PLANNING & DEVELOPMENT
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Item 3
5/16/17

Timothy Huey
Director

To: Mahesh Sharma, County Administrator

From: Timothy Huey, Planning Director

Date: May 5, 2017

Re: County Master Matrix review and public hearing on the Construction Permit Application of Paustian Enterprises Ltd. in the NE¼SE¼ Section 19, T79N, R2E (Hickory Grove Township) for an expansion of existing confined animal (hog) feeding operation located at 22444 70th Avenue.

On May 5th the above referenced application was submitted to the Iowa DNR. Scott County has 30 days from that date to submit comments and a recommendation on that application. Notice of the receipt of this application also must be published as a public notice. A public hearing will also be set for the Board meeting on May 18th to take comments from the public. Staff will publish both the notice of receipt of application and notice of the public hearing.

The State construction permit application submitted by Paustian Enterprises to the Iowa DNR is for a 60 foot by 92 foot addition on a farrowing barn at an existing hog confinement operation in Hickory Grove Township. The proposed project requires compliance with the standards of the Master Matrix because of the proposed building addition, even though it will not result in a net increase of the animal unit capacity of the operation. The existing confined animal feeding operation has a capacity of 1,836 animal unit (AU), include 808 head of gestating swine, 187 head of farrowing swine, 22 boars, 972 head of swine gilts and 2,600 head of swine finishers The 5,520 square foot building addition will be constructed over an 2 foot deep formed concrete manure storage pit.

The applicant has submitted their scoring for the Master Matrix, which shows sufficient points to meet the requirements of the Iowa DNR. Staff is reviewing the Master Matrix scores and will have a report and recommendation available at the next Committee of the Whole meeting, following the public hearing.

Planning and Health Department Staff will accompany the IDNR inspector from the Washington, Iowa district office when that inspection is scheduled

Staff will include any written comments and a summary of any verbal comments received at the public hearing with the Board's recommendation to the IDNR.

A resolution on the County's recommendation on the application will be on the next Board agenda on June 1st following the public hearing at the Thursday Board meeting on the 18th.

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PUBLIC NOTICE TO ALLOW FOR REVIEW AND COMMENT ON AN APPLICATION FOR A STATE CONSTRUCTION PERMIT FOR THE EXPANSION OF AN EXISTING ANIMAL CONFINEMENT FEEDING OPERATION

The Scott County Board of Supervisors have on file an application for a construction permit that has been submitted to the Iowa Department of Natural Resources for a new building addition at an existing animal (hog) confinement feeding operation in Scott County.

Name of Applicant:	Paustian Enterprises Ltd.
Address of applicant:	6520 215th Street Walcott, Iowa 52773
Location of operation	22444 70th Avenue, legally described as part of the NE¼ SE¼ Section 19, T79N, R2E (Hickory Grove Township)
Description of application	The existing confined animal feeding operation has a capacity of 1,836 animal units (AU) and the proposed building expansion would result in no net gain in capacity. The 1,836 animal units include 808 head of gestating swine, 187 head of farrowing swine, 22 boars, 972 head of swine gilts and 2,600 head of swine finishers. The proposed 60 foot X 92 foot farrowing barn addition will include the construction of a two-foot deep formed concrete pit beneath the building for manure storage.
Examination:	The application is on file with the Scott County Planning and Development Department located at 600 West 4th Street, Davenport, Iowa and is available for review by the public during normal working hours 8 AM to 4:30 PM, Monday through Friday.
Comments:	Written, faxed or emailed comments for the Board of Supervisors may be delivered or sent to the Scott County Planning and Development Department until Monday, May 15, 2017 at 4:30 PM. All comments will be forwarded to the Iowa Department of Natural Resources. The fax number for Planning and Development is 563-326-8257 and the email address is planning@scottcountyiowa.com
Additional Information:	Timothy Huey, Planning Director 600 West 4th Street Davenport, Iowa 52801 563-326-8643

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Timothy Huey
Director

NOTICE OF PUBLIC HEARING TO BE HELD BY THE SCOTT COUNTY BOARD OF SUPERVISORS FOR THE REVIEW OF AN APPLICATION FOR A STATE CONSTRUCTION PERMIT FOR THE EXPANSION OF AN EXISTING CONFINED ANIMAL (HOG) FEEDING OPERATION

Public Notice is hereby given that the Scott County Board of Supervisors will hold a public hearing on **Thursday, May 18, 2017** in the Board Room in the Scott County Administrative Center, 600 West 4th Street, Davenport, Iowa, during their regular meeting which starts promptly at **5:00 p.m.**

The Scott County Board of Supervisors will review and hear public comments on the construction permit application of Paustian Enterprises Ltd. for an expansion of an existing confined animal (hog) feeding operation in part of the NE¼ SE¼ Section 19, T79N, R2E (Hickory Grove Township). The address of the subject property is 22444 70th Avenue in Scott County.

The existing confined animal feeding operation has a capacity of 1,836 animal units (AU) and the proposed building expansion would result in no net gain in capacity. The 1,836 animal units include 808 head of gestating swine, 187 head of farrowing swine, 22 boars, 972 head of swine gilts and 2,600 head of swine finishers. The proposed 60 foot X 92 foot farrowing barn addition will include the construction of a two-foot deep formed concrete pit beneath the addition for manure storage.

A copy of the application is on file with the Scott County Planning and Development Department and is available for review prior to the hearing during normal working hours 8 AM to 4:30 PM, Monday through Friday. If you have questions or want further information, please call or write the Planning and Development Department, Scott County Administrative Center, 600 West Fourth Street, Davenport, Iowa 52801, 563-326-8643, or attend the hearing.

Written, faxed or emailed comments for the Board of Supervisors may be delivered or sent to the Scott County Planning and Development Department in advance of the public hearing or until Monday, May 15, 2017 at 4:30 PM. All comments will be forwarded to the Iowa Department of Natural Resources. The fax number for Planning and Development is 563-326-8257 and the email address is planning@scottcountyiowa.com

Timothy Huey
Director

Paustian Enterprises, Inc. Master Matrix Scores

Question	Score	Air	Water	Community
1	85	55.25		29.75
2	30	12		18
3	30	12		18
4	10		10	
5	30	9		21
6	10	4		6
7				
8	50	5	25	20
9				
10	30		22.5	7.5
11				
12	30	27		3
13				
14				
15				
16				
17	30		27	3
18				
19	20			20
20	30			30
21				
22	25			25
23	25			25
24	20			20
25				
26	30	12	12	6
27				
28				
29				
30				
31				
32				
33				
34				
35	10		7.5	2.5
36				
37				
38				
39				
40				
41				
42				
43				
44				
TOTALS	**495**	**136.25**	**104**	**254.75**
	440	53.38	67.75	101.13 scores to pass

IOWA MASTER MATRIX SUPPLEMENT

PAUSTIAN ENTERPRISES LTD.
SOW UNIT
SCOTT COUNTY

May 2017

This document will provide documentation, design information along with operation and maintenance (O&M) plans for items in the Master Matrix where points were gained.

Table 1. Summary table of matrix questions receiving points

Question #	Description	Actual
	Site Separation Distances	
1	Neighbor	2180 ft to SE
2	public use area	~10,800ft (St. of IA)
3	school, church, business	~4100 ft (I-80 Truck stop)
4	Closest water source > 500'	~1140 ft to N
5	Proposed structure to thoroughfare >300'	~950ft
6	critical public area	~4100 (I-80 Truck stop)
8	drainage wells, sinkholes, major water sources	~10,500ft (Hickory Creek)
10	high quality/protected waters	~37,600ft (Wapsi)
12	covered manure storage	design / O&M, CDS
17	formed manure storage structure	design / O&M, CDS
19	Truck turnaround	design / O&M
20	No administrative orders	personal statement
22	Homestead Tax Exemption	personal statement
23	Family Farm tax credit	personal statement
24	Facility Size	1836 au
25	Feed and watering for reduced waste	
26	Inject manure	see MMP
	Land Application Separation Distances	
35	HQW or PWA	>5 miles (Wapsi)

12. Covered Manure Storage

This facility has deep pits for manure storage which are formed manure storages structures directly beneath a floor where animals are housed in a confinement feeding operation. The design is based upon the attached building drawings and specs from the builder. The structure will be maintained to ensure its structural integrity for its useful life.

17. Formed Manure Storage Structure

The deep pit manure storage is designed to be below floor storage. The concrete design for the structure will adhere to the specs outlined in the building plans to insure the integrity of the structure.

- The storage structure will be measured for manure volume monthly to monitor the amount of manure being produced.
- The volume of manure will be recorded and records maintained on site.
- A visual inspection of the outer above ground perimeter will be made on a semi-annual basis to check for any structural challenges to the storage structure.
- The perimeter tile outside of the storage structure will be monitored monthly over 3 years to determine the average amount of water present.
- The drainage tile outside of the storage structure will be visually checked on a monthly basis to monitor for potential manure contamination by checking color.
- A sample of the water will be taken during the monthly check if the depth is significantly higher than average (1.5 times the average for the month).
- Foreign materials will not be added to the manure storage structure purposefully.
- Durable lids and caution signs will be used to cover the manure pumpouts located along the sides of the structure.
- Proper fit and placement of lids will be checked monthly.

19. Truck Turnaround

The truck turnaround has a diameter of at least 120 ft to allow for safe truck turnaround. The turnaround is located over 300 ft from the thoroughfare and therefore creates a safer environment for the truck driver and others on the road.

- When there has been significant snowfall, the snow will be removed from the drive and turnaround to allow for safe entrance and exit of trucks.
- The structure of the turnaround will be maintained with aggregate 2" to 5" thick.

20. I have no history of Administrative Orders in the last five years related to environmental and worker protection.

22. We are the closest residents to the site.

23. I can lawfully claim a Family Farm Tax Credit for agricultural land where the proposed confinement operation is to be located pursuant to Iowa Code chapter 425A.

I believe the statements here to be true and agree to adhere to the specifications.

Mike Paustian of Paustian Enterprises Ltd.

Daily Checks

Feeders: _____ Checked and working appropriately
_____ Checked and adjustments made

Waterers: _____ Checked and working appropriately
_____ Checked and adjustments made

Monthly Checks

Date _____
Manure Depth _____
Drain Tile: Is water present? YES or NO
Approximate depth? _____ inches
Pumpout lids: Condition? GOOD FAIR NEEDS ATTENTION

Semi-annual Check

The outer above ground perimeter of manure storage:

_____ Normal as built
_____ Normal aging no problems
_____ Evidence of potential problems**
_____ Manure leakage**

**If either of these situations should occur, an engineer will be contacted to inspect for potential structural integrity issues. If there is evidence of manure leakage, DNR will be contacted.

PAUSTIAN ENTERPRISES LTD.

APPENDIX C MASTER MATRIX

Proposed Site Characteristics

The following scoring criteria apply to the site of the proposed confinement feeding operation. Mark one score under each criterion selected by the applicant. The proposed site must obtain a minimum overall score of 440 and a score of 53.38 in the "air" subcategory, a score of 67.75 in the "water" subcategory and a score of 101.13 in the "community impacts" subcategory.

1. Additional separation distance, above minimum requirements, from proposed confinement structure to the closest:
   * Residence not owned by the owner of the confinement feeding operation,
   * Hospital,
   * Nursing home, or
   * Licensed or registered child care facility.

House to SE 2180ft

	Score	Air	Water	Community
250 feet to 500 feet	25	16.25		8.75
501 feet to 750 feet	45	29.25		17.50
751 feet to 1,000 feet	65	42.25		22.75
1,001 feet to 1,250 feet	85	55.25		29.75
1,251 feet or more	100	65.00		35.00

(A) Refer to the construction permit application package to determine the animal unit capacity (or animal weight capacity if an expansion) of the proposed confinement feeding operation. Then refer to Table 6 of 567--Chapter 65 to determine minimum required separation distances.
(B) The department will award points only for the single building, of the four listed above, closest to the proposed confinement feeding operation.
(C) "Licensed child care center" – a facility licensed by the department of human services providing child care or preschool services for seven or more children, except when the facility is registered as a child care home.
(D) "Registered child development homes" - child care providers certify that they comply with rules adopted by the department of human services. This process is voluntary for providers caring for five or fewer children and mandatory for providers caring for six or more children.
(E) A full listing of licensed and registered child care facilities is available at county offices of the department of human services.

2. Additional separation distance, above minimum requirements, from proposed confinement structure to the closest public use area.

State of IA to NE

	Score	Air	Water	Community
250 feet to 500 feet	5	2.00		3.00
501 feet to 750 feet	10	4.00		6.00
751 feet to 1,000 feet	15	6.00		9.00
1,001 feet to 1,250 feet	20	8.00		12.00
1,251 feet to 1,500	25	10.00		15.00
1,501 feet or more	30	12.00		18.00

(A) Refer to the construction permit application package to determine the animal unit capacity (or animal weight capacity if an expansion) of the proposed confinement feeding operation. Then refer to Table 6 of 567--Chapter 65 to determine minimum required separation distances.
(B) "Public use area" - a portion of land owned by the United States, the state, or a political subdivision with facilities which attract the public to congregate and remain in the area for significant periods of time. Facilities include, but are not limited to, picnic grounds, campgrounds, cemeteries, lodges, shelter houses, playground equipment, lakes as listed in Table 2 of 567--Chapter 65, and swimming beaches. It does not include a highway, road right-of-way, parking areas, recreational trails or other areas where the public passes through, but does not congregate or remain in the area for significant periods of time.

3. Additional separation distance, above minimum requirements, from proposed confinement structure to the closest:
   * Educational institution,
   * Religious institution, or
   * Commercial enterprise.

WALCOTT TRUCKSTOP

	Score	Air	Water	Community
250 feet to 500 feet	5	2.00		3.00

501 feet to 750 feet	10	4.00		6.00
751 feet to 1,000 feet	15	6.00		9.00
1,001 feet to 1,250 feet	20	8.00		12.00
1,251 feet to 1,500	25	10.00		15.00
1,501 feet or more	30	12.00		18.00

(A) Refer to the construction permit application package to determine the animal unit capacity (or animal weight capacity if an expansion) of the proposed confinement feeding operation. Then refer to Table 6 of 567--Chapter 65 to determine minimum required separation distances.
(B) The department will award points only for the single building, of the three listed above, closest to the proposed confinement feeding operation.
(C) "Educational institution" - a building in which an organized course of study or training is offered to students enrolled in kindergarten through grade 12 and served by local school districts, accredited or approved nonpublic schools, area educational agencies, community colleges, institutions of higher education under the control of the state board of regents, and accredited independent colleges and universities.
(D) "Religious institution" - a building in which an active congregation is devoted to worship.
(E) "Commercial enterprise" - a building which is used as a part of a business that manufactures goods, delivers services, or sells goods or services, which is customarily and regularly used by the general public during the entire calendar year and which is connected to electric, water, and sewer systems. A commercial enterprise does not include a farm operation.

4. Additional separation distance, above minimum requirement of 500 feet, from proposed confinement structure to the closest water source. ***Tributary of Hickory Creek***

	Score	Air	Water	Community
250 feet to 500 feet	5		5.00	
501 feet to 750 feet	10		10.00	
751 feet to 1,000 feet	15		15.00	
1,001 feet to 1,250 feet	20		20.00	
1,251 feet to 1,500	25		25.00	
1,501 feet or more	30		30.00	

"Water source" - a lake, river, reservoir, creek, stream, ditch, or other body of water or channel having definite banks and a bed with water flow, except lakes or ponds without an outlet to which only one landowner is riparian.

5. Separation distance of 300 feet or more from the proposed confinement structure to the nearest thoroughfare.

	Score	Air	Water	Community
300 feet or more	30	9.00		21.00

(A) "Thoroughfare" - a road, street, bridge, or highway open to the public and constructed or maintained by the state or a political subdivision.
(B) The 300-foot distance includes the 100-foot minimum setback plus additional 200 feet.

6. Additional separation distance, above minimum requirements, from proposed confinement structure to the closest critical public area. ***WALCOTT TRUCKSTOP***

	Score	Air	Water	Community
500 feet or more	10	4.00		6.00

(A) All critical public areas as defined in 567--65.1(455B), are public use areas, and therefore subject to public use area minimum separation distances.
(B) Refer to the construction permit application package to determine the animal unit capacity (or animal weight capacity if an expansion) of the proposed confinement feeding operation. Then refer to Table 6 of 567--Chapter 65 to determine minimum required separation distances.

X7. Proposed confinement structure is at least two times the minimum required separation distance from all private and public water wells.

	Score	Air	Water	Community
Two times the minimum separation distance	30		24.00	6.00

Refer to Table 6 of 567--Chapter 65 for minimum required separation distances to wells.

8. Additional separation distance, above the minimum requirement of 1,000 feet, from proposed confinement structure to the closest:

* Agricultural drainage well,
* Known sinkhole, or
* Major water source.

	Score	Air	Water	Community
250 feet to 500 feet	5	0.50	2.50	2.00
501 feet to 750 feet	10	1.00	5.00	4.00
751 feet to 1,000 feet	15	1.50	7.50	6.00
1,001 feet to 1,250 feet	20	2.00	10.00	8.00
1,251 feet to 1,500 feet	25	2.50	12.50	10.00
1,501 feet to 1,750 feet	30	3.00	15.00	12.00
1,751 feet to 2,000 feet	35	3.50	17.50	14.00
2,001 feet to 2,250 feet	40	4.00	20.00	16.00
2,251 feet to 2,500 feet	45	4.50	22.50	18.00
2,501 feet or more	50	5.00	25.00	20.00

(A) The department will award points only for the single item, of the three listed above, that is closest to the proposed confinement feeding operation.
(B) "Agricultural drainage wells" - include surface intakes, cisterns and wellheads of agricultural drainage wells.
(C) "Major water source" - a lake, reservoir, river or stream located within the territorial limits of the state, or any marginal river area adjacent to the state which can support a floating vessel capable of carrying one or more persons during a total of a six-month period in one out of ten years, excluding periods of flooding. Major water sources in the state are listed in Tables 1 and 2 in 567--Chapter 65.

X **9.** Distance between the proposed confinement structure and the nearest confinement facility that has a submitted department manure management plan.

	Score	Air	Water	Community
Three-quarter of a mile or more (3,960 feet)	25	7.50	7.50	10.00

Confinement facilities include swine, poultry, and dairy and beef cattle.

10. Separation distance from proposed confinement structure to closest:
* High quality (HQ) waters,
* High quality resource (HQR) waters, or
* Protected water areas (PWA)

is at least two times the minimum required separation distance

	Score	Air	Water	Community
Two times the minimum separation distance	30		22.50	7.50

(A) The department will award points only for the single item, of the three listed above, closest to the proposed confinement feeding operation.
(B) HQ waters are identified in 567--Chapter 61.
(C) HQR waters are identified in 567--Chapter 61.
(D) A listing of PWAs is available at:
http://www.iowadnr.gov/Recreation/CanoeingKayaking/StreamCare/ProtectedWaterAreas.aspx

X **11.** Air quality modeling results demonstrating an annoyance level less than 2 percent of the time for residences within two times the minimum separation distance.

	Score	Air	Water	Community
University of Minnesota OFFSET model results demonstrating an annoyance level less than 2 percent of the time	10	6.00		4.00e

(A) OFFSET can be found at http://www.extension.umn.edu/agriculture/manure-management-and-air-quality/feedlots-and-manure-storage/offset-odor-from-feedlots/. For more information, contact Dr. Larry Jacobson, University of Minnesota, (612) 625-8288, jacob007@tc.umn.edu.
(B) A residence that has a signed waiver for the minimum separation distance cannot be included in the model.
(C) Only the OFFSET model is acceptable until the department recognizes other air quality models.

12. Liquid manure storage structure is covered.

	Score	Air	Water	Community
Covered liquid manure storage	30	27.00		3.00

(A) "Covered" - organic or inorganic material, placed upon an animal feeding operation structure used to store manure, which significantly reduces the exchange of gases between the stored manure and the outside air.

Organic materials include, but are not limited to, a layer of chopped straw, other crop residue, or a naturally occurring crust on the surface of the stored manure. Inorganic materials include, but are not limited to, wood, steel, aluminum, rubber, plastic, or Styrofoam. The materials shall shield at least 90 percent of the surface area of the stored manure from the outside air. Cover shall include an organic or inorganic material which current scientific research shows reduces detectable odor by at least 75 percent. A formed manure storage structure directly beneath a floor where animals are housed in a confinement feeding operation is deemed to be covered.

(B) The design, operation and maintenance plan for the manure cover must be in the construction permit application and made a condition in the approved construction permit.

X **13.** Construction permit application contains design, construction, operation and maintenance plan for emergency containment area at manure storage structure pump-out area.

	Score	Air	Water	Community
Emergency containment area	20		18.00	2.00

(A) The emergency containment area must be able to contain at least 5 percent of the total volume capacity of the manure storage structure.

(B) The emergency containment area must be constructed on soils that are fine-grained and have low permeability.

(C) If manure is spilled into the emergency containment area, the spill must be reported to the department within six hours of onset or discovery.

(D) The design, construction, operation and maintenance plan for the emergency containment area must be in the construction permit application and made a condition in the approved construction permit.

X **14.** Installation of a filter(s) designed to reduce odors from confinement building(s) exhaust fan(s).

	Score	Air	Water	Community
Installation of filter(s)	10	8.00		2.00

The design, operation and maintenance plan for the filter(s) must be in the construction permit application and made a condition in the approved construction permit.

X **15.** Utilization of landscaping around confinement structure.

	Score	Air	Water	Community
Utilization of Landscaping	20	10.00		10.00

The design, operation and maintenance plan for the landscaping must be in the construction permit application and made a condition in the approved construction permit. The design should contain at least three rows of trees and shrubs, of both fast and slow-growing species that are well suited for the site.

X **16.** Enhancement, above minimum requirements, of structures used in stockpiling and composting activities, such as an impermeable pad and a roof or cover.

	Score	Air	Water	Community
Stockpile and compost facility enhancements	30	9.00	18.00	3.00

(A) The design, operation and maintenance plan for the stockpile or compost structure enhancements must be in the construction permit application and made a condition in the approved construction permit.

(B) The stockpile or compost structures must be located on land adjacent or contiguous to the confinement building.

17. Proposed manure storage structure is formed

	Score	Air	Water	Community
Formed manure storage structure	30		27.00	3.00

(A) "Formed manure storage structure" -a covered or uncovered impoundment used to store manure from an animal feeding operation, which has walls and a floor constructed of concrete, concrete block, wood, steel, or similar materials. Similar materials may include, but are not limited to, plastic, rubber, fiberglass, or other synthetic materials. Materials used in a formed manure storage structure shall have the structural integrity to withstand expected internal and external load pressures.

(B) The design, operation and maintenance plan for the formed manure storage structure must be in the construction permit application and made a condition in the approved construction permit.

X **18.** Manure storage structure is aerated to meet departmental standards as an aerobic structure, if aeration is not already required by the department.

	Score	Air	Water	Community
Aerated manure storage structure	10	8.00		2.00

(A) Aerobic structure - an animal feeding operation structure other than an egg wash water storage structure which relies on aerobic bacterial action which is maintained by the utilization of air or oxygen and which includes

aeration equipment to digest organic matter. Aeration equipment shall be used and shall be capable of providing oxygen at a rate sufficient to maintain an average of 2 milligrams per liter dissolved oxygen concentration in the upper 30 percent of the depth of manure in the structure at all times.

(B) The design, operation and maintenance plan for the aeration equipment must be in the construction permit application and made a condition in the approved construction permit.

19. Proposed confinement site has a suitable truck turnaround area so that semitrailers do not have to back into the facility from the road

	Score	Air	Water	Community
Truck turnaround	20			20.00

(A) The design, operation and maintenance plan for the truck turn around area must be in the construction permit application and made a condition in the approved construction permit.

(B) The turnaround area should be at least 120 feet in diameter and be adequately surfaced for traffic in inclement weather.

20. Construction permit applicant's animal feeding operation environmental and worker protection violation history for the last five years at all facilities in which the applicant has an interest.

	Score	Air	Water	Community
No history of Administrative Orders in last five years	30			30.00

(A) "Interest" - means ownership of a confinement feeding operation as a sole proprietor or a 10 percent or more ownership interest held by a person in a confinement feeding operation as a joint tenant, tenant in common, shareholder, partner, member, beneficiary or other equity interest holder. Ownership interest is an interest when it is held either directly, indirectly through a spouse or dependent child, or both.

(B) An environmental violation is a final Administrative Order (AO) from the department of natural resources or final court ruling against the construction permit applicant for environmental violations related to an animal feeding operation. A Notice of Violation (NOV) does not constitute a violation.

X **21.** Construction permit applicant waives the right to claim a Pollution Control Tax Exemption for the life of the proposed confinement feeding operation structure.

	Score	Air	Water	Community
Permanent waiver of Pollution Control Tax Exemption	5			5.00

(A) Waiver of Pollution Control Tax Exemption is limited to the proposed structure(s) in the construction permit application.

(B) The department and county assessor will maintain a record of this waiver, and it must be in the construction permit application and made a condition in the approved construction permit.

22. Construction permit applicant can lawfully claim a Homestead Tax Exemption on the site where the proposed confinement structure is to be constructed

- OR -

the construction permit applicant is the closest resident to the proposed confinement structure.

	Score	Air	Water	Community
Site qualifies for Homestead Tax Exemption or permit applicant is closest resident to proposed structure	25			25.00

(A) Proof of Homestead Tax Exemption is required as part of the construction permit application.

(B) Applicant includes persons who have ownership interests. "Interest" - means ownership of a confinement feeding operation as a sole proprietor or a 10 percent or more ownership interest held by a person in a confinement feeding operation as a joint tenant, tenant in common, shareholder, partner, member, beneficiary or other equity interest holder. Ownership interest is an interest when it is held either directly, indirectly through a spouse or dependent child, or both.

23. Construction permit applicant can lawfully claim a Family Farm Tax Credit for agricultural land where the proposed confinement feeding operation is to be located pursuant to Iowa Code chapter 425A.

	Score	Air	Water	Community
Family Farm Tax Credit qualification	25			25.00

Applicant includes persons who have ownership interests. "Interest" - means ownership of a confinement feeding operation as a sole proprietor or a 10 percent or more ownership interest held by a person in a confinement feeding operation as a joint tenant, tenant in common, shareholder, partner, member, beneficiary or other equity interest holder. Ownership interest is an interest when it is held either directly, indirectly through a spouse or dependent child, or both.

24. Facility size.

	Score	Air	Water	Community
1 to 2,000 animal unit capacity	20			20.00
2,001 to 3,000 animal unit capacity	10			10.00
3,001 animal unit capacity or more	0			0.00

(A) Refer to the construction permit application package to determine the animal unit capacity of the proposed confinement structure at the completion of construction.
(B) If the proposed structure is part of an expansion, animal unit capacity (or animal weight capacity) must include all animals confined in adjacent confinement structures.
(C) Two or more animal feeding operations under common ownership or management are deemed to be a single animal feeding operation if they are adjacent or utilize a common area or system for manure disposal. In addition, for purposes of determining whether two or more confinement feeding operations are adjacent, all of the following must apply:
  (a) At least one confinement feeding operation structure must be constructed on and after May 21, 1998.
  (b) A confinement feeding operation structure which is part of one confinement feeding operation is separated by less than a minimum required distance from a confinement feeding operation structure which is part of the other confinement feeding operation. The minimum required distance shall be as follows:
    (1) 1,250 feet for confinement feeding operations having a combined animal unit capacity of less than 1,000 animal units.
    (2) 2,500 feet for confinement feeding operations having a combined animal unit capacity of 1,000 animal units or more.

X **25.** Construction permit application includes livestock feeding and watering systems that significantly reduce manure volume.

	Score	Air	Water	Community
Wet/dry feeders or other feeding and watering systems that significantly reduce manure volume	25		12.50	12.50

The design, operation and maintenance plan for the feeding system must be in the construction permit application and made a condition in the approved construction permit.

Proposed Site Operation and Manure Management Practices

The following scoring criteria apply to the operation and manure management characteristics of the proposed confinement feeding operation. Mark <u>one</u> score under each criterion that best reflects the characteristics of the submitted manure management plan.

26. Liquid or dry manure (choose only one subsection from subsections "a" - "e" and mark one score in that subsection).

		Score	Air	Water	Community
a.	Bulk dry manure is sold under Iowa Code Chapter 200A and surface-applied	15		15.00	
	Bulk dry manure is sold under Iowa Code Chapter 200A and incorporated on the same date it is land-applied	30	12.00	12.00	6.00
b.	Dry manure is composted and land-applied under the requirements of an approved department manure management plan	10	4.00	4.00	2.00
	Dry manure is composted and sold so that no manure is applied under the requirements of an approved department manure management plan	30	12.00	12.00	6.00
c.	Methane digester is used to generate energy from manure and remaining manure is surface-applied under the requirements of an approved department manure management plan	10	3.00	3.00	4.00
	After methane digestion is complete, manure is injected or incorporated on the same date it is land-applied under the requirements of an approved department manure management plan	30	12.00	12.00	6.00
d.	Dry manure is completely burned to generate energy and no	30	9.00	9.00	12.00

	remaining manure is applied under the requirements of an approved department manure management plan				
	Some dry manure is burned to generate energy, but remaining manure is land-applied and incorporated on the same date it is land applied	30	12.00	12.00	6.00
e.	Injection or incorporation of manure on the same date it is land-applied	30	12.00	12.00	6.00

(A) Choose only ONE line from subsection "a", "b," "c," "d," or "e" above and mark only one score in that subsection.
(B) The injection or incorporation of manure must be in the construction permit application and made a condition in the approved construction permit.
(C) If an emergency arises and injection or incorporation is not feasible, prior to land application of manure the applicant must receive a written approval for an emergency waiver from a department field office to surface-apply manure.
(D) Requirements pertaining to the sale of bulk dry manure under pursuant to Iowa Code chapter 200A must be incorporated into the construction permit application and made a condition of the approved construction permit.
(E) The design, operation and maintenance plan for utilization of manure as an energy source must be in the construction permit application and made a condition in the approved construction permit.
(F) The design, operation and maintenance plan for composting facilities must be in the construction permit application and made a condition in the approved construction permit.

X **27.** Land application of manure is based on a two-year crop rotation phosphorus uptake level.

	Score	Air	Water	Community
Two-year phosphorus crop uptake application rate	10		10.00	

(A) Land application of manure cannot exceed phosphorus crop usage levels for a two-year crop rotation cycle.
(B) The phosphorus uptake application rates must be in the construction permit application and made a condition in the approved construction permit.

X **28.** Land application of manure to farmland that has USDA Natural Resources Conservation Service (NRCS) approved buffer strips contiguous to all water sources traversing or adjacent to the fields listed in the manure management plan.

	Score	Air	Water	Community
Manure application on farmland with buffer strips	10		8.00	2.00

(A) The department may request NRCS maintenance agreements to ensure proper design, installation and maintenance of filter strips. If a filter strip is present but not designed by NRCS, it must meet NRCS standard specifications.
(B) The application field does not need to be owned by the confinement facility owner to receive points.
(C) On current and future manure management plans, the requirement for buffer strips on all land application areas must be in the construction permit application and made a condition in the approved construction permit.

X **29.** Land application of manure does not occur on highly erodible land (HEL), as classified by the USDA NRCS.

	Score	Air	Water	Community
No manure application on HEL farmland	10		10.00	

Manure application on non-HEL farmland must be in the construction permit application and made a condition in the approved construction permit.

X **30.** Additional separation distance, above minimum requirements (0 or 750 feet, see below), for the land application of manure to the closest:

* Residence not owned by the owner of the confinement feeding operation,
* Hospital,
* Nursing home, or
* Licensed or registered child care facility.

	Score	Air	Water	Community
Additional separation distance of 200 feet	5	3.25		1.75
Additional separation distance of 500 feet	10	6.50		3.50

(A) The department will award points only for the single building, of the four listed above, closest to the proposed confinement feeding operation.
(B) Minimum separation distance for land application of manure injected or incorporated on the same date as application: 0 feet.

(C) Minimum separation distance for land application of manure broadcast on soil surface: 750 feet.
(D) The additional separation distances must be in the construction permit application and made a condition in the approved construction permit.
(E) "Licensed child care center" – a facility licensed by the department of human services providing child care or preschool services for seven or more children, except when the facility is registered as a child care home.
(F) "Registered child development homes" - child care providers certify that they comply with rules adopted by the department of human services. This process is voluntary for providers caring for five or fewer children and mandatory for providers caring for six or more children.
(G) A full listing of licensed and registered child care facilities is available at county offices of the Department of Human Services

X **31.** Additional separation distance, above minimum requirements (0 or 750 feet, see below), for land application of manure to closest public use area.

	Score	Air	Water	Community
Additional separation distance of 200 feet	5	2.00		3.00

(A) "Public use area" - a portion of land owned by the United States, the state, or a political subdivision with facilities which attract the public to congregate and remain in the area for significant periods of time. Facilities include, but are not limited to, picnic grounds, campgrounds, cemeteries, lodges, shelter houses, playground equipment, lakes as listed in Table 2 in 567--Chapter 65, and swimming beaches. It does not include a highway, road right-of-way, parking areas, recreational trails or other areas where the public passes through, but does not congregate or remain in the area for significant periods of time.
(B) Minimum separation distance for land application of manure injected or incorporated on the same date as application: 0 feet.
(C) Minimum separation distance for land application of manure broadcast on soil surface: 750 feet.
(D) The additional separation distances must be in the construction permit application and made a condition in the approved construction permit.

X **32.** Additional separation distance, above minimum requirements (0 or 750 feet, see below), for the land application of manure to the closest:

* Educational institution,
* Religious institution, or
* Commercial enterprise.

	Score	Air	Water	Community
Additional separation distance of 200 feet	5	2.00		3.00

(A) Minimum separation distance for land application of manure broadcast on soil surface: 750 feet.
(B) Minimum separation distance for land application of manure injected or incorporated on same date as application: 0 feet.
(C) The additional separation distances must be in the construction permit application and made a condition in the approved construction permit.
(D) "Educational institution" - a building in which an organized course of study or training is offered to students enrolled in kindergarten through grade 12 and served by local school districts, accredited or approved nonpublic schools, area educational agencies, community colleges, institutions of higher education under the control of the state board of regents, and accredited independent colleges and universities.
(E) "Religious institution" - a building in which an active congregation is devoted to worship.
(F) "Commercial enterprise" - a building which is used as a part of a business that manufactures goods, delivers services, or sells goods or services, which is customarily and regularly used by the general public during the entire calendar year and which is connected to electric, water, and sewer systems. A commercial enterprise does not include a farm operation.

X **33.** Additional separation distance of 50 feet, above minimum requirements (0 or 200 feet, see below), for the land application of manure to the closest private drinking water well or public drinking water well - OR well is properly closed under supervision of county health officials.

	Score	Air	Water	Community
Additional separation distance of 50 feet or well is properly closed	10		8.00	2.00

(A) Minimum separation distance for land application of manure injected or incorporated on the same date as application or 50-foot vegetation buffer exists around well and manure is not applied to the buffer: 0 feet.
(B) Minimum separation distance for land application of manure broadcast on soil surface: 200 feet.
(C) If applicant chooses to close the well; the well closure must be incorporated into the construction permit application and made a condition in the approved construction permit.

X **34.** Additional separation distance, above minimum requirements, for the land application of manure to the closest:
- * Agricultural drainage well,
- * Known sinkhole,
- * Major water source, or
- * Water source

	Score	Air	Water	Community
Additional separation distance of 200 feet	5	0.50	2.50	2.00
Additional separation distance of 400 feet	10	1.00	5.00	4.00

(A) "Agricultural drainage wells" - include surface intakes, cisterns and wellheads of agricultural drainage wells.
(B) "Major water source" - a lake, reservoir, river or stream located within the territorial limits of the state, or any marginal river area adjacent to the state, which can support a floating vessel capable of carrying one or more persons during a total of a six-month period in one out of ten years, excluding periods of flooding. Major water sources in the state are listed in Tables 1 and 2 in 567--Chapter 65.
(C) "Water source" - a lake, river, reservoir, creek, stream, ditch, or other body of water or channel having definite banks and a bed with water flow, except lakes or ponds without an outlet to which only one landowner is riparian.
(D) The additional separation distances must be in the construction permit application and made a condition in the approved construction permit.

35. Additional separation distance above minimum requirements, for the land application of manure, to the closest:
- * High quality (HQ) water,
- * High quality resource (HQR) water, or
- * Protected water area (PWA).

	Score	Air	Water	Community
Additional separation distance of 200 feet	5		3.75	1.25
Additional separation distance of 400 feet	10		7.50	2.50

(A) HQ waters are identified in 567--Chapter 61.
(B) HQR waters are identified in 567--Chapter 61.
(C) A listing of PWAs is available at: http://www.iowadnr.gov/Recreation/CanoeingKayaking/StreamCare/ProtectedWaterAreas.aspx.

X **36.** Demonstrated community support.

	Score	Air	Water	Community
Written approval of 100% of the property owners within a one mile radius	20			20.00

X **37.** Worker safety and protection plan is submitted with the construction permit application.

	Score	Air	Water	Community
Submission of worker safety and protection plan	10			10.00

(A) The worker safety and protection plan must be in the construction permit application and made a condition in the approved construction permit.
(B) The worker safety and protection plan and subsequent records must be kept on site with the manure management plan records.

X **38.** Applicant signs a waiver of confidentiality allowing public to view confidential manure management plan land application records

	Score	Air	Water	Community
Manure management plan confidentiality waiver	5			5.00

The waiver of confidentiality must be in the construction permit application and made a condition in the approved construction permit. The applicant may limit public inspection to reasonable times and places.

X **39.** Added economic value based on quality job development (number of full time equivalent (FTE) positions), and salary equal to or above Iowa department of workforce development median (45-2093)
-OR-
the proposed structure increases commercial property tax base in the county.

	Score	Air	Water	Community
Economic value to local community	10			10.00

The Iowa Department of Workforce Development regional profiles are available at http://www.iowaworkforce.org/centers/regionalsites.htm. Select the appropriate region and then select "Regional Profile."

X **40.** Construction permit application contains an emergency action plan.

	Score	Air	Water	Community
Emergency action plan	5		2.50	2.50

(A) Iowa State University Extension publication PM 1859 lists the components of an emergency action plan. The emergency action plan submitted should parallel the components listed in the publication.
(B) The posting and implementation of an emergency action plan must be in the construction permit application and made a condition in the approved construction permit.
(C) The emergency action plan and subsequent records must be kept on site with the manure management plan records.

X **41.** Construction permit application contains a closure plan.

	Score	Air	Water	Community
Closure Plan	5		2.50	2.50

(A) The closure plan must be in the construction permit application and made a condition in the approved construction permit.
(B) The closure plan must be kept on site with the manure management plan records.

X **42.** Adoption and implementation of an environmental management system (EMS) recognized by the department.

	Score	Air	Water	Community
EMS	15	4.50	4.50	6.00

(A) The EMS must be in the construction permit application and made a condition in the approved construction permit.
(B) The EMS must be recognized by the department as an acceptable EMS for use with confinement operations.

X **43.** Adoption and implementation of NRCS approved Comprehensive Nutrient Management Plan (CNMP).

	Score	Air	Water	Community
CNMP	10	3.00	3.00	4.00

The implementation and continuation of a CNMP must be in the construction permit application and made a condition in the approved construction permit.

X **44.** Groundwater monitoring wells installed near manure storage structure, and applicant agrees to provide data to the department.

	Score	Air	Water	Community
Groundwater monitoring	15		10.50	4.50

(A) Monitoring well location, sampling and data submission must meet department requirements.
(B) The design, operation and maintenance plan for the groundwater monitoring wells, and data transfer to the department, must be in the construction permit application and made a condition in the approved construction permit.

	Total Score	Air	Water	Community
	880	213.50	271.00	404.50
Score to pass	440	53.38	67.75	101.13

PAUSTIAN ENTERPRISES LTD. MM SCORES	495	136.25	104	254.75

Please staple check here

Iowa Department of Natural Resources

Construction Permit Application Form

Confinement Feeding Operations

INSTRUCTIONS:

Prior to constructing, installing, modifying or expanding a confinement feeding operation structure[1], answer questions 1-8 on Item 3, Section A (page 2), to determine if a construction permit is required. To calculate the animal unit capacity (AUC) of the operation, complete Table 1 (page 4.) If a construction permit is required, complete the rest of the form, have the applicant(s) sign it on pages 5 and 6. Mail to the DNR (see address on page 5) this application form, documents and fees requested in Checklist No. 1 or 2 (pages 10-15). See item 5 (page 5), to determine which checklist to use.

If a construction permit is not needed, some pre-construction requirements may still apply prior to the construction of a formed manure storage structure[2]. See page 5 for additional DNR contact information.

THIS APPLICATION IS FOR:

1. ☐ **A new confinement feeding operation**
2. ☒ **An existing confinement feeding operation** *(answer all of the following questions):*
   a) Facility ID No. (5 digit number): 62367
   b) Date when the operation was first constructed: 1996
   c) Date when the last construction, expansion or modification was completed: 2012

(Not needed if the confinement operation has previously received a construction permit from DNR.)

d) Is this also an ownership change? ☐ Yes ☒ No If yes box is checked additional fees apply. See page 8

ITEM 1 – LOCATION AND CONTACT INFORMATION (*See page 17 for instructions and an example*):

A) Name of operation: SOW UNIT

Location: NE (1/4 1/4) SE (1/4) 19 (Section) 79N & 2E (Tier & Range) HICKORY GROVE (Name of Township) SCOTT (County)

B) Applicant information:

Name: PAUSTIAN ENTERPRISES LTD. Title: OWNER

Address: 6520 - 215TH ST., WALCOTT, IA 52773

Telephone: 563-284-6814 Fax: Email: mike.paustian@gmail.com

C) Person to contact with questions about this application (if different than applicant):

Name: Mike Paustian Title: Owner

Address: 6520 - 215th St., Walcott, IA 52773

Telephone: 563-284-6814 Fax: Email: mike.paustian@gmail.com

☒ Enclose aerial photo or engineering drawing showing the proposed location of the confinement feeding operation structure[1] and all applicable separation distances, as requested in Attachment 1 (pages 11-12 or 14-15). See example of aerial photo on pages 18 to 19, at the end of this form.

☐ I manage or am the majority owner of another confinement feeding operation located within 2,500 feet of the proposed site. Please contact the DNR AFO Program staff at (712) 262-4177 to verify site adjacency requirements.

[1] Confinement feeding operation structure = animal feeding operation structure (confinement building, manure storage structure or egg washwater storage structure) that is part of a confinement feeding operation. Manure storage structures include formed and unformed manure storage structures.

[2] Formed manure storage structure = covered or uncovered concrete or steel tanks, and concrete pits below the building.

ITEM 2 – SITING INFORMATION:

A) Karst Determination: Go to DNR AFO Siting Atlas at http://programs.iowadnr.gov/maps/afo/. Agree to the disclaimer, then search for your site by either scrolling into your location or entering an address or legal description in the bottom search bar. Left click on the location of your proposed structure. Make sure the karst layer box is checked on the map layers. If you cannot access the map, or if you have questions about this issue, contact the AFO Engineer at (712) 262-4177. Check one of the following:

- ■ The site is not in karst or potential karst. Print and enclose the map with the name and location of the site clearly marked.
- ☐ The site is in karst. The upgraded concrete standards of 567 IAC 65.15(14)"c" must be used. Refer to "Applicant's submittal checklist" on page 10 for karst documentation.
- ☐ The site is within 1,000 feet of a known sinkhole, Secondary Containment Barrier is required in accordance with 567 IAC 65.15(17).

B) Alluvial Soils Determination: Go to the AFO Siting Atlas as described above. Make sure the alluvial layer box is checked on the map legend. If you cannot access the map, or if you have questions about this issue, contact DNR Flood Plain at (866) 849-0321. Check one of the following:

- ■ The site is not in alluvial soils. Print and enclose the map with the name and location of the site clearly marked.
- ☐ The site is in alluvial soils. You will need to submit a request for a flood plain determination from DNR Flood Plain (866) 849-0321. After receiving determination submit one of the following:
  - ☐ Not in 100-year floodplain or does not require a flood plain permit. Include correspondence from the DNR Flood Plain Section.
  - ☐ Requires flood plain permit. Include flood plain permit.
  - ☐ Documentation has been submitted to determine site is not in alluvial soils. Refer to "Applicant's Submittal Checklist" on page 10 for alluvial soils documentation.

ITEM 3 – OPERATION INFORMATION:

A) A construction permit is required prior to any of the following:

1. ☐ Constructing or modifying any unformed manure storage structure[3], or constructing or modifying a confinement building that uses an unformed manure storage structure[3].
2. ■ Constructing, installing or modifying a confinement building or a formed manure storage structure[2] at a confinement feeding operation if, after construction, installation or expansion, the AUC of the operation is 1,000 animal units (AU) or more. This also applies to confinement feeding operations that store manure exclusively in a dry form.
3. ☐ Initiating a change that would result in an increase in the volume of manure or a modification in the manner in which manure is stored in any unformed manure storage structure[3], even if no construction or physical alteration is necessary. Increases in the volume of manure due to an increase in animal capacity, animal weight capacity or AUC up to the limits specified in a previously issued construction permit do not require a new construction permit.
4. ☐ Initiating a change, even if no construction or physical alteration is necessary, that would result in an increase in the volume of manure or a modification in the manner in which manure is stored in a formed manure storage structure[2] if, after the change, the AUC of the operation is 1,000 AU or more. Increases in the volume of manure due to an increase in animal capacity, animal weight capacity or AUC up to the limits specified in a previously issued construction permit do not require a new construction permit.
5. ☐ Constructing or modifying any egg washwater storage structure or a confinement building at a confinement feeding operation that includes an egg washwater storage structure.
6. ☐ Initiating a change that would result in an increase in the volume of egg washwater or a modification in the manner in which egg washwater is stored, even if no construction or physical alteration is necessary. Increases in the volume of egg washwater due to an increase in animal capacity, animal weight capacity or AUC up to the limits specified in a previously issued construction permit do not require a new construction permit.
7. ☐ Repopulating a confinement feeding operation if it was closed for 24 months or more and if any of the following apply:
   1. ☐ The confinement feeding operation uses an unformed manure storage structure[3] or egg washwater storage structure;
   2. ☐ The confinement feeding operation includes only confinement buildings and formed manure storage structures[2] and has an AUC of 1,000 AU or more.
8. ☐ Installing a permanent manure transfer piping system, unless the department determines that a construction permit is not required.

[3] Unformed manure storage structure = covered or uncovered anaerobic lagoon, earthen manure storage basin, aerobic earthen structure.

B) **In your own words, describe in detail, the proposed construction, expansion, installation, modification or repair being proposed in this project.(Must be completed) Attach additional pages if necessary:**

The proposed addition to the farrowing barn will be a 60'6" x 92'3" x 2'0" extention of the existing farrowing barn.

C) **Master Matrix** *(must check one)*. If any of boxes 1 to 3 are checked, the operation is required to be evaluated with the master matrix if the county, where the confinement feeding operation structure[1] is or would be located, has adopted a 'Construction Evaluation Resolution' (CER). Select the one that best describes your confinement feeding operation:

1. ☐ A new confinement feeding operation proposed in a county that has adopted a CER.
2. ☐ An existing operation constructed on or after April 1, 2002, in a county that has adopted a CER.
3. ■ An existing operation constructed prior to April 1, 2002, with a current or proposed AUC of 1,667 AU or more, in a county that has adopted a CER.
4. ☐ None of the above. Therefore, the master matrix evaluation is not required.

D) **Qualified Operation** *(must check one)*. If any of boxes 1 to 4 are checked, the operation is also a 'qualified operation'. A qualified operation is required to use a manure storage structure that employs bacterial action which is maintained by the utilization of air or oxygen, and which shall include aeration equipment. However, this requirement does not apply if box 5 is checked. Select the one that best describes your confinement feeding operation:

1. ☐ A swine farrowing and gestating operation with an AUC of 2,500 AU or more. If the replacement breeding swine are raised and used at the operation, the animal units for those replacement animals do not count in the operations total AUC.
2. ☐ A swine farrow-to-finish operation with an AUC of 5,400 AU or more.
3. ☐ A cattle confinement feeding operation (including dairies) with an AUC of 8,500 AU or more.
4. ☐ Other confinement feeding operations with an AUC of 5,333 AU or more.
5. ■ This is not a qualified operation because:
   a. ■ It is below the limits shown on boxes 1 to 4.
   b. ☐ It includes a confinement feeding operation structure[1] constructed prior to May 31, 1995.
   c. ☐ It handles manure exclusively in a dry form (poultry).

ITEM 4 – ANIMAL UNIT CAPACITY (AUC) and, if applicable, ANIMAL WEIGHT CAPACITY (AWC):

A) Calculating AUC – Required for all operations

For each animal species, multiply the maximum number of animals that you would ever confine at one time by the appropriate factor, then add all AU together on Table 1 (page 4). Use the maximum market weight for the appropriate animal species to select the AU factor.

You must complete all applicable columns in Table 1. Use column a) to calculate the existing AUC, before permit for existing operations only. Use column b) to calculate the 'Total proposed AUC' (after a permit is issued) including new operations. The number obtained in column b) is the AUC of the operation and must be used to determine permit requirements. Use column c) to calculate the 'New AU' to be added to an existing operation. To calculate the indemnity fee (see page 7), also use column c), however, if the "Existing AUC" (column a) is 500 AU or less, enter the "Total proposed AUC" (column b) in the "New AU" (column c).

In calculating the AUC of a confinement feeding operation, you must include the AUC of all confinement buildings which are part of the confinement feeding operation, unless a confinement building has been abandoned. A confinement feeding operation structure[1] is abandoned if the confinement feeding operation structure[1] has been razed, removed from the site of a confinement feeding operation, filled in with earth, or converted to uses other than a confinement feeding operation structure[1] so that it cannot be used as a confinement feeding operation structure[1] without significant reconstruction. Therefore, in Table 1, enter the animal unit capacity of all the confinement buildings, including those that are from an "adjacent" operation located within 2,500 feet. For more information, contact the AFO Program at (712) 262-4177.

Table 1. Animal Unit Capacity (AUC): **(No. HEAD) x (FACTOR) = AUC**

Animal Species	a) Existing AUC (Before permit)			b) Total Proposed AUC (After permit)		
	(No. Head)	x (Factor)	= AUC	(No. Head)	x (Factor)	= AUC
Slaughter or feeder cattle		1.0			1.0	
Immature dairy cattle		1.0			1.0	
Mature dairy cattle		1.4			1.4	
Gestating sows	808	0.4	323	808	0.4	323
Farrowing sows & litter	187	0.4	75	187	0.4	75
Boars	22	0.4	9	22	0.4	9
Gilts	972	0.4	389	972	0.4	389
Finished (Market) hogs	2600	0.4	1040	2600	0.4	1040
Nursery pigs 15 lbs to 55 lbs		0.1			0.1	
Sheep and lambs		0.1			0.1	
Horses		2.0			2.0	
Turkeys 7lbs or more		0.018			0.018	
Turkeys less than 7 lbs		0.0085			0.0085	
Broiler/Layer chickens 3 lbs or more		0.01			0.01	
Broiler/Layer chickens less than 3 lbs		0.0025			0.0025	
Fish		0.001			0.001	
TOTALS:	**a) Existing AUC:**		1836	**b) Total proposed AUC:**		1836

Note: If the "Existing AUC" (column a) is 500 AU or less, enter the "Total proposed AUC" (column b) in the "New AU" (column c)

c) New AU = b) - a): **d)** 0

(This is the AUC of the operation)

B) Calculating AWC - Only for operations first constructed prior to March 1, 2003

The AWC is needed for an operation that was first constructed prior to March 1, 2003, to determine some of the minimum separation distance requirements for construction or expansion.

The AWC is the product of multiplying the maximum number of animals that you would ever confine at any one time by their average weight (lbs) during the production cycle. Then add the AWC if more than one animal species is present (examples on how to determine the AWC are provided in 567 IAC 65.1(455B).)

If the operation was first constructed prior to March 1, 2003, you must complete all applicable columns in Table 2:

Table 2. Animal Weight Capacity (AWC): **(No. head) * (Avg. weight, lbs) = AWC, lbs**

Animal Species	a) Existing AWC (Before Permit)			b) Proposed AWC (After permit)		
	(No. head) x	avg weight	= AWC	(No. head) x	avg weight	= AWC
Slaughter or feeder cattle						
Immature dairy cattle						
Mature dairy cattle						
Gestating sows	808	375	30300	808	375	3033
Farrowing sows & litter	187	375	70125	187	375	70125
Boars	22	350	7700	22	350	7700
Gilts	936	200	187200	936	200	187200
Finished (Market) hogs	2600	150	390000	2600	150	390000
Nursery pigs 15 lbs to 55 lbs						
Sheep and lambs						
Horses						
Turkeys 7lbs or more						
Turkeys less than 7 lbs						
Broiler/Layer chickens 3 lbs or more						
Broiler/Layer chickens less than 3 lbs						
Fish						
TOTALS:	**a) Existing AWC:**		685325	**b) Total proposed AWC:**		685325

c) New AWC = b) - a): 0

(This is the AWC of the operation)

ITEM 5 – SUBMITTAL REQUIREMENTS Checklists No. 1 or 2 (pages 10-15) describe the submittal requirements, which are based on the type of confinement feeding operation structure[1] and AUC proposed. To determine which checklist to use, choose the option that best describes your confinement feeding operation:

A) ☐ **Formed manure storage structures**[2]: The proposed confinement feeding operation structure[1] will be or will use a formed manure storage structure[2]. Check one of the following boxes:

1. ☐ A swine farrowing and gestating operation with an AUC of 1,250 AU or more. Use Submittal Checklist No. 2 (page 13).
2. ☐ A swine farrow-to-finish operation with an AUC of 2,750 AU or more. Use Submittal Checklist No. 2 (page 13).
3. ☐ A cattle confinement feeding operation (including dairies) with an AUC of 4,000 AU or more. Use Submittal Checklist No. 2 (page 13).
4. ☐ Other confinement feeding operations with an AUC of 3,000 AU or more. Use Submittal Checklist No. 2 (page 13).
5. ■ None of the above. Use Submittal Checklist No. 1 (page 10).

If any of boxes 1 to 4 are checked, the operation meets the threshold requirements for an engineer[4] and a Professional Engineer (PE), licensed in Iowa, is required. For these cases, use Submittal Checklist No. 2 (page 13).

If you checked box 5, your operation is below threshold requirements for an engineer[4] and a Professional Engineer (PE) is not required. Use Submittal Checklist No. 1 (page 10).

B) ☐ **Unformed manure storage structure**[3]: The proposed confinement feeding operation structure[1], will be or will use an unformed manure storage structure[3] or an egg washwater storage structure. A Professional Engineer (PE) licensed in Iowa must design and sign the engineering documents for any size of operation. Use Submittal Checklist No. 2 (page 13) and Addendum "A" (page 16).

ITEM 6 – SIGNATURE:

I hereby certify that the information contained in this application is complete and accurate.

Signature of Applicant(s): Carstens Enterprises by Mike Carstens Date: 05/02/17

MAILING INSTRUCTIONS:

To expedite the application process, follow the submittal requirements explained in Checklist No. 1 or 2 (pages 10 to 16), whichever applies. Page 1 of this form should be the first page of the package. Mail all documents and fees to:

Iowa DNR
AFO Program
1900 N Grand Ave
Gateway North, Ste E17
Spencer, IA 51301

(Note: Incomplete applications will be returned to the sender.)

Questions

Questions about construction permit requirements or regarding this form should be directed to an engineer of the animal feeding operations (AFO) Program at (712) 262-4177 To contact the appropriate DNR Field Office, go to http://www.iowadnr.gov/InsideDNR/DNRStaffOffices/EnvironmentalFieldOffices.aspx.

[4] Threshold requirements for an engineer apply to the construction of a formed manure storage structure[2]. Operations that meet or exceed the threshold requirements for an engineer are required to submit engineering documents signed by a professional engineer licensed in the state of Iowa. Please refer to Checklist No. 2 (pages 13-15).

ITEM 7

Interested Parties Form
Confinement Feeding Operation

Interest means ownership of a confinement feeding operation as a sole proprietor or a 10 percent or more ownership interest held by a person in a confinement feeding operation as a joint tenant, tenant in common, shareholder, partner, member, beneficiary or other equity interest holder. Ownership interest is an interest when it is held either directly or indirectly through a spouse or dependent child, or both.

INSTRUCTIONS:

Please list all persons (including corporations, partnerships, etc.) who have an interest in any part of the confinement feeding operation covered by this permit application.

Full Name	Address	City/State	Zip
Mike Paustian	22225 70th Ave.	Walcott/IA	52773
Amy Paustian	22225 70th Ave.	Walcott/IA	52773
Kent Paustian	6520 215th St.	Walcott/IA	52773
Marcia Paustian	6420 215th St.	Walcott/IA	52773
Ross Paustian	389 W. Parkview Dr.	Walcott/IA	52773
Carol Paustian	389 W. Parkview Dr.	Walcott/IA	52773
Carolyn Paustian	P.O. Box 459	Walcott/IA	52773

For each name above, please list below all other confinement feeding operations in Iowa in which that person has an interest. Check box "**None**", below, if there are no other confinement feeding operations in Iowa in which the above listed person(s) has or have an interest.

Operation Name	Location (1/4 1/4, 1/4, Section, Tier, Range, Township, County)	City
☐ **None** [There are no other confinements in Iowa in which the above listed person(s) has or have an interest].		
Home Farm	SW NE 30 79N 2E Hickory Grove, Scott	Walcott
Stender Farm	NW NE 20 79N 2E Hickory Grove, Scott	Walcott
Ralf Farm	SW SE 13 79N 1E Cleona, Scott	Walcott
Hein Farm	SE NE 34 79N 1E Cleona, Scott	Walcott

I hereby certify that the information provided on this form is complete and accurate.

Signature of Applicant(s): Paustian Enterprises by Mike Paustian Date: 05/02/17

ITEM 8

Manure Storage Indemnity Fee Form for Construction Permits

CASHIER'S USE ONLY
0474-542-474A-0431
Facility ID #
County

Credit fees to: Paustian Enterprises Ltd.

Name of operation: Sow Unit/Ross

INSTRUCTIONS:

1) Use the 'Total Proposed AUC' from column b), Table 1 (page 4), to select the appropriate fee line in the table below. The 'Total Proposed AUC' is the AUC of the operation.
2) Select the animal specie and row number (see examples). Enter the 'New AU' from column c), Table 1 (page 4). The 'New AU' is the number of AU to be added to an existing operation or being proposed with a new operation. **Note**: If the "Existing AUC" (column a) is 500 AU or less, enter the "Total proposed AUC" (column b) in "New AU" (column c).
3) Multiply the 'New AU' by the appropriate 'Fee per AU'. The resulting number is the indemnity fee due.

- **Example 1**: An existing swine operation is expanding from an 'Existing AUC' of 1,000 AU to a 'Total Proposed AUC' of 1,800 AU, and has previously paid an indemnity fee for the existing 1,000 AU. Calculate the indemnity fee as follows: The 'Total Proposed AUC' is between 1,000 AU and 3,000 AU; the animal specie is other than poultry; enter 800 AU in the 'New AU' column, row 4, and multiply it by $ 0.15:
  (800 AU) x ($ 0.15 per AU) = $ 120.00
- **Example 2**: An existing poultry operation is expanding from an 'Existing AUC' of 250 AU to a 'Total Proposed AUC' of 2,000 AU and has not paid the indemnity fee for animals housed in the existing buildings. Calculate the indemnity fee as follows: The 'Total Proposed AUC' is between 1,000 AU and 3,000 AU; the animal specie is poultry and the indemnity fee has not previously been paid, enter 2,000 AU in the 'New AU' column on row 3, and multiply it by $0.06:
  (2,000 AU) x ($ 0.06 per AU) = $ 120.00
- **Example 3**: If you are proposing a new swine confinement feeding operation with a 'Total Proposed AUC' of 3,500 AU, enter 3,500 AU in the 'New AU' column, row 6 and multiply it by $ 0.20:
  (3,500 AU) x ($ 0.20 per AU) = $ 700.00
- **Example 4**: If you are applying for a construction permit but you are not increasing the AUC of the operation, and has previously paid the applicable indemnity for the animals housed in the existing buildings, there is no indemnity fee due ($ 0.00). If no indemnity fee is due, do not submit this page.

Indemnity Fee Table:

Total Proposed AUC - (After permit) from column b), Table 1	Row	Animal species	New AU - from column c), Table 1	x	Fee per AU	Indemnity Fee
Less than 1,000 AU	1	Poultry		x	$ 0.04 =	
	2	Other		x	$ 0.10 =	
1,000 AU or more to less than 3,000 AU	3	Poultry		x	$ 0.06 =	
	4	Other	0	x	$ 0.15 =	0
3,000 AU or more	5	Poultry		x	$ 0.08 =	
	6	Other		x	$ 0.20 =	

ITEM 8 (Cont.)

Filing Fees Form for Construction Permits

CASHIER'S USE ONLY
0473-542-473A-0431
0474-542-474A-0431
Facility ID #
County

Credit fees to: Paustian Enterprises Ltd.

Name of operation: Sow Unit/Ross

INSTRUCTIONS:

1. If the operation is applying for a construction permit enclose a payment for the following:
   ☒ Construction application fee $250.00.
   (Note: This fee is non-refundable)
2. A manure management plan must be submitted with a filing fee.
   ☒ Manure management plan filing fee $250.00
   (Note: This fee is non-refundable)
3. If this is a change in ownership then indemnity fees must also be paid on the current (existing) total AUC at the appropriate rate on page 7.
   ☐ Indemnity fee due to ownership change $ _____
4. Total filing fees: Add the fees paid in items 1, 2 and 3 (above): $ 500.00

SUMMARY:

- Manure Storage Indemnity Fee (see previous page) to be deposited in the Manure Storage Indemnity Fee Fund (474)	$	0
- Total filing fees (see item 4 on this page) to be deposited in the Animal Agriculture Compliance Fund (473)	$	500.00
TOTAL DUE:	$	500.00

Make check payable to: Iowa Department of Natural Resources or Iowa DNR; and send it along with the construction application documents (See Submittal Checklist No. 1 or 2, pages 10-15.) Note: Do not send this fee to the county.

ITEM 9

COUNTY VERIFICATION RECEIPT OF DNR CONSTRUCTION PERMIT APPLICATION

This form provides proof that the County Board of Supervisors has been provided with a complete copy of the construction permit application documents (everything except the fees) for the confinement feeding operation or a complete MMP has been provided to the County because manure will be applied in that county:

Applicant: Paustian Enterprises Ltd. Telephone: _____

Name of operation: Sow Unit/Ross

Location:

NE	SE	19	79N & 2E	Hickory Grove	Scott
(1/4 1/4)	(1/4)	(Section)	(Tier & Range)	(Name of Township)	(County)

Documents being submitted to the county:

- [x] Construction permit application form: submit items 1 to 9 (see Submittal Checklist No. 1 or 2)
- [x] Attachment 1 - Aerial photos: Must clearly show the location of the proposed confinement feeding operation structure[1] and that all the separation distances are met, including those claimed for points in the master matrix (if applicable).
- [x] Attachment 2 - Statement of design certification, submit any of the following (see Checklist No. 1 or 2):
  - [x] Construction Design Statement form
  - [ ] Professional Engineer (PE) Design Certification form
  - [ ] Engineering report, construction plans and technical specifications
  - [ ] In addition, if proposing an unformed manure storage structure[3] or an egg washwater storage structure submit documentation required in Addemdum "A" of this construction application form.
- [x] Attachment 3 - Manure management plan.
- [x] Attachment 4 - Master Matrix (if required). You must include supporting documents (see Checklist No. 1 or 2)

THIS SECTION IS RESERVED FOR THE COUNTY

As soon as DNR receives a construction permit application, the DNR will fax your County Auditor a "Courtesy reminder letter" explaining what actions your County Board of Supervisors must complete and the deadlines.

Public Notice is required for **all** construction permit applications, including those applications not required to be evaluated with the master matrix and applications in counties not participating in the Master matrix.

Counties participating in the master matrix: the county's master matrix evaluation and county's recommendation is required for the following cases:

- A new confinement feeding operation that is applying for a construction permit
- An existing confinement feeding operation that was first constructed on or after April 1, 2002 that is applying for a construction permit.
- An existing confinement feeding operation that was first constructed prior to April 1, 2002 that is applying for a construction permit with an animal unit capacity (AUC) is 1,667 animal units (AU) or more.

I have read and acknowledge the county's duty with this construction permit application, as specified in 567 IAC 65.10 and Iowa Code 459.304. On behalf of the Board of Supervisors for:

COUNTY: _____

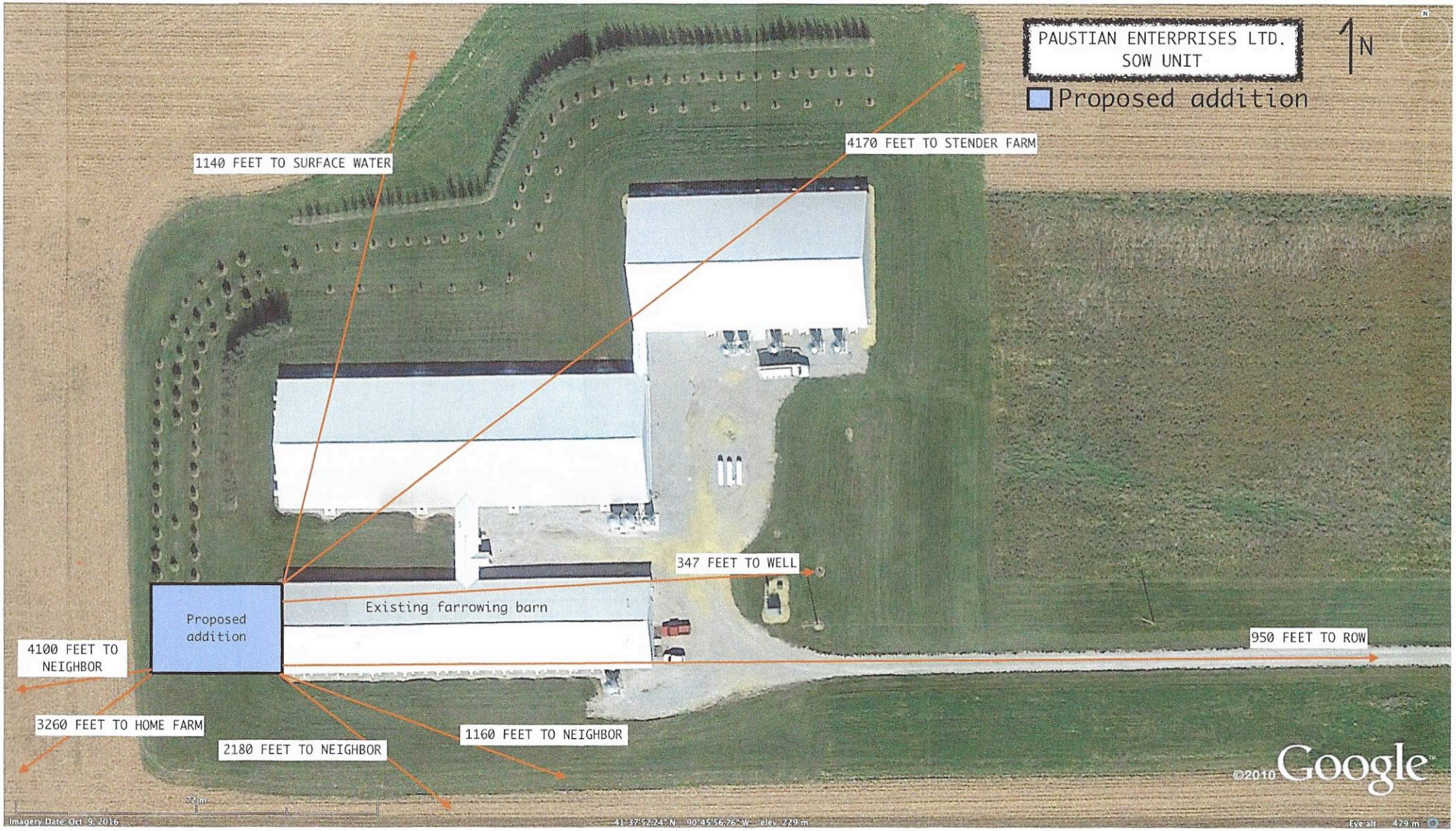
NAME: _____

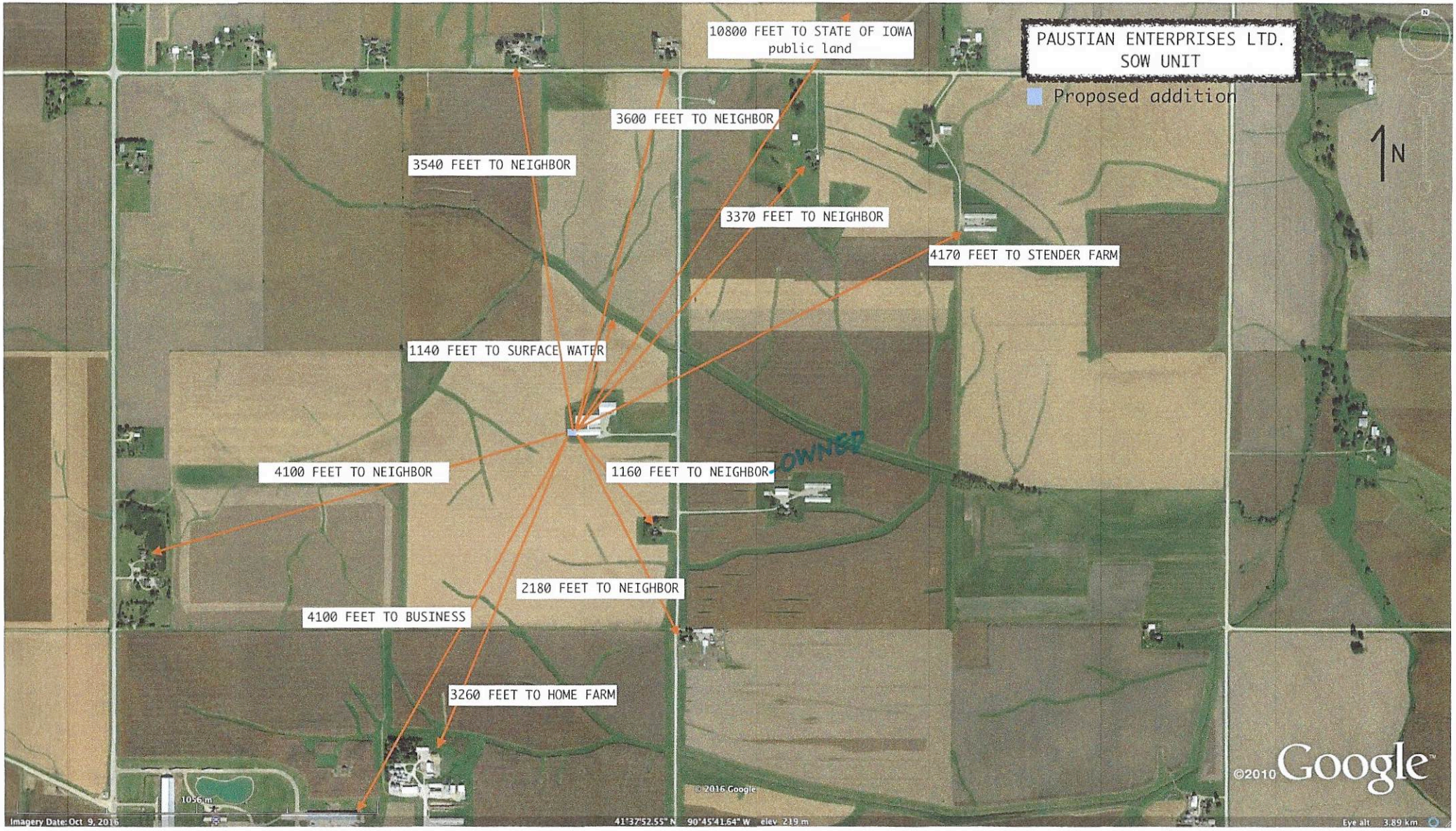
TITLE: _____

(Member of the County Board of Supervisors or its designated official/employee)

Date: _____ , 20 _____ .

If you do not receive the courtesy reminder letter within a reasonable time, or if you have any questions, please contact the animal feeding operations (AFO) Program at (712) 262-4177 or visit www.IowaDNR.gov

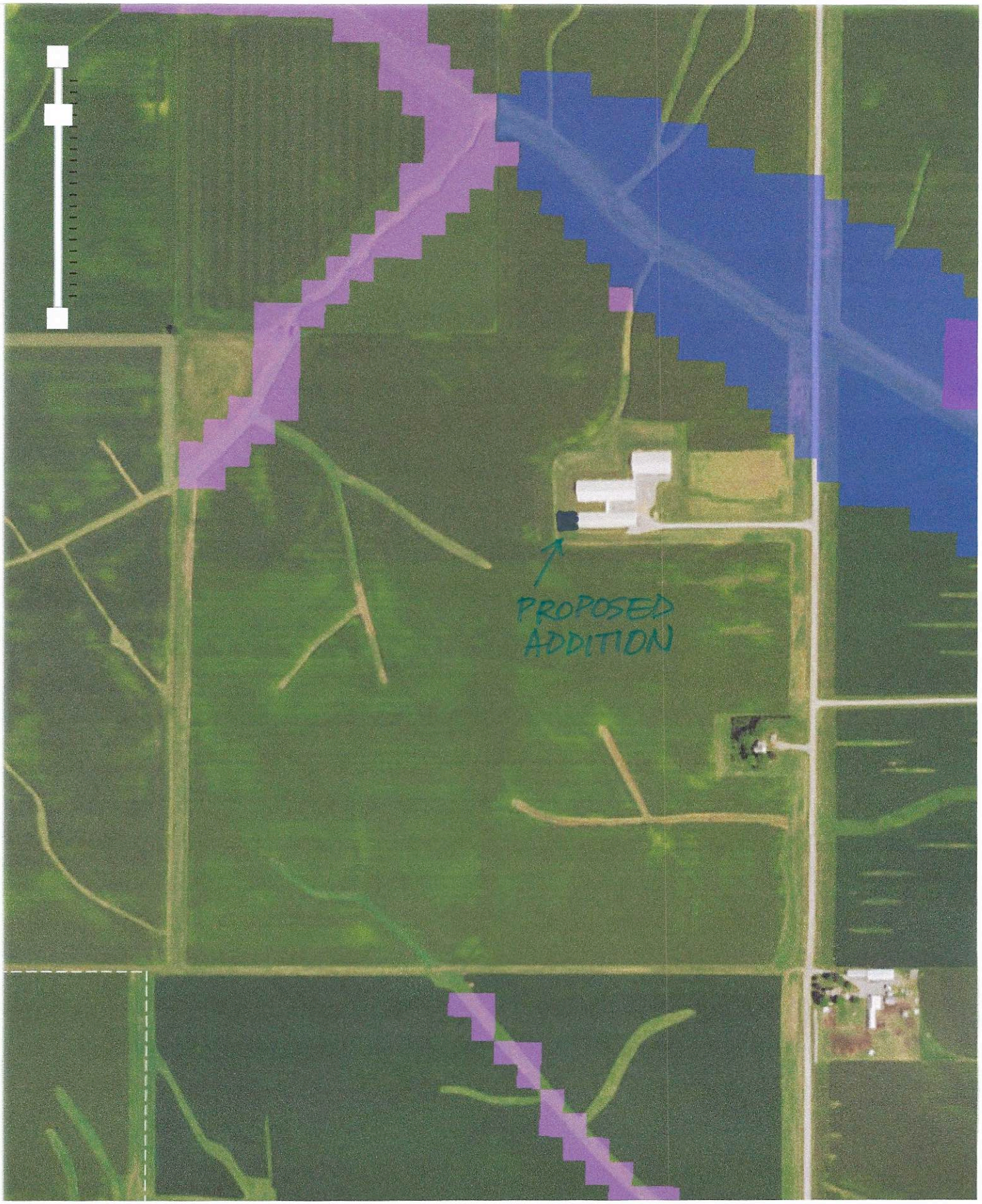

PAUSTIAN ENTERPRISES LTD.
SOW UNIT
Proposed addition
N
1140 FEET TO SURFACE WATER
4170 FEET TO STENDER FARM
347 FEET TO WELL
Proposed addition
Existing farrowing barn
950 FEET TO ROW
4100 FEET TO NEIGHBOR
3260 FEET TO HOME FARM
2180 FEET TO NEIGHBOR
1160 FEET TO NEIGHBOR
©2010 Google
Imagery Date: Oct 9, 2016
41°37'52.24" N 90°45'56.76" W elev 229 m
Eye alt 479 m


PAUSTIAN ENTERPRISES LTD.
SOW UNIT
Proposed addition
N
10800 FEET TO STATE OF IOWA
public land
3600 FEET TO NEIGHBOR
3540 FEET TO NEIGHBOR
3370 FEET TO NEIGHBOR
4170 FEET TO STENDER FARM
1140 FEET TO SURFACE WATER
4100 FEET TO NEIGHBOR
1160 FEET TO NEIGHBOR
OWNED
2180 FEET TO NEIGHBOR
4100 FEET TO BUSINESS
3260 FEET TO HOME FARM
©2010 Google
© 2016 Google
Imagery Date: Oct 9, 2016
41°37'52.55" N 90°45'41.64" W elev 219 m
Eye alt 3.89 km

DNR IOWA
DEPARTMENT OF NATURAL RESOURCES

PAUSTIAN ENTERPRISES LTD - SOW UNIT KARST + ALLUVIAL SOILS MAP

Basemaps Measure Bookmarks Mail Map Info Soil



Construction Design Statement (CDS)

Instructions:

1. This form is for new or expanding confinement feeding operations with an AUC[1] of more than 500 AU, not required to have a professional engineer (PE)[2], that are proposing to construct a formed manure storage structure[3].
2. Complete and submit Sections 1, 2 and 3 (pages 1 to 5).
3. Complete and submit Section 4 (page 6) only if you are applying for a construction permit and are constructing three or more confinement feeding operation structures[4].
4. Mail only pages 1 to 5, and page 6 (if applicable) as instructed on page 6. Do not mail the remainder of this form.
5. If the site-specific design is sealed by a PE[2], do not use this CDS instead use DNR Form 542-8122.

Section 1 - Information about the proposed formed manure storage structure[3](s)

A) Information about the operation:

Name of operation: Paustian Enterprises Ltd. Facility ID No. : 62367

Location:	NE	SE	19	T79R2E	Hickory Grove	Scott
	(¼ ¼)	(¼)	(Section)	(Tier & Range)	(Name of Township)	(County)

B) Description of the proposed formed manure storage structure[3]. Include dimensions (length, width, or diameter, depth). Indicate if it is aboveground or belowground; covered or uncovered, made of concrete or steel, address location of pit fans, if applicable, and address water line entry into buildings. If necessary attach more pages:

60'6" x 92'3" x 2'0" **belowground concrete pit covered by a swine** farrowing addition.

The water will come in through the gabled wall

The fans will sit on stainless steel transitions.

C) **Aerial photos:** Aerial photos must be submitted that clearly show the location of all existing and proposed confinement feeding operation structures and show at least a one-mile radius around the structures. The photos must either show roads on the north and south or east and west sides of a section (so that a mile distance is apparent), or include a distance scale.

The photo(s) must show that the proposed structures comply with all statutory minimum required separation distances to the objects listed below:

- Residences (not owned by the permit applicant), churches, businesses, schools, public use areas
- Water wells (depends on type)
- Major water sources, wellhead or cistern of an agricultural drainage well or known sinkholes
- Water sources (other than major water sources) or surface intakes of an agricultural drainage well
- Designated wetlands
- Road right-of-way

The separation distance to each of the above objects must be noted with a straight line between the proposed structure(s) and the object. If any of the above objects is not located within one mile from the proposed structures, note the fact on the photo(s) or use additional pages. (Example: "No agricultural drainage wells within one mile.")

All separation distances that are not clearly in excess of the required minimum separation distance must be measured according to 567 IAC 65.11(5) using standard survey methods. Go to the DNR fact sheet page at http://www.iowadnr.gov/Environment/LandStewardship/AnimalFeedingOperations/AFOResources/AFOFactsheets.aspx and select DNR fact sheet "Distance Requirements for Construction" to find the required separation distances. Or, go directly to: http://www.iowadnr.gov/Portals/idnr/uploads/forms/5421420.pdf. An example aerial photo can be found on pages 18 to 19 of the AFO Construction Permit Application (DNR Form 542-1428). Or, go directly to: http://www.iowadnr.gov/Portals/idnr/uploads/afo/fs_iemap.pdf.

Note: If a master matrix is required, the photos must also show that the additional separation distances required for any points claimed in matrix criteria one through ten will be met for the objects listed above. Note the additional separation distance by drawing a straight line between the proposed structures and the matrix item.

---

[1] To determine the AUC see the 'Manure Storage Indemnity Fee' (Form 542-4021) or the 'Construction Permit Application' (Form 542-1428), or visit http://www.iowadnr.gov

[2] PE is a professional engineer licensed in the state of Iowa or a NRCS-Engineer working for the USDA-Natural Resources Conservation Service (NRCS).

[3] Formed manure storage structure means a covered or uncovered concrete or steel tank, including concrete pits below the floor.

[4] Confinement feeding operation structure = A confinement building, a formed or unformed manure storage structure, or an egg washwater storage structure.

D) **Karst Determination:** Go to DNR AFO Siting Atlas at http://programs.iowadnr.gov/maps/afo/. Search for your site by either scrolling into your location or entering an address or legal description in the bottom search bar. Left click on the location of your proposed structure. Make sure the karst layer box is checked on the map layers. If you cannot access the map, or if you have questions about this issue, contact the AFO Engineer at 712-262-4177. Check one of the following:

☒ The site is not in karst or potential karst. Print and enclose the map with the name and location of the site clearly marked.

☐ The Siting Atlas has indicated that the site is in karst. The upgraded concrete standards of 567 IAC 65.15(14)"c" must be used. Complete and sign Section 3,H (page 5).

E) **Alluvial Soils Determination:** Go to the AFO Siting Atlas as described above. Make sure the alluvial box is checked on the map layers. If you cannot access the map, or if you have questions about this issue, contact DNR Flood Plain at 1-866-849-0321. Check one of the following:

☒ The site is not in alluvial soils. Print and enclose the map with the name and location of the site clearly marked.

☐ If the site is in alluvial soils contact DNR Flood Plain at 866-849-0321. You will be required to submit a petition for a declaratory order if less than 1000 AU or request a flood plain determination if 1000 AU or greater. After receiving Flood Plain determination, submit one of the following:

- ☐ Include correspondence from the DNR showing the site is not in 100-year flood plain or does not require a Flood Plain permit. .
- ☐ Include copy of the Flood Plain permit if a Flood Plain permit is required.

Section 2 - Manure management plan:

☒ An original manure management plan (MMP) is enclosed with this form, even if a MMP was previously filed.

Paustian Enterprises by Mike Paustian		05/02/17
Owner's Name (print)	Owner's Signature	Date

Section 3 - Construction design standards: The person responsible for constructing the formed manure storage structure(s)[3] must complete pages 2 to 5.

A) Liquid and semi-liquid manure: The proposed formed manure storage structure[3] will be (check one):

- A.1 ☒ A non-circular concrete tank, belowground, with walls laterally braced or below the building concrete pit designed according to 567 IAC Chapter 65, Appendix D.
- A.2 ☐ A non-circular concrete tank, belowground, walls designed according to MidWest Plan Service (MWPS), publication MWPS-36. Include design calculations.
- A.3 ☐ A circular concrete tank, walls designed according to MidWest Plan Service (MWPS), publication MWPS TR-9. Include design calculations.
- A.4 ☐ Will be made of steel, constructed aboveground according to the manufacturer's recommendations.

B) Dry manure: The proposed formed manure storage structure[3] will be (check one):

- B.1 ☐ An aboveground concrete tank, with walls designed according to MWPS-36. Include design calculations.
- B.2 ☐ Will be made of steel, constructed aboveground according to the manufacturer's recommendations.
- B.3 ☐ Will be a belowground or partially belowground concrete tank, with walls laterally braced designed according to 567 IAC Chapter 65, Appendix D or MWPS-36. Include design calculations.

C) Details of the proposed design: Submit an additional completed copy of this page 2 for each formed manure storage structure[3] that have different dimensions. Complete all of the following information:

Number of buildings: 1 **Building name:** Finisher

Dimensions of proposed formed manure storage structure[3]

	Length	Width	Height or depth	Wall thickness	Diameter (circular tanks only)
Feet	92	60	2	0	
Inches	3	6	0	6	

To determine the appropriate vertical steel in walls, first check one of the following boxes (must check one):

☐ a. To use Tables D-1 and D-2 (on pages 7-8), backfilling of walls shall be performed with gravel, sand, silt, and clay mixtures (less than 50 percent fines), with coarse sand with silt or clay (less than 50 percent fines), or cleaner granular material (see page 9 for the unified soils classification). You will need to submit a copy of a USDA soil survey map with the proposed location of the formed manure storage structures[3] clearly marked showing the unified soil classification; or a statement signed by a qualified organization or NRCS staff.

☒ b. Use Tables D-3 and D-4 (on pages 8-9) if backfilling of walls will be performed with soils that are unknown or with low plasticity silts and clays with some sand or gravel (50 percent or more fines); or fine sands with silt or clay (less than 50 percent fines); or low to medium plasticity silts and clays with little sand or gravel (50 percent or more fines); or high plasticity silts and clays (see page 9 for unified soils classification). You must use Tables D-3 and D-4 if you do not submit the soils information requested in box "a", above.

Maximum spacing of steel, in inches

Description of reinforcing steel in walls	Proposed vertical steel in walls [see boxes "a" and "b", above]				Proposed horizontal steel in walls (use Table D-5)
	Walls where vehicles are **not** allowed within 5 feet (use Table D-1)[a]	All walls with pumpout ports and walls where vehicles are allowed within 5 feet (use Table D-2)[a]	Walls where vehicles are **not** allowed within 5 feet (use Table D-3)[b]	All walls with pumpout ports and walls where vehicles are allowed within 5 feet (use Table D-4)[b]	
Grade 40, No. 4					
Grade 40, No. 5					
Grade 60, No. 4				18	18
Grade 60, No. 5					

D) Aboveground tanks or partially aboveground tanks: Liquid and semi-liquid manure (check the following box):

☐ If the proposed tank is to be constructed **aboveground or partially aboveground** and will have an external outlet or inlet below the liquid level, the tank will also be constructed according to the 567 IAC 65.15(20).

E) Steel Tanks: Certification that the tank will be constructed according to the tank manufacturer's specifications:

Name of tank manufacturer company: _____

Address: _____

Telephone: _____ Fax: _____

F) Additional construction design standards:

To determine the additional requirements set forth in 567 IAC 65.15(14) that would apply to the proposed formed manure storage structure[3], check any of the following 3 boxes based on the information entered on Sections 3.A or 3.B (page 2):

☒ If you checked boxes A.1, A.2, A.3 or B.3 (on page 2) **all** of the following 15 additional requirements apply. Complete the numbered items 1 to 15 (below).

☐ If you checked box B.1 (on page 2), only the requirements of numbered items 1, 3, 4, 5, 6, 8 and 12 apply and need to check those boxes (below).

☐ If you checked boxes A.4 or B.2 (on page 2) and the steel tank will have a concrete floor, only the requirements of numbered items 1, 2, 3, 4, 5, 8, 9, 12, apply and need to check those boxes (below).

Additional Requirements that will be followed during construction of the formed manure storage structure(s)[3]:

1. Site preparation (check the following box):

   ☒ The finished subgrade of a formed manure storage structure shall be graded and compacted to provide a uniform and level base and shall be free of vegetation, manure and debris. For the purpose of this subrule, "uniform" means a finished subgrade with similar soils.

2. Groundwater separation requirements (check one of the following boxes):

   ☒ When the groundwater table, as determined in 65.15(7)*"c,"* is above the bottom of the formed structure, a drain tile shall be installed along the footings to artificially lower the groundwater table pursuant to 65.15(7)*"b"(2).* The drain tile shall be placed within 3 feet of the footings as indicated in Appendix D, Figure D-1, at the end of this chapter and shall be covered with a minimum of 2 inches of gravel, granular material, fabric or a combination of these materials to prevent plugging the drain tile. A device to allow monitoring of the water in the drainage tile lines installed to lower the groundwater table and a device to allow shutoff of the drainage tile lines shall be installed if the drainage tile lines do not have a surface outlet accessible on the property where the formed manure storage structure is located.

   ☐ In lieu of the drain tile, a certification signed by a PE[2], a groundwater professional certified pursuant to 567 Chapter 134, or a qualified staff from NRCS, is being submitted indicating that the groundwater elevation, according to 65.15(7)"c", is below the bottom of the formed structure.

3. Minimum as-placed concrete compressive strength (check the following box):

   ☒ All concrete shall have the following minimum as-placed compressive strengths and shall meet American Society for Testing and Materials (ASTM) standard ASTM C 94: 4,000 pounds per square inch (psi) for walls, floors, beams, columns

and pumpouts and 3,000 psi for the footings. The average concrete strength by testing shall not be below design strength. No single test result shall be more than 500 psi less than the minimum compressive strength.

4. Cement and aggregates specifications (check the following box):
☒ Cementitious materials shall consist of Portland cement conforming to ASTM C 150. Aggregates shall conform to ASTM C 33. Blended cements in conformance with ASTM C 595 are allowed only for concrete placed between March 15 and October 15. Portland-pozzolan cement or Portland blast furnace slag blended cements shall contain at least 75 percent, by mass, of Portland cement.

5. Concrete consolidation and vibration requirements (check the following box):
☒ All concrete placed for walls shall be consolidated or vibrated, by manual or mechanical means, or a combination, in a manner which meets ACI 309.

6. Minimum rebar specifications: (check the following box):
☒ All rebar used shall be a minimum of grade 40 steel. All rebar, with the exception of rebar dowels connecting the walls to the floor or footings, shall be secured and tied in place prior to the placing of concrete.

7. Wall reinforcement placement specifications (check the following box):
☒ All wall reinforcement shall be placed so as to have a rebar cover of 2 inches from the inside face of the wall for a belowground manure storage structure. Vertical wall reinforcement should be placed closest to the inside face. Rebar placement shall not exceed tolerances specified in ACI 318.

8. Minimum floor specifications. Complete part a) and b):
a) Floor thickness requirements (check the following box):
☒ The floor slab shall be a minimum of 5 inches thick. Nondestructive methods to verify the floor slab thickness may be required by the department. The results shall indicate that at least 95 percent of the floor slab area meets the minimum required thickness. In no case shall the floor slab thickness be less than 4½ inches.

b) The floor slab reinforcement shall be located in the middle of the thickness of the floor slab (check one of the following boxes):
☒ Formed manure storage structures with a depth of 4 feet or more shall have primary reinforcement consisting of a minimum of #4 rebar placed a maximum of 18 inches on center in each direction placed in a single mat.
☐ Formed manure storage structure with a depth less than 4 feet shall have shrinkage reinforcement consisting of a minimum of 6 × 6-W1.4 × W1.4 welded wire fabric.

9. Minimum footing specifications (check the following box):
☒ The footing or the area where the floor comes in contact with the walls and columns shall have a thickness equal to the wall thickness, but in no case be less than 8 inches, and the width shall be at least twice the thickness of the footing. All exterior walls shall have footings below the frostline. Tolerances shall not exceed -½ inch of the minimum footing dimensions.

10. Requirement to connect walls to footings (check one of the following boxes):
☐ The vertical steel of all walls shall be extended into the footing, and be bent at 90°, **OR**
☒ A separate dowel shall be installed as a #4 rebar that is bent at 90° with at least 20 inches of rebar in the wall and extended into the footing within 3 inches of the bottom of the footing and extended at least 3 inches horizontally, as indicated in Appendix D, Figure D-1 (page 10). Dowel spacing (bend or extended) shall be the same as the spacing for the vertical rebar.
☐ As an alternative to the 90°bend, the dowel may be extended at least 12 inches into the footing, with a minimum concrete cover of 3 inches at the bottom, as indicated in Appendix D, Figure D-1 (page 10). Dowel spacing (bend or extended) shall be the same as the spacing for the vertical rebar.
☐ In lieu of dowels, mechanical means or alternate methods may be used as anchorage of interior walls to footings. Please submit structural calculations and details of this proposal.

11. Concrete forms specifications (check the following box):
☒ All walls shall be formed with rigid forming systems and shall not be earth-formed.

12. Curing of concrete requirements (check the following box):
☒ All concrete shall be cured for at least seven days after placing, in a manner which meets ACI 308, by maintaining adequate moisture or preventing evaporation. Proper curing shall be done by ponding, spraying or fogging water; or by using a curing compound that meets ASTM C 309; or by using wet burlap, plastic sheets or similar materials.

13. Construction joints and waterstops specifications (check the following box):

☒ All construction joints in exterior walls shall be constructed to prevent discontinuity of steel and have properly spliced rebar placed through the joint. Waterstops shall be installed in all areas where fresh concrete will meet hardened concrete as indicated in Appendix D, Figures D-1 and D-2, at the end of this chapter. The waterstops shall be made of plastic, rolled bentonite or similar materials approved by the department.

14. Backfilling of walls specifications (check the following box):
☒ Backfilling of the walls shall not start until the floor slats or permanent bracing have been installed. Backfilling shall be performed with material free of vegetation, large rocks or debris.

15. Additional design requirements (check the following box, if applicable):
☐ A formed manure storage structure with a depth greater than 12 feet shall be designed by a PE or an NRCS engineer.

G) Construction Certification: The person responsible for constructing the formed manure storage structure[3] must sign this page. Any change(s) to the specifications of the formed manure storage structure must be first approved by DNR:

"I hereby certify that I have read and understand the minimum design and construction standards of Iowa Code chapter 459, Subchapter III, and the 567 Iowa Administrative Code (IAC) 65.15(14) "Minimum concrete standards" or 567 IAC 65 (if other than concrete). The proposed formed manure storage structure(s)[3] at the operation:

Name of operation: Puastian Enterprises Ltd. County: Scott

Owner's name: Kent Paustian

will be constructed in accordance with these minimum requirements. Included with this certification are:

☒ Page 2, for each formed manure storage structure[3] that have different dimensions
☒ Pages 3 to 5 (applicable sections)
☐ Other documents (specify): ____

Doug Green		April 12, 2017
	(Signature)	(Date)
P.S.I.	**1204 1st Ave. NE, Wellman, IA 52356**	**(319)646-2430**
(Company)	(Address)	(Phone No.)

(See page 6 for mailing instructions)

Manure Management Plan Form

Animal Feeding Operation Information

Instructions: Complete this form for your animal feeding operation. Footnotes are provided on page 4.

The information within this form, and the attachments, describes my animal feeding operation, my manure storage and handling system, and my planned manure management system. I (we) will manage the manure, and the nutrients it contains, as described withi

Signed: Paustian Enterprises By Mike Paustian (Signature) Mike Paustian (Print name) **Date:** 05/02/17

Name of operation: Sow Unit **Facility ID No.** 62367

Location of the operation: 22444 - 70th Ave (911 address)

Walcott (Town) Iowa (State) 52773 (Zip)

NE (1/4 1/4) 1/4 of the SE (1/4) 1/4 of Sec 19 (Section) T 79N R 2E (Tier & Range) Hickory Grove (Township Name) Scott (County)

Owner and contacts of the animal feeding operation:

Owner Paustian Enterprises Ltd. Phone 563-284-6814

Address 6520 - 215th St., Walcott, IA 52773

E-mail address (optional) _____ Cell phone (optional) _____

Contact person (if different than owner) Kent Paustian Phone 563-284-6814

Address 6520 - 215th St., Walcott, IA 52773

E-mail address (optional) _____ Cell phone (optional) _____

Contract company (if applicable) _____ Phone _____

Address _____

This manure management plan is for: (check one)

_____ existing operation, not expanding X existing operation, expanding _____ new operation

Construction and Expansion Dates: 1998 date of initial construction and all expansions

_____ _____ _____

Table 1. Information about livestock production and manure management system

1	2	3	4	5	6	7	8
Animal type/ Production phase[a]	Max # of animals confined	Manure Storage Structure [b]	N[c]	P_2O_5[c]	gal/space/dy[d]	Days/yr Facility occupied	Annual Manure Produced[e]
Select production phas			0	0	0.0		000
Select production phas			0	0	0.0		000
Select production phas			0	0	0.0		000
Brding,Gest.& Farrowing	1116	Deep pit	25	12	3.3	365	1,311,740
Developing Gilts	873	Deep pit	25	12	2.0	292	509,832
						Total Gallons	**1,821,572**

Estimated annual animal production[f] ~18000 animals/year

Source of Manure Nutrient Content Data (standard tables, manure analysis, other): manure analysis

Manure Management Plan Form

Animal Feeding Operation Information

Instructions: Complete this form for your animal feeding operation. Footnotes are provided on page 4.

The information within this form, and the attachments, describes my animal feeding operation, my manure storage and handling system, and my planned manure management system. I (we) will manage the manure, and the nutrients it contains, as described within this manure management plan (MMP) and any revisions of the plan, individual field information, and field summary sheet, and in accordance with current rules and regulations. Deviations permitted by Iowa law will be documented and maintained in my records.

Signed: Paustian Enterprises by Mike Paustian (Signature) Mike Paustian (Print name) **Date:** 05/02/17

Name of operation: Ross Finishing **Facility ID No.** 62367

Location of the operation: 22225 - 70th Ave (911 address)

Walcott (Town) Iowa (State) 52773 (Zip)

SE (1/4 1/4) 1/4 of the SW (1/4) 1/4 of Sec 20 (Section) T 79N R 2E (Tier & Range) Hickory Grove (Township Name) Scott (County)

Owner and contacts of the animal feeding operation:

Owner Paustian Enterprises Ltd. Phone 563-284-6814

Address 6520 - 215th St., Walcott, IA 52773

E-mail address (optional) _____ Cell phone (optional) _____

Contact person (if different than owner) Kent Paustian Phone 563-284-6814

Address 6520 - 215th St., Walcott, IA 52773

E-mail address (optional) _____ Cell phone (optional) _____

Contract company (if applicable) _____ Phone _____

Address _____

This manure management plan is for: (check one)

X existing operation, not expanding ____ existing operation, expanding ____ new operation

Construction and Expansion Dates: 1996 date of initial construction

1998 _____ _____ and all expansions

Table 1. Information about livestock production and manure management system

1	2	3	4	5	6	7	8
Animal type/ Production phase[a]	Max # of animals confined	Manure Storage Structure [b]	N[c]	P_2O_5[c]	gal/space/dy[d]	Days/yr Facility occupied	Annual Manure Produced[e]
Select production phas			0	0	0.0		000
Select production phas			0	0	0.0		000
Select production phas			0	0	0.0		000
Grow - Finish	2600	Deep pits	54	34	0.8	365	759,038
						Total Gallons	**759,038**

Estimated annual animal production[f] ~6500 animals/year

Source of Manure Nutrient Content Data (standard tables, manure analysis, other): manure analysis

Manure Management Plan Form

Determining Maximum Allowable Manure Application Rates

Instructions: Complete a worksheet for each unique combination of the following factors (crop rotation, optimum crop yield, manure nutrient concentration, remaining crop N need, method of application) that occurs at this operation. Complete form by filling in blanks, yellow-colored cells, and drop down menus. Gray shaded cells will calculate automatically. Footnotes are given on pages 4, 5 and 6.

Management Identification (Mgt ID)[f] F) Corn-Corn (finishing)

(identify this application scenario by letter)

Method to determine optimum crop yield[g] Soil survey interpretation records | **Timing of application** Sp & Fall

Method of application Knifed in or soil injection of liquid manure | **Application loss factor** 0.98

If spray irrigation is used, identify method [i]

Table 2. Manure nutrient concentration

Manure Nutrient Content (lbs/1000gal or lbs/ton) [j]					
Total N	54		**P_2O_5**	34	
%TN Available 1st year[k]	100%	**2nd year**	0%	**3rd year**	
Available N 1st year[l]	52.9	**2nd year[m]**	0.0	**3rd year[n]**	0.0

Table 3. Crop usage rates[o]

lb/bu or lb/ton	N	P_2O_5
Corn	1.2	0.32
Soybean	3.8	0.72
Alfalfa	50	13
Other crop	0	0

*Use blank space above to add crop not listed.

Table 4. Calculations for rate based on nitrogen (always required)

			Corn	Corn	Corn	Corn
1	**Applying Manure For** (crop to be grown) [p]					
2	**Optimum Crop Yield [g]**	bu or ton/acre	217	217	217	217
3	**P_2O_5 removed with crop by harvest [q]**	lb/acre	69.4	69.4	69.4	69.4
4	**Crop N utilization [r]**	lb/acre	260	260	260	260
5a	**Legume N credit [s]**	lb/acre		0	0	0
5b	**Commercial N planned[t]**	lb/acre	25	25	25	25
5c	**Manure N carryover credit [u]**	lb/acre		0.0	0.0	0.0
6	**Remaining crop N need [v]**	lb/acre	235	235	235	235
7	**Manure rate to supply remaining N [w]**	gal/acre	4448	4448	4448	4448
8	**P_2O_5 applied with N-based rate [x]**	lb/acre	151	151	151	151

Table 5. Calculations for rate based on phosphorus (fill out only if P-based rates are planned)

9	**Commercial P_2O_5 planned [y]**	lb/acre				
10	**Manure rate to supply P removal [z]**	gal/acre	2042	2042	2042	2042
11	**Manure rate for P based plan [aa]**	gal/acre	4084	4084	4084	4084
12	**Manure N applied with P-based plan [bb]**	lb/acree	216	216	216	216

Table 6. Application rates that will be carried over to page 3

13	**Planned manure application rate [cc]**	gal/acre	4448	4448	4448	4448

When applicable, manure application rates must be based on the P index value as follows:
(0-2) N-based manure management.
(>2-5) N-based manure management but P application rate cannot exceed two times the P removal rate of the crop schedule.
(>5-15) No manure application until practices are adopted to reduce P index to 5 or below.

Manure Management Plan Form

Determining Maximum Allowable Manure Application Rates

Instructions: Complete a worksheet for each unique combination of the following factors (crop rotation, optimum crop yield, manure nutrient concentration, remaining crop N need, method of application) that occurs at this operation. Complete form by filling in blanks, yellow-colored cells, and drop down menus. Gray shaded cells will calculate automatically. Footnotes are given on pages 4, 5 and 6.

Management Identification (Mgt ID)[f]

S) Corn-Corn (sow)

(identify this application scenario by letter)

Method to determine optimum crop yield[g] Soil survey interpretation records

Timing of application Sp & Fall

Method of application Knifed in or soil injection of liquid manure

Application loss factor 0.98

If spray irrigation is used, identify method [j]

Table 2. Manure nutrient concentration

Manure Nutrient Content (lbs/1000gal or lbs/ton) [j]					
Total N	25.6		P_2O_5	12	
%TN Available 1st year[k]	100%	2nd year	0%	3rd year	
Available N 1st year[l]	25.1	2nd year[m]	0.0	3rd year[n]	0.0

Table 3. Crop usage rates[o]

lb/bu or lb/ton	N	P_2O_5
Corn	1.2	0.32
Soybean	3.8	0.72
Alfalfa	50	13
Other crop	0	0

*Use blank space above to add crop not listed.

Table 4. Calculations for rate based on nitrogen (always required)

1	**Applying Manure For** (crop to be grown) [p]		Corn	Corn	Corn	Corn
2	**Optimum Crop Yield** [g]	bu or ton/acre	217	217	217	217
3	**P_2O_5 removed with crop by harvest** [q]	lb/acre	69.4	69.4	69.4	69.4
4	**Crop N utilization** [r]	lb/acre	260	260	260	260
5a	**Legume N credit** [s]	lb/acre		0	0	0
5b	**Commercial N planned** [t]	lb/acre	75	75	75	75
5c	**Manure N carryover credit** [u]	lb/acre		0.0	0.0	0.0
6	**Remaining crop N need** [v]	lb/acre	185	185	185	185
7	**Manure rate to supply remaining N** [w]	gal/acre	7390	7390	7390	7390
8	**P_2O_5 applied with N-based rate** [x]	lb/acre	89	89	89	89

Table 5. Calculations for rate based on phosphorus (fill out only if P-based rates are planned)

9	**Commercial P_2O_5 planned** [y]	lb/acre				
10	**Manure rate to supply P removal** [z]	gal/acre	5787	5787	5787	5787
11	**Manure rate for P based plan** [aa]	gal/acre				
12	**Manure N applied with P-based plan** [bb]	lb/acree	0	0	0	0

Table 6. Application rates that will be carried over to page 3

13	**Planned manure application rate** [cc]	gal/acre	7390	7390	7390	7390

When applicable, manure application rates must be based on the P index value as follows:
(0-2) N-based manure management.
(>2-5) N-based manure management but P application rate cannot exceed two times the P removal rate of the crop schedule.
(>5-15) No manure application until practices are adopted to reduce P index to 5 or below.

Manure Management Plan Form

Year by Year Manure Management Plan Summary

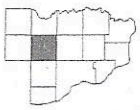
Instructions: Complete this form for each of the next four growing seasons, to demonstrate sufficient land base to apply manure over multiple crop years. If this page is identical for multiple years (e.g. every other year), submit only once for the identical years, and indicate which years the form represents. Footnotes are given on page 6.

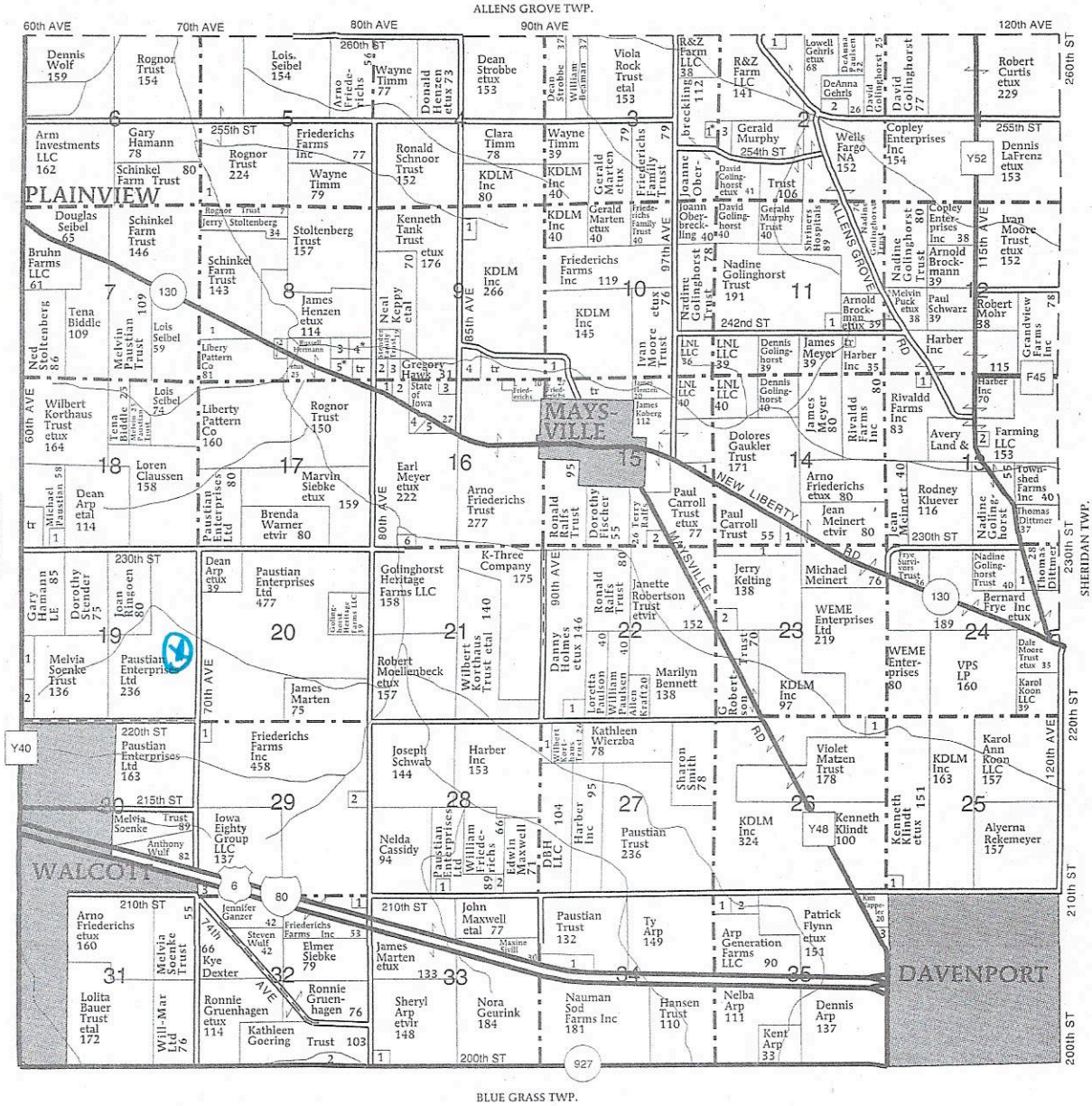
Crop year(s): 2017 - 2021 (Ross Finisher/Sow Unit)

1	2	3	4	5	6	7	8	9	10	11
Field Designation [ee]	Field Location ___1/4 of the___ 1/4 Sec___ T___ R___ Townsip Name_____, County Name _____	Mgt Id [ff]	Planned Crop	Acres receiving manure[gg]	Own, rent, agreement (include length of agreement) [hh]	P index value [ii]	HEL (Y/N)[jj]	Planned Application		Correct Soil Test for P[II] (Yes or No)
								gal/acre	gal/field [kk]	
									0	
Reece North	NW SW 17 79N 2E Hickory Grove, Scott	S	Corn	6.36	Own	2.08	N	7390	47000	Yes
Reece South	W1/2 SW 17 79N 2E Hickory Grove, Scott	F	Corn	64.02	Own	1.69	Y	4448	284761	Yes
Shrine W	E1/2 NE 19 79N 2E Hickory Grove, Scott	S	Corn	57.9	Own	1.97	Y	7390	427881	Yes
Shrine E	S1/2 NW, N1/2 SW 20 79N 2E Hickory Gv, Scott	F	Corn	112.4	Own	4.24	Y		0	Yes
Stender	NE NW,N1/2 SE,NE1/4 20 79N 2E Hkry Gv, Scott	F	Corn	196.3	Own	2.29	Y		0	Yes
Puck	SE1/4 19 79N 2E Hickory Grove, Scott	S	Corn	147	Own	2.31	Y	7390	1086330	Yes
Ross	SW1/4 20 79N 2E Hickory Grove, Scott	F	Corn	95.7	Own	4.30	Y	4084	390839	Yes
I-80	NW1/4 30 79N 2E Hickory Grove, Scott	S	Corn	83.58	Rent	2.87	N	7390	617656	Yes
Home	NE1/4 30 79N 2E Hickory Grove, Scott	N	Corn	132.5	Own	3.95	Y		0	Yes
Goering Front	SW1/4 29 79N 2E Hickory Grove, Scott	F	Corn	90.5	Rent	2.97	Y	4084	369602	Yes
Goering Back	SW1/4 29 79N 2E Hickory Grove, Scott	F	Corn	32.3	Rent	2.65	Y	4084	131913	Yes
Duffy North	E1/2 SW 28 79N 2E Hickory Grove, Scott	F	Corn	43.86	Own	2.64	Y		0	Yes
Duffy South	E1/2 SW 28 79N 2E Hickory Grove, Scott	F	Corn	38.5	Own	3.13	N		0	Yes
									0	
									0	
									0	
									0	
									0	
									0	
									0	
									0	
	Total acres available for manure application			1100.92	**Total gallons that could be applied**				3355983	

PAUSTIAN ENTERPRISES LTD.
Farm Location - Sow Unit

T-79-N HICKORY GROVE PLAT (Landowners) R-2-E





HICKORY GROVE TOWNSHIP

SECTION 2
1. Watts, Jill 12
2. Decap, Michael 13
3. Schoenthaler, Jeremy 10

SECTION 3
1. Gevers, Andrew 6

SECTION 5
1. Schinkel Farm Trust 16

SECTION 8
1. Seibel, Lois 13
2. Schneider, Anthony 6
3. Williams, Joseph 7
4. Petersen, Robert 7
5. Negus, Julius 5

SECTION 9
1. Newmarch Trust, Paul 5
2. Kieffert, Sharon 5
3. Wulf, Robert 6
4. Friederichs, Arno 15

SECTION 10
1. Jewell, Kari 15

SECTION 11
1. Holtz, Donald 6

SECTION 13
1. Grandview Farms Inc 10
2. Adrian, Gary 6

SECTION 14
1. Jewell, Kari 10

SECTION 15
1. Sapp, Wayne 11
2. Friederichs, Loran 14

SECTION 16
1. Ehrecke, Kenneth 6
2. Schneckloth, Jeffrey 9
3. Robinson, Thomas 6
4. R&D Lossi Trust 6
5. Meyer, Paul 7
6. Golinghorst, Robert 5

SECTION 18
1. Miller, John 9

SECTION 19
1. Duncan, Arthur 11
2. August, Gary 9

SECTION 22
1. Paulsen, William 9

SECTION 23
1. Carroll Trust, Paul 15
2. Robertson Trust, Janette 7

SECTION 24
1. Kundel, Dorothy 9

SECTION 25
1. Congdon, Dennis 11

SECTION 26
1. WEME Enterprises Ltd 12

SECTION 27
1. Harber Inc 13

SECTION 28
1. Duffey Trust, Mack 9
2. Keppy, Carl 5

SECTION 29
1. Friederichs, Earl 7
2. Friederichs, Earl 7
3. Iowa Eighty Group LLC 6

SECTION 32
1. Kraft, Scott 5
2. Allison, Grant 10

SECTION 33
1. Knickrehm, Dorothy 7

SECTION 34
1. Sivill, Maxine 12

SECTION 35
1. Roseman, Lysle 8
2. DeVault, Roy 10
3. Harris, Allen 9

SCOTT CO., IA

2016 info

Historical Corn Yields - last 5 years

Field	2011	2012	2013	2014	2015
Home	181	187	192	196	224
Goering	181	186	200	193	252
I-80	181	187	192	196	235
Puck/Shrine W	181	185	180	200	215
Mike	181	186	171	211	Beans
Ralfs	200	178	150	184	220
Shrine E	181	186	171	211	229

5500 acres other acres 100 yr

Manure test results - last 5 tests

Source							AVG
Mike N finisher	N	56	59	52	53	45	53
	P	33	33	36	45	29	35
	K	34	34	30	38	36	34
Mike S finisher	N	53	49	59	59	55	55
	P	46	41	23	28	24	32
	K	35	36	39	43	36	38
Sow gestation	N	22	17	16	19	29	21
	P	19	13	3	26	12	15
	K	11	11	10	11	21	13
Sow GDU	N				21	34	28
	P				6	9	8
	K				13	23	18
Home nursery	N	19	22	21	25	31	24
	P	8	10	7	4	14	9
	K	13	15	14	17	24	17

TKN P_2O_5
54 - 34 average
#/1000gal

TKN P_2O_5
25 - 12 average
#/1000gal

NOTE: Beginning last year, there are no longer any finishing hogs at the hom
there will be from nursery pigs

Home finisher	N	46	59	54	46	57	52
	P	39	41	24	20	24	30
	K	28	34	29	25	27	29

Paustian Enterprises

Home & I80		soil type yields		Total bu	
		corn	soybeans	corn	soybean
11b	10.5	221	64	2320.5	672
83d2	2.3	199	58	457.7	133.4
118	6.2	233	68	1444.6	421.6
119	5	240	70	1200	350
120b	48.6	235	68	11421	3304.8
120c2	35.6	221	64	7867.6	2278.4
160	3.2	180	52	576	166.4
442d2	4.9	177	51	867.3	249.9
920b	45.1	205	59	9245.5	2660.9
920c2	20	193	56	3860	1120
920d2	24.7	184	54	4544.8	1333.8
	206.1			43805	12691.2
			Avg Yield	**213**	**62**

Goering		soil type yields		Total bu	
		corn	soybeans	corn	soybean
11b	8.8	221	64	1944.8	563.2
20c2	6.3	215	62	1354.5	390.6
119	4.8	240	70	1152	336
120b	14.1	235	68	3313.5	958.8
442d2	5	177	51	885	255
450c2	6.6	196	57	1293.6	376.2
920b	51.1	205	59	10475.5	3014.9
920c2	36.1	193	56	6967.3	2021.6
	132.8			27386.2	7916.3
			Avg Yield	**206**	**60**

		YIELDS		total bu	
	acres	CORN	SOYBEANS	C	S
Home & I80	206.1	213	62	43899	12778
Goering	132.8	206	60	27357	7968
Duffy	86	221	64	19006	5504
Puck/Shrine	213.3	220	64	46926	13651
Mike's Etc.	459.7	219	63	100674	28961
Reese	76.1	219	64	16666	4870
	1174	259.6	75.4	254528	73733
			Overall average	**217**	**63**

Duffy		soil type yields		Total bu	
		corn	soybeans	corn	soybean
11b	16.1	221	64	3558.1	1030.4
118	4	233	68	932	272
119	2.9	240	70	696	203
120b	39.8	235	68	9353	2706.4
920b	1.7	205	59	348.5	100.3
920c2	21.5	193	56	4149.5	1204
	86			19037.1	5516.1
			Avg Yield	**221**	**64**

Puck/Shrine		soil type yields		Total bu	
		corn	soybeans	corn	soybean
20c2	16	215	62	3440	992
20c3	5.6	206	60	1153.6	336
20d3	4.3	197	57	847.1	245.1
83d2	6.1	199	58	1213.9	353.8
83d3	12.2	187	54	2281.4	658.8
119	4.2	240	70	1008	294
120b	68.3	235	68	16050.5	4644.4
120c	36.8	228	66	8390.4	2428.8
120c2	8.8	221	64	1944.8	563.2
120d2	0.1	212	61	21.2	6.1
377c2	31.4	217	63	6813.8	1978.2
426d2	3.2	197	57	630.4	182.4
430b	16.3	194	56	3162.2	912.8
	213.3			46957.3	13595.6
			Avg Yield	**220**	**64**

Mikes/Shriner/Stender		soil type yields		Total bu	
		corn	soybeans	corn	soybean
20c3	12.4	206	60	2554.4	744
20d3	21.8	197	57	4294.6	1242.6
83c2	4.3	208	60	894.4	258
83d2	13.8	199	58	2746.2	800.4
83d3	29.3	187	54	5479.1	1582.2
119	3.1	240	70	744	217
120b	73.9	235	68	17366.5	5025.2
120c	126.2	228	66	28773.6	8329.2
120c2	74.1	221	64	16376.1	4742.4
120d2	8.9	212	61	1886.8	542.9
133	2.6	210	61	546	158.6
420b	23.9	235	68	5616.5	1625.2
430b	26	194	56	5044	1456
442d2	19.8	177	51	3504.6	1009.8
1119	19.6	240	70	4704	1372
	459.7			100530.8	29105.5
			Avg Yield	**219**	**63**

Reese		soil type yields		Total bu	
		corn	soybeans	corn	soybean
120b	13.4	235	68	3149	911.2
120c	1.6	228	66	364.8	105.6
120c2	43.1	221	64	9525.1	2758.4
120d2	0.2	212	61	42.4	12.2
133	9.7	210	61	2037	591.7
430b	8.1	194	56	1571.4	453.6
	76.1			16689.7	4832.7
			Avg Yield	**219**	**64**

Ralfs	soil type yields	Total bu

		corn	soybeans	corn	soybean
11b	12.5	221	64	2762.5	800
20c2	12	215	62	2580	744
119	4.5	240	70	1080	315
119b	2.9	235	68	681.5	197.2
120b	109.4	235	68	25709	7439.2
120c	13.9	228	66	3169.2	917.4
120c2	82.4	221	64	18210.4	5273.6
120d2	1.6	212	61	339.2	97.6
428b	4.6	235	68	1081	312.8
	243.8			55612.8	16096.8
			Avg Yield	**228**	**66**

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

PUCK - PAUSTIAN

Inputs:
Location: USA\Iowa\Scott County
Soil: Scott County, Iowa\377C2 Dinsdale silty clay loam, 5 to 9 percent slopes, moderately eroded\Dinsdale Silty clay loam moderately eroded 100%
Slope length (horiz): 200 ft
Avg. slope steepness: 7.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records\PAUSTIANcorn grain;FC, st pt, disk, fcult, z4	vegetations\Corn, grain	bushels	217.00

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 2.9 t/ac/yr
Detachment on slope: 2.9 t/ac/yr
Soil loss for cons. plan: 2.9 t/ac/yr
Sediment delivery: 2.9 t/ac/yr

Crit. slope length: 200 ft
Surf. cover after planting: 66 %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
11/1/0	Fert applic. surface broadcast		96
11/1/0	Manure injector, liquid low disturb.30 inch		96
11/7/0	Chisel, st. pt.		77
4/28/1	Cultivator, field 6-12 in sweeps		65
5/1/1	planter, double disk opnr	Corn, grain	66
5/3/1	Sprayer, pre-emergence		66
6/7/1	Sprayer, post emergence and fert. tank mix		57
10/20/1	Harvest, killing crop 50pct standing stubble		91

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

MIKE (ROSS) - PAUSTIAN

Inputs:
Location: USA\Iowa\Scott County
Soil: Scott County, Iowa\83D3 Kenyon loam, 9 to 14 percent slopes, severely eroded\Kenyon Loam severely eroded 100%
Slope length (horiz): 150 ft
Avg. slope steepness: 12 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records\PAUSTIANcorn grain;FC, st pt, disk, fcult, z4	vegetations\Corn, grain	bushels	187.00

Contouring: b. absolute row grade 3 percent
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 4.0 t/ac/yr
Soil loss erod. portion: 4.0 t/ac/yr
Detachment on slope: 4.0 t/ac/yr
Soil loss for cons. plan: 4.0 t/ac/yr
Sediment delivery: 4.0 t/ac/yr

Crit. slope length: 150 ft
Surf. cover after planting: 61 %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
11/1/0	Fert applic. surface broadcast		94
11/1/0	Manure injector, liquid low disturb.30 inch		94
11/7/0	Chisel, st. pt.		72
4/28/1	Cultivator, field 6-12 in sweeps		60
5/1/1	planter, double disk opnr	Corn, grain	61
5/3/1	Sprayer, pre-emergence		60
6/7/1	Sprayer, post emergence and fert. tank mix		52
10/20/1	Harvest, killing crop 50pct standing stubble		88

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

I-80 - PAUSTIAN

Inputs:
Location: USA\Iowa\Scott County
Soil: Scott County, Iowa\120C2 Tama silty clay loam, 5 to 9 percent slopes, eroded\Tama Silty clay loam eroded 90%
Slope length (horiz): 200 ft
Avg. slope steepness: 7.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records\PAUSTIANcorn grain;FC, st pt, disk, fcult, z4	vegetations\Corn, grain	bushels	221.00

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 2.8 t/ac/yr
Detachment on slope: 2.8 t/ac/yr
Soil loss for cons. plan: 2.8 t/ac/yr
Sediment delivery: 2.8 t/ac/yr

Crit. slope length: 200 ft
Surf. cover after planting: 67 %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
11/1/0	Fert applic. surface broadcast		96
11/1/0	Manure injector, liquid low disturb.30 inch		96
11/7/0	Chisel, st. pt.		77
4/28/1	Cultivator, field 6-12 in sweeps		66
5/1/1	planter, double disk opnr	Corn, grain	67
5/3/1	Sprayer, pre-emergence		66
6/7/1	Sprayer, post emergence and fert. tank mix		58
10/20/1	Harvest, killing crop 50pct standing stubble		91

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

GOERING - PAUSTIAN

Inputs:
Location: USA\Iowa\Scott County
Soil: Scott County, Iowa\920C2 Tama silty clay loam, sandy substratum, 5 to 9 percent slopes, eroded\Tama Silty clay loam sandy substratum, eroded 85%
Slope length (horiz): 200 ft
Avg. slope steepness: 7.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records\PAUSTIANcorn grain;FC, st pt, disk, fcult, z4	vegetations\Corn, grain	bushels	193.00

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 3.4 t/ac/yr
Detachment on slope: 3.4 t/ac/yr
Soil loss for cons. plan: 3.4 t/ac/yr
Sediment delivery: 3.4 t/ac/yr

Crit. slope length: 200 ft
Surf. cover after planting: 62 %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
11/1/0	Fert applic. surface broadcast		94
11/1/0	Manure injector, liquid low disturb.30 inch		94
11/7/0	Chisel, st. pt.		73
4/28/1	Cultivator, field 6-12 in sweeps		61
5/1/1	planter, double disk opnr	Corn, grain	62
5/3/1	Sprayer, pre-emergence		61
6/7/1	Sprayer, post emergence and fert. tank mix		53
10/20/1	Harvest, killing crop 50pct standing stubble		88

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

HOME - PAUSTIAN

Inputs:
Location: USA\Iowa\Scott County
Soil: Scott County, Iowa\920D2 Tama silty clay loam, sandy substratum, 9 to 14 percent slopes, eroded\Tama Silty clay loam sandy substratum, eroded 85%
Slope length (horiz): 150 ft
Avg. slope steepness: 12 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records\PAUSTIANcorn grain;FC, st pt, disk, fcult, z4	vegetations\Corn, grain	bushels	184.00

Contouring: b. absolute row grade 3 percent
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 4.7 t/ac/yr
Detachment on slope: 4.7 t/ac/yr
Soil loss for cons. plan: 4.7 t/ac/yr
Sediment delivery: 4.7 t/ac/yr

Crit. slope length: 150 ft
Surf. cover after planting: 60 %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
11/1/0	Fert applic. surface broadcast		94
11/1/0	Manure injector, liquid low disturb.30 inch		94
11/7/0	Chisel, st. pt.		71
4/28/1	Cultivator, field 6-12 in sweeps		59
5/1/1	planter, double disk opnr	Corn, grain	60
5/3/1	Sprayer, pre-emergence		60
6/7/1	Sprayer, post emergence and fert. tank mix		51
10/20/1	Harvest, killing crop 50pct standing stubble		87

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Duffy N & S - Paustian

Inputs:

Location	Soil	Slope length (horiz)	Avg. slope steepness, %
USA\Iowa\Scott County	Scott County, Iowa\920C2 Tama silty clay loam, sandy substratum, 5 to 9 percent slopes, moderately eroded\Tama Silty clay loam sandy substratum, moderately eroded 100%	200	7.0

Management	Vegetation	Yield units	# yield units, #/ac
managements\CMZ 04\c.Other Local Mgt Records\cc paustianb 2015	vegetations\Corn, grain	bushels	168.00
managements\CMZ 04\c.Other Local Mgt Records\cc paustianb 2015	vegetations\Corn, grain	bushels	168.00

Contouring	Strips/barriers	Diversion/terrace, sediment basin	Subsurface drainage	Adjust res. burial level	General yield level	Rock cover, %
b. absolute row grade 3 percent	(none)	(none)	(none)	Normal res. burial	Set by user	0

Outputs:

T value	Soil loss erod. portion	Detachment on slope	Soil loss for cons. plan	Sediment delivery	Net C factor	Net K factor	Crit. slope length	Surf. cover after planting, %
4.0	4.0	4.0	4.0	4.0	0.075	0.37	200	

Date	Operation	Vegetation	Surf. res. cov. after op, %
11/1/0	Manure injector, liquid low disturb.30 inch		91
11/8/0	Chisel, st. pt.		66
4/9/1	Disk, single gang		48
4/9/1	Cultivator, field 6-12 in sweeps, coil tine har		48
4/9/1	Sprayer, pre-emergence		48
4/10/1	planter, double disk opnr	Corn, grain	48
5/29/1	Sprayer, post emergence and fert. tank mix		46
10/20/1	Harvest, killing crop 50pct standing stubble		84
10/22/1	Manure injector, liquid low disturb.30 inch		91
10/31/1	Chisel, st. pt.		67
3/30/2	Disk, single gang		49
3/30/2	Cultivator, field 6-12 in sweeps, coil tine har		49
4/15/2	Sprayer, pre-emergence		46
4/23/2	Planter, double disk opnr	Corn, grain	46
5/28/2	Sprayer, post emergence and fert. tank mix		46
10/20/2	Harvest, killing crop 50pct standing stubble		84

FUEL USE EVALUATION:

Fuel type for entire run	Equiv. diesel use for entire simulation	Energy use for entire simulation	Fuel cost for entire simulation, US$/ac
(none)	13	1800000	0

SCI and STIR Output

Soil conditioning index (SCI)	SCI OM subfactor	SCI FO subfactor	SCI ER subfactor	Avg. annual slope STIR	Wind & irrigation-induced erosion for SCI, t/ac/yr
0.377	1.2	0.023	-0.57	98.7	0

The **SCI** is the **Soil Conditioning Index** rating. If the calculated index is a negative value, soil organic matter levels are predicted to decline under that production system. If the index is a positive value, soil organic matter levels are predicted to increase under that system.

The **STIR** value is the **Soil Tillage Intensity Rating**. It utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate a tillage intensity rating for the system used in growing a crop or a rotation. STIR ratings tend to show the differences in the degree of soil disturbance between systems. The kind, severity and number of ground disturbing passes are evaluated for the entire cropping rotation as shown in the management description.

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Shrine E - Paustian

Inputs:

Location	Soil	Slope length (horiz)	Avg. slope steepness, %
USA\Iowa\Scott County	Scott County, Iowa\442D2 Tama, sandy substratum-Dickinson complex, 9 to 14 percent slopes, moderately eroded\Tama Silty clay loam moderately eroded 50%	150	12

Management	Vegetation	Yield units	# yield units, #/ac
managements\CMZ 04\c.Other Local Mgt Records\cc paustian 2015mt	vegetations\Corn, grain	bushels	107.00
managements\CMZ 04\c.Other Local Mgt Records\cc paustian 2015mt	vegetations\Corn, grain	bushels	107.00

Contouring	Strips/barriers	Diversion/terrace, sediment basin	Subsurface drainage	Adjust res. burial level	General yield level	Rock cover, %
b. absolute row grade 3 percent	(none)	(none)	(none)	Normal res. burial	Base yield	0

Outputs:

T value	Soil loss erod. portion	Detachment on slope	Soil loss for cons. plan	Sediment delivery	Net C factor	Net K factor	Crit. slope length	Surf. cover after planting, %
4.0	9.2	9.2	9.2	9.2	0.094	0.37	150	

Date	Operation	Vegetation	Surf. res. cov. after op, %
10/22/0	Manure injector, liquid low disturb.30 inch		82
4/8/1	Cultivator, field 6-12 in sweeps, coil tine har		62
4/15/1	Sprayer, pre-emergence		62
4/15/1	Planter, double disk opnr	Corn, grain	62
5/28/1	Sprayer, post emergence and fert. tank mix		59
10/20/1	Harvest, killing crop 50pct standing stubble		73
10/22/1	Manure injector, low disturb.30 inch		82
4/15/2	Cultivator, field 6-12 in sweeps, coil tine har		62
4/15/2	Sprayer, pre-emergence		62
4/15/2	Planter, double disk opnr	Corn, grain	62
5/28/2	Sprayer, post emergence and fert. tank mix		59
10/20/2	Harvest, killing crop 50pct standing stubble		73

FUEL USE EVALUATION:

Fuel type for entire run	Equiv. diesel use for entire simulation	Energy use for entire simulation	Fuel cost for entire simulation, US$/ac
(none)	10	1400000	0

SCI and STIR Output

Soil conditioning index (SCI)	SCI OM subfactor	SCI FO subfactor	SCI ER subfactor	Avg. annual slope STIR	Wind & irrigation-induced erosion for SCI, t/ac/yr
-0.0415	0.55	0.67	-2.6	33.7	0

The **SCI** is the **Soil Conditioning Index** rating. If the calculated index is a negative value, soil organic matter levels are predicted to decline under that production system. If the index is a positive value, soil organic matter levels are predicted to increase under that system.

The **STIR** value is the **Soil Tillage Intensity Rating**. It utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate a tillage intensity rating for the system used in growing a crop or a rotation. STIR ratings tend to show the differences in the degree of soil disturbance between systems. The kind, severity and number of ground disturbing passes are evaluated for the entire cropping rotation as shown in the management description.

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Reece N & S, Stender, I-80, Ralfs E & W - Paustian

Inputs:

Location	Soil	Slope length (horiz)	Avg. slope steepness, %
USA\Iowa\Scott County	Scott County, Iowa\120C2 Tama silty clay loam, 5 to 9 percent slopes, moderately eroded\Tama Silty clay loam moderately eroded 100%	200	7.0

Management	Vegetation	Yield units	# yield units, #/ac
managements\CMZ 04\c.Other Local Mgt Records\cc paustianb 2015	vegetations\Corn, grain	bushels	195.00
managements\CMZ 04\c.Other Local Mgt Records\cc paustianb 2015	vegetations\Corn, grain	bushels	195.00

Contouring	Strips/barriers	Diversion/terrace, sediment basin	Subsurface drainage	Adjust res. burial level	General yield level	Rock cover, %
b. absolute row grade 3 percent	(none)	(none)	(none)	Normal res. burial	Set by user	0

Outputs:

T value	Soil loss erod. portion	Detachment on slope	Soil loss for cons. plan	Sediment delivery	Net C factor	Net K factor	Crit. slope length	Surf. cover after planting, %
5.0	3.2	3.2	3.2	3.2	0.063	0.37	200	

Date	Operation	Vegetation	Surf. res. cov. after op, %
11/1/0	Manure injector, liquid low disturb.30 inch		93
11/8/0	Chisel, st. pt.		72
4/9/1	Disk, single gang		52
4/9/1	Cultivator, field 6-12 in sweeps, coil tine har		52
4/9/1	Sprayer, pre-emergence		52
4/10/1	planter, double disk opnr	Corn, grain	53
5/29/1	Sprayer, post emergence and fert. tank mix		50
10/20/1	Harvest, killing crop 50pct standing stubble		88
10/22/1	Manure injector, liquid low disturb.30 inch		94
10/31/1	Chisel, st. pt.		72
3/30/2	Disk, single gang		53
3/30/2	Cultivator, field 6-12 in sweeps, coil tine har		53
4/15/2	Sprayer, pre-emergence		51
4/23/2	Planter, double disk opnr	Corn, grain	51
5/28/2	Sprayer, post emergence and fert. tank mix		50
10/20/2	Harvest, killing crop 50pct standing stubble		88

FUEL USE EVALUATION:

Fuel type for entire run	Equiv. diesel use for entire simulation	Energy use for entire simulation	Fuel cost for entire simulation, US$/ac
(none)	13	1800000	0

SCI and STIR Output

Soil conditioning index (SCI)	SCI OM subfactor	SCI FO subfactor	SCI ER subfactor	Avg. annual slope STIR	Wind & irrigation-induced erosion for SCI, t/ac/yr
0.558	1.5	0.023	-0.26	98.7	0

The **SCI** is the **Soil Conditioning Index** rating. If the calculated index is a negative value, soil organic matter levels are predicted to decline under that production system. If the index is a positive value, soil organic matter levels are predicted to increase under that system.

The **STIR** value is the **Soil Tillage Intensity Rating**. It utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate a tillage intensity rating for the system used in growing a crop or a rotation. STIR ratings tend to show the differences in the degree of soil disturbance between systems. The kind, severity and number of ground disturbing passes are evaluated for the entire cropping rotation as shown in the management description.

USDA NRCS Natural Resources Conservation Service

RUSLE2 Profile Erosion Calculation Record

Shrine W - Paustian

Inputs:

Location	Soil	Slope length (horiz)	Avg. slope steepness, %
USA\Iowa\Scott County	Scott County, Iowa\120C Tama silty clay loam, 5 to 9 percent slopes\Tama Silty clay loam 95%	200	7.0

Management	Vegetation	Yield units	# yield units, #/ac
managements\CMZ 04\c.Other Local Mgt Records\cc paustianb 2015	vegetations\Corn, grain	bushels	200.00
managements\CMZ 04\c.Other Local Mgt Records\cc paustianb 2015	vegetations\Corn, grain	bushels	200.00

Contouring	Strips/barriers	Diversion/terrace, sediment basin	Subsurface drainage	Adjust res. burial level	General yield level	Rock cover, %
b. absolute row grade 3 percent	(none)	(none)	(none)	Normal res. burial	Set by user	0

Outputs:

T value	Soil loss erod. portion	Detachment on slope	Soil loss for cons. plan	Sediment delivery	Net C factor	Net K factor	Crit. slope length	Surf. cover after planting, %
5.0	2.7	2.7	2.7	2.7	0.060	0.32	200	

Date	Operation	Vegetation	Surf. res. cov. after op, %
11/1/0	Manure injector, liquid low disturb.30 inch		94
11/8/0	Chisel, st. pt.		72
4/9/1	Disk, single gang		53
4/9/1	Cultivator, field 6-12 in sweeps, coil tine har		53
4/9/1	Sprayer, pre-emergence		53
4/10/1	planter, double disk opnr	Corn, grain	54
5/29/1	Sprayer, post emergence and fert. tank mix		51
10/20/1	Harvest, killing crop 50pct standing stubble		89
10/22/1	Manure injector, liquid low disturb.30 inch		94
10/31/1	Chisel, st. pt.		73
3/30/2	Disk, single gang		54
3/30/2	Cultivator, field 6-12 in sweeps, coil tine har		54
4/15/2	Sprayer, pre-emergence		52
4/23/2	Planter, double disk opnr	Corn, grain	52
5/28/2	Sprayer, post emergence and fert. tank mix		51
10/20/2	Harvest, killing crop 50pct standing stubble		89

FUEL USE EVALUATION:

Fuel type for entire run	Equiv. diesel use for entire simulation	Energy use for entire simulation	Fuel cost for entire simulation, US$/ac
(none)	13	1800000	0

SCI and STIR Output

Soil conditioning index (SCI)	SCI OM subfactor	SCI FO subfactor	SCI ER subfactor	Avg. annual slope STIR	Wind & irrigation-induced erosion for SCI, t/ac/yr
0.622	1.6	0.023	-0.052	98.7	0

The **SCI** is the **Soil Conditioning Index** rating. If the calculated index is a negative value, soil organic matter levels are predicted to decline under that production system. If the index is a positive value, soil organic matter levels are predicted to increase under that system.

The **STIR** value is the **Soil Tillage Intensity Rating**. It utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate a tillage intensity rating for the system used in growing a crop or a rotation. STIR ratings tend to show the differences in the degree of soil disturbance between systems. The kind, severity and number of ground disturbing passes are evaluated for the entire cropping rotation as shown in the management description.


Untitled Map
DUFFY FARM
A
B
C
D
E
F
G
H
1000 ft

lb/A

BROOKSIDE LABORATORIES, INC.

70632-9

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location DUFFY				DUFFY	DUFFY	DUFFY	DUFFY	DUFFY
Sample Identification				A	B	C	D	DD
Lab Number				0530-1	0531-1	0532-1	0533-1	0534-1
Total Exchange Capacity (ME/100 g)				24.53	23.92	24.62	20.14	17.52
pH (H_2O 1:1)				6.7	6.2	6.4	6.5	6.5
Organic Matter (humus) %				3.85	4.03	3.36	3.56	3.29
Estimated Nitrogen Release			lb/A	88	90	84	86	83
ANIONS	SOLUBLE SULFUR*		ppm	10	11	11	11	12
	PHOSPHORUS MEHLICH III		lb/A P as P_2O_5	206	275	325	243	298
			ppm of P	45	60	71	53	65
	PHOSPHORUS BRAY II		lb/A P as P_2O_5	256	229	293	197	275
			ppm of P	56	50	64	43	60
	PHOSPHORUS OLSEN		lb/A P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	6820	6028	6212	5376	4692
			ppm	3410	3014	3106	2688	2346
	MAGNESIUM*		lb/A	1102	958	1040	816	648
			ppm	551	479	520	408	324
	POTASSIUM*		lb/A	372	470	524	534	612
			ppm	186	235	262	267	306
	SODIUM*		lb/A	70	64	292	56	62
			ppm	35	32	146	28	31
BASE SATURATION PERCENT								
Calcium		%		69.51	63.00	63.08	66.73	66.95
Magnesium		%		18.72	16.69	17.60	16.88	15.41
Potassium		%		1.94	2.52	2.73	3.40	4.48
Sodium		%		0.62	0.58	2.58	0.60	0.77
Other Bases		%		4.70	5.20	5.00	4.90	4.90
Hydrogen		%		4.50	12.00	9.00	7.50	7.50
EXTRACTABLE MINORS								
Boron* (ppm)				0.74	0.67	0.59	0.54	0.68
Iron* (ppm)				138	160	208	140	193
Manganese* (ppm)				109	93	142	128	145
Copper* (ppm)				2.93	3.14	3.53	2.84	2.92
Zinc* (ppm)				4.63	5.46	6.66	4.82	5.55
Aluminum* (ppm)				601	680	666	655	596
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-9

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location DUFFY				DUFFY	DUFFY	DUFFY	DUFFY	DUFFY
Sample Identification				E	F	G	H	J
Lab Number				0535-1	0536-1	0537-1	0538-1	0539-1
Total Exchange Capacity (ME/100 g)				22.51	26.98	22.32	18.96	18.96
pH (H_2O 1:1)				6.3	6.2	6.5	6.2	6.4
Organic Matter (humus) %				3.86	4.42	3.62	3.07	3.02
Estimated Nitrogen Release			lb/A	89	94	86	81	80
ANIONS	SOLUBLE SULFUR*		ppm	12	11	11	11	12
	PHOSPHORUS MEHLICH III	lb/A	P as P_2O_5	289	325	156	188	215
			ppm of P	63	71	34	41	47
	PHOSPHORUS BRAY II	lb/A	P as P_2O_5	247	238	119	183	165
			ppm of P	54	52	26	40	36
	PHOSPHORUS OLSEN	lb/A	P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	5978	6868	5948	4612	4940
			ppm	2989	3434	2974	2306	2470
	MAGNESIUM*		lb/A	768	1030	928	824	786
			ppm	384	515	464	412	393
	POTASSIUM*		lb/A	536	556	420	390	420
			ppm	268	278	210	195	210
	SODIUM*		lb/A	76	76	128	108	64
			ppm	38	38	64	54	32
BASE SATURATION PERCENT								
Calcium		%		66.39	63.64	66.62	60.81	65.14
Magnesium		%		14.22	15.91	17.32	18.11	17.27
Potassium		%		3.05	2.64	2.41	2.64	2.84
Sodium		%		0.73	0.61	1.25	1.24	0.73
Other Bases		%		5.10	5.20	4.90	5.20	5.00
Hydrogen		%		10.50	12.00	7.50	12.00	9.00
EXTRACTABLE MINORS								
Boron* (ppm)				0.68	0.64	0.63	0.56	0.61
Iron* (ppm)				173	192	146	153	178
Manganese* (ppm)				81	72	127	112	92
Copper* (ppm)				3.18	3.63	2.52	2.86	3.38
Zinc* (ppm)				5.28	6.38	3.89	3.77	4.43
Aluminum* (ppm)				605	580	638	677	554
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-9

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location DUFFY				DUFFY		DUFFY		DUFFY
Sample Identification				K		L		LL
Lab Number				0540-1		0541-1		0542-1
Total Exchange Capacity (ME/100 g)				21.23		23.12		22.09
pH (H_2O 1:1)				6.2		6.3		6.2
Organic Matter (humus) %				3.31		3.42		3.31
Estimated Nitrogen Release			lb/A	83		84		83
ANIONS	SOLUBLE SULFUR*		ppm	12		10		11
ANIONS	PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	169		169		206
			ppm of P	37		37		45
		BRAY II	lb/A P as P_2O_5	133		165		192
			ppm of P	29		36		42
		OLSEN	lb/A P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	5470		6084		5574
			ppm	2735		3042		2787
	MAGNESIUM*		lb/A	782		902		872
			ppm	391		451		436
	POTASSIUM*		lb/A	384		310		452
			ppm	192		155		226
	SODIUM*		lb/A	70		66		64
			ppm	35		33		32
BASE SATURATION PERCENT								
Calcium			%	64.41		65.79		63.08
Magnesium			%	15.35		16.26		16.45
Potassium			%	2.32		1.72		2.62
Sodium			%	0.72		0.62		0.63
Other Bases			%	5.20		5.10		5.20
Hydrogen			%	12.00		10.50		12.00
EXTRACTABLE MINORS								
Boron* (ppm)				0.46		0.73		0.62
Iron* (ppm)				186		215		198
Manganese* (ppm)				93		113		119
Copper* (ppm)				2.84		3.14		3.04
Zinc* (ppm)				3.94		4.07		4.74
Aluminum* (ppm)				636		576		686
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable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lb/A

BROOKSIDE LABORATORIES, INC.

70632-10

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location GOERING				GF	GF	GF	GF	GF
Sample Identification				A	B	C	D	E
Lab Number				0556-1	0557-1	0558-1	0559-1	0560-1
Total Exchange Capacity (ME/100 g)				22.87	24.83	21.91	22.49	22.77
pH (H_2O 1:1)				6.4	6.1	6.1	5.7	5.8
Organic Matter (humus) %				4.16	4.62	4.29	4.22	3.21
Estimated Nitrogen Release			lb/A	92	96	93	92	82
ANIONS	SOLUBLE SULFUR*		ppm	10	10	13	10	8
	PHOSPHORUS MEHLICH III	lb/A	P as P_2O_5	485	499	531	362	307
			ppm of P	106	109	116	79	67
	PHOSPHORUS BRAY II	lb/A	P as P_2O_5	472	513	453	279	302
			ppm of P	103	112	99	61	66
	PHOSPHORUS OLSEN	lb/A	P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	6254	6424	5774	4944	5086
			ppm	3127	3212	2887	2472	2543
	MAGNESIUM*		lb/A	780	812	612	628	834
			ppm	390	406	306	314	417
	POTASSIUM*		lb/A	536	508	540	538	310
			ppm	268	254	270	269	155
	SODIUM*		lb/A	44	44	64	34	38
			ppm	22	22	32	17	19
BASE SATURATION PERCENT								
Calcium		%		68.36	64.68	65.88	54.96	55.84
Magnesium		%		14.21	13.63	11.64	11.63	15.26
Potassium		%		3.00	2.62	3.16	3.07	1.75
Sodium		%		0.42	0.39	0.64	0.33	0.36
Other Bases		%		5.00	5.20	5.20	6.00	5.80
Hydrogen		%		9.00	13.50	13.50	24.00	21.00
EXTRACTABLE MINORS								
Boron* (ppm)				0.62	0.84	0.68	0.76	0.55
Iron* (ppm)				146	147	169	148	146
Manganese* (ppm)				116	94	85	102	77
Copper* (ppm)				4.86	5.67	5.92	5.26	5.67
Zinc* (ppm)				15.13	17.81	19.23	17.64	11.31
Aluminum* (ppm)				537	639	514	634	747
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-10

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location GOERING				GF	GF	GF	GF	GF
Sample Identification				F	G	H	J	K
Lab Number				0561-1	0562-1	0563-1	0564-1	0565-1
Total Exchange Capacity (ME/100 g)				22.49	20.65	18.96	21.01	24.66
pH (H_2O 1:1)				6.0	6.5	6.2	6.4	6.2
Organic Matter (humus) %				3.98	4.07	3.73	3.91	4.77
Estimated Nitrogen Release			lb/A	90	91	87	89	98
ANIONS	SOLUBLE SULFUR*		ppm	12	10	9	11	10
	PHOSPHORUS MEHLICH III		lb/A P as P_2O_5	376	348	266	234	224
			ppm of P	82	76	58	51	49
	PHOSPHORUS BRAY II		lb/A P as P_2O_5	202	261	229	197	169
			ppm of P	44	57	50	43	37
	PHOSPHORUS OLSEN		lb/A P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	5748	5892	5110	5770	6740
			ppm	2874	2946	2555	2885	3370
	MAGNESIUM*		lb/A	686	650	560	726	682
			ppm	343	325	280	363	341
	POTASSIUM*		lb/A	436	428	392	400	482
			ppm	218	214	196	200	241
	SODIUM*		lb/A	54	48	42	50	50
			ppm	27	24	21	25	25
BASE SATURATION PERCENT								
Calcium		%		63.90	71.33	67.38	68.66	68.33
Magnesium		%		12.71	13.12	12.31	14.40	11.52
Potassium		%		2.49	2.66	2.65	2.44	2.51
Sodium		%		0.52	0.51	0.48	0.52	0.44
Other Bases		%		5.40	4.90	5.20	5.00	5.20
Hydrogen		%		15.00	7.50	12.00	9.00	12.00
EXTRACTABLE MINORS								
Boron* (ppm)				0.73	0.82	0.74	0.71	0.81
Iron* (ppm)				135	140	119	126	134
Manganese* (ppm)				110	108	97	93	80
Copper* (ppm)				6.40	4.70	3.86	4.93	4.00
Zinc* (ppm)				32.51	14.02	14.12	9.68	9.29
Aluminum* (ppm)				651	608	562	686	597
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-10

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location	GOERING			GF		GF		GF
Sample Identification				L		M		N
Lab Number				0566-1		0567-1		0568-1
Total Exchange Capacity (ME/100 g)				26.04		22.18		21.12
pH (H_2O 1:1)				6.2		5.9		6.6
Organic Matter (humus) %				4.91		3.69		4.29
Estimated Nitrogen Release			lb/A	99		87		93
ANIONS	SOLUBLE SULFUR*		ppm	10		9		11
ANIONS	PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	289		192		522
			ppm of P	63		42		114
		BRAY II	lb/A P as P_2O_5	234		160		444
			ppm of P	51		35		97
		OLSEN	lb/A P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	7028		5384		5918
			ppm	3514		2692		2959
	MAGNESIUM*		lb/A	790		704		670
			ppm	395		352		335
	POTASSIUM*		lb/A	466		360		912
			ppm	233		180		456
	SODIUM*		lb/A	46		40		38
			ppm	23		20		19
BASE SATURATION PERCENT								
Calcium	%			67.47		60.69		70.05
Magnesium	%			12.64		13.23		13.22
Potassium	%			2.29		2.08		5.54
Sodium	%			0.38		0.39		0.39
Other Bases	%			5.20		5.60		4.80
Hydrogen	%			12.00		18.00		6.00
EXTRACTABLE MINORS								
Boron* (ppm)				0.62		0.73		0.79
Iron* (ppm)				136		121		146
Manganese* (ppm)				89		105		137
Copper* (ppm)				5.13		4.67		6.62
Zinc* (ppm)				12.92		8.02		20.52
Aluminum* (ppm)				634		663		602
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-10

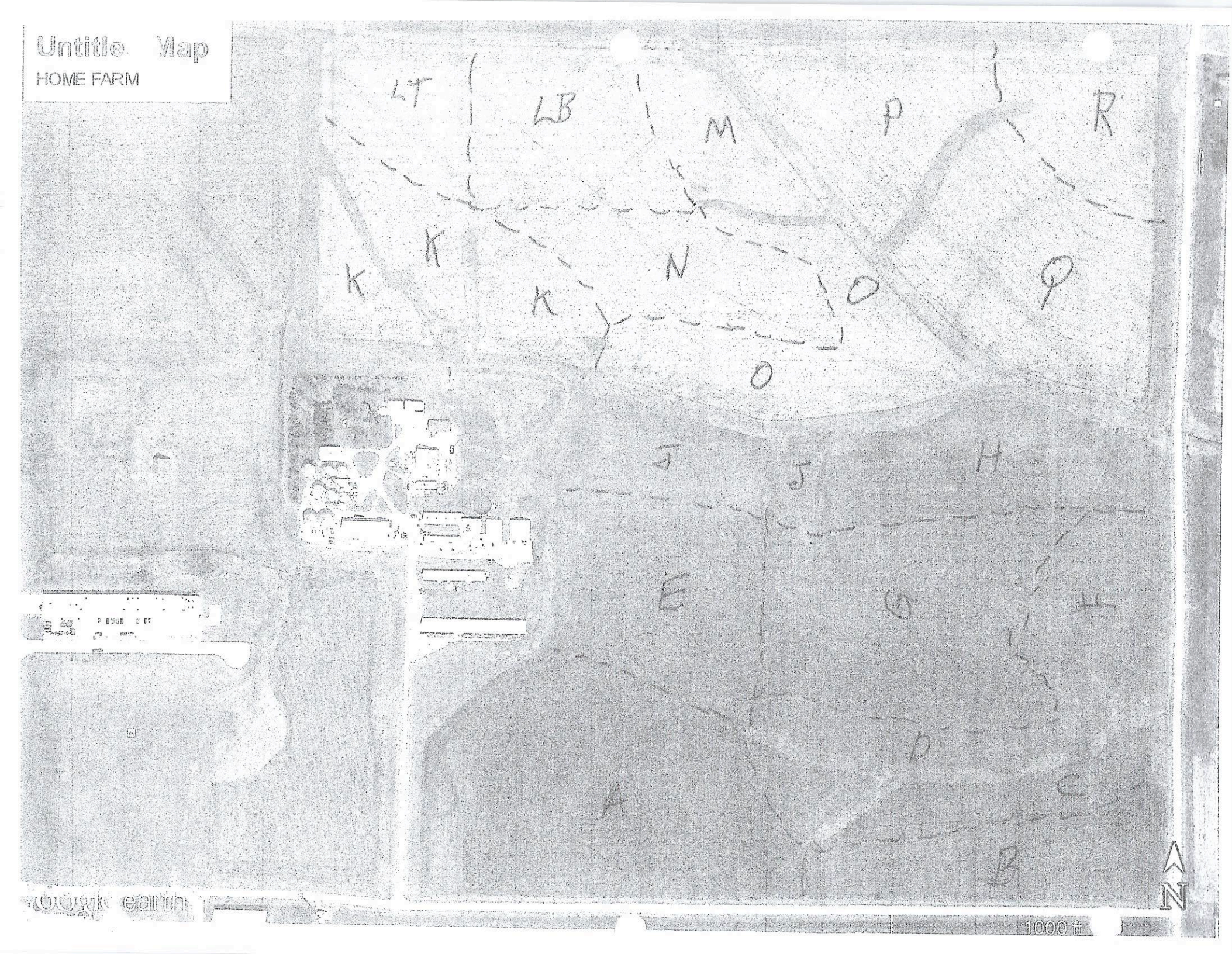
SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location GOERING				GF		GF		GF
Sample Identification				O		P		Q
Lab Number				0569-1		0570-1		0571-1
Total Exchange Capacity (ME/100 g)				20.35		22.10		25.69
pH (H_2O 1:1)				6.5		6.7		6.2
Organic Matter (humus) %				4.13		4.46		4.37
Estimated Nitrogen Release			lb/A	91		95		94
ANIONS	SOLUBLE SULFUR*		ppm	11		11		14
	PHOSPHORUS MEHLICH III		lb/A P as P_2O_5	660		467		518
			ppm of P	144		102		113
	PHOSPHORUS BRAY II		lb/A P as P_2O_5	568		389		376
			ppm of P	124		85		82
	PHOSPHORUS OLSEN		lb/A P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	5500		6412		6516
			ppm	2750		3206		3258
	MAGNESIUM*		lb/A	632		744		972
			ppm	316		372		486
	POTASSIUM*		lb/A	1042		648		630
			ppm	521		324		315
	SODIUM*		lb/A	48		48		58
			ppm	24		24		29
BASE SATURATION PERCENT								
Calcium		%		67.57		72.53		63.41
Magnesium		%		12.94		14.03		15.76
Potassium		%		6.56		3.76		3.14
Sodium		%		0.51		0.47		0.49
Other Bases		%		4.90		4.70		5.20
Hydrogen		%		7.50		4.50		12.00
EXTRACTABLE MINORS								
Boron* (ppm)				0.70		0.67		0.70
Iron* (ppm)				163		129		161
Manganese* (ppm)				142		142		122
Copper* (ppm)				7.83		6.07		6.44
Zinc* (ppm)				27.70		20.56		18.78
Aluminum* (ppm)				576		545		656
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable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lb/A

BROOKSIDE LABORATORIES, INC.

70632-6

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 06/30/2014

Sample Location HOME				HOME	HOME	HOME	HOME	HOME
Sample Identification				A	B	C	D	E
Lab Number				0597-1	0598-1	0599-1	0600-1	0601-1
Total Exchange Capacity (ME/100 g)				23.68	17.82	22.78	18.32	20.40
pH (H_2O 1:1)				6.8	7.0	6.6	6.5	5.6
Organic Matter (humus) %				4.51	4.28	3.98	3.62	3.97
Estimated Nitrogen Release			lb/A	95	93	90	86	90
ANIONS	SOLUBLE SULFUR*		ppm	8	10	11	8	9
	PHOSPHORUS MEHLICH III		lb/A P as P_2O_5	655	518	660	472	559
			ppm of P	143	113	144	103	122
	PHOSPHORUS BRAY II		lb/A P as P_2O_5	1131	614	568	463	591
			ppm of P	247	134	124	101	129
	PHOSPHORUS OLSEN		lb/A P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	6642	4852	6090	4880	4272
			ppm	3321	2426	3045	2440	2136
	MAGNESIUM*		lb/A	1058	974	1022	760	522
			ppm	529	487	511	380	261
	POTASSIUM*		lb/A	596	574	568	446	526
			ppm	298	287	284	223	263
	SODIUM*		lb/A	46	50	50	50	44
			ppm	23	25	25	25	22
BASE SATURATION PERCENT								
	Calcium		%	70.12	68.07	66.83	66.59	52.35
	Magnesium		%	18.62	22.77	18.69	17.29	10.66
	Potassium		%	3.23	4.13	3.20	3.12	3.31
	Sodium		%	0.42	0.61	0.48	0.59	0.47
	Other Bases		%	4.60	4.40	4.80	4.90	6.20
	Hydrogen		%	3.00	0.00	6.00	7.50	27.00
EXTRACTABLE MINORS								
	Boron* (ppm)			1.15	1.01	0.98	0.85	0.77
	Iron* (ppm)			133	105	157	197	182
	Manganese* (ppm)			83	108	107	100	71
	Copper* (ppm)			3.85	3.40	4.64	4.99	3.84
	Zinc* (ppm)			16.10	14.55	21.08	19.81	19.72
	Aluminum* (ppm)			374	362	450	420	447
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-6

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 06/30/2014

Sample Location HOME				HOME	HOME	HOME	HOME	HOME
Sample Identification				F	G	H	J	K
Lab Number				0602-1	0603-1	0604-1	0605-1	0606-1
Total Exchange Capacity (ME/100 g)				18.54	20.21	21.35	20.19	17.23
pH (H_2O 1:1)				6.6	5.7	6.2	5.7	6.1
Organic Matter (humus) %				3.61	3.83	3.05	3.37	3.53
Estimated Nitrogen Release			lb/A	86	88	80	84	85
ANIONS	SOLUBLE SULFUR*		ppm	9	9	10	10	9
	PHOSPHORUS MEHLICH III		lb/A P as P_2O_5	458	440	504	586	463
			ppm of P	100	96	110	128	101
	PHOSPHORUS BRAY II		lb/A P as P_2O_5	440	394	417	573	495
			ppm of P	96	86	91	125	108
	PHOSPHORUS OLSEN		lb/A P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	5164	4402	5500	4418	4358
			ppm	2582	2201	2750	2209	2179
	MAGNESIUM*		lb/A	696	594	812	574	552
			ppm	348	297	406	287	276
	POTASSIUM*		lb/A	476	444	348	478	556
			ppm	238	222	174	239	278
	SODIUM*		lb/A	54	46	46	40	46
			ppm	27	23	23	20	23
BASE SATURATION PERCENT								
Calcium		%		69.63	54.45	64.40	54.71	63.23
Magnesium		%		15.64	12.25	15.85	11.85	13.35
Potassium		%		3.29	2.82	2.09	3.04	4.14
Sodium		%		0.63	0.49	0.47	0.43	0.58
Other Bases		%		4.80	6.00	5.20	6.00	5.20
Hydrogen		%		6.00	24.00	12.00	24.00	13.50
EXTRACTABLE MINORS								
Boron* (ppm)				0.84	0.63	0.73	0.76	0.73
Iron* (ppm)				129	165	182	185	210
Manganese* (ppm)				111	80	66	59	65
Copper* (ppm)				3.92	4.73	5.45	5.59	3.15
Zinc* (ppm)				18.70	21.41	20.39	19.95	9.30
Aluminum* (ppm)				440	495	586	611	491
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-6

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 06/30/2014

Sample Location HOME				HOME	HOME	HOME	HOME	HOME
Sample Identification				LB	M	N	O	P
Lab Number				0607-1	0608-1	0609-1	0610-1	0611-1
Total Exchange Capacity (ME/100 g)				16.09	19.26	18.62	21.67	19.78
pH (H_2O 1:1)				6.0	6.1	6.1	6.4	6.2
Organic Matter (humus) %				3.54	3.61	3.98	4.20	3.31
Estimated Nitrogen Release			lb/A	85	86	90	92	83
ANIONS	SOLUBLE SULFUR*		ppm	9	9	10	10	9
	PHOSPHORUS MEHLICH III		lb/A P as P_2O_5	417	412	444	834	637
			ppm of P	91	90	97	182	139
	PHOSPHORUS BRAY II		lb/A P as P_2O_5	453	527	485	788	641
			ppm of P	99	115	106	172	140
	PHOSPHORUS OLSEN		lb/A P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	4128	4870	4970	5920	5116
			ppm	2064	2435	2485	2960	2558
	MAGNESIUM*		lb/A	448	668	482	730	652
			ppm	224	334	241	365	326
	POTASSIUM*		lb/A	404	446	474	530	614
			ppm	202	223	237	265	307
	SODIUM*		lb/A	48	58	46	52	40
			ppm	24	29	23	26	20
BASE SATURATION PERCENT								
Calcium		%		64.14	63.21	66.73	68.30	64.66
Magnesium		%		11.60	14.45	10.79	14.04	13.73
Potassium		%		3.22	2.97	3.26	3.14	3.98
Sodium		%		0.65	0.65	0.54	0.52	0.44
Other Bases		%		5.40	5.20	5.20	5.00	5.20
Hydrogen		%		15.00	13.50	13.50	9.00	12.00
EXTRACTABLE MINORS								
Boron* (ppm)				0.60	0.65	0.81	0.70	0.71
Iron* (ppm)				151	166	163	228	187
Manganese* (ppm)				95	89	93	81	90
Copper* (ppm)				2.78	3.45	3.94	4.22	3.23
Zinc* (ppm)				8.83	8.87	10.88	13.80	9.91
Aluminum* (ppm)				515	524	503	504	599
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-6

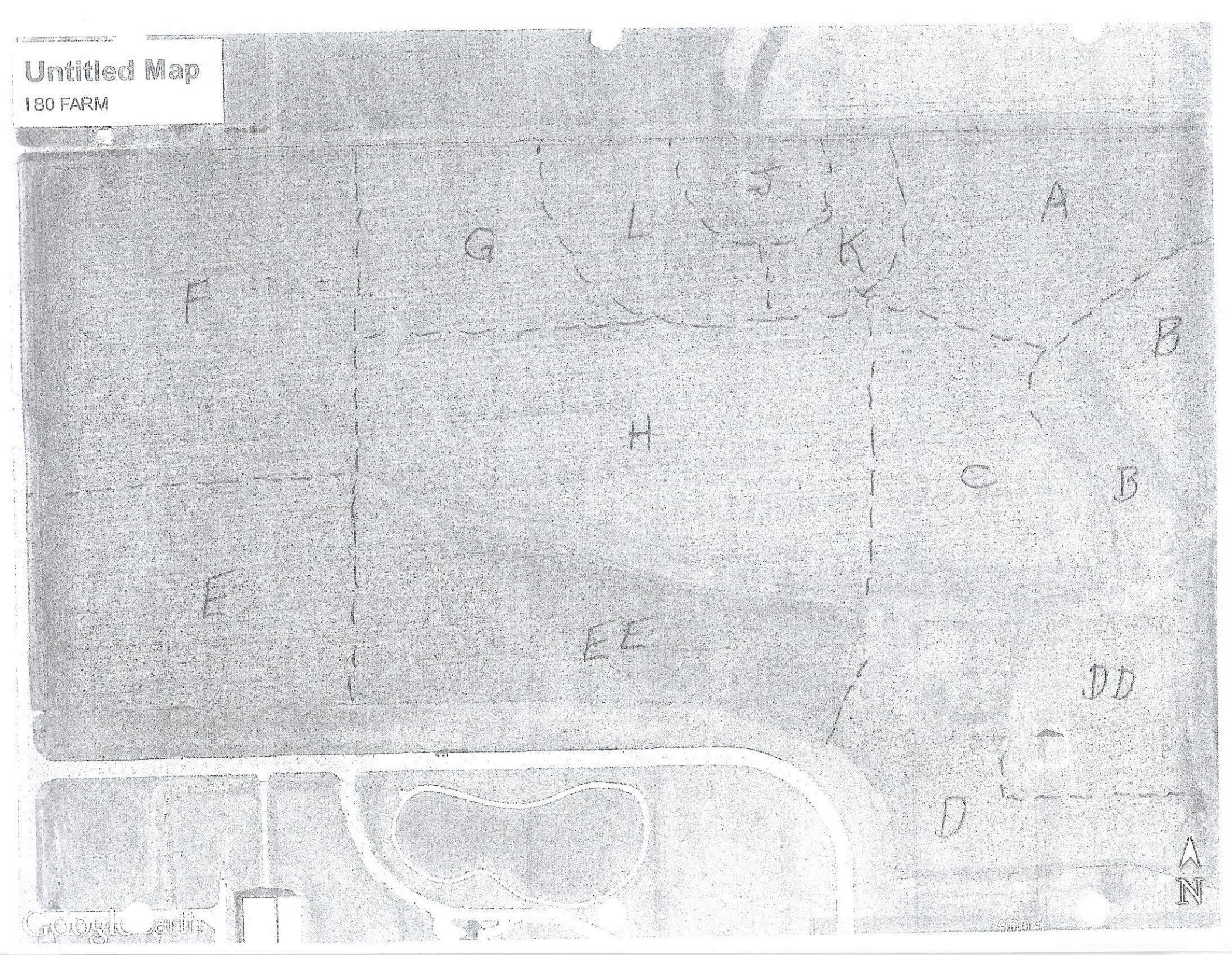
SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 06/30/2014

Sample Location HOME				HOME		HOME		HOME
Sample Identification				Q		R		LT
Lab Number				0612-1		0613-1		0614-1
Total Exchange Capacity (ME/100 g)				21.95		18.61		17.17
pH (H_2O 1:1)				6.6		6.3		6.3
Organic Matter (humus) %				3.25		3.35		3.34
Estimated Nitrogen Release			lb/A	82		84		83
ANIONS	SOLUBLE SULFUR*		ppm	10		10		9
	PHOSPHORUS MEHLICH III	lb/A	P as P_2O_5	710		577		348
			ppm of P	155		126		76
	PHOSPHORUS BRAY II	lb/A	P as P_2O_5	765		531		362
			ppm of P	167		116		79
	PHOSPHORUS OLSEN	lb/A	P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	6212		4842		4774
			ppm	3106		2421		2387
	MAGNESIUM*		lb/A	720		618		462
			ppm	360		309		231
	POTASSIUM*		lb/A	716		710		422
			ppm	358		355		211
	SODIUM*		lb/A	62		54		42
			ppm	31		27		21
BASE SATURATION PERCENT								
Calcium		%		70.75		65.05		69.51
Magnesium		%		13.67		13.84		11.21
Potassium		%		4.18		4.89		3.15
Sodium		%		0.61		0.63		0.53
Other Bases		%		4.80		5.10		5.10
Hydrogen		%		6.00		10.50		10.50
EXTRACTABLE MINORS								
Boron* (ppm)				0.73		0.76		0.68
Iron* (ppm)				195		168		153
Manganese* (ppm)				134		122		83
Copper* (ppm)				4.09		3.48		2.91
Zinc* (ppm)				11.77		10.84		9.24
Aluminum* (ppm)				578		603		526
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable


Untitled Map
180 FARM
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lb/A

BROOKSIDE LABORATORIES, INC.

70632-11

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location I-80				I-80	I-80	I-80	I-80	I-80
Sample Identification				A	B	C	D	DD
Lab Number				0466-1	0467-1	0468-1	0469-1	0470-1
Total Exchange Capacity (ME/100 g)				21.38	19.22	21.17	27.29	26.50
pH (H_2O 1:1)				5.9	6.1	5.9	6.1	6.7
Organic Matter (humus) %				3.74	3.60	3.39	4.58	4.98
Estimated Nitrogen Release			lb/A	87	86	84	96	100
ANIONS	SOLUBLE SULFUR*		ppm	14	13	12	12	13
	PHOSPHORUS MEHLICH III	lb/A	P as P_2O_5	316	467	417	742	1305
			ppm of P	69	102	91	162	285
	PHOSPHORUS BRAY II	lb/A	P as P_2O_5	247	435	385	724	463
			ppm of P	54	95	84	158	101
	PHOSPHORUS OLSEN	lb/A	P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	5252	4986	5064	6914	7054
			ppm	2626	2493	2532	3457	3527
	MAGNESIUM*		lb/A	586	550	658	876	996
			ppm	293	275	329	438	498
	POTASSIUM*		lb/A	490	578	518	882	1676
			ppm	245	289	259	441	838
	SODIUM*		lb/A	62	58	50	54	58
			ppm	31	29	25	27	29
BASE SATURATION PERCENT								
Calcium		%		61.41	64.85	59.80	63.34	66.55
Magnesium		%		11.42	11.92	12.95	13.37	15.66
Potassium		%		2.94	3.86	3.14	4.14	8.11
Sodium		%		0.63	0.66	0.51	0.43	0.48
Other Bases		%		5.60	5.20	5.60	5.20	4.70
Hydrogen		%		18.00	13.50	18.00	13.50	4.50
EXTRACTABLE MINORS								
Boron* (ppm)				0.74	0.74	0.84	0.65	0.99
Iron* (ppm)				149	159	192	233	347
Manganese* (ppm)				109	147	134	87	73
Copper* (ppm)				5.42	6.00	5.07	5.14	4.69
Zinc* (ppm)				21.36	27.96	15.29	12.26	16.18
Aluminum* (ppm)				608	600	614	616	497
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-7

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 06/30/2014

Sample Location I-80				I80	I80	I80	I80	I80
Sample Identification				E	EE	F	G	H
Lab Number				0877-1	0878-1	0879-1	0880-1	0881-1
Total Exchange Capacity (ME/100 g)				23.30	23.96	23.01	23.08	20.44
pH (H_2O 1:1)				6.6	6.9	6.0	6.4	6.0
Organic Matter (humus) %				4.42	4.31	3.91	3.99	3.33
Estimated Nitrogen Release			lb/A	94	93	89	90	83
ANIONS	SOLUBLE SULFUR*		ppm	9	13	10	11	11
	PHOSPHORUS MEHLICH III	lb/A	P as P_2O_5	426	573	321	408	334
			ppm of P	93	125	70	89	73
	PHOSPHORUS BRAY II	lb/A	P as P_2O_5	618	802	408	545	398
			ppm of P	135	175	89	119	87
	PHOSPHORUS OLSEN	lb/A	P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	6688	7048	5882	6538	5264
			ppm	3344	3524	2941	3269	2632
	MAGNESIUM*		lb/A	808	960	720	684	590
			ppm	404	480	360	342	295
	POTASSIUM*		lb/A	464	594	394	424	432
			ppm	232	297	197	212	216
	SODIUM*		lb/A	48	64	48	50	46
			ppm	24	32	24	25	23
BASE SATURATION PERCENT								
Calcium		%		71.76	73.54	63.91	70.82	64.38
Magnesium		%		14.45	16.69	13.04	12.35	12.03
Potassium		%		2.55	3.18	2.20	2.36	2.71
Sodium		%		0.45	0.58	0.45	0.47	0.49
Other Bases		%		4.80	4.50	5.40	5.00	5.40
Hydrogen		%		6.00	1.50	15.00	9.00	15.00
EXTRACTABLE MINORS								
Boron* (ppm)				0.67	0.80	0.76	0.85	0.65
Iron* (ppm)				149	198	142	196	153
Manganese* (ppm)				96	79	112	112	140
Copper* (ppm)				4.05	4.77	5.11	5.20	5.27
Zinc* (ppm)				12.62	14.40	17.14	18.98	16.49
Aluminum* (ppm)				489	518	579	532	626
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-7

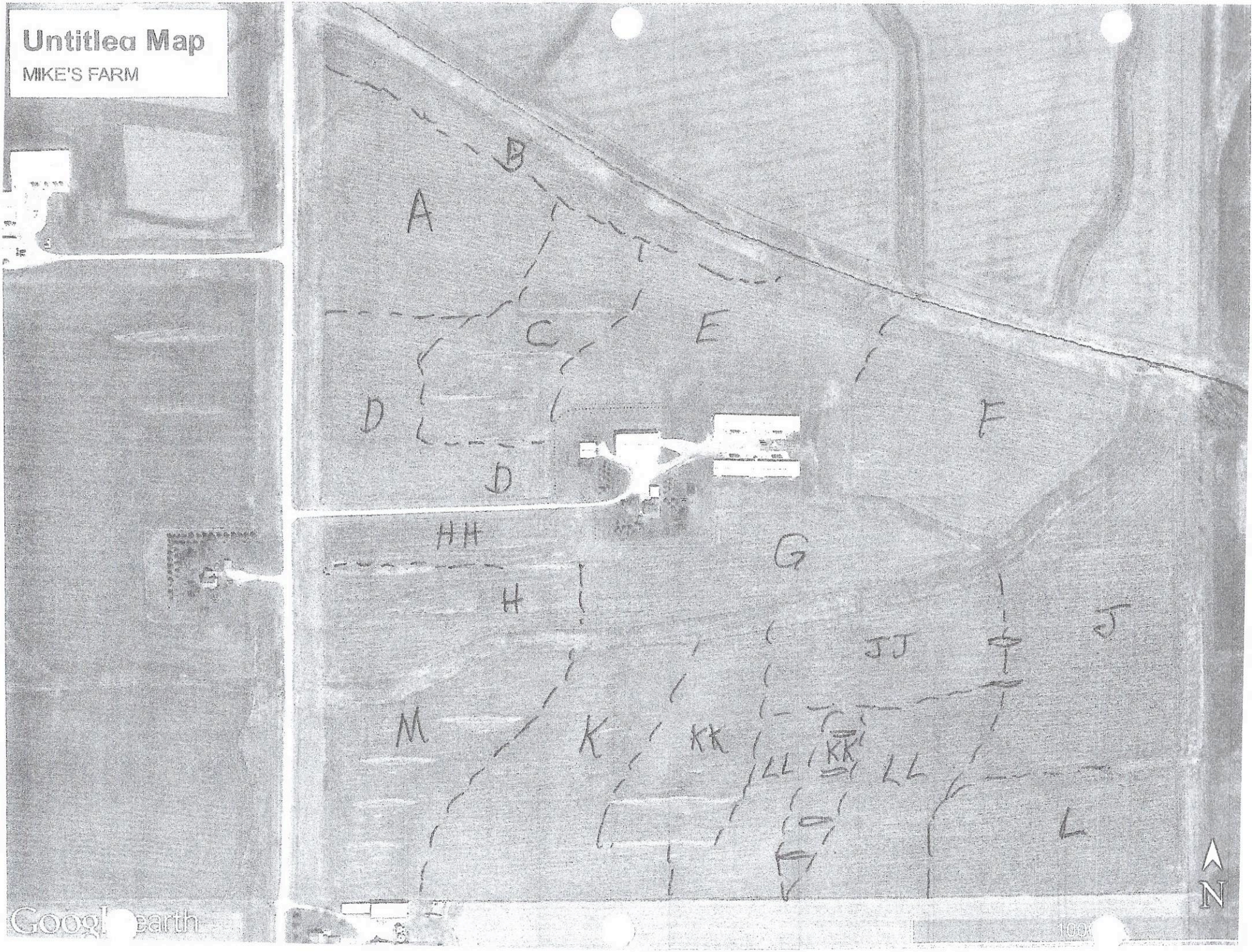
SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 06/30/2014

Sample Location	I-80		I80		I80		I80	
Sample Identification			J		K		L	
Lab Number			0882-1		0883-1		0884-1	
Total Exchange Capacity (ME/100 g)			20.63		23.79		22.61	
pH (H_2O 1:1)			5.9		5.4		5.6	
Organic Matter (humus) %			3.78		3.63		3.75	
Estimated Nitrogen Release		lb/A	88		86		88	
ANIONS	SOLUBLE SULFUR*	ppm	12		13		13	
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	449		325		371	
		ppm of P	98		71		81	
	BRAY II	lb/A P as P_2O_5	518		339		389	
		ppm of P	113		74		85	
	OLSEN	lb/A P as P_2O_5						
		ppm of P						
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	4930		4588		4724	
		ppm	2465		2294		2362	
	MAGNESIUM*	lb/A	618		538		610	
		ppm	309		269		305	
	POTASSIUM*	lb/A	574		430		490	
		ppm	287		215		245	
	SODIUM*	lb/A	58		50		58	
		ppm	29		25		29	
BASE SATURATION PERCENT								
Calcium		%	59.74		48.21		52.23	
Magnesium		%	12.48		9.42		11.24	
Potassium		%	3.57		2.32		2.78	
Sodium		%	0.61		0.46		0.56	
Other Bases		%	5.60		6.60		6.20	
Hydrogen		%	18.00		33.00		27.00	
EXTRACTABLE MINORS								
Boron* (ppm)			0.74		0.60		0.66	
Iron* (ppm)			178		148		170	
Manganese* (ppm)			117		123		107	
Copper* (ppm)			6.53		5.26		5.07	
Zinc* (ppm)			34.06		22.15		15.82	
Aluminum* (ppm)			575		662		681	
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable


Untitled Map
MIKE'S FARM
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Google Earth

lb/A

BROOKSIDE LABORATORIES, INC.

70632-11

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location MIKE'S				MIKE	MIKE	MIKE	MIKE	MIKE
Sample Identification				A	B	C	D	E
Lab Number				0441-1	0442-1	0443-1	0444-1	0445-1
Total Exchange Capacity (ME/100 g)				21.09	22.23	22.71	24.28	18.54
pH (H_2O 1:1)				6.8	6.1	6.3	6.7	6.3
Organic Matter (humus) %				3.75	3.95	3.54	3.96	3.14
Estimated Nitrogen Release			lb/A	88	90	85	90	81
ANIONS	SOLUBLE SULFUR*		ppm	12	13	13	13	11
ANIONS / PHOSPHORUS	MEHLICH III	lb/A	P as P_2O_5	550	760	989	682	650
			ppm of P	120	166	216	149	142
	BRAY II	lb/A	P as P_2O_5	522	802	1035	632	609
			ppm of P	114	175	226	138	133
	OLSEN	lb/A	P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	5788	5490	5804	6712	5020
			ppm	2894	2745	2902	3356	2510
	MAGNESIUM*		lb/A	1006	754	820	1032	528
			ppm	503	377	410	516	264
	POTASSIUM*		lb/A	546	838	866	652	604
			ppm	273	419	433	326	302
	SODIUM*		lb/A	56	60	60	58	58
			ppm	28	30	30	29	29
BASE SATURATION PERCENT								
Calcium		%		68.61	61.74	63.89	69.11	67.69
Magnesium		%		19.88	14.13	15.04	17.71	11.87
Potassium		%		3.32	4.83	4.89	3.44	4.18
Sodium		%		0.58	0.59	0.57	0.52	0.68
Other Bases		%		4.60	5.20	5.10	4.70	5.10
Hydrogen		%		3.00	13.50	10.50	4.50	10.50
EXTRACTABLE MINORS								
Boron* (ppm)				0.59	0.61	0.54	0.79	0.74
Iron* (ppm)				141	226	288	168	181
Manganese* (ppm)				116	113	106	146	116
Copper* (ppm)				5.88	6.33	6.44	5.38	5.37
Zinc* (ppm)				9.43	12.72	12.61	11.93	10.84
Aluminum* (ppm)				620	518	625	578	596
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-11

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location MIKE'S				MIKE	MIKE	MIKE	MIKE	MIKE
Sample Identification				F	G	H	HH	J
Lab Number				0446-1	0447-1	0448-1	0449-1	0450-1
Total Exchange Capacity (ME/100 g)				21.65	19.00	22.33	19.09	24.11
pH (H_2O 1:1)				5.6	6.4	6.8	7.2	5.8
Organic Matter (humus) %				3.60	2.81	3.53	3.49	3.91
Estimated Nitrogen Release			lb/A	86	76	85	85	89
ANIONS	SOLUBLE SULFUR*		ppm	12	11	11	10	14
	PHOSPHORUS MEHLICH III	lb/A	P as P_2O_5	714	733	678	650	559
			ppm of P	156	160	148	142	122
	PHOSPHORUS BRAY II	lb/A	P as P_2O_5	650	669	673	586	444
			ppm of P	142	146	147	128	97
	PHOSPHORUS OLSEN	lb/A	P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	4438	5090	6430	5278	5592
			ppm	2219	2545	3215	2639	2796
	MAGNESIUM*		lb/A	540	614	870	992	628
			ppm	270	307	435	496	314
	POTASSIUM*		lb/A	788	756	640	658	730
			ppm	394	378	320	329	365
	SODIUM*		lb/A	48	42	50	52	54
			ppm	24	21	25	26	27
BASE SATURATION PERCENT								
Calcium		%		51.25	66.97	71.99	69.12	57.98
Magnesium		%		10.39	13.46	16.23	21.65	10.85
Potassium		%		4.67	5.10	3.67	4.42	3.88
Sodium		%		0.48	0.48	0.49	0.59	0.49
Other Bases		%		6.20	5.00	4.60	4.20	5.80
Hydrogen		%		27.00	9.00	3.00	0.00	21.00
EXTRACTABLE MINORS								
Boron* (ppm)				0.45	0.54	0.83	0.68	0.53
Iron* (ppm)				218	238	213	177	185
Manganese* (ppm)				107	95	136	153	105
Copper* (ppm)				7.50	5.39	6.00	5.83	5.21
Zinc* (ppm)				11.39	11.67	12.89	12.68	10.12
Aluminum* (ppm)				722	662	518	510	625
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-11

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location MIKE'S				MIKE		MIKE	MIKE	MIKE
Sample Identification				JJ		K	KK	L
Lab Number				0451-1		0452-1	0453-1	0454-1
Total Exchange Capacity (ME/100 g)				21.28		22.72	20.92	28.39
pH (H_2O 1:1)				6.1		6.1	6.4	5.8
Organic Matter (humus) %				3.67		4.33	3.19	4.55
Estimated Nitrogen Release			lb/A	87		93	82	96
ANIONS	SOLUBLE SULFUR*		ppm	12		13	12	13
	PHOSPHORUS MEHLICH III	lb/A	P as P_2O_5	637		678	843	563
			ppm of P	139		148	184	123
	PHOSPHORUS BRAY II	lb/A	P as P_2O_5	550		573	742	417
			ppm of P	120		125	162	91
	PHOSPHORUS OLSEN	lb/A	P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	5658		5884	5548	6762
			ppm	2829		2942	2774	3381
	MAGNESIUM*		lb/A	522		662	730	694
			ppm	261		331	365	347
	POTASSIUM*		lb/A	686		696	752	678
			ppm	343		348	376	339
	SODIUM*		lb/A	48		52	52	52
			ppm	24		26	26	26
BASE SATURATION PERCENT								
Calcium			%	66.47		64.74	66.30	59.55
Magnesium			%	10.22		12.14	14.54	10.19
Potassium			%	4.13		3.93	4.61	3.06
Sodium			%	0.49		0.50	0.54	0.40
Other Bases			%	5.20		5.20	5.00	5.80
Hydrogen			%	13.50		13.50	9.00	21.00
EXTRACTABLE MINORS								
Boron* (ppm)				0.61		0.69	0.67	0.61
Iron* (ppm)				241		195	315	202
Manganese* (ppm)				111		152	81	97
Copper* (ppm)				6.05		6.50	6.28	5.90
Zinc* (ppm)				11.87		14.37	12.79	9.52
Aluminum* (ppm)				567		534	606	693
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-11

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location	MIKE'S		MIKE		MIKE		
Sample Identification			LL		M		
Lab Number			0455-1		0456-1		
Total Exchange Capacity (ME/100 g)			27.50		18.42		
pH (H_2O 1:1)			5.5		7.2		
Organic Matter (humus) %			3.95		3.22		
Estimated Nitrogen Release		lb/A	90		82		
ANIONS	SOLUBLE SULFUR*	ppm	15		10		
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	449		627		
		ppm of P	98		137		
	BRAY II	lb/A P as P_2O_5	339		605		
		ppm of P	74		132		
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	5488		5146		
		ppm	2744		2573		
	MAGNESIUM*	lb/A	654		926		
		ppm	327		463		
	POTASSIUM*	lb/A	694		644		
		ppm	347		322		
	SODIUM*	lb/A	72		46		
		ppm	36		23		

BASE SATURATION PERCENT

Calcium	%	49.89		69.84	
Magnesium	%	9.91		20.95	
Potassium	%	3.24		4.48	
Sodium	%	0.57		0.54	
Other Bases	%	6.40		4.20	
Hydrogen	%	30.00		0.00	

EXTRACTABLE MINORS

Boron* (ppm)		0.60		0.68	
Iron* (ppm)		173		191	
Manganese* (ppm)		146		162	
Copper* (ppm)		5.58		6.32	
Zinc* (ppm)		9.82		12.01	
Aluminum* (ppm)		627		506	
OTHER TESTS	Soluble Salts (mmhos/cm)				
	Chlorides (ppm)				

* Mehlich III Extractable


Untitled Map
PUCK FARM
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lb/A

BROOKSIDE LABORATORIES, INC.

70632-7

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 06/30/2014

Sample Location PUCK				PUCK	PUCK	PUCK	PUCK	PUCK
Sample Identification				A	B	C	D	E
Lab Number				0859-1	0860-1	0861-1	0862-1	0863-1
Total Exchange Capacity (ME/100 g)				18.93	20.46	19.91	19.86	20.76
pH (H_2O 1:1)				6.7	6.5	6.2	6.8	6.5
Organic Matter (humus) %				3.40	3.31	3.84	3.45	3.95
Estimated Nitrogen Release			lb/A	84	83	88	84	90
ANIONS	SOLUBLE SULFUR*		ppm	11	10	10	10	10
	PHOSPHORUS MEHLICH III	lb/A	P as P_2O_5	458	380	385	637	453
			ppm of P	100	83	84	139	99
	PHOSPHORUS BRAY II	lb/A	P as P_2O_5	591	490	403	943	554
			ppm of P	129	107	88	206	121
	PHOSPHORUS OLSEN	lb/A	P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	5292	5216	5226	5644	5882
			ppm	2646	2608	2613	2822	2941
	MAGNESIUM*		lb/A	690	988	614	772	572
			ppm	345	494	307	386	286
	POTASSIUM*		lb/A	750	506	604	708	772
			ppm	375	253	302	354	386
	SODIUM*		lb/A	54	54	42	52	50
			ppm	27	27	21	26	25
BASE SATURATION PERCENT								
Calcium		%		69.89	63.73	65.62	71.05	70.83
Magnesium		%		15.19	20.12	12.85	16.20	11.48
Potassium		%		5.08	3.17	3.89	4.57	4.77
Sodium		%		0.62	0.57	0.46	0.57	0.52
Other Bases		%		4.70	4.90	5.20	4.60	4.90
Hydrogen		%		4.50	7.50	12.00	3.00	7.50
EXTRACTABLE MINORS								
Boron* (ppm)				0.60	0.79	0.76	0.73	0.60
Iron* (ppm)				138	164	141	218	168
Manganese* (ppm)				131	69	68	87	84
Copper* (ppm)				4.81	3.89	4.01	4.01	4.47
Zinc* (ppm)				15.38	10.12	11.56	14.55	12.35
Aluminum* (ppm)				561	594	575	519	555
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-7

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 06/30/2014

Sample Location PUCK				PUCK	PUCK	PUCK	PUCK
Sample Identification				G	H	J	K
Lab Number				0864-1	0865-1	0866-1	0867-1
Total Exchange Capacity (ME/100 g)				20.07	22.65	21.92	19.11
pH (H_2O 1:1)				6.5	6.6	6.6	6.2
Organic Matter (humus) %				3.62	3.32	3.87	3.55
Estimated Nitrogen Release		lb/A		86	83	89	86
ANIONS	SOLUBLE SULFUR*	ppm		9	10	10	10
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5		298	353	293	284
		ppm of P		65	77	64	62
	BRAY II	lb/A P as P_2O_5		321	426	325	321
		ppm of P		70	93	71	70
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A		5732	6154	6326	5048
		ppm		2866	3077	3163	2524
	MAGNESIUM*	lb/A		612	980	678	600
		ppm		306	490	339	300
	POTASSIUM*	lb/A		468	482	634	478
		ppm		234	241	317	239
	SODIUM*	lb/A		48	56	44	42
		ppm		24	28	22	21
BASE SATURATION PERCENT							
Calcium	%			71.40	67.92	72.15	66.04
Magnesium	%			12.71	18.03	12.89	13.08
Potassium	%			2.99	2.73	3.71	3.21
Sodium	%			0.52	0.54	0.44	0.48
Other Bases	%			4.90	4.80	4.80	5.20
Hydrogen	%			7.50	6.00	6.00	12.00
EXTRACTABLE MINORS							
Boron* (ppm)				0.76	0.84	0.76	0.71
Iron* (ppm)				154	154	148	154
Manganese* (ppm)				77	88	116	81
Copper* (ppm)				3.11	4.78	3.92	2.86
Zinc* (ppm)				8.96	9.47	8.71	8.04
Aluminum* (ppm)				566	640	585	629
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-7

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 06/30/2014

Sample Location PUCK				PUCK	PUCK	PUCK	PUCK	PUCK
Sample Identification				L	M	N	O	P
Lab Number				0868-1	0869-1	0870-1	0871-1	0872-1
Total Exchange Capacity (ME/100 g)				19.22	20.82	21.35	22.82	19.06
pH (H_2O 1:1)				6.4	6.0	6.1	5.9	6.0
Organic Matter (humus) %				3.25	3.07	3.59	3.70	3.65
Estimated Nitrogen Release			lb/A	82	81	86	87	86
ANIONS	SOLUBLE SULFUR*		ppm	9	11	11	11	12
	PHOSPHORUS MEHLICH III	lb/A	P as P_2O_5	206	463	431	325	284
			ppm of P	45	101	94	71	62
	PHOSPHORUS BRAY II	lb/A	P as P_2O_5	256	490	559	316	243
			ppm of P	56	107	122	69	53
	PHOSPHORUS OLSEN	lb/A	P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	5186	5204	5566	5510	4656
			ppm	2593	2602	2783	2755	2328
	MAGNESIUM*		lb/A	702	722	622	694	642
			ppm	351	361	311	347	321
	POTASSIUM*		lb/A	426	342	564	508	602
			ppm	213	171	282	254	301
	SODIUM*		lb/A	44	52	60	54	40
			ppm	22	26	30	27	20
BASE SATURATION PERCENT								
Calcium		%		67.46	62.49	65.18	60.36	61.07
Magnesium		%		15.22	14.45	12.14	12.67	14.03
Potassium		%		2.84	2.11	3.39	2.85	4.05
Sodium		%		0.50	0.54	0.61	0.51	0.46
Other Bases		%		5.00	5.40	5.20	5.60	5.40
Hydrogen		%		9.00	15.00	13.50	18.00	15.00
EXTRACTABLE MINORS								
Boron* (ppm)				0.67	0.63	0.85	0.68	0.76
Iron* (ppm)				134	137	185	177	177
Manganese* (ppm)				89	80	87	91	76
Copper* (ppm)				2.74	3.11	4.34	3.75	2.66
Zinc* (ppm)				6.59	9.58	10.30	9.21	6.90
Aluminum* (ppm)				636	629	614	693	763
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-7

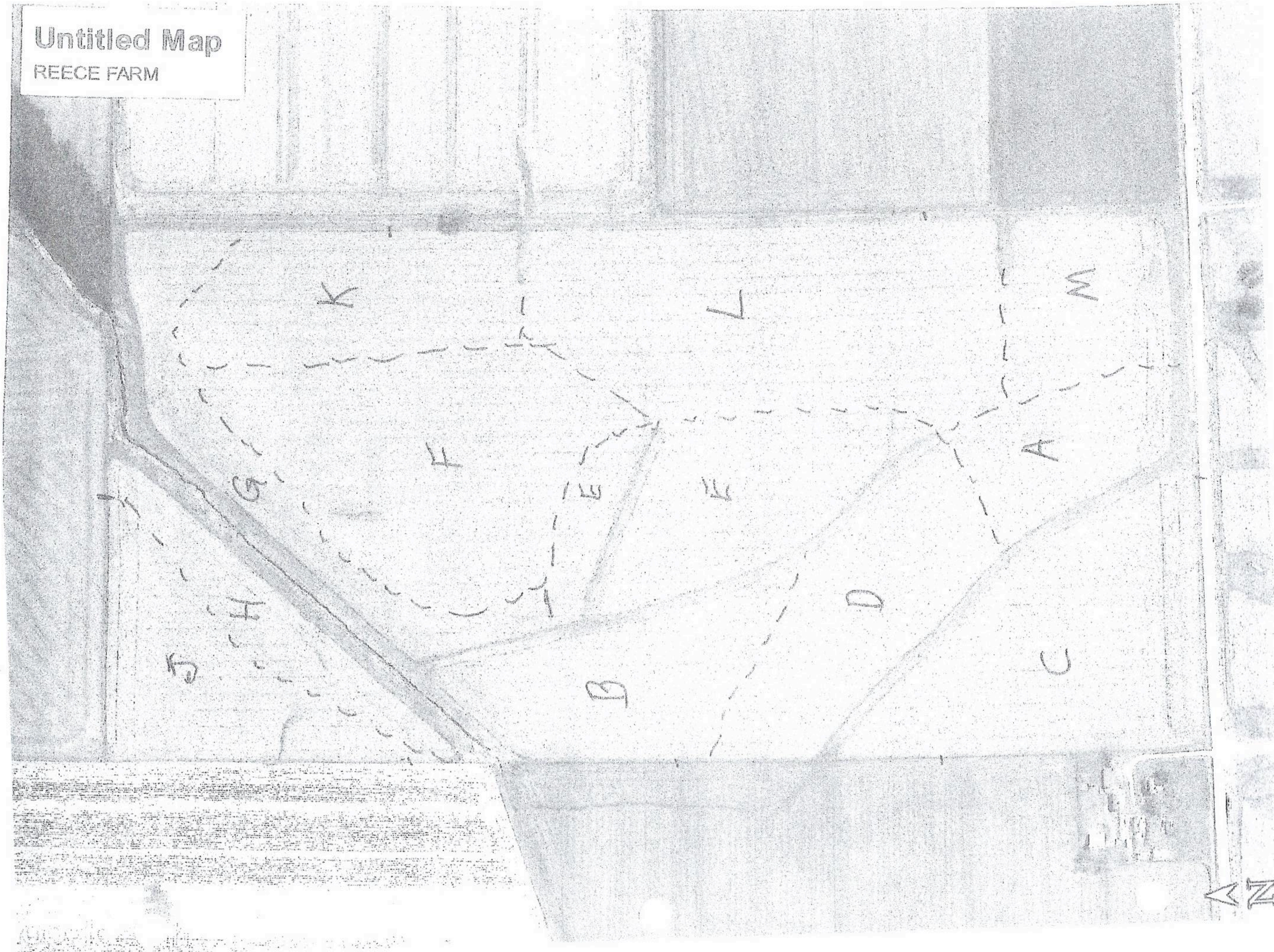
SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 06/30/2014

Sample Location PUCK				PUCK	PUCK	PUCK	PUCK
Sample Identification				Q	R	S	T
Lab Number				0873-1	0874-1	0875-1	0876-1
Total Exchange Capacity (ME/100 g)				22.30	20.86	20.29	21.58
pH (H_2O 1:1)				5.7	6.5	6.3	6.8
Organic Matter (humus) %				4.02	2.96	3.68	2.87
Estimated Nitrogen Release			lb/A	90	79	87	77
ANIONS	SOLUBLE SULFUR*		ppm	11	11	11	11
	PHOSPHORUS MEHLICH III	lb/A	P as P_2O_5	398	334	385	330
			ppm of P	87	73	84	72
	PHOSPHORUS BRAY II	lb/A	P as P_2O_5	467	380	417	380
			ppm of P	102	83	91	83
	PHOSPHORUS OLSEN	lb/A	P as P_2O_5				
			ppm of P				
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	4668	5632	5348	6020
			ppm	2334	2816	2674	3010
	MAGNESIUM*		lb/A	738	824	690	998
			ppm	369	412	345	499
	POTASSIUM*		lb/A	594	490	600	462
			ppm	297	245	300	231
	SODIUM*		lb/A	46	60	50	64
			ppm	23	30	25	32
BASE SATURATION PERCENT							
Calcium			%	52.33	67.50	65.89	69.74
Magnesium			%	13.79	16.46	14.17	19.27
Potassium			%	3.41	3.01	3.79	2.74
Sodium			%	0.45	0.63	0.54	0.64
Other Bases			%	6.00	4.90	5.10	4.60
Hydrogen			%	24.00	7.50	10.50	3.00
EXTRACTABLE MINORS							
Boron* (ppm)				0.84	0.77	0.79	0.61
Iron* (ppm)				229	155	157	156
Manganese* (ppm)				64	109	86	131
Copper* (ppm)				3.05	3.41	3.66	3.83
Zinc* (ppm)				8.89	8.52	10.07	10.94
Aluminum* (ppm)				608	682	666	599
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable



Untitled Map
REECE FARM
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lb/A

BROOKSIDE LABORATORIES, INC.

70632-9

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location REECE				REECE	REECE	REECE	REECE	REECE
Sample Identification				A	B	C	D	E
Lab Number				0518-1	0519-1	0520-1	0521-1	0522-1
Total Exchange Capacity (ME/100 g)				19.79	21.67	20.03	20.18	19.01
pH (H_2O 1:1)				7.1	6.5	7.0	6.5	6.1
Organic Matter (humus) %				3.15	3.48	3.76	3.21	3.76
Estimated Nitrogen Release			lb/A	82	85	88	82	88
ANIONS	SOLUBLE SULFUR*		ppm	8	9	8	8	10
	PHOSPHORUS MEHLICH III	lb/A	P as P_2O_5	252	128	220	211	234
			ppm of P	55	28	48	46	51
	PHOSPHORUS BRAY II	lb/A	P as P_2O_5	261	115	197	192	179
			ppm of P	57	25	43	42	39
	PHOSPHORUS OLSEN	lb/A	P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	5280	5834	5190	5180	4764
			ppm	2640	2917	2595	2590	2382
	MAGNESIUM*		lb/A	1218	888	1336	976	694
			ppm	609	444	668	488	347
	POTASSIUM*		lb/A	438	338	392	422	424
			ppm	219	169	196	211	212
	SODIUM*		lb/A	48	122	46	54	52
			ppm	24	61	23	27	26
BASE SATURATION PERCENT								
Calcium		%		66.70	67.31	64.78	64.17	62.65
Magnesium		%		25.64	17.07	27.79	20.15	15.21
Potassium		%		2.84	2.00	2.51	2.68	2.86
Sodium		%		0.53	1.22	0.50	0.58	0.59
Other Bases		%		4.30	4.90	4.40	4.90	5.20
Hydrogen		%		0.00	7.50	0.00	7.50	13.50
EXTRACTABLE MINORS								
Boron* (ppm)				0.66	0.77	0.69	0.68	0.58
Iron* (ppm)				126	121	103	127	126
Manganese* (ppm)				141	140	109	124	92
Copper* (ppm)				3.78	3.42	3.63	3.22	3.07
Zinc* (ppm)				6.53	5.33	5.34	5.31	5.67
Aluminum* (ppm)				599	550	584	640	535
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-9

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location REECE				REECE	REECE	REECE	REECE	REECE
Sample Identification				F	G	H	J	K
Lab Number				0523-1	0524-1	0525-1	0526-1	0527-1
Total Exchange Capacity (ME/100 g)				23.38	22.07	19.03	24.18	16.91
pH (H_2O 1:1)				6.7	6.2	6.8	5.8	6.7
Organic Matter (humus) %				3.51	3.45	3.07	4.06	3.03
Estimated Nitrogen Release			lb/A	85	84	81	91	80
ANIONS	SOLUBLE SULFUR*		ppm	10	10	9	9	9
	PHOSPHORUS MEHLICH III	lb/A	P as P_2O_5	165	252	266	147	169
			ppm of P	36	55	58	32	37
	PHOSPHORUS BRAY II	lb/A	P as P_2O_5	119	192	202	87	124
			ppm of P	26	42	44	19	27
	PHOSPHORUS OLSEN	lb/A	P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	6662	5820	5660	5722	4696
			ppm	3331	2910	2830	2861	2348
	MAGNESIUM*		lb/A	896	726	664	670	752
			ppm	448	363	332	335	376
	POTASSIUM*		lb/A	476	456	454	388	308
			ppm	238	228	227	194	154
	SODIUM*		lb/A	108	52	38	48	40
			ppm	54	26	19	24	20
BASE SATURATION PERCENT								
Calcium		%		71.24	65.93	74.36	59.16	69.43
Magnesium		%		15.97	13.71	14.54	11.55	18.53
Potassium		%		2.61	2.65	3.06	2.06	2.34
Sodium		%		1.00	0.51	0.43	0.43	0.51
Other Bases		%		4.70	5.20	4.60	5.80	4.70
Hydrogen		%		4.50	12.00	3.00	21.00	4.50
EXTRACTABLE MINORS								
Boron* (ppm)				0.61	0.58	0.78	0.67	0.40
Iron* (ppm)				128	161	160	175	96
Manganese* (ppm)				125	122	117	76	66
Copper* (ppm)				3.20	3.60	3.31	3.41	2.30
Zinc* (ppm)				5.04	5.39	5.96	3.90	4.27
Aluminum* (ppm)				642	631	510	736	570
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-9

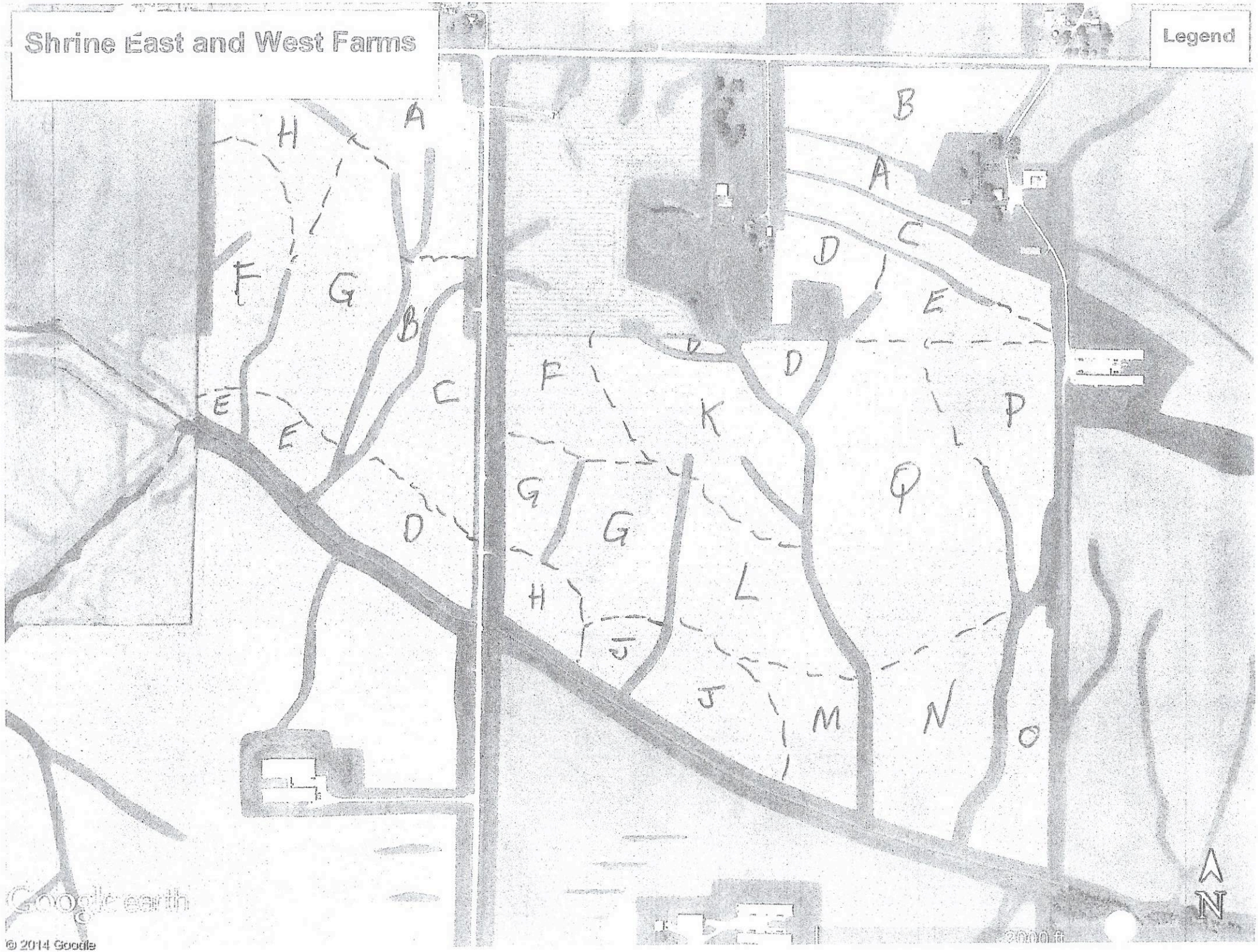
SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location REECE				REECE		REECE		
Sample Identification				L		M		
Lab Number				0528-1		0529-1		
Total Exchange Capacity (ME/100 g)				19.23		15.75		
pH (H_2O 1:1)				6.6		7.2		
Organic Matter (humus) %				3.43		2.84		
Estimated Nitrogen Release			lb/A	84		77		
ANIONS	SOLUBLE SULFUR*		ppm	9		8		
	PHOSPHORUS MEHLICH III	lb/A	P as P_2O_5	183		220		
			ppm of P	40		48		
	PHOSPHORUS BRAY II	lb/A	P as P_2O_5	169		174		
			ppm of P	37		38		
	PHOSPHORUS OLSEN	lb/A	P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	5328		3984		
			ppm	2664		1992		
	MAGNESIUM*		lb/A	754		1082		
			ppm	377		541		
	POTASSIUM*		lb/A	460		406		
			ppm	230		203		
	SODIUM*		lb/A	48		48		
			ppm	24		24		
BASE SATURATION PERCENT								
Calcium			%	69.27		63.24		
Magnesium			%	16.34		28.62		
Potassium			%	3.07		3.30		
Sodium			%	0.54		0.66		
Other Bases			%	4.80		4.20		
Hydrogen			%	6.00		0.00		
EXTRACTABLE MINORS								
Boron* (ppm)				0.56		0.76		
Iron* (ppm)				123		124		
Manganese* (ppm)				121		197		
Copper* (ppm)				2.86		3.69		
Zinc* (ppm)				4.97		12.46		
Aluminum* (ppm)				616		543		
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable


Shrine East and West Farms
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2000 ft
Google earth
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lb/A

BROOKSIDE LABORATORIES, INC.

70632-6

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 06/30/2014

Sample Location SHRINE				W	W	W	W	W
Sample Identification				A	B	C	E	F
Lab Number				0615-1	0616-1	0617-1	0618-1	0619-1
Total Exchange Capacity (ME/100 g)				19.86	17.45	20.58	20.96	25.28
pH (H_2O 1:1)				6.5	6.0	6.1	6.0	5.7
Organic Matter (humus) %				3.19	3.43	3.51	3.45	3.68
Estimated Nitrogen Release			lb/A	82	84	85	84	87
ANIONS	SOLUBLE SULFUR*		ppm	8	7	7	8	8
ANIONS / PHOSPHORUS	MEHLICH III	lb/A	P as P_2O_5	495	256	234	417	156
			ppm of P	108	56	51	91	34
	BRAY II	lb/A	P as P_2O_5	692	316	247	458	147
			ppm of P	151	69	54	100	32
	OLSEN	lb/A	P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	5012	4316	5070	5154	5684
			ppm	2506	2158	2535	2577	2842
	MAGNESIUM*		lb/A	954	606	826	694	704
			ppm	477	303	413	347	352
	POTASSIUM*		lb/A	632	390	416	634	362
			ppm	316	195	208	317	181
	SODIUM*		lb/A	36	36	36	44	40
			ppm	18	18	18	22	20
BASE SATURATION PERCENT								
	Calcium		%	63.09	61.83	61.59	61.47	56.21
	Magnesium		%	20.02	14.47	16.72	13.80	11.60
	Potassium		%	4.08	2.87	2.59	3.88	1.84
	Sodium		%	0.39	0.45	0.38	0.46	0.34
	Other Bases		%	4.90	5.40	5.20	5.40	6.00
	Hydrogen		%	7.50	15.00	13.50	15.00	24.00
EXTRACTABLE MINORS								
	Boron* (ppm)			0.85	0.70	0.76	0.79	0.76
	Iron* (ppm)			176	142	115	194	118
	Manganese* (ppm)			92	104	122	115	96
	Copper* (ppm)			3.17	2.85	2.71	4.14	2.77
	Zinc* (ppm)			9.29	5.64	6.22	7.95	4.50
	Aluminum* (ppm)			464	440	510	451	589
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-6

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 06/30/2014

Sample Location SHRINE			W		W		
Sample Identification			G		H		
Lab Number			0620-1		0621-1		
Total Exchange Capacity (ME/100 g)			20.28		23.62		
pH (H_2O 1:1)			6.0		5.7		
Organic Matter (humus) %			3.27		2.88		
Estimated Nitrogen Release		lb/A	83		78		
ANIONS	SOLUBLE SULFUR*	ppm	7		7		
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	169		174		
		ppm of P	37		38		
	BRAY II	lb/A P as P_2O_5	174		160		
		ppm of P	38		35		
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	5210		5144		
		ppm	2605		2572		
	MAGNESIUM*	lb/A	638		766		
		ppm	319		383		
	POTASSIUM*	lb/A	296		320		
		ppm	148		160		
	SODIUM*	lb/A	36		32		
		ppm	18		16		
BASE SATURATION PERCENT							
Calcium		%	64.23		54.45		
Magnesium		%	13.11		13.51		
Potassium		%	1.87		1.74		
Sodium		%	0.39		0.29		
Other Bases		%	5.40		6.00		
Hydrogen		%	15.00		24.00		
EXTRACTABLE MINORS							
Boron* (ppm)			0.63		0.55		
Iron* (ppm)			114		114		
Manganese* (ppm)			100		103		
Copper* (ppm)			2.82		3.21		
Zinc* (ppm)			5.83		5.19		
Aluminum* (ppm)			568		609		
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-11

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location SHRINE				E	E	E	E	E
Sample Identification				A	B	C	D	E
Lab Number				0425-1	0426-1	0427-1	0428-1	0429-1
Total Exchange Capacity (ME/100 g)				21.68	19.44	18.84	19.36	21.81
pH (H_2O 1:1)				6.9	7.1	6.5	6.0	5.8
Organic Matter (humus) %				3.05	2.84	4.02	2.56	3.85
Estimated Nitrogen Release			lb/A	80	77	90	71	88
ANIONS	SOLUBLE SULFUR*		ppm	8	7	9	8	10
	PHOSPHORUS MEHLICH III	lb/A	P as P_2O_5	302	426	256	179	321
			ppm of P	66	93	56	39	70
	PHOSPHORUS BRAY II	lb/A	P as P_2O_5	371	536	229	165	247
			ppm of P	81	117	50	36	54
	PHOSPHORUS OLSEN	lb/A	P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	6374	5382	5372	4596	5052
			ppm	3187	2691	2686	2298	2526
	MAGNESIUM*		lb/A	936	1094	580	798	586
			ppm	468	547	290	399	293
	POTASSIUM*		lb/A	360	414	468	398	630
			ppm	180	207	234	199	315
	SODIUM*		lb/A	38	28	28	40	40
			ppm	19	14	14	20	20
BASE SATURATION PERCENT								
Calcium		%		73.50	69.21	71.28	59.35	57.91
Magnesium		%		17.99	23.45	12.83	17.17	11.20
Potassium		%		2.13	2.73	3.18	2.64	3.70
Sodium		%		0.38	0.31	0.32	0.45	0.40
Other Bases		%		4.50	4.30	4.90	5.40	5.80
Hydrogen		%		1.50	0.00	7.50	15.00	21.00
EXTRACTABLE MINORS								
Boron* (ppm)				0.74	0.71	0.82	0.45	0.43
Iron* (ppm)				151	152	140	141	180
Manganese* (ppm)				167	168	109	120	81
Copper* (ppm)				5.42	6.23	4.10	3.13	4.76
Zinc* (ppm)				7.90	8.13	6.37	4.60	8.34
Aluminum* (ppm)				607	574	519	647	579
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-11

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location SHRINE				E	E	E	E	E
Sample Identification				F	G	H	J	K
Lab Number				0430-1	0431-1	0432-1	0433-1	0434-1
Total Exchange Capacity (ME/100 g)				21.43	19.93	18.66	19.87	19.89
pH (H_2O 1:1)				6.3	6.8	6.9	6.7	6.5
Organic Matter (humus) %				3.45	3.82	3.57	3.81	3.49
Estimated Nitrogen Release			lb/A	84	88	86	88	85
ANIONS	SOLUBLE SULFUR*		ppm	9	9	8	7	8
	PHOSPHORUS MEHLICH III	lb/A	P as P_2O_5	284	238	371	417	275
			ppm of P	62	52	81	91	60
	PHOSPHORUS BRAY II	lb/A	P as P_2O_5	238	215	325	408	247
			ppm of P	52	47	71	89	54
	PHOSPHORUS OLSEN	lb/A	P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	5538	5530	5426	5486	5552
			ppm	2769	2765	2713	2743	2776
	MAGNESIUM*		lb/A	830	944	792	886	658
			ppm	415	472	396	443	329
	POTASSIUM*		lb/A	526	438	462	438	558
			ppm	263	219	231	219	279
	SODIUM*		lb/A	50	46	38	34	40
			ppm	25	23	19	17	20
BASE SATURATION PERCENT								
Calcium		%		64.61	69.37	72.70	69.02	69.78
Magnesium		%		16.14	19.74	17.68	18.58	13.78
Potassium		%		3.15	2.82	3.17	2.83	3.60
Sodium		%		0.51	0.50	0.44	0.37	0.44
Other Bases		%		5.10	4.60	4.50	4.70	4.90
Hydrogen		%		10.50	3.00	1.50	4.50	7.50
EXTRACTABLE MINORS								
Boron* (ppm)				0.61	0.65	0.72	0.83	0.51
Iron* (ppm)				143	124	125	188	131
Manganese* (ppm)				117	99	123	104	138
Copper* (ppm)				4.72	4.52	5.20	4.45	4.17
Zinc* (ppm)				7.14	6.49	9.36	8.46	6.94
Aluminum* (ppm)				673	643	508	463	545
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-11

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location	SHRINE		E		E		E
Sample Identification			L		M		N
Lab Number			0435-1		0436-1		0437-1
Total Exchange Capacity (ME/100 g)			20.69		23.47		21.19
pH (H_2O 1:1)			6.1		6.4		5.8
Organic Matter (humus) %			4.02		3.67		3.53
Estimated Nitrogen Release		lb/A	90		87		85
ANIONS	SOLUBLE SULFUR*	ppm	10		10		10
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	362		376		289
		ppm of P	79		82		63
	BRAY II	lb/A P as P_2O_5	293		293		206
		ppm of P	64		64		45
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	5124		6490		4948
		ppm	2562		3245		2474
	MAGNESIUM*	lb/A	764		778		608
		ppm	382		389		304
	POTASSIUM*	lb/A	580		490		402
		ppm	290		245		201
	SODIUM*	lb/A	40		40		44
		ppm	20		20		22
BASE SATURATION PERCENT							
Calcium		%	61.91		69.13		58.38
Magnesium		%	15.39		13.81		11.96
Potassium		%	3.59		2.68		2.43
Sodium		%	0.42		0.37		0.45
Other Bases		%	5.20		5.00		5.80
Hydrogen		%	13.50		9.00		21.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.54		0.74		0.46
Iron* (ppm)			155		152		150
Manganese* (ppm)			100		110		91
Copper* (ppm)			5.30		4.55		3.65
Zinc* (ppm)			7.51		8.17		5.85
Aluminum* (ppm)			660		620		657
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-11

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location SHRINE		E		E		E
Sample Identification		O		P		Q
Lab Number		0438-1		0439-1		0440-1
Total Exchange Capacity (ME/100 g)		22.94		20.86		19.69
pH (H_2O 1:1)		6.2		6.0		5.9
Organic Matter (humus) %		3.95		3.13		3.33
Estimated Nitrogen Release	lb/A	90		81		83
ANIONS — SOLUBLE SULFUR*	ppm	9		10		9
ANIONS — PHOSPHORUS — MEHLICH III	lb/A P as P_2O_5	435		247		211
	ppm of P	95		54		46
ANIONS — PHOSPHORUS — BRAY II	lb/A P as P_2O_5	353		188		160
	ppm of P	77		41		35
ANIONS — PHOSPHORUS — OLSEN	lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS — CALCIUM*	lb/A	6194		5044		4616
	ppm	3097		2522		2308
EXCHANGEABLE CATIONS — MAGNESIUM*	lb/A	672		802		648
	ppm	336		401		324
EXCHANGEABLE CATIONS — POTASSIUM*	lb/A	502		450		566
	ppm	251		225		283
EXCHANGEABLE CATIONS — SODIUM*	lb/A	32		36		34
	ppm	16		18		17
BASE SATURATION PERCENT						
Calcium	%	67.50		60.45		58.61
Magnesium	%	12.21		16.02		13.71
Potassium	%	2.81		2.77		3.69
Sodium	%	0.30		0.38		0.38
Other Bases	%	5.20		5.40		5.60
Hydrogen	%	12.00		15.00		18.00
EXTRACTABLE MINORS						
Boron* (ppm)		0.78		0.46		0.46
Iron* (ppm)		148		157		133
Manganese* (ppm)		103		101		113
Copper* (ppm)		4.50		4.73		4.16
Zinc* (ppm)		9.42		6.66		6.04
Aluminum* (ppm)		579		582		659
OTHER TESTS — Soluble Salts (mmhos/cm)						
OTHER TESTS — Chlorides (ppm)						

* Mehlich III Extractable


Untitled Map
STENDER EAST FARM
A
C
B
E
EE
H
D
F
G
N
1000 ft
Google Earth

lb/A

BROOKSIDE LABORATORIES, INC.

70632-11

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location STENDER-EAST				STEN-E		STEN-E		STEN-E
Sample Identification				A		B		C
Lab Number				0457-1		0458-1		0459-1
Total Exchange Capacity (ME/100 g)				18.45		22.62		24.64
pH (H_2O 1:1)				7.3		6.2		6.8
Organic Matter (humus) %				4.09		3.88		4.24
Estimated Nitrogen Release			lb/A	91		89		92
ANIONS	SOLUBLE SULFUR*		ppm	11		11		12
	PHOSPHORUS MEHLICH III		lb/A P as P_2O_5	398		499		600
			ppm of P	87		109		131
	PHOSPHORUS BRAY II		lb/A P as P_2O_5	279		362		426
			ppm of P	61		79		93
	PHOSPHORUS OLSEN		lb/A P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	5010		5656		6930
			ppm	2505		2828		3465
	MAGNESIUM*		lb/A	984		874		1030
			ppm	492		437		515
	POTASSIUM*		lb/A	762		652		804
			ppm	381		326		402
	SODIUM*		lb/A	44		52		54
			ppm	22		26		27
BASE SATURATION PERCENT								
	Calcium		%	67.89		62.51		70.31
	Magnesium		%	22.22		16.10		17.42
	Potassium		%	5.29		3.70		4.18
	Sodium		%	0.52		0.50		0.48
	Other Bases		%	4.10		5.20		4.60
	Hydrogen		%	0.00		12.00		3.00
EXTRACTABLE MINORS								
	Boron* (ppm)			0.82		0.79		0.73
	Iron* (ppm)			125		156		171
	Manganese* (ppm)			119		88		109
	Copper* (ppm)			3.82		5.50		5.62
	Zinc* (ppm)			8.85		8.91		11.31
	Aluminum* (ppm)			540		650		607
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-11

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location STENDER-EAST				STEN-E		STEN-E		STEN-E
Sample Identification				D		E		EE
Lab Number				0460-1		0461-1		0462-1
Total Exchange Capacity (ME/100 g)				23.95		23.37		19.47
pH (H_2O 1:1)				6.6		6.7		7.3
Organic Matter (humus) %				3.36		4.28		3.56
Estimated Nitrogen Release			lb/A	84		93		86
ANIONS	SOLUBLE SULFUR*		ppm	12		10		10
	PHOSPHORUS MEHLICH III	lb/A	P as P_2O_5	426		504		344
			ppm of P	93		110		75
	PHOSPHORUS BRAY II	lb/A	P as P_2O_5	330		412		293
			ppm of P	72		90		64
	PHOSPHORUS OLSEN	lb/A	P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	6330		6232		5042
			ppm	3165		3116		2521
	MAGNESIUM*		lb/A	1116		1122		1274
			ppm	558		561		637
	POTASSIUM*		lb/A	600		646		474
			ppm	300		323		237
	SODIUM*		lb/A	56		62		68
			ppm	28		31		34
BASE SATURATION PERCENT								
Calcium			%	66.08		66.67		64.74
Magnesium			%	19.42		20.00		27.26
Potassium			%	3.21		3.54		3.12
Sodium			%	0.51		0.58		0.76
Other Bases			%	4.80		4.70		4.10
Hydrogen			%	6.00		4.50		0.00
EXTRACTABLE MINORS								
Boron* (ppm)				0.85		0.60		0.76
Iron* (ppm)				156		190		132
Manganese* (ppm)				184		119		131
Copper* (ppm)				5.56		6.03		4.95
Zinc* (ppm)				8.41		10.73		9.40
Aluminum* (ppm)				673		591		535
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-11

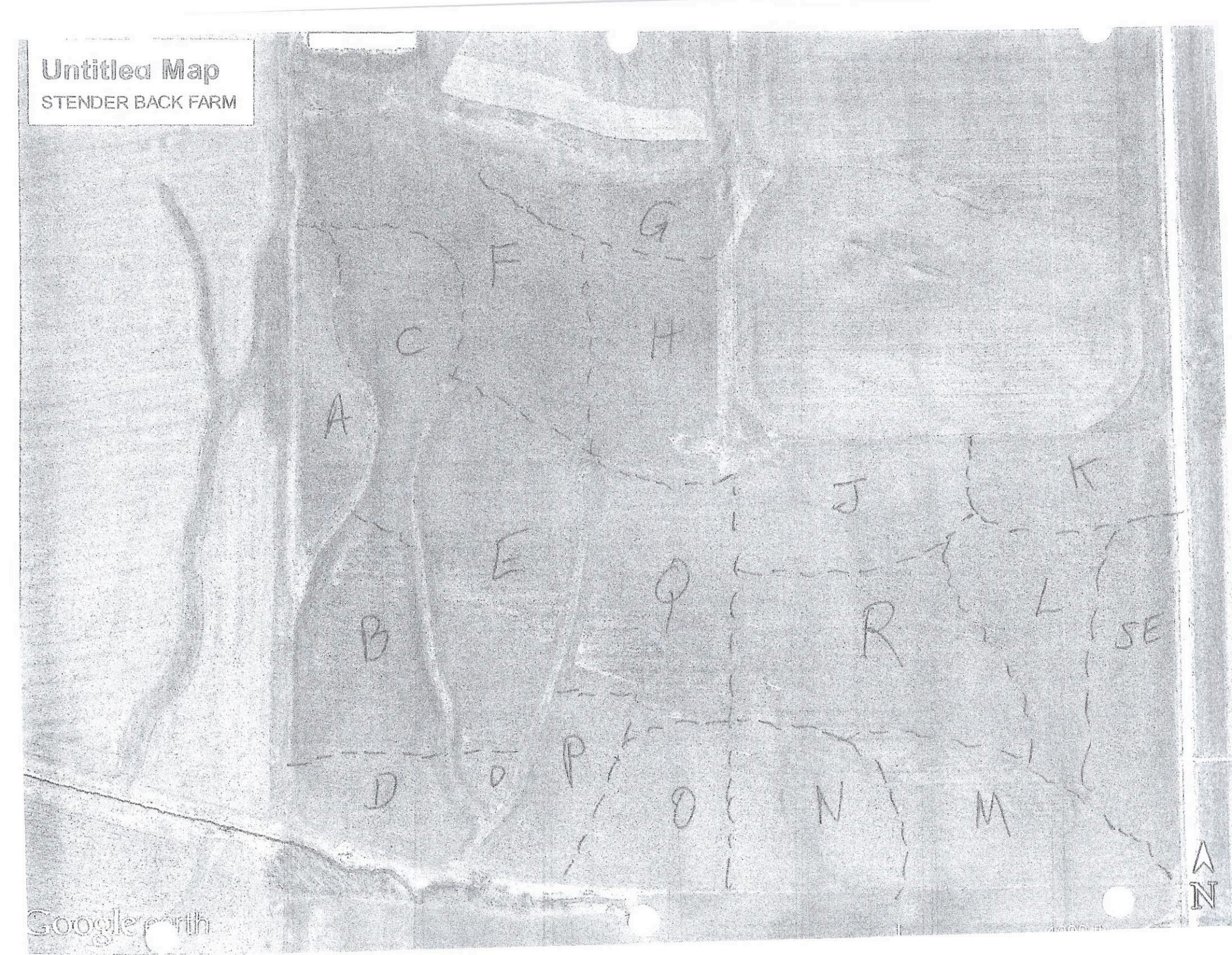
SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location STENDER-EAST				STEN-E		STEN-E		STEN-E
Sample Identification				F		G		H
Lab Number				0463-1		0464-1		0465-1
Total Exchange Capacity (ME/100 g)				23.06		21.83		22.88
pH (H_2O 1:1)				6.6		6.7		6.3
Organic Matter (humus) %				3.92		3.88		4.69
Estimated Nitrogen Release			lb/A	89		89		97
ANIONS	SOLUBLE SULFUR*		ppm	11		10		11
ANIONS	PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	435		344		586
			ppm of P	95		75		128
		BRAY II	lb/A P as P_2O_5	426		311		408
			ppm of P	93		68		89
		OLSEN	lb/A P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	6460		6160		5970
			ppm	3230		3080		2985
	MAGNESIUM*		lb/A	850		884		800
			ppm	425		442		400
	POTASSIUM*		lb/A	576		482		732
			ppm	288		241		366
	SODIUM*		lb/A	66		54		54
			ppm	33		27		27
BASE SATURATION PERCENT								
Calcium			%	70.03		70.55		65.23
Magnesium			%	15.36		16.87		14.57
Potassium			%	3.20		2.83		4.10
Sodium			%	0.62		0.54		0.51
Other Bases			%	4.80		4.70		5.10
Hydrogen			%	6.00		4.50		10.50
EXTRACTABLE MINORS								
Boron* (ppm)				0.73		0.60		0.61
Iron* (ppm)				141		165		204
Manganese* (ppm)				152		168		95
Copper* (ppm)				5.18		4.87		5.86
Zinc* (ppm)				8.25		7.73		11.66
Aluminum* (ppm)				633		614		639
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable


Untitled Map
STENDER BACK FARM
A
B
C
D
E
F
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H
J
K
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M
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P
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R
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Google earth

lb/A

BROOKSIDE LABORATORIES, INC.

70632-8

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location STENDER-BACK				SB	SB	SB	SB	SB
Sample Identification				A	B	C	D	E
Lab Number				0408-1	0409-1	0410-1	0411-1	0412-1
Total Exchange Capacity (ME/100 g)				21.89	23.59	21.91	21.38	22.95
pH (H_2O 1:1)				6.2	6.5	6.3	6.3	6.5
Organic Matter (humus) %				3.11	3.57	3.42	3.43	3.55
Estimated Nitrogen Release			lb/A	81	86	84	84	86
ANIONS	SOLUBLE SULFUR*		ppm	12	10	12	10	11
ANIONS	PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	412	293	412	284	234
			ppm of P	90	64	90	62	51
		BRAY II	lb/A P as P_2O_5	417	270	417	298	192
			ppm of P	91	59	91	65	42
		OLSEN	lb/A P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	5302	6248	5366	5574	6094
			ppm	2651	3124	2683	2787	3047
	MAGNESIUM*		lb/A	978	1028	1034	840	1022
			ppm	489	514	517	420	511
	POTASSIUM*		lb/A	516	492	496	382	372
			ppm	258	246	248	191	186
	SODIUM*		lb/A	62	60	60	54	62
			ppm	31	30	30	27	31
BASE SATURATION PERCENT								
Calcium %				60.55	66.21	61.23	65.18	66.38
Magnesium %				18.62	18.16	19.66	16.37	18.55
Potassium %				3.02	2.67	2.90	2.29	2.08
Sodium %				0.62	0.55	0.60	0.55	0.59
Other Bases %				5.20	4.90	5.10	5.10	4.90
Hydrogen %				12.00	7.50	10.50	10.50	7.50
EXTRACTABLE MINORS								
Boron* (ppm)				0.64	0.76	0.64	0.60	0.59
Iron* (ppm)				173	157	188	152	141
Manganese* (ppm)				136	159	145	133	113
Copper* (ppm)				5.12	5.49	5.54	5.15	4.95
Zinc* (ppm)				7.77	8.18	8.29	7.10	6.45
Aluminum* (ppm)				660	624	680	626	732
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-8

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location STENDER-BACK				SB	SB	SB	SB	SB
Sample Identification				F	G	H	K	L
Lab Number				0413-1	0414-1	0415-1	0416-1	0417-1
Total Exchange Capacity (ME/100 g)				19.20	23.05	23.67	21.09	20.92
pH (H_2O 1:1)				6.0	6.3	6.0	6.6	5.9
Organic Matter (humus) %				3.62	2.98	3.76	3.56	2.29
Estimated Nitrogen Release			lb/A	86	80	88	86	66
ANIONS	SOLUBLE SULFUR*		ppm	11	11	11	10	11
	PHOSPHORUS MEHLICH III	lb/A	P as P_2O_5	321	444	238	261	224
			ppm of P	70	97	52	57	49
	PHOSPHORUS BRAY II	lb/A	P as P_2O_5	302	403	192	224	206
			ppm of P	66	88	42	49	45
	PHOSPHORUS OLSEN	lb/A	P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	4780	5720	5874	5788	4740
			ppm	2390	2860	2937	2894	2370
	MAGNESIUM*		lb/A	656	1070	832	800	856
			ppm	328	535	416	400	428
	POTASSIUM*		lb/A	362	442	444	706	338
			ppm	181	221	222	353	169
	SODIUM*		lb/A	62	60	56	46	60
			ppm	31	30	28	23	30
BASE SATURATION PERCENT								
Calcium		%		62.24	62.04	62.04	68.61	56.64
Magnesium		%		14.24	19.34	14.65	15.81	17.05
Potassium		%		2.42	2.46	2.40	4.29	2.07
Sodium		%		0.70	0.57	0.51	0.47	0.62
Other Bases		%		5.40	5.10	5.40	4.80	5.60
Hydrogen		%		15.00	10.50	15.00	6.00	18.00
EXTRACTABLE MINORS								
Boron* (ppm)				0.57	0.61	0.57	0.65	0.48
Iron* (ppm)				170	186	166	145	165
Manganese* (ppm)				116	157	124	125	81
Copper* (ppm)				4.76	5.01	4.79	3.40	3.33
Zinc* (ppm)				8.82	8.24	7.18	5.24	3.79
Aluminum* (ppm)				531	700	687	585	743
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-8

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location STENDER-BACK				SB	SB	SB	SB	SB
Sample Identification				M	N	O	P	Q
Lab Number				0418-1	0419-1	0420-1	0421-1	0422-1
Total Exchange Capacity (ME/100 g)				25.99	20.06	21.94	20.89	19.93
pH (H_2O 1:1)				a 7.4	6.0	6.5	6.5	6.2
Organic Matter (humus) %				3.29	3.44	3.37	3.67	3.54
Estimated Nitrogen Release			lb/A	83	84	84	87	85
ANIONS	SOLUBLE SULFUR*		ppm	15	13	11	9	11
ANIONS	PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	284	316	380	215	243
			ppm of P	62	69	83	47	53
		BRAY II	lb/A P as P_2O_5	234	243	376	169	211
			ppm of P	51	53	82	37	46
		OLSEN	lb/A P as P_2O_5					
			ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	7672	4736	5890	5584	5114
			ppm	3836	2368	2945	2792	2557
	MAGNESIUM*		lb/A	1188	768	888	918	734
			ppm	594	384	444	459	367
	POTASSIUM*		lb/A	562	628	538	314	414
			ppm	281	314	269	157	207
	SODIUM*		lb/A	48	56	48	52	58
			ppm	24	28	24	26	29
BASE SATURATION PERCENT								
Calcium %				73.80	59.02	67.11	66.83	64.15
Magnesium %				19.05	15.95	16.86	18.31	15.35
Potassium %				2.77	4.01	3.14	1.93	2.66
Sodium %				0.40	0.61	0.48	0.54	0.63
Other Bases %				4.00	5.40	4.90	4.90	5.20
Hydrogen %				0.00	15.00	7.50	7.50	12.00
EXTRACTABLE MINORS								
Boron* (ppm)				0.84	0.71	0.77	0.55	0.55
Iron* (ppm)				122	165	148	144	123
Manganese* (ppm)				161	122	150	103	146
Copper* (ppm)				3.63	3.09	5.29	4.29	4.38
Zinc* (ppm)				7.58	7.50	8.26	5.88	6.56
Aluminum* (ppm)				414	652	635	650	612
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

a - alkaline soil

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

70632-8

SOIL AUDIT AND INVENTORY REPORT

Name Paustian Farms City Walcott State IA

Independent Consultant Boehle Consulting Date 07/10/2014

Sample Location	STENDER-BACK			SB		SB	
Sample Identification				R		SE	
Lab Number				0423-1		0424-1	
Total Exchange Capacity (ME/100 g)				24.41		18.99	
pH (H_2O 1:1)				6.7		7.1	
Organic Matter (humus) %				4.07		3.57	
Estimated Nitrogen Release		lb/A		91		86	
ANIONS	SOLUBLE SULFUR*	ppm		12		12	
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5		215		476	
		ppm of P		47		104	
	BRAY II	lb/A P as P_2O_5		169		417	
		ppm of P		37		91	
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A		6848		4588	
		ppm		3424		2294	
	MAGNESIUM*	lb/A		984		1354	
		ppm		492		677	
	POTASSIUM*	lb/A		646		728	
		ppm		323		364	
	SODIUM*	lb/A		52		58	
		ppm		26		29	
BASE SATURATION PERCENT							
	Calcium	%		70.14		60.40	
	Magnesium	%		16.80		29.71	
	Potassium	%		3.39		4.91	
	Sodium	%		0.46		0.66	
	Other Bases	%		4.70		4.30	
	Hydrogen	%		4.50		0.00	
EXTRACTABLE MINORS							
	Boron* (ppm)			0.70		0.80	
	Iron* (ppm)			131		115	
	Manganese* (ppm)			131		172	
	Copper* (ppm)			3.17		4.23	
	Zinc* (ppm)			4.88		17.16	
	Aluminum* (ppm)			657		546	
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable