Westbeld #9

United States Department of Agriculture

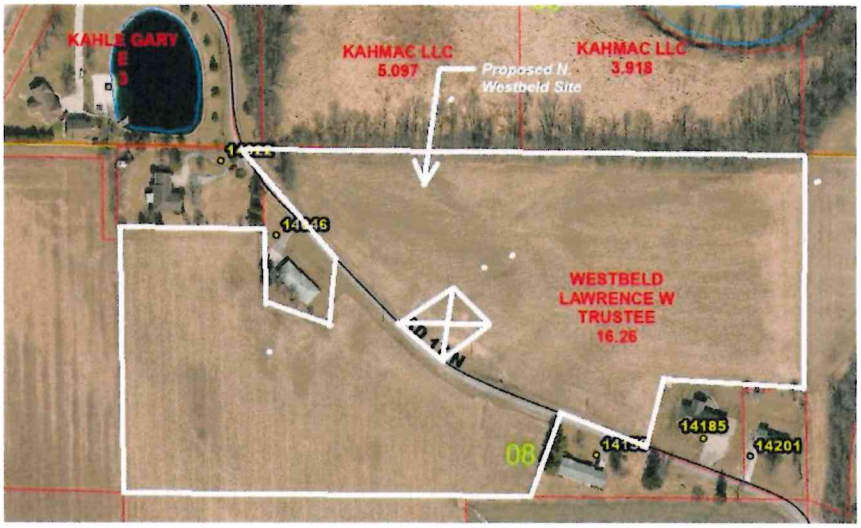
NRCS

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 Putnam County, Ohio

July 12, 2024



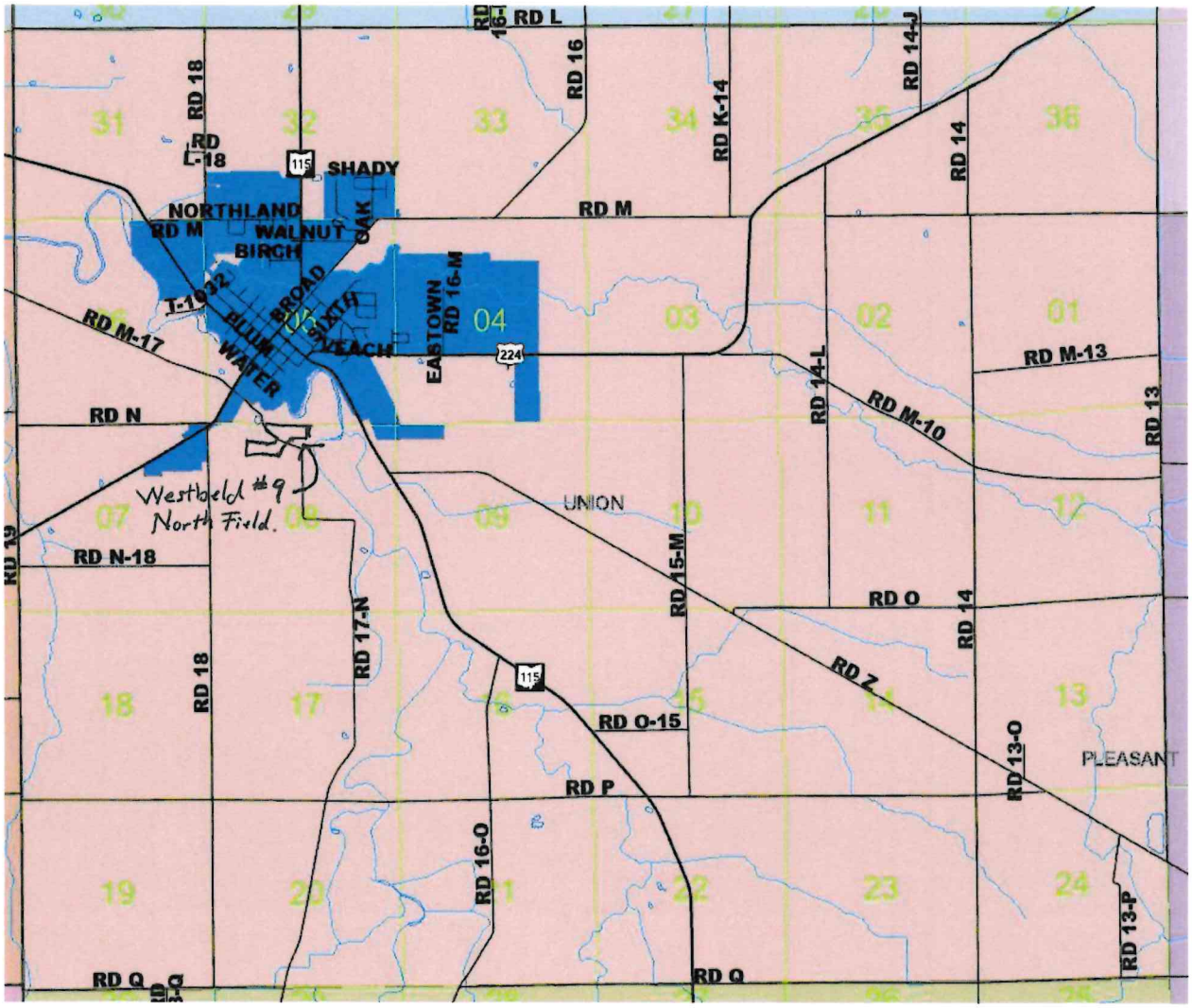
Proposed Biosolids Beneficial Use Site

Owner(s): Lawrence W. Westbeld

Westbeld # 9

North Site Location

16.26 Acres



Proposed Biosolids Beneficial Use Site:

Westbeld # 9 Field

Proposed North Site

South of Kalida

Application for Authorization: Class B Biosolids Beneficial Use Sites

Please list Field IDs here: Westbeld #9

Form BUA-1
Biosolids Treatment Works Information

Treatment works name: Village of Kalida STP		
Ohio NPDES permit #: 2 PA 00047 * ND	County: Putnam	
Mailing address: P.O. Box 511		
City: Kalida	State: Ohio	Zip: 45853
Operator of record: Craig Hoffman		
Telephone number: (w) 419-532-3899	cell 419-796-9806	
Email address: kalidawater@bright.net		

Certification Statement

1. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

2. I have read and understand Chapter 3745-40 of the Ohio Administrative Code (OAC) and I agree to beneficially use biosolids in accordance with all applicable beneficial use requirements and restrictions established in Chapter 3745-40 of the Ohio Administrative Code.

3. I agree to only beneficially use biosolids that have satisfied a pathogen reduction alternative and a vector attraction reduction option and have metals concentration below the pollutant ceiling concentrations as established in Chapter 3745-40 of the Ohio Administrative Code.

4. I agree to maintain all applicable records established in Chapter 3745-40 of the Ohio Administrative Code.

_____ _____/_____/_____
Signature Date

This form shall be signed by the operator of record for the treatment works, be an original signature, not a copy, and be less than one year old at the time the application is submitted to Ohio EPA for review.

Form BUA-2
Owner Consent for Beneficial Use

Beneficial use site owner[1]: Lawrence W. Westheld		
Mailing address: 14046 Rd 17-N		
City: Ft. Jennings	State: Ohio	Zip: 45844
Telephone number: 419-532-3052		
Email address:		

Certification Statement

1. I agree to allow biosolids generated by the treatment plant identified on Form BUA-1 to be beneficially used on my property at agronomic rates.

2. I agree to allow federal, state, and local regulatory staff access to the beneficial use site for the purposes of inspecting and authorizing the beneficial use site, beneficially using biosolids, and collecting and analyzing samples from the beneficial use site. I reserve the right to ask the above parties for proper identification at any time.

3. I certify that I am holder of legal title to the property described on application form BUA-5 or am authorized by the holder to give consent for the land application of biosolids, and that there are no restrictions to the granting of consent under this form.

_____ _____ / _____ / _____
Signature[2] Date

☐ Check if the signer is a trustee for ownership of this property.

Original signatures, not copies, shall be less than one year old at the time the application is submitted to Ohio EPA for review.

[1] For purposes of this form, "beneficial use site owner" means the record owner or owners of legal title to the parcel(s).

[2] In the event the owner of the beneficial use site changes, Form BUA-2 shall be revised and resubmitted to Ohio EPA.

Form BUA-3
Beneficial Use Site Operator Consent for Beneficial Use

Beneficial use site operator[1]: Bruce Warnecke		
Contact person: Bruce Warnecke		
Mailing address: 1753 Tiki St.		
City: Findlay	State: Ohio	Zip: 45840
Telephone number: 419-233-3885		
Email address: bdubskalida@yahoo.com		

Certification Statement

I agree to be responsible for complying with all applicable beneficial use requirements established in Chapter 3745-40 of the Ohio Administrative Code.

_____ _____/_____/_____
Signature[2] Date

Original signatures, not copies, shall be less than one year old at the time the application is submitted to Ohio EPA for review.

[1] For purposes of this form, "beneficial use site operator" means the person or entity who plants, grows, harvests, or otherwise manages feed crops, fiber crops, food crops, or pasture on the proposed beneficial use site.

[2] In the event the site operator of the beneficial use site changes, Form BUA-3 shall be revised and resubmitted to Ohio EPA.

Form BUA-4
Beneficial User Information

Beneficial user[1]:		
Contact person:		
Mailing address:		
City:	State:	Zip:
Telephone number:		
Email address:		

Certification Statement

I agree to be responsible for complying with all applicable beneficial use requirements established in Chapter 3745-40 of the Ohio Administrative Code.

_____ _____ / _____ / _____
Signature[2] Date

Original signatures, not copies, shall be less than one year old at the time the application is submitted to Ohio EPA for review.

[1] For purposes of this form, the beneficial user means the person or entity who sprays or spreads Class B biosolids onto the surface of the beneficial use site, injects below the surface of the beneficial use site, or incorporates into the soil of the beneficial use site, for the purpose of providing an agronomic benefit.

[2] In the event the beneficial user of the beneficial use site changes, Form BUA-4 shall be revised and resubmitted to Ohio EPA.

Form BUA-5
Beneficial Use Site Information

Field name: Westbeld #9	**Total acreage proposed:** 16.26 Ac
Beneficial use site location and/or nearest intersection: 14046 Rd 17-N	
County: Putnam	**Township:** Union
Latitude: 40° 58' 30" N	**Longitude:** 84° 12' 02" W
Type of beneficial use to be performed: Surface application ☐ Injection ☑ Immediate incorporation ☐	**Ground slope percent:** Less than 15% ☑ 15% to 20% ☐ Greater than 20% ☐
Subsurface tile drainage: ☒ Present ☐ Absent	**Will biosolids be stored at this site?** ☐ Yes ☐ No
Soil pH range (s.u.): _____-_____	**Soil phosphorus range (ppm):** _____-_____
Minimum bedrock depth (feet): 20' per Well log #379429	Bray Kurtz P1 ☐ Mehlich III ☐
Type of crops to be grown: Corn, Soybeans & Wheat	

Soil Types

Soil Unit Symbol	Soil unit Name	Hydrologic Soil Group	Months Soil are Prone to Flooding[1]
HnA	Haskins loam	B	N/A
NpA	Nappanee silt	B/D	N/A
SeC2	St. Clair silt loam	B	N/A
Lb	Latty silty clay	D	Jan-May
HnB	Haskins loam	B	N/A
Gn	Genesee silt loam	B	Jan-May

[1] Please see Appendix A, Table 1 from Ohio Administrative Code Chapter 901:10-2-14 for a list of months soils are prone to flooding (*https://codes.ohio.gov/assets/laws/administrative-code/pdfs/901/10/2/901$10-2-14_PH_FF_A_APP2_20210203_0904.pdf*). If the soil unit name is not listed, enter N/A for that soil unit.

Form BUA-5 (cont.)

Applicable isolation distances:

Surface waters of the state	☐	Sinkhole/UIC class V drainage	☐
Occupied building	☒	Private potable water source	☒
Medical care facility	☐	Public water system	☐

Are any endangered species or endangered species habitats located on the beneficial use site?

Yes	☐	No	☒

If "Yes" is marked, list the types of endangered species or endangered species habitat:

Have biosolids been beneficially used on the site within the last five years? ☐ Yes ☒ No

If "Yes" is marked, list the biosolids generators and years beneficial use occurred:

Generator (EQ or Class B)	NPDES permit No.	Year of Beneficial Use

Include all of the following with the application:

☑ A soil map of the proposed beneficial use site

☐ An aerial map of the proposed beneficial use site that clearly identifies the following:

- ✓ entrance of the beneficial use site from the nearest road
- ✓ tile discharge points
- N/A potential field storage locations
- ✓ all applicable isolation distances listed in OAC 3745-40

☐ A copy of the most recent soil test results identified in this form

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July 12, 2024

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.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:2,180 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

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.

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: Putnam County, Ohio
Survey Area Data: Version 22, Sep 11, 2023

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

Date(s) aerial images were photographed: Oct 14, 2019—Oct 23, 2019

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Gn	Genesee silt loam, 0 to 2 percent slopes, occasionally flooded	0.7	4.6%
HnA	Haskins loam, 0 to 2 percent slopes	5.5	35.9%
HnB	Haskins loam, 2 to 6 percent slopes	0.9	5.9%
Lb	Latty silty clay, till substratum, 0 to 1 percent slopes	1.0	6.7%
NpA	Nappanee silt loam, 0 to 2 percent slopes	4.9	32.3%
ScC2	St. Clair silt loam, 6 to 12 percent slopes, moderately eroded	2.2	14.6%
Totals for Area of Interest		**15.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor

components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series.* Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Putnam County, Ohio

Gn—Genesee silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2z6ct
Elevation: 520 to 1,280 feet
Mean annual precipitation: 37 to 46 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 145 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Genesee, occasionally flooded, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Genesee, Occasionally Flooded

Setting

Landform: Flood-plain steps, natural levees
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

Ap - 0 to 8 inches: silt loam
Bw - 8 to 32 inches: loam
C - 32 to 79 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 30 to 33 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Ecological site: F111XB204IN - Dry Alluvium Forest
Hydric soil rating: No

Minor Components

Eel, frequently flooded
Percent of map unit: 8 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Sloan, occassionally ponded
Percent of map unit: 7 percent
Landform: Depressions, flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Shoals, occasionally flooded
Percent of map unit: 5 percent
Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

HnA—Haskins loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 5qkm
Elevation: 600 to 1,300 feet
Mean annual precipitation: 27 to 42 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 130 to 200 days
Farmland classification: Prime farmland if drained

Map Unit Composition
Haskins and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Haskins

Setting
Landform: Till plains, lake plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear

Parent material: Glaciolacustrine deposits over till

Typical profile

H1 - 0 to 16 inches: loam
H2 - 16 to 30 inches: sandy clay loam
H3 - 30 to 60 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.01 to 0.06 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D
Ecological site: F099XY007MI - Lake Plain Flats
Forage suitability group: Unnamed (G099XYC-2OH)
Other vegetative classification: Unnamed (G099XYC-2OH)
Hydric soil rating: No

Minor Components

Hoytville

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Hydric soil rating: Yes

Mermill

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Hydric soil rating: Yes

Slopes of 2 to 6 percent

Percent of map unit:

Silt loam surface layer

Percent of map unit:

Nappanee loam

Percent of map unit:
Landform: Lake plains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear

Digby loam

Percent of map unit:
Landform: Outwash plains, outwash terraces
Landform position (three-dimensional): Tread

Down-slope shape: Linear
Across-slope shape: Linear

HnB—Haskins loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 5qkn
Elevation: 600 to 1,300 feet
Mean annual precipitation: 27 to 42 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 130 to 200 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Haskins and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Haskins

Setting

Landform: Rises on beach ridges, rises on stream terraces
Landform position (two-dimensional): Summit, shoulder, backslope
Parent material: Glaciolacustrine deposits over basal till

Typical profile

H1 - 0 to 16 inches: loam
H2 - 16 to 30 inches: sandy clay loam
H3 - 30 to 60 inches: clay

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.01 to 0.06 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: D
Ecological site: F099XY007MI - Lake Plain Flats
Forage suitability group: Unnamed (G099XYC-2OH)
Other vegetative classification: Unnamed (G099XYC-2OH)
Hydric soil rating: No

Minor Components

Sloan
Percent of map unit: 5 percent
Landform: Flood plains
Ecological site: F099XY009MI - Wet Floodplain
Hydric soil rating: Yes

Pewamo
Percent of map unit: 5 percent
Landform: Drainageways, depressions
Hydric soil rating: Yes

Hoytville
Percent of map unit: 5 percent
Landform: Drainageways, depressions
Hydric soil rating: Yes

Nappanee loam
Percent of map unit:
Landform: Lake plains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear

Digby loam
Percent of map unit:
Landform: Outwash plains, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear

Nearly level areas
Percent of map unit:

Fine sandy loam surface layer
Percent of map unit:

Silt loam surface layer
Percent of map unit:

Lb—Latty silty clay, till substratum, 0 to 1 percent slopes

Map Unit Setting
National map unit symbol: 2vt1k
Elevation: 570 to 780 feet
Mean annual precipitation: 28 to 38 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 135 to 210 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Latty, till substratum, and similar soils: 87 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Latty, Till Substratum

Setting

Landform: Till-floored lake plains, wave-worked till plains
Down-slope shape: Linear
Across-slope shape: Concave, linear
Parent material: Clayey glaciolacustrine deposits over clayey till

Typical profile

Ap - 0 to 7 inches: silty clay
Bg - 7 to 24 inches: silty clay
BCg - 24 to 37 inches: silty clay
C1 - 37 to 67 inches: silty clay
2C2 - 67 to 80 inches: silty clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 30 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline (0.1 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F099XY013MI - Wet Lake Plain Flats
Hydric soil rating: Yes

Minor Components

Fulton

Percent of map unit: 6 percent
Landform: Till-floored lake plains, wave-worked till plains
Microfeatures of landform position: Rises
Down-slope shape: Linear
Across-slope shape: Linear, convex
Ecological site: F099XY007MI - Lake Plain Flats
Hydric soil rating: No

Nappanee

Percent of map unit: 6 percent
Landform: Till-floored lake plains, wave-worked till plains

Microfeatures of landform position: Rises
Down-slope shape: Linear
Across-slope shape: Linear, convex
Ecological site: F099XY007MI - Lake Plain Flats
Hydric soil rating: No

Haskins

Percent of map unit: 1 percent
Landform: Till-floored lake plains, wave-worked till plains
Microfeatures of landform position: Rises
Down-slope shape: Linear
Across-slope shape: Linear, convex
Ecological site: F099XY007MI - Lake Plain Flats
Hydric soil rating: No

NpA—Nappanee silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 5ql9
Elevation: 600 to 800 feet
Mean annual precipitation: 27 to 36 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 140 to 170 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Nappanee and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nappanee

Setting

Landform: Lake plains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Till

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 34 inches: clay
H3 - 34 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.01 to 0.06 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Available water supply, 0 to 60 inches: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F099XY007MI - Lake Plain Flats
Hydric soil rating: No

Minor Components

Latty

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Hydric soil rating: Yes

Hoytville

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Hydric soil rating: Yes

Steeper areas

Percent of map unit:

Finer textured surface layer

Percent of map unit:

ScC2—St. Clair silt loam, 6 to 12 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 5qly
Elevation: 600 to 1,300 feet
Mean annual precipitation: 28 to 36 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

St. clair and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of St. Clair

Setting

Landform: Lake plains, end moraines, ground moraines
Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Till

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 26 inches: clay
H3 - 26 to 60 inches: clay

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.01 to 0.06 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F099XY007MI - Lake Plain Flats
Hydric soil rating: No

Minor Components

Slopes of 12 to 18 percent

Percent of map unit:

Silty clay loam surface layer

Percent of map unit:

Uneroded areas

Percent of map unit:

Substratum at less than 20 inches

Percent of map unit:

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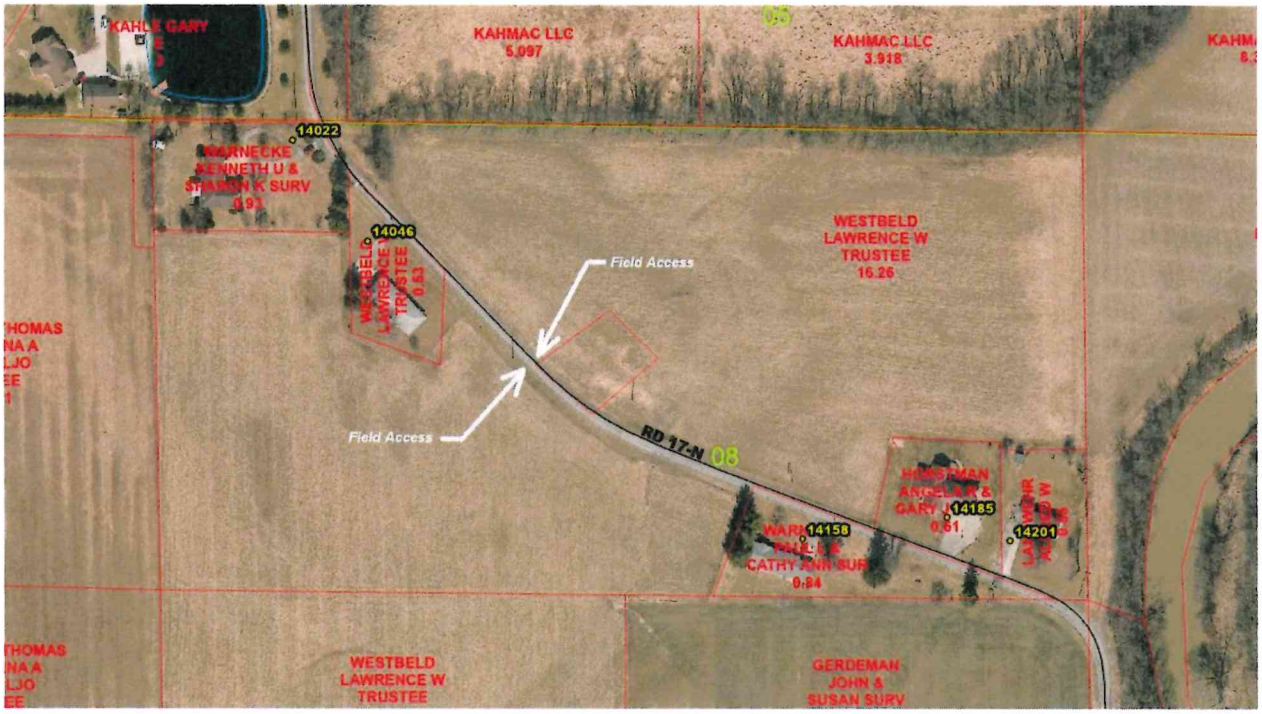
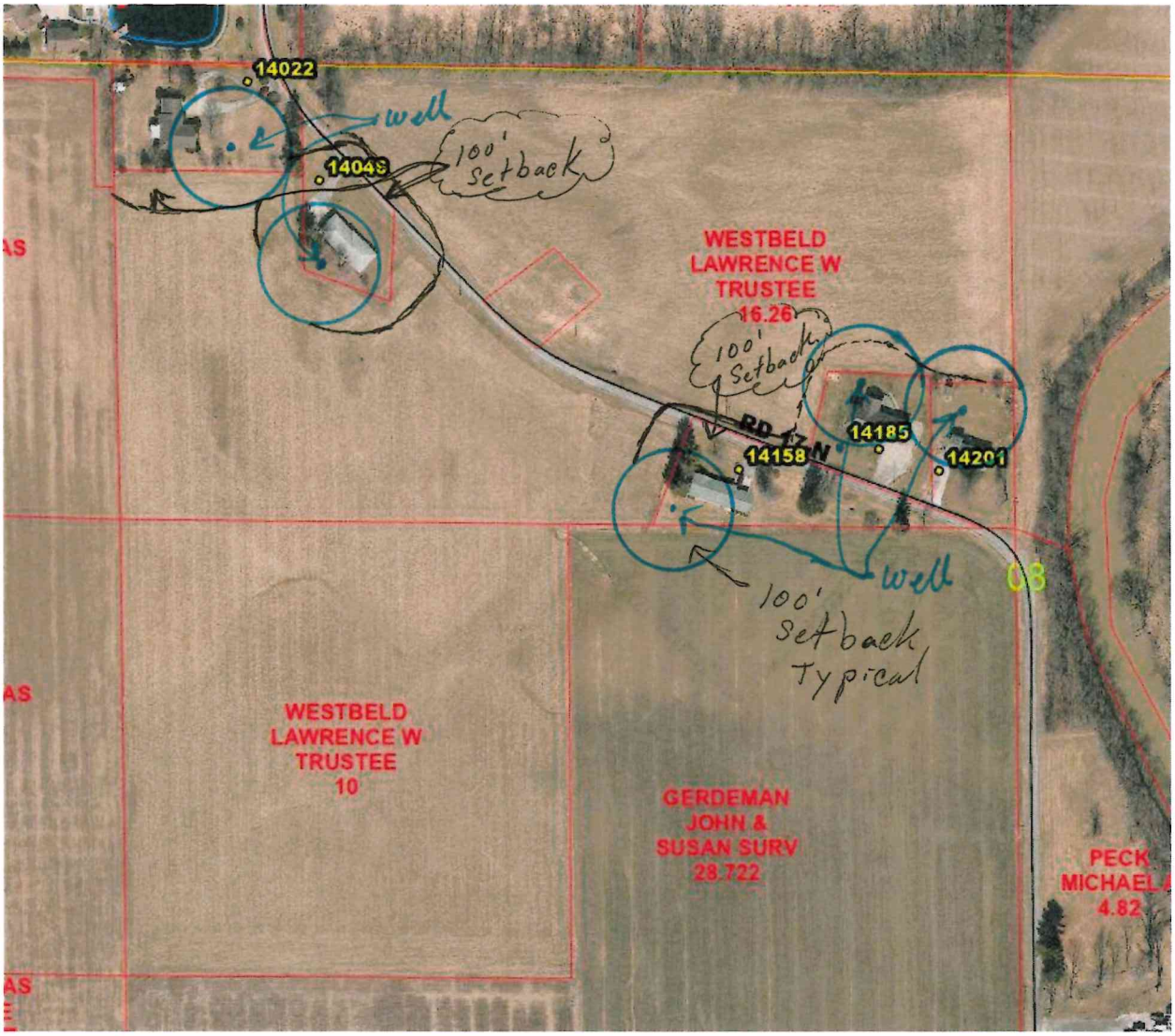


Westbeld # 9

Westbeld North Property

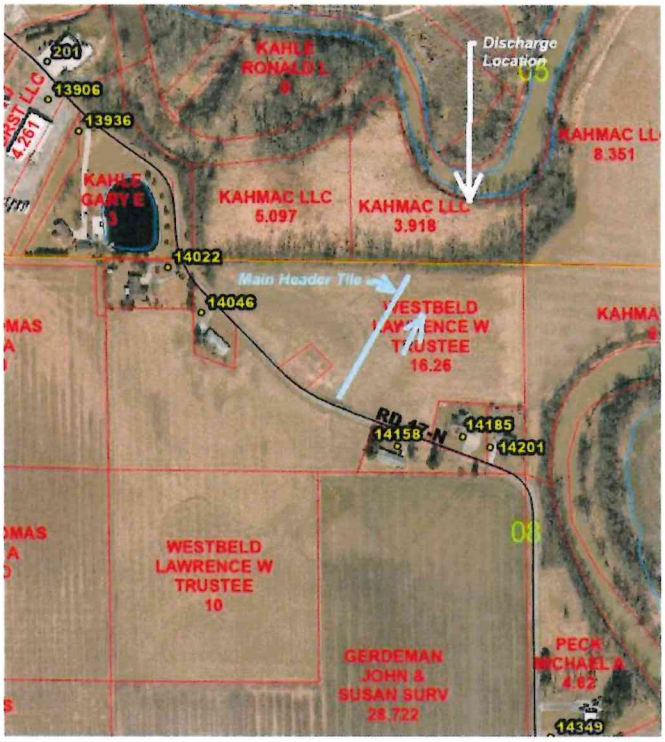
Access



Westbeld # 9 Field setback per

AOC 3745-40

North 16.26 Acres



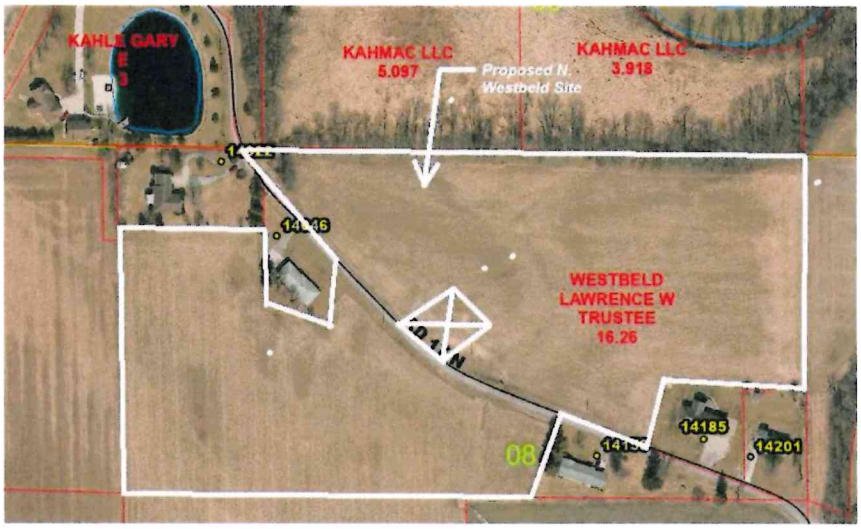
Proposed Biosolids Bencificial Use Site

Owner Lawrence W. Westbeld

Westbeld # 9

North Field Location

16.26 Acres



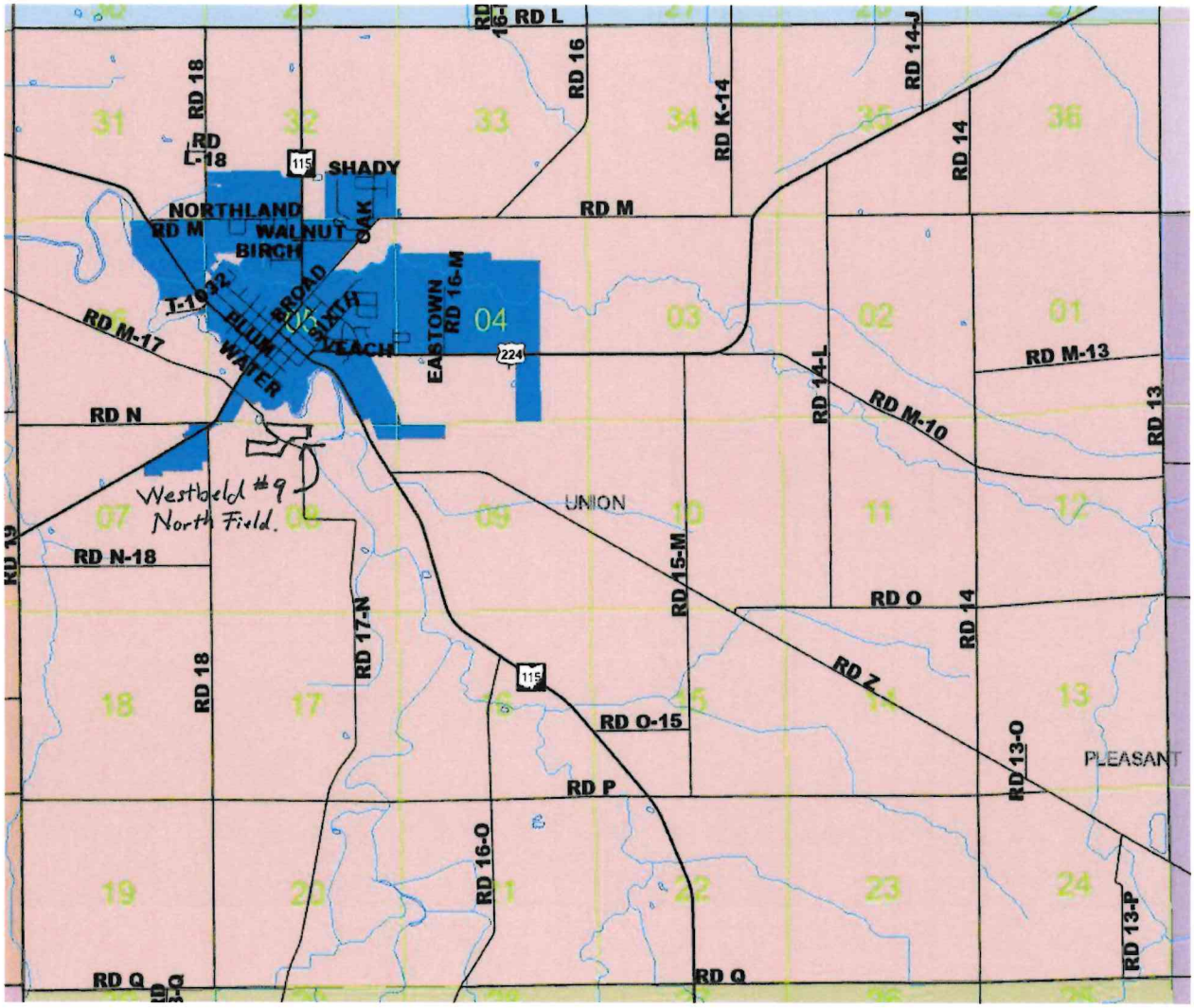
Proposed Biosolids Beneficial Use Site

Owner(s): Lawrence W. Westbeld

Westbeld # 9

North Site Location

16.26 Acres



Proposed Biosolids Beneficial Use Site:

Westbeld # 9 Field

Proposed North Site

South of Kalida