primary Tillage*
All	No till corn and no till cover crops	At Planting

OPERATION AND MAINTENANCE

✓ Rotations shall provide for acceptable substitute crops in case of crop failure or shift in planting intentions for weather-related or economic reasons. Acceptable substitutes are crops having similar properties that will accomplish the purpose of the original crop.

Planned Crop Substitutions			
Field (s)	*Planned Crops*	*Substitute Crop*	*Additional Criteria (e.g. may need a cover crop)*
1, 2, 6b	Corn Silage, Cover Crops, Fescue	2nd year of Corn Silage with Cover Crop and 2 years of Fescue	NA
3, 4, 5, 6a	Corn Silage w/Cover Crops	Sorghum Sudan Grass	Establish with No Till

✓ Evaluate the rotation and the crop sequence to determine if the planned system is meeting the planned purposes.

United States Department of Agriculture
Natural Resources Conservation Service

329 - Residue and Tillage Management No Till Implementation Requirements

Producer: John Doe
Project or Contract:
Location: Holstein, TN
County: Morgan
Farm Name:
Tract Number: 1234

Practice Location Map

(showing detailed aerial view of where practice is to be installed on farm/site, showing all major components, stationing, relative location to any landmarks, and survey benchmarks)

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- ✓ Cover Sheet
- ✓ Specifications (Utilize the RUSLE2 Profile or WEPS Printouts that show operations and residue amounts - Specify fields in printout)
- ✓ Operation & Maintenance

Utility Safety / One-Call System Information

Description of work:

Use No Till Planter and Drill technology to establish corn silage and cover crops.

NRCS Review Only

Designed By:	Norman Widman	**Date:**	2/26/2015
Checked By:	J Roberts	**Date:**	2/26/2015
Approved By:	Norman Widman	**Date:**	2/26/2015

329 - Residue and Tillage Management
No Till
Implementation Requirements

The Practice Purpose(s): (check all that apply)

✓ Reduce sheet, rill, and wind erosion.

__ Reduce tillage-induced particulate emissions.

✓ Maintain or increase soil quality and organic matter content.

✓ Reduce energy use.

__ Increase water use and precipitation storage efficiency.

__ Provide food and escape cover for wildlife

Attach a RUSLE2 and/or WEPS profile summary printout that displays:

1. Planned crop(s).
2. Specific equipment utilized for no till for each crop.
3. At a minimum specify the planned residue amounts for: (1) after harvest of the prior crop and (2) for planned residue cover after seeding the planned crop.
4. The Soil Tillage Intensity Rating (STIR) and Soil Condition Index (SCI).

Crop stubble height during the time of expected evaporation losses shall be:

__ At least 10 inches for crops with a row spacing of less than 15 inches;

__ At least 15 inches for crops with a row spacing of 15 inches or greater.

These stubble heights shall be present on at least 60% of the field.

Trapping Snow. Crop stubble height during the time significant snowfall is expected to occur shall be:

__ At least 10 inches for crops with a row spacing of less than 15 inches;

__ At least 15 inches for crops with a row spacing of 15 inches or greater.

These heights shall be present over at least 50% of the field.

Fall field operations that disturb residue shall be done as close to perpendicular as possible to the direction of prevailing winds during the time that significant snowfall is expected to occur.

Operation and Maintenance:

Evaluate/measure the crop residues cover and orientation after each crop to ensure the planned amounts and orientation are achieved. Adjust management as needed to maintain adjusted residue amount and orientation or adjust the planting and/or harvesting equipment.

ATTACHMENTS:

✓ **RUSLE2 and/or** __ **WEPS Printouts**

Attachment for No Till (Code 329)

No Till (Code 329) and Field Operations

Info: Fields 1, 2, 6B

Approx. Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
4/4/0	Manure spreader, slurry		59
4/30/0	Sprayer, kill crop		88
5/1/0	Fert applic. surface broadcast		90
5/10/0	No till Planter, double disk opnr w/fluted coulter	Corn, silage	88
5/11/0	Sprayer, pre-emergence		87
6/10/0	Fert applic. side-dress, liquid		78
8/20/0	Harvest, silage		60
9/4/0	Manure spreader, slurry		58
9/30/0	Sprayer, kill crop		52
10/1/0	Fert applic. surface broadcast		52
10/10/0	No Till Drill or air seeder single disk openers 7-10 in spac.	Wheat, winter, silage, mid south, 7in rows	49
4/28/1	Harvest, silage		37
4/30/1	Begin growth	Tall fescue, y2 regrowth after cut	37
7/15/1	Harvest, hay, grass	Tall fescue, y2 regrowth after cut	32
7/20/1	Fert applic. surface broadcast		32
9/1/1	Harvest, hay, grass	Tall fescue, y2 senesc thru yr3 greenup	38
5/25/2	No operation		36
5/26/2	Harvest, hay, grass	Tall fescue y3+, regrowth after cut	52
6/1/2	Fert applic. surface broadcast		53
7/15/2	Harvest, hay, grass	Tall fescue y3+, regrowth after cut	54
7/20/2	Fert applic. surface broadcast		55
9/1/2	Harvest, hay, grass	Tall fescue, y2 senesc thru yr3 greenup	54
5/25/3	No operation		40
5/26/3	Harvest, hay, grass	Tall fescue y3+, regrowth after cut	54
6/1/3	Fert applic. surface broadcast		56
7/15/3	Harvest, hay, grass	Tall fescue y3+, regrowth after cut	55
7/20/3	Fert applic. surface broadcast		56
9/1/3	Harvest, hay, grass	Tall fescue, y2 senesc thru yr3 greenup	54

Attachment for No Till (Code 329) – Con't

Info: Fields 3, 4. 5, 6A

Approx. Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
4/30/0	Sprayer, kill crop		95
5/1/0	Fert applic. surface broadcast		96
5/10/0	No Till Planter, double disk opnr w/fluted coulter	Corn, silage	95
5/11/0	Sprayer, pre-emergence		95
6/10/0	Fert applic. side-dress, liquid		90
8/20/0	Harvest, silage		72
8/21/0	No Till Drill or air seeder single disk openers 7-10 in spac.	Wheat, winter, silage, mid south, 7in rows	73

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Natural Resources Conservation Service

330 - Contour Farming Implementation Requirements

Producer:	John Doe	**Project or Contract:**	
Location:	Holstein, TN	**County:**	Morgan
Farm Name:		**Tract Number:**	1234

Practice Location Map

(showing detailed aerial view of where practice is to be installed on farm/site, showing all major components, stationing, relative location to any landmarks, and survey benchmarks)

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- ✓ Cover Sheet
- ✓ Specifications
- ___ Drawings
- ___ Cost Estimate and Project Bid Form
- ✓ Operation & Maintenance

Utility Safety / One-Call System Information

On the map, delineate the contour baseline(s), correction areas, and stable outlets for concentrated flow.

Description of work:

Crop and field operations will be performed on the contour.

NRCS Review Only

Designed By:	Norman Widman	**Date:**	2/26/2015
Checked By:	J Roberts	**Date:**	2/26/2015
Approved By:	Norman Widman	**Date:**	2/26/2015

330 - Contour Farming
Implementation Requirements

The Practice Purpose(s):

✓ Reduce sheet and rill erosion.

✓ Reduce transport of sediment, other solids and the contaminants attached to them.

✓ Reduce transport of contaminants found in solution runoff.

✓ Increase water infiltration.

Site Planning Conditions for the Dominant Critical Soil Map Unit/Component			
Planning Map Unit/Component	**Planning Slope %**	**Planning Slope Length (ft)**	**Percent Absolute Contour Row Grade Planned**
Dewey Silty Clay	16-25	150-300	1 percent

Maximum and Minimum Contour Row Grades	
Maximum Contour Row Grade (Percent) The crop rows shall have sufficient grade to ensure that runoff water does not pond and cause unacceptable crop damage.	**Maximum Contour Row Grade (Percent)** The maximum row grade shall not exceed: (a) 1/2 of the up-and-down hill-slope percent used for conservation planning, or (b) 10 percent, whichever is less. Up to a 25-percent deviation from the design row grade is permitted within 150 feet of a stable outlet.
1 Percent	4 Percent

Minimum Ridge Heights and In-Row Plant Spacing		
Row spacing greater than 10 inches	**Row spacing 10 inches or less**	**No-Tillage Planting**
The minimum ridge height shall be 2 inches during the period of the rotation that is most vulnerable to sheet and rill erosion (RUSLE2)	The minimum ridge height shall be one inch for close-grown crops, such as small grains. Plant height shall be at least 6 inches high and the spacing between plants within the row shall not be greater than 2 inches during the time most vulnerable to sheet and rill erosion.	No minimum ridge height

Corrections Areas: Where field operations begin to converge between two non-parallel contour baselines, establish a correction area that either is permanently in sod, established to an annual close-grown crop.

OPERATION AND MAINTENANCE

✓ Perform all tillage and planting operations parallel to contour baselines or terraces, diversions, or contour buffer strip boundaries where these practices are used, provided the applicable row grade criteria are met.

✓ Where terraces, diversions, or contour buffer strips are not present, maintain contour markers on grades that, when followed during establishment of each crop, will maintain crop rows at designed grades. Contour markers may be field boundaries, a crop row left untilled near or on an original contour baseline or other readily identifiable, continuous, lasting marker. All tillage and planting operations shall be parallel to the established marker. If a marker is lost, reestablish a contour baseline within the applicable criteria set forth by this standard prior to seedbed preparation for the next crop.

✓ Farming operations should begin on the contour baselines and precede both up and down the slope in a parallel pattern until patterns meet. Where field operations begin to converge between two non-parallel contour baselines, establish a correction area that either is permanently in sod, established to an annual close-grown crop.

✓ Where contour row curvature becomes too sharp to keep machinery aligned with rows during field operations, establish sod turn strips on sharp ridge points or other odd areas as needed.

United States Department of Agriculture
Natural Resources Conservation Service

340 - Cover Crop Implementation Requirements

Producer:	John Doe	**Project or Contract:**	
Location:	Holstein, TN	**County:**	Morgan
Farm Name:		**Tract Number:**	1234

Practice Location Map

(showing detailed aerial view of where practice is to be installed on farm/site, showing all major components, stationing, relative location to any landmarks, and survey benchmarks)

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- ✓ Cover Sheet
- ✓ Specifications
- ___ Cost Estimate and Project Bid Form
- ✓ Operation & Maintenance

Utility Safety / One-Call System Information

Description of work:

Establish cover Crops after Corn Silage on all crop fields

NRCS Review Only

Designed By:	Norman Widman	**Date:**	2/26/2015
Checked By:	J Roberts	**Date:**	2/26/2015
Approved By:	Norman Widman	**Date:**	2/26/2015

340 - Cover Crop
Implementation Requirements

The Practice Purpose(s):

✓ Reduce erosion from wind and water.

___ Increase soil organic matter content.

✓ Capture and recycle or redistribute nutrients in the soil profile.

___ Promote biological nitrogen fixation and reduce energy use.

___ Increase biodiversity.

___ Suppress weeds.

___ Manage soil moisture.

___ Minimize and reduce soil compaction.

Seeding and Management: *Fill in the following table with the appropriate cover crop information for each field.*

Field #	Acres	Species	Seeding rate (lbs/ac PLS*)	Seeding date range	Seeding method	Termination date or stage	Termination method
1, 2, 6b	66.9	Rye	80	Sept	No Till Drill	Harvest Silage April	Chemical Kill
3, 4, 5, 6a	137.7	Rye	80	Sept	No Till Drill	1 Wk Prior to Plant Corn	Chemical Kill

**To figure Pure Live Seed (PLS) rates, multiply the percent purity by the percent germination. Divide the seeding rate by the percent PLS to find the bulk seed needed per acre. For example: 98% purity X 60% germination = 0.588% PLS 10 lbs/acre X 0.588% PLS = 17 lbs/acre.*

340 - Cover Crop
Implementation Requirements

Soil Amendments, if needed. *Apply soil amendments prior to seedbed preparation or before seeding if a no-till drill is used.*

Field	N fertilizer needed (lbs/acre)	K20 fertilizer needed (lbs/acre)	P2O5 fertilizer needed (lbs/acre)
	NA	NA	NA

Additional specifications:

OPERATION AND MAINTENANCE

✓ Control growth of the cover crop to reduce competition from volunteer plants and shading.

___ Control weeds in cover crops by mowing or by using other pest management techniques.

___ Control soil moisture depletion by selecting water efficient plant species and terminating the cover crop before excessive transpiration.

✓ Evaluate the cover crop to determine if the cover crop is meeting the planned purpose(s). If the cover crop is not meeting the purpose(s) adjust the management, change the species of cover crop, or choose a different technology.

United States Department of Agriculture
Natural Resources Conservation Service

386 - Field Border Implementation Requirements

Producer:	John Doe	**Project or Contract:**	
Location:	Holstein, TN	**County:**	Morgan
Farm Name:		**Tract Number:**	1234

Practice Location Map

(showing detailed aerial view of where practice is to be installed on farm/site, showing all major components, stationing, relative location to any landmarks, and survey benchmarks)

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- ✓ Cover Sheet
- ✓ Specifications
- ___ Drawings
- ___ Cost Estimate and Project Bid Form
- ✓ Operation & Maintenance

Utility Safety / One-Call System Information

Description of work:

Plant 25 feet wide field border on the south side of field 6.

NRCS Review Only

Designed By:	Norman Widman	**Date:**	2/26/2015
Checked By:	J Roberts	**Date:**	2/26/2015
Approved By:	Norman Widman	**Date:**	2/26/2015

386 – Field Border
Implementation Requirements

The Practice Purpose(s):

- ✓ Reduce erosion from wind and water
- ✓ Protect soil and water quality
- ___ Provide wildlife food and cover and pollinator habitat
- ___ Increase carbon storage
- ___ Improve air quality

Field Number/Location: 6a and 6b **Acres Installed:** 0.6 Ac **Seeding Date:** April 10-20

Average Width: 25 ft **Minimum Width:** 25 **Field Border Length:** 1045 feet

Site Preparation: Use a Burndown Chemical prior to planting

Planting Method: No Till Drill

Planting Description (*e.g.* shrubs established on outside edge of area, *etc.*):

SEEDING RATES AND SPECIES (woody species units are plants/linear ft)

Plant species		Lbs/acre of seed (PLS)	Total lbs of seed for planned acreage
Orchardgrass	1	12 lbs/ac (PLS)	7.2 Lbs PLS
White clover	2	.5 lbs/ac (PLS)	.3 lbs PLS
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	TOTALS =>	12.50	7.50

FERTILIZERS AND AMENDMENTS

Fertilizer Element	Fertilizer Form	Fertilizer Amount (lbs/acre)
N	(Urea) *e.g. DAP*	100 as N
P	0-46-0 *e.g. DAP*	100 as P_2O_5
K	0-0-60 *e.g. K_2SO_4*	100 as K_2O
S	*e.g. K_2SO_4*	as S
Lime		
Gypsum		

386 – Field Border
Implementation Requirements

Operation and Maintenance: (check all that apply)

✓ Repair storm damage.

✓ Remove sediment from above or within the field border when accumulated sediment either alters the function of the field border or threatens the degradation of the planted species' survival.

✓ Shut off sprayers and raise tillage equipment to avoid damage to field borders.

✓ Shape and reseed border areas damaged by animals, chemicals, tillage, or equipment traffic.

✓ Maintain desired vegetative communities and plant vigor by liming, fertilizing, mowing, disking, or burning and controlling noxious weeds to sustain effectiveness of the border.

___ Repair and reseed ephemeral gullies and rills that develop in the border.

___ Minimally invasive tillage (e.g. paraplowing) may be performed in rare cases where compaction and vehicle traffic have degraded the field border function. The purpose of the tillage is strictly to decrease bulk density and increase infiltration rates so as to provide a better media for reestablishment of vegetation and field border function.

___ Maintenance activities that result in disturbance of vegetation should not be conducted during the nesting season of grass nesting birds.

✓ Avoid vehicle traffic when soil moisture conditions are saturated.

United States Department of Agriculture
Natural Resources Conservation Service

393 - Filter Strip Implementation Requirements

Producer:	John Doe	**Project or Contract:**	
Location:	Holstein, TN	**County:**	Morgan
Farm Name:		**Tract Number:**	1234

Practice Location Map

(showing detailed aerial view of where practice is to be installed on farm/site, showing all major components, stationing, relative location to any landmarks, and survey benchmarks)

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- ✓ Cover Sheet
- ✓ Specifications
- ___ Drawings
- ___ Cost Estimate and Project Bid Form
- ✓ Operation & Maintenance

Utility Safety / One-Call System Information

Description of work:

Plant a Tall Fescue Filter Strip adjacent to the stream along fields 1 and 7

NRCS Review Only

Designed By:	Norman Widman	**Date:**	2/26/2015
Checked By:	J Roberts	**Date:**	2/26/2015
Approved By:	Norman Widman	**Date:**	2/26/2015

393 – Filter Strip
Implementation Requirements

The Practice Purpose(s):

✓ Reduce suspended solids and associated contaminants in runoff.

✓ Reduce dissolved contaminant loadings in runoff.

___ Reduce suspended solids and associated contaminants in irrigation tail water.

Field Number/Location: Along the stream Field 1 and 7 **Acres Installed:** 3.2 **Seeded Date:** April 1-20

Average Width: 50 **Minimum Width (ft)** 35 **Filter Strip Length (ft):** 2800

Site Preparation: Chemical Burndown

Planting Method: No Till Drill

Planting Description (*e.g.* warm season grasses only, *etc.*):

SEEDING RATES AND SPECIES

Plant species	Lbs/acre of seed (PLS)	Total lbs of seed for planned acreage
Tall Fescue 1	50 lbs/ac (PLS)	160 lbs
2		
3		
4		
5		
6		
7		
8		
9		
10		
TOTALS =>	50.00	160.00

FERTILIZERS AND AMENDMENTS

Fertilizer Element	Fertilizer Form	Fertilizer Amount (lbs/acre)
N	Urea *e.g. DAP*	100 as N
P	0-46-0 *e.g. DAP*	100 as P_2O_5
K	0-0-60 *e.g. K_2SO_4*	100 as K_2O
S	*e.g. K_2SO_4*	as S
Lime		
Gypsum		

NRCS
January 2014

393 – Filter Strip
Implementation Requirements

Operation and Maintenance: (check all that apply)

✓ For the purposes of filtering contaminants, permanent filter strip vegetative plantings shall be harvested as appropriate to encourage dense growth, maintain an upright growth habit and remove nutrients and other contaminants that are contained in the plant tissue.

_____ Control undesired weed species, especially State-listed noxious weeds.

_____ If prescribed burning is used to manage and maintain the filter strip, an approved burn plan must be developed.

✓ Inspect the filter strip after storm events and repair any gullies that have formed, remove unevenly deposited sediment accumulation that will disrupt sheet flow, reseed disturbed areas and take other measures to prevent concentrated flow through the filter strip.

_____ Apply supplemental nutrients as needed to maintain the desired species composition and stand density of the filter strip.

_____ Periodically regrade and reestablish the filter strip area when sediment deposition at the filter strip-field interface jeopardizes its function. Reestablish the filter strip vegetation in these regraded areas, if needed.

✓ If grazing is used to harvest vegetation from the filter strip, the grazing plan must insure that the integrity and function of the filter strip is not adversely affected.

Implementation Requirements
Nutrient Management (Code 590)

Nitrogen and Phosphorus Risk Analyses

Tennessee Phosphorus Index

Field	Crop Year	Site and Transport Factor	Mgmt. and Source Factor	P Index w/o P Apps	P Index w/ P Apps	P Loss Risk
1	2008	13	2	26	26	Low
1	2009	13	2	26	26	Low
1	2010	13	2	26	26	Low
2	2008	13	2	26	26	Low
2	2009	13	2	26	26	Low
2	2010	13	2	26	26	Low
3	2008	6	4	24	24	Low
3	2009	6	4	24	24	Low
3	2010	6	4	24	24	Low
4	2008	6	20	24	120	Medium
4	2009	6	20	24	120	Medium
4	2010	6	20	24	120	Medium
5	2008	15	27	120	405	Very High
5	2009	15	27	120	405	Very High
5	2010	15	27	120	405	Very High
6a	2008	15	18	60	270	High
6a	2009	15	18	60	270	High
6a	2010	15	18	60	270	High
6b	2008	13	4	52	52	Low
6b	2009	13	4	52	52	Low
6b	2010	13	4	52	52	Low
7	2008	6	8	48	48	Low
7	2009	6	8	48	48	Low
7	2010	6	8	48	48	Low

Additional Field Data Required by Risk Assessment Procedure(s)

Manure Application Setback Distances and Buffers

Field	Distance to Water (Feet)	Slope Length (Feet)	Buffer Width (Feet)	Tillage/Cover Type
1	31	50	None	Pasture/Hay
2	101	50	None	Pasture/Hay
3	32	100	30	No-till w/ heavy residues
4	33	100	30	No-till w/ heavy residues
5	212	50	None	No-till w/ heavy residues
6a	350	50	None	No-till w/ heavy residues
6b	1,068	50	None	Pasture/Hay
7	31	100	30	Pasture/Hay

Soil Test Data

Field	Test Year	OM (%)	P Test Used	P	K	Mg	Ca	Units	Soil pH	Buffer pH	CEC (meq/ 100g)
1	2003		Mehlich-1	40	128			lbs/a	6.3		
2	2003		Mehlich-1	40	128			lbs/a	6.3		
3	2003		Mehlich-1	76	196			lbs/a	7.0		
4	2003		Mehlich-1	220	340			lbs/a	6.4		
5	2003		Mehlich-1	250	488			lbs/a	5.6		
6a	2003		Mehlich-1	86	208			lbs/a	6.0		
6b	2003		Mehlich-1	86	208			lbs/a	6.0		
7	2003		Mehlich-1	362	688			lbs/a	6.0		

Manure Nutrient Analyses

Manure Source	Dry Matter (%)	Total N	NH_4-N	Total P_2O_5	Total K_2O	Avail. P_2O_5	Avail. K_2O	Units	Analysis Source and Date
Holding pond		10.0	5.0	3.0	12.5	3.0	12.5	Lb/1000Gal	Lab analysis 11/08/2003; no NH4-N so assume 50%.
Calf shed		6.1	1.2	2.3	2.7	2.3	2.7	Lb/Ton	MMP Estimate

(1) Entered analysis may be the average of several individual analyses.
(2) Tennessee assumes that 100% of manure phosphorus and 100% of manure potassium is crop available. First-year per-acre nitrogen availability for individual manure applications is given in the Planned Nutrient Applications table. For more information about nitrogen availability in Tennessee, see "Manure Application Management," Tables 3 and 4, Tennessee Extension, PB1510, 2/94 (http://wastemgmt.ag.utk.edu/Pubs/PB1510.pdf).

Planned Crops and Fertilizer Recommendations

Field	Crop Year	Planned Crop	Yield Goal (per Acre)	N Rec (Lbs/A)	P_2O_5 Rec (Lbs/A)	K_2O Rec (Lbs/A)	N Removed (Lbs/A)	P_2O_5 Removed (Lbs/A)	K_2O Removed (Lbs/A)	Custom Fert. Rec. Source
1	2008	Corn silage	22.0 Ton	150	0	160	183	79	183	
1	2009	Grass-clover hay new	4.0 Ton	30	0	60	200	60	240	
1	2010	Grass-clover hay maint	6.0 Ton	60	0	30	300	90	360	
2	2008	Grass-clover hay maint	6.0 Ton	60	0	30	300	90	360	
2	2009	Corn silage	22.0 Ton	150	0	160	183	79	183	
2	2010	Grass-clover hay new	4.0 Ton	30	0	60	200	60	240	
3	2008	Small grain cover*		0	0	0	0	0	0	
3	2008	Corn silage	22.0 Ton	150	0	0	183	79	183	
3	2009	Small grain cover*		0	0	0	0	0	0	
3	2009	Corn silage	22.0 Ton	150	0	0	183	79	183	
3	2010	Small grain cover*		0	0	0	0	0	0	
3	2010	Corn silage	22.0 Ton	150	0	0	183	79	183	
4	2008	Small grain cover*		0	0	0	0	0	0	
4	2008	Corn silage	22.0 Ton	150	0	0	183	79	183	
4	2009	Small grain cover*		0	0	0	0	0	0	
4	2009	Corn silage	22.0 Ton	150	0	0	183	79	183	
4	2010	Small grain cover*		0	0	0	0	0	0	
4	2010	Corn silage	22.0 Ton	150	0	0	183	79	183	
5	2008	Small grain cover*		0	0	0	0	0	0	
5	2008	Corn silage	22.0 Ton	150	0	0	183	79	183	
5	2009	Small grain cover*		0	0	0	0	0	0	
5	2009	Corn silage	22.0 Ton	150	0	0	183	79	183	
5	2010	Small grain cover*		0	0	0	0	0	0	
5	2010	Corn silage	22.0 Ton	150	0	0	183	79	183	
6a	2008	Small grain cover*		0	0	0	0	0	0	
6a	2008	Corn silage	22.0 Ton	150	0	0	183	79	183	
6a	2009	Small grain cover*		0	0	0	0	0	0	
6a	2009	Corn silage	22.0 Ton	150	0	0	183	79	183	
6a	2010	Small grain cover*		0	0	0	0	0	0	
6a	2010	Corn silage	22.0 Ton	150	0	0	183	79	183	
6b	2008	Grass-clover hay new	4.0 Ton	30	0	0	200	60	240	
6b	2009	Grass-clover hay maint	6.0 Ton	60	0	0	300	90	360	
6b	2010	Corn silage	22.0 Ton	150	0	0	183	79	183	
7	2008	Bermuda common pasture	4.0 Ton	230[a]	0	0	184	48	200	Pasture includes fescue so increased N.

Field	Crop Year	Planned Crop	Yield Goal (per Acre)	N Rec (Lbs/A)	P_2O_5 Rec (Lbs/A)	K_2O Rec (Lbs/A)	N Removed (Lbs/A)	P_2O_5 Removed (Lbs/A)	K_2O Removed (Lbs/A)	Custom Fert. Rec. Source
7	2009	Bermuda common pasture	4.0 Ton	230[a]	0	0	184	48	200	Pasture includes fescue so increased N.
7	2010	Bermuda common pasture	4.0 Ton	230[a]	0	0	184	48	200	Pasture includes fescue so increased N.

* Unharvested cover crop or first crop in double-crop system.
[a] Custom fertilizer recommendation.

Planned Nutrient Applications (Manure-spreadable Area)

Field	App. Month	Target Crop	Nutrient Source	Application Method	Rate Basis	Rate/ Acre	Loads, Speed or Time	Total Amount Applied	Acres Cov.	Avail N (Lbs/A)	Avail P_2O_5 (Lbs/A)	Avail K_2O (Lbs/A)
1	Oct 2007	Corn silage	0-0-60	Surface broadcast	1-yr K	266 Lbs		0 Lbs	0.0	0	0	160
1	Jun 2008	Corn silage	28-0-0	Surface band	1-yr N	51 Gal		0 Gal	0.0	152	0	0
1	Oct 2008	Grass-clover hay new	0-0-60	Surface broadcast	1-yr K	100 Lbs		0 Lbs	0.0	0	0	60
1	Jun 2009	Grass-clover hay new	33-0-0	Surface broadcast	1-yr N	90 Lbs		0 Lbs	0.0	30	0	0
1	Oct 2009	Grass-clover hay maint	0-0-60	Surface broadcast	1-yr K	50 Lbs		0 Lbs	0.0	0	0	30
1	May 2010	Grass-clover hay maint	33-0-0	Surface broadcast	1-yr N	181 Lbs		0 Lbs	0.0	60	0	0
2	Oct 2007	Grass-clover hay maint	0-0-60	Surface broadcast	1-yr K	50 Lbs		0 Lbs	0.0	0	0	30
2	May 2008	Grass-clover hay maint	33-0-0	Surface broadcast	1-yr N	181 Lbs		0 Lbs	0.0	60	0	0
2	Oct 2008	Corn silage	0-0-60	Surface broadcast	1-yr K	266 Lbs		0 Lbs	0.0	0	0	160
2	Jun 2009	Corn silage	28-0-0	Surface band	1-yr N	51 Gal		0 Gal	0.0	152	0	0
2	Oct 2009	Grass-clover hay new	0-0-60	Surface broadcast	1-yr K	100 Lbs		0 Lbs	0.0	0	0	60
2	Jun 2010	Grass-clover hay new	33-0-0	Surface broadcast	1-yr N	90 Lbs		0 Lbs	0.0	30	0	0
3	Jun 2008	Corn silage	28-0-0	Surface band	1-yr N	51 Gal		0 Gal	0.0	152	0	0
3	Jun 2009	Corn silage	28-0-0	Surface band	1-yr N	51 Gal		0 Gal	0.0	152	0	0

Field	App. Month	Target Crop	Nutrient Source	Application Method	Rate Basis	Rate/ Acre	Loads, Speed or Time	Total Amount Applied	Acres Cov.	Avail N (Lbs/A)	Avail P_2O_5 (Lbs/A)	Avail K_2O (Lbs/A)
3	Jun 2010	Corn silage	28-0-0	Surface band	1-yr N	51 Gal		0 Gal	0.0	152	0	0
4	Sep 2007	Corn silage	Holding pond	Splash plate unit, Not incorporated	Custom	19,000 Gal	0.8 mph	553,600 Gal	29.1	86	57	238
4	Oct 2007	Corn silage	Holding pond	Splash plate unit, Not incorporated	Custom	19,000 Gal	0.8 mph	91,200 Gal	4.8	86	57	238
4	Jun 2008	Corn silage	28-0-0	Surface band	Supp. N	22 Gal		746 Gal	33.9	66	0	0
4	Sep 2008	Corn silage	Holding pond	Splash plate unit, Not incorporated	Custom	19,000 Gal	0.8 mph	562,200 Gal	29.6	86	57	238
4	Oct 2008	Corn silage	Holding pond	Splash plate unit, Not incorporated	Custom	19,000 Gal	0.8 mph	81,700 Gal	4.3	86	57	238
4	Jun 2009	Corn silage	28-0-0	Surface band	Supp. N	17 Gal		576 Gal	33.9	51	0	0
4	Sep 2009	Corn silage	Holding pond	Splash plate unit, Not incorporated	Custom	19,000 Gal	0.8 mph	571,000 Gal	30.1	86	57	238
4	Oct 2009	Corn silage	Holding pond	Splash plate unit, Not incorporated	Custom	19,000 Gal	0.8 mph	72,200 Gal	3.8	86	57	238
4	Jun 2010	Corn silage	28-0-0	Surface band	Supp. N	15 Gal		509 Gal	33.9	45	0	0
5	Mar 2008	Corn silage	Holding pond	Aerway unit, Not incorporated	Custom	22,000 Gal	1.1 mph	530,400 Gal	24.1	99	66	275
5	Apr 2008	Corn silage	Holding pond	Aerway unit, Not incorporated	Custom	22,000 Gal	1.1 mph	59,400 Gal	2.7	99	66	275
5	Jun 2008	Corn silage	28-0-0	Surface band	Supp. N	17 Gal		456 Gal	26.8	51	0	0

Field	App. Month	Target Crop	Nutrient Source	Application Method	Rate Basis	Rate/ Acre	Loads, Speed or Time	Total Amount Applied	Acres Cov.	Avail N (Lbs/A)	Avail P_2O_5 (Lbs/A)	Avail K_2O (Lbs/A)
5	Mar 2009	Corn silage	Holding pond	Aerway unit, Not incorporated	Custom	22,000 Gal	1.1 mph	539,900 Gal	24.5	99	66	275
5	Apr 2009	Corn silage	Holding pond	Aerway unit, Not incorporated	Custom	22,000 Gal	1.1 mph	50,600 Gal	2.3	99	66	275
5	Jun 2009	Corn silage	28-0-0	Surface band	Supp. N	12 Gal		322 Gal	26.8	36	0	0
5	Mar 2010	Corn silage	Holding pond	Aerway unit, Not incorporated	Custom	22,000 Gal	1.1 mph	549,400 Gal	25.0	99	66	275
5	Apr 2010	Corn silage	Holding pond	Aerway unit, Not incorporated	Custom	22,000 Gal	1.1 mph	39,600 Gal	1.8	99	66	275
5	Jun 2010	Corn silage	28-0-0	Surface band	Supp. N	10 Gal		268 Gal	26.8	30	0	0
6a	Oct 2007	Corn silage	Calf shed	Flail spreader, Not incorporated	Custom	15 Ton	84.5 Lds	253.5 Ton	16.9	36	35	41
6a	Jun 2008	Corn silage	28-0-0	Surface band	Supp. N	39 Gal		659 Gal	16.9	116	0	0
6a	Oct 2008	Corn silage	Calf shed	Flail spreader, Not incorporated	Custom	15 Ton	84.5 Lds	253.5 Ton	16.9	36	35	41
6a	Jun 2009	Corn silage	28-0-0	Surface band	Supp. N	36 Gal		608 Gal	16.9	107	0	0
6a	Oct 2009	Corn silage	Calf shed	Flail spreader, Not incorporated	Custom	15 Ton	84.5 Lds	253.5 Ton	16.9	36	35	41
6a	Jun 2010	Corn silage	28-0-0	Surface band	Supp. N	35 Gal		591 Gal	16.9	104	0	0
6b	Jun 2008	Grass-clover hay new	33-0-0	Surface broadcast	1-yr N	90 Lbs		0 Lbs	0.0	30	0	0
6b	May 2009	Grass-clover hay maint	33-0-0	Surface broadcast	1-yr N	181 Lbs		0 Lbs	0.0	60	0	0
6b	Jun 2010	Corn silage	28-0-0	Surface band	1-yr N	51 Gal		0 Gal	0.0	152	0	0
7	Oct 2007	Bermuda common pasture	33-0-0	Surface broadcast	Custom	90 Lbs		0 Lbs	0.0	30	0	0

Field	App. Month	Target Crop	Nutrient Source	Application Method	Rate Basis	Rate/ Acre	Loads, Speed or Time	Total Amount Applied	Acres Cov.	Avail N (Lbs/A)	Avail P_2O_5 (Lbs/A)	Avail K_2O (Lbs/A)
7	May 2008	Bermuda common pasture	33-0-0	Surface broadcast	Custom	303 Lbs		0 Lbs	0.0	100	0	0
7	Jul 2008	Bermuda common pasture	33-0-0	Surface broadcast	Custom	303 Lbs		0 Lbs	0.0	100	0	0
7	Oct 2008	Bermuda common pasture	33-0-0	Surface broadcast	Custom	90 Lbs		0 Lbs	0.0	30	0	0
7	May 2009	Bermuda common pasture	33-0-0	Surface broadcast	Custom	303 Lbs		0 Lbs	0.0	100	0	0
7	Jul 2009	Bermuda common pasture	33-0-0	Surface broadcast	Custom	303 Lbs		0 Lbs	0.0	100	0	0
7	Oct 2009	Bermuda common pasture	33-0-0	Surface broadcast	Custom	90 Lbs		0 Lbs	0.0	30	0	0
7	May 2010	Bermuda common pasture	33-0-0	Surface broadcast	Custom	303 Lbs		0 Lbs	0.0	100	0	0
7	Jul 2010	Bermuda common pasture	33-0-0	Surface broadcast	Custom	303 Lbs		0 Lbs	0.0	100	0	0

Planned Nutrient Applications (Non-manure-spreadable Area)

Field	App. Month	Target Crop	Nutrient Source	Application Method	Rate Basis	Rate/Acre	Total Amount Applied	Acres Cov.	Avail N (Lbs/A)	Avail P_2O_5 (Lbs/A)	Avail K_2O (Lbs/A)
1	Oct 2007	Corn silage	0-0-60	Surface broadcast	1-yr K	266 Lbs	7,608 Lbs	28.6	0	0	160
1	Jun 2008	Corn silage	28-0-0	Surface band	1-yr N	51 Gal	1,459 Gal	28.6	152	0	0
1	Oct 2008	Grass-clover hay new	0-0-60	Surface broadcast	1-yr K	100 Lbs	2,860 Lbs	28.6	0	0	60
1	Jun 2009	Grass-clover hay new	33-0-0	Surface broadcast	1-yr N	90 Lbs	2,574 Lbs	28.6	30	0	0
1	Oct 2009	Grass-clover hay maint	0-0-60	Surface broadcast	1-yr K	50 Lbs	1,430 Lbs	28.6	0	0	30
1	May 2010	Grass-clover hay maint	33-0-0	Surface broadcast	1-yr N	181 Lbs	5,177 Lbs	28.6	60	0	0
2	Oct 2007	Grass-clover hay maint	0-0-60	Surface broadcast	1-yr K	50 Lbs	1,040 Lbs	20.8	0	0	30
2	May 2008	Grass-clover hay maint	33-0-0	Surface broadcast	1-yr N	181 Lbs	3,765 Lbs	20.8	60	0	0
2	Oct 2008	Corn silage	0-0-60	Surface broadcast	1-yr K	266 Lbs	5,533 Lbs	20.8	0	0	160
2	Jun 2009	Corn silage	28-0-0	Surface band	1-yr N	51 Gal	1,061 Gal	20.8	152	0	0
2	Oct 2009	Grass-clover hay new	0-0-60	Surface broadcast	1-yr K	100 Lbs	2,080 Lbs	20.8	0	0	60
2	Jun 2010	Grass-clover hay new	33-0-0	Surface broadcast	1-yr N	90 Lbs	1,872 Lbs	20.8	30	0	0
3	Jun 2008	Corn silage	28-0-0	Surface band	1-yr N	51 Gal	2,764 Gal	54.2	152	0	0
3	Jun 2009	Corn silage	28-0-0	Surface band	1-yr N	51 Gal	2,764 Gal	54.2	152	0	0
3	Jun 2010	Corn silage	28-0-0	Surface band	1-yr N	51 Gal	2,764 Gal	54.2	152	0	0
6a	Jun 2008	Corn silage	28-0-0	Surface band	1-yr N	51 Gal	31 Gal	0.6	152	0	0
6a	Jun 2009	Corn silage	28-0-0	Surface band	1-yr N	51 Gal	31 Gal	0.6	152	0	0
6a	Jun 2010	Corn silage	28-0-0	Surface band	1-yr N	51 Gal	31 Gal	0.6	152	0	0
6b	Jun 2008	Grass-clover hay new	33-0-0	Surface broadcast	1-yr N	90 Lbs	2,052 Lbs	22.8	30	0	0
6b	May 2009	Grass-clover hay maint	33-0-0	Surface broadcast	1-yr N	181 Lbs	4,127 Lbs	22.8	60	0	0
6b	Jun 2010	Corn silage	28-0-0	Surface band	1-yr N	51 Gal	1,163 Gal	22.8	152	0	0
7	Oct 2007	Bermuda common pasture	33-0-0	Surface broadcast	Custom	90 Lbs	4,446 Lbs	49.4	30	0	0
7	May 2008	Bermuda common pasture	33-0-0	Surface broadcast	Custom	303 Lbs	14,968 Lbs	49.4	100	0	0
7	Jul 2008	Bermuda common pasture	33-0-0	Surface broadcast	Custom	303 Lbs	14,968 Lbs	49.4	100	0	0
7	Oct 2008	Bermuda common pasture	33-0-0	Surface broadcast	Custom	90 Lbs	4,446 Lbs	49.4	30	0	0

Field	App. Month	Target Crop	Nutrient Source	Application Method	Rate Basis	Rate/Acre	Total Amount Applied	Acres Cov.	Avail N (Lbs/A)	Avail P_2O_5 (Lbs/A)	Avail K_2O (Lbs/A)
7	May 2009	Bermuda common pasture	33-0-0	Surface broadcast	Custom	303 Lbs	14,968 Lbs	49.4	100	0	0
7	Jul 2009	Bermuda common pasture	33-0-0	Surface broadcast	Custom	303 Lbs	14,968 Lbs	49.4	100	0	0
7	Oct 2009	Bermuda common pasture	33-0-0	Surface broadcast	Custom	90 Lbs	4,446 Lbs	49.4	30	0	0
7	May 2010	Bermuda common pasture	33-0-0	Surface broadcast	Custom	303 Lbs	14,968 Lbs	49.4	100	0	0
7	Jul 2010	Bermuda common pasture	33-0-0	Surface broadcast	Custom	303 Lbs	14,968 Lbs	49.4	100	0	0

Field Nutrient Balance (Manure-spreadable Area)

Year	Field	Size	Crop	Yield Goal	Fertilizer Recs[1]			Nutrients Applied[2]			Balance After Recs[3]			Balance After Removal[4]	
		Acres		/Acre	N Lb/A	P_2O_5 Lb/A	K_2O Lb/A	N Lb/A	P_2O_5 Lb/A	K_2O Lb/A	N Lb/A	P_2O_5 Lb/A	K_2O Lb/A	P_2O_5 Lb/A	K_2O Lb/A
2008	4	33.9	Small grain cover		0	0	0								
2008	4	33.9	Corn silage	22	150	0	0	152	57	238	2	57	238	-22	55
2009	4	33.9	Small grain cover		0	0	0								
2009	4	33.9	Corn silage	22	150	0	0	137	57	238	0†	114	476	-22	110
2010	4	33.9	Small grain cover		0	0	0								
2010	4	33.9	Corn silage	22	150	0	0	131	57	238	0†	171	714	-22	165
Total	**4**				**450**	**0**	**0**	**420**	**171**	**714**					
2008	5	26.8	Small grain cover		0	0	0								
2008	5	26.8	Corn silage	22	150	0	0	150	66	275	0	66	275	-13	92
2009	5	26.8	Small grain cover		0	0	0								
2009	5	26.8	Corn silage	22	150	0	0	135	66	275	0†	132	550	-13	184
2010	5	26.8	Small grain cover		0	0	0								
2010	5	26.8	Corn silage	22	150	0	0	129	66	275	1†	198	825	-13	276
Total	**5**				**450**	**0**	**0**	**414**	**198**	**825**					
2008	6a	16.9	Small grain cover		0	0	0								
2008	6a	16.9	Corn silage	22	150	0	0	152	35	41	2	35	41	-44	-142
2009	6a	16.9	Small grain cover		0	0	0								
2009	6a	16.9	Corn silage	22	150	0	0	143	35	41	2†	70	82	-44	-142
2010	6a	16.9	Small grain cover		0	0	0								
2010	6a	16.9	Corn silage	22	150	0	0	140	35	41	2†	105	123	-44	-142
Total	**6a**				**450**	**0**	**0**	**435**	**105**	**123**					

Field Nutrient Balance (Non-manure-spreadable Area)

Year	Field	Size	Crop	Yield Goal	Fertilizer Recs[1]			Nutrients Applied[2]			Balance After Recs[3]			Balance After Removal[4]	
		Acres		/Acre	N Lb/A	P_2O_5 Lb/A	K_2O Lb/A	N Lb/A	P_2O_5 Lb/A	K_2O Lb/A	N Lb/A	P_2O_5 Lb/A	K_2O Lb/A	P_2O_5 Lb/A	K_2O Lb/A
2008	1	28.6	Corn silage	22	150	0	160	152	0	160	2	0	0	-79	-23
2009	1	28.6	Grass-clover hay new	4	30	0	60	30	0	60	0	0	0	-60	-180
2010	1	28.6	Grass-clover hay maint	6	60	0	30	60	0	30	0	0	0	-90	-330
Total	**1**				**240**	**0**	**250**	**242**	**0**	**250**					
2008	2	20.8	Grass-clover hay maint	6	60	0	30	60	0	30	0	0	0	-90	-330
2009	2	20.8	Corn silage	22	150	0	160	152	0	160	2	0	0	-79	-23
2010	2	20.8	Grass-clover hay new	4	30	0	60	30	0	60	0	0	0	-60	-180
Total	**2**				**240**	**0**	**250**	**242**	**0**	**250**					
2008	3	54.2	Small grain cover		0	0	0								
2008	3	54.2	Corn silage	22	150	0	0	152	0	0	2	0	0	-79	-183
2009	3	54.2	Small grain cover		0	0	0								
2009	3	54.2	Corn silage	22	150	0	0	152	0	0	2	0	0	-79	-183
2010	3	54.2	Small grain cover		0	0	0								
2010	3	54.2	Corn silage	22	150	0	0	152	0	0	2	0	0	-79	-183
Total	**3**				**450**	**0**	**0**	**456**	**0**	**0**					
2008	6a	0.6	Small grain cover		0	0	0								
2008	6a	0.6	Corn silage	22	150	0	0	152	0	0	2	0	0	-79	-183
2009	6a	0.6	Small grain cover		0	0	0								
2009	6a	0.6	Corn silage	22	150	0	0	152	0	0	2	0	0	-79	-183
2010	6a	0.6	Small grain cover		0	0	0								
2010	6a	0.6	Corn silage	22	150	0	0	152	0	0	2	0	0	-79	-183
Total	**6a**				**450**	**0**	**0**	**456**	**0**	**0**					
2008	6b	22.8	Grass-clover hay new	4	30	0	0	30	0	0	0	0	0	-60	-240
2009	6b	22.8	Grass-clover hay maint	6	60	0	0	60	0	0	0	0	0	-90	-360
2010	6b	22.8	Corn silage	22	150	0	0	152	0	0	2	0	0	-79	-183
Total	**6b**				**240**	**0**	**0**	**242**	**0**	**0**					
2008	7	49.4	Bermuda common pasture	4	230¤	0	0	230	0	0	0	0	0	-48	-200

Year	Field	Size	Crop	Yield Goal	Fertilizer Recs[1]			Nutrients Applied[2]			Balance After Recs[3]			Balance After Removal[4]	
		Acres		/Acre	N Lb/A	P_2O_5 Lb/A	K_2O Lb/A	N Lb/A	P_2O_5 Lb/A	K_2O Lb/A	N Lb/A	P_2O_5 Lb/A	K_2O Lb/A	P_2O_5 Lb/A	K_2O Lb/A
2009	7	49.4	Bermuda common pasture	4	230¤	0	0	230	0	0	0	0	0	-48	-200
2010	7	49.4	Bermuda common pasture	4	230¤	0	0	230	0	0	0	0	0	-48	-200
Total	**7**				**690**	**0**	**0**	**690**	**0**	**0**					

[1] Fertilizer Recs are the crop fertilizer recommendations. The N rec accounts for any N credit from previous legume crop.

[2] Nutrients Applied are the nutrients expected to be available to the crop from that year's manure applications plus nutrients from that year's commercial fertilizer applications and nitrates from irrigation water. With a double-crop year, the total nutrients applied for both crops and the year's balances are listed on the second crop's line.

[3] For N, Nutrients Applied minus Fertilizer Recs for indicated crop year. Also includes amount of residual N expected to become available that year from prior years' manure applications. For P_2O_5 and K_2O, Nutrients Applied minus Fertilizer Recs *through* the indicated crop year, with positive balances carried forward to subsequent years. Negative values indicate a potential need to apply additional nutrients.

[4] Nutrients Applied minus amount removed by harvested portion of crop through the indicated year. Positive balances are carried forward to subsequent years.

¤ Indicates a custom fertilizer recommendation in the Fertilizer Recs column.

[a] Indicates in the Balance After Recs N column that the legume crop is assumed to utilize some or all of the supplied N.

† Indicates in the Balance After Recs N column that the value includes residual N expected to become available that year from prior years' manure applications.

Manure Inventory Annual Summary

Manure Source	Plan Period	On Hand at Start of Period	Total Generated	Total Imported	Total Trans-ferred In	Total Applied	Total Exported	Total Trans-ferred Out	On Hand at End of Period	Units
Holding pond	Sep '07 - Aug '08	450,000	1,244,000	0	0	1,234,600	0	0	459,400	Gal
Calf shed	Sep '07 - Aug '08	220	264	0	0	254	0	0	231	Ton
Holding pond	Sep '08 - Aug '09	459,400	1,244,000	0	0	1,234,400	0	0	469,000	Gal
Calf shed	Sep '08 - Aug '09	231	264	0	0	254	0	0	241	Ton
Holding pond	Sep '09 - Aug '10	469,000	1,244,000	0	0	1,232,200	0	0	480,800	Gal
Calf shed	Sep '09 - Aug '10	241	264	0	0	254	0	0	252	Ton

Fertilizer Material Annual Summary

Product Analysis	Plan Period	Product Needed Sep - Dec	Product Needed Jan - Aug	Total Product Needed	Units
0-0-60	Sep '07 - Aug '08	8,648	0	8,648	Lbs
28-0-0	Sep '07 - Aug '08	0	6,115	6,115	Gal
33-0-0	Sep '07 - Aug '08	4,446	35,753	40,199	Lbs
0-0-60	Sep '08 - Aug '09	8,393	0	8,393	Lbs
28-0-0	Sep '08 - Aug '09	0	5,362	5,362	Gal
33-0-0	Sep '08 - Aug '09	4,446	36,637	41,083	Lbs
0-0-60	Sep '09 - Aug '10	3,510	0	3,510	Lbs
28-0-0	Sep '09 - Aug '10	0	5,326	5,326	Gal
33-0-0	Sep '09 - Aug '10	4,446	36,985	41,431	Lbs

Plan Nutrient Balance (Manure-spreadable Area)

	N (Lbs)	P_2O_5 (Lbs)	K_2O (Lbs)
Total Manure Nutrients on Hand at Start of Plan[1]	5,842	1,856	6,219
Total Manure Nutrients Collected[2]	42,151	13,018	48,788
Total Manure Nutrients Imported[3]	0	0	0
Total Manure Nutrients Exported[4]	0	0	0
Total Manure Nutrients Gained/Lost in Transfer[5]	0	0	0
Total Manure Nutrients on Hand at End of Plan[6]	6,342	2,021	6,689
Total Manure Nutrients Applied[7]	41,675	12,878	48,393
Available Manure Nutrients Applied (Utilized by plan's crops)[8]	20,962	12,878	48,393
Available Manure Nutrients Applied (Not utilized by plan's crops)[9]	1,878	0	0
Commercial Fertilizer Nutrients Applied (Utilized by plan's crops)[10]	14,154	0	0
Commercial Fertilizer Nutrients Applied (Not utilized by plan's crops)[11]	0	0	0
Available Nutrients Applied (Manure and fertilizer; utilized by plan's crops)[12]	35,116	12,878	48,393
Nutrient Utilization Potential[13]	34,920	18,391	42,602
Nutrient Balance of Spreadable Acres[14]*	196	-5,513	5,791
Average Nutrient Balance per Spreadable Acre per Year[15]*	1	-24	25

1. Values indicate total manure nutrients present in storage(s) at the beginning of the plan.
2. Values indicate total manure nutrients collected on the farm.
3. Values indicate total manure nutrients imported onto the farm.
4. Values indicate total manure nutrients exported from the farm to an external operation.
5. Values indicate changes in total manure nutrients due to internal transfers between storage units with differing analyses.
6. Values indicate total manure nutrients present in storage(s) at the end of plan.
7. Values indicate total nutrients present in land-applied manure. Losses due to rate, timing and method of application are not included in these values.
8. Values indicate available manure nutrients applied on the farm based on rate, time and method of application. These values are based on the total manure nutrients applied (row 7) after accounting for state-specific nutrient losses due to rate, time and method of application. Nutrients which will not be utilized by crops in the plan (row 9) are excluded from these values.
9. Values indicate manure nutrients applied that will be utilized by crops outside the plan.
10. Values indicate nutrients applied as commercial fertilizers and nitrates contained in irrigation water. Nutrients that will not be utilized by crops in the plan (row 11) are excluded from these values.
11. Values indicate nutrients applied as commercial fertilizer which will be utilized by crops outside the plan.
12. Values are the sum of available manure nutrients applied (row 8) and commercial fertilizer nutrients applied (row 10).
13. Values indicate nutrient utilization potential of crops grown. For N the value generally is based on crop N recommendation for non-legume crops and crop N uptake or other state-imposed limit for N application rates for legumes. P_2O_5 and K_2O values generally are based on fertilizer recommendations or crop removal (whichever is greatest).
14. Values indicate available nutrients applied (row 12) minus crop nutrient utilization potential (row 13). Negative values indicate additional nutrient utilization potential and positive values indicate over-application.
15. Values indicate average per acre nutrient balance. Values are calculated by dividing nutrient balance of spreadable acres (row 14) by the number of spreadable acres in plan and by the length of the plan in years. Negative values indicate additional average per acre nutrient utilization potential and positive values indicate average per acre over-application.

* Non-trivial, positive values for N indicate that the plan was not properly developed. Negative values for N indicate additional nutrient utilization potential which may or may not be intentional. For example, plans that include legume crops often will not utilize the full N utilization potential for legume crops if manure can be applied to non-legume crops that require N for optimum yield. Positive values for P_2O_5 and/or K_2O do not necessarily indicate that the plan was not developed properly. For example, producers may be allowed to apply N-based application rates of manure to fields with low soil test P values or fields with a low potential P-loss risk based on the risk assessment tool used by the state. Negative values for P_2O_5 and K_2O indicate that planned applications to some fields are less than crop removal rates.

Plan Nutrient Balance (Non-manure-spreadable Area)

	N (Lbs)	P_2O_5 (Lbs)	K_2O (Lbs)
Commercial Fertilizer Nutrients Applied[1]	76,547	0	12,350
Nutrient Utilization Potential[2]	76,074	0	12,350
Nutrient Balance of Non-spreadable Acres[3*]	473	0	0
Average Nutrient Balance per Non-spreadable Acre per Year[4*]	1	0	0

1. Values indicate nutrients applied as commercial fertilizers and nitrates contained in irrigation water.
2. Values indicate nutrient utilization potential of crops grown based on crop fertilizer recommendations.
3. Values indicate commercial fertilizer nutrients applied (row 1) minus crop nutrient utilization potential (row 2). Negative values indicate additional nutrient utilization potential and positive values indicate over-application.
4. Values indicate average per acre nutrient balance. Values are calculated by dividing nutrient balance of non-spreadable acres (row 3) by number of non-spreadable acres in plan. Negative values indicate additional average per acre nutrient utilization potential and positive values indicate average per acre over-application.

* Non-trivial, positive values for N indicate that the plan was not properly developed. Negative values for N indicate additional nutrient utilization potential which may or may not be intentional. Positive values for P_2O_5 and/or K_2O do not necessarily indicate that the plan was not developed properly. For example, multiple year applications may have been planned during the final plan year(s) and these nutrients will not be utilized by crops in the current plan. Negative values for P_2O_5 and K_2O indicate that applications to some fields may have been delayed to allow the producer to apply the nutrients in accordance with their fertilization schedule.