Nutrient Management Plan

Hogs-R-Us Sample Plan

Comment: The Document Generator report is a Microsoft Word™ document that can be edited. Content can be added or deleted as needed. Tables that are blank or contain irrelevant information should be deleted

NUTRIENT MANAGEMENT PLAN

Farm Contact Information: Hogs-R-Us Sample Plan

, MO
Contact:
Home Phone:
Office Phone:
E-mail:

Planner Name:

Planner Certification (if needed):

Plan Starting Date: September, 2008

Plan Duration: 3 year(s)

Created by Missouri CNMP Document Generator version 0.20.24 on July 30, 2008

Revisions and reviews:

Date of Review or Revision	Planner ID	Planner Certification	Revision Page Number(s)	Comments

Comments:

Comment: This is a signature page for inspections (usually federal or state government) of the operation. In addition to planner name and affiliation, fill in the purpose of the visit and recommendation actions as a result of the visit.

NRCS

Index

Section I:

Farm Location and Maps

Contents:

ⓘ Comment: Note that not all of these index items will be in every plan. If they do not apply, simply delete the entry.

Farm Contact Information: Hogs-R-Us Sample Plan

, MO
Home Phone:
Office Phone:
E-mail:

Table I-1. Geographic information

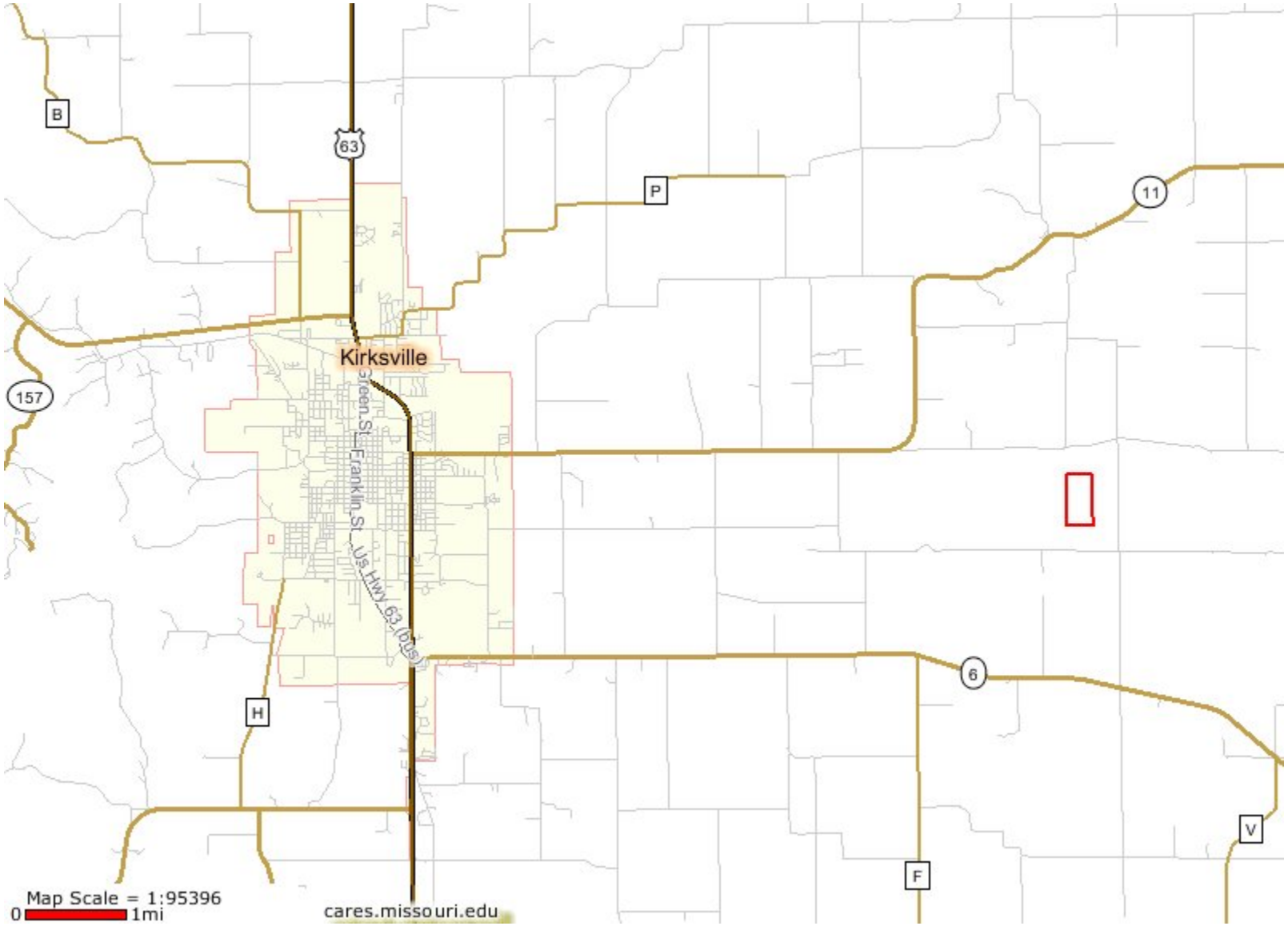
Farm	County, State	FSA Tract Number	Legal Description (S-T-R)	Latitude-Longitude	Digital Ortho-Photo Quads
Hogs-R-Us Sample Plan	Benton County, MO				

Spatial information available from the CARES Map Room web site at www.cares.missouri.edu.

Driving instructions: (see Map 1)

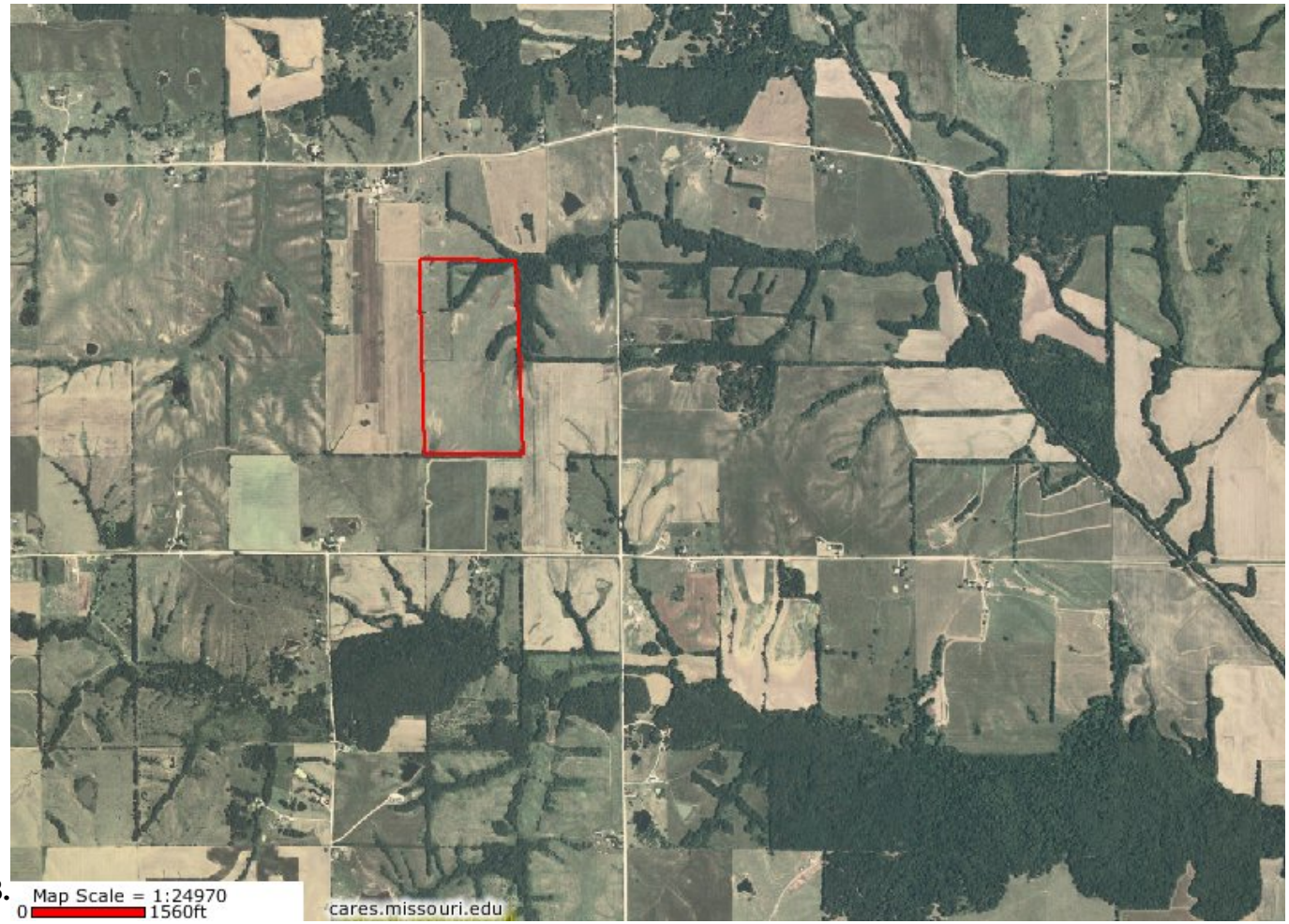
Comment: The easiest way to get the information required on this page is to find the operation using the Missouri Nutrient Management Data Download (http://www.nmplanner.missouri.edu/software/missouri_data.asp) and select "Fertilizer Plan Maps." This will provide highway maps, driving directions, aerial photo, topographic map, soil type map, and a table showing soil types in the area of interest.

Map 1. Farm location

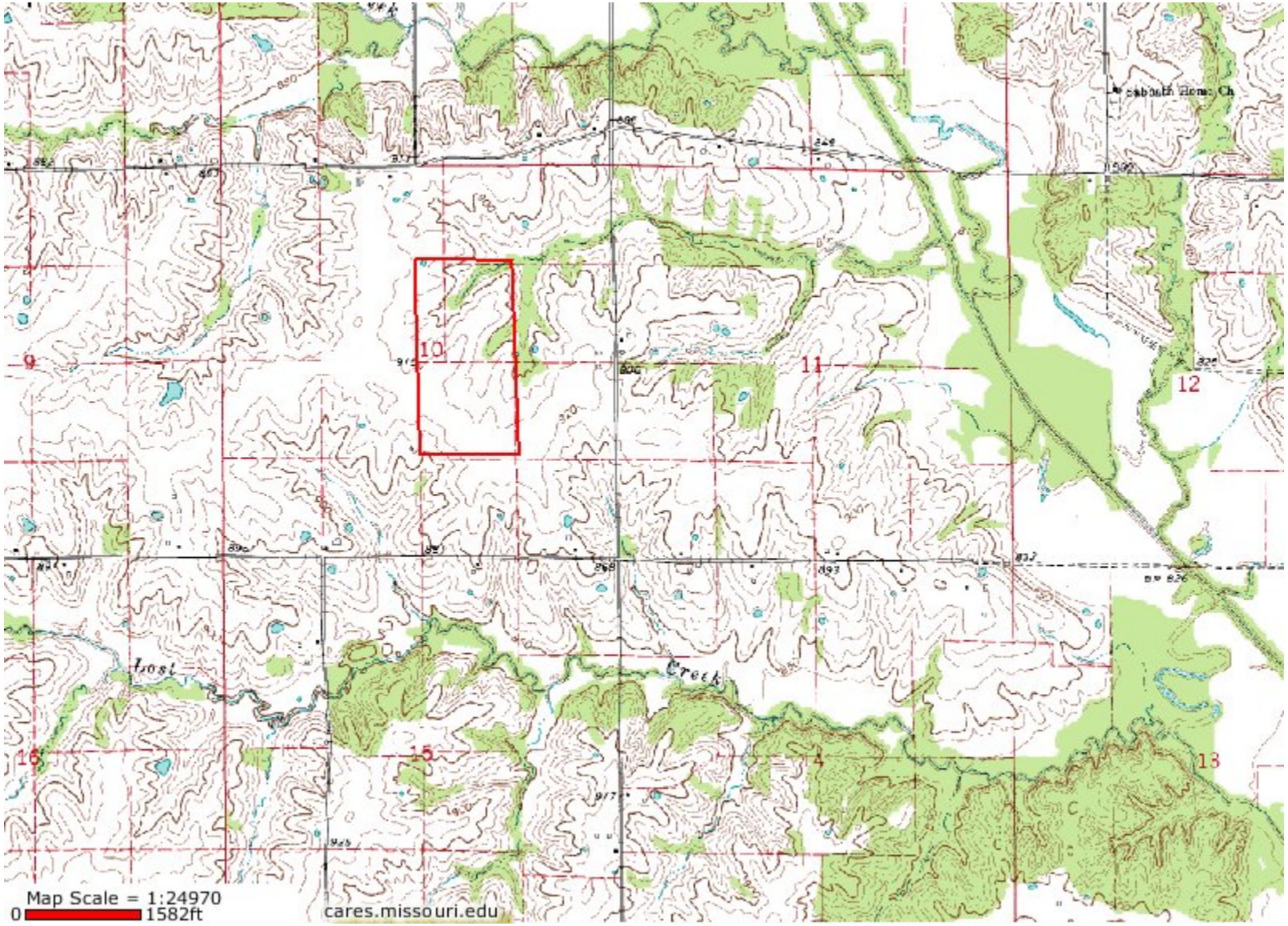


Comment: The maps shown here are examples and do not represent the complete set of maps that should be generated using the University of Missouri's Spatial Nutrient Management Planner (SNMP) found at http://projects.cares.missouri.edu/snmp/. SNMP allows you to download imagery, delineate field boundaries and water quality setback features (streams etc.) and enter soil test data to produce field condition maps.

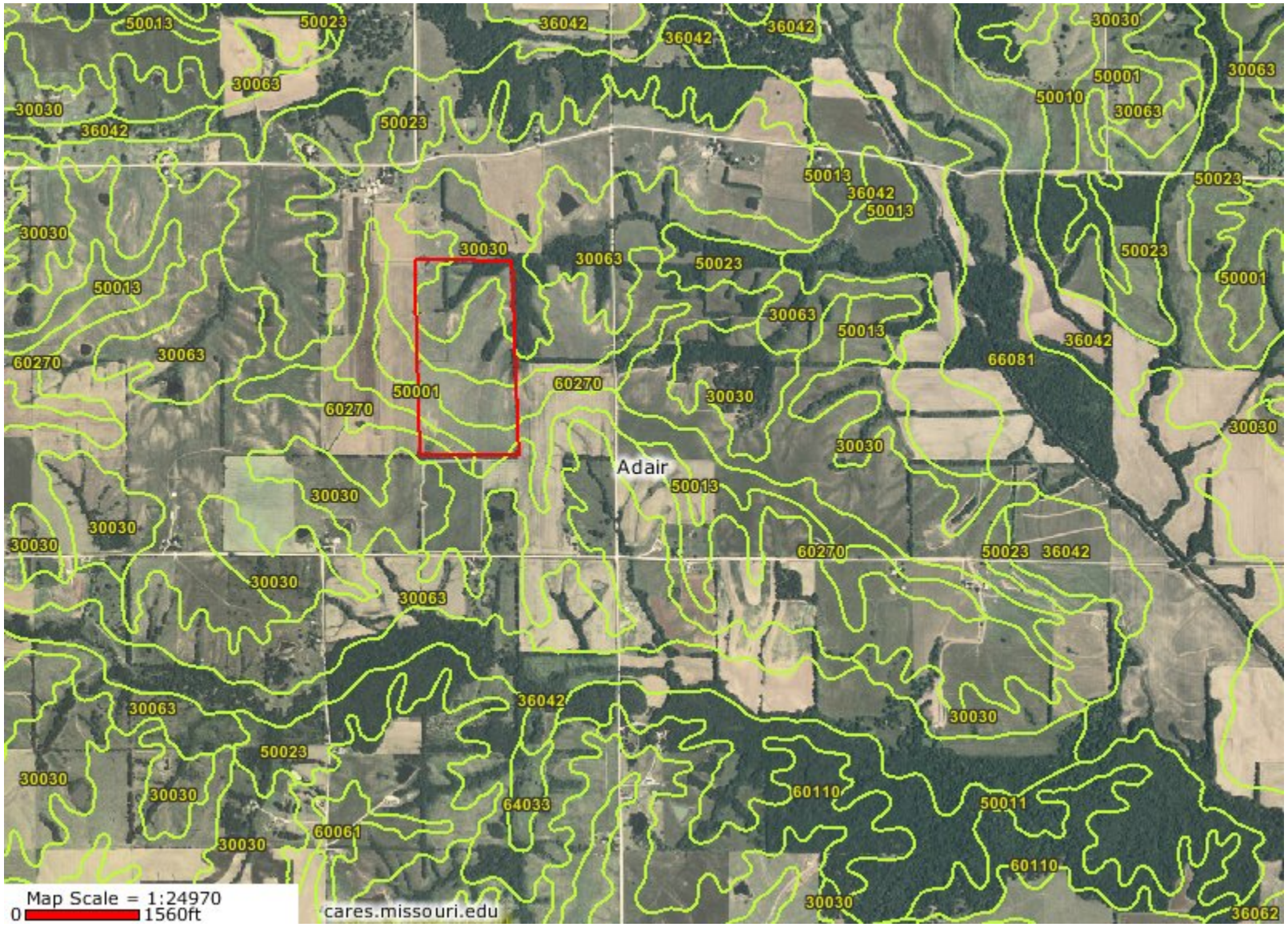
Map 2. Aerial photo



Map 3.


Map Scale = 1:24970
0
1582ft
cares.missouri.edu
9
10
11
12
15
13
Creek

Map 4. Soil types



Section II:

Plan Summary

Contents:

A. Plan Overview

Comment: This is an opportunity to describe the operation in a general, narrative summary style. Describe animal types, storage types, production goals, and land inventory.

B. Environmental Inventory

Comment: The environmental inventory is an opportunity to list the sensitive features that are or can be affected by the animal operation. It has characteristics of an environmental risk assessment, but is not primarily a risk assessment. Background information can be obtained using the AFOSite tool found at http://www.nmplanner.missouri.edu/tools/afosite.asp.

C. Animal and Manure Resources

Table II-1. Estimated mean manure nutrient content

Storage	Storage Type	Total N	Ammonia N	Max Available N	P_2O_5	K_2O	Units
Farrow pit	Underfloor liquid storage	33.8	16.2	22.4	35.2	37.2	Lb/1000Gal
Nursery pit	Underfloor liquid storage	31.4	21	24.6	22.4	22.4	Lb/1000Gal
Grow-finish pit	Underfloor liquid storage	37.1	25.2	29.4	33	27	Lb/1000Gal
Breeding pit	Underfloor liquid storage	29.2	14	19.3	34.7	34.7	Lb/1000Gal

Table II-2. Manure generation

	Source 1		Source 2		Source 3		Source 4	
	Farrow pit		Nursery pit		Grow-finish pit		Breeding pit	
Year	**Amount**	**Units**	**Amount**	**Units**	**Amount**	**Units**	**Amount**	**Units**
9/2002 - 8/2003	68000	Gal	98000	Gal	876000	Gal	65000	Gal
9/2003 - 8/2004	68000	Gal	98000	Gal	876000	Gal	65000	Gal
9/2004 - 8/2005	68000	Gal	98000	Gal	876000	Gal	65000	Gal
Total	204000	Gal	294000	Gal	2628000	Gal	195000	Gal

D. Land Inventory

Comment: What are the acres available to the animal operation, and how many acres are spreadable? What non-owned acres are available through spreading agreements/easements?

E. Cropping System

Comment: What is the planned and (or) alternative crop rotation? What is the general planting date/procedure, commercial fertilizer application plan, and harvest operation?

Table II-3. Nutrient inventory (acres suitable for manure application)

	Applied Nutrients			Crop Removal			Fertilizer Need			Max. Removal or Need[1]		
Year	**N**	**P_2O_5**	**K_2O**	**N**	**P_2O_5**	**K_2O**	**N**	**P_2O_5**	**K_2O**	**N**	**P_2O_5**	**K_2O**
2003	38226	33639	31589	117523	46572	42909	83152	13744	36918	130709	47974	53104
2004	35075	26280	23368	124657	47721	45941	79863	18254	51569	136108	49090	59470
2005	37791	22692	20545	117522	46572	42908	83154	15401	48406	130710	48028	55798
Total	111092	82611	75502	359702	140865	131758	246169	47399	136893	397527	145092	168372

[1]Max. removal or need; based on crop removal or fertilizer need whichever is greater

F. Land Application Strategy

Comment: This is a general statement of the application strategy…e.g., strategy is to build soil test levels to optimal levels, or strategy is storage-centric so that the priority is to keep lagoons in the "safety zone" to avoid spills.

G. Nutrient Balance

Comment: Shows the balance between the crop/soil nutrient requirement and the supply of nutrients for each year.

Table II-4. Annual nutrient balance (acres suitable for manure application)

	Nutrient Balance if Based on Crop Removal			Nutrient Balance if Based on Fertilizer Need			Nutrient Balance if Based on Max. Removal or Need		
Year	**N**	**P_2O_5**	**K_2O**	**N**	**P_2O_5**	**K_2O**	**N**	**P_2O_5**	**K_2O**
2003	-560	18570	17341	11932	29049	19258	-4889	18118	13780
2004	-5108	10181	8776	6061	19921	6897	-9322	9726	4145
2005	-994	7624	6298	11497	17540	4453	-5324	7153	1827
3 year balance	-6662	36375	32415	29490	66510	30608	-19535	34997	19752

Positive numbers indicate more nutrients are being applied than removed. While negative numbers indicate more nutrients are being removed than applied and may require additional fertilizer.

H. Projected Manure Value

Comment: Shows the value of nutrients in manure.

Section IV:
Farm Inventory

Contents:

Comment: The tables in this section are given as examples of information available. Not all information will be appropriate or available for every operation.

A. Animal and Manure Inventory

Table IV-1. Animal inventory

Animal Type	Number of Animals[1]	Production Cycles per year	Weight In (lbs)	Weight Out (lbs)	Average Weight (lbs)	Days Confined per Year[2]	Ration Management
Farrowing pigs	50				375		
Nursery pigs	430				35		
Grow-finish pigs	1500				160		
Breeding pigs	150				275		
Total	2130						

[1] Number of animals: average number of animals for a particular animal group found on the operation on a typical production day.
[2] Days confined per year: Total number of days the animals are confined during the year. Poultry and swine operations estimate this value by the total number of production cycles per year times the number of production days per cycle.

Table IV-2. Animal mortality

Animal Type	Total Animals per Year[1]	Annual Mortality %	Annual Mortality Carcasses	Average Mortality Tons
Farrowing pigs				
Nursery pigs				
Grow-finish pigs				
Breeding pigs				
Total				

[1] Total animals per year: Poultry and swine operations estimate this value by multiplying the total number of production cycles per year by the number of animals per cycle.

Table IV-3. Mortality compost facilities

Number of Bins	Bin Size (cu. ft.)	Litter Used Per Year (tons)	Annual Compost Generated (tons)	Number of Cleanouts per Year

Table IV-4. Manure storage facilities

Storage	Capacity	Units
Farrow pit	90000	Gal
Nursery pit	65000	Gal
Grow-finish pit	725000	Gal
Breeding pit	100000	Gal

Table IV-5. Manure end of year inventory

	Source 1		Source 2		Source 3		Source 4	
	Farrow pit		Nursery pit		Grow-finish pit		Breeding pit	
Year	Amount	Units	Amount	Units	Amount	Units	Amount	Units
9/2002 - 8/2003	55000	gals	24250	gals	360500	gals	46000	gals
9/2003 - 8/2004	46000	gals	59000	gals	300500	gals	17500	gals
9/2004 - 8/2005	39750	gals	25000	gals	309250	gals	38500	gals

Table IV-6. Manure test results (manually enter manure results below the average values)

Manure Source	Storage Type	Sampling Date	DM (%)	Total N	Ammonia N	Phosphate (P_2O_5)	Potash (K_2O)	Units
Farrow pit				33.8	16.2	35.2	37.2	Lb/1000 Gal
Nursery pit				31.4	21	22.4	22.4	Lb/1000 Gal
Grow-finish pit				37.1	25.2	33	27	Lb/1000 Gal
Breeding pit				29.2	14	34.7	34.7	Lb/1000 Gal

Table IV-7. Manure test results – heavy metals (optional)

Manure Source	Manure Type	Sampling Date	Arsenic	Cadmium	Chromium	Copper	Lead	Units
Regulatory limit[1]	**Sewage sludge**	**-**	**41**	**39**	**1200**	**1500**	**300**	**ppm per dry ton**

[1] Limits based on metal limits for biosolids to be considered a low concentration material with no restrictions for agronomic use. Based on USEPA Title 40 Code of Regulations Part 503 (40 CFR 503).

Table IV-7. Manure test results – heavy metals continued (optional)

Manure Source	Manure Type	Sampling Date	Mercury	Molybdenum	Nickel	Selenium	Zinc	Units
Regulatory limit[1]	**Sewage sludge**	**-**	**18**	**18**	**420**	**36**	**2800**	**ppm per dry ton**

[1] Limits based on metal limits for biosolids to be considered a low concentration material with no restrictions for agronomic use. Based on USEPA Title 40 Code of Regulations Part 503 (40 CFR 503).

See University of Missouri guide sheet WQ425 "Biosolid standards for metals and other trace substances" for more information on heavy metal land application limits.

See the following University of Missouri guide sheets for more information on taking and interpreting manure test results:

EQ215 "Laboratory analysis of manure."

G9340 "Sampling poultry litter for nutrient testing."

Table IV-8a. Nutrient availability in manure (solid)

Manure Source	Application Method	% Nutrient Availability[1]				Plant Available Nutrients ----------lbs/ton----------		
		Organic N	Ammonia N	P_2O_5	K_2O	PAN	P_2O_5	K_2O

[1] Percent of nutrients available the first year of application

Table IV-8b. Nutrient availability in manure (liquid)

Manure Source	Application Method	% Nutrient Availability[1]				Plant Available Nutrients ---------lbs/1000gal---------		
		Organic N	Ammonia N	P_2O_5	K_2O	PAN	P_2O_5	K_2O
Farrow pit	Injected/incorporated immediately	35	95	100	100			
Nursery pit	Injected/incorporated immediately	35	95	100	100			
Grow-finish pit	Injected/incorporated immediately	35	95	100	100			
Breeding pit	Injected/incorporated immediately	35	95	100	100			
Farrow pit	Surface incorporated within 2 days	35	90	100	100			
Nursery pit	Surface incorporated within 2 days	35	90	100	100			
Grow-finish pit	Surface incorporated within 2 days	35	90	100	100			
Breeding pit	Surface incorporated within 2 days	35	90	100	100			
Farrow pit	Surface not incorporated	35	60	100	100			
Nursery pit	Surface not incorporated	35	60	100	100			
Grow-finish pit	Surface not incorporated	35	60	100	100			
Breeding pit	Surface not incorporated	35	60	100	100			

[1] Percent of nutrients available the first year of application

Table IV-9. Nutrient generation

Year	Source	Generated	Units	Manure Nutrients (lbs)		
				Total N	P_2O_5	K_2O
9/2002 - 8/2003	Farrow pit	0		0	0	0
9/2002 - 8/2003	Nursery pit	0		0	0	0
9/2002 - 8/2003	Grow-finish pit	0		0	0	0
9/2002 - 8/2003	Breeding pit	0		0	0	0
Total		0		0	0	0
9/2003 - 8/2004	Farrow pit	0		0	0	0
9/2003 - 8/2004	Nursery pit	0		0	0	0
9/2003 - 8/2004	Grow-finish pit	0		0	0	0
9/2003 - 8/2004	Breeding pit	0		0	0	0
Total		0		0	0	0
9/2004 - 8/2005	Farrow pit	0		0	0	0
9/2004 - 8/2005	Nursery pit	0		0	0	0
9/2004 - 8/2005	Grow-finish pit	0		0	0	0
9/2004 - 8/2005	Breeding pit	0		0	0	0
Total		0		0	0	0

B: Land and Crop Inventory

1. Farm size and access:

Table IV-10. Farm size and accessible acres (see Maps 2 and 3)

Farm	Total Acres	Crop and Forage Acres	Acres Suitable for Manure Application
Hogs-R-Us Sample Plan		320	292

Total acres and accessible acres calculated by the Spatial Nutrient Management Planner (SNMP).

Table IV-11. Field size and transport distance from manure storage

Field Name	Subfield	Acres	Spreadable Acres	Non-Spreadable Acres	Distance to Storage (miles)	Land Owned
Home 60	N20	20	20	0.0	0.25	Yes
Home 60	C20	20	20	0.0	0.13	Yes
Home 60	S20	20	16.25	3.8	0.13	Yes
Johnson 80	NW20	20	15.5	4.5	1	Yes
Johnson 80	N20	20	20	0.0	0.5	Yes
Johnson 80	C20	20	19	1.0	0.5	Yes
Johnson 80	S20	20	18	2.0	0.5	Yes
New 60	W20	20	19	1.0	0.75	Yes
New 60	C20	20	17	3.0	0.5	Yes
New 60	E20	20	16	4.0	0.25	Yes
Pop's 20	E20	20	16	4.0	0.13	Yes
Far West 40	E20	20	19.25	0.8	1.25	Yes
Far West 40	W20	20	20	0.0	1.5	Yes
Smith 120	1	20	18.75	1.3	3.5	No
Smith 120	2	20	16.5	3.5	3.5	No
Smith 120	3	20	20	0.0	3.5	No

Distance to storage is calculated from the southeast corner of the leased land.

Table IV-12. Predominant soil type and map unit index

Field Name	Subfield	Map Unit Name	Map Unit Symbol	Surface Texture	% Slope
Home 60	N20	Crider	73600	SIL	1-5
Home 60	C20	Crider	73600	SIL	1-5
Home 60	S20	Crider	73600	SIL	1-5
Johnson 80	NW20	Hartwell	40066	SIL	0-1
Johnson 80	N20	Hartwell	40066	SIL	0-1
Johnson 80	C20	Hartwell	40066	SIL	0-1
Johnson 80	S20	Hartwell	40066	SIL	0-1
New 60	W20	Barden	40038	SIL	1-5
New 60	C20	Barden	40038	SIL	1-5
New 60	E20	Barden	40038	SIL	1-5
Pop's 20	E20	Barden	40038	SIL	1-5
Far West 40	E20	Hartwell	40066	SIL	0-1
Far West 40	W20	Hartwell	40066	SIL	0-1
Smith 120	1	Barden	40038	SIL	1-5
Smith 120	2	Barden	40038	SIL	1-5
Smith 120	3	Hartwell	40066	SIL	0-1
Smith 120	4	Hartwell	40066	SIL	0-1
Smith 120	5	Barden	40038	SIL	1-5
Smith 120	6	Barden	40038	SIL	1-5
Mueller 120		Barden	40038	SIL	1-5

2. Soil series descriptions:
Soil series information can be found on line at the Official Soil Description web site, Soil Survey Division, NRCS (http://soils.usda.gov/technical/classification/osd/index.html)

Comment: What is Listed below is text downloaded from the website as an example. This full description can be edited to reduce its size.

LOCATION CRIDER KY+IN MO OH TN
Established Series
Rev. JMR:WHC:JCJ
04/2003

CRIDER SERIES

The Crider series consists of deep, well drained, moderately permeable soils on uplands. They formed in a loess mantle and the underlying residuum from limestone. Slopes range from 0 to 30 percent. Near the type location, the mean annual precipitation is 48 inches and the mean annual temperature is 57 degrees F.

TAXONOMIC CLASS: Fine-silty, mixed, active, mesic Typic Paleudalfs

TYPICAL PEDON: Crider silt loam--on a smooth 3 percent slope under cultivation. (Colors are for moist soil.)

Ap--0 to 8 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many medium and fine roots; moderately acid; clear smooth boundary. (5 to 11 inches thick)

Bt1--8 to 12 inches; brown (7.5YR 4/4) silt loam; weak fine subangular blocky structure; friable; many fine roots; few faint clay films on faces of peds; moderately acid; gradual smooth boundary. (0 to 10 inches thick)

Bt2--12 to 24 inches; brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common fine roots; common distinct brown (7.5YR 4/3) clay films on faces of peds; common black (7.5YR 2.5/1) mangangese concretions; moderately acid; gradual smooth boundary. (10 to 30 inches thick)

Bt3--24 to 38 inches; reddish brown (5YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common fine and very fine roots; common distinct reddish brown (5YR 4/3) clay films on faces of peds; few fine prominent pale brown (10YR 6/3) silt coatings and black (10YR 2/1) manganese stains on some peds; few black (10YR 2/1) manganese concretions; strongly acid; gradual smooth boundary. (0 to 20 inches thick)

2Bt4--38 to 50 inches; dark red (2.5YR 3/6) silt clay loam; moderate medium angular blocky structure; firm; few very fine roots; common prominent red (2.5YR 4/6) clay films on faces of

peds; few fine prominent pale brown (10YR 6/3) silt coatings and black (10YR 2/1) manganese stains on some peds; common black (10YR 2/1) manganese concretions; strongly acid; gradual smooth boundary. (10 to 30 inches thick)

2Bt5--50 to 100 inches; dark red (10R 3/6) clay, few fine prominent yellowish red (5YR 5/6) and (7.5YR 5/4) brown mottles; strong fine angular blocky structure; very firm, slightly sticky, slightly plastic; common prominent dusky red (10R 3/4) clay films on faces of peds; common black (10YR 2/1) manganese concretions; strongly acid.

R--100 inches; limestone bedrock.

TYPE LOCATION: Caldwell County, Kentucky; in Pleasant Valley, 1 mile northwest of Crider on State Highway 91. (Latitude: 37 degrees, 9 minutes, 55.9 seconds N.; Longitude: 87 degrees, 59 minutes, 29.6 seconds W.)

RANGE IN CHARACTERISTICS: Thickness of the solum ranges from 60 to more than 100 inches. Depth to bedrock ranges from 60 to more than 160 inches; commonly more than 100 inches. Fragments of chert ranges from 0 to about 15 percent; in some pedons it ranges 0 to 35 percent below the lithologic discontinuity. Reaction is from neutral to strongly acid to a depth of 40 inches, and from moderately acid to very strongly acid below 40 inches.

The Ap horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam or silty clay loam.

The Bt horizon, in the upper part, has hue of 10YR, 7.5YR, or 5YR, value of 4 or 5, and chroma of 4 to 6. In the lower part has hue of 7.5YR, 5YR, or 2.5YR, value of 4 or 5, and chroma of 4 to 8. Texture is silt loam or silty clay loam.

The 2Bt horizon has hue of 5YR to 10R, value of 3 to 5, and chroma of 4 to 8. Some pedons have few to common mottles in shades of red, brown, or yellow, and occasionally shades of gray in the lower part. Texture is silty clay, clay, or silty clay loam.

Some pedons may have 2C or 2BC horizons with colors and textures similar to the 2Bt horizon.

COMPETING SERIES: These are the Peridge and Ryker series in the same family Peridge soils lack a lithologic discontinuity in the lower subsoil. Ryker soils are formed in loess, glacial till, and residuum weathered from underlying limestone bedrock

GEOGRAPHIC SETTING: Crider soils are on nearly level to moderately steep uplands. Slopes commonly range from 0 to 12 percent, but the range allows to 30 percent. Many areas are undulating to rolling karst topography. The upper 20 to 45 inches of the solum formed in loess and the lower part formed in limestone residuum or old alluvium. Near the type location, the mean annual temperatures is 57 degrees F., and the mean annual precipitation 48 inches.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Baxter, Beasley, Hagerstown, Lowell, Nicholson, Nolin, and Pembroke series. Baxter, Beasley, Hagerstown, and Lowell soils

have more than 35 percent clay in the upper Bt horizons. Nicholson soils are moderately well drained and have a fragipan. Nolin soils are in depressions or on floodplains and lack argillic horizons. Pembroke soils have a mollic epipedon.

DRAINAGE AND PERMEABILITY: Well drained. Runoff ranges from low to high. Permeability is moderate.

USE AND VEGETATION: Nearly all of the soil is used for growing crops and pasture. The chief crops are corn, small grains, soybeans, tobacco,and hay; truck crops are grown in a few places. The original vegetation was mixed hardwood forest, chiefly of oaks, maple, hickory, elm, ash, and hackberry.

DISTRIBUTION AND EXTENT: The Pennyroyal and the western Outer Bluegrass of Kentucky; the northern part of the Highland Rim of Tennessee, and possibly northeast Arkansas. The soil is of large extent.

MLRA OFFICE RESPONSIBLE: Lexington, Kentucky

SERIES ESTABLISHED: Caldwell County (Western Kentucky Agricultural Experiment Substation Princeton), Kentucky; 1957.

REMARKS: Diagnostic horizons recognized in this pedon are:

Ochric epipedon - 0 to 8 inches (Ap).
Argillic horizon - 8 to 100 inches (Bt1, Bt2, Bt3, 2Bt4,2Bt5).
Diagnostic features recognized in this pedon are:
A palic clay curve.
Base saturation greater than 60 percent at 1.25 meters below the upper boundary of the argillic horizon.

National Cooperative Soil Survey
U.S.A.

3. Soil testing:

Soil testing plan

> Comment: The soil test procedures should be described here, including who does the sampling, how often, and how the fields are sampled. It is also appropriate to identify the soil testing lab chosen.

Table IV-13. Soil test results

Field Name	Subfield	Year	OM (%)	P	K	Mg	Ca	Unit	pH	CEC
Home 60	N20	1998	2.3	152	376	168	2540	lbs/acre	6.2	
Home 60	C20	1998	2.1	182	422	192	2688	lbs/acre	6.4	
Home 60	S20	1998	2	254	452	222	2820	lbs/acre	6.3	
Johnson 80	NW20	1998	2.2	42	188	176	2650	lbs/acre	6.1	
Johnson 80	N20	1998	2.1	76	268	242	2290	lbs/acre	6.4	
Johnson 80	C20	1998	1.9	90	286	194	2486	lbs/acre	6.6	
Johnson 80	S20	1998	2	112	316	234	2642	lbs/acre	6.2	
New 60	W20	2000	1.7	60	224	148	2160	lbs/acre	5.9	
New 60	C20	2000	1.9	84	278	174	2422	lbs/acre	6.3	
New 60	E20	2000	2.2	102	292	212	2694	lbs/acre	6.1	
Pop's 20	E20	2000	2.4	162	388	254	3046	lbs/acre	6.7	
Far West 40	E20	2000	2.2	46	182	174	2468	lbs/acre	6.4	
Far West 40	W20	2000	2.1	42	176	204	2256	lbs/acre	6.2	
Smith 120	1	2000	1.9	44	150	152	1994	lbs/acre	6.3	
Smith 120	2	2000	1.7	36	156	172	2036	lbs/acre	6.2	
Smith 120	3	2000	1.8	36	178	182	1986	lbs/acre	6.3	

Smith 120	4	2000	1.9	34	182	178	1798	lbs/acre	6.1	
Smith 120	5	2000	1.6	26	188	156	1948	lbs/acre	6	
Smith 120	6	2000	1.7	24	158	152	1976	lbs/acre	6.2	
Mueller 120		2000	1.7	42	182	190	2004	lbs/acre	6.1	

4. Land treatments and conservation assessments:

Erosion assessment using Revised Universal Soil Loss Equation 2 (RUSLE2)

Get RUSLE2 at the NRCS website: http://fargo.nserl.purdue.edu/rusle2_dataweb/,

> Comment: The soil RUSLE2 assessment carried out in a separate procedure. The tables here allow the planner to record the outcomes and actions recommended by the RUSLE2 analysis.

Table IV-14. Key land treatment practices

Field Name	Subfield	Runoff Reduction Practice	Comments[1]
Home 60	N20		
Home 60	C20		
Home 60	S20		
Johnson 80	NW20		
Johnson 80	N20		
Johnson 80	C20		
Johnson 80	S20		
New 60	W20		
New 60	C20		

New 60	E20		
Pop's 20	E20		
Far West 40	E20		
Far West 40	W20		
Smith 120	1		
Smith 120	2		
Smith 120	3		
Smith 120	4		
Smith 120	5		
Smith 120	6		
Mueller 120			

1 List key land treatment activities and the timing of those events for each field. Examples include major tillage operations and the presence of terraces or other erosion prevention treatments.
Also note the presence of edge of field treatments to reduce nutrient loss and/or sediment.

Table IV-15. RUSLE2 results and additional key data input

Field Name	Subfield	Soil Type	Slope Length (ft)	Slope Steepness (%)	Runoff Reduction Practice?	Soil T Value (tons/a)	RUSLE2 Erosion Estimate (tons/a)	Sediment Delivery (tons/a)
Home 60	N20	Crider		1-5				
Home 60	C20	Crider		1-5				
Home 60	S20	Crider		1-5				
Johnson 80	NW20	Hartwell		0-1				
Johnson 80	N20	Hartwell		0-1				
Johnson 80	C20	Hartwell		0-1				
Johnson 80	S20	Hartwell		0-1				
New 60	W20	Barden		1-5				
New 60	C20	Barden		1-5				
New 60	E20	Barden		1-5				
Pop's 20	E20	Barden		1-5				
Far West 40	E20	Hartwell		0-1				
Far West 40	W20	Hartwell		0-1				
Smith 120	1	Barden		1-5				
Smith 120	2	Barden		1-5				
Smith 120	3	Hartwell		0-1				

Smith 120	4	Hartwell		0-1				
Smith 120	5	Barden		1-5				
Smith 120	6	Barden		1-5				
Mueller 120		Barden		1-5				

The NRCS standard is for estimated erosion to be less then “T”.

Long-term phosphorus loss assessment

Missouri suggests using the Missouri Phosphorus Index or agronomic phosphorus levels to assess potential for long-term loss of phosphorus from your field. A version of the Missouri Phosphorus Index is available at http://www.nmplanner.missouri.edu.

> Comment: The Document Generator output describes both agronomic P and Phosphorus Index risk assessments. The current Missouri NRCS Nutrient Management conservation practice standard (590) requires that a Missouri Phosphorus Index assessment be performed for all manured fields, as well as the Leaching Index.

Table IV-16. Phosphorus assessment results and additional key data input

Field Name	Subfield	Method of Assessment (Index or Agronomic)	Soil Test P	Soil Test P Units	Tillage (Tilled vs. No-till or Forage)	Hydrologic Soil Group[1]	Hydrologic Condition[2] (good, fair, poor)	P Index Value	P Index Rating[3]
Home 60	N20		152	lbs/acre					
Home 60	C20		182	lbs/acre					
Home 60	S20		254	lbs/acre					
Johnson 80	NW20		42	lbs/acre					
Johnson 80	N20		76	lbs/acre					
Johnson 80	C20		90	lbs/acre					
Johnson 80	S20		112	lbs/acre					
New 60	W20		60	lbs/acre					
New 60	C20		84	lbs/acre					
New 60	E20		102	lbs/acre					

Pop's 20	E20		162	lbs/acre					
Far West 40	E20		46	lbs/acre					
Far West 40	W20		42	lbs/acre					
Smith 120	1		44	lbs/acre					
Smith 120	2		36	lbs/acre					
Smith 120	3		36	lbs/acre					
Smith 120	4		34	lbs/acre					
Smith 120	5		26	lbs/acre					
Smith 120	6		24	lbs/acre					
Mueller 120			42	lbs/acre					

[1] An attribute of the soil type available in the soil survey.

[2] Hydrologic condition: based on past treatment, select soil condition in relation to runoff potential. Healthy soil condition-good. Compacted soil- poor.

[3] Ratings of low, medium, high, or very high. Refer to P assessment interpretation later in this chapter.

Summary and interpretation of key assessment results

Table IV-17. Field assessment summary

Field Name	Subfield	PI Assessment Rating	N Leaching Assessment Rating	Does Erosion Exceed "T" (Y or N)	Highly Erodable Land (HEL) (Y or N)	Mark all fields that should not receive manure.
Home 60	N20					
Home 60	C20					
Home 60	S20					
Johnson 80	NW20					
Johnson 80	N20					
Johnson 80	C20					
Johnson 80	S20					
New 60	W20					
New 60	C20					
New 60	E20					
Pop's 20	E20					
Far West 40	E20					
Far West 40	W20					
Smith 120	1					
Smith 120	2					

Smith 120	3					
Smith 120	4					
Smith 120	5					
Smith 120	6					
Mueller 120						

P assessment interpretation:
The objective of the Missouri P index is to identify fields that have a high risk for phosphorus loss from erosion and elevated soil test phosphorus.

Rating	Interpretation
Low	Nitrogen-based nutrient management allowed.
Medium	Nitrogen-based nutrient management allowed. Consider implementing phosphorus-based management of manure and other conservation practices to reduce phosphorus loss from the field.
High	Phosphorus based manure management required. Additional land conservation practices to reduce phosphorus loss from this field highly recommended.
Very high	No manure applications recommended. Implement land conservation practices to reduce phosphorus loss from this field.

Leaching assessment interpretation:
The objective of the Leaching Index is to identify fields that have high potential for contaminating the ground water with soluble nutrients.

Rating	Interpretation
Low (2 to 4)	Soils have low potential to leach mobile nutrients below the root zone.
Medium (5 to 10)	Soils have a medium potential to leach mobile nutrients below the root zone. Consider site specific land treatments to minimize the potential for leaching losses.
High	Soils have a high potential to leach mobile nutrients below the root zone. Special considerations for the method, rate, and timing of nutrient applications should be implemented to reduce the potential of losses to ground water resources.

Highly erodible land (HEL) interpretation:

Comment: The HEL interpretation can be entered in as a narrative.

5. Cropping system:

Yield records

Table IV-18. Yield records

Field Name	Subfield	Crop Year	Crop	Area (acres)	Yield Goal*	Actual Yield	Units

* Based on 1.1 times the mean yield. Extreme values excluded.

Table IV-19. Annual crop removal/fertilizer recommendation per acre

Field Name	Sub Field	Crop Year	Crop	Yield Goal	Units Per/ acre	Crop Removal (lbs/acre)			Fertilizer Rec. (lbs/ acre)			Max. Removal or Rec. [1] (lbs/acre)		
						N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Home 60	N20	2003	Corn grain	160	Bushels	144	72	48	185	0	20	185	72	48
Home 60	N20	2004	Corn grain	160	Bushels	144	72	48	185	0	20	185	72	48
Home 60	N20	2005	Corn grain	160	Bushels	144	72	48	185	0	20	185	72	48
Total						432	216	144	555	0	60	555	216	144
Home 60	C20	2003	Corn grain	160	Bushels	144	72	48	190	0	5	190	72	48
Home 60	C20	2004	Corn grain	160	Bushels	144	72	48	190	0	5	190	72	48
Home 60	C20	2005	Corn grain	160	Bushels	144	72	48	190	0	5	190	72	48
Total						432	216	144	570	0	15	570	216	144

[1] Max removal or recommendation based on crop removal or fertilizer recommendation, whichever is greater

Table IV-19. Annual crop removal/fertilizer recommendation per acre

Field Name	Sub Field	Crop Year	Crop	Yield Goal	Units Per/ acre	Crop Removal (lbs/acre)			Fertilizer Rec. (lbs/ acre)			Max. Removal or Rec. [1] (lbs/acre)		
						N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Home 60	S20	2003	Corn grain	160	Bushels	144	72	48	190	0	0	190	72	48
Home 60	S20	2004	Corn grain	160	Bushels	144	72	48	190	0	0	190	72	48
Home 60	S20	2005	Corn grain	160	Bushels	144	72	48	190	0	0	190	72	48
Total						432	216	144	570	0	0	570	216	144
Johnson 80	NW20	2003	Corn grain	150	Bushels	135	68	45	150	70	75	150	70	75
Johnson 80	NW20	2004	Soybeans	50	Bushels	175	42	72	0	45	105	175	45	105
Johnson 80	NW20	2005	Corn grain	150	Bushels	135	68	45	150	70	75	150	70	75
Total						445	178	162	300	185	255	475	185	255

[1] Max removal or recommendation based on crop removal or fertilizer recommendation, whichever is greater

Table IV-19. Annual crop removal/fertilizer recommendation per acre

Field Name	Sub Field	Crop Year	Crop	Yield Goal	Units Per/ acre	Crop Removal (lbs/acre)			Fertilizer Rec. (lbs/ acre)			Max. Removal or Rec. [1] (lbs/acre)		
						N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Johnson 80	N20	2003	Corn grain	150	Bushels	135	68	45	150	0	50	150	68	50
Johnson 80	N20	2004	Soybeans	50	Bushels	175	42	72	0	0	80	175	42	80
Johnson 80	N20	2005	Corn grain	150	Bushels	135	68	45	150	0	50	150	68	50
Total						445	178	162	300	0	180	475	178	180
Johnson 80	C20	2003	Corn grain	150	Bushels	135	68	45	155	0	45	155	68	45
Johnson 80	C20	2004	Soybeans	50	Bushels	175	42	72	0	0	75	175	42	75
Johnson 80	C20	2005	Corn grain	150	Bushels	135	68	45	155	0	45	155	68	45
Total						445	178	162	310	0	165	485	178	165

[1] Max removal or recommendation based on crop removal or fertilizer recommendation, whichever is greater

Table IV-19. Annual crop removal/fertilizer recommendation per acre

Field Name	Sub Field	Crop Year	Crop	Yield Goal	Units Per/ acre	Crop Removal (lbs/acre)			Fertilizer Rec. (lbs/ acre)			Max. Removal or Rec. [1] (lbs/acre)		
						N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Johnson 80	S20	2003	Corn grain	150	Bushels	135	68	45	155	0	40	155	68	45
Johnson 80	S20	2004	Soybeans	50	Bushels	175	42	72	0	0	60	175	42	72
Johnson 80	S20	2005	Corn grain	150	Bushels	135	68	45	155	0	40	155	68	45
Total						445	178	162	310	0	140	485	178	162
New 60	W20	2003	Soybeans	40	Bushels	140	34	58	0	10	75	140	34	75
New 60	W20	2004	Corn grain	135	Bushels	122	61	40	130	20	60	130	61	60
New 60	W20	2005	Soybeans	40	Bushels	140	34	58	0	10	75	140	34	75
Total						402	129	156	130	40	210	410	129	210

[1] Max removal or recommendation based on crop removal or fertilizer recommendation, whichever is greater

Table IV-19. Annual crop removal/fertilizer recommendation per acre

Field Name	Sub Field	Crop Year	Crop	Yield Goal	Units Per/ acre	Crop Removal (lbs/acre)			Fertilizer Rec. (lbs/ acre)			Max. Removal or Rec. [1] (lbs/acre)		
						N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
New 60	C20	2003	Soybeans	40	Bushels	140	34	58	0	0	0	140	34	58
New 60	C20	2004	Corn grain	135	Bushels	122	61	40	130	0	45	130	61	45
New 60	C20	2005	Soybeans	40	Bushels	140	34	58	0	0	60	140	34	60
Total						402	129	156	130	0	105	410	129	163
New 60	E20	2003	Soybeans	40	Bushels	140	34	58	0	0	0	140	34	58
New 60	E20	2004	Corn grain	135	Bushels	122	61	40	125	0	40	125	61	40
New 60	E20	2005	Soybeans	40	Bushels	140	34	58	0	0	60	140	34	60
Total						402	129	156	125	0	100	405	129	158

[1] Max removal or recommendation based on crop removal or fertilizer recommendation, whichever is greater

Table IV-19. Annual crop removal/fertilizer recommendation per acre

Field Name	Sub Field	Crop Year	Crop	Yield Goal	Units Per/ acre	Crop Removal (lbs/acre)			Fertilizer Rec. (lbs/ acre)			Max. Removal or Rec. [1] (lbs/acre)		
						N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Pop's 20	E20	2003	Corn grain	120	Bushels	108	54	36	140	0	15	140	54	36
Pop's 20	E20	2004	Corn grain	120	Bushels	108	54	36	140	0	15	140	54	36
Pop's 20	E20	2005	Corn grain	120	Bushels	108	54	36	140	0	15	140	54	36
Total						324	162	108	420	0	45	420	162	108
Far West 40	E20	2003	Corn grain	135	Bushels	122	61	40	125	60	75	125	61	75
Far West 40	E20	2004	Soybeans	40	Bushels	140	34	58	0	30	90	140	34	90
Far West 40	E20	2005	Corn grain	135	Bushels	122	61	40	125	60	75	125	61	75
Total						384	156	138	250	150	240	390	156	240

[1] Max removal or recommendation based on crop removal or fertilizer recommendation, whichever is greater

Table IV-19. Annual crop removal/fertilizer recommendation per acre

Field Name	Sub Field	Crop Year	Crop	Yield Goal	Units Per/ acre	Crop Removal (lbs/acre)			Fertilizer Rec. (lbs/ acre)			Max. Removal or Rec. [1] (lbs/acre)		
						N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Far West 40	W20	2003	Soybeans	40	Bushels	140	34	58	0	35	90	140	35	90
Far West 40	W20	2004	Corn grain	135	Bushels	122	61	40	130	65	75	130	65	75
Far West 40	W20	2005	Soybeans	40	Bushels	140	34	58	0	35	90	140	35	90
Total						402	129	156	130	135	255	410	135	255
Smith 120	1	2003	Soybeans	35	Bushels	122	29	50	0	0	0	122	29	50
Smith 120	1	2004	Corn grain	125	Bushels	112	56	38	125	55	80	125	56	80
Smith 120	1	2005	Soybeans	35	Bushels	122	29	50	0	30	95	122	30	95
Total						356	114	138	125	85	175	369	115	225

[1] Max removal or recommendation based on crop removal or fertilizer recommendation, whichever is greater

Table IV-19. Annual crop removal/fertilizer recommendation per acre

Field Name	Sub Field	Crop Year	Crop	Yield Goal	Units Per/ acre	Crop Removal (lbs/acre)			Fertilizer Rec. (lbs/ acre)			Max. Removal or Rec. [1] (lbs/acre)		
						N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Smith 120	2	2003	Soybeans	35	Bushels	122	29	50	0	40	90	122	40	90
Smith 120	2	2004	Corn grain	125	Bushels	112	56	38	125	65	80	125	65	80
Smith 120	2	2005	Soybeans	35	Bushels	122	29	50	0	40	90	122	40	90
Total						356	114	138	125	145	260	369	145	260
Smith 120	3	2003	Soybeans	35	Bushels	122	29	50	0	40	85	122	40	85
Smith 120	3	2004	Corn grain	125	Bushels	112	56	38	125	65	70	125	65	70
Smith 120	3	2005	Soybeans	35	Bushels	122	29	50	0	40	85	122	40	85
Total						356	114	138	125	145	240	369	145	240

[1] Max removal or recommendation based on crop removal or fertilizer recommendation, whichever is greater

Table IV-19. Annual crop removal/fertilizer recommendation per acre

Field Name	Sub Field	Crop Year	Crop	Yield Goal	Units Per/ acre	Crop Removal (lbs/acre)			Fertilizer Rec. (lbs/ acre)			Max. Removal or Rec. [1] (lbs/acre)		
						N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Smith 120	4	2003	Soybeans	35	Bushels	122	29	50	0	40	80	122	40	80
Smith 120	4	2004	Corn grain	125	Bushels	112	56	38	125	70	70	125	70	70
Smith 120	4	2005	Soybeans	35	Bushels	122	29	50	0	40	80	122	40	80
Total						356	114	138	125	150	230	369	150	230
Smith 120	5	2003	Soybeans	35	Bushels	122	29	50	0	50	80	122	50	80
Smith 120	5	2004	Corn grain	125	Bushels	112	56	38	125	80	65	125	80	65
Smith 120	5	2005	Soybeans	35	Bushels	122	29	50	0	50	80	122	50	80
Total						356	114	138	125	180	225	369	180	225

[1] Max removal or recommendation based on crop removal or fertilizer recommendation, whichever is greater

Table IV-19. Annual crop removal/fertilizer recommendation per acre

Field Name	Sub Field	Crop Year	Crop	Yield Goal	Units Per/ acre	Crop Removal (lbs/acre)			Fertilizer Rec. (lbs/ acre)			Max. Removal or Rec. [1] (lbs/acre)		
						N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Smith 120	6	2003	Soybeans	35	Bushels	122	29	50	0	0	0	122	29	50
Smith 120	6	2004	Corn grain	125	Bushels	112	56	38	125	80	75	125	80	75
Smith 120	6	2005	Soybeans	35	Bushels	122	29	50	0	55	90	122	55	90
Total						356	114	138	125	135	165	369	164	215
Mueller 120		2003	Corn grain	140	Bushels	126	63	42	145	65	75	145	65	75
Mueller 120		2004	Soybeans	40	Bushels	140	34	58	0	35	90	140	35	90
Mueller 120		2005	Corn grain	140	Bushels	126	63	42	145	65	75	145	65	75
Total						392	160	142	290	165	240	430	165	240

[1] Max removal or recommendation based on crop removal or fertilizer recommendation, whichever is greater

Table IV-20. Annual nutrient balance per acre (acres suitable for manure application)[1]

Field Name	Sub Field	Crop Year	Applied Nutrients (lbs/acre)			Balance Based on Crop Removal (lbs/acre)			Balance Based on Fertilizer Rec. (lbs/ acre)			Balance Based on Max Removal or Rec.[2] (lbs/acre)		
			N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Home 60	N20	2003	185	0	60	41	-72	12	0	0	40	0	-72	12
Home 60	N20	2004	185	0	0	41	-72	-48	0	0	-20	0	-72	-48
Home 60	N20	2005	185	0	0	41	-72	-48	0	0	-20	0	-72	-48
Total			555	0	60	123	-216	-84	0	0	0	0	-216	-84
Home 60	C20	2003	190	0	15	46	-72	-33	0	0	10	0	-72	-33
Home 60	C20	2004	190	0	0	46	-72	-48	0	0	-5	0	-72	-48
Home 60	C20	2005	190	0	0	46	-72	-48	0	0	-5	0	-72	-48
Total			570	0	15	138	-216	-129	0	0	0	0	-216	-129

[1] Positive numbers indicate more nutrients are being applied than removed. Negative numbers indicate more nutrients are being removed than applied and may require additional fertilizer.

[2] Removal or recommendation based on the crop removal or fertilizer recommendation, whichever is greater.

Table IV-20. Annual nutrient balance per acre (acres suitable for manure application)[1]

Field Name	Sub Field	Crop Year	Applied Nutrients (lbs/acre)			Balance Based on Crop Removal (lbs/acre)			Balance Based on Fertilizer Rec. (lbs/ acre)			Balance Based on Max Removal or Rec.[2] (lbs/acre)		
			N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Home 60	S20	2003	190	0	0	46	-72	-48	0	0	0	0	-72	-48
Home 60	S20	2004	190	0	0	46	-72	-48	0	0	0	0	-72	-48
Home 60	S20	2005	190	0	0	46	-72	-48	0	0	0	0	-72	-48
Total			570	0	0	138	-216	-144	0	0	0	0	-216	-144
Johnson 80	NW20	2003												
Johnson 80	NW20	2004												
Johnson 80	NW20	2005												
Total			0	0	0	0	0	0	0	0	0	0	0	0

[1] Positive numbers indicate more nutrients are being applied than removed. Negative numbers indicate more nutrients are being removed than applied and may require additional fertilizer.

[2] Removal or recommendation based on the crop removal or fertilizer recommendation, whichever is greater.

Table IV-20. Annual nutrient balance per acre (acres suitable for manure application)[1]

Field Name	Sub Field	Crop Year	Applied Nutrients (lbs/acre)			Balance Based on Crop Removal (lbs/acre)			Balance Based on Fertilizer Rec. (lbs/ acre)			Balance Based on Max Removal or Rec.[2] (lbs/acre)		
			N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Johnson 80	N20	2003												
Johnson 80	N20	2004	0	0	61	-175	-42	-11	0	0	-19	-175	-42	-19
Johnson 80	N20	2005	145	0	0	10	-68	-45	-5	0	-50	-5	-68	-50
Total			145	0	61	-165	-110	-56	-5	0	-69	-180	-110	-69
Johnson 80	C20	2003												
Johnson 80	C20	2004	0	0	0	-175	-42	-72	0	0	-75	-175	-42	-75
Johnson 80	C20	2005	150	0	42	15	-68	-3	-5	0	-3	-5	-68	-3
Total			150	0	42	-160	-110	-75	-5	0	-78	-180	-110	-78

[1] Positive numbers indicate more nutrients are being applied than removed. Negative numbers indicate more nutrients are being removed than applied and may require additional fertilizer.

[2] Removal or recommendation based on the crop removal or fertilizer recommendation, whichever is greater.

Table IV-20. Annual nutrient balance per acre (acres suitable for manure application)[1]

Field Name	Sub Field	Crop Year	Applied Nutrients (lbs/acre)			Balance Based on Crop Removal (lbs/acre)			Balance Based on Fertilizer Rec. (lbs/ acre)			Balance Based on Max Removal or Rec.[2] (lbs/acre)		
			N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Johnson 80	S20	2003												
Johnson 80	S20	2004	0	0	0	-175	-42	-72	0	0	-60	-175	-42	-72
Johnson 80	S20	2005	150	0	0	15	-68	-45	-5	0	-40	-5	-68	-45
Total			150	0	0	-160	-110	-117	-5	0	-100	-180	-110	-117
New 60	W20	2003												
New 60	W20	2004												
New 60	W20	2005												
Total			0	0	0	0	0	0	0	0	0	0	0	0

[1] Positive numbers indicate more nutrients are being applied than removed. Negative numbers indicate more nutrients are being removed than applied and may require additional fertilizer.

[2] Removal or recommendation based on the crop removal or fertilizer recommendation, whichever is greater.

Table IV-20. Annual nutrient balance per acre (acres suitable for manure application)[1]

Field Name	Sub Field	Crop Year	Applied Nutrients (lbs/acre)			Balance Based on Crop Removal (lbs/acre)			Balance Based on Fertilizer Rec. (lbs/ acre)			Balance Based on Max Removal or Rec.[2] (lbs/acre)		
			N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
New 60	C20	2003	0	0	0	-140	-34	-58	0	0	0	-140	-34	-58
New 60	C20	2004												
New 60	C20	2005	0	0	0	-140	-34	-58	0	0	-60	-140	-34	-60
Total			0	0	0	-280	-68	-116	0	0	-60	-280	-68	-118
New 60	E20	2003	0	0	0	-140	-34	-58	0	0	0	-140	-34	-58
New 60	E20	2004												
New 60	E20	2005	0	0	0	-140	-34	-58	0	0	-60	-140	-34	-60
Total			0	0	0	-280	-68	-116	0	0	-60	-280	-68	-118

[1] Positive numbers indicate more nutrients are being applied than removed. Negative numbers indicate more nutrients are being removed than applied and may require additional fertilizer.

[2] Removal or recommendation based on the crop removal or fertilizer recommendation, whichever is greater.

Table IV-20. Annual nutrient balance per acre (acres suitable for manure application)[1]

Field Name	Sub Field	Crop Year	Applied Nutrients (lbs/acre)			Balance Based on Crop Removal (lbs/acre)			Balance Based on Fertilizer Rec. (lbs/ acre)			Balance Based on Max Removal or Rec.[2] (lbs/acre)		
			N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Pop's 20	E20	2003	140	0	45	32	-54	9	0	0	30	0	-54	9
Pop's 20	E20	2004	140	0	0	32	-54	-36	0	0	-15	0	-54	-36
Pop's 20	E20	2005	140	0	0	32	-54	-36	0	0	-15	0	-54	-36
Total			420	0	45	96	-162	-63	0	0	0	0	-162	-63
Far West 40	E20	2003												
Far West 40	E20	2004												
Far West 40	E20	2005												
Total			0	0	0	0	0	0	0	0	0	0	0	0

[1] Positive numbers indicate more nutrients are being applied than removed. Negative numbers indicate more nutrients are being removed than applied and may require additional fertilizer.

[2] Removal or recommendation based on the crop removal or fertilizer recommendation, whichever is greater.

Comment: Many of the tables in this section were blank (no manure or fertilizer applied) so they were deleted for clarity.

Table IV-20. Annual nutrient balance per acre (acres suitable for manure application)[1]

Smith 120	1	2003	0	0	0	-122	-29	-50	0	0	0	-122	-29	-50
Smith 120	1	2004												
Smith 120	1	2005												
Total			0	0	0	-122	-29	-50	0	0	0	-122	-29	-50

[1] Positive numbers indicate more nutrients are being applied than removed. Negative numbers indicate more nutrients are being removed than applied and may require additional fertilizer.

[2] Removal or recommendation based on the crop removal or fertilizer recommendation, whichever is greater.

Table IV-20. Annual nutrient balance per acre (acres suitable for manure application)[1]

Field Name	Sub Field	Crop Year	Applied Nutrients (lbs/acre)			Balance Based on Crop Removal (lbs/acre)			Balance Based on Fertilizer Rec. (lbs/ acre)			Balance Based on Max Removal or Rec.[2] (lbs/acre)		
			N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Smith 120	6	2003	0	0	0	-122	-29	-50	0	0	0	-122	-29	-50
Smith 120	6	2004												
Smith 120	6	2005												
Total			0	0	0	-122	-29	-50	0	0	0	-122	-29	-50
Mueller 120		2003	145	100	165	19	37	123	0	35	90	0	35	90
Mueller 120		2004	0	0	0	-140	-34	-58	0	-35	-90	-140	-35	-90
Mueller 120		2005	145	100	165	19	37	123	0	35	90	0	35	90
Total			290	200	330	-102	40	188	0	35	90	-140	35	90

[1] Positive numbers indicate more nutrients are being applied than removed. Negative numbers indicate more nutrients are being removed than applied and may require additional fertilizer.

[2] Removal or recommendation based on the crop removal or fertilizer recommendation, whichever is greater.

Table IV-22. 2003 Summary of manure and fertilizer distribution

Field Name	Subfield	Source	Crop	Acres Covered	Application Rate	Units /acre	Timing	Total Applied	Nutrients Applied (lbs/a)		
									N	P_2O_5	K_2O
Home 60	N20	0-0-60	Corn grain	20	100	Lbs	November 2002	2000	0	0	60
Home 60	N20	28-0-0	Corn grain	20	10	Lbs	May 2003	200	30	0	0
Home 60	N20	82-0-0	Corn grain	20	189	Lbs	June 2003	3780	155	0	0
Home 60	C20	0-0-60	Corn grain	20	25	Lbs	November 2002	500	0	0	15
Home 60	C20	28-0-0	Corn grain	20	10	Lbs	May 2003	200	30	0	0
Home 60	C20	82-0-0	Corn grain	20	195	Lbs	June 2003	3900	160	0	0
Home 60	S20	28-0-0	Corn grain	20	10	Lbs	May 2003	200	30	0	0
Home 60	S20	82-0-0	Corn grain	20	195	Lbs	June 2003	3900	160	0	0
Johnson 80	NW20	Grow-finish pit	Corn grain	20.5	4300	Gal	November 2002	88000	121	142	116
Johnson 80	NW20	28-0-0	Corn grain	20	10	Lbs	May 2003	200	30	0	0
Johnson 80	N20	Grow-finish pit	Corn grain	20.5	4300	Gal	September 2002	88000	121	142	116
Johnson 80	N20	28-0-0	Corn grain	20	10	Lbs	May 2003	200	30	0	0
Johnson 80	C20	Nursery pit	Corn grain	12.5	5300	Gal	October 2002	66000	125	119	119
Johnson 80	C20	Grow-finish pit	Corn grain	7.9	4500	Gal	October 2002	35750	126	149	122
Johnson 80	C20	28-0-0	Corn grain	20	10	Lbs	May 2003	200	30	0	0
Johnson 80	S20	Grow-finish pit	Corn grain	20.2	4500	Gal	October 2002	90750	126	149	122
Johnson 80	S20	28-0-0	Corn grain	20	10	Lbs	May 2003	200	30	0	0

New 60	W20	Grow-finish pit	Soybeans	20.3	7300	Gal	April 2003	148500	141	241	197
Far West 40	E20	Farrow pit	Corn grain	20	4400	Gal	November 2002	88000	95	155	164
Far West 40	W20	Nursery pit	Soybeans	6.6	8700	Gal	May 2003	57750	141	195	195
Far West 40	W20	Grow-finish pit	Soybeans	13.6	7300	Gal	May 2003	99000	141	241	197
Pop's 20	E20	0-0-60	Corn grain	20	75	Lbs	November 2002	1500	0	0	45
Pop's 20	E20	28-0-0	Corn grain	20	10	Lbs	May 2003	200	30	0	0
Pop's 20	E20	82-0-0	Corn grain	20	134	Lbs	June 2003	2680	110	0	0
Far West 40	E20	28-0-0	Corn grain	20	10	Lbs	May 2003	200	30	0	0
Mueller 120		0-46-0	Corn grain	120	217	Lbs	November 2002	26040	0	100	0
Mueller 120		0-0-60	Corn grain	120	275	Lbs	November 2002	33000	0	0	165
Mueller 120		28-0-0	Corn grain	120	10	Lbs	May 2003	1200	30	0	0
Mueller 120		82-0-0	Corn grain	120	140	Lbs	June 2003	16800	115	0	0
Smith 120	2	Grow-finish pit	Soybeans	20.2	6400	Gal	February 2003	129250	124	211	173
Smith 120	3	Grow-finish pit	Soybeans	9	6400	Gal	December 2002	57750	124	211	173
Smith 120	3	Breeding pit	Soybeans	11	9000	Gal	December 2002	99000	123	312	312
Smith 120	4	Grow-finish pit	Soybeans	20.2	6400	Gal	January 2003	129250	124	211	173
Smith 120	5	Grow-finish pit	Soybeans	20.2	6400	Gal	May 2003	129250	124	211	173

Table IV-22. 2004 Summary of manure and fertilizer distribution

Field Name	Subfield	Source	Crop	Acres Covered	Application Rate	Units /acre	Timing	Total Applied	Nutrients Applied (lbs/a)		
									N	P_2O_5	K_2O
Home 60	N20	28-0-0	Corn grain	20	10	Lbs	May 2004	200	30	0	0
Home 60	N20	82-0-0	Corn grain	20	189	Lbs	June 2004	3780	155	0	0
Home 60	C20	28-0-0	Corn grain	20	10	Lbs	May 2004	200	30	0	0
Home 60	C20	82-0-0	Corn grain	20	195	Lbs	June 2004	3900	160	0	0
Home 60	S20	28-0-0	Corn grain	20	10	Lbs	May 2004	200	30	0	0
Home 60	S20	82-0-0	Corn grain	20	195	Lbs	June 2004	3900	160	0	0
Johnson 80	N20	0-0-60	Soybeans	20	101	Lbs	November 2003	2020	0	0	61
Johnson 80	NW20	Grow-finish pit	Soybeans	20	5900	Gal	November 2003	118250	166	195	159
New 60	W20	Grow-finish pit	Corn grain	20	4400	Gal	April 2004	88000	85	145	119
New 60	W20	28-0-0	Corn grain	20	10	Lbs	May 2004	200	30	0	0
New 60	C20	Grow-finish pit	Corn grain	20.6	3600	Gal	September 2003	74250	101	119	97
New 60	C20	28-0-0	Corn grain	20	10	Lbs	May 2004	200	30	0	0
New 60	E20	Grow-finish pit	Corn grain	20.2	3400	Gal	October 2003	68750	96	112	92
New 60	E20	28-0-0	Corn grain	20	10	Lbs	May 2004	200	30	0	0
Far West 40	E20	Grow-finish pit	Soybeans	20	6600	Gal	May 2004	132000	127	218	178
Far West 40	W20	Grow-finish pit	Corn grain	20.2	3000	Gal	November 2003	60500	84	99	81
Pop's 20	E20	28-0-0	Corn grain	20	10	Lbs	May 2004	200	30	0	0
Pop's 20	E20	82-0-0	Corn grain	20	134	Lbs	June 2004	2680	110	0	0
Far West	W20	28-0-0	Corn grain	20	10	Lbs	May 2004	200	30	0	0

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Smith 120	1	Grow-finish pit	Corn grain	20.2	3400	Gal	November 2003	68750	96	112	92
Smith 120	1	28-0-0	Corn grain	20	10	Lbs	May 2004	200	30	0	0
Smith 120	2	Grow-finish pit	Corn grain	20.5	4300	Gal	February 2004	88000	83	142	116
Smith 120	2	28-0-0	Corn grain	20	10	Lbs	May 2004	200	30	0	0
Smith 120	3	Farrow pit	Corn grain	16	4800	Gal	December 2003	77000	76	169	179
Smith 120	3	Grow-finish pit	Corn grain	4.1	4000	Gal	December 2003	16500	77	132	108
Smith 120	3	28-0-0	Corn grain	20	10	Lbs	May 2004	200	30	0	0
Smith 120	4	Nursery pit	Corn grain	12.4	5100	Gal	January 2004	63250	83	114	114
Smith 120	4	Grow-finish pit	Corn grain	7.7	4300	Gal	January 2004	33000	83	142	116
Smith 120	4	28-0-0	Corn grain	20	10	Lbs	May 2004	200	30	0	0
Smith 120	5	Grow-finish pit	Corn grain	4.5	4300	Gal	May 2004	19250	83	142	116
Smith 120	5	Breeding pit	Corn grain	15.6	6000	Gal	May 2004	93500	82	208	208
Smith 120	5	28-0-0	Corn grain	20	10	Lbs	May 2004	200	30	0	0
Smith 120	6	Grow-finish pit	Corn grain	20.2	3400	Gal	October 2003	68750	96	112	92
Smith 120	6	28-0-0	Corn grain	20	10	Lbs	May 2004	200	30	0	0

Table IV-22. 2005 Summary of manure and fertilizer distribution

Field Name	Subfield	Source	Crop	Acres Covered	Application Rate	Units /acre	Timing	Total Applied	Nutrients Applied (lbs/a)		
									N	P_2O_5	K_2O
Home 60	N20	28-0-0	Corn grain	20	10	Lbs	May 2005	200	30	0	0
Home 60	N20	82-0-0	Corn grain	20	189	Lbs	June 2005	3780	155	0	0
Home 60	C20	28-0-0	Corn grain	20	10	Lbs	May 2005	200	30	0	0
Home 60	C20	82-0-0	Corn grain	20	195	Lbs	June 2005	3900	160	0	0
Home 60	S20	28-0-0	Corn grain	20	10	Lbs	May 2005	200	30	0	0
Home 60	S20	82-0-0	Corn grain	20	195	Lbs	June 2005	3900	160	0	0
Johnson 80	NW20	Nursery pit	Corn grain	15	4400	Gal	September 2004	66000	104	99	99
Johnson 80	NW20	Grow-finish pit	Corn grain	5.2	3700	Gal	September 2004	19250	104	122	100
Johnson 80	NW20	28-0-0	Corn grain	20	10	Lbs	May 2005	200	30	0	0
Johnson 80	N20	28-0-0	Corn grain	20	10	Lbs	May 2005	200	30	0	0
Johnson 80	N20	82-0-0	Corn grain	20	140	Lbs	June 2005	2800	115	0	0
Johnson 80	C20	0-0-60	Corn grain	20	70	Lbs	November 2004	1400	0	0	42
Johnson 80	C20	28-0-0	Corn grain	20	10	Lbs	May 2005	200	30	0	0
Johnson 80	C20	82-0-0	Corn grain	20	146	Lbs	June 2005	2920	120	0	0
Johnson 80	S20	28-0-0	Corn grain	20	10	Lbs	May 2005	200	30	0	0
Johnson 80	S20	82-0-0	Corn grain	20	146	Lbs	June 2005	2920	120	0	0
New 60	W20	Grow-finish pit	Soybeans	20.2	6400	Gal	December 2004	129250	124	211	173
Far West 40	E20	Grow-finish pit	Corn grain	20.2	3000	Gal	October 2004	60500	84	99	81
Far West 40	W20	Grow-finish pit	Soybeans	20.2	4500	Gal	October 2004	90750	126	149	122

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Pop's 20	E20	28-0-0	Corn grain	20	10	Lbs	May 2005	200	30	0	0
Pop's 20	E20	82-0-0	Corn grain	20	134	Lbs	June 2005	2680	110	0	0
Far West 40	E20	28-0-0	Corn grain	20	10	Lbs	May 2005	200	30	0	0
Mueller 120		0-0-60	Corn grain	120	275	Lbs	November 2004	33000	0	0	165
Mueller 120		0-46-0	Corn grain	120	217	Lbs	November 2004	26040	0	100	0
Mueller 120		28-0-0	Corn grain	120	10	Lbs	May 2005	1200	30	0	0
Mueller 120		82-0-0	Corn grain	120	140	Lbs	June 2005	16800	115	0	0
Smith 120	1	Farrow pit	Soybeans	10.2	7300	Gal	January 2005	74250	116	257	272
Smith 120	1	Grow-finish pit	Soybeans	5	6000	Gal	January 2005	30250	116	198	162
Smith 120	1	Breeding pit	Soybeans	5.2	8500	Gal	January 2005	44000	116	295	295
Smith 120	2	Grow-finish pit	Soybeans	20.1	5600	Gal	February 2005	112750	108	185	151
Smith 120	3	Grow-finish pit	Soybeans	20.6	3600	Gal	November 2004	74250	101	119	97
Smith 120	4	Grow-finish pit	Soybeans	20.3	3800	Gal	November 2004	77000	107	125	103
Smith 120	5	Grow-finish pit	Soybeans	20.2	5300	Gal	April 2005	107250	102	175	143
Smith 120	6	Nursery pit	Soybeans	9.2	7200	Gal	May 2005	66000	117	161	161
Smith 120	6	Grow-finish pit	Soybeans	11	6000	Gal	May 2005	66000	116	198	162

6. Setback acres and land not receiving manure:

Table IV-23. Fertilizer recommendations for land *not* receiving manure

Field Name	Subfield	Crop Year	Crop	Non-Spreadable Acres	Yield Goal	Units/ acre	Fertilizer Recommendation lbs/acre			Nutrients from Fertilizer lbs/acre		
							N	P_2O_5	K_2O	N	P_2O_5	K_2O
Home 60	N20	2003	Corn grain		160	Bushels	185	0	20	185	0	60
Home 60	N20	2004	Corn grain		160	Bushels	185	0	20	185	0	0
Home 60	N20	2005	Corn grain		160	Bushels	185	0	20	185	0	0
Home 60	C20	2003	Corn grain		160	Bushels	190	0	5	190	0	15
Home 60	C20	2004	Corn grain		160	Bushels	190	0	5	190	0	0
Home 60	C20	2005	Corn grain		160	Bushels	190	0	5	190	0	0
Home 60	S20	2003	Corn grain		160	Bushels	190	0	0	190	0	0
Home 60	S20	2004	Corn grain		160	Bushels	190	0	0	190	0	0
Home 60	S20	2005	Corn grain		160	Bushels	190	0	0	190	0	0
Johnson 80	NW20	2003	Corn grain		150	Bushels	150	70	75	30	0	0
Johnson 80	NW20	2004	Soybeans		50	Bushels	0	45	105	0	0	0
Johnson 80	NW20	2005	Corn grain		150	Bushels	150	70	75	30	0	0
Johnson 80	N20	2003	Corn grain		150	Bushels	150	0	50	30	0	0

Johnson 80	N20	2004	Soybeans		50	Bushels	0	0	80	0	0	61
Johnson 80	N20	2005	Corn grain		150	Bushels	150	0	50	145	0	0
Johnson 80	C20	2003	Corn grain		150	Bushels	155	0	45	30	0	0
Johnson 80	C20	2004	Soybeans		50	Bushels	0	0	75	0	0	0
Johnson 80	C20	2005	Corn grain		150	Bushels	155	0	45	150	0	42
Johnson 80	S20	2003	Corn grain		150	Bushels	155	0	40	30	0	0
Johnson 80	S20	2004	Soybeans		50	Bushels	0	0	60	0	0	0
Johnson 80	S20	2005	Corn grain		150	Bushels	155	0	40	150	0	0
New 60	W20	2003	Soybeans		40	Bushels	0	10	75	0	0	0
New 60	W20	2004	Corn grain		135	Bushels	130	20	60	30	0	0
New 60	W20	2005	Soybeans		40	Bushels	0	10	75	0	0	0
New 60	C20	2003	Soybeans		40	Bushels	0	0	0	0	0	0
New 60	C20	2004	Corn grain		135	Bushels	130	0	45	30	0	0
New 60	C20	2005	Soybeans		40	Bushels	0	0	60	0	0	0
New 60	E20	2003	Soybeans		40	Bushels	0	0	0	0	0	0
New 60	E20	2004	Corn grain		135	Bushels	125	0	40	30	0	0
New 60	E20	2005	Soybeans		40	Bushel	0	0	60	0	0	0

						s						
Pop's 20	E20	2003	Corn grain		120	Bushels	140	0	15	140	0	45
Pop's 20	E20	2004	Corn grain		120	Bushels	140	0	15	140	0	0
Pop's 20	E20	2005	Corn grain		120	Bushels	140	0	15	140	0	0
Far West 40	E20	2003	Corn grain		135	Bushels	125	60	75	30	0	0
Far West 40	E20	2004	Soybeans		40	Bushels	0	30	90	0	0	0
Far West 40	E20	2005	Corn grain		135	Bushels	125	60	75	30	0	0
Far West 40	W20	2003	Soybeans		40	Bushels	0	35	90	0	0	0
Far West 40	W20	2004	Corn grain		135	Bushels	130	65	75	30	0	0
Far West 40	W20	2005	Soybeans		40	Bushels	0	35	90	0	0	0
Smith 120	1	2003	Soybeans		35	Bushels	0	0	0	0	0	0
Smith 120	1	2004	Corn grain		125	Bushels	125	55	80	30	0	0
Smith 120	1	2005	Soybeans		35	Bushels	0	30	95	0	0	0
Smith 120	2	2003	Soybeans		35	Bushels	0	40	90	0	0	0
Smith 120	2	2004	Corn grain		125	Bushels	125	65	80	30	0	0
Smith 120	2	2005	Soybeans		35	Bushels	0	40	90	0	0	0
Smith 120	3	2003	Soybeans		35	Bushels	0	40	85	0	0	0

Smith 120	3	2004	Corn grain		125	Bushels	125	65	70	30	0	0
Smith 120	3	2005	Soybeans		35	Bushels	0	40	85	0	0	0
Smith 120	4	2003	Soybeans		35	Bushels	0	40	80	0	0	0
Smith 120	4	2004	Corn grain		125	Bushels	125	70	70	30	0	0
Smith 120	4	2005	Soybeans		35	Bushels	0	40	80	0	0	0
Smith 120	5	2003	Soybeans		35	Bushels	0	50	80	0	0	0
Smith 120	5	2004	Corn grain		125	Bushels	125	80	65	30	0	0
Smith 120	5	2005	Soybeans		35	Bushels	0	50	80	0	0	0
Smith 120	6	2003	Soybeans		35	Bushels	0	0	0	0	0	0
Smith 120	6	2004	Corn grain		125	Bushels	125	80	75	30	0	0
Smith 120	6	2005	Soybeans		35	Bushels	0	55	90	0	0	0
Mueller 120		2003	Corn grain		140	Bushels	145	65	75	145	100	165
Mueller 120		2004	Soybeans		40	Bushels	0	35	90	0	0	0
Mueller 120		2005	Corn grain		140	Bushels	145	65	75	145	100	165

7. Equipment Inventory:

Table IV-24. Land application equipment.

Type	Spreader or Pump Capacity	Units	Minimum Application Rate	Units	Application Width or Area	Units	Land Application Travel Speed (min, max)	Units
Liquid spreader, injected	2750	gal	3000	gal/a	10	feet		
Liquid spreader, surface spray	2750	gal	4000	gal/a	25	feet		