Pat Walters

From: Karl VanDevender
Sent: Monday, October 26, 2015 12:50 PM
To: Kresse, Timothy
Cc: Andrew Sharpley; Phillip Hays; Mike Daniels
Subject: Soils and Pond info at C&H
Attachments: 20151026_12132712804_64_Sewage_Lagoons.pdf; 20151026_12162012054_64_Manure_and_Food-Processing_Waste.pdf; 20151026_12180312429_64_Disposal_of_Wastewater_by_Irrigation.pdf; 20151026_12195012101_75_Pond_Reservoir_Areas.pdf; 20151026_12233812491_68_Surface_Water_Management_System.pdf; 20151026_12060412913_71_Soil_Report.pdf

Tim,

As promised below is the info I've located on ADEQ's web site that pertains to soils and sub-soil info as well as pond construction.

Original NOI info submitted (soils and well info pg 41-58):
https://www.adeq.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/ARG590001_NOI_20120625.pdf

As built engineering sheets:
https://www.adeq.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/ARG590001_As%20Built%20Engineering%20Plan%20Sheets_20130412.pdf

Additional Soils Engineering compaction Information with some duplication and supplementation from NOI above :
https://www.adeq.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/ARG590001_Additional%20Information%20Waste%20Management%20Plan_20120712.pdf

Attached are Additional reports from NRCS Soil Data Mart.

Please note that the selected area for the report was small enough that an error message was generated indicating that it was possible inclusions of different soils could occur into the designated soil classification areas. I translate that to mean that to mean that at the report scale we are at the lower end of the data resolution and care should be taken in interpreting results. In other words to roughly quote Tim K. when interpreting avoid single source interpretation if possible and seek multiple sources.

Hope this helps some.

Bye the way I found out the following.

1) The additional potable water well is located between the two barns about half way from the south ends. I think this puts it east of Pond 2 not too north of the spill way.
2) From a visit to ADEQ's web site they have not yet approved or denied the permit liner modification request. Nor have they responded to C&H's email request for clarification that if the liner modification is approved will it be mantory or optional for a liner to be installed.
3) C&H's contract with JBS apparently went through.

Karl

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Description

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Ksat is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a Ksat rate of more than 14 micrometers per second are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

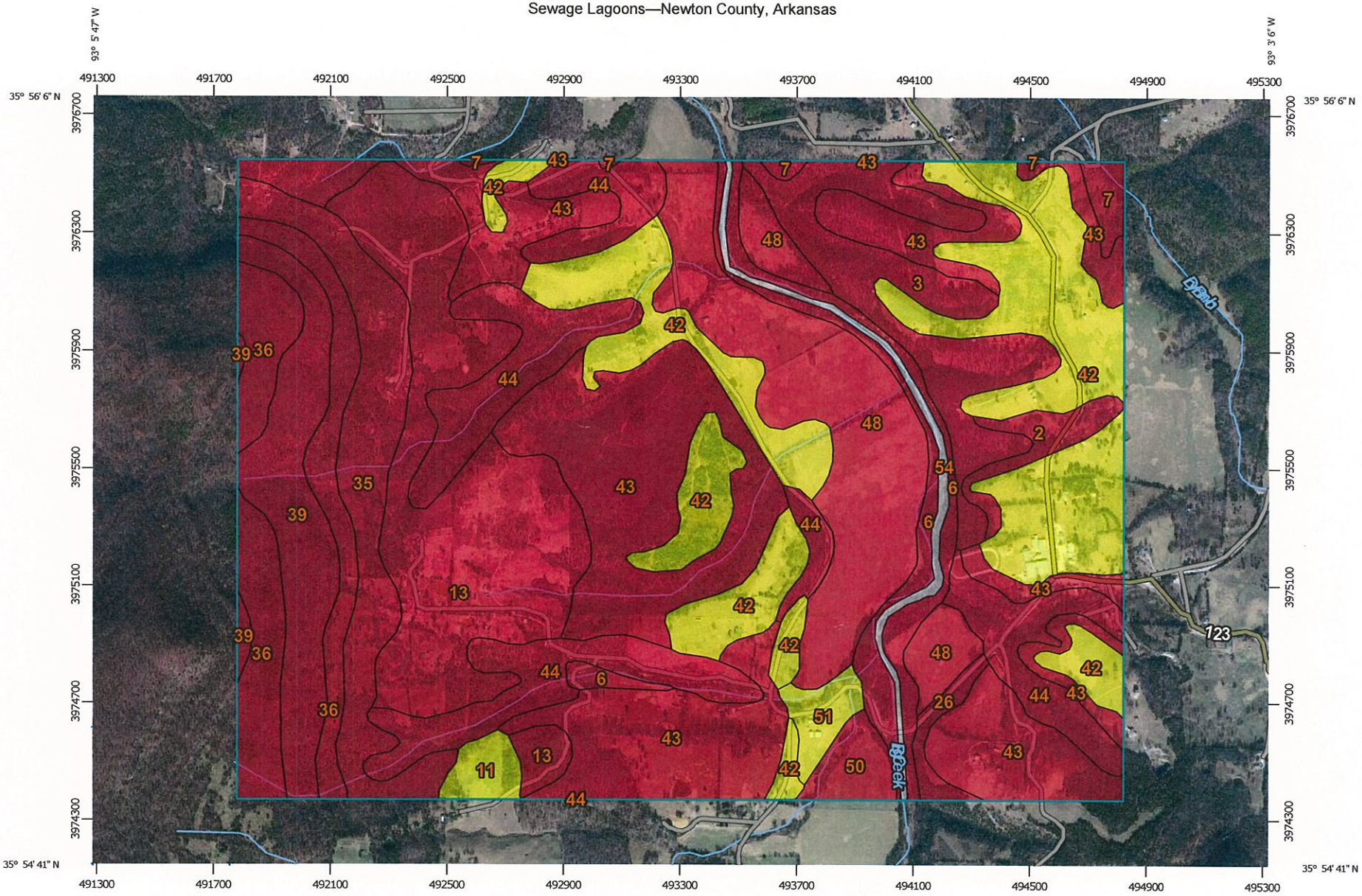
The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.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Map Scale: 1:18,400 if printed on A landscape (11" x 8.5") sheet.
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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

Very limited

Somewhat limited

Not limited

Not rated or not available

Soil Rating Lines

Very limited

Somewhat limited

Not limited

Not rated or not available

Soil Rating Points

Very limited

Somewhat limited

Not limited

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 1:20,000.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
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: Newton County, Arkansas
Survey Area Data: Version 13, Sep 22, 2014

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

Date(s) aerial images were photographed: Sep 20, 2010—Nov 27, 2010

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.

Sewage Lagoons

Sewage Lagoons— Summary by Map Unit — Newton County, Arkansas (AR101)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
2	Arkana-Moko complex, 8 to 20 percent slopes	Very limited	Arkana (50%)	Depth to hard bedrock (1.00)	16.7	1.0%
				Slope (1.00)		
			Moko (35%)	Depth to hard bedrock (1.00)		
				Slope (1.00)		
				Large stones (1.00)		
				Seepage (0.50)		
3	Arkana-Moko complex, 20 to 40 percent slopes	Very limited	Moko (45%)	Depth to hard bedrock (1.00)	87.5	5.3%
				Slope (1.00)		
				Large stones (1.00)		
				Seepage (0.50)		
			Arkana (45%)	Depth to hard bedrock (1.00)		
				Slope (1.00)		
6	Ceda-Kenn complex, frequently flooded	Very limited	Ceda (55%)	Flooding (1.00)	56.6	3.5%
				Seepage (1.00)		
				Large stones (0.18)		
			Kenn (30%)	Flooding (1.00)		
				Seepage (0.50)		
7	Clarksville very cherty silt loam, 20 to 50 percent slopes	Very limited	Clarksville (100%)	Slope (1.00)	10.7	0.7%
				Seepage (1.00)		
11	Enders gravelly loam, 3 to 8 percent slopes	Somewhat limited	Enders (80%)	Slope (0.68)	12.2	0.7%
				Depth to soft bedrock (0.13)		
13	Enders stony loam, 3 to 15 percent slopes	Very limited	Enders (85%)	Slope (1.00)	188.3	11.5%
				Depth to soft bedrock (0.13)		
26	Moko-Rock outcrop complex, 15 to 50 percent slopes	Very limited	Moko (50%)	Depth to hard bedrock (1.00)	9.4	0.6%
				Slope (1.00)		

Sewage Lagoons— Summary by Map Unit — Newton County, Arkansas (AR101)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Large stones (1.00)		
				Seepage (0.50)		
35	Nella-Enders stony loams, 8 to 20 percent slopes	Very limited	Nella (45%)	Slope (1.00)	88.7	5.4%
				Seepage (0.50)		
			Enders (40%)	Slope (1.00)		
				Depth to soft bedrock (0.42)		
				Large stones (0.01)		
36	Nella-Enders stony loams, 20 to 40 percent slopes	Very limited	Nella (50%)	Slope (1.00)	98.9	6.0%
				Seepage (0.50)		
			Enders (35%)	Slope (1.00)		
				Depth to soft bedrock (0.42)		
				Large stones (0.01)		
39	Nella-Steprock-Mountainburg very stony loams, 40 to 60 percent slopes	Very limited	Nella (45%)	Slope (1.00)	81.1	4.9%
				Seepage (0.50)		
				Large stones (0.03)		
			Steprock (20%)	Depth to soft bedrock (1.00)		
				Slope (1.00)		
				Large stones (1.00)		
				Seepage (0.50)		
			Mountainburg (10%)	Depth to hard bedrock (1.00)		
				Slope (1.00)		
				Seepage (1.00)		
				Large stones (1.00)		
42	Noark very cherty silt loam, 3 to 8 percent slopes	Somewhat limited	Noark (100%)	Slope (0.68)	263.9	16.1%
				Seepage (0.50)		
43	Noark very cherty silt loam, 8 to 20 percent slopes	Very limited	Noark (100%)	Slope (1.00)	349.6	21.3%
				Seepage (0.50)		
44	Noark very cherty silt loam, 20 to 40 percent slopes	Very limited	Noark (100%)	Slope (1.00)	168.5	10.3%
				Seepage (0.50)		

Sewage Lagoons— Summary by Map Unit — Newton County, Arkansas (AR101)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
48	Razort loam, occasionally flooded	Very limited	Razort (95%)	Flooding (1.00)	163.0	9.9%
				Seepage (1.00)		
50	Spadra loam, occasionally flooded	Very limited	Spadra (95%)	Flooding (1.00)	16.2	1.0%
				Seepage (0.50)		
51	Spadra loam, 2 to 5 percent slopes	Somewhat limited	Spadra (95%)	Seepage (0.50)	13.8	0.8%
				Slope (0.02)		
54	Water	Not rated	Water (100%)		16.2	1.0%
Totals for Area of Interest					**1,641.4**	**100.0%**

Sewage Lagoons— Summary by Rating Value		
Rating	Acres in AOI	Percent of AOI
Very limited	1,335.3	81.3%
Somewhat limited	290.0	17.7%
Null or Not Rated	16.2	1.0%
Totals for Area of Interest	**1,641.4**	**100.0%**

Description

Wastewater includes municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. The effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also can improve crop production by increasing the amount of water available to crops. The ratings are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, saturated hydraulic conductivity (Ksat), slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a cemented pan, depth to a water table, and ponding. The properties that affect performance include depth to bedrock or a cemented pan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation-exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals. Permanently frozen soils are not suitable for disposal of wastewater by irrigation.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect agricultural waste management. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations

between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

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Rating Options

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The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Lines

- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Points

- Very limited
- Somewhat limited
- Not limited
- 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 1:20,000.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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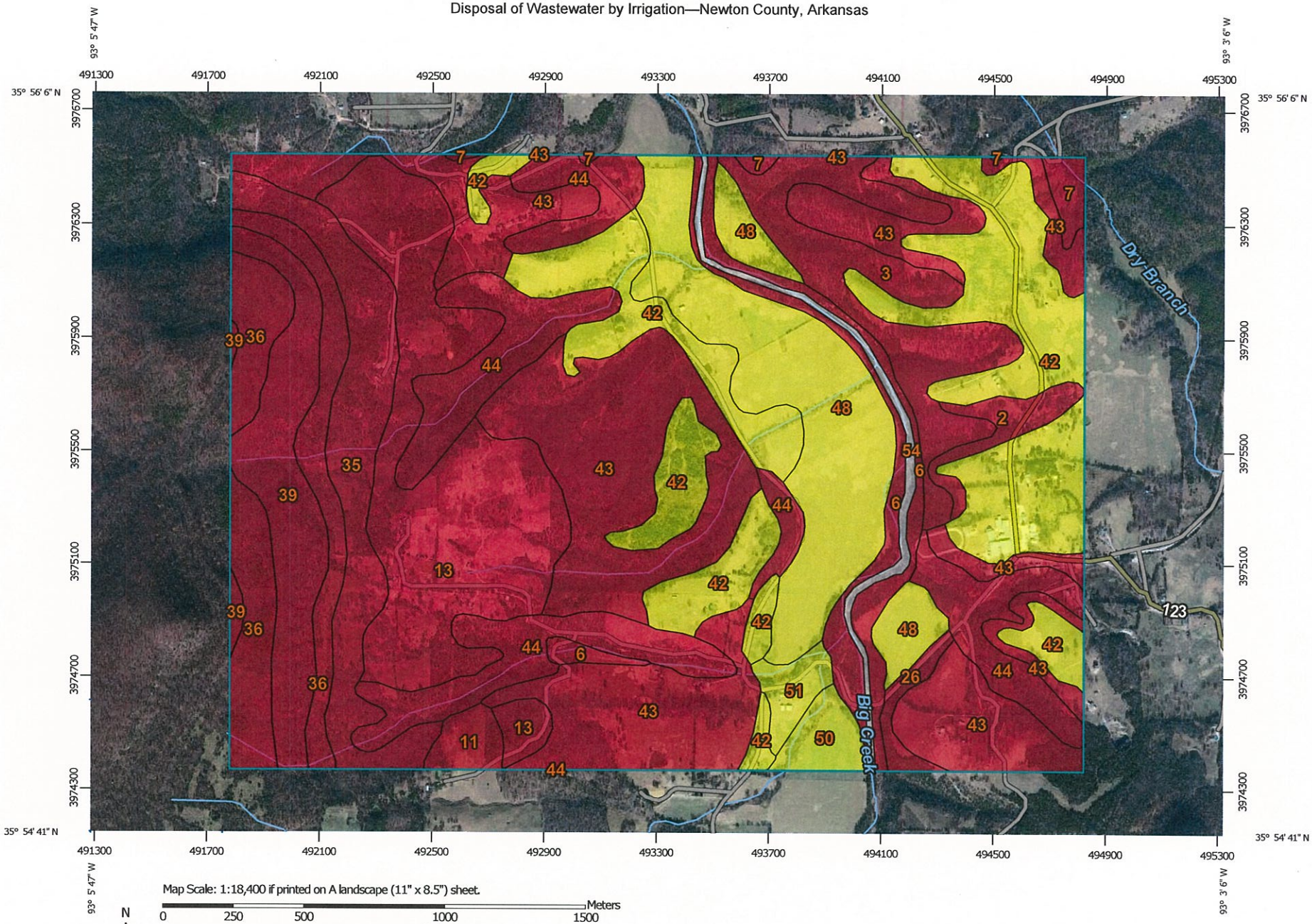
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3975500
3975100
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3974300
Dry Branch
Big Creek
123
Map Scale: 1:18,400 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 250 500 1000 1500
Feet
0 500 1000 2000 3000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

Disposal of Wastewater by Irrigation

Disposal of Wastewater by Irrigation— Summary by Map Unit — Newton County, Arkansas (AR101)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
2	Arkana-Moko complex, 8 to 20 percent slopes	Very limited	Arkana (50%)	Too steep for surface application (1.00)	16.7	1.0%
				Droughty (1.00)		
				Too steep for sprinkler application (0.98)		
				Seepage, porous bedrock (0.50)		
				Depth to bedrock (0.42)		
			Moko (35%)	Large stones on the surface (1.00)		
				Droughty (1.00)		
				Too steep for surface application (1.00)		
				Depth to bedrock (1.00)		
				Too steep for sprinkler application (0.98)		
3	Arkana-Moko complex, 20 to 40 percent slopes	Very limited	Moko (45%)	Large stones on the surface (1.00)	87.5	5.3%
				Droughty (1.00)		
				Too steep for surface application (1.00)		
				Too steep for sprinkler application (1.00)		
				Depth to bedrock (1.00)		

Disposal of Wastewater by Irrigation— Summary by Map Unit — Newton County, Arkansas (AR101)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
			Arkana (45%)	Too steep for surface application (1.00)		
				Too steep for sprinkler application (1.00)		
				Droughty (1.00)		
				Seepage, porous bedrock (0.50)		
				Depth to bedrock (0.42)		
6	Ceda-Kenn complex, frequently flooded	Very limited	Ceda (55%)	Filtering capacity (1.00)	56.6	3.5%
				Flooding (1.00)		
				Too acid (0.14)		
				Cobble content (0.05)		
				Large stones on the surface (0.04)		
			Kenn (30%)	Flooding (1.00)		
				Too acid (0.42)		
				Droughty (0.18)		
7	Clarksville very cherty silt loam, 20 to 50 percent slopes	Very limited	Clarksville (100%)	Too steep for surface application (1.00)	10.7	0.7%
				Too steep for sprinkler application (1.00)		
				Too acid (1.00)		
				Seepage, porous bedrock (0.10)		
				Cobble content (0.05)		
11	Enders gravelly loam, 3 to 8 percent slopes	Very limited	Enders (80%)	Slow water movement (1.00)	12.2	0.7%
				Too acid (1.00)		
				Large stones on the surface (0.49)		

Disposal of Wastewater by Irrigation— Summary by Map Unit — Newton County, Arkansas (AR101)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
				Too steep for surface application (0.32)		
13	Enders stony loam, 3 to 15 percent slopes	Very limited	Enders (85%)	Slow water movement (1.00)	188.3	11.5%
				Too acid (1.00)		
				Large stones on the surface (1.00)		
				Too steep for surface application (1.00)		
				Too steep for sprinkler application (0.78)		
26	Moko-Rock outcrop complex, 15 to 50 percent slopes	Very limited	Moko (50%)	Large stones on the surface (1.00)	9.4	0.6%
				Droughty (1.00)		
				Too steep for surface application (1.00)		
				Too steep for sprinkler application (1.00)		
				Depth to bedrock (1.00)		
35	Nella-Enders stony loams, 8 to 20 percent slopes	Very limited	Nella (45%)	Too steep for surface application (1.00)	88.7	5.4%
				Too acid (1.00)		
				Too steep for sprinkler application (0.98)		
				Cobble content (0.13)		
				Large stones on the surface (0.03)		
			Enders (40%)	Slow water movement (1.00)		

Disposal of Wastewater by Irrigation— Summary by Map Unit — Newton County, Arkansas (AR101)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
				Too steep for surface application (1.00)		
				Too acid (1.00)		
				Large stones on the surface (1.00)		
				Too steep for sprinkler application (0.98)		
36	Nella-Enders stony loams, 20 to 40 percent slopes	Very limited	Nella (50%)	Too steep for surface application (1.00)	98.9	6.0%
				Too steep for sprinkler application (1.00)		
				Too acid (1.00)		
				Cobble content (0.13)		
				Large stones on the surface (0.03)		
			Enders (35%)	Slow water movement (1.00)		
				Too steep for surface application (1.00)		
				Too steep for sprinkler application (1.00)		
				Too acid (1.00)		
				Large stones on the surface (1.00)		
39	Nella-Steprock-Mountainburg very stony loams, 40 to 60 percent slopes	Very limited	Nella (45%)	Too steep for surface application (1.00)	81.1	4.9%
				Too steep for sprinkler application (1.00)		
				Too acid (1.00)		

Disposal of Wastewater by Irrigation— Summary by Map Unit — Newton County, Arkansas (AR101)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
				Cobble content (0.87)		
				Large stones on the surface (0.18)		
			Steprock (20%)	Too steep for surface application (1.00)		
				Too steep for sprinkler application (1.00)		
				Too acid (1.00)		
				Droughty (1.00)		
				Large stones on the surface (1.00)		
			Mountainburg (10%)	Large stones on the surface (1.00)		
				Droughty (1.00)		
				Too steep for surface application (1.00)		
				Too steep for sprinkler application (1.00)		
				Depth to bedrock (1.00)		
42	Noark very cherty silt loam, 3 to 8 percent slopes	Somewhat limited	Noark (100%)	Too acid (0.77)	263.9	16.1%
				Too steep for surface application (0.32)		
				Seepage, porous bedrock (0.10)		
43	Noark very cherty silt loam, 8 to 20 percent slopes	Very limited	Noark (100%)	Too steep for surface application (1.00)	349.6	21.3%
				Too steep for sprinkler application (0.98)		
				Too acid (0.77)		

Disposal of Wastewater by Irrigation— Summary by Map Unit — Newton County, Arkansas (AR101)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
				Seepage, porous bedrock (0.10)		
44	Noark very cherty silt loam, 20 to 40 percent slopes	Very limited	Noark (100%)	Too steep for surface application (1.00)	168.5	10.3%
				Too steep for sprinkler application (1.00)		
				Too acid (0.77)		
				Seepage, porous bedrock (0.10)		
48	Razort loam, occasionally flooded	Somewhat limited	Razort (95%)	Flooding (0.60)	163.0	9.9%
50	Spadra loam, occasionally flooded	Somewhat limited	Spadra (95%)	Too acid (0.92)	16.2	1.0%
				Flooding (0.60)		
51	Spadra loam, 2 to 5 percent slopes	Somewhat limited	Spadra (95%)	Too acid (0.92)	13.8	0.8%
54	Water	Not rated	Water (100%)		16.2	1.0%
Totals for Area of Interest					**1,641.4**	**100.0%**

Disposal of Wastewater by Irrigation— Summary by Rating Value		
Rating	**Acres in AOI**	**Percent of AOI**
Very limited	1,168.3	71.2%
Somewhat limited	456.9	27.8%
Null or Not Rated	16.2	1.0%
Totals for Area of Interest	**1,641.4**	**100.0%**

Description

The ratings for Surface Water Management, System are based on the soil properties that affect the capacity of the soil to convey surface water across the landscape. Factors affecting the system installation and performance are considered. Water conveyances include graded ditches, grassed waterways, terraces, and diversions. The ratings are for soils in their natural condition and do not consider present land use. The properties that affect the surface system performance include depth to bedrock, saturated hydraulic conductivity, depth to cemented pan, slope, flooding, ponding, large stone content, sodicity, surface water erosion, and gypsum content.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as that listed for the map unit. The percent composition of each component in a particular map unit is given so that the user will realize the percentage of each map unit that has the specified rating.

A map unit may have other components with different ratings. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher