UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
16255 LIBERTY ST.
MORRISON, IL 61270

SUBJECT: Bigger Feedlot Manure Plan **DATE:** May 18, 2000

TO: Cathy Olson, DC, Monmouth **FILE:** 180

Enclosed are manure tests for the Bigger Feedlot in Henderson County used in developing the manure management plan. The solids test indicates only .02% ammonia N which is equal to 0.0028 lbs/ton. This is low enough to ignore in the calculations of available nitrogen. That is why there is no NH4-N indicated in the plan on Worksheet 1 for Beef Solids. I have indicated this on the solids test for ammonia sheet. The rest of the numbers come from the solid manure test dated 1/13/00.

The liquid manure nutrient numbers come from Table IL11-5 from the NRCS Ag. Waste Management Field Handbook. I have included this table and circled the row used. I used the table values as the liquid manure test values are too low compared to table values to be reliable. I am not sure how I got an NH4-N amount, as there is none indicated in the table and there was no ammonia test done on this sample. However, the number used on Worksheet 1 (0.6 lbs/1000 gal) is 20% of the total N on the liquid manure sample. This is a little lower than that indicated by other table values, but this would not make a significant impact on the total amount of nutrients available. Until there are more reliable manure tests completed on the liquid manure, I would continue to recommend using these numbers.

You will probably want to send a copy of this letter and the attached manure tests and Table IL11-5 to the Inspector General, with Mr. Bigger's permission. This should satisfy their questions number 4 and 8 on the May 10, 2000 letter to you. If you have any questions on this, please contact me.

Steve Hollister
Agronomist

:eport Number
0-013-2076

Midwest Laboratories, Inc.

13611 "B" Street • Omaha, Nebraska 68144-3693 • (402) 334-7770 • FAX (402) 334-9121

REPORT OF ANALYSIS

For: (1194) KEY AGRICULTURAL SERVICE
(309)833-1313

Date Reported: 01/13/00
Date Received: 01/11/00

ail to:

KEY AGRICULTURAL SERVICE
114 SHADY LANE
MACOMB IL 61455-2610

BIGGER FARM AND FEED LOT

ıb number: 515047 Sample ID: LIQUID

ıalysis	Level Found	Units	LB/1000 G	Detection Limit	Method	Analyst-Date
ɔtal Nitrogen	47	ppm	.39	5	AOAC 984.13	cck-01/12
ıosphorus (total)	13.2	ppm	.11 .25 P_2O_5	0.05	ICAP	kkh-01/13
ɔtassium (total)	259	ppm	2.15 2.58 K_2O	0.5	ICAP	kkh-01/13
lfur (total)	57	ppm		0.1	ICAP	kkh-01/13
agnesium (total)	59.4	ppm		0.01	ICAP	kkh-01/13
ılcium (total)	99	ppm		0.01	ICAP	kkh-01/13
dium (total)	66.7	ppm		0.01	ICAP	kkh-01/13
ɔn (total)	3.27	ppm		0.05	ICAP	kkh-01/13
anganese (total)	1.06	ppm		0.01	ICAP	kkh-01/13
ɔpper (total)	0.02	ppm		0.01	ICAP	kkh-01/13
ıc (total)	0.14	ppm		0.01	ICAP	kkh-01/13

lotes: DID NOT USE IN CALCULATIONS — TOO LOW COMPARED TO TABLE VALUES

AOAC - Association of Official Analytical Chemists.
ICAP - Inductively Coupled Argon Plasma.
To convert ppm to lbs/1000 gal, multiply by 0.0083
To convert potassium to potash(K2O), multiply by 1.204
To convert phosphorous to phosphate(P2O5), multiply by 2.29
To convert lbs/1000 gal to lbs/acre foot, multiply by 326

Respectfully Submitted

Heather Ramig/Sue Ann Seitz
Client Services

PORT NUMBER:
00-013-5029

Midwest Laboratories, Inc.
13611 "B" Street • Omaha, Nebraska 68144-3693 • (402) 334-7770 • FAX (402) 334-9121

PORT DATE: 01/13/00 ACCOUNT NO: 1194 CLIENT:

:ND
I:

COPY TO:

KEY AGRICULTURAL SERVICE
114 SHADY LANE
MACOMB, IL 61455-2610

BIGGER FARM AND FEEDLOT
SOLIDS

B NO. 76920

NUTRIENT ANALYSIS REPORT

Add'l

REPORT OF ANALYSIS -- PERCENT

SAMPLE IDENTIFICATION	N NITROGEN	P_2O_5 PHOSPHATE	K_2O POTASH	S SULFUR	Mg MAGNESIUM	Ca CALCIUM	Na SODIUM
SOLIDS	0.71	0.55	0.52	0.09	0.40	1.29	0.04

REPORT OF ANALYSIS -- PARTS PER MILLION

SAMPLE IDENTIFICATION	Fe IRON	Al ALUMINUM	Mn MANGANESE	Cu COPPER	Zn ZINC		
SOLIDS	5904	2464	313	13	67		

POUNDS OF NUTRIENTS /Ton

SAMPLE IDENTIFICATION	N NITROGEN	P_2O_5 PHOSPHATE	K_2O POTASH	S SULFUR	Mg MAGNESIUM	Ca CALCIUM	Na SODIUM
SOLIDS	14	11	10	2	8	26	1

SAMPLE IDENTIFICATION	Fe IRON	Al ALUMINUM	Mn MANGANESE	Cu COPPER	Zn ZINC		
SOLIDS	11.8	4.93	0.63	0.03	0.13		

☒ Reported on an as-received basis Moisture = 39.5 %

☐ Reported on a dry basis Moisture = %

narks:

This report applies only to the sample(s) tested. Samples are retained a maximum of thirty days after testing.

BY Heather Ramey
MIDWEST LABORATORIES, INC.

REV. 10/93

Report Number
00-013-5029

Midwest Laboratories, Inc.

13611 "B" Street • Omaha, Nebraska 68144-3693 • (402) 334-7770 • FAX (402) 334-9121

REPORT OF ANALYSIS

For: (1194) KEY AGRICULTURAL SERVICE
(309)833-1313

Date Reported: 01/13/00
Date Received: 01/11/00

Mail to:

KEY AGRICULTURAL SERVICE
114 SHADY LANE
MACOMB IL 61455-2610

BIGGER FARM AND FEEDLOT
SOLIDS

Lab number: 76920 Sample ID: SOLIDS

Analysis	Level Found	Units		Detection Limit	Method
pH	8.5	SU		0.1	ISE
Ammonia Nitrogen(N)	0.02	%	= .0028 LBS/1000 GAL IGNORE	.01	KJELDAHL DISTILLATION

Notes:
add'l report (NAR).

Respectfully Submitted

Heather Ramig/Sue Ann Seitz
Client Services

TABLE IL 11-5 Suggested Average Nutrient Content of Manure

Kind of Manure	N	NH_4	P_2O_5	K_2O
Liquid pit manure		Pounds/1000 Gallons		
Swine				
Farrowing	25	17	20	15
Growing, Finishing	50	34	35	25
Nursery	35	23	20	20
Gestation	25	17	25	25
Average	40	27	28	24
Dairy	26	6	15	25
Beef	40	14	25	28
Manure, Anerobic Lagoon		Pounds/1000 Gallons		
All Swine	4	3	3	4
Dairy, and Beef	4	2	3	4
Liquid Runoff from Outside Lots		Pounds/1000 Gallons		
Earth Lots	3	-	1	1
Concrete Lots:				
Swine	15	-	5	10
Beef and Dairy	6	-	2	7
Solid Manure Scraped From Outside Lots		Pounds/Ton		
Earth Lots, Beef	22	7	16	14
Concrete Lots:				
Swine	15	7	14	9
Beef	14	5	9	11
Dairy	11	5	6	11
Solid Manure Pack, Confinement		Pounds/Ton		
Swine	14	6	9	11
Dairy and Beef	12	4	6	12
Broilers	65	16	65	45
Layers	85	32	70	45
Turkeys	40	16	40	25

Sources: Livestock Waste Facilities Handbook, MidWest Plan Service, 1993; Ag Waste Field Handbook, NRCS, 1992; Field Office Technical Guide, Iowa, 1995; Field Office Technical Guide, Wisconsin, 1993; Illinois Agronomy Handbook, University of Illinois, 1999

NRCS, IL
April, 1999

SOIL	SLOPE %	CLASS	NAME	NEW	T' VALUE
263T	0-1	AO-1	NIOTA	261	3
263/4T	0-3	BO-2	NIOTA	261	3
263T	4-6	BO-2,C3	NIOTA	261	3
264	0-1	AO-1	MT CARROLL	268A	5
264	2-3	BO-1	MT CARROLL	268B	5
264	**4-6**	**BO-2,CO-3**	**MT CARROLL**	**268C2**	**5**
263/4	7-11	C,DO-2	MT CARROLL	268D2	5
264/T	7-11	C,D3-5	TIMULA	271D2	5
264	12-17	D1-2	MT CARROLL	268E2	5
264	12-17	D3-5	TIMULA	271E2	5
264T	2-3	BO-2	NIOTA	261	3
269	0-1	A+-1	BEARDSTOWN	188	4
272T	0-1	AO-1	NIOTA	261	3
272T	2-3	BO-2	NIOTA	261	3
272T	4-6	B,CO-2	NIOTA	261	3
273	0-1	AO-1	SEATON	274A	5
273	2-3	BO-2	SEATON	274B	5
273	**4-6**	**BO-2,CO-3**	**TIMULA**	**271C2**	**5**
273	7-11	C,D1-5	TIMULA	271D2	5
273	12-17	D,E1-5	TIMULA	271E2	5
273	18-24	E,F1-5	TIMULA	271F2	5
273T	0-1	AO-1	NIOTA	261	3
273	2-3	BO-2	NIOTA	261	3
273T	4-6	B,CO-2	NIOTA	261	3
274	0-1	AO-1	SEATON	274A	5
274	2-3	BO-2	SEATON	274B	5
274	**4-6**	**BO-2,CO-3**	**TIMULA**	**271C2**	**5**
274	7-11	C,D1-5	TIMULA	271D2	5
274	11-17	C,D1-5	TIMULA	271E2	5
274	18-29	E,F1-5	TIMULA	271F2	5
274T	0-1	AO-1	NIOTA	261	3
274T	2-3	BO-2	NIOTA	261	3
274T	4-6	B,CO-2	NIOTA	261	3
275	12-17	D,E1-2	SEATON-HICKOR	937E2	5

SOIL	SLOPE %	CLASS	NAME	NEW	T' VALUE
275	12-17	D,E3-5	HICKORY	8E3	4
275	18-29	E,F1-2	HICKORY	8F	5
275	18-29	E,F3-5	HICKORY	8F3	4
275	30+	G1-5	HICKORY	8G2	5
280	0-1	A+-1	EDGINGTON	272	5
282	0-1	AO-1	STRONGHURST	278A	5
282	2-3	BO-2	STRONGHURST	278B	5
282	**4-6**	**B,CO-3**	**ROZETTA**	**279C2**	**5**
283	0-1	AO-1	STRONGHURST	278A	5
283	2-3	BO-2	STRONGHURST	278B	5
283	**4-6**	**B,CO-2**	**ROZETTA**	**279C2**	**5**
283	**4-6**	**B,C3**	**ROZETTA**	**279C3**	**5**
283	7-11	C,D1-2	ROZETTA	279D2	5
283	7-11	C,D3	ROZETTA	279D3	5
283	12-14	D1-2	FAYETTE	280E2	5
283	12-14	D3-5	FAYETTE	280E3	4
283	15-17	E1-2	SEATON-HICKOR	937E2	5
283	15-17	E3	HICKORY	8E3	4
283	18-29	E,F1-2	HICKORY	8F	4
283	18-29	E,F3-5	HICKORY	8F3	4
283	30+	G1-5	HICKORY	8G2	4
283T	0-1	AO-1	NIOTA	261	3
283T	2-3	BO-2	NIOTA	261	3
283T	4-6	B,C0-2	NIOTA	261	3
284	0-1	AO-1	FAYETTE	280A	5
284	2-3	BO-2	FAYETTE	280B	5
284	**4-6**	**B,CO-2**	**FAYETTE**	**280C2**	**5**
284	**4-6**	**B,C3-5**	**FAYETTE**	**280C3**	**4**
284	7-11	C,D1-2	FAYETTE	280D2	5
284	7-11	C,D3-5	FAYETTE	280D3	4
284T	0-1	AO-1	NIOTA	261	3
284T	2-3	BO-2	NIOTA	261	3
284T	4-6	B,C1-2	NIOTA	261	3
285	12-14	D1-2	FAYETTE	280E2	5

SOIL	SLOPE %	CLASS	NAME	NEW	T' VALUE
285	12-14	D3-5	FAYETTE	280E3	4
285	15-17	E1-2	SEATON-HICKOR	937E2	5
285	15-17	E3-5	HICKORY	8E3	4
285	18-29	E,F1-2	HICKORY	8F	5
285	18-29	E,F3-5	HICKORY	8F3	4
285	30+	G1-5	HICKORY	8G2	5
293	0-2	A,BO-2	JOY	275	5
293	3	BO-2	PORT BYRON	277B	5
293	**4-6**	**BO-2,CO-3**	**PORT BYRON**	**277C2**	**5**
293	7-11	C,D1-2	PORT BYRON	277D2	5
293	7-11	C,D3-5	TIMULA	271D2	5
294	0-1	AO-1	PORT BYRON	277A	5
294	2-3	BO-2	PORT BYRON	277B	5
294	**4-6**	**BO-2,CO-3**	**PORT BYRON**	**277C2**	**5**
294	7-11	C,D1-2	PORT BYRON	277D2	5
294	7-11	C,D3-5	TIMULA	271D2	5
294	12-17	D,E1-2	MT CARROLL	268D2	5
294	12-17	D,E3-5	TIMULA	271D2	5
298	0-1	A+-1	EDINGTON	272	5
301	0-1	A+-1	NIOTA	261	3
303	0-1	A+-1	NIOTA	261	3
305	0-1	A+-1	SELMA	125	5
306	0-1	A+-1	BROOKLYN	136	4
307	0-1	A+	SAWMILL OW	107+	5
307	0-1	AO-1	SAWMILL	107	5
307	0-1	A+	SAWMILL OW W	1107+*	5
307	0-1	AO-1	SAWMILL WET	1107*	5
312	0-1	AO-1	ATTERBERRY	61A	5
312	2-3	BO-2	ATTERBERRY	61B	5
312	**4-6**	**BO-2,CO-3**	**ATTERBERRY**	**61C2**	**5**
312	7-11	C,D1-2	DOWNS	386D2	5
312	7-11	C,D3-5	FAYETTE	280D3	4
313	0-1	AO-1	ATTERBERRY	61A	5
313	2-3	BO-2	ATTERBERRY	61B	5

The soil should be tested to determine lime, phosphate, and potash requirements, and these materials should be added where needed. A rotation with a high percentage of hay is desirable, as organic matter and nitrogen are naturally low. Rotation recommendations are given on page 35.

Thorp silt loam, terrace (206)

Thorp silt loam is a moderately dark, medium-textured soil, occurring in slight depressions or on low-lying, nearly level areas of the silt loam terraces of the Mississippi river and Henderson creek. It occupies about 560 acres in Henderson county.

Soil profile. The surface, 7 inches deep, is dark grayish-brown to dark-brown friable silt loam. The subsurface, extending from 7 to about 18 inches, is a very friable silt loam. Dark gray or very dark gray in the upper part, it grades into lighter gray in the lower part. The subsoil, from about 18 to about 36 inches, is a compact, plastic silty clay loam, slowly permeable to water. It is dark gray to very dark gray, mottled with yellowish brown and reddish brown. Below 36 inches are water-laid stratified friable silts and sands.

Most areas of Thorp include small areas of Brooklyn silt loam (page 34). The main differences between Thorp and Brooklyn are that the profile of Thorp is less gray and the subsoil is slightly more permeable to water.

Use and management. Thorp silt loam is a moderately productive soil. Drainage is naturally slow and needs to be supplemented by tile or open ditches. Tile draw slowly. Open inlets into tile will help remove surface water in the wetter pockets.

After drainage is established the soil should be tested and fertilizer applied as needed. An R-G-M-M[1] rotation is suggested for Thorp silt loam in Henderson county. The high percentage of deep-rooting legumes in such a rotation will help to open up the subsoil and to build up the organic-matter supply.

Niota silt loam, terrace (261)

Niota silt loam is a grayish soil composed of silts and clays deposited by slowly moving waters. It occurs in slight depressions on low terraces. The subsoil is a very heavy claypan, which in some areas is rather shallow. Niota is a very minor type in Henderson county, occupying only about 50 acres.

Soil profile. The surface, 6 inches deep, is a dark-gray compact silt loam to silty clay loam. The subsurface, if it is present, extends from 6 to about 14 inches. It is a light-gray compact silty clay loam to silty clay, slowly permeable to water. This layer is absent in some Niota areas of Henderson county. The subsoil extends to a depth of about 30 or 35 inches. Normally it is dark reddish-brown dense clay, but in many areas the reddish color is replaced by gray. This horizon, like the one above, is very slowly permeable to water. As a result, many areas stay ponded for prolonged periods. Beneath the subsoil the material is strongly spotted yellowish-brown and pale reddish-brown sandy clay, often stratified with silt loam and sandy loam. These lower horizons are more friable than the subsoil but are somewhat sticky when wet and hard when dry.

[1] R = row crop; G = small grain; M = rotation hay or pasture.

Use and management. Most areas of Niota are ponded during a good part of the growing season. Tile do not draw well and the poor physical condition of the soil limits the yields of the grain crops. Niota is best used for pasture.

Denrock silt loam, terrace (262)

Denrock silt loam is a dark-colored soil. It occurs on nearly level areas of the heavy-textured terraces along the Mississippi river and Henderson creek. It is a minor type in Henderson county, occupying only about 175 acres.

Soil profile. Eight inches deep, the surface is dark-brown to dark grayish-brown friable silt loam. The subsurface, extending from 8 to 13 inches, is grayish-brown light silty clay loam or heavy silt loam. The upper subsoil, from 13 to about 32 inches, is pale reddish-brown silty clay, which is moderately compact and very slowly permeable to water. The lower subsoil, from about 32 to about 44 inches, is dark yellowish-brown sandy clay to silty clay, mottled with gray and rusty iron stains. Below 44 inches the material is spotted yellowish-brown and pale reddish-brown sandy clay loam to sandy clay with lenses of silt loam and sandy loam. The subsoil probably is not a developed soil horizon but consists of heavy-textured backwater sediments.

Use and management. The very slow permeability of the subsoil makes drainage a problem. Since tile draw very slowly, open ditches are generally used for drainage. Erosion is not a problem, as Denrock occurs on nearly level terrace areas.

Plant roots are mostly restricted to the layers above the clayey subsoil, and thus crop yields may be limited. In general, however, medium to high yields may be obtained if the soil is adequately drained, is treated according to tests, and is planted to a good rotation. An R-R-G-M-M' rotation is suggested. Two years of hay crops in five should help replenish organic matter and nitrogen.

Fall silt loam (263)

A moderately dark upland prairie-timber transition soil. Fall silt loam is intermediate between Joy silt loam, a prairie soil, and Decorra silt loam, a timber soil. It is usually found within about 4 miles of the Mississippi river bluffs. Mostly it occurs on slopes of ½ to 1½ percent, although some areas are on steeper slopes. It occupies about 3,700 acres in Henderson county.

Soil profile. The surface is grayish-brown to dark grayish-brown friable silt loam, about 10 inches thick. The subsurface, about 5 inches thick, is light brownish-gray friable silt loam with some weak mottles of light gray. The upper subsoil extends from 15 to about 30 inches. It is light yellowish-brown heavy silt loam, weakly mottled with reddish brown and gray. The lower subsoil, from 30 to 42 inches, is very pale-brown compact silt loam, mottled with brown, yellow, and gray. Below 42 inches the material is similar to the 30- to 42-inch horizon except that it is more friable and the mottles become more prominent. Calcareous (limey) material is found at 70 to 90 inches.

Use and management. Fall silt loam should be limed and fertilized according to the results of soil tests. Usually some limestone is required to correct soil acidity, and sometimes phosphorus is needed. Potash is usually not needed on this

[1] R = row crop; G = small grain; M = rotation hay or pasture.

soil as much of the time as possible, and leave crop residues on the surface. Plowing to leave the surface rough or to leave some of the organic crop residue on the surface helps to reduce soil movement when row crops are to be planted.

All fields should be strip-planted in strips no wider than 20 rods and at right angles to prevailing winds. Where the land is sloping the crop strips may be planted on the contour, although this practice is not generally recommended on the very permeable sandy soils. Where this soil is adequately fertilized and otherwise well managed, an R-G-M-M-M-M rotation is suggested. (R = row crop; G = small grain; M = rotation hay or pasture.)

Timula silt loam (271)

Timula silt loam is a light-colored soil having free carbonates (lime) at shallow depths. It was formed from recent deposits of loess, a wind-blown silt. Timula is found for the most part within a mile or two of the Mississippi river bluffs, on slopes ranging from 0 to 18 percent. This soil is a minor type in Henderson county, as there is a total of only 960 acres shown on the map.

Soil profile. In uncultivated areas the surface or upper 3 inches is dark grayish-brown friable silt loam. The subsurface, from 3 to about 15 inches, is brown friable silt loam. No subsoil is present. The parent material, lying below a depth of about 15 inches, is yellowish calcareous (limey) coarse silt loam, which becomes mottled with yellowish brown, reddish brown, and gray at about 4 feet. The depth to free lime ranges from about 15 inches to 30 inches.

Use and management. Since Timula frequently occurs on ridge tops with steep slopes on one or more sides, it may be badly cut into by side gullies. To keep this from happening, contour farming, terraces, and grass waterways are needed both on areas of Timula and on the adjacent slopes. You can't depend

Rotations and conservation practices recommended for different degrees of slope and erosion on Timula silt loam

(Slopes between 200 and 300 feet long)

Map symbol[1]	Slope percent	Degree of erosion	Most intensive cropping system with—			
			No conservation practices	Contouring	Strip cropping	Terracing
271	3–8	None to moderate	R-G-M-M-M	R-G-M-M	R-G-M	R-R-G-M-M
271	3–8	Severe	G-M-M-M	R-G-M-M-M	R-G-M-M-M	R-G-M-M
271	8–15	None to moderate	G-M-M-M	R-G-M-M-M	R-G-M-M-M	R-G-M-M
271	8–15	Severe	Pasture	G-M-M-M	R-G-M-M-M-M	R-G-M-M-M
271	15 plus	None to moderate	Pasture	Pasture	G-M-M-M-M	Terraces not recommended
271	15 plus	Severe	Pasture	Pasture	Pasture	

R = row crop; G = small grain; M = rotation hay or pasture

[1] The horizontal, diagonal, and vertical lines which indicate slope are in red on soil map.