IOWA DEPARTMENT OF NATURAL RESOURCES

BENEFICIAL USE DETERMINATION
APPLICATION FORM

Send completed applications with attached information to:

Iowa Department of Natural Resources
Land Quality Bureau
Solid Waste and Contaminated Sites Section
6200 Park Ave Ste 200
Des Moines IA 50321

For questions concerning this application please contact the Department at (515) 201-8272.

SECTION 1. CONTACT INFORMATION [IAC 567-108.5] Provide the name, address and telephone number for the following

Address of the site where the project will be located

Site Owner Name: Ray Pick Phone Number: 515-494-4996

Site Address: 12559 Northeast 72nd St County: Polk

City: Bondurant State: IA Zip Code: 50035

____ ¼ of ____ ¼ of ____ ¼ Section ____ Township ____ N Range ____ ☐ East ☐ West

(you may attach a legal description from your county assessor)

Beneficial Use Determination Applicant

Name: Des Moines Water Works Phone Number: 515-283-8700

Site Address: 2201 George Flagg Pkwy

City: Des Moines State: IA Zip Code: 50321

Individual responsible for operation of the project

Name: Synagro Phone Number: 319-352-1090

Site Address: 435 Williams Court Suite 100

City: Baltimore State: MD Zip Code: 21220

Professional engineer (P.E.) licensed in the state of Iowa and retained for the design of the facility, if any

Name: ____ License #: ____

Site Address: ____ Phone Number: ____

City: ____ State: ____ Zip Code: ____

Agency to be served by the project, if any

Name of Agency: ____

Responsible Official: ____ Phone Number: ____

Site Address: ____

City: ____ State: ____ Zip Code: ____

SECTION 2. FACILITY OPERATIONAL INFORMATION

A description of the solid by-product under review and its proposed use:

Synagro is proposing to use a by-product of the lime softening water treatment process. Des Moines Water Works utilizes lime softening of the Fleur Drive Treatment plant. The Fleur Drive Treatment Plant has the capacity to treat 75 million gallons of water per day. The Fleur Treatment Plant has 3 raw water sources. Raccoon River, Des Moines River and an infiltration gallery adjacent to the Raccoon River. The precipitated water treatment lime is dewatered using filter presses. The resulting water treatment lime sludge is in solid form and can be used for beneficial use. Most of the water treatment lime generated at Fleur Treatment Plant is beneficially used by spreading on farm fields as an agricultural lime licensed by the Iowa Department of Agriculture and Land Stewardship. We propose to use the material as a base layer for a new runnway for the Des Moines Modelaires Club. Petromat will be used as a surface material to cover the lime. The proposed use for the product of the lime created is to be used by the club as a base material for the new runnway. This runnway is located in Bondurant, IA (Polk County) and is owned by Ray Pick.

The chemical and physical characteristics of the solid by-product:

The lime softening by-product is mostly calcium carbonate.
Physically the water treatment lime is a very finely ground aggregate with 99 percent passing through a 200 mesh screen. This fine texture allows the material to pack into a very hard surface similar to a packed clay.
Additionally, the water treatment lime is analyzed regularly for constituents of concern using both the Toxicity Characteristic Leaching Procedure (TCLP) and Specific Precipitate Leaching Procedure (SPLP). The test results demonstrate that the water treatment lime does not leach constituents of concern for the public health or the environment.

A demonstration that there is a known or reasonably probable market for the intended use of the solid by-product:

The abundance of limestone in Iowa makes it a common material used as a base for driveway and for enclosed barns. Limestone is great to be used to develop a hard packed base before covering with surface rock. As a company, Synagro can provide a more economical material at a lower cost to these farm owners and to other local companies.

Mr. Pick plans to utilize the lime by putting it as a base layer for a runnway for the Des Moines Modelaires Club prior to covering the lime with petromat. The club is looking to expand their airfield for the Des Moines Modelairs Club by building a new and larger runnway in order to expand the club and allow the club to host air shows in the future. Mr. Pick intends on using the lime as a base layer for the runnway before finishing the runnway with the petromat. The lime is able to be hard packed which makes it the ideal material for Mr. Pick's project.

A demonstration that the proposed use of the solid by-product will not adversely affect human health and environment:

The use of limestone in construction and landscaping projects is a very common practice throughout Iowa. The water treatment lime is essentially a wet limestone material that when used in the landscape would have no potential to adversely affect on human health or the environment. One of the hazards from using quarry limestone is the release of dust and its potential to impact human health. With the use of water treatment lime the release of dust is mitigated by the water content of the lime. This makes it a potentially a safer product for use in these projects.
Analysis and knowledge of the production of the water treatment lime show that the use of water treatment lime has no greater risk than the use of other limestone or concrete materials for the same purpose.

SECTION 3. PERMIT APPLICATION CHECKLIST

Checking the appropriate boxes below certifies that the documents submitted in conjunction with this application form are complete and in compliance with the applicable chapters of the Iowa Administrative Code. If an application is found by the department to be incomplete, it may be denied and returned to the applicant.

Required Documents

☒ Solid By-product Management Plan [IAC 567 Chapter 108.5(6)]
☒ Site Map
☒ Solid By-product Analytical Results [IAC 567 Chapter 108.5]

SECTION 4. APPLICANT CERTIFICATION

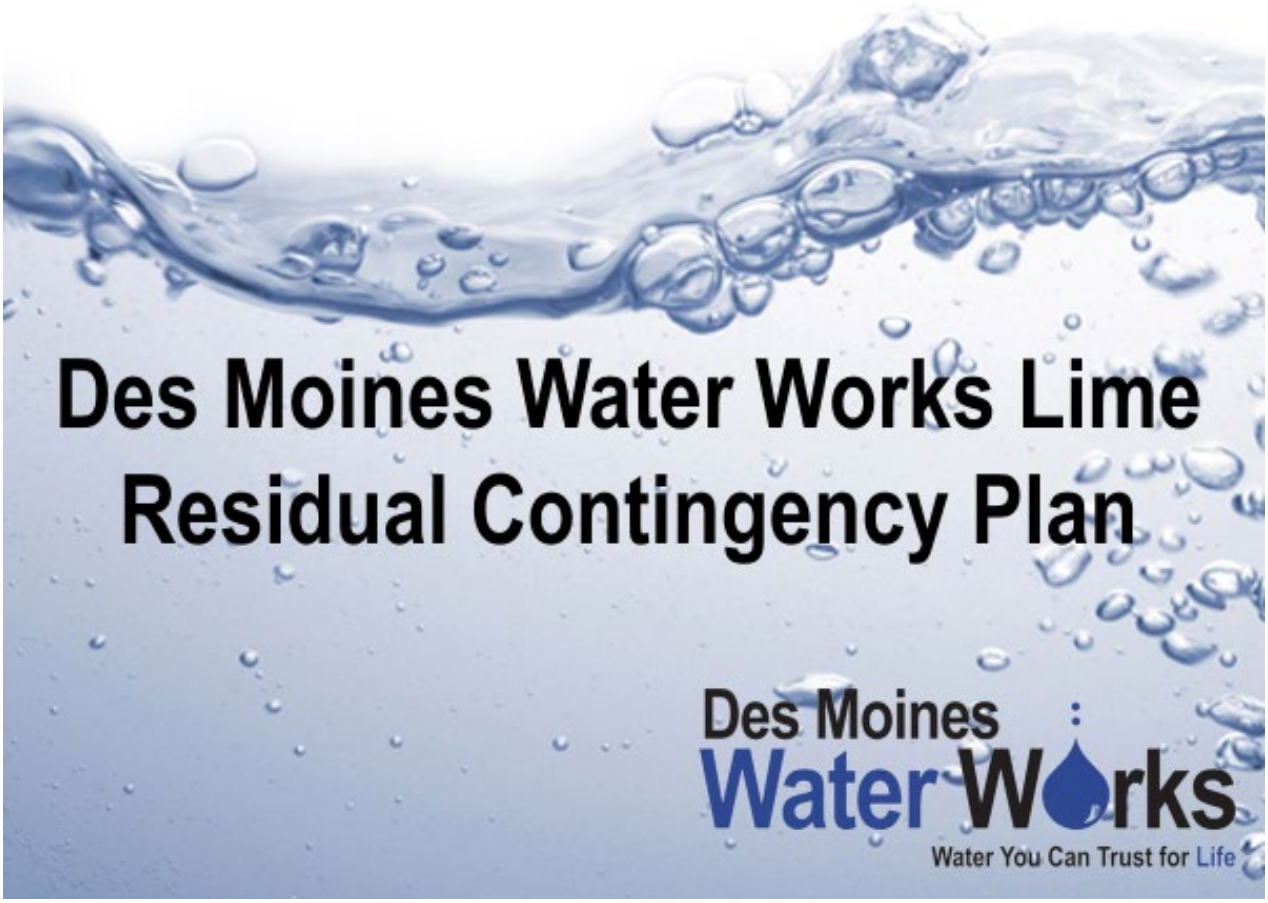
Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I further certify that the construction and operation of the above described project will be in accordance with the plans, specifications, reports and related communications accepted by the Iowa Department of Natural Resources and on file in its office; and in accordance with conditions imposed in the determination issued by the Iowa Department of Natural Resources.

Signature: _____ Date: 5-6-2025

Printed Name: John Steffen Title: Technical Service Specialist



Updated 05192025

Beneficial Reuse Determination #_____

This BUD will contain Fleur lime residuals only.

Date _____

Des Moines Water Works Lime Residual Contingency Plan 2025

Introduction

Iowa Department of Natural Resources (IDNR) requires Des Moines Water Works (DMWW) to develop a contingency plan as part of the Beneficial Use Determination (BUD) process. This is a detailed plan addressing how DMWW will react and how the Lime Residuals will be handled if a chemical exceedance should occur.

Lime Residual Sampling and Analysis

In accordance with the BUD process, the lime residuals will be sampled on a semi-annual basis. These samples will be analyzed utilizing the following methods: Synthetic Precipitation Leaching Procedure (SPLP), Toxicity Characteristics Leaching Procedure (TCLP) for metals, and RCRA Total Metals.

The DMWW Laboratory will oversee the sampling of this material. The testing frequency will be added to the monitoring calendar the Lab maintains to ensure samples are collected at the required frequencies.

Representative samples will be sent to the State Hygienic Lab for analysis and analyzed using the methods listed.

- SPLP – EPA Method 1312/6020, 7470A: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Fluoride, Lead, Mercury, Selenium, and Thallium
- TCLP – EPA 1311/6020, 7470A: Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, and Thallium
- RCRA Total Metals – EPA 6010, 6020, 300.0, and 7471B: Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Fluoride, Lead, Lithium, Manganese, Mercury, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, and Zinc

Once analyses are completed and reports have been released, SHL will send them to DMWW Lab. The lab will archive the results and send a copy to Water Production Department (WP). WP will release the reports to the Responsible Official to be entered into DNR form 542-0652.

Storage

Lime Residuals are stored at the McMullen Treatment Plant in the designated Lime Storage Area north and east of the lagoons. Fleur Dr produces lime to be hauled/stored daily.

Regulatory Exceedance

If the analysis for SPLP or TCLP or RCRA would determine there was an exceedance, material would be put on hold and no more would leave the premise for a BUD location. DMWW and Synagro staff would work with DNR to identify the best alternative use option.

Initial Response

Upon receiving test results that show an exceedance DMWW will begin response actions identified in this Contingency Plan.

Any material in transit to a BUD site at the onset of initial response will be redirected. No other loads will be sent to the BUD site until exceedance has been corrected. When the appropriate alternative method of use has been determined Lime residuals may be shipped to the alternative site.

DNR will receive notice of the exceedance within 10 business days of DMWW receiving the results that trigger the exceedance.

Resampling

Upon first knowledge of the exceedance DMWW will contact the lab and confirm the analysis is being repeated to confirm the exceedance. The lab will collect a new representative sample and request an expedited analysis of the chemical(s) that triggered the exceedance.

Alternative use Sites

Agreements have been made to use the Lime Residuals at the sites listed below. If an exceedance occurs, DMWW and Synagro staff will work with DNR and IDALS to identify the best alternative use option. Lime residuals that exceed BUD limits will not be used for quarry reclamation or ag lime use without written authorization from IDALS and DNR.

1. Landfill
   Metro Park East Landfill – 12181 NE University Ave. Mitchellville, IA. 50169
2. Quarry
   Peru Quarry Inc. – 2587 265th St Peru, IA 50222
3. Ag Lime Usage
   A contractor (Synagro) uses the material for pH adjustment of soil.

Return to Compliance

Upon receipt of results of subsequent testing that demonstrate compliance with the associated constituent, notifications will be sent to IDNR. The notification will include the applicable certified laboratory report and associated DNR Form 542-0652. This notification will also include a narrative description of the circumstances surrounding the exceedance. This will

include a conclusion of why the exceedance occurred, Corrective action to minimize the possibility of the same from happening in the future, and how the material was handled in the interim. Upon review of this information, IDNR will notify DMWW and the Responsible Official of a return to regulatory compliance and the beneficial reuse of the Lime Residuals may resume.

Sample Plan

Des Moines Water Works

Lime Residual Monitoring Plan

Lime Residuals are a by-product of the softening process at the Fleur Drive Treatment Plant. Fleur Dr has a process that settles the solids for a time them pumps the slurry into presses and removes around 50% of the water. This produces a firm cake that will be dropped into trailers and moved for storage/delivery.

At the dewatered stage the lime will be relocated for allocation for beneficial reuse. Some of these options require DNR approval so they must go through the Beneficial Reuse Determination (BUD). To be utilized for BUD uses the residuals need to be analyzed to ensure they will not be hazardous to the environment. Sampling will be conducted on a semi-annual basis.

The Beneficial Use Determinations program was developed for instances in which a solid by-product is a resource and not a solid waste. Solid by-products determined by the department not to be a solid waste through a beneficial use determination may not be subject to all sanitary disposal project (SDP) permitting requirements. Furthermore, the purpose of this program is to encourage the utilization of solid by-products as resources when such utilization improves, or at a minimum does not adversely affect, human health and the environment.

The samples will be analyzed for:

- SPLP – EPA Method 1312/6020, 7470A: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Fluoride, Lead, Mercury, Selenium, and Thallium

- TCLP – EPA 1311/6020, 7470A: Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, and Thallium

- RCRA Total Metals – EPA 6010, 6020, 300.0, and 7471B: Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Fluoride, Lead, Lithium, Manganese, Mercury, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, and Zinc

Our sampling effort will involve collection of representative samples of the Lime Residuals from the Fleur Dr Treatment Plant.

Our objective is to sample different areas of stored Lime Residuals to ensure a representative sample.

Lime Residual Sample Procedure

1000ml glass containers (#17) supplied by State Hygienic Lab will be used for collections.

For Fleur Dr Treatment Plant

1. In the dewatering building find a press that is full
2. When the press dumps obtain a small section of the cake.
3. Place Lime Residuals in a clean plastic bag
4. Repeat this process for the remaining presses
5. Mix residuals in the bag
6. Fill #1 Glass container from the mixed sample in the bag.
7. Discard remaining sample
8. Fill out paperwork and deliver sample to SHL

Personnel Authorized to Collect Samples

Bill Blubaugh, Sample Technician

Jeff Mitchell, Laboratory Supervisor

Iowa Department of Natural Resources

Beneficial Use Determination: Solid By-Product Management Plan

Analytical Testing Report

Beneficial Use ID#: 113064 -BUD- _____ - _____

DNR Certified Lab: State Hygienic Laboratory (SHL)

Lab Report Date: 5-6-2025

By-Product Generator: Des Moines Water Works (DMWW)

City: Bondurant State: IA Zip: 50321

By-Product Name: Water Treatment Lime (Sampled 4-10-25)

Send completed report form(s), laboratory analytics, and supplemental Solid By-Product Management Plan (SBMP) documentation to:

Iowa Department of Natural Resources
Land Quality Bureau
Solid Waste Section
502 E 9th St
Des Moines, IA 50319-0034

For questions concerning this report form please contact the DNR at (515) 201-8272.

ANALYTICAL TESTING RESULTS

Test Methods for Evaluating Solid Waste: Physical/Chemical Methods (SW-846).

Required		Synthetic Precipitation Leaching Procedure (EPA Test Method 1312)			Total Metals		
*	Contaminant	MCL	10 X MCL	Test Result	Regulatory Limit	Test Result	
☒	Antimony	0.006 mg/L	0.06 mg/L	<0.006 mg/L	31 mg/kg	<5.0	mg/kg
☒	Arsenic	0.010 mg/L	0.10 mg/L	<0.01 mg/L	17 mg/kg	1.5	mg/kg
☒	Barium	2.0 mg/L	20.0 mg/L	<2.0 mg/L	15,000 mg/kg	110	mg/kg
☒	Beryllium	0.004 mg/L	0.04 mg/L	<0.004 mg/L	110 mg/kg	<2.0	mg/kg
☒	Boron				16,000 mg/kg	28.0	mg/kg
☒	Cadmium	0.005 mg/L	0.05 mg/L	<0.005 mg/L	70 mg/kg	<2.0	mg/kg
☒	Chromium	0.1 mg/L	1.0 mg/L	<0.1 mg/L	**(Total)	10.0	mg/kg
					(Hexavalent - VI) 210 mg/kg		mg/kg
					(Trivalent - III) 97,000 mg/kg		mg/kg
☒	Cobalt				23 mg/kg	<5.0	mg/kg
☒	Copper	1.3 mg/L	13.0 mg/L	<1.0 mg/L	15,000 mg/kg	7.6	mg/kg
☒	Fluoride	4.0 mg/L	40.0 mg/L	0.1 mg/L	4,700 mg/kg	<1.0	mg/kg
☒	Lead	0.015 mg/L	0.15 mg/L	<0.015 mg/L	400 mg/kg	<1.0	mg/kg
☒	Lithium				160 mg/kg	1.2	mg/kg
☒	Manganese				10,000 mg/kg	400	mg/kg
☒	Mercury	0.002 mg/L	0.02 mg/L	<0.002 mg/L	23 mg/kg	<1.0	mg/kg
☒	Molybdenum				390 mg/kg	<5.0	mg/kg
☒	Nickel				1,500 mg/kg	9.3	mg/kg
☒	Selenium	0.05 mg/L	0.5 mg/L	<0.05 mg/L	390 mg/kg	<1.0	mg/kg
☒	Silver				370 mg/kg	<1.0	mg/kg
☒	Thallium	0.002 mg/L	0.02 mg/L	<0.002 mg/L	0.78 mg/kg	<0.5	mg/kg
☒	Vanadium				350 mg/kg	6.0	mg/kg
☒	Zinc				23,000 mg/kg	12.0	mg/kg

*Required contaminant

**If Total Chromium ≥210 mg/kg, further analysis shall be conducted to determine hexavalent and trivalent results.

Toxicity Characteristic Leaching Procedure (EPA Test Method 1311) - Regulatory Limits

Metals					Volatile Organic Compounds				
*	Contaminant	Regulatory Limit	Test Result		*	Contaminant	Regulatory Limit	Test Result	
☒	Arsenic	5.0 mg/L	<0.5	mg/L	☐	Benzene	0.5 mg/L		mg/L
☒	Barium	100.0 mg/L	<10.0	mg/L	☐	Carbon tetrachloride	0.5 mg/L		mg/L
☒	Cadmium	1.0 mg/L	<0.1	mg/L	☐	Chlorobenzene	100.0 mg/L		mg/L
☒	Chromium	5.0 mg/L	<0.5	mg/L	☐	Chloroform	6.0 mg/L		mg/L
☒	Lead	5.0 mg/L	<0.5	mg/L	☐	1,2-Dichloroethane	0.5 mg/L		mg/L
☒	Mercury	0.2 mg/L	<0.02	mg/L	☐	1,1-Dichloroethylene	0.7 mg/L		mg/L
☒	Selenium	1.0 mg/L	<0.1	mg/L	☐	Methyl ethyl ketone	200.0 mg/L		mg/L
☒	Silver	5.0 mg/L	<0.5	mg/L	☐	Tetrachloroethylene	0.7 mg/L		mg/L
					☐	Trichloroethylene	0.5 mg/L		mg/L
					☐	Vinyl chloride	0.2 mg/L		mg/L
Pesticides					**Semi-Volatile Organic Compounds**				
*	Contaminant	Regulatory Limit	Test Result		*	Contaminant	Regulatory Limit	Test Result	
☐	Chlordane	0.03 mg/L		mg/L	☐	o-Cresol	200.0 mg/L		mg/L
☐	Endrin	0.02 mg/L		mg/L	☐	m-Cresol	200.0 mg/L		mg/L
☐	Heptachlor (and its epoxide)	0.008 mg/L		mg/L	☐	p-Cresol	200.0 mg/L		mg/L
☐	Lindane	0.4 mg/L		mg/L	☐	Cresol	200.0 mg/L		mg/L
☐	Methoxychlor	10.0 mg/L		mg/L	☐	1,4-Dichlorobenzene	7.5 mg/L		mg/L
☐	Toxaphene	0.5 mg/L		mg/L	☐	2,4-Dinitrotoluene	0.13 mg/L		mg/L
					☐	Hexachlorobenzene	0.13 mg/L		mg/L
					☐	Hexachlorobutadiene	0.5 mg/L		mg/L
					☐	Hexachloroethane	3.0 mg/L		mg/L
Herbicides					☐	Nitrobenzene	2.0 mg/L		mg/L
*	Contaminant	Regulatory Limit	Test Result		☐	Pentachlorophenol	100.0 mg/L		mg/L
☐	2,4-D	10.0 mg/L		mg/L	☐	Pyridine	5.0 mg/L		mg/L
☐	2,4,5-TP (Silvex)	1.0 mg/L		mg/L	☐	2,4,5-Trichlorophenol	400.0 mg/L		mg/L
					☐	2,4,6-Trichlorophenol	2.0 mg/L		mg/L

*Required contaminant

BY-PRODUCT GENERATOR CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Signature:  **Date:** 5-6-2025

Printed Name: John Steffen **Title:** Technical Service Specialist

Solid By-Product Management Plan

Beneficial Use of Water Treatment Lime

Des Moines Water Works Fleur Plant

05/19/2025

Solid By-Product Source

Synagro is proposing to use the water treatment by-product lime from the Des Moines Water Works Fleur Drive Treatment Plant for this beneficial use project.

The Fleur Drive Treatment Plant treats up to 75 million gallons of water per day from either the Racoon River, Des Moines River or an infiltration gallery adjacent to the Raccoon River. Since the water is removed directly from the river the first stage is pretreatment to remove organic matter. The water is then lime softened. The precipitated water treatment lime is dewatered using pressure filtration. The resulting water treatment lime in solid form can then be used for beneficial use.

By-Product Testing

The Fleur lime residuals has been tested for many years. The lime has been tested using the Toxicity Characteristic Leaching Procedure (TCLP – EPA Method 1311), Synthetic Precipitation Leaching Procedure (SPLP – EPA method 1312), and Resource Conservation and Recovery Act (RCRA) Total Metals (EPA Methods 6010, 6020, 7470, 7471) for the elements of concern. The lime is tested for the elements of concern listed in the Beneficial Use Determination Solid By-Product Management Plan Analytical testing Report (DNR Form 542-0652). This testing will be done every 6 months.

Storage Procedures

The water treatment lime is mostly stored on-site at the Des Moines Water Works L.D. McMullen water treatment facility. The lime from Fleur Drive WTP is stored at the L.D. McMullen plant when field conditions do not allow direct delivery.

Lime used for beneficial use is generally not stored in large quantities and is used for its beneficial use shortly after delivery to the site. Beneficial use sites vary in size using from 20 to 2000 tons of lime. The largest stockpiles for up to 2,000 tons would be roughly 60 feet by 100 feet stacked to a 10 foot height.

Run-on and run-off controls will be integrated with the project that is beneficially using the lime. Many of the projects are using lime for enhancing a livestock feeding yard. Livestock feeding yards have protections in place to prevent storm water run-on and run-off of rain and manure from the yard. The water treatment lime is being beneficially used to improve the feedlot and its ability to protect the environment.

The water treatment lime is often described as inert material because of its very low water solubility. Uncontrolled dispersion of the water treatment lime would not be possible.

Collection Location	Collector and Phone	Client Reference	Accession #
fleur dr lime DES MOINES,	mitchell jeff 515/283-8787	lime	2614738 CORRECTED REPORT 1
	Collected	**Received**	**Project**
	2025-04-10 13:45	2025-04-10 14:38	

Report To

JEFF MITCHELL
DES MOINES WATER WORKS

2201 GEORGE FLAGG PKWY
DES MOINES, IA 50321-1190

Sample Description: sludge
Sample Type: Solid
Sample Source:
Sample Note(s): 1

RESULTS OF ANALYSIS - FINAL REPORT

TEST	RESULT (mg/kg [recd wt])	QUANT LIMIT	MCL	ANALYSIS NOTE(S)
Anions, EPA 300.0				*4*
Fluoride	**<1.0**	**1**		

TEST	RESULT (mg/L)	QUANT LIMIT	MCL	ANALYSIS NOTE(S)
Fluoride, EPA 300.0			*CORRECTED REPORT 1*	*2, 4*
Fluoride	**0.09**	**0.05**	**4.0**	
Fluoride, EPA 300.0				*3, 4*
Fluoride	**0.1**	**0.05**	**4.0**	

TEST	RESULT (mg/L)	QUANT LIMIT	ANALYSIS NOTE(S)
Mercury, EPA 7470A (SPLP)			
Mercury	**<0.002**	**0.002**	

TEST	RESULT (mg/L)	QUANT LIMIT	REGULATORY LEVEL	ANALYSIS NOTE(S)
Mercury, EPA 7470A (TCLP)				
Mercury	**<0.02**	**0.02**	**0.2**	

TEST	RESULT (mg/kg [dry wt])	QUANT LIMIT	ANALYSIS NOTE(S)
Mercury, EPA 7471B			
Mercury	**<1.0**	**1**	
Metals, EPA 6020			
Arsenic	**1.5**	**1**	
Barium	**110**	**5**	
Beryllium	**<2.0**	**2**	
Cadmium	**<2.0**	**2**	
Chromium	**10**	**2**	
Cobalt	**<5.0**	**5**	
Copper	**7.6**	**5**	
Lead	**<1.0**	**1**	
Manganese	**400**	**2**	
Molybdenum	**<5.0**	**5**	
Nickel	**9.3**	**5**	
Selenium	**<1.0**	**1**	
Thallium	**<0.5**	**0.5**	
Zinc	**12**	**2**	
Metals, EPA 6020			
Antimony	**<5.0**	**5.0**	
Silver	**<1.0**	**1.0**	

Collection Location	Collector	Client Reference	Accession #	
fleur dr lime	mitchell jeff	lime	2614738	CORRECTED REPORT 1

TEST	RESULT (mg/kg [dry wt])	QUANT LIMIT	ANALYSIS NOTE(S)
Vanadium	**6.0**	**5.0**	
Metals, EPA 6010 D			
Boron	**28**	**5.0**	
Lithium	**1.2**	**1.0**	

TEST	RESULT (mg/L)	QUANT LIMIT	REGULATORY LEVEL	ANALYSIS NOTE(S)
Metals, EPA 6020 (TCLP)				
Arsenic	**<0.5**	**0.5**	**5**	
Barium	**<10**	**10**	**100**	
Cadmium	**<0.1**	**0.1**	**1**	
Chromium	**<0.5**	**0.5**	**5**	
Lead	**<0.5**	**0.5**	**5**	
Selenium	**<0.1**	**0.1**	**1**	
Silver	**<0.5**	**0.5**	**5**	

TEST	RESULT (mg/L)	QUANT LIMIT	ANALYSIS NOTE(S)
Metals, EPA 6020 (SPLP)			
Antimony	**<0.006**	**0.006**	
Arsenic	**<0.01**	**0.01**	
Barium	**<2.0**	**2**	
Beryllium	**<0.004**	**0.004**	
Cadmium	**<0.005**	**0.005**	
Chromium	**<0.1**	**0.1**	
Copper	**<1.0**	**1**	
Lead	**<0.015**	**0.015**	
Selenium	**<0.05**	**0.05**	
Thallium	**<0.002**	**0.002**	

TEST	RESULT	ANALYSIS NOTE(S)
Leaching for TCLP, EPA 1311		
Leachate pH	**7.4**	

SAMPLE AND ANALYSIS NOTES

1. Unless otherwise noted, the sample met container and preservation requirements for the analysis requested. Please review carefully your sample results for additional analyte comments or method exceptions.

2. EPA 300.0 extraction

   Adding Fluoride EPA 300.0 mg/kg result.

3. SPLP Extraction

4. The MCL (maximum contaminant level) is only applicable to compliance monitoring samples under the Safe Drinking Water Act (SDWA).

ANALYSIS INFORMATION

TEST	ANALYZED	SITE	RELEASED	ANALYSIS PREP
1. Anions, EPA 300.0	2025-04-28 14:11 MGB	3201	2025-05-06 08:37 JAE	
2. Fluoride, EPA 300.0	2025-04-28 14:11 MGB	3201	2025-05-05 12:28 MGB	
3. Fluoride, EPA 300.0	2025-04-28 16:30 MGB	3201	2025-04-29 11:51 JAE	
4. Mercury, EPA 7470A (SPLP)	2025-04-25 12:48 SGB	3201	2025-04-28 13:57 BRW	
5. Mercury, EPA 7470A (TCLP)	2025-04-25 12:48 SGB	3201	2025-04-28 13:57 BRW	

Collection Location	Collector	Client Reference	Accession #	
fleur dr lime	mitchell jeff	lime	2614738	CORRECTED REPORT 1

TEST	ANALYZED	SITE	RELEASED	ANALYSIS PREP
6. Mercury, EPA 7471B	2025-05-01 13:35 SGB, SGW	3201	2025-05-05 08:56 BRW	
7. Metals, EPA 6020	2025-04-24 15:45 SGB	3201	2025-04-25 16:24 BRW	
8. Metals, EPA 6020	2025-04-25 11:11 SGB	3201	2025-04-28 13:17 BRW	
9. Metals, EPA 6010 D	2025-04-24 13:38 MRC	3201	2025-04-28 13:00 BRW	
10. Metals, EPA 6020 (TCLP)	2025-05-01 15:17 SGB	3201	2025-05-05 09:06 BRW	
11. Synthetic Precipitation Leaching Procedure, EPA 1312	2025-04-21 13:45 KMJ	3201	2025-04-23 12:21 JAE	
12. Metals, EPA 6020 (SPLP)	2025-05-01 15:17 SGB	3201	2025-05-05 09:05 BRW	
13. Leaching for TCLP, EPA 1311	2025-04-21 13:45 KMJ	3201	2025-04-23 12:21 JAE	

DESCRIPTION OF UNITS

mg/kg [recd wt] = Milligrams per Kilogram as Received
mg/L = Milligrams per Liter
mg/kg [dry wt] = Milligrams per Kilogram by Dry Weight

SITE(S) PERFORMING TESTING

3201 STATE HYGIENIC LABORATORY ANKENY, IOWA LABORATORIES COMPLEX, 2220 S ANKENY BLVD, ANKENY, IA 50023; Phone 515/725-1600; Fax 515/725-1642; Michael D. Schueller, M.S., Associate Director; Michael A. Pentella, Ph.D., D(ABMM), Director; IOWA ENVIRONMENTAL LAB ID #397; CLIA ID Number 16D0709302

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Polk County, Iowa

Ray Pick

June 5, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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Contents

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Water Features

Water Features include ponding frequency, flooding frequency, and depth to water table.

Flooding Frequency Class (Ray Pick)

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent.

"None" means that flooding is not probable. The chance of flooding is nearly 0 percent in any year. Flooding occurs less than once in 500 years.

"Very rare" means that flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year.

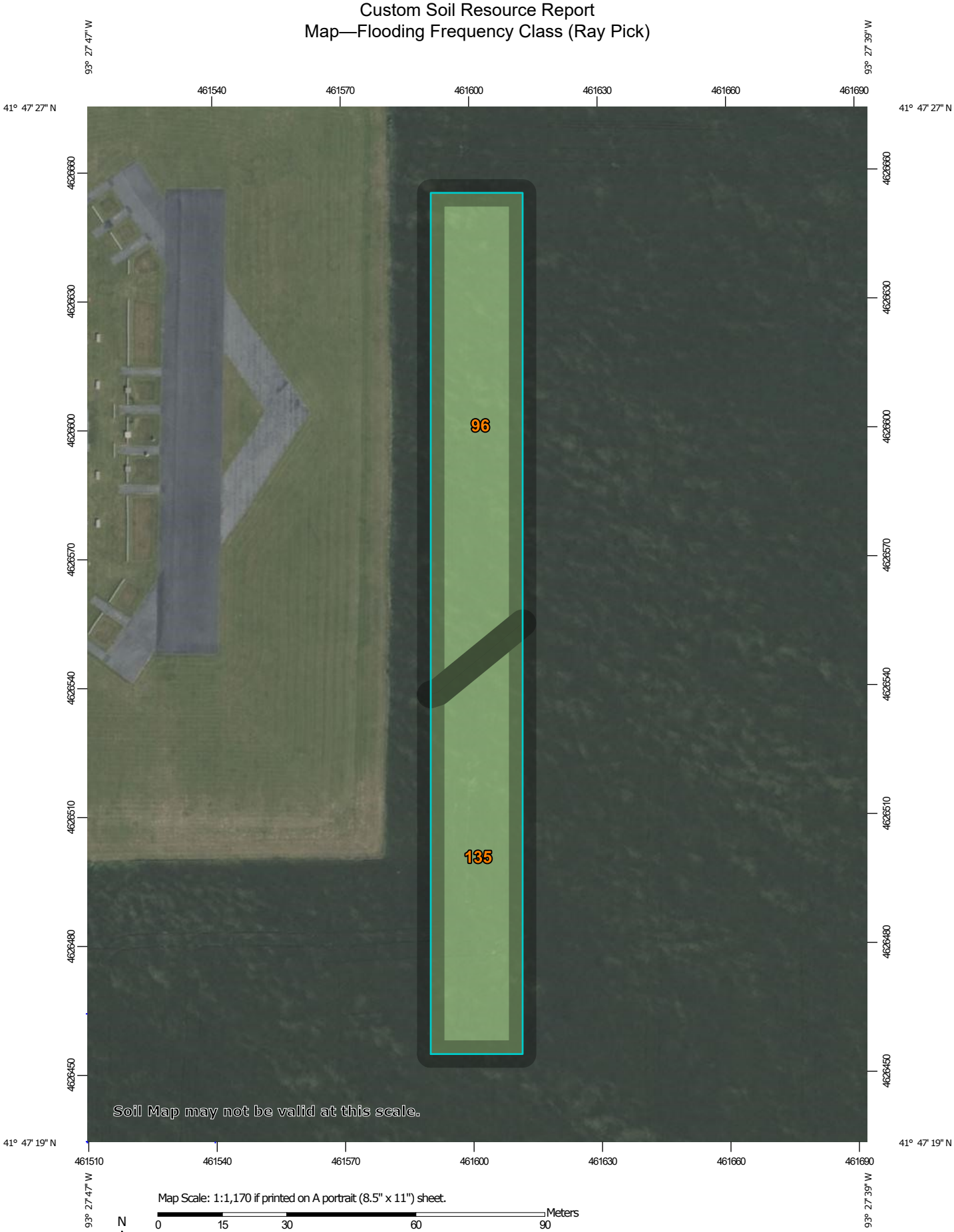
"Rare" means that flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year.

"Occasional" means that flooding occurs infrequently under normal weather conditions. The chance of flooding is 5 to 50 percent in any year.

"Frequent" means that flooding is likely to occur often under normal weather conditions. The chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year.

"Very frequent" means that flooding is likely to occur very often under normal weather conditions. The chance of flooding is more than 50 percent in all months of any year.

Custom Soil Resource Report
Map—Flooding Frequency Class (Ray Pick)



Map Scale: 1:1,170 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- None
- Very Rare
- Rare
- Occasional
- Common
- Frequent
- Very Frequent
- Not rated or not available

Soil Rating Lines
- None
- Very Rare
- Rare
- Occasional
- Common
- Frequent
- Very Frequent
- Not rated or not available

Soil Rating Points
- None
- Very Rare
- Rare
- Occasional
- Common
- Frequent
- Very Frequent
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Polk County, Iowa
Survey Area Data: Version 27, Aug 29, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 17, 2023—Aug 31, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Flooding Frequency Class (Ray Pick)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
96	Turlin loam, 0 to 2 percent slopes, occasionally flooded	Occasional	0.6	54.3%
135	Coland clay loam, 0 to 2 percent slopes, occasionally flooded	Occasional	0.5	45.7%
Totals for Area of Interest			**1.1**	**100.0%**

Rating Options—Flooding Frequency Class (Ray Pick)

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Less Frequent

Beginning Month: January

Ending Month: December


12559 Northeast 72nd St
Bondurant, IA 50035
96
135

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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Custom Soil Resource Report for Polk County, Iowa

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Water Features

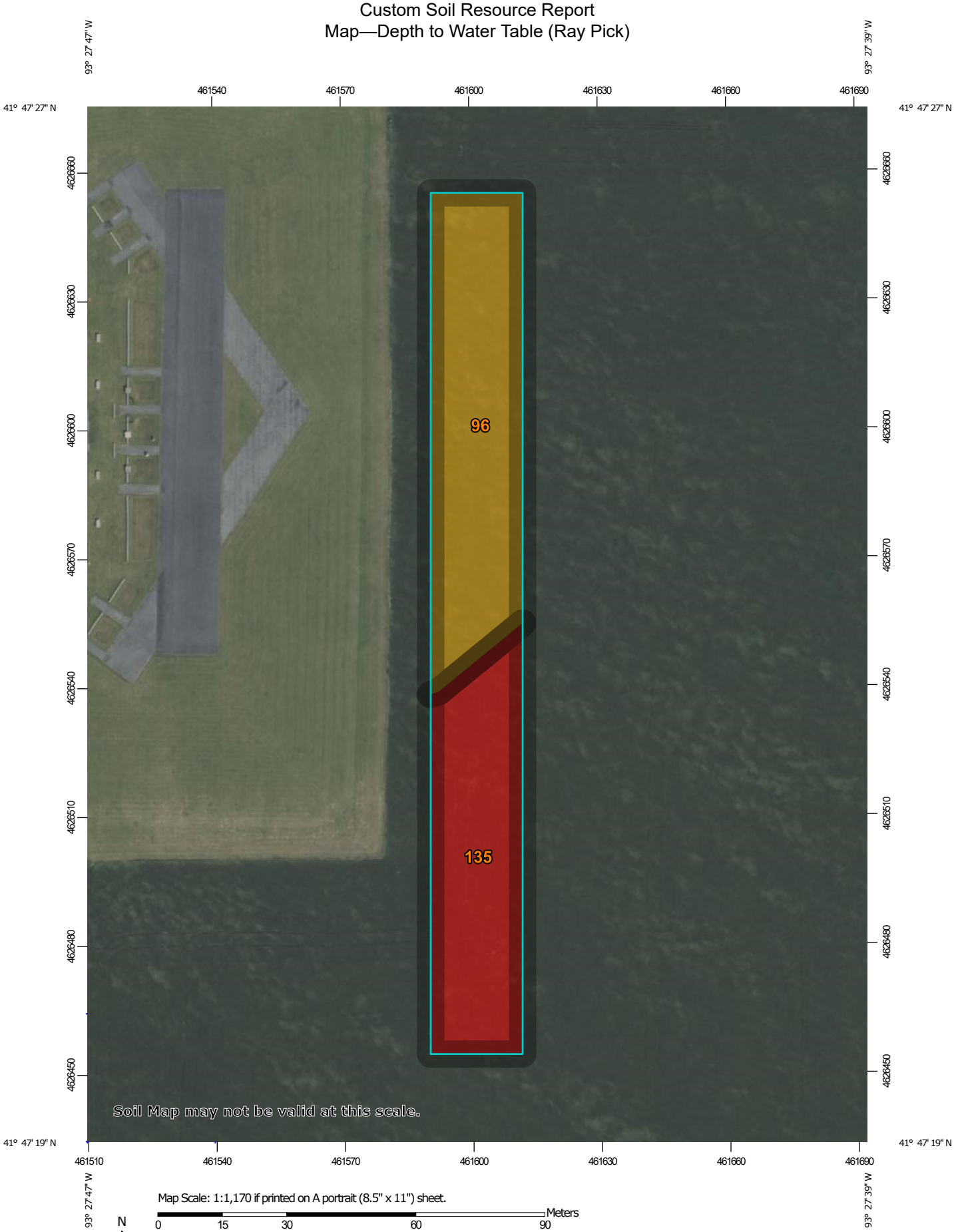
Water Features include ponding frequency, flooding frequency, and depth to water table.

Depth to Water Table (Ray Pick)

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

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

Custom Soil Resource Report
Map—Depth to Water Table (Ray Pick)



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Area of Interest (AOI)

Soils

Soil Rating Polygons

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Soil Rating Lines

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Soil Rating Points

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

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Major Roads

Local Roads

Background

Aerial Photography

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Rating Options—Depth to Water Table (Ray Pick)

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December