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Environmental Assessment Report
MO70 Missouri – Iowa Transmission Line

Northeast Missouri Electric Power Cooperative

Palmyra, Missouri

Draft

February 2025

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Project:	MO70: Missouri – Iowa Transmission Line
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Section 1 Introduction

1.1 Project Description

Northeast Missouri Electric Power Cooperative (NEP) has identified the need for additional transmission capacity in the Iowa portion of NEP's power system to reliably and economically serve existing and expected new power demands. NEP has proposed to rebuild approximately 52 miles of transmission line to support a larger capacity, construct six miles of new transmission line and conduct improvements at a substation to support higher voltages and additional transmission lines (Project). This project stretches from Lewis County, Missouri, to Lee County, Iowa, and is seeking funding from the U.S. Department of Agriculture (USDA) Rural Utilities Service (RUS).

The project involves several segments of transmission line and the Winchester Substation improvements.

- **Franklin Tap to Franklin Substation, 1.77 miles of double circuit 69 kV line rebuild**: This portion of the project will consist of rebuilding the existing Franklin Tap with single metal pole structures following the existing right-of-way.
- **Franklin Sub to Winchester Substation, 25.27 miles of 161 kV (operated at 69 kV) new line construction as single circuit new line and double circuit with existing ITC/Ameren 161 kV transmission line**: This portion of the project will tie the existing Winchester Substation with the existing Franklin Substation. The new NEP line will be a single circuit line (5.54 miles) to connect with an existing ITC/Ameren 161 kV transmission line and create a double circuit with the existing ITC (Iowa, 12.24 miles) and Ameren (Missouri, 7.49 miles) 161 kV following the existing ITC/Ameren right-of-way using single metal pole structures.
- **Winchester 69 kV to 12.47 kV Substation Improvements**: This portion of the project will involve upgrading the Winchester Substation to accommodate the new Franklin Sub to Winchester Sub transmission line and the rebuild Winchester Tap (below).
- **Winchester Tap to Winchester Substation, 9.20 miles of 161 kV (operated at 69 kV) line rebuild**: This portion of the project will consist of rebuilding the existing Winchester Tap with single metal pole structures following the existing right-of-way.
- **Winchester Tap to Williamstown Tap, 10.42 miles of 161 kV (operated at 69 kV) line rebuild**: This portion of the project will consist of rebuilding the existing Winchester Tap to Williamstown Tap with single metal pole structures following the existing right-of-way.
- **Williamstown Tap to Lewistown Switch Station: 10.43 miles of 161 kV (operated at 69 kV) line rebuild**: This portion of the project will consist of rebuilding the existing Williamstown Tap to Lewistown Switch Station with single metal pole structures following the existing right-of-way.

NEP is a not-for-profit electric utility headquartered in Palmyra, Missouri, and is owned by the eight member-distribution cooperatives that they serve, three in southeast Iowa and five in northeast Missouri. NEP is part of a three-tiered not-for-profit cooperative system, each level having its own set of unique responsibilities. The member-distribution cooperatives are the top tier. NEP provides electric service directly to the member-owners, which include businesses, farms, and private households.

This Environmental Assessment (EA) will serve as a written record of the environmental analysis completed for the proposed Project. The EA incorporates a detailed description of discussions related to the proposed Project and the affected environment within the Project Study Area (Figure 1-1), the environmental consequences of the proposed action, and mitigation of the potential environmental impacts.

1.2 Purpose and Need

USDA, Rural Development is a mission area that includes three federal agencies – Rural Business-Cooperative Service, Rural Housing Service, and Rural Utilities Service. The agencies have in excess of 50 programs that provide financial assistance and a variety of technical and educational assistance to eligible rural and tribal populations, eligible communities, individuals, cooperatives, and other entities with a goal of improving the quality of life, sustainability, infrastructure, economic opportunity, development, and security in rural America. Financial assistance can include direct loans, guaranteed loans, and grants in order to accomplish program objectives.

NEP has identified the need for additional transmission capacity in the Iowa portion of NEP's power system to reliably and economically serve existing and anticipated new power demands. NEP has proposed to rebuild approximately 52 miles of transmission line to support a larger capacity, construct six miles of new transmission line and conduct improvements at a substation to support higher voltages and additional transmission lines.

The Project is seeking funding from RUS rural electric program thereby the Project is a potential federal action subject to the National Environmental Policy Act of 1969 (NEPA), as amended (42 U.S.C. § 4231-4347), the Council on Environmental Quality's (CEQ)'s NEPA implementing regulations (40 CFR Parts 1500-1508), and Rural Development's NEPA implementing regulations, Environmental Policies and Procedures (7 CFR Part 1970). RUS must complete an environmental analysis, and an EA must be prepared prior to the start of construction.

Section 2 Alternatives Evaluated Including the Proposed Action

2.1 Proposed Action

The proposed Project will result in the rebuild/ construction and operation of overhead electric transmission lines and distribution facilities. The majority of the Project corridor will be rebuilt on existing utility easements, owned by NEP and others, to accommodate a new double-circuit line, with a small portion (approximately six miles) requiring easement acquisition and development of a new Right-of-Way and transmission line installation. Additionally, the footprint of the Winchester Substation will be expanded.

Project construction will take place over the course of several years as development of the route will be broken into sections. As stated, the majority of the Project is within existing utility right-of-way (ROW). Grading of the new utility easement will be minimized to the extent feasible and will focus on maintaining original contours. When possible, wetlands and other Waters of the United States (WOTUS) will be avoided and there will be minimal impacts when avoidance is not feasible.

The project involves several segments of transmission line and the Winchester Substation improvements. Specific elements are discussed in greater detail in Section 1.1.

The transmission lines will use 60 to 80 foot tall single-pole steel structures with spacing of approximately 250 – 400 feet apart. Structures will be direct embedded 10 – 20 feet deep in drilled holes approximately 3 – 4 feet in diameter. Holes will be back filled with rock and any spoils removed and surrounding disturbance restored to original condition. At certain locations on the route, down-guys and anchors will be used to support the line. Anchors will have helical fins and will be installed by rotating the helical fins into the ground. In addition to direct embed steel poles, engineered laminated wood structures will also be utilized and directed buried in a similar manner to direct embed steel poles. Self-supporting steel structures may be used on the project. These structures will require a drilled pier concrete foundation, the size of which is anticipated to be 3-5 feet in diameter and 10-15 feet deep. Installed pole will generally have a height of 60 – 75 feet and will be supporting electrical transmission conductor.

Upgrades to the Winchester Substation will consist of expanding the footprint of the existing substation and adding equipment necessary to accommodate the new and rebuilt transmission circuits. The expanded area around the existing substation will be graded to level, a copper grounding grid will be installed below the soil surface, and approximately 6 inches of crushed rock will be added across the site. Also within the site, various structure foundations will be installed to a depth of between five and ten feet. The site will be enclosed by a chain-link fence with posts installed directly in the ground.

Upon completion of construction, operations at the substations throughout the overall site are expected to generate 4 – 10 trips per year for maintenance and inspection. The transmission corridor will be visited at least once a year and vegetation management will be provided through manual upkeep. The planned operational life of the installed facilities is approximately 50 years.

2.2 Other Alternatives Evaluated

There is no alternative route or method of supply to provide this service, except such routes that will require duplicating existing lines and existing facilities. Minor alternative routes were identified and evaluated based on cooperative property owners and feasible constructability.

2.3 No Action Alternative

Under the No Action Alternative, RUS will not provide financial assistance to NEP for the construction of the proposed transmission line. As a result, NEP will be required to secure alternative financing for the proposed Project.

Demand for energy in the southeast Iowa and Northeast Missouri area is projected to continue to grow. NEP will be unable to meet this need and it is anticipated that the region will experience outages during periods of peak use. Outages will also occur as a result of damage to aging infrastructure, which could lead to both short and long-term loss of power to some users depending on the severity of damage. NEP has determined the No Action Alternative to be unreasonable since they will be unable to meet customer needs.

Section 3 Affected Environment and Environmental Consequences

Council on Environmental Quality (CEQ) regulations direct federal agencies to succinctly describe the environment that may be affected by the alternatives under consideration (40 CFR § 1507.3). This section describes the existing environment for resources across the human and biological environments that have the potential to be affected by implementing the Proposed Action. Each affected Environment description is followed by an Environmental Consequences discussion that provides an analysis of the potential effects of implementing the Proposed Action. Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable (i.e., likely to occur within the duration of the project). Cumulative effects are the result of the incremental direct and indirect effects of any action when added to other past, present, and reasonably foreseeable future actions, and can result from individually minor but collectively significant actions taking place over a period of time.

3.1 Land Use

3.1.1 General Land Use

The topography throughout the corridor varies, but generally consists of rills, ravines, intermittent and ephemeral creeks, and perennial streams and rivers in major valleys. Land uses within the project area, at lower elevations, is agricultural and residential development. Land use at higher elevations is predominately undeveloped deciduous forests with some residential development. As previously described in Section 1, the project stretches from Lewis County, Missouri, to Lee County, Iowa, and is approximately 52 miles in length. With the exception of upland, deciduous forest being lost to the construction of the new portion of the transmission line easement, land use in the area will not change.

3.1.2 Important Farmland

A search of the Natural Resource Conservation Service (NRCS) Web Soil Survey was conducted to determine the farmland classification of the site. Although some of the area within the overall project area is shown as “prime farmland”, most of the area is shown as “not prime farmland”. The amount of land utilized for the pole placement within the Iowa project area will be minimal and no additional poles are planned for the Missouri project area.

Because the Missouri NRCS does not regulate the placement of pole structures (Scott Larsen, Area Resource Soil Scientist, 3 March 2023), only the grading of the new Winchester Substation was considered when completing NRCS Form AD-1006, Farmland Conversion Impact Rating. Because the form resulted in a score less than 160, no alternatives sites are required for consideration (USDA Response Letter, 5 May 2023). A score of zero was produced by the Iowa NRCS during the completion of Form AD-1006 (11 October 2023).

3.1.3 Formally Classified Lands

The proposed project area is not located within or in close proximity to any state parks or federal and/or state owned/operated lands. (See associated figure in Appendix X.)

3.2 Floodplains

3.2.1 Affected Environment

A comparison of the Federal Emergency Management Agency (FEMA) National Flood Hazard Layer (NFHL) and the proposed new overhead transmission lines and Winchester Substation was made to identify the potential for impacts to regulated floodways and floodplains. All proposed work for the Substation and transmission lines will take place outside of the FEMA recognized flood hazard areas. (See associated figure in Appendix X.)

3.2.2 Environmental Consequence

The proposed project will not have an impact of flood elevations in the area of the new transmission lines or substation.

3.2.3 Mitigation

No mitigation required.

3.3 Wetland

3.3.1 Affected Environment

A review of USFWS National Wetland Inventory (NWI) maps was conducted to determine the presence of US Army Corps of Engineers (USACE) regulated wetlands and other WOTUS. Wetlands were identified within the proposed project boundary, the transmission line corridor and the proposed new construction of the Winchester Substation however, poles will be placed in upland positions to avoid impacts and existing easements and access roads will be utilized. In the area of new construction, all construction vehicles will be restricted to upland areas (See associated figure in Appendix X). Since construction activities will take place outside of identified wetland areas, is not anticipated that Section 404 permitting by the USACE will be required.

Permitting from USACE Section 408 is not anticipated as no levees will be impacted by project activities.

3.3.2 Environmental Consequence

No impact.

3.3.3 Mitigation

No mitigation impact.

3.4 Water Resources

3.4.1 Affected Environment

A search of the Missouri Department of Natural Resources' (MODNR) Geosciences Technical Resource Assessment Tool (GeoSTRAT) and the Iowa GEOSAM was utilized to identify underground wells (water wells and oil/gas wells) on or around the property. There are private water wells identified in the vicinity of the project however, there were no oil and gas wells observed. A search of abandoned and active mines was also performed on December 11, 2023. Results showed that there are no abandoned mines within the project area. There are no sole source aquifers within Iowa or Missouri (See corresponding figure in Appendix X and data in Appendix X.)

3.4.2 Environmental Consequence

No impact.

3.4.3 Mitigation

No mitigation needed.

3.5 Coastal References

3.5.1 Affected Environment

The states of Missouri and Iowa are not within the boundaries of a Coastal Zone or Coastal Barrier Resource Area. Therefore, construction of the transmission line does not require review under the Coastal Zone Management Act or Coastal Barrier Resources Act.

3.5.2 Environmental Consequence

No change.

3.5.3 Mitigation

No mitigation required.

3.6 Biological Resources

3.6.1 Affected Environment

3.6.1.1 Threatened and Endangered Species

Using the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consulting (IPaC) tool, several threatened and endangered species were identified within the investigation boundary. No critical habitats were identified in the IPaC. Identified plant and animal species and potential impacts are discussed in the following paragraphs. Several animal and plant species were identified in a search of the Missouri

Natural Heritage Program database. However, there is no habitat within project boundaries that would support these species. Copies of official species lists are included as Appendix B.

3. 6.1.1.1 Mammals

Gray Bats – Gray Bats roost in caves or mines year-round and use water features and forested riparian corridors for foraging and travel. Current USFWS information (December 14, 2020) shows Missouri within the range of the Gray Bat; however, the majority of the project easement has been cleared and maintained and clearing of the easement for the new section of the transmission line route will be limited to the timeframe outside the active bat roosting season.

Indiana Bats and Northern Long-Eared Bats – All of Iowa and Missouri are classified by the USFWS as within the range of the Indiana Bat and Northern Long-Eared Bat. Suitable summer habitat for these bat species consists of a wide variety of forested/wooded habitats where bats roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields, and pastures. Additionally, individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000-feet (305 meters) of other forested/wooded habitat.

Per the USFWS 6 March 2023 Interim Voluntary Guidance for the Northern Long-Eared Bat: Forest Habitat Modification, the project will assume bats are present within the project area and any removal actions will occur during the non-roosting period.

Tricolored Bat - The tricolored bat, a small insectivorous bat that is distinguished by its unique tricolored fur and often appears yellowish to nearly orange, proposed endangered. The species is wide ranging across the eastern and central United States and portions of southern Canada, Mexico and Central America, with sporadic populations known to or are believed to occur in Iowa and Missouri. During the winter, tricolored bats are often found in caves and abandoned mines, although in the southern United States, where caves are sparse, tricolored bats are often found roosting in road-associated culverts where they exhibit shorter torpor bouts and forage during warm nights. Tricolored bats face extinction due primarily to the rangewide impacts of white-nose syndrome, a deadly disease affecting cave-dwelling bats across the continent.

3. 6.1.1.2 Clams

Sheepnose Mussel – This endangered species can be identified by the many low, wide bumps run in a single file line down the outer shell surface, from the beak (the swelling above the point where the 2 shell halves join) to the opposite shell edge. The rest of the shell surface is smooth (without bumps), and looks slightly pressed-in from the beak to the shell edge (similar to the pressed-in mark the length of your finger would make on wet clay), parallel to the row of bumps.

Higgins Eye (pearlymussel) – This endangered species is a freshwater mussel of larger rivers where it is usually found in areas with deep water and moderate currents. Its range includes the upper Mississippi River, the St. Croix River between Minnesota and Wisconsin, the Wisconsin River in Wisconsin, and the lower Rock River between Illinois and Iowa.

Spectaclecase (mussel) – This endangered, large mussel that can grow up to 9 inches in length. The shape of the shell is elongated, sometimes curved, and somewhat inflated, hence its name.

3. 6.1.1.3 Insects

Monarch Butterfly – The monarch is a candidate species and not yet listed or proposed for listing. There are no Section 7 requirements for candidate species. Regardless, impacts to this species are not anticipated as the majority of the site is row cropped.

Western Regal Fritillary Butterfly – The regal fritillary (Speyeria idalia) is a brush-footed butterfly with large, orange and black wings and is currently under evaluation for listing under the Endangered Species Act (ESA). Regal fritillaries live all year long and have only one lifecycle per year. Their survival as a species relies on the larvae surviving the winter and, in the spring, the small caterpillars finding their way to the violets. Regal fritillary now occurs only in local colonies of remnant prairie in Pennsylvania and Virginia in the east, from southern Wisconsin west to Montana, and south to northeast Oklahoma in the west.

3. 6.1.1.4 Plants

Eastern Prairie Fringed Orchid - This plant is 8 to 40 inches tall and has an upright leafy stem with a flower cluster called an inflorescence. The 3 to 8 inch lance-shaped leaves sheath the stem. The species historical range includes eastern Iowa and northeastern Missouri.

3. 6.1.1.5 Bald Eagle

While no longer considered endangered, bald eagles and golden eagles are protected by multiple federal laws, such as the Bald and Golden Eagle Act, the Migratory Bird Treaty Act, the Lacey Act, and other state and municipal protections. Eagles, their feathers and parts, nests, nest trees, and winter/nighttime roosts are all protected by federal law. The Bald and Golden Eagle Act prohibits anyone from taking, possessing, or transporting any eagle or eagle parts (including nests, eggs, feathers, etc.) without prior authorization from the USFWS. This includes both active and inactive nests. Activities that directly or indirectly lead to take are prohibited without a permit.

Impacts to this species are not anticipated as the majority of the site is cropped, a habitat not favored by eagles, and the nearest permanent water body, the Des Moines River, is more than ten miles northeast of the site.

3.6.2 Environmental Consequence

There are no areas of critical habitat for these species within the project area. The project will not likely adversely affect the species identified within this section.

3.6.3 Mitigation

Limitations that will be placed on tree clearing (outside the maternity roosting season and the use of minimally invasive techniques).

3.7 Cultural Resources and Historic Properties

3.7.1 Affected Environment

Efforts to identify potentially affected historic properties are described in the reports *Phase I Archaeological Survey for the Northeast Missouri Electric Power Cooperative MO70-2021B Missouri-Iowa Transmission Project, Clark and Lewis Counties, Missouri* (BCA 3077-1) and *Phase I Archaeological Survey for the Northeast Missouri Electric Power Cooperative MO70-2021B Missouri-Iowa Transmission Project, Lee County, Iowa* (BCA 3077-2) The reports describe the examination of the project's Area of Potential Effect, defined as a total project corridor approximately 55.2 miles in length and 100 feet wide. This APE was determined in consultation to be sufficient to encompass potentially affected historic properties. In addition, the Rural Utilities Service reviewed the APE and information concerning known sites in the APE.

The results of these identification efforts indicate that there are five (5) previously identified sites in the APE, with two (2) in Missouri and three (3) in Iowa. During the survey, seventeen (17) new sites and three isolated finds were discovered, including nine (9) sites and three (3) isolated finds in Missouri and eight (8) sites in Iowa. The APE for the project contains twenty-two (22) total sites. Of these sites, nine (9) were determined to be not eligible for the National Register of Historic Places, six (6) have undetermined NRHP eligibility, and seven (7) have been determined or recommended to be eligible for the NRHP. For the purposes of assessing effect, sites with undetermined NRHP eligibility and sites recommended to be potential eligible are treated as if they are eligible.

The RUS considered the project effects to these seven (7) sites, and determined that they would not be adversely affected by the proposed activities when avoidance and minimization measures are implemented. The RUS identified the following as consulting parties to the Undertaking and consulted with them on the effects of the project: the Missouri State Historic Preservation Officer; the Iowa State Historic Preservation Officer; the Apache Tribe of Oklahoma; the Iowa Tribe of Kansas and Nebraska; the Iowa Tribe of Oklahoma; the Menominee Indian Tribe of Wisconsin; the Miami Tribe of Oklahoma; The Osage Nation; the Sac & Fox Tribe of the Mississippi in Iowa; the Sac & Fox Nation of Missouri in Kansas and Nebraska, and; the Sac & Fox Nation of Oklahoma.

3.7.2 Environmental Consequence

The seven (7) sites that were either previously determined eligible, recommended to be eligible, or treated as eligible for the NRHP will not be adversely affected by the Undertaking's activities. Four (4) of the sites will be avoided by temporarily marking the site boundary and conducting any project activities outside of those boundaries. Adverse effects at the other three sites will be minimized through restricting project activities to times of dry soil conditions, use of low-impact practices for the conduct of project activities within the site boundaries and the use of timber matting to protect work areas within the site boundaries. These measures will minimize disturbance to an extent that the deposits at the sites will not be affected in a way that diminishes their information potential. At one of these sites, the implementation of minimization measures will be monitored by an archaeologist meeting Secretary of the Interior professional qualifications and Osage Nation standards.

3.7.3 Mitigation

As described above, project activities will be constrained within or around seven sites so as to minimize or avoid effects. When used, monitors will provide daily monitoring reports.

3.8 Aesthetics

3.8.1 Affected Environment

The project will not be located in areas of high scenic beauty, scenic overlooks, scenic highways, wilderness areas, integral vistas, parks, national forests nor along wild and scenic, recreational, or national inventory rivers. Additionally, a significant portion of the project rebuilds existing transmission lines along established rights-of-way.

3.8.2 Environmental Consequence

For the reasons listed above, the proposed project will have limited to no aesthetic impact.

3.8.3 Mitigation

None required.

3.9 Air Quality

3.9.1 Affected Environment

This Project is in Lewis County, Missouri, and Lee County, Iowa. Ambient air quality is protected by federal, state, and local regulations. The US Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for nine criteria pollutants. These standards were implemented to protect human health, including the health of defined sensitive populations such as asthmatics, children, and the elderly. Lewis (MO) and Lee (IA) counties are designated as having attainment, meaning the areas are in compliance with federal clean air standards for criteria pollutants carbon monoxide, ozone, particulate matter, nitrogen dioxide, and lead and as attainment/unclassified for sulfur dioxide (USEPA 2022c).

3.9.2 Environmental Consequence

Air emissions resulting from construction of the Project will occur due to 1) vehicular emissions from increased traffic from the construction work force and construction deliveries, 2) internal combustion engine emissions from construction equipment, and 3) fugitive dust emissions (particulate matter less than 10 microns in diameter (PM10) and particulate matter less than 2.5 microns in diameter (PM2.5)) from site preparation and equipment travel. Emissions from construction activities can be difficult to quantify as they are dependent on the number and type of construction vehicles in operation at any given time during construction, the number of construction workers driving to and from the site, the type of construction activities occurring, and soil conditions related to dust potential. Generally, air emissions from construction are low and temporary in nature, fall off rapidly with distance from the construction site, and will not result

in long-term impacts. No stationary emissions units (e.g., emergency generators) are being constructed as part of the Project, and none of the facilities will generate air emissions. No NAAQS permitting analysis or permitting will be required for Project operation therefore, negligible impacts to air quality are expected from Project construction and operation.

3.9.3 Mitigation

Air emissions from construction activities are expected to have a minimal effect on air quality, be temporary in nature, and will be largely within the Project construction area, reducing the further one moves outside the Project site and right-of-way (ROW) boundaries. Emissions will be from fugitive sources (dust from soil disturbance), fuel combustion from construction equipment, and fuel combustion from increased vehicular traffic. Construction equipment emissions will be controlled by use of properly maintained equipment. Vehicular emissions will be controlled by minimizing the time spent idling. Fugitive dust control mitigation measures will include, but are not limited to, the following:

- Applications of water
- Watering of roadways after completion of grading
- Reduction in speed on unpaved roadways
- Use of sweepers or water trucks to remove mud at points of public street access
- Stabilization of dirt storage piles by seeding and mulching, tarps, or barrier fencing

3.10 Socio-Economic Impact Assessment

3.10.1 Affected Environment

Based on information obtained from the U.S. Census Bureau, the area in a 1-mile radius of the project is sparsely populated, with those residing in that area nearly equal between male and female and less than 10%minority individuals. The population over age 64, is nearly 25% of the total population within in project area. Unemployment amongst the population was less than 5% and low income individuals reported at 30%. The majority of the homes in the area are predominately occupant owned. No sensitive populations were identified and no critical service gaps are present within the project area

3.10.2 Environmental Consequence

No impact.

3.10.3 Mitigation

No mitigation necessary.

3.11 Miscellaneous Issues

3.11.1 Noise

Noise impacts will occur during construction, but since the Project Area is not in close proximity to noise sensitive receptors, the impacts during construction will not be significant.

3.11.2 Transportation

The project is proposed to cross over multiple county roadways and US Highway 218. The design team will coordinate with the local county jurisdictions and the Iowa DOT for proper compliance of those crossings.

3.12 Human Health and Safety

3.12.1 Introduction

There are no known health risks that have been conclusively demonstrated to be caused by living near high-voltage power lines.

3.12.2 Electromagnetic Fields and Interference

No potential effects or interference due to electromagnetic fields (EMF)s are expected from the project. The project area is sparsely populated, and the Missouri portion of the project will co-locate with an existing line, where no known issues have been reported.

3.12.3 Environmental Risk Management

One former superfund site is located within the project area. The design team is aware of the presence and will place poles to avoid the areas of concern and the existing site cap. The E.I. DuPont de Nemours & Company, Inc. (County Road X23) site consists of two subsites, known as the Baier and McCarl subsites, located in rural Lee County, near West Point, Iowa. Between 1949 and 1953, an estimated 48,000 to 72,000 55-gallon drums of waste generated from DuPont's paint manufacturing facility in Fort Madison, Iowa, were disposed at the site. The wastes contaminated groundwater and soil at the two subsites with metals and organic compounds. Ash and unburned sludges were also present on the subsites. The site was listed on EPA's National Priorities List (NPL) in September 1990. Following cleanup, the EPA deleted the site from the NPL in September 1995. Groundwater monitoring and cap maintenance are ongoing.

3.13 Corridor Analysis

Refer to Chapter 2, Alternatives Evaluated Including the Proposed Action.

Section 4 Cumulative Effects

This section addresses the cumulative impacts associated with the ROW modifications considered in this EA. Cumulative impacts result, "from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7).

The methodology used to analyze the potential cumulative impacts included identification of the affected environment and environmental consequences associated with each modification individually, and the cumulative effects associated with past, present, and future conditions relevant to these modifications when considered collectively.

The proposed Project will result in the rebuild/ construction and operation of overhead electric transmission lines and distribution facilities. The majority of the Project corridor will be rebuilt on existing utility easements, owned by NEP and others, to accommodate a new double-circuit line, with a small portion (approximately six miles) requiring new easement acquisition and development of a new Right-of-Way and transmission line installation. Additionally, the footprint of the Winchester Substation will be expanded.

Upon completion of construction, operations at the substation site are expected to generate 4 – 10 trips per year for maintenance and inspection. The transmission corridor will be visited at least once a year and vegetation management will be provided through manual upkeep. The planned operational life of the installed facilities is approximately 50 years.

4.1 Past, Present, and Reasonably Foreseeable Future Actions Relevant to the Cumulative Effects Analysis

4.1.1 Land Use

The project area is predominantly existing utility easements and the NRCS does not regulate the placement of pole structures, the only the grading for the project will occur at the Winchester Substation. Since that grading activity fell below the NRCS threshold, no alternative sites were required for consideration. The project is not located within or in close proximity to any state parks or federal and/or state owned or operated lands.

4.1.2 Floodplains

A comparison of the Federal Emergency Management Agency (FEMA) National Flood Hazard Layer (NFHL) and the proposed new overhead transmission lines and Winchester Substation was made to identify the potential for impacts to regulated floodways and floodplains. All proposed work with this project will take place outside of the FEMA recognized flood hazard areas.

4.1.3 Wetlands

A review of USFWS National Wetland Inventory (NWI) maps was conducted to determine the presence of US Army Corps of Engineers (USACE) regulated wetlands and other WOTUS. Wetlands were identified

within the proposed project boundary, the transmission line corridor and the proposed new construction of the Winchester Substation however, poles will be placed in upland positions to avoid impacts and existing easements and access roads will be utilized.

4.1.4 Water Resources

A search of the Missouri Department of Natural Resources' (MODNR) Geosciences Technical Resource Assessment Tool (GeoSTRAT) and the Iowa GEOSAM was utilized to identify underground wells (water wells and oil/gas wells) on or around the property. There are private water wells identified in the vicinity of the project however, there were no oil and gas wells observed. A search of abandoned and active mines was also performed and there are no abandoned mines within the project area. There are no sole source aquifers within Iowa or Missouri. Construction vehicles will be restricted to upland areas and construction activities will take place outside of identified wetland areas.

4.1.5 Coastal Resources

The states of Missouri and Iowa are not within the boundaries of a Coastal Zone or Coastal Barrier Resource Area. Therefore, construction of the transmission line does not require review under the Coastal Zone Management Act or Coastal Barrier Resources Act.

4.1.6 Biological Resources

Using the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consulting (IPaC) tool, several threatened and endangered species were identified within the investigation boundary. No critical habitats were identified in the IPaC.

4.1.6.1 Mammals

Gray Bats – Current USFWS information (December 14, 2020) shows Missouri within the range of the Gray Bat; however, the majority of the project easement has been cleared and maintained and clearing of the easement for the new section of the transmission line route will be limited to the timeframe outside the active bat roosting season.

Indiana Bats and Northern Long-Eared Bats – All of Missouri is classified by the USFWS as within the range of the Indiana Bat and Northern Long-Eared Bat. Suitable summer habitat for these bat species consists of a wide variety of forested/wooded habitats where bats roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields, and pastures. Additionally, individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000-feet (305 meters) of other forested/wooded habitat.

Per the USFWS 6 March 2023 Interim Voluntary Guidance for the Northern Long-Eared Bat: Forest Habitat Modification, the project will assume bats are present within the project area and any removal actions will occur during the non-roosting period.

4.1.6.2 Insects

Monarch Butterfly – The monarch is a candidate species and not yet listed or proposed for listing. There are no Section 7 requirements for candidate species. Impacts to this species are not anticipated as the majority of the project area is either row cropped or existing maintained easement.

4.1.6.3 Bald Eagle

While no longer considered endangered, bald eagles and golden eagles are protected by multiple federal laws, such as the Bald and Golden Eagle Act, the Migratory Bird Treaty Act, the Lacey Act, and other state and municipal protections. Eagles, their feathers and parts, nests, nest trees, and winter/nighttime roosts are all protected by federal law. The Bald and Golden Eagle Act prohibits anyone from taking, possessing, or transporting any eagle or eagle parts (including nests, eggs, feathers, etc.) without prior authorization from the USFWS. This includes both active and inactive nests. Activities that directly or indirectly lead to take are prohibited without a permit.

Impacts to this species are not anticipated as the majority of the site is cropped, a habitat not favored by eagles, and the nearest permanent water body, the Des Moines River, is more than ten miles northeast of the site.

4.1.7 Cultural Resources & Historic Properties

The field investigation of the Missouri portion of the project identified and recorded new archeological sites, isolated lithic flakes, and a pioneer cemetery within the corridor for the proposed project. The landforms associated with the findings were found to be significantly eroded/disturbed during the geomorphic assessment, suggesting negligible potential for additional significant archeological deposits and requiring no further investigations within the project corridor. The prehistoric sites were identified along intact landforms and are recommended eligible for National Register of Historic Places (NRHP) inclusion. Avoidance of these sites or additional archeological investigations to further determine eligibility are recommended.

The field investigation of the Iowa portion of the project identified and recorded eight new archeological sites within the corridor. Seven of these newly recorded sites are prehistoric, including four habitation sites, one lithic scatter site, an isolated projectile point fragment, and an isolated lithic flake. Two of the habitation sites were recorded along a landform that may possess intact components. Avoidance of these sites or additional archeological investigations to further determine National Register of Historic Places eligibility are recommended.

No further investigation was recommended for the project areas and the respective SHPOs have provided concurrence.

4.1.8 Aesthetics

The project will not be located in areas of high scenic beauty, scenic overlooks, scenic highways, wilderness areas, integral vistas, parks, national forests nor along wild and scenic, recreational, or national inventory rivers. Additionally, a significant portion of the project rebuilds existing transmission lines along established rights-of-way.

4.1.9 Air Quality Resources

Air emissions from construction activities are expected to have a minimal effect on air quality, be temporary in nature, and will be largely within the Project construction area, reducing the further one moves outside the Project site and right-of-way (ROW) boundaries. Emissions will be from fugitive sources (dust from soil disturbance), fuel combustion from construction equipment, and fuel combustion from increased vehicular traffic. Construction equipment emissions will be controlled by use of properly maintained equipment. Vehicular emissions will be controlled by minimizing the time spent idling. Fugitive dust control mitigation measures will include, but are not limited to, the following:

- Applications of water
- Watering of roadways after completion of grading
- Reduction in speed on unpaved roadways
- Use of sweepers or water trucks to remove mud at points of public street access
- Stabilization of dirt storage piles by seeding and mulching, tarps, or barrier fencing

4.1.10 Socioeconomic

Cumulative socioeconomic impacts are generally only a concern if they would overextend public services and accommodations in the project area. Because of the small size of the work force associated with transmission line construction, and its transitory nature, cumulative impacts are not expected with regard to the construction of the project.

4.1.11 Miscellaneous Issues

4.1.11.1 Noise

Noise impacts will occur during construction, but since the Project Area is not in close proximity to noise sensitive receptors, the impacts during construction will not be significant.

4.1.11.2 Transportation

The project is proposed to cross over multiple county roadways and US Highway 218. The design team will coordinate with the local county jurisdictions and the Iowa DOT for proper compliance of those crossings.

4.1.12 Human Health and Safety

4.1.12.1 Electromagnetic Fields and Interference

No potential effects or interference due to electromagnetic fields (EMF)s are expected from the project. The project area is sparsely populated, and the Missouri portion of the project will co-locate with an existing line, where no known issues have been reported.

4.1.12.2 Environmental Risk Management

One former superfund site is located within the project area. The design team is aware of the presence and will place poles to avoid the areas of concern and the existing site cap. The E.I. DuPont de Nemours & Company, Inc. (County Road X23) site consists of two subsites, known as the Baier and McCarl subsites, located in rural Lee County, near West Point, Iowa. The site was listed on EPA's National Priorities List (NPL) in September 1990. Following cleanup, the EPA deleted the site from the NPL in September 1995. Groundwater monitoring and cap maintenance are ongoing

4.2 Summary

To a large degree, the cumulative effects to all environmental resources should be minimized in the long-term based on extensive planning and the location of the planned linear facilities within a common utility corridor (to the extent possible). In particular, by consolidating a portion of the project within an established utility corridor, future lines and linear facilities are located in a previously planned for and modified setting, thereby reducing cumulative effects related to impacts resulting from the construction of new land disturbance required for the project. NEP has worked to design the project that (1) accommodates existing and potential future utilities to the greatest degree possible, (2) minimizes environmental impacts, and (3) maintains consistency with the original easements or rights-of-ways.

Section 5 Summary of Mitigation

Table 5-1: Mitigations

Resource	Mitigation Measures
Land Use	No mitigations are warranted.
Floodplains	No mitigations are warranted.
Wetlands	No mitigations are warranted.
Water Resources	All necessary BMPs will be implemented by the contractor. A SWPPP will be implemented, and runoff control will be considered in design.
Coastal Resources	No mitigations are warranted.
Biological Resources	Tree clearing will be limited to non-bat rooting seasons.
Cultural Resources and Historic Properties	Identified sites avoidance.
Aesthetics	No mitigations are warranted.
Air Quality	All necessary BMPs will be implemented by the contractor.
Socio-Economic Impact	No mitigations are warranted.
Miscellaneous Issues	No mitigations are warranted.
Human Health and Safety	All applicable OSHA guidelines will be followed.

Section 6 List of Preparers

The environmental review for the Project was prepared by RUS, NEP, and Stanley Consultants, Inc.

The following is a list of preparers of this document:

Rural Utilities Services Rural Utilities Services

- Environmental and Historic Preservation Division

Northeast Missouri Power Cooperative

- Skyler Wiegmann, Chief Operations Officer
- Quentin Gehring, Engineering Manager
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- Brian Fuqua, System Engineer

Stanley Consultants, Inc.

- Eric Kamm, Business Development Manager
- Megan Dusing, Project Manager
- Melissa Tiedemann, Senior Environmental Planner


Stanley Consultants INC.
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Appendix A Resource Documentation

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 Clark County, Missouri, Lee County, Iowa, and Lewis County, Missouri

January 20, 2023

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

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.

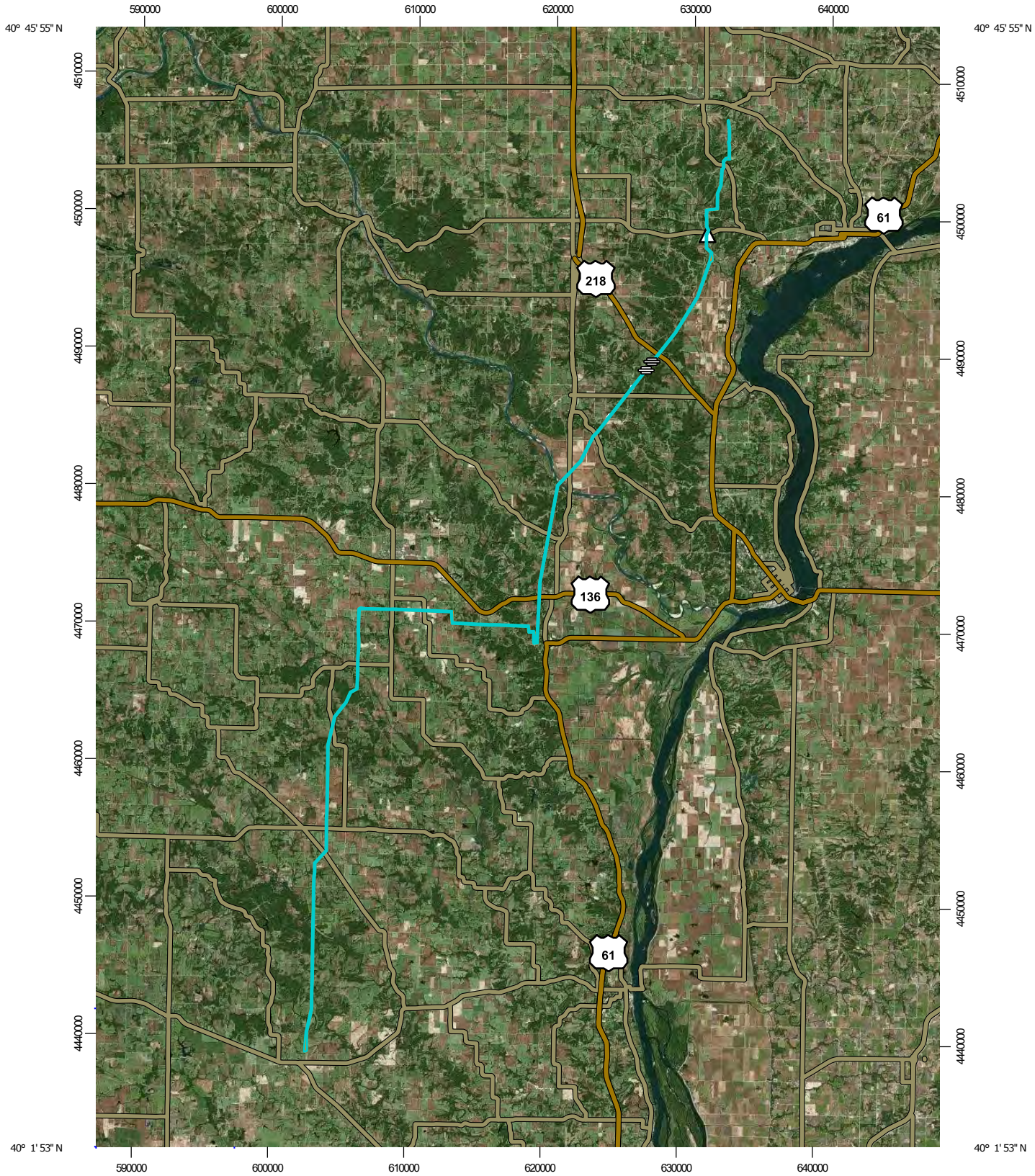
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree 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.



Map Scale: 1:397,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 5000 10000 20000 30000

Feet
0 15000 30000 60000 90000

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 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 scales ranging from 1:15,800 to 1:24,000.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
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: Clark County, Missouri
Survey Area Data: Version 25, Aug 30, 2022

Soil Survey Area: Lee County, Iowa
Survey Area Data: Version 31, Oct 11, 2022

Soil Survey Area: Lewis County, Missouri
Survey Area Data: Version 25, Sep 6, 2022

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Jan 1, 1999—Dec 31, 2003

MAP LEGEND

MAP INFORMATION

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 (NEP Missouri to Iowa Environmental Assessment)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
30032	Armstrong loam, 12 to 18 percent slopes, eroded	71.5	2.6%
30035	Armstrong loam, 5 to 12 percent slopes, eroded	130.7	4.7%
30039	Armstrong loam, 9 to 14 percent slopes, eroded	18.0	0.6%
30050	Edina silt loam, 0 to 2 percent slopes	73.2	2.6%
30059	Gara loam, 18 to 24 percent slopes, moderately eroded	28.9	1.0%
30067	Gorin silt loam, 3 to 9 percent slopes, eroded	40.4	1.5%
30097	Keswick loam, 12 to 18 percent slopes, eroded	52.4	1.9%
30098	Keswick loam, 5 to 14 percent slopes, eroded	33.3	1.2%
30149	Lindley loam, 14 to 40 percent slopes	194.8	7.0%
34018	Moniteau silt loam, 0 to 3 percent slopes, rarely flooded	20.7	0.7%
36022	Klum fine sandy loam, 0 to 2 percent slopes, frequently flooded	9.9	0.4%
36041	Vesser silt loam, 0 to 2 percent slopes, frequently flooded	22.0	0.8%
36091	Vesser silt loam, 1 to 3 percent slopes, occasionaly flooded	14.6	0.5%
36104	Neeper loam, 2 to 5 percent slopes	2.5	0.1%
36113	Klum fine sandy loam, 1 to 3 percent slopes, frequently flloded	2.2	0.1%
36116	Zook silty clay loam, heavy till, 0 to 2 percent slopes, occasionally flooded	16.0	0.6%
50012	Putnam silt loam, 0 to 1 percent slopes	45.5	1.6%
50015	Adco silt loam, 1 to 5 percent slopes	143.8	5.2%
60006	Marion silt loam, 2 to 5 percent slopes	47.0	1.7%
60022	Leonard silt loam, 1 to 6 percent slopes, eroded	30.2	1.1%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
60068	Bucklick silt loam, 18 to 35 percent slopes	42.4	1.5%
60248	Winfield silt loam, 5 to 12 percent slopes, eroded	120.0	4.3%
64020	Hoopeston fine sandy loam, 1 to 5 percent slopes	14.7	0.5%
66054	Wakeland silt loam, 0 to 2 percent slopes, frequently flooded	41.4	1.5%
66093	Gilford sandy loam, occasionally ponded, 0 to 2 percent slopes, occasionally flooded	25.6	0.9%
67005	Wakeland silt loam, 1 to 3 percent slopes, frequently flooded	13.1	0.5%
99001	Water	6.5	0.2%
Subtotals for Soil Survey Area		**1,261.2**	**45.4%**
Totals for Area of Interest		**2,775.9**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
41	Sparta loamy sand, 0 to 2 percent slopes	22.7	0.8%
41B	Sparta loamy sand, 2 to 7 percent slopes	4.3	0.2%
56	Cantril loam, 0 to 2 percent slopes	11.8	0.4%
56B	Cantril loam, 2 to 5 percent slopes	11.2	0.4%
57	Rushville silt loam, 0 to 2 percent slopes	0.9	0.0%
58D2	Douds loam, heavy loess, 9 to 14 percent slopes, moderately eroded	8.2	0.3%
58E2	Douds loam, heavy loess, 14 to 18 percent slopes, moderately eroded	3.4	0.1%
63B	Chelsea loamy fine sand, 2 to 9 percent slopes	0.5	0.0%
65E2	Lindley loam, 14 to 18 percent slopes, moderately eroded	21.2	0.8%
65E3	Lindley clay loam, 14 to 18 percent slopes, severely eroded	0.9	0.0%
65F2	Lindley loam, 18 to 25 percent slopes, moderately eroded	55.8	2.0%
65G	Lindley loam, 25 to 40 percent slopes	49.5	1.8%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
80B	Clinton silt loam, 2 to 5 percent slopes	4.7	0.2%
80C2	Clinton silt loam, 5 to 9 percent slopes, eroded	39.3	1.4%
80D2	Clinton silt loam, 9 to 14 percent slopes, eroded	12.9	0.5%
115D	Chelsea loamy fine sand, 9 to 18 percent slopes	2.1	0.1%
130	Belinda silt loam, 0 to 2 percent slopes	8.9	0.3%
131B	Pershing silt loam, 2 to 5 percent slopes	6.2	0.2%
132B	Weller silt loam, 2 to 5 percent slopes	65.1	2.3%
132C2	Weller silt loam, 5 to 9 percent slopes, moderately eroded	76.1	2.7%
133	Colo silty clay loam, heavy till, 0 to 2 percent slopes, occasionally flooded	9.9	0.4%
140	Sparta loamy sand, thick surface, 0 to 2 percent slopes	77.9	2.8%
173	Hoopeston sandy loam, 0 to 2 percent slopes	4.5	0.2%
175	Dickinson fine sandy loam, 0 to 2 percent slopes	8.1	0.3%
179C	Gara loam, 5 to 10 percent slopes	3.3	0.1%
180	Keomah silt loam, 0 to 2 percent slopes	1.5	0.1%
180B	Keomah silt loam, 2 to 5 percent slopes	7.5	0.3%
208	Landes sandy loam, 0 to 2 percent slopes	30.4	1.1%
220	Nodaway silt loam, 0 to 2 percent slopes	20.0	0.7%
260	Beckwith silt loam, 0 to 2 percent slopes	30.8	1.1%
263	Okaw silt loam, 0 to 3 percent slopes	11.7	0.4%
316	Birds-Klum complex, 0 to 2 percent slopes, frequently flooded	9.6	0.3%
424D2	Lindley-Keswick loams, 9 to 14 percent slopes, moderately eroded	10.2	0.4%
425C2	Keswick loam, 5 to 9 percent slopes, moderately eroded	10.0	0.4%
425D2	Keswick loam, 9 to 14 percent slopes, moderately eroded	61.8	2.2%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
425D3	Keswick clay loam, 9 to 14 percent slopes, severely eroded	3.5	0.1%
484	Lawson silt loam, 0 to 2 percent slopes	0.0	0.0%
485	Spillville loam, 0 to 2 percent slopes	3.2	0.1%
520	Coppock silt loam, 0 to 2 percent slopes	8.2	0.3%
587	Chequest silty clay loam, 0 to 2 percent slopes	12.5	0.5%
594D2	Galland loam, heavy loess, 9 to 14 percent slopes, moderately eroded	3.2	0.1%
594D3	Galland soils, 9 to 14 percent slopes, severely eroded	7.9	0.3%
594E2	Galland loam, heavy loess, 14 to 18 percent slopes, moderately eroded	1.5	0.1%
687	Watkins silt loam, 1 to 3 percent slopes	8.4	0.3%
688	Koszta silt loam, 0 to 2 percent slopes, rarely flooded	8.5	0.3%
720	Racoon silt loam, 0 to 2 percent slopes	5.8	0.2%
730B	Nodaway-Cantril complex, 2 to 5 percent slopes	51.7	1.9%
793	Bertrand silt loam, 0 to 2 percent slopes	12.5	0.4%
793B	Bertrand silt loam, 2 to 5 percent slopes	10.2	0.4%
793C2	Bertrand silt loam, 5 to 9 percent slopes, moderately eroded	13.1	0.5%
795C2	Ashgrove silt loam, 5 to 9 percent slopes, moderately eroded	0.2	0.0%
795C3	Ashgrove soils, 5 to 9 percent slopes, severely eroded	7.4	0.3%
795D2	Ashgrove silt loam, 9 to 14 percent slopes, moderately eroded	23.2	0.8%
795D3	Ashgrove soils, 9 to 14 percent slopes, severely eroded	4.4	0.2%
820	Dockery silt loam, 0 to 2 percent slopes, occasionally flooded	2.0	0.1%
880B	Clinton silt loam, terrace, 2 to 5 percent slopes	4.2	0.2%
880C2	Clinton silt loam, terrace, 5 to 9 percent slopes, eroded	3.1	0.1%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
950	Niota silty clay loam, 0 to 2 percent slopes	15.9	0.6%
950B	Niota silty clay loam, 2 to 5 percent slopes	0.2	0.0%
950D2	Niota silty clay loam, 7 to 14 percent slopes, moderately eroded	8.2	0.3%
977	Richwood silt loam, 0 to 2 percent slopes	5.7	0.2%
978	Festina silt loam, 1 to 3 percent slopes	2.5	0.1%
1152	Marshan clay loam, 0 to 2 percent slopes, rarely flooded	6.2	0.2%
5010	Pits, sand and gravel	2.3	0.1%
5011	Anthroportic Udorthents, reclaimed sand and gravel pits, 0 to 9 percent slopes	0.0	0.0%
S154G	Douds-Alvin-Tell Complex, 18 to 60 percent slopes	4.9	0.2%
S484	Lawson silt loam, heavy till, 0 to 2 percent slopes, occasionally flooded	1.9	0.1%
S587	Chequest silty clay loam, 0 to 2 percent slopes, occasionally flooded	4.1	0.1%
W	Water	8.9	0.3%
Subtotals for Soil Survey Area		**958.4**	**34.5%**
Totals for Area of Interest		**2,775.9**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
13505	Blackoar silt loam, 0 to 2 percent slopes, occasionally flooded	39.6	1.4%
30039	Armstrong loam, 9 to 14 percent slopes, eroded	7.8	0.3%
30068	Gorin silt loam, 5 to 9 percent slopes, eroded	76.5	2.8%
30096	Keswick clay loam, Audrain-Shelby plain, 9 to 14 percent slopes, eroded	79.2	2.9%
30106	Kilwinning silt loam, 1 to 5 percent slopes	49.6	1.8%
30243	Vigar loam, 3 to 5 percent slopes, rarely flooded	2.5	0.1%
34008	Gifford silt loam, 5 to 9 percent slopes, eroded, rarely flooded	27.7	1.0%
34018	Moniteau silt loam, 0 to 3 percent slopes, rarely flooded	13.2	0.5%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
36013	Fatima silt loam, 0 to 2 percent slopes, occasionally flooded	2.3	0.1%
36080	Fatima silt loam, 1 to 3 percent slopes, frequently flooded	3.7	0.1%
50001	Armstrong loam, 5 to 9 percent slopes, eroded	69.8	2.5%
50012	Putnam silt loam, 0 to 1 percent slopes	17.2	0.6%
50015	Adco silt loam, 1 to 5 percent slopes	24.1	0.9%
50040	Lindley loam, 14 to 20 percent slopes, eroded	47.0	1.7%
50042	Lindley loam, 20 to 35 percent slopes, eroded	46.1	1.7%
50057	Putnam silt loam, 1 to 3 percent slopes	0.9	0.0%
54000	Chariton silt loam, 0 to 2 percent slopes, rarely flooded	8.1	0.3%
60022	Leonard silt loam, 1 to 6 percent slopes, eroded	23.0	0.8%
60228	Vanmeter silt loam, 14 to 25 percent slopes	3.3	0.1%
66040	Kickapoo fine sandy loam, 0 to 2 percent slopes, frequently flooded	2.6	0.1%
67050	Kickapoo fine sandy loam, 1 to 3 percent slopes, frequently flooded	5.4	0.2%
67602	Westerville silt loam, 1 to 3 percent slopes, frequently flooded	2.9	0.1%
99001	Water	3.3	0.1%
Subtotals for Soil Survey Area		**555.5**	**20.0%**
Totals for Area of Interest		**2,775.9**	**100.0%**

Map Unit Descriptions (NEP Missouri to Iowa Environmental Assessment)

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.

Clark County, Missouri

30032—Armstrong loam, 12 to 18 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2x422
Elevation: 560 to 920 feet
Mean annual precipitation: 37 to 45 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 175 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Armstrong and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Armstrong

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over red palesol and underlying subglacial till

Typical profile

Ap - 0 to 8 inches: loam
BE - 8 to 11 inches: loam
Bt1 - 11 to 14 inches: clay loam
2Bt2 - 14 to 18 inches: clay loam
2Bt3 - 18 to 26 inches: clay
2Bt4 - 26 to 54 inches: clay loam
2C - 54 to 79 inches: clay loam

Properties and qualities

Slope: 9 to 14 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 12 to 16 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R109XY046MO - Till Upland Savanna
Hydric soil rating: No

Minor Components

Lindley

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY022MO - Till Exposed Backslope Woodland, F109XY009MO - Till Protected Backslope Forest
Hydric soil rating: No

30035—Armstrong loam, 5 to 12 percent slopes, eroded

Map Unit Setting

National map unit symbol: ytt3
Elevation: 800 to 1,300 feet
Mean annual precipitation: 31 to 40 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 160 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Armstrong, Eroded

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over till

Typical profile

Ap - 0 to 5 inches: loam
2Bt1 - 5 to 11 inches: clay loam
2Bt2 - 11 to 31 inches: clay
2Btg - 31 to 70 inches: clay loam

Properties and qualities

Slope: 5 to 12 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): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: R109XY046MO - Till Upland Savanna
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: No

Minor Components

Leonard, eroded

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R113XY002MO - Loess Upland Prairie
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

30039—Armstrong loam, 9 to 14 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2x423
Elevation: 560 to 920 feet
Mean annual precipitation: 37 to 45 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 175 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Armstrong

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over red palesol and underlying subglacial till

Typical profile

Ap - 0 to 8 inches: loam
BE - 8 to 11 inches: loam
Bt1 - 11 to 14 inches: clay loam
2Bt2 - 14 to 18 inches: clay loam
2Bt3 - 18 to 26 inches: clay
2Bt4 - 26 to 54 inches: clay loam
2C - 54 to 79 inches: clay loam

Properties and qualities

Slope: 9 to 14 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 12 to 16 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R109XY046MO - Till Upland Savanna
Hydric soil rating: No

Minor Components

Lindley

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY022MO - Till Exposed Backslope Woodland, F109XY009MO - Till Protected Backslope Forest
Hydric soil rating: No

30050—Edina silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tfz7

Elevation: 660 to 1,120 feet
Mean annual precipitation: 34 to 41 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 175 to 210 days
Farmland classification: Prime farmland if drained

Map Unit Composition

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

Description of Edina

Setting

Landform: Flats
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loess

Typical profile

Ap - 0 to 9 inches: silt loam
E - 9 to 18 inches: silt loam
Btg - 18 to 54 inches: silty clay
Cg - 54 to 79 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: R109XY001MO - Claypan Summit Prairie
Hydric soil rating: Yes

Minor Components

Haig

Percent of map unit: 10 percent
Landform: Flats
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R109XY001MO - Claypan Summit Prairie

Hydric soil rating: Yes

30059—Gara loam, 18 to 24 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 2sj61
Elevation: 650 to 1,350 feet
Mean annual precipitation: 33 to 41 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 177 to 209 days
Farmland classification: Not prime farmland

Map Unit Composition

Gara, moderately eroded, and similar soils: 94 percent
Minor components: 6 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gara, Moderately Eroded

Setting

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

Typical profile

Ap - 0 to 6 inches: loam
Bt1 - 6 to 31 inches: clay loam
Bt2 - 31 to 40 inches: clay loam
Bk - 40 to 79 inches: clay loam

Properties and qualities

Slope: 18 to 24 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 14 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C

Ecological site: R109XY008MO - Till Backslope Savanna
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: No

Minor Components

Vanmeter, flaggy
Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F109XY013MO - Interbedded Sedimentary Protected Backslope Forest, F109XY025MO - Interbedded Sedimentary Exposed Backslope Woodland
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Armstrong, moderately eroded
Percent of map unit: 3 percent
Landform: Interfluves
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R109XY046MO - Till Upland Savanna
Hydric soil rating: No

30067—Gorin silt loam, 3 to 9 percent slopes, eroded

Map Unit Setting
National map unit symbol: 2qmwx
Elevation: 500 to 1,300 feet
Mean annual precipitation: 35 to 47 inches
Mean annual air temperature: 50 to 57 degrees F
Frost-free period: 177 to 228 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Gorin and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gorin

Setting
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest

Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loess over pedisediment over till

Typical profile

A - 0 to 12 inches: silt loam
Bt1 - 12 to 27 inches: silty clay
2Bt2 - 27 to 48 inches: loam
3Bt3 - 48 to 80 inches: clay

Properties and qualities

Slope: 3 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F109XY003MO - Loess Upland Woodland
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Minor Components

Keswick

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

Lindley

Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY022MO - Till Exposed Backslope Woodland, F109XY009MO - Till Protected Backslope Forest
Hydric soil rating: No

30097—Keswick loam, 12 to 18 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2qnrh
Elevation: 700 to 1,300 feet
Mean annual precipitation: 35 to 45 inches
Mean annual air temperature: 50 to 57 degrees F
Frost-free period: 177 to 209 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Keswick

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Pedisediment and/or till

Typical profile

Ap - 0 to 7 inches: loam
2Bt - 7 to 20 inches: clay
2Btg - 20 to 60 inches: clay loam

Properties and qualities

Slope: 12 to 18 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F109XY007MO - Till Upland Woodland
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Minor Components

Lindley

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY022MO - Till Exposed Backslope Woodland, F109XY009MO - Till Protected Backslope Forest
Hydric soil rating: No

30098—Keswick loam, 5 to 14 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2qnrj
Elevation: 700 to 1,300 feet
Mean annual precipitation: 35 to 41 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 177 to 209 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Keswick

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Pedisediment over till

Typical profile

Ap - 0 to 7 inches: loam
2Bt - 7 to 20 inches: clay
2Btg - 20 to 60 inches: clay loam

Properties and qualities

Slope: 5 to 14 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 12 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F109XY007MO - Till Upland Woodland
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Minor Components

Leonard

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R113XY002MO - Loess Upland Prairie
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

30149—Lindley loam, 14 to 40 percent slopes

Map Unit Setting

National map unit symbol: 2tbr9
Elevation: 700 to 1,300 feet
Mean annual precipitation: 35 to 47 inches
Mean annual air temperature: 50 to 57 degrees F
Frost-free period: 177 to 228 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Lindley

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex

Parent material: Till

Typical profile

A - 0 to 5 inches: loam
E - 5 to 8 inches: loam
Bt - 8 to 30 inches: clay loam
Btk - 30 to 79 inches: clay loam

Properties and qualities

Slope: 14 to 40 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F109XY022MO - Till Exposed Backslope Woodland, F109XY009MO - Till Protected Backslope Forest
Hydric soil rating: No

Minor Components

Keswick

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

Goss

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F115XB048MO - Chert Exposed Backslope Woodland, F115XB011MO - Chert Protected Backslope Forest
Hydric soil rating: No

34018—Moniteau silt loam, 0 to 3 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: 2y8cy
Elevation: 490 to 980 feet
Mean annual precipitation: 37 to 45 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 175 to 195 days
Farmland classification: Prime farmland if drained

Map Unit Composition

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

Description of Moniteau

Setting

Landform: Flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Silty alluvium

Typical profile

Ap - 0 to 7 inches: silt loam
E - 7 to 15 inches: silt loam
Btg1 - 15 to 52 inches: silty clay loam
Btg2 - 52 to 79 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Rare
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F115XB025MO - Wet Terrace Forest
Hydric soil rating: Yes

Minor Components

Twomile

Percent of map unit: 10 percent
Landform: Flood-plain steps
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F115XB025MO - Wet Terrace Forest
Hydric soil rating: Yes

36022—Klum fine sandy loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: ytsq
Elevation: 500 to 1,400 feet
Mean annual precipitation: 33 to 45 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 145 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Klum

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap - 0 to 7 inches: fine sandy loam
C - 7 to 80 inches: stratified sandy loam to silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: FrequentRare
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A
Ecological site: F109XY030MO - Loamy Floodplain Forest
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: No

Minor Components

Vesser

Percent of map unit: 6 percent
Landform: Flood-plain steps
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R115XC018IL - Wet Floodplain Sedge Meadow
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Klum

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F115XC021IL - Sandy Floodplain Forest
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

Bremer

Percent of map unit: 2 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F115XB025MO - Wet Terrace Forest
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

36041—Vesser silt loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: yttn
Elevation: 600 to 1,400 feet
Mean annual precipitation: 35 to 45 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 160 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Vesser and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Vesser

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 12 inches: silt loam
E - 12 to 24 inches: silt loam
Btg - 24 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: FrequentRare
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: R109XY031MO - Wet Floodplain Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Minor Components

Klum

Percent of map unit: 8 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F109XY030MO - Loamy Floodplain Forest
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: No

36091—Vesser silt loam, 1 to 3 percent slopes, occasionaly flooded

Map Unit Setting

National map unit symbol: 2qs2j
Elevation: 340 to 1,400 feet
Mean annual precipitation: 35 to 41 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 177 to 209 days
Farmland classification: Prime farmland if drained

Map Unit Composition

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

Description of Vesser

Setting

Landform: Drainageways
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 12 inches: silt loam
E - 12 to 24 inches: silt loam
Btg - 24 to 60 inches: silty clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: RareOccasional
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: R109XY029MO - Wet Upland Drainageway Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Minor Components

Chequest

Percent of map unit: 3 percent
Landform: Drainageways
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F109XY020MO - Quercus macrocarpa-Quercus bicolor/Salix nigra/Carex-Calamagrostis canadensis
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

Floris

Percent of map unit: 3 percent
Landform: Drainageways
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F109XY004MO - Loamy Upland Drainageway Woodland
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Moniteau

Percent of map unit: 2 percent
Landform: Drainageways
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F113XY005MO - Wet Upland Drainageway Woodland
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: Yes

Bremer

Percent of map unit: 2 percent
Landform: Drainageways
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R109XY029MO - Wet Upland Drainageway Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

36104—Neeper loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2rpz4
Elevation: 500 to 800 feet
Mean annual precipitation: 35 to 45 inches
Mean annual air temperature: 52 to 57 degrees F

Frost-free period: 165 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Neeper and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Neeper

Setting
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Colluvium

Typical profile
Ap - 0 to 20 inches: loam
Bw - 20 to 51 inches: clay loam
BC - 51 to 80 inches: loam

Properties and qualities
Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: R109XY018MO - Loamy Footslope Savanna
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: No

36113—Klum fine sandy loam, 1 to 3 percent slopes, frequently flloded

Map Unit Setting
National map unit symbol: 2rpyz
Elevation: 500 to 1,400 feet
Mean annual precipitation: 33 to 45 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 145 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Klum and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Klum

Setting

Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Alluvium

Typical profile

Ap - 0 to 7 inches: fine sandy loam
C - 7 to 80 inches: stratified sandy loam to silt loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A
Ecological site: F109XY030MO - Loamy Floodplain Forest
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: No

Minor Components

Vesser

Percent of map unit: 4 percent
Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R115XC018IL - Wet Floodplain Sedge Meadow
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Bremer

Percent of map unit: 4 percent
Landform: Drainageways

Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R109XY029MO - Wet Upland Drainageway Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

36116—Zook silty clay loam, heavy till, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2wjg3
Elevation: 660 to 980 feet
Mean annual precipitation: 34 to 41 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 210 days
Farmland classification: Prime farmland if drained

Map Unit Composition

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

Description of Zook, Occasionally Flooded

Setting

Landform: Flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap - 0 to 8 inches: silty clay loam
A1 - 8 to 20 inches: silty clay loam
A2 - 20 to 38 inches: silty clay
Bg - 38 to 52 inches: silty clay loam
BCg - 52 to 61 inches: silty clay loam
Cg - 61 to 79 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 0 to 12 inches

Frequency of flooding: NoneOccasional
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D
Ecological site: R109XY031MO - Wet Floodplain Prairie
Hydric soil rating: Yes

Minor Components

Chequest, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R109XY031MO - Wet Floodplain Prairie
Hydric soil rating: Yes

Zook, occasionally flooded, overwash

Percent of map unit: 5 percent
Landform: Flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R109XY031MO - Wet Floodplain Prairie
Hydric soil rating: Yes

Zook, occasionally flooded, ponded

Percent of map unit: 5 percent
Landform: Flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R109XY031MO - Wet Floodplain Prairie
Hydric soil rating: Yes

50012—Putnam silt loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2tbss
Elevation: 600 to 1,000 feet
Mean annual precipitation: 37 to 41 inches
Mean annual air temperature: 52 to 54 degrees F

Frost-free period: 189 to 212 days
Farmland classification: Not prime farmland

Map Unit Composition

Putnam and similar soils: 88 percent
Minor components: 12 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Putnam

Setting

Landform: Divides
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess over pedisediment

Typical profile

Ap - 0 to 8 inches: silt loam
Eg - 8 to 14 inches: silt loam
Btg1 - 14 to 35 inches: silty clay
Btg2 - 35 to 47 inches: silty clay loam
2Btg3 - 47 to 79 inches: silty clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: 10 to 19 inches to abrupt textural change
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: R113XY001MO - Claypan Summit Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Minor Components

Mexico

Percent of map unit: 7 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R113XY001MO - Claypan Summit Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Adco

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R113XY001MO - Claypan Summit Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: No

50015—Adco silt loam, 1 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2qnz5
Elevation: 700 to 1,100 feet
Mean annual precipitation: 37 to 41 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 189 to 212 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Adco

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over pedisediment

Typical profile

Ap - 0 to 9 inches: silt loam
E - 9 to 16 inches: silt loam
Btg1 - 16 to 28 inches: clay
Btg2 - 28 to 49 inches: silty clay
2BCg - 49 to 60 inches: silty clay loam

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: 10 to 18 inches to abrupt textural change
Drainage class: Somewhat poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: About 12 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: R113XY001MO - Claypan Summit Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: No

Minor Components

Belinda

Percent of map unit: 6 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, toeslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R109XY001MO - Claypan Summit Prairie
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

Edina

Percent of map unit: 2 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R113XY001MO - Claypan Summit Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Leonard

Percent of map unit: 2 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R113XY002MO - Loess Upland Prairie
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

60006—Marion silt loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2qp0f
Elevation: 340 to 1,020 feet
Mean annual precipitation: 37 to 47 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 184 to 228 days
Farmland classification: Not prime farmland

Map Unit Composition

Marion and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Marion

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loess over pedisediment

Typical profile

Ap - 0 to 6 inches: silt loam
E - 6 to 10 inches: silt loam
Bt - 10 to 39 inches: silty clay
2Btg1 - 39 to 56 inches: silt loam
2Btg2 - 56 to 65 inches: silty clay

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 5 to 18 inches to abrupt textural change
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.06 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F113XY003MO - Claypan Summit Woodland

Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Minor Components

Mariosa

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F116AY066MO - Fragipan Upland Flatwoods
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: Yes

60022—Leonard silt loam, 1 to 6 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2x41x
Elevation: 570 to 980 feet
Mean annual precipitation: 35 to 43 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 190 to 210 days
Farmland classification: Prime farmland if drained

Map Unit Composition

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

Description of Leonard

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loess over till

Typical profile

Ap - 0 to 8 inches: silt loam
2Btg1 - 8 to 26 inches: silty clay
2Btg2 - 26 to 79 inches: silty clay loam

Properties and qualities

Slope: 1 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: R113XY002MO - Loess Upland Prairie
Hydric soil rating: Yes

Minor Components

Armstrong

Percent of map unit: 7 percent
Landform: Interfluves
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R109XY006MO - Till Upland Prairie
Hydric soil rating: No

Mexico

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R113XY001MO - Claypan Summit Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Keswick

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

60068—Bucklick silt loam, 18 to 35 percent slopes

Map Unit Setting

National map unit symbol: yttg
Elevation: 500 to 980 feet
Mean annual precipitation: 31 to 46 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 170 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Bucklick

Setting

Landform: Ridges, hillslopes
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over residuum weathered from dolomite

Typical profile

Ap - 0 to 8 inches: silt loam
Bt1 - 8 to 31 inches: silty clay
2Bt2 - 31 to 45 inches: silty clay
2Bt3/Cr - 45 to 53 inches: bedrock
2R - 53 to 80 inches: bedrock

Properties and qualities

Slope: 18 to 35 percent
Depth to restrictive feature: 40 to 60 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F109XY015MO - Loamy Backslope Woodland

Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Minor Components

Gorin

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F109XY003MO - Loess Upland Woodland
Hydric soil rating: No

60248—Winfield silt loam, 5 to 12 percent slopes, eroded

Map Unit Setting

National map unit symbol: ytth
Elevation: 510 to 710 feet
Mean annual precipitation: 31 to 40 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 160 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Winfield

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess

Typical profile

Ap - 0 to 6 inches: silt loam
BE - 6 to 10 inches: silt loam
Bt - 10 to 40 inches: silty clay loam
Btg - 40 to 60 inches: silt loam

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F115XB001MO - Deep Loess Upland Woodland
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

64020—Hoopeston fine sandy loam, 1 to 5 percent slopes

Map Unit Setting

National map unit symbol: ytss
Elevation: 360 to 1,400 feet
Mean annual precipitation: 35 to 45 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 200 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Hoopeston and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hoopeston

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap - 0 to 16 inches: fine sandy loam
Bw - 16 to 43 inches: sandy loam
C - 43 to 80 inches: loamy sand

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: About 12 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: R115XC004MO - Wet Terrace Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: No

Minor Components

Gilford

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R113XY004MO - Wet Terrace Prairie
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

66054—Wakeland silt loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2qp90
Elevation: 360 to 850 feet
Mean annual precipitation: 37 to 47 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 184 to 228 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Wakeland

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap - 0 to 6 inches: silt loam
Bw - 6 to 24 inches: silt loam
Bg - 24 to 80 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 24 inches
Frequency of flooding: FrequentOccasional
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F115XB031MO - Loamy Floodplain Forest
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Minor Components

Haymond

Percent of map unit: 12 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F115XB031MO - Loamy Floodplain Forest
Hydric soil rating: No

Moniteau

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F115XB025MO - Wet Terrace Forest
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: Yes

66093—Gilford sandy loam, occasionally ponded, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: yttm
Elevation: 360 to 900 feet
Mean annual precipitation: 37 to 47 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 184 to 228 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Gilford and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gilford

Setting

Landform: Flood-plain steps
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap - 0 to 15 inches: sandy loam
Bg - 15 to 49 inches: coarse sandy loam
Cg - 49 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: RareOccasional
Frequency of ponding: Occasional
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: R115XC005MO - Ponded Floodplain Prairie
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

Minor Components

Alvin, rarely flooded

Percent of map unit: 5 percent
Landform: Terraces
Landform position (two-dimensional): Summit
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

67005—Wakeland silt loam, 1 to 3 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2rpz0
Elevation: 340 to 1,000 feet
Mean annual precipitation: 37 to 47 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 184 to 228 days
Farmland classification: Not prime farmland

Map Unit Composition

Wakeland and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wakeland

Setting

Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Alluvium

Typical profile

Ap - 0 to 6 inches: silt loam
Bw - 6 to 24 inches: silt loam
Bg - 24 to 80 inches: silt loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 24 inches
Frequency of flooding: Frequent
Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F116AY041MO - Loamy Floodplain Forest, F109XY030MO - Loamy Floodplain Forest
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Minor Components

Moniteau

Percent of map unit: 5 percent
Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F115XB025MO - Wet Terrace Forest
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: Yes

99001—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Lee County, Iowa

41—Sparta loamy sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: fq18
Elevation: 600 to 1,300 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 180 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Sparta

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit, toeslope
Landform position (three-dimensional): Interfluve, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy eolian deposits

Typical profile

Ap - 0 to 8 inches: loamy sand
AB - 8 to 15 inches: loamy fine sand
Bw - 15 to 72 inches: fine sand
E and Bt - 72 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: R115XC011IL - Sand Prairie
Hydric soil rating: No

Minor Components

Dickinson

Percent of map unit: 5 percent

Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F115XC011MO - Chert Upland Woodland
Hydric soil rating: No

Saude

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R104XY010IA - Sandy Upland Prairie
Hydric soil rating: No

41B—Sparta loamy sand, 2 to 7 percent slopes

Map Unit Setting

National map unit symbol: fq19
Elevation: 700 to 1,200 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Sparta

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit, toeslope
Landform position (three-dimensional): Interfluve, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy eolian deposits

Typical profile

Ap - 0 to 8 inches: loamy sand
AB - 8 to 15 inches: loamy fine sand
Bw - 15 to 72 inches: fine sand
E and Bt - 72 to 80 inches: fine sand

Properties and qualities

Slope: 2 to 7 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups
Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: R115XC011IL - Sand Prairie
Hydric soil rating: No

56—Cantril loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: fq1s
Elevation: 500 to 1,400 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: All areas are prime farmland

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

Description of Cantril, Rarely Flooded

Setting
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy colluvium

Typical profile
H1 - 0 to 44 inches: loam
H2 - 44 to 60 inches: clay loam

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)

Depth to water table: About 12 to 42 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B/D
Ecological site: R109XY036MO - Wet Loess High Terrace Savanna
Hydric soil rating: No

Minor Components

Vesser, rarely flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R115XC018IL - Wet Floodplain Sedge Meadow
Hydric soil rating: Yes

Olmitz, rarely flooded

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R109XY018MO - Loamy Footslope Savanna
Hydric soil rating: No

56B—Cantril loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2wjg0
Elevation: 500 to 1,400 feet
Mean annual precipitation: 33 to 41 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 175 to 220 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Cantril

Setting

Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy colluvium

Typical profile

Ap - 0 to 8 inches: loam
E - 8 to 12 inches: loam
BE - 12 to 17 inches: loam
Bt - 17 to 39 inches: clay loam
C - 39 to 79 inches: clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 12 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Ecological site: R109XY036MO - Wet Loess High Terrace Savanna
Hydric soil rating: No

Minor Components

Coppock, rarely flooded

Percent of map unit: 5 percent
Landform: Flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R109XY038MO - Wet Terrace Prairie
Hydric soil rating: Yes

Nodaway, frequently flooded

Percent of map unit: 5 percent
Landform: Drainageways
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F109XY030MO - Loamy Floodplain Forest

Hydric soil rating: No

Colo, frequently flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R109XY031MO - Wet Floodplain Prairie
Hydric soil rating: Yes

57—Rushville silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: fq1v
Elevation: 450 to 1,020 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: Prime farmland if drained

Map Unit Composition

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

Description of Rushville

Setting

Landform: Flats
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loess

Typical profile

Ap - 0 to 7 inches: silt loam
Eg - 7 to 13 inches: silt loam
Btg - 13 to 43 inches: silty clay
Bg - 43 to 50 inches: silty clay loam
Cg - 50 to 80 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None

Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: R109XY036MO - Wet Loess High Terrace Savanna
Hydric soil rating: Yes

58D2—Douds loam, heavy loess, 9 to 14 percent slopes, moderately eroded

Map Unit Setting
National map unit symbol: 2wjg8
Elevation: 550 to 1,300 feet
Mean annual precipitation: 34 to 38 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Douds, moderately eroded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Douds, Moderately Eroded

Setting
Landform: Stream terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Alluvial sediments derived from till

Typical profile
Ap - 0 to 8 inches: loam
BE - 8 to 11 inches: loam
Bt - 11 to 48 inches: clay loam
BC - 48 to 64 inches: fine sandy loam
C - 64 to 79 inches: stratified loam to sandy clay loam to clay loam

Properties and qualities
Slope: 9 to 14 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None

Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R109XY018MO - Loamy Footslope Savanna
Hydric soil rating: No

Minor Components

Douds, severely eroded

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R109XY018MO - Loamy Footslope Savanna
Hydric soil rating: No

Weller, terrace

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F115XB022MO - Loess High Terrace Forest
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Galland, moderately eroded

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R109XY018MO - Loamy Footslope Savanna
Hydric soil rating: No

58E2—Douds loam, heavy loess, 14 to 18 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 2wjg7
Elevation: 550 to 1,300 feet
Mean annual precipitation: 34 to 38 inches
Mean annual air temperature: 48 to 54 degrees F

Frost-free period: 175 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Douds, Moderately Eroded

Setting

Landform: Stream terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Alluvial sediments derived from till

Typical profile

Ap - 0 to 8 inches: loam
BE - 8 to 11 inches: loam
Bt - 11 to 48 inches: clay loam
BC - 48 to 64 inches: fine sandy loam
C - 64 to 79 inches: stratified loam to sandy clay loam to clay loam

Properties and qualities

Slope: 14 to 18 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: R109XY018MO - Loamy Footslope Savanna
Hydric soil rating: No

Minor Components

Douds, severely eroded

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R109XY018MO - Loamy Footslope Savanna
Hydric soil rating: No

Weller, terrace

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F115XB022MO - Loess High Terrace Forest
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Galland, moderately eroded

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R109XY018MO - Loamy Footslope Savanna
Hydric soil rating: No

63B—Chelsea loamy fine sand, 2 to 9 percent slopes

Map Unit Setting

National map unit symbol: 2thkk
Elevation: 510 to 1,160 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 46 to 53 degrees F
Frost-free period: 162 to 202 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Chelsea

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Eolian sands

Typical profile

Ap - 0 to 8 inches: loamy fine sand
E - 8 to 36 inches: fine sand
E and Bt - 36 to 70 inches: fine sand

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: F108XC508IA - Sandy Upland Woodland
Hydric soil rating: No

65E2—Lindley loam, 14 to 18 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 2tk9k
Elevation: 700 to 1,350 feet
Mean annual precipitation: 33 to 41 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 177 to 209 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Lindley, Moderately Eroded

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Till

Typical profile

Ap - 0 to 8 inches: loam
Bt - 8 to 30 inches: clay loam
Bk - 30 to 79 inches: clay loam

Properties and qualities

Slope: 14 to 18 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F109XY022MO - Till Exposed Backslope Woodland, F109XY009MO - Till Protected Backslope Forest
Hydric soil rating: No

Minor Components

Lindley, severely eroded

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY022MO - Till Exposed Backslope Woodland, F109XY009MO - Till Protected Backslope Forest
Hydric soil rating: No

Olmitz

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R109XY018MO - Loamy Footslope Savanna
Hydric soil rating: No

Keswick, moderately eroded

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

65E3—Lindley clay loam, 14 to 18 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 2tkc4
Elevation: 700 to 1,000 feet
Mean annual precipitation: 33 to 38 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 177 to 209 days
Farmland classification: Not prime farmland

Map Unit Composition

Lindley, severely eroded, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lindley, Severely Eroded

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Till

Typical profile

Ap - 0 to 6 inches: clay loam
Bt - 6 to 30 inches: clay loam
Btk - 30 to 79 inches: clay loam

Properties and qualities

Slope: 14 to 18 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: F109XY022MO - Till Exposed Backslope Woodland, F109XY009MO - Till Protected Backslope Forest
Hydric soil rating: No

65F2—Lindley loam, 18 to 25 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 2tk9j
Elevation: 700 to 1,000 feet
Mean annual precipitation: 33 to 38 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 150 to 228 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Lindley, Moderately Eroded

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Till

Typical profile

A - 0 to 5 inches: loam
E - 5 to 8 inches: loam
Bt - 8 to 30 inches: clay loam
Btk - 30 to 79 inches: clay loam

Properties and qualities

Slope: 18 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: F109XY022MO - Till Exposed Backslope Woodland, F109XY009MO - Till Protected Backslope Forest
Hydric soil rating: No

Minor Components

Lamont, moderately eroded
Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY019MO - Loess High Terrace Woodland
Hydric soil rating: No

Munterville, moderately eroded
Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F109XY013MO - Interbedded Sedimentary Protected Backslope Forest
Hydric soil rating: No

Keswick
Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

65G—Lindley loam, 25 to 40 percent slopes

Map Unit Setting
National map unit symbol: 2tk9n
Elevation: 700 to 1,000 feet
Mean annual precipitation: 33 to 38 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 177 to 209 days
Farmland classification: Not prime farmland

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

Description of Lindley

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Till

Typical profile

A - 0 to 5 inches: loam
E - 5 to 8 inches: loam
Bt - 8 to 30 inches: clay loam
Bk - 30 to 79 inches: clay loam

Properties and qualities

Slope: 25 to 40 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: F109XY022MO - Till Exposed Backslope Woodland, F109XY009MO - Till Protected Backslope Forest
Hydric soil rating: No

Minor Components

Munterville

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F109XY013MO - Interbedded Sedimentary Protected Backslope Forest
Hydric soil rating: No

Rock outcrop

Percent of map unit: 5 percent
Hydric soil rating: Unranked

Keswick, moderately eroded

Percent of map unit: 5 percent
Landform: Hillslopes

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

80B—Clinton silt loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2t3c8
Elevation: 560 to 1,210 feet
Mean annual precipitation: 35 to 39 inches
Mean annual air temperature: 49 to 53 degrees F
Frost-free period: 174 to 205 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Clinton and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Clinton

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess

Typical profile

Ap - 0 to 8 inches: silt loam
E - 8 to 15 inches: silt loam
Bt1 - 15 to 20 inches: silty clay loam
Bt2 - 20 to 27 inches: silty clay loam
Bt3 - 27 to 39 inches: silty clay loam
Bt4 - 39 to 47 inches: silty clay loam
Bt5 - 47 to 58 inches: silty clay loam
Bt6 - 58 to 72 inches: silty clay loam
C - 72 to 79 inches: silty clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)

Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F109XY003MO - Loess Upland Woodland
Hydric soil rating: No

Minor Components

Keomah

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F108XC518IA - Wet Loess Upland Flatwood
Hydric soil rating: No

80C2—Clinton silt loam, 5 to 9 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2t3cb
Elevation: 530 to 1,210 feet
Mean annual precipitation: 35 to 39 inches
Mean annual air temperature: 49 to 53 degrees F
Frost-free period: 174 to 205 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Clinton, Eroded

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess

Typical profile

Ap - 0 to 6 inches: silt loam
BE - 6 to 11 inches: silty clay loam
Bt1 - 11 to 16 inches: silty clay loam
Bt2 - 16 to 23 inches: silty clay loam
Bt3 - 23 to 35 inches: silty clay loam
Bt4 - 35 to 43 inches: silty clay loam
Bt5 - 43 to 54 inches: silty clay loam
Bt6 - 54 to 68 inches: silty clay loam
C - 68 to 79 inches: silty clay loam

Properties and qualities

Slope: 5 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F109XY003MO - Loess Upland Woodland
Hydric soil rating: No

Minor Components

Clinton, severely eroded

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY003MO - Loess Upland Woodland
Hydric soil rating: No

Ashgrove, eroded

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F108XC514IA - Till Backslope Seep Forest
Hydric soil rating: Yes

80D2—Clinton silt loam, 9 to 14 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2t3cd
Elevation: 560 to 960 feet
Mean annual precipitation: 36 to 38 inches
Mean annual air temperature: 49 to 53 degrees F
Frost-free period: 175 to 205 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Clinton, Eroded

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess

Typical profile

Ap - 0 to 6 inches: silt loam
BE - 6 to 11 inches: silty clay loam
Bt1 - 11 to 16 inches: silty clay loam
Bt2 - 16 to 23 inches: silty clay loam
Bt3 - 23 to 35 inches: silty clay loam
Bt4 - 35 to 43 inches: silty clay loam
Bt5 - 43 to 54 inches: silty clay loam
Bt6 - 54 to 68 inches: silty clay loam
C - 68 to 79 inches: silty clay loam

Properties and qualities

Slope: 9 to 14 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F109XY003MO - Loess Upland Woodland
Hydric soil rating: No

Minor Components

Keswick, eroded

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F108XC513IA - Till Backslope Forest
Hydric soil rating: No

Clinton, severely eroded

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY003MO - Loess Upland Woodland
Hydric soil rating: No

115D—Chelsea loamy fine sand, 9 to 18 percent slopes

Map Unit Setting

National map unit symbol: 2thkn
Elevation: 720 to 950 feet
Mean annual precipitation: 35 to 38 inches
Mean annual air temperature: 46 to 51 degrees F
Frost-free period: 167 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Chelsea

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex

Across-slope shape: Convex
Parent material: Eolian sands

Typical profile

Ap - 0 to 8 inches: loamy fine sand
E - 8 to 36 inches: fine sand
E and Bt - 36 to 70 inches: fine sand

Properties and qualities

Slope: 9 to 18 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: F108XC508IA - Sandy Upland Woodland
Hydric soil rating: No

130—Belinda silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2vcv3
Elevation: 790 to 1,100 feet
Mean annual precipitation: 31 to 35 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 155 to 200 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Belinda and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Belinda

Setting

Landform: Flats
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loess

Typical profile

Ap - 0 to 8 inches: silt loam
E - 8 to 17 inches: silt loam
Btg - 17 to 60 inches: silty clay
Cg - 60 to 79 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 14 to 26 inches to abrupt textural change
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: R109XY001MO - Claypan Summit Prairie
Hydric soil rating: Yes

Minor Components

Belinda, ponded

Percent of map unit: 5 percent
Landform: Flats
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: R109XY001MO - Claypan Summit Prairie
Hydric soil rating: Yes

131B—Pershing silt loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2vctv
Elevation: 700 to 1,400 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Pershing and similar soils: 90 percent

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

Description of Pershing

Setting

Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loess

Typical profile

Ap - 0 to 7 inches: silt loam
BE - 7 to 12 inches: silty clay loam
Bt - 12 to 55 inches: silty clay
BC - 55 to 79 inches: silty clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 11 to 20 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: R109XY002MO - Loess Upland Prairie
Hydric soil rating: No

Minor Components

Belinda

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R109XY001MO - Claypan Summit Prairie
Hydric soil rating: Yes

Pershing, moderately eroded

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex

Across-slope shape: Linear
Ecological site: R109XY002MO - Loess Upland Prairie
Hydric soil rating: No

132B—Weller silt loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2tkbl
Elevation: 700 to 1,350 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Weller

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loess

Typical profile

Ap - 0 to 7 inches: silt loam
E - 7 to 9 inches: silt loam
BE - 9 to 15 inches: silty clay loam
Bt1 - 15 to 24 inches: silty clay
Bt2 - 24 to 67 inches: silty clay loam
BC - 67 to 79 inches: silty clay loam

Properties and qualities

Slope: 2 to 5 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): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: R109XY002MO - Loess Upland Prairie
Hydric soil rating: No

Minor Components

Beckwith

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F109XY003MO - Loess Upland Woodland
Hydric soil rating: Yes

Clinton

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY003MO - Loess Upland Woodland
Hydric soil rating: No

132C2—Weller silt loam, 5 to 9 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 2tkbm
Elevation: 700 to 1,350 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 174 to 209 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Weller, Moderately Eroded

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope

Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loess

Typical profile

Ap - 0 to 7 inches: silt loam
BE - 7 to 18 inches: silty clay loam
Bt1 - 18 to 25 inches: silty clay
Bt2 - 25 to 67 inches: silty clay loam
BC - 67 to 79 inches: silty clay loam

Properties and qualities

Slope: 5 to 9 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): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F109XY003MO - Loess Upland Woodland
Hydric soil rating: No

Minor Components

Keswick, moderately eroded

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

Ashgrove, moderately eroded

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: Yes

133—Colo silty clay loam, heavy till, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2sj5y
Elevation: 660 to 980 feet
Mean annual precipitation: 34 to 41 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 210 days
Farmland classification: Prime farmland if drained

Map Unit Composition

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

Description of Colo, Occasionally Flooded

Setting

Landform: Flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium

Typical profile

Ap - 0 to 8 inches: silty clay loam
A - 8 to 34 inches: silty clay loam
Bg - 34 to 46 inches: silty clay loam
BCg - 46 to 52 inches: silty clay loam
Cg - 52 to 79 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 0 to 8 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D

Ecological site: R109XY031MO - Wet Floodplain Prairie
Hydric soil rating: Yes

Minor Components

Nodaway, occasionally flooded
Percent of map unit: 5 percent
Landform: Flood-plain steps
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F109XY030MO - Loamy Floodplain Forest
Hydric soil rating: No

Lawson, occasionally flooded
Percent of map unit: 5 percent
Landform: Flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F109XY030MO - Loamy Floodplain Forest
Hydric soil rating: No

Colo, ponded
Percent of map unit: 5 percent
Landform: Flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: R109XY031MO - Wet Floodplain Prairie
Hydric soil rating: Yes

140—Sparta loamy sand, thick surface, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: fq05
Elevation: 700 to 1,500 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 180 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Sparta, thick surface, and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sparta, Thick Surface

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit, toeslope
Landform position (three-dimensional): Interfluve, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy eolian deposits

Typical profile

Ap - 0 to 8 inches: loamy sand
AB - 8 to 15 inches: loamy fine sand
Bw - 15 to 72 inches: fine sand
E and Bt - 72 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: R108XC506IA - Sandy Upland Prairie
Hydric soil rating: No

Minor Components

Chelsea

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F108XC508IA - Sandy Upland Woodland
Hydric soil rating: No

173—Hoopeston sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: fq0d
Elevation: 400 to 1,500 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Hoopeston, Rarely Flooded

Setting

Landform: Stream terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy outwash

Typical profile

Ap - 0 to 8 inches: sandy loam
A - 8 to 14 inches: sandy loam
Bw1, Bw2 - 14 to 38 inches: sandy loam
C - 38 to 60 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: About 12 to 42 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 25 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): 2s
Hydrologic Soil Group: A/D
Ecological site: R115XC004MO - Wet Terrace Prairie
Hydric soil rating: No

Minor Components

Granby, rarely flooded

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: R104XY014IA - Ponded Floodplain Marsh
Hydric soil rating: Yes

Dickinson

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F115XC011MO - Chert Upland Woodland
Hydric soil rating: No

Saude

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R104XY010IA - Sandy Upland Prairie
Hydric soil rating: No

175—Dickinson fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: fq0f
Elevation: 600 to 1,300 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 180 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Dickinson

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy eolian deposits

Typical profile

Ap - 0 to 8 inches: fine sandy loam
A1, A2 - 8 to 18 inches: fine sandy loam
Bw1, Bw2 - 18 to 30 inches: fine sandy loam
BC - 30 to 36 inches: loamy sand
C - 36 to 60 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F115XC011MO - Chert Upland Woodland
Hydric soil rating: No

Minor Components

Saude

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R104XY010IA - Sandy Upland Prairie
Hydric soil rating: No

Sparta

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, toeslope
Landform position (three-dimensional): Interfluve, tread
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R115XC011IL - Sand Prairie

Hydric soil rating: No

179C—Gara loam, 5 to 10 percent slopes

Map Unit Setting

National map unit symbol: fq0j
Elevation: 500 to 1,350 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Gara and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gara

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Subglacial till

Typical profile

H1 - 0 to 12 inches: loam
H2 - 12 to 46 inches: clay loam
H3 - 46 to 60 inches: clay loam

Properties and qualities

Slope: 5 to 10 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Available water supply, 0 to 60 inches: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R109XY046MO - Till Upland Savanna
Hydric soil rating: No

Minor Components

Cantril

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: R109XY036MO - Wet Loess High Terrace Savanna
Hydric soil rating: No

180—Keomah silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: fq0k
Elevation: 450 to 1,300 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Keomah and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Keomah

Setting

Landform: Flats
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 30 inches: silty clay loam
H3 - 30 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: About 12 to 42 inches

Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: F109XY003MO - Loess Upland Woodland
Hydric soil rating: No

Minor Components

Rushville

Percent of map unit: 5 percent
Landform: Depressions on interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F115XC006IL - Loess Upland Flatwoods
Hydric soil rating: Yes

180B—Keomah silt loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: fq0l
Elevation: 450 to 1,300 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Keomah and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Keomah

Setting

Landform: Flats
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 30 inches: silty clay loam

H3 - 30 to 60 inches: silty clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: About 12 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Ecological site: F109XY003MO - Loess Upland Woodland
Hydric soil rating: No

Minor Components

Rushville

Percent of map unit: 5 percent
Landform: Depressions on interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F115XC006IL - Loess Upland Flatwoods
Hydric soil rating: Yes

208—Landes sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: fq0m
Elevation: 500 to 1,400 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 180 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Landes, Occasionally Flooded

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

Ap, A - 0 to 14 inches: fine sandy loam
AB, Bw1 - 14 to 23 inches: loam
Bw - 23 to 32 inches: fine sandy loam
BC, C - 32 to 60 inches: stratified sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: OccasionalNone
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): 2s
Hydrologic Soil Group: B
Ecological site: F109XY030MO - Loamy Floodplain Forest
Hydric soil rating: No

Minor Components

Coland, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R115XC018IL - Wet Floodplain Sedge Meadow
Hydric soil rating: Yes

Nodaway, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F109XY030MO - Loamy Floodplain Forest

Hydric soil rating: No

220—Nodaway silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: fq0p
Elevation: 500 to 1,400 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Nodaway, Occasionally Flooded

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium

Typical profile

Ap - 0 to 7 inches: silt loam
C1 - 7 to 31 inches: stratified silt loam to silty clay loam
C2 - 31 to 42 inches: stratified silt loam to silty clay loam
C3 - 42 to 80 inches: stratified silt loam to silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 13.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Ecological site: F109XY030MO - Loamy Floodplain Forest
Hydric soil rating: No

Minor Components

Colo, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R115XC018IL - Wet Floodplain Sedge Meadow
Hydric soil rating: Yes

Aquents, frequently flooded, ponded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

260—Beckwith silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2wbd5
Elevation: 700 to 1,350 feet
Mean annual precipitation: 33 to 38 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 170 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Beckwith and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Beckwith

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loess

Typical profile

Ap - 0 to 6 inches: silt loam
E - 6 to 17 inches: silt loam
Btg1 - 17 to 39 inches: silty clay

Btg2 - 39 to 79 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 11 to 21 inches to abrupt textural change
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F109XY003MO - Loess Upland Woodland
Hydric soil rating: Yes

Minor Components

Weller

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F109XY003MO - Loess Upland Woodland
Hydric soil rating: No

263—Okaw silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: fq0z
Elevation: 500 to 1,200 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Okaw, rarely flooded, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Okaw, Rarely Flooded

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Silty sediments over clayey alluvium

Typical profile

Ap, Eg - 0 to 15 inches: silt loam
2Btg, 2Bg - 15 to 54 inches: silty clay
2Cg - 54 to 80 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F115XC003MO - Wet Terrace Forest
Hydric soil rating: Yes

316—Birds-Klum complex, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2q5t2
Elevation: 430 to 890 feet
Mean annual precipitation: 33 to 40 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 180 to 215 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Birds, frequently flooded, and similar soils: 50 percent
Klum, frequently flooded, and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Birds, Frequently Flooded

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap - 0 to 9 inches: silt loam
ACg - 9 to 37 inches: silt loam
C - 37 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: R115XC018IL - Wet Floodplain Sedge Meadow
Hydric soil rating: Yes

Description of Klum, Frequently Flooded

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium

Typical profile

Ap - 0 to 8 inches: fine sandy loam
C - 8 to 60 inches: stratified sandy loam to loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A
Ecological site: F115XC021IL - Sandy Floodplain Forest
Hydric soil rating: No

Minor Components

Toolesboro, frequently flooded

Percent of map unit: 10 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R115XC018IL - Wet Floodplain Sedge Meadow
Hydric soil rating: Yes

424D2—Lindley-Keswick loams, 9 to 14 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 2tkb4
Elevation: 700 to 1,300 feet
Mean annual precipitation: 33 to 39 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 177 to 209 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Lindley, moderately eroded, and similar soils: 60 percent
Keswick, moderately eroded, and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lindley, Moderately Eroded

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Till

Typical profile

Ap - 0 to 8 inches: loam

Bt - 8 to 30 inches: clay loam
Bk - 30 to 79 inches: clay loam

Properties and qualities

Slope: 9 to 14 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F109XY022MO - Till Exposed Backslope Woodland, F109XY009MO - Till Protected Backslope Forest
Hydric soil rating: No

Description of Keswick, Moderately Eroded

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Pedisediment over till

Typical profile

Ap - 0 to 10 inches: loam
2Bt - 10 to 34 inches: clay
2BC - 34 to 79 inches: clay loam

Properties and qualities

Slope: 9 to 14 percent
Depth to restrictive feature: 5 to 10 inches to abrupt textural change
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

Minor Components

Keswick, severely eroded

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

425C2—Keswick loam, 5 to 9 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 2tk9w
Elevation: 700 to 1,300 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 177 to 209 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Keswick, Moderately Eroded

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Red paleosol till over subglacial till

Typical profile

Ap - 0 to 10 inches: loam
2Bt - 10 to 34 inches: clay
2BC - 34 to 79 inches: clay loam

Properties and qualities

Slope: 5 to 9 percent
Depth to restrictive feature: 5 to 10 inches to abrupt textural change
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 12 to 18 inches

Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

Minor Components

Lindley, moderately eroded

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY022MO - Till Exposed Backslope Woodland, F109XY009MO - Till Protected Backslope Forest
Hydric soil rating: No

Keswick, severely eroded

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

425D2—Keswick loam, 9 to 14 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 2tk9t
Elevation: 700 to 1,300 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 177 to 209 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Keswick, Moderately Eroded

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Red paleosol till over subglacial till

Typical profile

Ap - 0 to 10 inches: loam
2Bt - 10 to 34 inches: clay
2BC - 34 to 79 inches: clay loam

Properties and qualities

Slope: 9 to 14 percent
Depth to restrictive feature: 5 to 10 inches to abrupt textural change
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

Minor Components

Lindley, moderately eroded

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY022MO - Till Exposed Backslope Woodland, F109XY009MO - Till Protected Backslope Forest
Hydric soil rating: No

Keswick, severely eroded

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

425D3—Keswick clay loam, 9 to 14 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 2xjcv
Elevation: 700 to 1,300 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 177 to 209 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Keswick, Severely Eroded

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Red paleosol till over subglacial till

Typical profile

Ap - 0 to 4 inches: clay loam
2Bt - 4 to 34 inches: clay
2BC - 34 to 79 inches: clay loam

Properties and qualities

Slope: 9 to 14 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

Minor Components

Lindley, moderately eroded

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY022MO - Till Exposed Backslope Woodland, F109XY009MO - Till Protected Backslope Forest
Hydric soil rating: No

484—Lawson silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: fq1l
Elevation: 340 to 1,530 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Lawson, occasionally flooded, and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lawson, Occasionally Flooded

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 29 inches: silt loam
H2 - 29 to 60 inches: stratified silty clay loam to sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 12 to 42 inches

Frequency of flooding: OccasionalNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F115XC020IL - Loamy Floodplain Forest
Hydric soil rating: No

Minor Components

Colo, overwash, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R115XC018IL - Wet Floodplain Sedge Meadow
Hydric soil rating: Yes

485—Spillville loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: fq1m
Elevation: 500 to 1,400 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Spillville, Occasionally Flooded

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

H1 - 0 to 60 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Ecological site: F104XY020IA - Loamy Floodplain Forest
Hydric soil rating: No

Minor Components

Coland, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R115XC018IL - Wet Floodplain Sedge Meadow
Hydric soil rating: Yes

Landes, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F115XC021IL - Sandy Floodplain Forest
Hydric soil rating: No

520—Coppock silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: fq1r
Elevation: 500 to 1,000 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Coppock, occasionally flooded, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Coppock, Occasionally Flooded

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 25 inches: silt loam
H3 - 25 to 45 inches: silty clay loam
H4 - 45 to 80 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: R109XY038MO - Wet Terrace Prairie
Hydric soil rating: Yes

587—Chequest silty clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: fq1w
Elevation: 500 to 1,000 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 180 to 200 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Chequest, occasionally flooded, and similar soils: 90 percent

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

Description of Chequest, Occasionally Flooded

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium

Typical profile

H1 - 0 to 17 inches: silty clay loam
H2 - 17 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: R109XY031MO - Wet Floodplain Prairie
Hydric soil rating: Yes

Minor Components

Coppock, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R115XC004MO - Wet Terrace Prairie
Hydric soil rating: Yes

Chequest, overwash, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R109XY031MO - Wet Floodplain Prairie
Hydric soil rating: Yes

594D2—Galland loam, heavy loess, 9 to 14 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 2wjfl
Elevation: 550 to 1,300 feet
Mean annual precipitation: 34 to 38 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Galland, Moderately Eroded

Setting

Landform: Stream terraces
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey and loamy valley side alluvium from till

Typical profile

Ap - 0 to 8 inches: loam
BE - 8 to 11 inches: loam
Bt - 11 to 38 inches: clay loam
BC - 38 to 48 inches: clay loam
C - 48 to 79 inches: stratified loam

Properties and qualities

Slope: 9 to 14 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C/D

Ecological site: R109XY018MO - Loamy Footslope Savanna
Hydric soil rating: No

Minor Components

Douds, moderately eroded
Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R109XY018MO - Loamy Footslope Savanna
Hydric soil rating: No

Weller, terrace
Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F115XB022MO - Loess High Terrace Forest
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Galland, severely eroded
Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R109XY018MO - Loamy Footslope Savanna
Hydric soil rating: No

594D3—Galland soils, 9 to 14 percent slopes, severely eroded

Map Unit Setting
National map unit symbol: fq21
Elevation: 500 to 1,350 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition
Galland, severely eroded, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Galland, Severely Eroded

Setting

Landform: Stream terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Alluvial sediments derived from till

Typical profile

H1 - 0 to 9 inches: clay loam
H2 - 9 to 48 inches: clay
H3 - 48 to 60 inches: stratified sandy loam to clay

Properties and qualities

Slope: 9 to 14 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R109XY018MO - Loamy Footslope Savanna
Hydric soil rating: No

594E2—Galland loam, heavy loess, 14 to 18 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 2wjfn
Elevation: 550 to 1,300 feet
Mean annual precipitation: 34 to 38 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Galland, Moderately Eroded

Setting

Landform: Stream terraces
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey and loamy valley side alluvium from till

Typical profile

Ap - 0 to 8 inches: loam
BE - 8 to 11 inches: loam
Bt - 11 to 38 inches: clay loam
BC - 38 to 48 inches: clay loam
C - 48 to 79 inches: stratified loam

Properties and qualities

Slope: 14 to 18 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C/D
Ecological site: R109XY018MO - Loamy Footslope Savanna
Hydric soil rating: No

Minor Components

Douds, moderately eroded

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R109XY018MO - Loamy Footslope Savanna
Hydric soil rating: No

Galland, severely eroded

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear

Ecological site: R109XY018MO - Loamy Footslope Savanna
Hydric soil rating: No

687—Watkins silt loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: fq29
Elevation: 600 to 1,350 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 180 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Watkins, rarely flooded, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Watkins, Rarely Flooded

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Silty alluvium

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 48 inches: silty clay loam
H3 - 48 to 60 inches: silty clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: C
Ecological site: R108XC522IA - Terrace Savanna
Hydric soil rating: No

688—Koszta silt loam, 0 to 2 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: 2wbdj
Elevation: 600 to 1,300 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 170 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Koszta, Rarely Flooded

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium

Typical profile

Ap - 0 to 8 inches: silt loam
E - 8 to 13 inches: silt loam
BE - 13 to 21 inches: silty clay loam
Btg - 21 to 48 inches: silty clay loam
BCg - 48 to 57 inches: silty clay loam
Cg - 57 to 79 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Rare
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B/D
Ecological site: R109XY018MO - Loamy Footslope Savanna

Hydric soil rating: No

Minor Components

Coppock, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R109XY038MO - Wet Terrace Prairie
Hydric soil rating: Yes

Tuskeego, rarely flooded

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R109XY038MO - Wet Terrace Prairie
Hydric soil rating: Yes

720—Racoon silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: fq2c
Elevation: 350 to 1,400 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: Prime farmland if drained

Map Unit Composition

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

Description of Racoon, Occasionally Flooded

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap - 0 to 9 inches: silt loam

Eg - 9 to 30 inches: silt loam
Btg - 30 to 59 inches: silty clay loam
Cg - 59 to 80 inches: stratified loamy fine sand to silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 12.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: F113XY005MO - Wet Upland Drainageway Woodland
Hydric soil rating: Yes

Minor Components

Coppock, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R115XC004MO - Wet Terrace Prairie
Hydric soil rating: Yes

Okaw, rarely flooded

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F115XC003MO - Wet Terrace Forest
Hydric soil rating: Yes

Nodaway, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F109XY030MO - Loamy Floodplain Forest
Hydric soil rating: No

730B—Nodaway-Cantril complex, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2wjg2
Elevation: 500 to 1,400 feet
Mean annual precipitation: 33 to 41 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 177 to 220 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Nodaway, frequently flooded, and similar soils: 60 percent
Cantril and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nodaway, Frequently Flooded

Setting

Landform: Drainageways
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium

Typical profile

Ap - 0 to 7 inches: silt loam
C1 - 7 to 31 inches: silt loam
C2 - 31 to 42 inches: silt loam
C3 - 42 to 79 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 13.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Ecological site: F109XY030MO - Loamy Floodplain Forest
Hydric soil rating: No

Description of Cantril

Setting

Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy colluvium

Typical profile

Ap - 0 to 8 inches: loam
E - 8 to 12 inches: loam
BE - 12 to 17 inches: loam
Bt - 17 to 39 inches: clay loam
C - 39 to 79 inches: clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 12 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Ecological site: R109XY036MO - Wet Loess High Terrace Savanna
Hydric soil rating: No

Minor Components

Vesser, frequently flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R109XY031MO - Wet Floodplain Prairie
Hydric soil rating: Yes

Colo, frequently flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R109XY031MO - Wet Floodplain Prairie

Hydric soil rating: Yes

793—Bertrand silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: fq2k
Elevation: 700 to 1,950 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Bertrand

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium over stratified sandy alluvium

Typical profile

H1 - 0 to 15 inches: silt loam
H2 - 15 to 40 inches: silty clay loam
H3 - 40 to 60 inches: stratified silt loam to sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Ecological site: R115XC014IL - Terrace Savanna
Hydric soil rating: No

793B—Bertrand silt loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: fq2l
Elevation: 700 to 1,950 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Bertrand

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium over stratified sandy alluvium

Typical profile

H1 - 0 to 15 inches: silt loam
H2 - 15 to 40 inches: silty clay loam
H3 - 40 to 60 inches: stratified silt loam to sand

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: R115XC014IL - Terrace Savanna
Hydric soil rating: No

793C2—Bertrand silt loam, 5 to 9 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: fq2m
Elevation: 700 to 1,950 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Bertrand, moderately eroded, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bertrand, Moderately Eroded

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Silty alluvium over stratified sandy alluvium

Typical profile

H1 - 0 to 15 inches: silt loam
H2 - 15 to 40 inches: silty clay loam
H3 - 40 to 60 inches: stratified silt loam to sand

Properties and qualities

Slope: 5 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R115XC014IL - Terrace Savanna
Hydric soil rating: No

795C2—Ashgrove silt loam, 5 to 9 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 2wbd2
Elevation: 530 to 1,300 feet
Mean annual precipitation: 33 to 39 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 170 to 209 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Ashgrove, Moderately Eroded

Setting

Landform: Interfluves
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Fine loamy till over gray paleosol subglacial till

Typical profile

Ap - 0 to 6 inches: silt loam
BE - 6 to 10 inches: silty clay loam
2Bt - 10 to 15 inches: silty clay
2Btg1 - 15 to 54 inches: clay
2Btg2 - 54 to 79 inches: clay

Properties and qualities

Slope: 5 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: Yes

Minor Components

Keswick, moderately eroded
Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

Ashgrove, severely eroded
Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: Yes

795C3—Ashgrove soils, 5 to 9 percent slopes, severely eroded

Map Unit Setting
National map unit symbol: fq2p
Elevation: 800 to 1,100 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Ashgrove, severely eroded, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ashgrove, Severely Eroded

Setting
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Gray paleosol and underlying subglacial till

Typical profile
H1 - 0 to 14 inches: silty clay loam
H2 - 14 to 31 inches: silty clay
H3 - 31 to 60 inches: clay

Properties and qualities

Slope: 5 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: Yes

795D2—Ashgrove silt loam, 9 to 14 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 2wbd3
Elevation: 530 to 1,300 feet
Mean annual precipitation: 33 to 39 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 170 to 209 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Ashgrove, Moderately Eroded

Setting

Landform: Interfluves
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Fine loamy till over gray paleosol subglacial till

Typical profile

Ap - 0 to 6 inches: silt loam
BE - 6 to 10 inches: silty clay loam
2Bt - 10 to 15 inches: silty clay
2Btg1 - 15 to 54 inches: clay
2Btg2 - 54 to 79 inches: clay

Properties and qualities

Slope: 9 to 14 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: Yes

Minor Components

Lindley, moderately eroded

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY022MO - Till Exposed Backslope Woodland, F109XY009MO - Till Protected Backslope Forest
Hydric soil rating: No

Ashgrove, severely eroded

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: Yes

795D3—Ashgrove soils, 9 to 14 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: fq2r
Elevation: 800 to 1,100 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F

Frost-free period: 175 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition
Ashgrove, severely eroded, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ashgrove, Severely Eroded

Setting
Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Gray paleosol and underlying subglacial till

Typical profile
H1 - 0 to 14 inches: silty clay loam
H2 - 14 to 31 inches: silty clay
H3 - 31 to 60 inches: clay

Properties and qualities
Slope: 9 to 14 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: Yes

820—Dockery silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting
National map unit symbol: 2vcvd
Elevation: 500 to 900 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Dockery, Occasionally Flooded

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium

Typical profile

Ap - 0 to 8 inches: silt loam
C - 8 to 79 inches: stratified silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F109XY030MO - Loamy Floodplain Forest
Hydric soil rating: No

Minor Components

Colo, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F109XY030MO - Loamy Floodplain Forest
Hydric soil rating: Yes

Landes, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F109XY030MO - Loamy Floodplain Forest

Hydric soil rating: No

880B—Clinton silt loam, terrace, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2t3cg
Elevation: 520 to 1,130 feet
Mean annual precipitation: 35 to 39 inches
Mean annual air temperature: 50 to 53 degrees F
Frost-free period: 174 to 205 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Clinton, terrace, and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Clinton, Terrace

Setting

Landform: Stream terraces
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loess

Typical profile

Ap - 0 to 8 inches: silt loam
E - 8 to 15 inches: silt loam
Bt1 - 15 to 20 inches: silty clay loam
Bt2 - 20 to 27 inches: silty clay loam
Bt3 - 27 to 39 inches: silty clay loam
Bt4 - 39 to 47 inches: silty clay loam
Bt5 - 47 to 58 inches: silty clay loam
Bt6 - 58 to 72 inches: silty clay loam
C - 72 to 79 inches: silty clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F109XY019MO - Loess High Terrace Woodland
Hydric soil rating: No

Minor Components

Keomah, terrace

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F108XC518IA - Wet Loess Upland Flatwood
Hydric soil rating: No

880C2—Clinton silt loam, terrace, 5 to 9 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2t3cj
Elevation: 540 to 810 feet
Mean annual precipitation: 36 to 39 inches
Mean annual air temperature: 50 to 53 degrees F
Frost-free period: 189 to 204 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Clinton, Terrace, Eroded

Setting

Landform: Stream terraces
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loess

Typical profile

Ap - 0 to 6 inches: silt loam
BE - 6 to 11 inches: silty clay loam
Bt1 - 11 to 16 inches: silty clay loam
Bt2 - 16 to 23 inches: silty clay loam
Bt3 - 23 to 35 inches: silty clay loam

Bt4 - 35 to 43 inches: silty clay loam
Bt5 - 43 to 54 inches: silty clay loam
Bt6 - 54 to 68 inches: silty clay loam
C - 68 to 79 inches: silty clay loam

Properties and qualities

Slope: 5 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F109XY019MO - Loess High Terrace Woodland
Hydric soil rating: No

Minor Components

Douds, eroded

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F108XC513IA - Till Backslope Forest
Hydric soil rating: No

Galland, eroded

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F108XC513IA - Till Backslope Forest
Hydric soil rating: No

950—Niota silty clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: fq33

Elevation: 500 to 1,300 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 180 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Niota and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Niota

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Silty sediments loess over lacustrine deposits

Typical profile

H1 - 0 to 7 inches: silty clay loam
H2 - 7 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: R115XC015IL - Wet Terrace Sedge Meadow
Hydric soil rating: Yes

Minor Components

Festina

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R108XC522IA - Terrace Savanna
Hydric soil rating: No

950B—Niota silty clay loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: fq34
Elevation: 680 to 1,020 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 180 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Niota

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Silty sediments loess over lacustrine deposits

Typical profile

H1 - 0 to 7 inches: silty clay loam
H2 - 7 to 60 inches: silty clay

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: R115XC015IL - Wet Terrace Sedge Meadow
Hydric soil rating: Yes

950D2—Niota silty clay loam, 7 to 14 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: fq35
Elevation: 680 to 1,020 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 180 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Niota, moderately eroded, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Niota, Moderately Eroded

Setting

Landform: Stream terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Silty sediments loess over lacustrine deposits

Typical profile

H1 - 0 to 7 inches: silty clay loam
H2 - 7 to 60 inches: silty clay

Properties and qualities

Slope: 7 to 14 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R109XY038MO - Wet Terrace Prairie
Hydric soil rating: Yes

977—Richwood silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: fq37
Elevation: 700 to 1,950 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 180 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Richwood

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess and/or silty deposits over stratified sandy alluvium

Typical profile

Ap - 0 to 8 inches: silt loam
A, AB - 8 to 18 inches: silt loam
Bt - 18 to 46 inches: silt loam
2BC - 46 to 60 inches: stratified loamy sand to silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Ecological site: R108XC522IA - Terrace Savanna
Hydric soil rating: No

978—Festina silt loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: fq38
Elevation: 500 to 1,950 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 180 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Festina, Rarely Flooded

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium

Typical profile

H1 - 0 to 14 inches: silt loam
H2 - 14 to 37 inches: silty clay loam
H3 - 37 to 60 inches: silt loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 12.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: C
Ecological site: R108XC522IA - Terrace Savanna
Hydric soil rating: No

Minor Components

Bertrand

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R115XC014IL - Terrace Savanna
Hydric soil rating: No

Watkins

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R108XC522IA - Terrace Savanna
Hydric soil rating: No

1152—Marshan clay loam, 0 to 2 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: 2tgsb
Elevation: 490 to 1,410 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 44 to 53 degrees F
Frost-free period: 160 to 200 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Marshan, rarely flooded, and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Marshan, Rarely Flooded

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium over sandy and gravelly alluvium

Typical profile

Ap - 0 to 8 inches: clay loam
A - 8 to 14 inches: silty clay loam

AB - 14 to 18 inches: silty clay loam
Bg1 - 18 to 23 inches: silty clay loam
Bg2 - 23 to 30 inches: loam
2Cg1 - 30 to 40 inches: gravelly sand
2Cg2 - 40 to 79 inches: gravelly sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: R104XY016IA - Wet Terrace Sedge Meadow
Hydric soil rating: Yes

Minor Components

Lawler, rarely flooded

Percent of map unit: 15 percent
Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R104XY015IA - Terrace Savanna
Hydric soil rating: No

Shandep, ponded, occasionally flooded

Percent of map unit: 5 percent
Landform: Depressions on stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R104XY014IA - Ponded Floodplain Marsh
Hydric soil rating: Yes

Selmass, rarely flooded

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R104XY016IA - Wet Terrace Sedge Meadow
Hydric soil rating: Yes

5010—Pits, sand and gravel

Map Unit Setting

National map unit symbol: 2zv8y
Elevation: 750 to 1,600 feet
Mean annual precipitation: 27 to 37 inches
Mean annual air temperature: 45 to 51 degrees F
Frost-free period: 140 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Pits, sand and gravel: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

5011—Anthroportic Udorthents, reclaimed sand and gravel pits, 0 to 9 percent slopes

Map Unit Setting

National map unit symbol: 2zv9q
Elevation: 510 to 1,230 feet
Mean annual precipitation: 35 to 39 inches
Mean annual air temperature: 49 to 52 degrees F
Frost-free period: 155 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Anthroportic udorthents, reclaimed sand and gravel pits, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Anthroportic Udorthents, Reclaimed Sand And Gravel Pits

Setting

Landform: Hillslopes, flood plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Human-transported material over sandy alluvium

Typical profile

^A - 0 to 2 inches: sandy loam
^C1 - 2 to 24 inches: stratified sandy loam to sandy clay loam
2C2 - 24 to 64 inches: sandy loam
2C3 - 64 to 79 inches: sand

Properties and qualities

Slope: 0 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F108XD902IA - Sandy/Loamy Floodplain Forest
Hydric soil rating: Unranked

S154G—Douds-Alvin-Tell Complex, 18 to 60 percent slopes

Map Unit Setting

National map unit symbol: fq07
Elevation: 540 to 1,950 feet
Mean annual precipitation: 28 to 40 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 108 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Douds and similar soils: 40 percent
Alvin and similar soils: 35 percent
Tell and similar soils: 20 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Douds

Setting

Landform: Stream terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Alluvial sediments derived from till

Typical profile

A - 0 to 4 inches: loam
E - 4 to 9 inches: loam
Bt - 9 to 59 inches: clay loam
BC, C - 59 to 79 inches: stratified loam to sandy clay loam to clay loam

Properties and qualities

Slope: 18 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R109XY018MO - Loamy Footslope Savanna
Hydric soil rating: No

Description of Alvin

Setting

Landform: Stream terraces
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Interfluve, riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Eolian deposits and/or outwash

Typical profile

A - 0 to 8 inches: fine sandy loam
BE, Bt - 8 to 19 inches: fine sandy loam
E and Bt - 19 to 52 inches: loamy fine sand
C - 52 to 80 inches: fine sandy loam

Properties and qualities

Slope: 18 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F115XC013IL - Sand Woodland
Hydric soil rating: No

Description of Tell

Setting

Landform: Stream terraces
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve, riser
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loess or silty materials over sandy deposits

Typical profile

Ap - 0 to 9 inches: silt loam
E, BE - 9 to 18 inches: silt loam
Bt - 18 to 28 inches: silty clay loam
2BC - 28 to 32 inches: loam
2C - 32 to 60 inches: stratified sand

Properties and qualities

Slope: 18 to 40 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F115XC013IL - Sand Woodland
Hydric soil rating: No

Minor Components

Algansee, frequently flooded, very brief

Percent of map unit: 5 percent
Landform: Drainageways
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F098XA004MI - Wet Floodplains
Hydric soil rating: No

S484—Lawson silt loam, heavy till, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2wbdk
Elevation: 660 to 980 feet
Mean annual precipitation: 34 to 41 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 210 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Lawson, Occasionally Flooded

Setting

Landform: Flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium

Typical profile

Ap - 0 to 8 inches: silt loam
A - 8 to 30 inches: silt loam
Cg - 30 to 79 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 12 to 42 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: B/D
Ecological site: R109XY031MO - Wet Floodplain Prairie
Hydric soil rating: No

Minor Components

Colo, occasionally flooded
Percent of map unit: 5 percent
Landform: Flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R109XY031MO - Wet Floodplain Prairie
Hydric soil rating: Yes

Nodaway, occasionally flooded
Percent of map unit: 5 percent
Landform: Flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F109XY030MO - Loamy Floodplain Forest
Hydric soil rating: No

S587—Chequest silty clay loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting
National map unit symbol: 2wbdd
Elevation: 500 to 1,400 feet
Mean annual precipitation: 34 to 41 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 175 to 210 days
Farmland classification: Prime farmland if drained

Map Unit Composition
Chequest, occasionally flooded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chequest, Occasionally Flooded

Setting
Landform: Flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Clayey alluvium

Typical profile

Ap - 0 to 7 inches: silty clay loam
A - 7 to 12 inches: silty clay loam
Btg1 - 12 to 35 inches: silty clay loam
Btg2 - 35 to 79 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: R109XY031MO - Wet Floodplain Prairie
Hydric soil rating: Yes

Minor Components

Vesser, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R109XY031MO - Wet Floodplain Prairie
Hydric soil rating: Yes

Chequest, occasionally flooded, overwash

Percent of map unit: 5 percent
Landform: Flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R109XY031MO - Wet Floodplain Prairie
Hydric soil rating: Yes

Zook, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear

Ecological site: R109XY031MO - Wet Floodplain Prairie
Hydric soil rating: Yes

W—Water

Map Unit Setting

National map unit symbol: 1tfb0
Mean annual precipitation: 33 to 38 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 170 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Lewis County, Missouri

13505—Blackoar silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2qmt9
Elevation: 340 to 1,100 feet
Mean annual precipitation: 33 to 41 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 177 to 220 days
Farmland classification: Prime farmland if drained

Map Unit Composition

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

Description of Blackoar

Setting

Landform: Flood-plain steps
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 11 inches: silt loam
Bg - 11 to 48 inches: silt loam
BCg - 48 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: OccasionalRare
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 12.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F109XY037MO - Wet Floodplain Woodland
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

Minor Components

Chequest

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear

Across-slope shape: Linear
Ecological site: R109XY031MO - Wet Floodplain Prairie
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

Piopolis

Percent of map unit: 5 percent
Landform: Flood-plain steps
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R115XB042MO - Ponded Floodplain Prairie
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: Yes

30039—Armstrong loam, 9 to 14 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2x423
Elevation: 560 to 920 feet
Mean annual precipitation: 37 to 45 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 175 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Armstrong

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over red palesol and underlying subglacial till

Typical profile

Ap - 0 to 8 inches: loam
BE - 8 to 11 inches: loam
Bt1 - 11 to 14 inches: clay loam
2Bt2 - 14 to 18 inches: clay loam
2Bt3 - 18 to 26 inches: clay
2Bt4 - 26 to 54 inches: clay loam
2C - 54 to 79 inches: clay loam

Properties and qualities

Slope: 9 to 14 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 12 to 16 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R109XY046MO - Till Upland Savanna
Hydric soil rating: No

Minor Components

Lindley

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY009MO - Till Protected Backslope Forest, F109XY022MO - Till Exposed Backslope Woodland
Hydric soil rating: No

30068—Gorin silt loam, 5 to 9 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2tbrm
Elevation: 500 to 1,300 feet
Mean annual precipitation: 35 to 47 inches
Mean annual air temperature: 50 to 57 degrees F
Frost-free period: 177 to 228 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Gorin

Setting

Landform: Ridges
Landform position (two-dimensional): Summit

Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loess over pedisediment over till

Typical profile

A - 0 to 10 inches: silt loam
Bt1 - 10 to 27 inches: silty clay
2Bt2 - 27 to 48 inches: clay loam
3Bt3 - 48 to 79 inches: clay

Properties and qualities

Slope: 5 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F109XY003MO - Loess Upland Woodland
Hydric soil rating: No

Minor Components

Keswick

Percent of map unit: 7 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

Lindley

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY009MO - Till Protected Backslope Forest, F109XY022MO - Till Exposed Backslope Woodland
Hydric soil rating: No

30096—Keswick clay loam, Audrain-Shelby plain, 9 to 14 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2x41t
Elevation: 610 to 980 feet
Mean annual precipitation: 37 to 47 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 185 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Keswick

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Pedisediment over till

Typical profile

A - 0 to 6 inches: clay loam
2Bt - 6 to 53 inches: clay loam
2BC - 53 to 79 inches: clay loam

Properties and qualities

Slope: 9 to 14 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

Minor Components

Gorin

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F109XY003MO - Loess Upland Woodland
Hydric soil rating: No

Lindley

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY009MO - Till Protected Backslope Forest, F109XY022MO - Till Exposed Backslope Woodland
Hydric soil rating: No

30106—Kilwinning silt loam, 1 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2qnrm
Elevation: 600 to 1,100 feet
Mean annual precipitation: 35 to 41 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 177 to 209 days
Farmland classification: Prime farmland if drained

Map Unit Composition

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

Description of Kilwinning

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loess

Typical profile

Ap - 0 to 8 inches: silt loam

Btg1 - 8 to 26 inches: silty clay
Btg2 - 26 to 47 inches: silty clay loam
Cg - 47 to 60 inches: silty clay loam

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: R109XY001MO - Claypan Summit Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Minor Components

Putnam

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R113XY001MO - Claypan Summit Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Leonard

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R113XY002MO - Loess Upland Prairie
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

30243—Vigar loam, 3 to 5 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: 2qs3j
Elevation: 600 to 900 feet
Mean annual precipitation: 35 to 41 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 177 to 209 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Vigar and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Vigar

Setting

Landform: Drainageways
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Colluvium

Typical profile

A - 0 to 20 inches: loam
BA - 20 to 26 inches: loam
Bt - 26 to 44 inches: loam
BC - 44 to 60 inches: silty clay loam

Properties and qualities

Slope: 3 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: Very rareRare
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: R109XY018MO - Loamy Footslope Savanna
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: No

Minor Components

Arbela

Percent of map unit: 3 percent
Landform: Drainageways
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R109XY029MO - Wet Upland Drainageway Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Zook

Percent of map unit: 2 percent
Landform: Drainageways
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R109XY029MO - Wet Upland Drainageway Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

34008—Gifford silt loam, 5 to 9 percent slopes, eroded, rarely flooded

Map Unit Setting

National map unit symbol: 2qnv1
Elevation: 350 to 1,100 feet
Mean annual precipitation: 35 to 41 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 177 to 209 days
Farmland classification: Not prime farmland

Map Unit Composition

Gifford and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gifford

Setting

Landform: Stream terraces
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loess over alluvium

Typical profile

Ap - 0 to 7 inches: silt loam
BE - 7 to 10 inches: silty clay loam
Btg1 - 10 to 18 inches: silty clay
Btg2 - 18 to 45 inches: silty clay loam
2Btg3 - 45 to 60 inches: silt loam

Properties and qualities

Slope: 5 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 6 to 24 inches
Frequency of flooding: Very rareRare
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: R109XY038MO - Wet Terrace Prairie
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

Minor Components

Chariton

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R109XY029MO - Wet Upland Drainageway Prairie
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

34018—Moniteau silt loam, 0 to 3 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: 2y8cy
Elevation: 490 to 980 feet
Mean annual precipitation: 37 to 45 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 175 to 195 days
Farmland classification: Prime farmland if drained

Map Unit Composition

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

Description of Moniteau

Setting

Landform: Flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Silty alluvium

Typical profile

Ap - 0 to 7 inches: silt loam
E - 7 to 15 inches: silt loam
Btg1 - 15 to 52 inches: silty clay loam
Btg2 - 52 to 79 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Rare
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F115XB025MO - Wet Terrace Forest
Hydric soil rating: Yes

Minor Components

Twomile

Percent of map unit: 10 percent
Landform: Flood-plain steps
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F115XB025MO - Wet Terrace Forest
Hydric soil rating: Yes

36013—Fatima silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2qnvj

Elevation: 340 to 1,400 feet
Mean annual precipitation: 35 to 41 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 177 to 209 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Fatima

Setting

Landform: Flood-plain steps
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 14 inches: silt loam
Bw - 14 to 55 inches: silt loam
C - 55 to 68 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: RareOccasional
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Ecological site: F109XY030MO - Loamy Floodplain Forest
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Minor Components

Piopolis

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F115XB030MO - Wet Floodplain Woodland
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: Yes

Blackoar

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F115XB030MO - Wet Floodplain Woodland
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

Zook

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R109XY031MO - Wet Floodplain Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Fatima

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F109XY030MO - Loamy Floodplain Forest
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: Yes

36080—Fatima silt loam, 1 to 3 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2rpyr
Elevation: 340 to 1,400 feet
Mean annual precipitation: 35 to 41 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 177 to 209 days
Farmland classification: Not prime farmland

Map Unit Composition

Fatima and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fatima

Setting

Landform: Drainageways
Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Alluvium

Typical profile

A - 0 to 14 inches: silt loam
Bw - 14 to 55 inches: silt loam
C - 55 to 68 inches: silt loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Ecological site: F109XY030MO - Loamy Floodplain Forest
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Minor Components

Piopolis

Percent of map unit: 2 percent
Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F113XY005MO - Wet Upland Drainageway Woodland
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: Yes

Zook

Percent of map unit: 2 percent
Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R115XC017IL - Floodplain Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Fatima

Percent of map unit: 2 percent

Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F109XY030MO - Loamy Floodplain Forest
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Blackoar

Percent of map unit: 2 percent
Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R115XC018IL - Wet Floodplain Sedge Meadow
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

50001—Armstrong loam, 5 to 9 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2x425
Elevation: 560 to 920 feet
Mean annual precipitation: 37 to 45 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 175 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Armstrong

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over red palesol and underlying subglacial till

Typical profile

Ap - 0 to 8 inches: loam
BE - 8 to 11 inches: loam
Bt1 - 11 to 14 inches: clay loam
2Bt2 - 14 to 18 inches: clay loam

2Bt3 - 18 to 26 inches: clay
2Bt4 - 26 to 54 inches: clay loam
2C - 54 to 79 inches: clay loam

Properties and qualities

Slope: 5 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 12 to 16 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R109XY046MO - Till Upland Savanna
Hydric soil rating: No

Minor Components

Lindley

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY009MO - Till Protected Backslope Forest, F109XY022MO - Till Exposed Backslope Woodland
Hydric soil rating: No

Leonard

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R113XY002MO - Loess Upland Prairie
Hydric soil rating: Yes

Keswick

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

50012—Putnam silt loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2tbss
Elevation: 600 to 1,000 feet
Mean annual precipitation: 37 to 41 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 189 to 212 days
Farmland classification: Not prime farmland

Map Unit Composition

Putnam and similar soils: 88 percent
Minor components: 12 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Putnam

Setting

Landform: Divides
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess over pedisediment

Typical profile

Ap - 0 to 8 inches: silt loam
Eg - 8 to 14 inches: silt loam
Btg1 - 14 to 35 inches: silty clay
Btg2 - 35 to 47 inches: silty clay loam
2Btg3 - 47 to 79 inches: silty clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: 10 to 19 inches to abrupt textural change
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: R113XY001MO - Claypan Summit Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)

Hydric soil rating: Yes

Minor Components

Mexico

Percent of map unit: 7 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R113XY001MO - Claypan Summit Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Adco

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R113XY001MO - Claypan Summit Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: No

50015—Adco silt loam, 1 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2qnz5
Elevation: 700 to 1,100 feet
Mean annual precipitation: 37 to 41 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 189 to 212 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Adco

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over pedisediment

Typical profile

Ap - 0 to 9 inches: silt loam
E - 9 to 16 inches: silt loam
Btg1 - 16 to 28 inches: clay
Btg2 - 28 to 49 inches: silty clay
2BCg - 49 to 60 inches: silty clay loam

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: 10 to 18 inches to abrupt textural change
Drainage class: Somewhat poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 12 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: R113XY001MO - Claypan Summit Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: No

Minor Components

Belinda

Percent of map unit: 6 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, toeslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R109XY001MO - Claypan Summit Prairie
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

Edina

Percent of map unit: 2 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R113XY001MO - Claypan Summit Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Leonard

Percent of map unit: 2 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R113XY002MO - Loess Upland Prairie
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

50040—Lindley loam, 14 to 20 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2tbr8
Elevation: 700 to 1,300 feet
Mean annual precipitation: 35 to 47 inches
Mean annual air temperature: 50 to 57 degrees F
Frost-free period: 177 to 228 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Lindley

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Till

Typical profile

A - 0 to 5 inches: loam
E - 5 to 8 inches: loam
Bt - 8 to 30 inches: clay loam
Btk - 30 to 79 inches: clay loam

Properties and qualities

Slope: 14 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F109XY009MO - Till Protected Backslope Forest, F109XY022MO - Till Exposed Backslope Woodland
Hydric soil rating: No

Minor Components

Keswick

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

Goss

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F115XB011MO - Chert Protected Backslope Forest, F115XB048MO - Chert Exposed Backslope Woodland
Hydric soil rating: No

50042—Lindley loam, 20 to 35 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2tbrb
Elevation: 700 to 1,300 feet
Mean annual precipitation: 35 to 47 inches
Mean annual air temperature: 50 to 57 degrees F
Frost-free period: 177 to 228 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Lindley

Setting

Landform: Hillslopes

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

Typical profile

A - 0 to 5 inches: loam
E - 5 to 8 inches: loam
Bt - 8 to 30 inches: clay loam
Btk - 30 to 79 inches: clay loam

Properties and qualities

Slope: 20 to 35 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F109XY009MO - Till Protected Backslope Forest, F109XY022MO - Till Exposed Backslope Woodland
Hydric soil rating: No

Minor Components

Keswick

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

Goss

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F115XB011MO - Chert Protected Backslope Forest, F115XB048MO - Chert Exposed Backslope Woodland
Hydric soil rating: No

50057—Putnam silt loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tbst
Elevation: 600 to 1,000 feet
Mean annual precipitation: 37 to 41 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 189 to 212 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Putnam

Setting

Landform: Divides
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess over pedisediment

Typical profile

Ap - 0 to 8 inches: silt loam
Eg - 8 to 14 inches: silt loam
Btg1 - 14 to 35 inches: silty clay
Btg2 - 35 to 47 inches: silty clay loam
2Btg3 - 47 to 79 inches: silty clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: 10 to 19 inches to abrupt textural change
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: R113XY001MO - Claypan Summit Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)

Hydric soil rating: Yes

Minor Components

Adco

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R113XY001MO - Claypan Summit Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: No

Mexico

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R113XY001MO - Claypan Summit Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

54000—Chariton silt loam, 0 to 2 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: 2y8cw
Elevation: 490 to 980 feet
Mean annual precipitation: 37 to 45 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 175 to 195 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Chariton and similar soils: 88 percent
Minor components: 12 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chariton

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loess over alluvium

Typical profile

Ap - 0 to 7 inches: silt loam
E - 7 to 12 inches: silt loam
Btg1 - 12 to 33 inches: silty clay
Btg2 - 33 to 57 inches: silty clay loam
2Cg - 57 to 79 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 10 to 20 inches to abrupt textural change
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: Rare
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: R109XY029MO - Wet Upland Drainageway Prairie
Hydric soil rating: Yes

Minor Components

Gifford

Percent of map unit: 7 percent
Landform: Stream terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Riser
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: R109XY038MO - Wet Terrace Prairie
Hydric soil rating: Yes

Moniteau

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F115XB025MO - Wet Terrace Forest
Hydric soil rating: Yes

60022—Leonard silt loam, 1 to 6 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2x41x
Elevation: 570 to 980 feet
Mean annual precipitation: 35 to 43 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 190 to 210 days
Farmland classification: Prime farmland if drained

Map Unit Composition

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

Description of Leonard

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loess over till

Typical profile

Ap - 0 to 8 inches: silt loam
2Btg1 - 8 to 26 inches: silty clay
2Btg2 - 26 to 79 inches: silty clay loam

Properties and qualities

Slope: 1 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: R113XY002MO - Loess Upland Prairie
Hydric soil rating: Yes

Minor Components

Armstrong

Percent of map unit: 7 percent
Landform: Interfluves
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R109XY006MO - Till Upland Prairie
Hydric soil rating: No

Mexico

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R113XY001MO - Claypan Summit Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Keswick

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

60228—Vanmeter silt loam, 14 to 25 percent slopes

Map Unit Setting

National map unit symbol: ytvk
Elevation: 700 to 1,300 feet
Mean annual precipitation: 33 to 47 inches
Mean annual air temperature: 46 to 57 degrees F
Frost-free period: 177 to 228 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Vanmeter

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from shale

Typical profile

A1 - 0 to 5 inches: silt loam
A2 - 5 to 12 inches: silty clay loam
Bw - 12 to 23 inches: silty clay
Cr - 23 to 32 inches: bedrock
R - 32 to 80 inches: bedrock

Properties and qualities

Slope: 14 to 25 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock; 30 to 80 inches to lithic bedrock
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F109XY013MO - Interbedded Sedimentary Protected Backslope Forest, F109XY025MO - Interbedded Sedimentary Exposed Backslope Woodland
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Minor Components

Lindley

Percent of map unit: 8 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY009MO - Till Protected Backslope Forest, F109XY022MO - Till Exposed Backslope Woodland
Hydric soil rating: No

Winfield

Percent of map unit: 7 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F115XB001MO - Deep Loess Upland Woodland
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

66040—Kickapoo fine sandy loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2qp8y
Elevation: 480 to 640 feet
Mean annual precipitation: 37 to 47 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 184 to 228 days
Farmland classification: Not prime farmland

Map Unit Composition

Kickapoo and similar soils: 93 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kickapoo

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap - 0 to 5 inches: fine sandy loam
C - 5 to 80 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 42 to 74 inches
Frequency of flooding: RareFrequent
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B
Ecological site: F109XY030MO - Loamy Floodplain Forest
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Minor Components

Fatima

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F109XY030MO - Loamy Floodplain Forest
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: Yes

Kickapoo

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F109XY030MO - Loamy Floodplain Forest
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: Yes

67050—Kickapoo fine sandy loam, 1 to 3 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2rpys
Elevation: 520 to 710 feet
Mean annual precipitation: 37 to 41 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 189 to 212 days
Farmland classification: Not prime farmland

Map Unit Composition

Kickapoo and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kickapoo

Setting

Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Alluvium

Typical profile

A - 0 to 9 inches: fine sandy loam
C - 9 to 80 inches: fine sandy loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Ecological site: F109XY030MO - Loamy Floodplain Forest
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Minor Components

Blackoar

Percent of map unit: 3 percent
Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R115XC018IL - Wet Floodplain Sedge Meadow
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

Piopolis

Percent of map unit: 2 percent
Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F113XY005MO - Wet Upland Drainageway Woodland

Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: Yes

67602—Westerville silt loam, 1 to 3 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2rpyw
Elevation: 510 to 800 feet
Mean annual precipitation: 35 to 41 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 177 to 209 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Westerville

Setting

Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Alluvium

Typical profile

Ap - 0 to 13 inches: silt loam
AC - 13 to 37 inches: silt loam
C - 37 to 60 inches: silty clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 12 to 36 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: F109XY037MO - Wet Floodplain Woodland
Other vegetative classification: Trees/Timber (Woody Vegetation)

Hydric soil rating: No

99001—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Soil Information for All Uses

Suitabilities and Limitations for Use

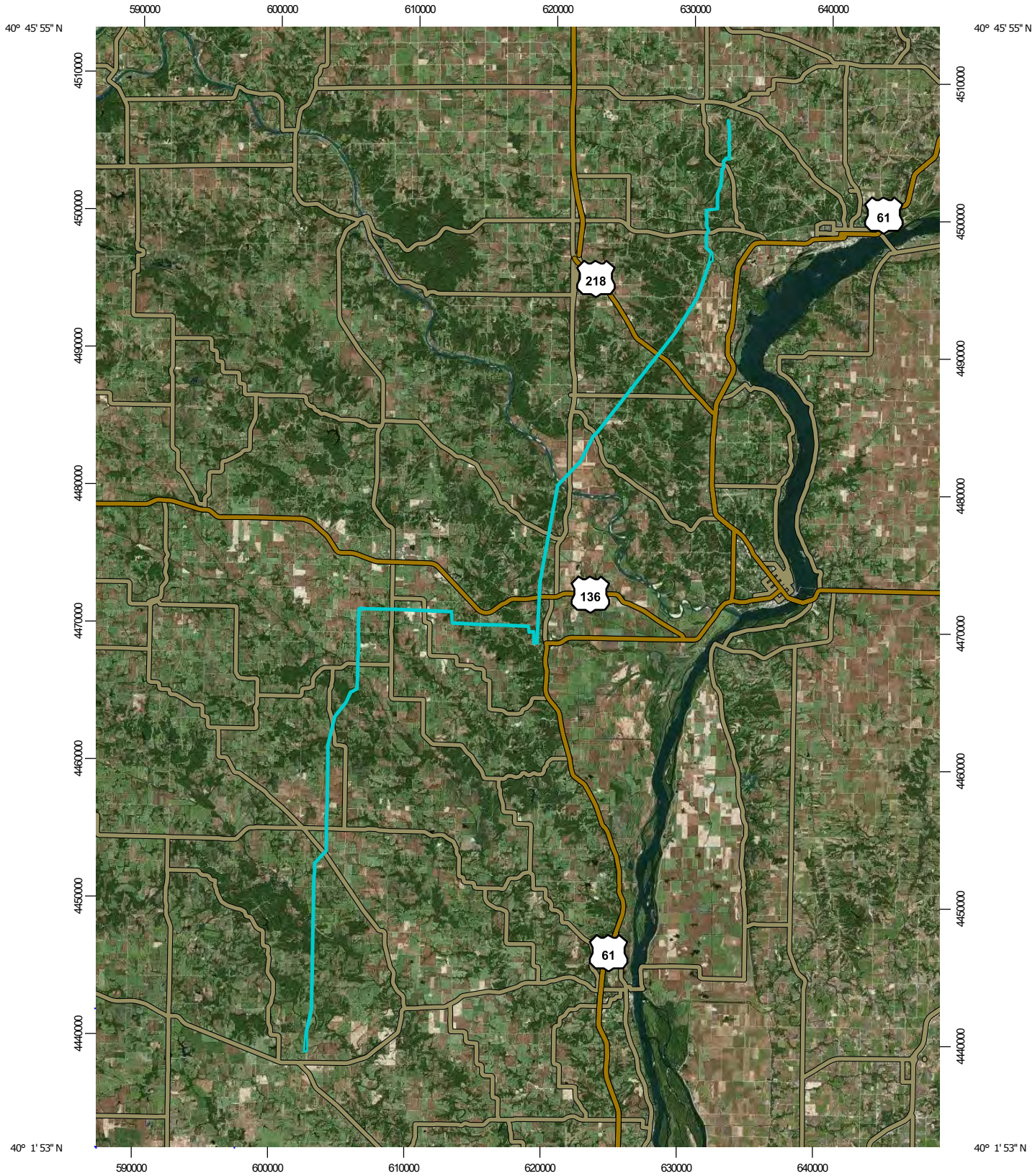
The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Farmland Classification (NEP Missouri to Iowa Environmental Assessment)

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.



Map Scale: 1:397,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 5000 10000 20000 30000

Feet
0 15000 30000 60000 90000

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

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

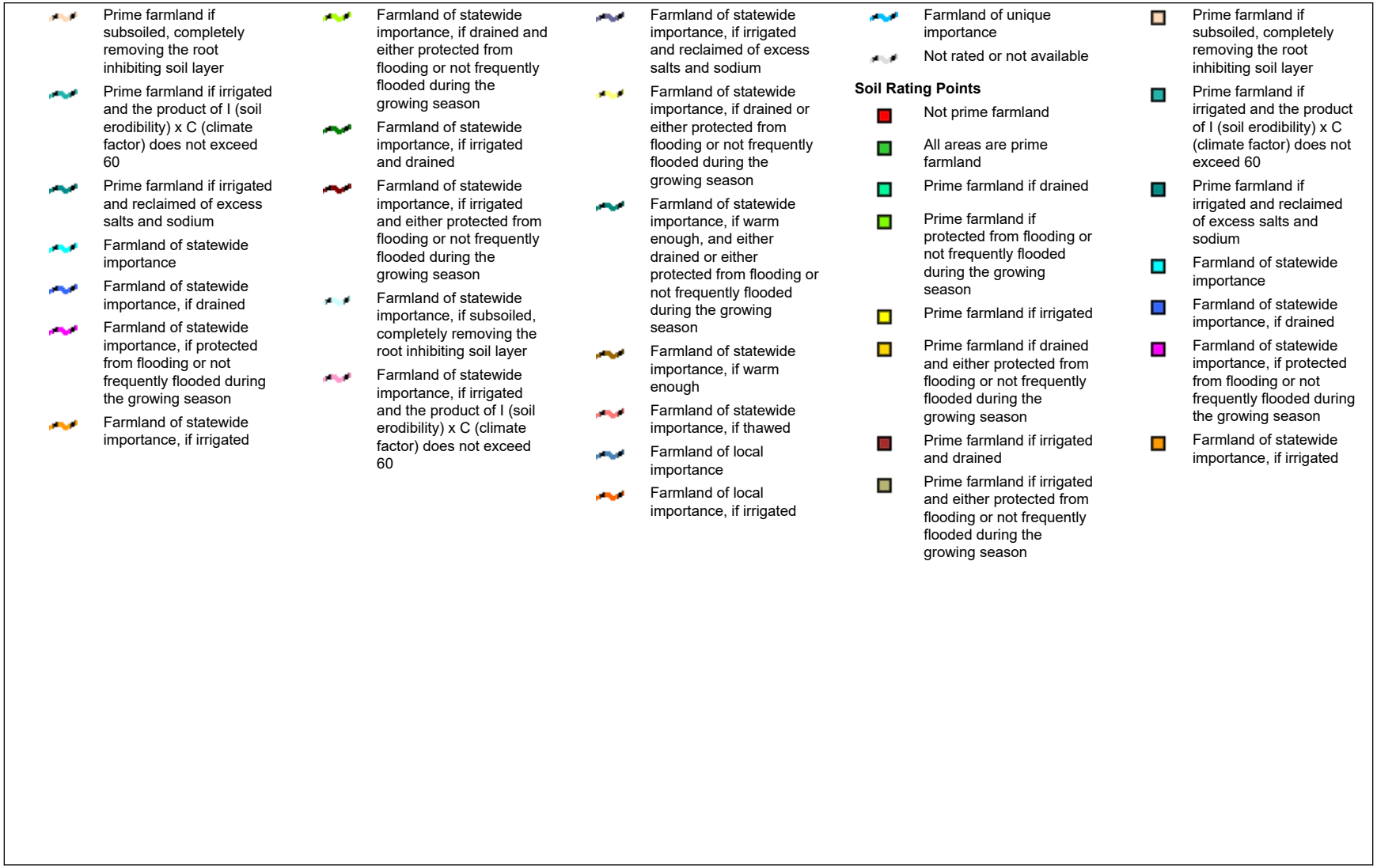
Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated
- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season


Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated
Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated and drained
Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough
Farmland of statewide importance, if thawed
Farmland of local importance
Farmland of local importance, if irrigated
Farmland of unique importance
Not rated or not available
Soil Rating Points
Not prime farmland
All areas are prime farmland
Prime farmland if drained
Prime farmland if protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated and drained
Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated

- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

The soil surveys that comprise your AOI were mapped at scales ranging from 1:15,800 to 1:24,000.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
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: Clark County, Missouri
Survey Area Data: Version 25, Aug 30, 2022

Soil Survey Area: Lee County, Iowa
Survey Area Data: Version 31, Oct 11, 2022

Soil Survey Area: Lewis County, Missouri
Survey Area Data: Version 25, Sep 6, 2022

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Jan 1, 1999—Dec 31, 2003

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—Farmland Classification (NEP Missouri to Iowa Environmental Assessment)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
30032	Armstrong loam, 12 to 18 percent slopes, eroded	Not prime farmland	71.5	2.6%
30035	Armstrong loam, 5 to 12 percent slopes, eroded	Not prime farmland	130.7	4.7%
30039	Armstrong loam, 9 to 14 percent slopes, eroded	Not prime farmland	18.0	0.6%
30050	Edina silt loam, 0 to 2 percent slopes	Prime farmland if drained	73.2	2.6%
30059	Gara loam, 18 to 24 percent slopes, moderately eroded	Not prime farmland	28.9	1.0%
30067	Gorin silt loam, 3 to 9 percent slopes, eroded	Farmland of statewide importance	40.4	1.5%
30097	Keswick loam, 12 to 18 percent slopes, eroded	Not prime farmland	52.4	1.9%
30098	Keswick loam, 5 to 14 percent slopes, eroded	Not prime farmland	33.3	1.2%
30149	Lindley loam, 14 to 40 percent slopes	Not prime farmland	194.8	7.0%
34018	Moniteau silt loam, 0 to 3 percent slopes, rarely flooded	Prime farmland if drained	20.7	0.7%
36022	Klum fine sandy loam, 0 to 2 percent slopes, frequently flooded	Not prime farmland	9.9	0.4%
36041	Vesser silt loam, 0 to 2 percent slopes, frequently flooded	Not prime farmland	22.0	0.8%
36091	Vesser silt loam, 1 to 3 percent slopes, occasionaly flooded	Prime farmland if drained	14.6	0.5%
36104	Neeper loam, 2 to 5 percent slopes	All areas are prime farmland	2.5	0.1%
36113	Klum fine sandy loam, 1 to 3 percent slopes, frequently flloded	Not prime farmland	2.2	0.1%
36116	Zook silty clay loam, heavy till, 0 to 2 percent slopes, occasionally flooded	Prime farmland if drained	16.0	0.6%
50012	Putnam silt loam, 0 to 1 percent slopes	Not prime farmland	45.5	1.6%
50015	Adco silt loam, 1 to 5 percent slopes	Not prime farmland	143.8	5.2%
60006	Marion silt loam, 2 to 5 percent slopes	Not prime farmland	47.0	1.7%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
60022	Leonard silt loam, 1 to 6 percent slopes, eroded	Prime farmland if drained	30.2	1.1%
60068	Bucklick silt loam, 18 to 35 percent slopes	Not prime farmland	42.4	1.5%
60248	Winfield silt loam, 5 to 12 percent slopes, eroded	Farmland of statewide importance	120.0	4.3%
64020	Hoopeston fine sandy loam, 1 to 5 percent slopes	Prime farmland if drained	14.7	0.5%
66054	Wakeland silt loam, 0 to 2 percent slopes, frequently flooded	Not prime farmland	41.4	1.5%
66093	Gilford sandy loam, occasionally ponded, 0 to 2 percent slopes, occasionally flooded	Prime farmland if drained	25.6	0.9%
67005	Wakeland silt loam, 1 to 3 percent slopes, frequently flooded	Not prime farmland	13.1	0.5%
99001	Water	Not prime farmland	6.5	0.2%
Subtotals for Soil Survey Area			**1,261.2**	**45.4%**
Totals for Area of Interest			**2,775.9**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
41	Sparta loamy sand, 0 to 2 percent slopes	Farmland of statewide importance	22.7	0.8%
41B	Sparta loamy sand, 2 to 7 percent slopes	Farmland of statewide importance	4.3	0.2%
56	Cantril loam, 0 to 2 percent slopes	All areas are prime farmland	11.8	0.4%
56B	Cantril loam, 2 to 5 percent slopes	All areas are prime farmland	11.2	0.4%
57	Rushville silt loam, 0 to 2 percent slopes	Prime farmland if drained	0.9	0.0%
58D2	Douds loam, heavy loess, 9 to 14 percent slopes, moderately eroded	Farmland of statewide importance	8.2	0.3%
58E2	Douds loam, heavy loess, 14 to 18 percent slopes, moderately eroded	Not prime farmland	3.4	0.1%
63B	Chelsea loamy fine sand, 2 to 9 percent slopes	Farmland of statewide importance	0.5	0.0%
65E2	Lindley loam, 14 to 18 percent slopes, moderately eroded	Not prime farmland	21.2	0.8%
65E3	Lindley clay loam, 14 to 18 percent slopes, severely eroded	Not prime farmland	0.9	0.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
65F2	Lindley loam, 18 to 25 percent slopes, moderately eroded	Not prime farmland	55.8	2.0%
65G	Lindley loam, 25 to 40 percent slopes	Not prime farmland	49.5	1.8%
80B	Clinton silt loam, 2 to 5 percent slopes	All areas are prime farmland	4.7	0.2%
80C2	Clinton silt loam, 5 to 9 percent slopes, eroded	Farmland of statewide importance	39.3	1.4%
80D2	Clinton silt loam, 9 to 14 percent slopes, eroded	Farmland of statewide importance	12.9	0.5%
115D	Chelsea loamy fine sand, 9 to 18 percent slopes	Farmland of statewide importance	2.1	0.1%
130	Belinda silt loam, 0 to 2 percent slopes	Prime farmland if drained	8.9	0.3%
131B	Pershing silt loam, 2 to 5 percent slopes	All areas are prime farmland	6.2	0.2%
132B	Weller silt loam, 2 to 5 percent slopes	All areas are prime farmland	65.1	2.3%
132C2	Weller silt loam, 5 to 9 percent slopes, moderately eroded	Farmland of statewide importance	76.1	2.7%
133	Colo silty clay loam, heavy till, 0 to 2 percent slopes, occasionally flooded	Prime farmland if drained	9.9	0.4%
140	Sparta loamy sand, thick surface, 0 to 2 percent slopes	Farmland of statewide importance	77.9	2.8%
173	Hoopeston sandy loam, 0 to 2 percent slopes	All areas are prime farmland	4.5	0.2%
175	Dickinson fine sandy loam, 0 to 2 percent slopes	All areas are prime farmland	8.1	0.3%
179C	Gara loam, 5 to 10 percent slopes	Farmland of statewide importance	3.3	0.1%
180	Keomah silt loam, 0 to 2 percent slopes	All areas are prime farmland	1.5	0.1%
180B	Keomah silt loam, 2 to 5 percent slopes	All areas are prime farmland	7.5	0.3%
208	Landes sandy loam, 0 to 2 percent slopes	All areas are prime farmland	30.4	1.1%
220	Nodaway silt loam, 0 to 2 percent slopes	All areas are prime farmland	20.0	0.7%
260	Beckwith silt loam, 0 to 2 percent slopes	Farmland of statewide importance	30.8	1.1%
263	Okaw silt loam, 0 to 3 percent slopes	Prime farmland if drained	11.7	0.4%
316	Birds-Klum complex, 0 to 2 percent slopes, frequently flooded	Farmland of statewide importance	9.6	0.3%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
424D2	Lindley-Keswick loams, 9 to 14 percent slopes, moderately eroded	Farmland of statewide importance	10.2	0.4%
425C2	Keswick loam, 5 to 9 percent slopes, moderately eroded	Farmland of statewide importance	10.0	0.4%
425D2	Keswick loam, 9 to 14 percent slopes, moderately eroded	Farmland of statewide importance	61.8	2.2%
425D3	Keswick clay loam, 9 to 14 percent slopes, severely eroded	Not prime farmland	3.5	0.1%
484	Lawson silt loam, 0 to 2 percent slopes	All areas are prime farmland	0.0	0.0%
485	Spillville loam, 0 to 2 percent slopes	All areas are prime farmland	3.2	0.1%
520	Coppock silt loam, 0 to 2 percent slopes	Prime farmland if drained	8.2	0.3%
587	Chequest silty clay loam, 0 to 2 percent slopes	Prime farmland if drained	12.5	0.5%
594D2	Galland loam, heavy loess, 9 to 14 percent slopes, moderately eroded	Farmland of statewide importance	3.2	0.1%
594D3	Galland soils, 9 to 14 percent slopes, severely eroded	Not prime farmland	7.9	0.3%
594E2	Galland loam, heavy loess, 14 to 18 percent slopes, moderately eroded	Not prime farmland	1.5	0.1%
687	Watkins silt loam, 1 to 3 percent slopes	All areas are prime farmland	8.4	0.3%
688	Koszta silt loam, 0 to 2 percent slopes, rarely flooded	All areas are prime farmland	8.5	0.3%
720	Racoon silt loam, 0 to 2 percent slopes	Prime farmland if drained	5.8	0.2%
730B	Nodaway-Cantril complex, 2 to 5 percent slopes	All areas are prime farmland	51.7	1.9%
793	Bertrand silt loam, 0 to 2 percent slopes	All areas are prime farmland	12.5	0.4%
793B	Bertrand silt loam, 2 to 5 percent slopes	All areas are prime farmland	10.2	0.4%
793C2	Bertrand silt loam, 5 to 9 percent slopes, moderately eroded	Farmland of statewide importance	13.1	0.5%
795C2	Ashgrove silt loam, 5 to 9 percent slopes, moderately eroded	Farmland of statewide importance	0.2	0.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
795C3	Ashgrove soils, 5 to 9 percent slopes, severely eroded	Farmland of statewide importance	7.4	0.3%
795D2	Ashgrove silt loam, 9 to 14 percent slopes, moderately eroded	Farmland of statewide importance	23.2	0.8%
795D3	Ashgrove soils, 9 to 14 percent slopes, severely eroded	Not prime farmland	4.4	0.2%
820	Dockery silt loam, 0 to 2 percent slopes, occasionally flooded	All areas are prime farmland	2.0	0.1%
880B	Clinton silt loam, terrace, 2 to 5 percent slopes	All areas are prime farmland	4.2	0.2%
880C2	Clinton silt loam, terrace, 5 to 9 percent slopes, eroded	Farmland of statewide importance	3.1	0.1%
950	Niota silty clay loam, 0 to 2 percent slopes	Farmland of statewide importance	15.9	0.6%
950B	Niota silty clay loam, 2 to 5 percent slopes	Farmland of statewide importance	0.2	0.0%
950D2	Niota silty clay loam, 7 to 14 percent slopes, moderately eroded	Farmland of statewide importance	8.2	0.3%
977	Richwood silt loam, 0 to 2 percent slopes	All areas are prime farmland	5.7	0.2%
978	Festina silt loam, 1 to 3 percent slopes	All areas are prime farmland	2.5	0.1%
1152	Marshan clay loam, 0 to 2 percent slopes, rarely flooded	Prime farmland if drained	6.2	0.2%
5010	Pits, sand and gravel	Not prime farmland	2.3	0.1%
5011	Anthroportic Udorthents, reclaimed sand and gravel pits, 0 to 9 percent slopes	Not prime farmland	0.0	0.0%
S154G	Douds-Alvin-Tell Complex, 18 to 60 percent slopes	Not prime farmland	4.9	0.2%
S484	Lawson silt loam, heavy till, 0 to 2 percent slopes, occasionally flooded	All areas are prime farmland	1.9	0.1%
S587	Chequest silty clay loam, 0 to 2 percent slopes, occasionally flooded	Prime farmland if drained	4.1	0.1%
W	Water	Not prime farmland	8.9	0.3%
Subtotals for Soil Survey Area			**958.4**	**34.5%**
Totals for Area of Interest			**2,775.9**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
13505	Blackoar silt loam, 0 to 2 percent slopes, occasionally flooded	Prime farmland if drained	39.6	1.4%
30039	Armstrong loam, 9 to 14 percent slopes, eroded	Not prime farmland	7.8	0.3%
30068	Gorin silt loam, 5 to 9 percent slopes, eroded	Farmland of statewide importance	76.5	2.8%
30096	Keswick clay loam, Audrain-Shelby plain, 9 to 14 percent slopes, eroded	Not prime farmland	79.2	2.9%
30106	Kilwinning silt loam, 1 to 5 percent slopes	Prime farmland if drained	49.6	1.8%
30243	Vigar loam, 3 to 5 percent slopes, rarely flooded	All areas are prime farmland	2.5	0.1%
34008	Gifford silt loam, 5 to 9 percent slopes, eroded, rarely flooded	Not prime farmland	27.7	1.0%
34018	Moniteau silt loam, 0 to 3 percent slopes, rarely flooded	Prime farmland if drained	13.2	0.5%
36013	Fatima silt loam, 0 to 2 percent slopes, occasionally flooded	All areas are prime farmland	2.3	0.1%
36080	Fatima silt loam, 1 to 3 percent slopes, frequently flooded	Not prime farmland	3.7	0.1%
50001	Armstrong loam, 5 to 9 percent slopes, eroded	Not prime farmland	69.8	2.5%
50012	Putnam silt loam, 0 to 1 percent slopes	Not prime farmland	17.2	0.6%
50015	Adco silt loam, 1 to 5 percent slopes	Not prime farmland	24.1	0.9%
50040	Lindley loam, 14 to 20 percent slopes, eroded	Farmland of statewide importance	47.0	1.7%
50042	Lindley loam, 20 to 35 percent slopes, eroded	Not prime farmland	46.1	1.7%
50057	Putnam silt loam, 1 to 3 percent slopes	Not prime farmland	0.9	0.0%
54000	Chariton silt loam, 0 to 2 percent slopes, rarely flooded	Prime farmland if drained	8.1	0.3%
60022	Leonard silt loam, 1 to 6 percent slopes, eroded	Prime farmland if drained	23.0	0.8%
60228	Vanmeter silt loam, 14 to 25 percent slopes	Not prime farmland	3.3	0.1%
66040	Kickapoo fine sandy loam, 0 to 2 percent slopes, frequently flooded	Not prime farmland	2.6	0.1%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
67050	Kickapoo fine sandy loam, 1 to 3 percent slopes, frequently flooded	Not prime farmland	5.4	0.2%
67602	Westerville silt loam, 1 to 3 percent slopes, frequently flooded	Not prime farmland	2.9	0.1%
99001	Water	Not prime farmland	3.3	0.1%
Subtotals for Soil Survey Area			**555.5**	**20.0%**
Totals for Area of Interest			**2,775.9**	**100.0%**

Rating Options—Farmland Classification (NEP Missouri to Iowa Environmental Assessment)

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Hydric Rating by Map Unit (NEP Missouri to Iowa Environmental Assessment)

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

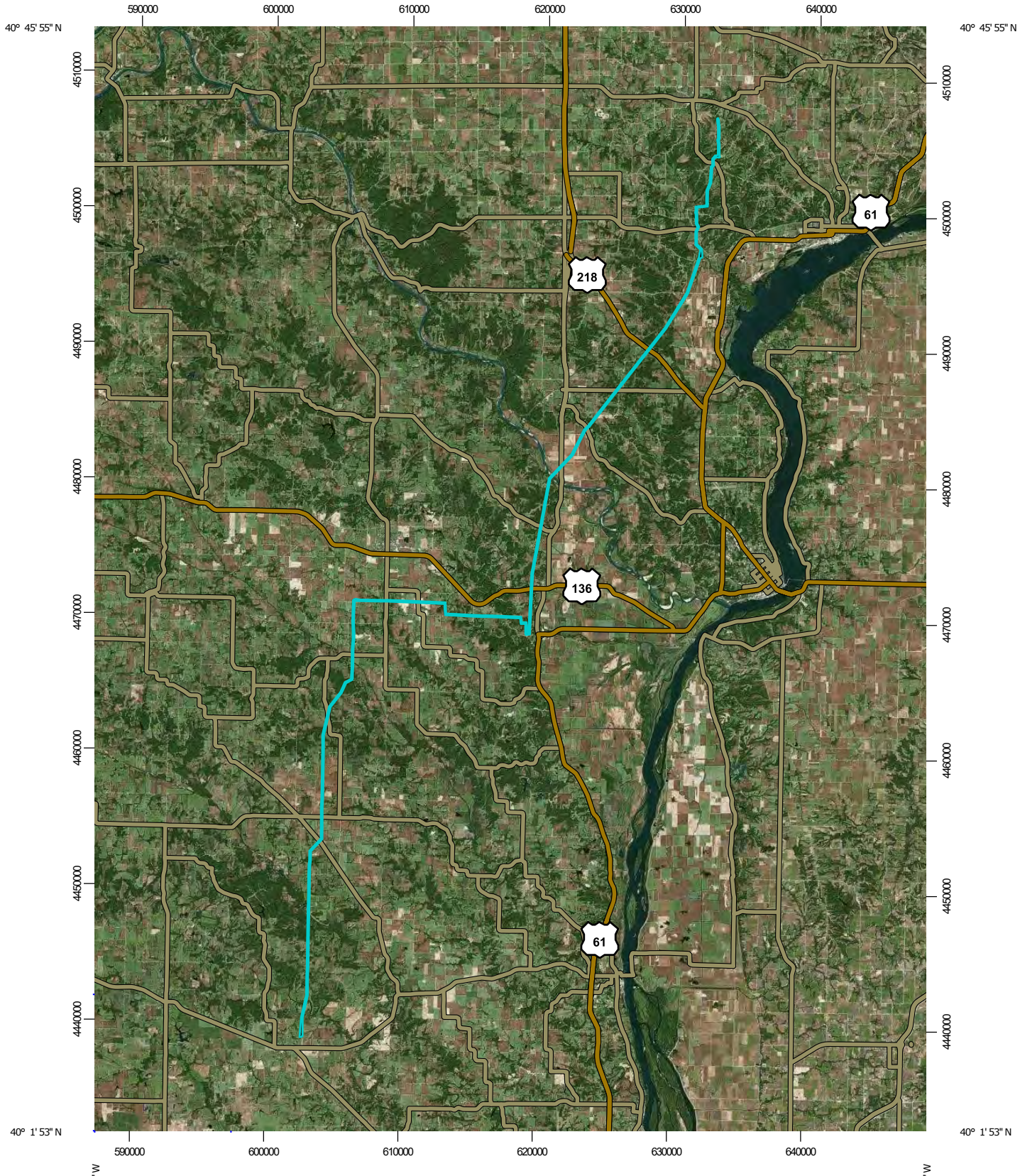
Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Map—Hydric Rating by Map Unit (NEP Missouri to Iowa Environmental Assessment)



Map Scale: 1:397,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 5000 10000 20000 30000

Feet
0 15000 30000 60000 90000

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
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- 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 scales ranging from 1:15,800 to 1:24,000.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
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: Clark County, Missouri
Survey Area Data: Version 25, Aug 30, 2022

Soil Survey Area: Lee County, Iowa
Survey Area Data: Version 31, Oct 11, 2022

Soil Survey Area: Lewis County, Missouri
Survey Area Data: Version 25, Sep 6, 2022

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Jan 1, 1999—Dec 31, 2003

MAP LEGEND

MAP INFORMATION

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—Hydric Rating by Map Unit (NEP Missouri to Iowa Environmental Assessment)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
30032	Armstrong loam, 12 to 18 percent slopes, eroded	0	71.5	2.6%
30035	Armstrong loam, 5 to 12 percent slopes, eroded	10	130.7	4.7%
30039	Armstrong loam, 9 to 14 percent slopes, eroded	0	18.0	0.6%
30050	Edina silt loam, 0 to 2 percent slopes	100	73.2	2.6%
30059	Gara loam, 18 to 24 percent slopes, moderately eroded	0	28.9	1.0%
30067	Gorin silt loam, 3 to 9 percent slopes, eroded	0	40.4	1.5%
30097	Keswick loam, 12 to 18 percent slopes, eroded	0	52.4	1.9%
30098	Keswick loam, 5 to 14 percent slopes, eroded	10	33.3	1.2%
30149	Lindley loam, 14 to 40 percent slopes	0	194.8	7.0%
34018	Moniteau silt loam, 0 to 3 percent slopes, rarely flooded	100	20.7	0.7%
36022	Klum fine sandy loam, 0 to 2 percent slopes, frequently flooded	10	9.9	0.4%
36041	Vesser silt loam, 0 to 2 percent slopes, frequently flooded	92	22.0	0.8%
36091	Vesser silt loam, 1 to 3 percent slopes, occasionaly flooded	97	14.6	0.5%
36104	Neeper loam, 2 to 5 percent slopes	0	2.5	0.1%
36113	Klum fine sandy loam, 1 to 3 percent slopes, frequently flloded	8	2.2	0.1%
36116	Zook silty clay loam, heavy till, 0 to 2 percent slopes, occasionally flooded	100	16.0	0.6%
50012	Putnam silt loam, 0 to 1 percent slopes	95	45.5	1.6%
50015	Adco silt loam, 1 to 5 percent slopes	10	143.8	5.2%
60006	Marion silt loam, 2 to 5 percent slopes	5	47.0	1.7%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
60022	Leonard silt loam, 1 to 6 percent slopes, eroded	90	30.2	1.1%
60068	Bucklick silt loam, 18 to 35 percent slopes	0	42.4	1.5%
60248	Winfield silt loam, 5 to 12 percent slopes, eroded	0	120.0	4.3%
64020	Hoopeston fine sandy loam, 1 to 5 percent slopes	5	14.7	0.5%
66054	Wakeland silt loam, 0 to 2 percent slopes, frequently flooded	3	41.4	1.5%
66093	Gilford sandy loam, occasionally ponded, 0 to 2 percent slopes, occasionally flooded	95	25.6	0.9%
67005	Wakeland silt loam, 1 to 3 percent slopes, frequently flooded	5	13.1	0.5%
99001	Water	0	6.5	0.2%
Subtotals for Soil Survey Area			**1,261.2**	**45.4%**
Totals for Area of Interest			**2,775.9**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
41	Sparta loamy sand, 0 to 2 percent slopes	0	22.7	0.8%
41B	Sparta loamy sand, 2 to 7 percent slopes	0	4.3	0.2%
56	Cantril loam, 0 to 2 percent slopes	5	11.8	0.4%
56B	Cantril loam, 2 to 5 percent slopes	10	11.2	0.4%
57	Rushville silt loam, 0 to 2 percent slopes	100	0.9	0.0%
58D2	Douds loam, heavy loess, 9 to 14 percent slopes, moderately eroded	0	8.2	0.3%
58E2	Douds loam, heavy loess, 14 to 18 percent slopes, moderately eroded	0	3.4	0.1%
63B	Chelsea loamy fine sand, 2 to 9 percent slopes	0	0.5	0.0%
65E2	Lindley loam, 14 to 18 percent slopes, moderately eroded	0	21.2	0.8%
65E3	Lindley clay loam, 14 to 18 percent slopes, severely eroded	0	0.9	0.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
65F2	Lindley loam, 18 to 25 percent slopes, moderately eroded	0	55.8	2.0%
65G	Lindley loam, 25 to 40 percent slopes	0	49.5	1.8%
80B	Clinton silt loam, 2 to 5 percent slopes	0	4.7	0.2%
80C2	Clinton silt loam, 5 to 9 percent slopes, eroded	5	39.3	1.4%
80D2	Clinton silt loam, 9 to 14 percent slopes, eroded	0	12.9	0.5%
115D	Chelsea loamy fine sand, 9 to 18 percent slopes	0	2.1	0.1%
130	Belinda silt loam, 0 to 2 percent slopes	100	8.9	0.3%
131B	Pershing silt loam, 2 to 5 percent slopes	5	6.2	0.2%
132B	Weller silt loam, 2 to 5 percent slopes	5	65.1	2.3%
132C2	Weller silt loam, 5 to 9 percent slopes, moderately eroded	5	76.1	2.7%
133	Colo silty clay loam, heavy till, 0 to 2 percent slopes, occasionally flooded	90	9.9	0.4%
140	Sparta loamy sand, thick surface, 0 to 2 percent slopes	0	77.9	2.8%
173	Hoopeston sandy loam, 0 to 2 percent slopes	5	4.5	0.2%
175	Dickinson fine sandy loam, 0 to 2 percent slopes	0	8.1	0.3%
179C	Gara loam, 5 to 10 percent slopes	0	3.3	0.1%
180	Keomah silt loam, 0 to 2 percent slopes	5	1.5	0.1%
180B	Keomah silt loam, 2 to 5 percent slopes	5	7.5	0.3%
208	Landes sandy loam, 0 to 2 percent slopes	5	30.4	1.1%
220	Nodaway silt loam, 0 to 2 percent slopes	10	20.0	0.7%
260	Beckwith silt loam, 0 to 2 percent slopes	95	30.8	1.1%
263	Okaw silt loam, 0 to 3 percent slopes	100	11.7	0.4%
316	Birds-Klum complex, 0 to 2 percent slopes, frequently flooded	60	9.6	0.3%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
424D2	Lindley-Keswick loams, 9 to 14 percent slopes, moderately eroded	0	10.2	0.4%
425C2	Keswick loam, 5 to 9 percent slopes, moderately eroded	0	10.0	0.4%
425D2	Keswick loam, 9 to 14 percent slopes, moderately eroded	0	61.8	2.2%
425D3	Keswick clay loam, 9 to 14 percent slopes, severely eroded	0	3.5	0.1%
484	Lawson silt loam, 0 to 2 percent slopes	5	0.0	0.0%
485	Spillville loam, 0 to 2 percent slopes	5	3.2	0.1%
520	Coppock silt loam, 0 to 2 percent slopes	100	8.2	0.3%
587	Chequest silty clay loam, 0 to 2 percent slopes	100	12.5	0.5%
594D2	Galland loam, heavy loess, 9 to 14 percent slopes, moderately eroded	0	3.2	0.1%
594D3	Galland soils, 9 to 14 percent slopes, severely eroded	0	7.9	0.3%
594E2	Galland loam, heavy loess, 14 to 18 percent slopes, moderately eroded	0	1.5	0.1%
687	Watkins silt loam, 1 to 3 percent slopes	0	8.4	0.3%
688	Koszta silt loam, 0 to 2 percent slopes, rarely flooded	10	8.5	0.3%
720	Racoon silt loam, 0 to 2 percent slopes	95	5.8	0.2%
730B	Nodaway-Cantril complex, 2 to 5 percent slopes	10	51.7	1.9%
793	Bertrand silt loam, 0 to 2 percent slopes	0	12.5	0.4%
793B	Bertrand silt loam, 2 to 5 percent slopes	0	10.2	0.4%
793C2	Bertrand silt loam, 5 to 9 percent slopes, moderately eroded	0	13.1	0.5%
795C2	Ashgrove silt loam, 5 to 9 percent slopes, moderately eroded	95	0.2	0.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
795C3	Ashgrove soils, 5 to 9 percent slopes, severely eroded	100	7.4	0.3%
795D2	Ashgrove silt loam, 9 to 14 percent slopes, moderately eroded	95	23.2	0.8%
795D3	Ashgrove soils, 9 to 14 percent slopes, severely eroded	100	4.4	0.2%
820	Dockery silt loam, 0 to 2 percent slopes, occasionally flooded	5	2.0	0.1%
880B	Clinton silt loam, terrace, 2 to 5 percent slopes	0	4.2	0.2%
880C2	Clinton silt loam, terrace, 5 to 9 percent slopes, eroded	0	3.1	0.1%
950	Niota silty clay loam, 0 to 2 percent slopes	95	15.9	0.6%
950B	Niota silty clay loam, 2 to 5 percent slopes	100	0.2	0.0%
950D2	Niota silty clay loam, 7 to 14 percent slopes, moderately eroded	100	8.2	0.3%
977	Richwood silt loam, 0 to 2 percent slopes	0	5.7	0.2%
978	Festina silt loam, 1 to 3 percent slopes	0	2.5	0.1%
1152	Marshan clay loam, 0 to 2 percent slopes, rarely flooded	85	6.2	0.2%
5010	Pits, sand and gravel	0	2.3	0.1%
5011	Anthroportic Udorthents, reclaimed sand and gravel pits, 0 to 9 percent slopes	0	0.0	0.0%
S154G	Douds-Alvin-Tell Complex, 18 to 60 percent slopes	0	4.9	0.2%
S484	Lawson silt loam, heavy till, 0 to 2 percent slopes, occasionally flooded	5	1.9	0.1%
S587	Chequest silty clay loam, 0 to 2 percent slopes, occasionally flooded	100	4.1	0.1%
W	Water	0	8.9	0.3%
Subtotals for Soil Survey Area			**958.4**	**34.5%**
Totals for Area of Interest			**2,775.9**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
13505	Blackoar silt loam, 0 to 2 percent slopes, occasionally flooded	100	39.6	1.4%
30039	Armstrong loam, 9 to 14 percent slopes, eroded	0	7.8	0.3%
30068	Gorin silt loam, 5 to 9 percent slopes, eroded	0	76.5	2.8%
30096	Keswick clay loam, Audrain-Shelby plain, 9 to 14 percent slopes, eroded	0	79.2	2.9%
30106	Kilwinning silt loam, 1 to 5 percent slopes	100	49.6	1.8%
30243	Vigar loam, 3 to 5 percent slopes, rarely flooded	5	2.5	0.1%
34008	Gifford silt loam, 5 to 9 percent slopes, eroded, rarely flooded	100	27.7	1.0%
34018	Moniteau silt loam, 0 to 3 percent slopes, rarely flooded	100	13.2	0.5%
36013	Fatima silt loam, 0 to 2 percent slopes, occasionally flooded	10	2.3	0.1%
36080	Fatima silt loam, 1 to 3 percent slopes, frequently flooded	6	3.7	0.1%
50001	Armstrong loam, 5 to 9 percent slopes, eroded	5	69.8	2.5%
50012	Putnam silt loam, 0 to 1 percent slopes	95	17.2	0.6%
50015	Adco silt loam, 1 to 5 percent slopes	10	24.1	0.9%
50040	Lindley loam, 14 to 20 percent slopes, eroded	0	47.0	1.7%
50042	Lindley loam, 20 to 35 percent slopes, eroded	0	46.1	1.7%
50057	Putnam silt loam, 1 to 3 percent slopes	90	0.9	0.0%
54000	Chariton silt loam, 0 to 2 percent slopes, rarely flooded	100	8.1	0.3%
60022	Leonard silt loam, 1 to 6 percent slopes, eroded	90	23.0	0.8%
60228	Vanmeter silt loam, 14 to 25 percent slopes	0	3.3	0.1%
66040	Kickapoo fine sandy loam, 0 to 2 percent slopes, frequently flooded	7	2.6	0.1%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
67050	Kickapoo fine sandy loam, 1 to 3 percent slopes, frequently flooded	5	5.4	0.2%
67602	Westerville silt loam, 1 to 3 percent slopes, frequently flooded	0	2.9	0.1%
99001	Water	0	3.3	0.1%
Subtotals for Soil Survey Area			**555.5**	**20.0%**
Totals for Area of Interest			**2,775.9**	**100.0%**

Rating Options—Hydric Rating by Map Unit (NEP Missouri to Iowa Environmental Assessment)

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

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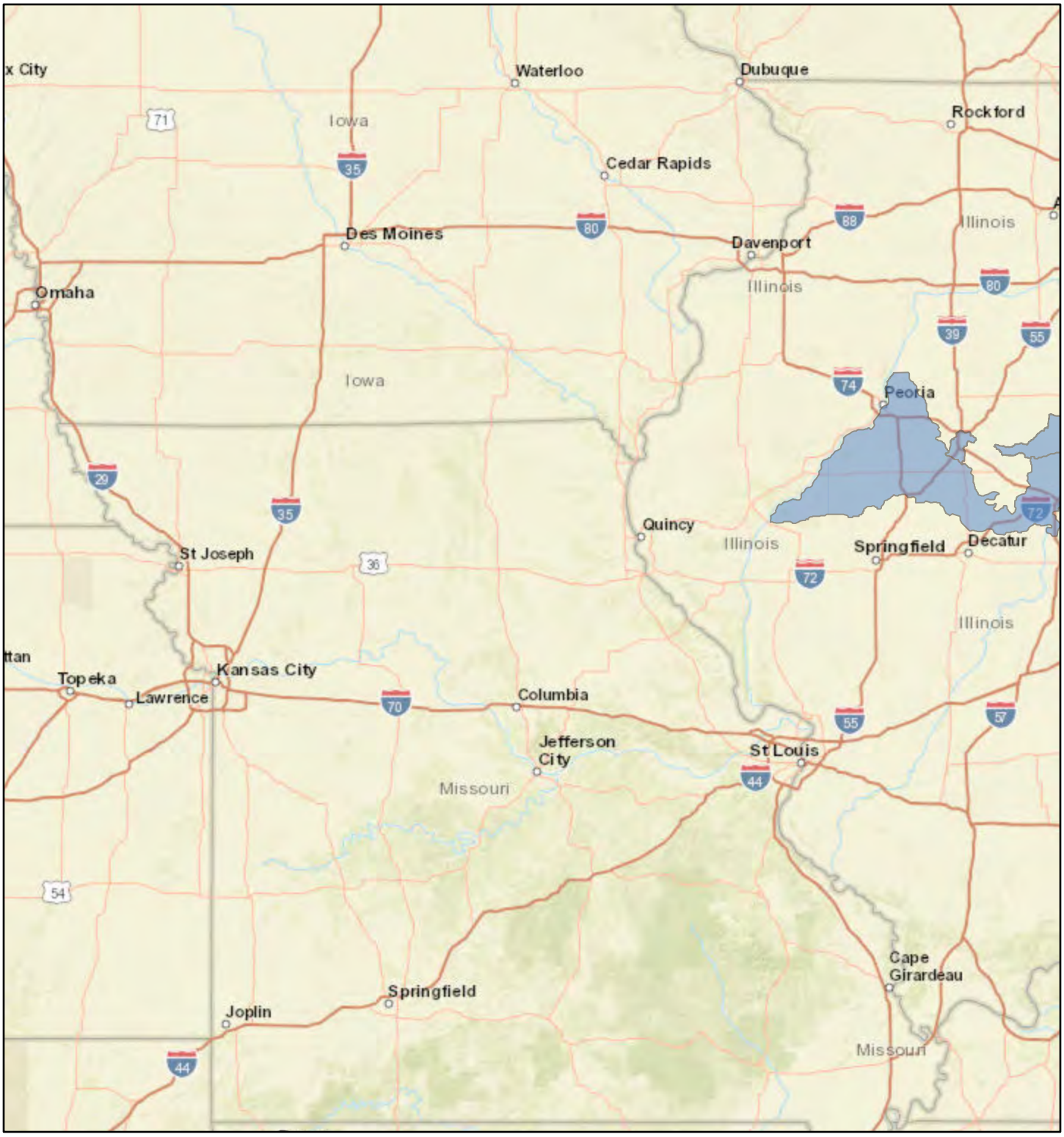
Sole Source Aquifers



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Esri, HERE, Garmin, NGA, USGS, NPS

U.S. Environmental Protection Agency

NEP MO-IA NWI Wetlands/FEMA

Overview Map

N

250th Ave

Pitman Creek

Otte Rd

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DIST

DIST

FRANKLIN S.S.

Esri Community Maps Contributors, Iowa DNR, SafeGraph, GeoTechnologies, Inc, METI/NASA,

Pole Location

Transmission Centerline

Evaluation Area 100-ft

NWI Wetland Type

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Riverine

FEMA (NFHL) Flood Zones

Regulatory Floodway

1% Annual Chance Flood Hazard

0.2% Annual Chance Flood Hazard

Stanley Consultants co.

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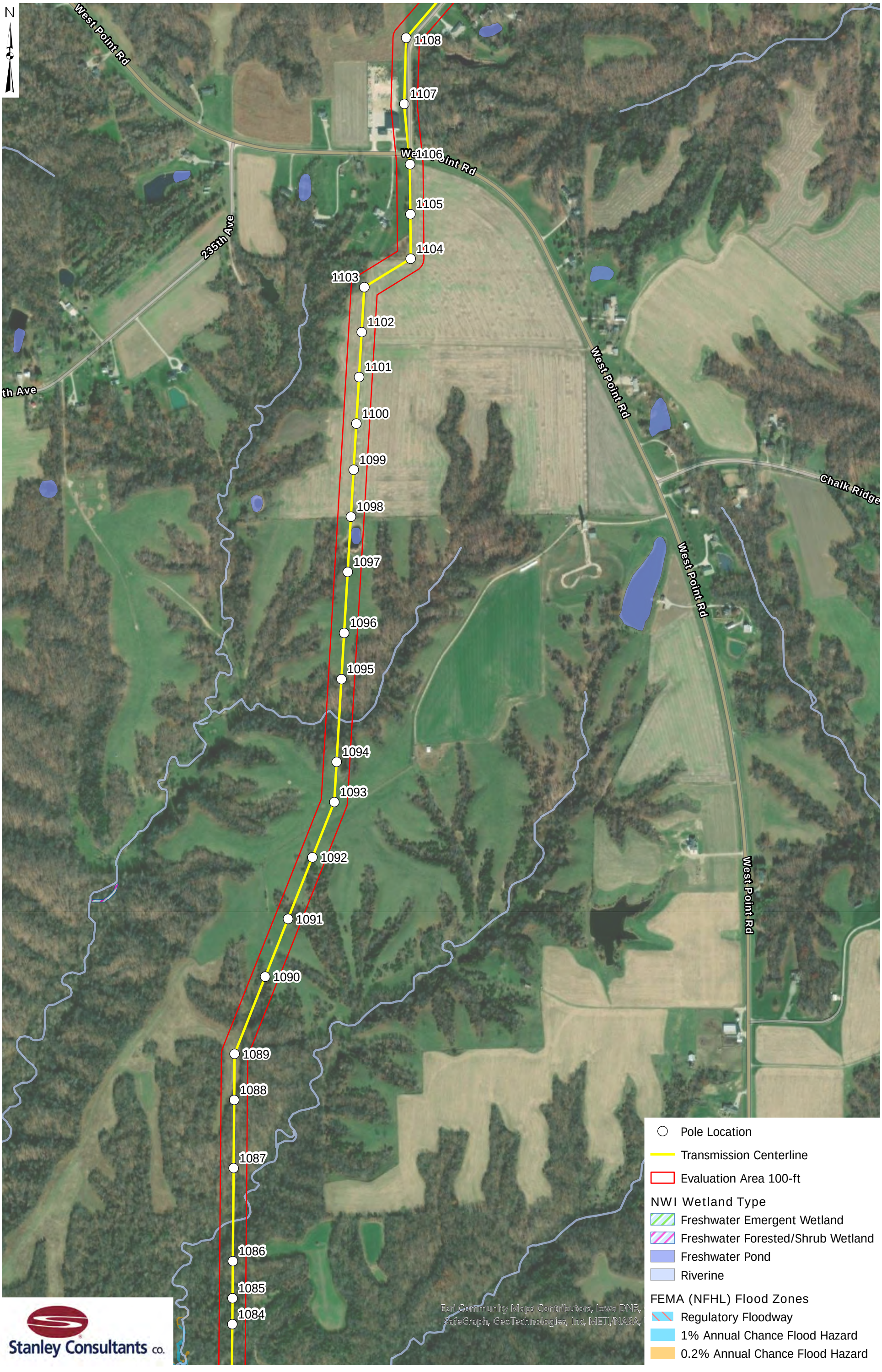
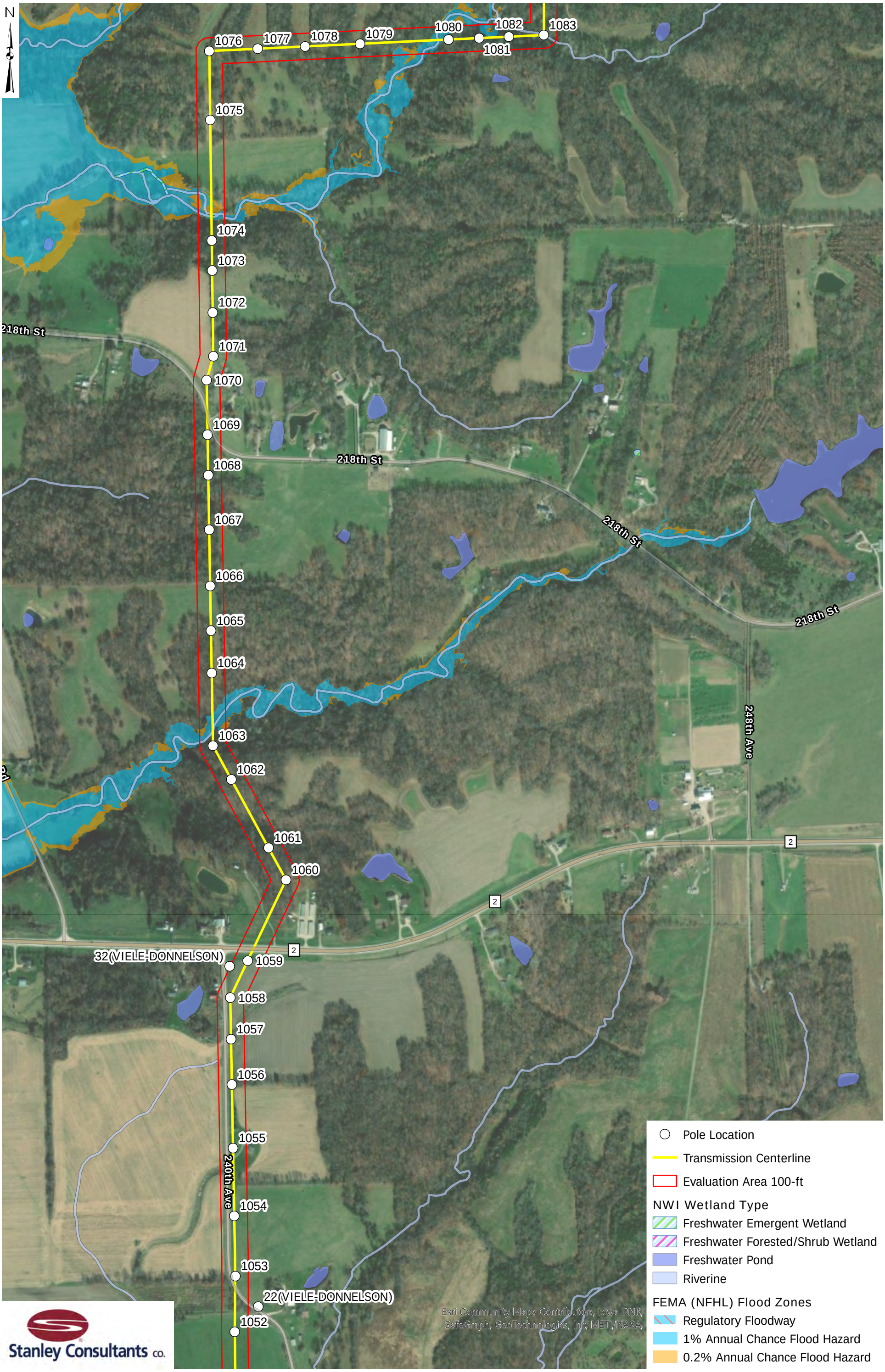
NEP MO-IA NWI Wetlands/FEMA

Map 01



NEP MO-IA NWI Wetlands/FEMA

Map 02



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NEP MO-IA NWI Wetlands/FEMA

Map 03

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1033
1032
1031
1030
A1
A1
A2
A3

240th Ave
235th St
235th St
235th St
Sugar Creek
Burlington Northern Santa Fe
245th Ave
Painter Creek
Painter Creek
Painter Creek
Burlington Northern Santa Fe
245th Ave
235th Ave

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Stanley Consultants co.

Pole Location
Transmission Centerline
Evaluation Area 100-ft

NWI Wetland Type
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Riverine

FEMA (NFHL) Flood Zones
Regulatory Floodway
1% Annual Chance Flood Hazard
0.2% Annual Chance Flood Hazard

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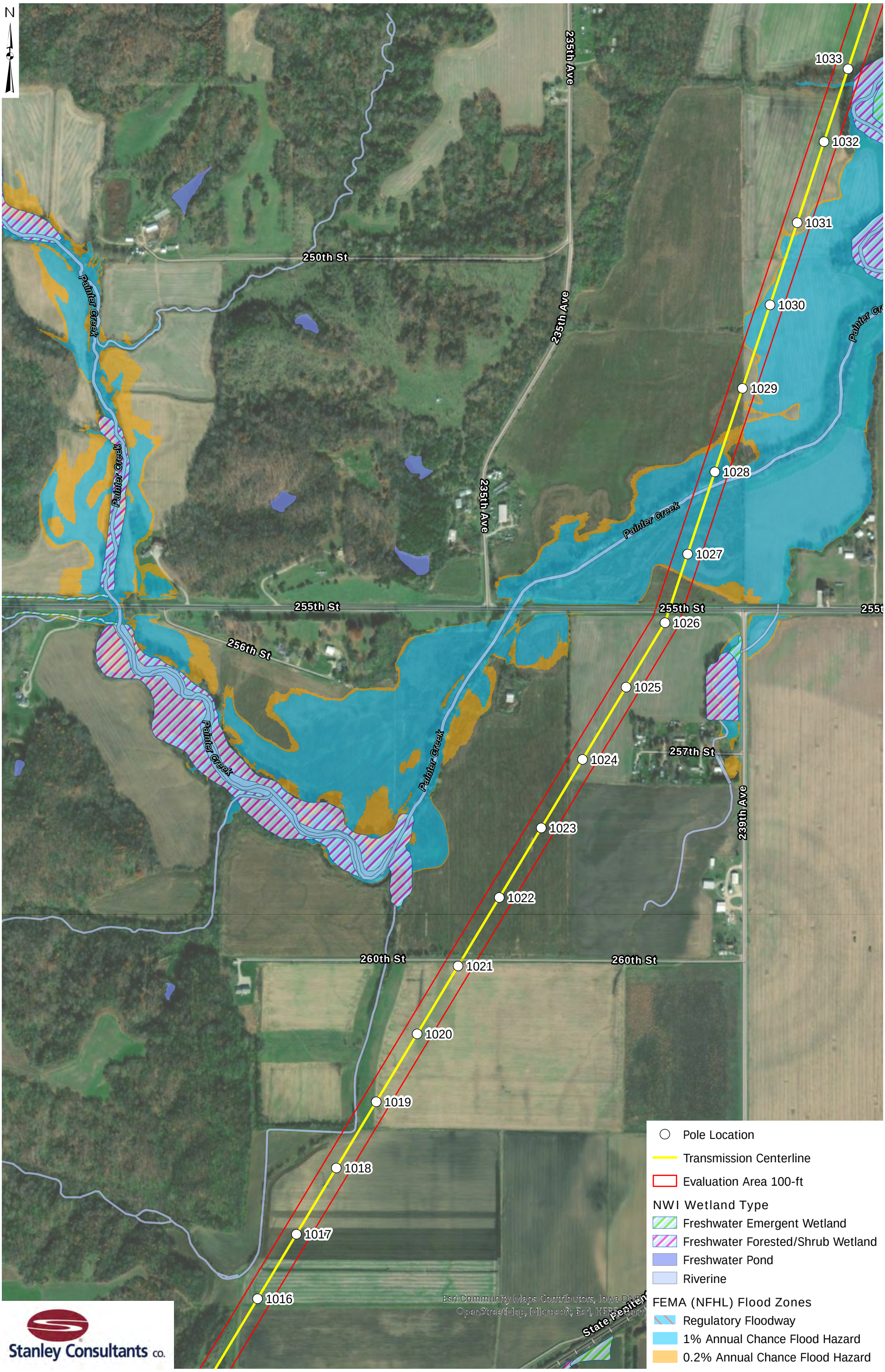
NEP MO-IA NWI Wetlands/FEMA

Map 04



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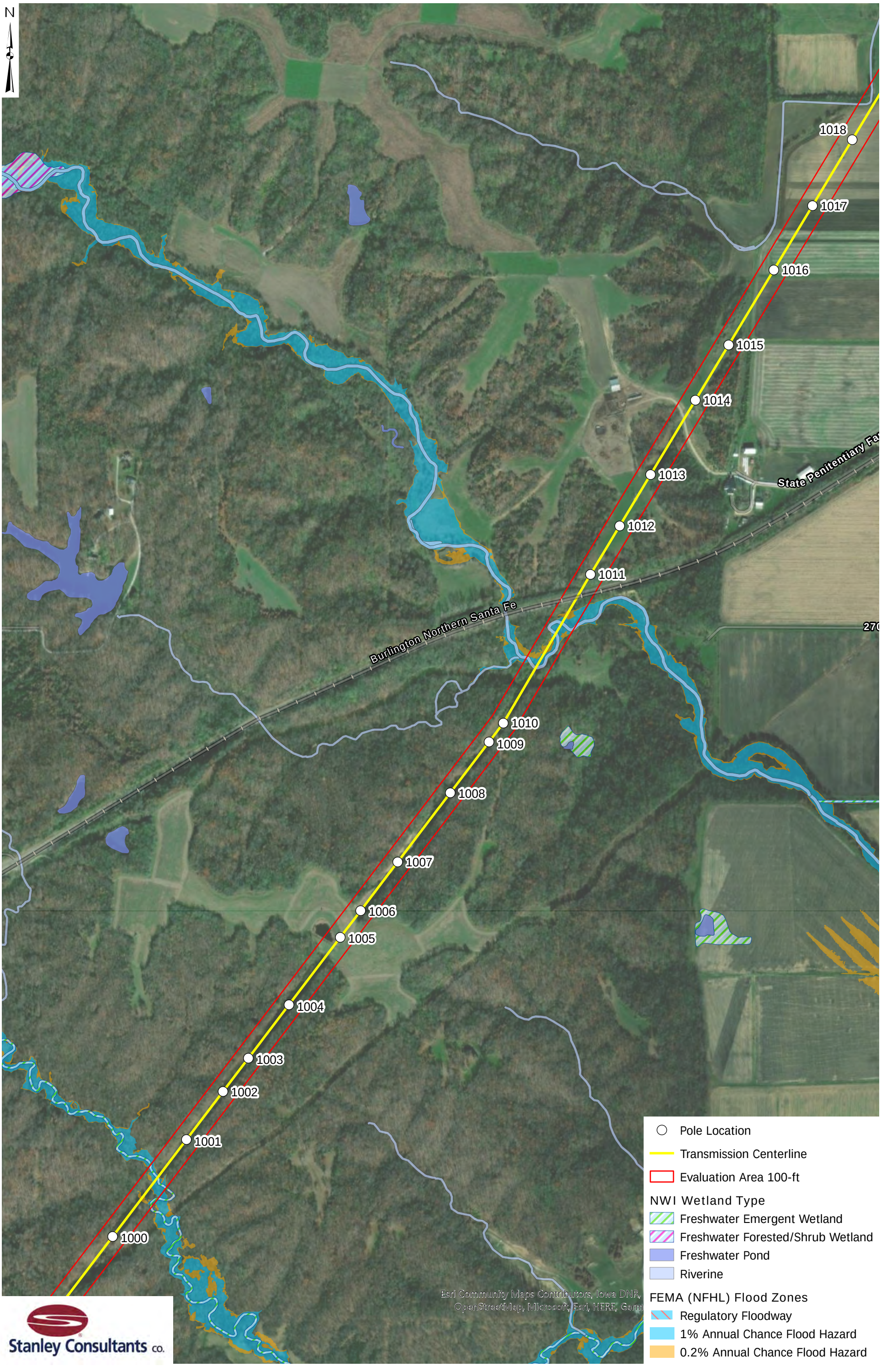
NEP MO-IA NWI Wetlands/FEMA

Map 05



NEP MO-IA NWI Wetlands/FEMA

Map 06

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Highway 218

Highway 218

Highway 218

280th St

213th Ave

213th Ave

286th St

thern Santa Fe

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Pole Location

Transmission Centerline

Evaluation Area 100-ft

NWI Wetland Type

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Riverine

FEMA (NFHL) Flood Zones

Regulatory Floodway

1% Annual Chance Flood Hazard

0.2% Annual Chance Flood Hazard

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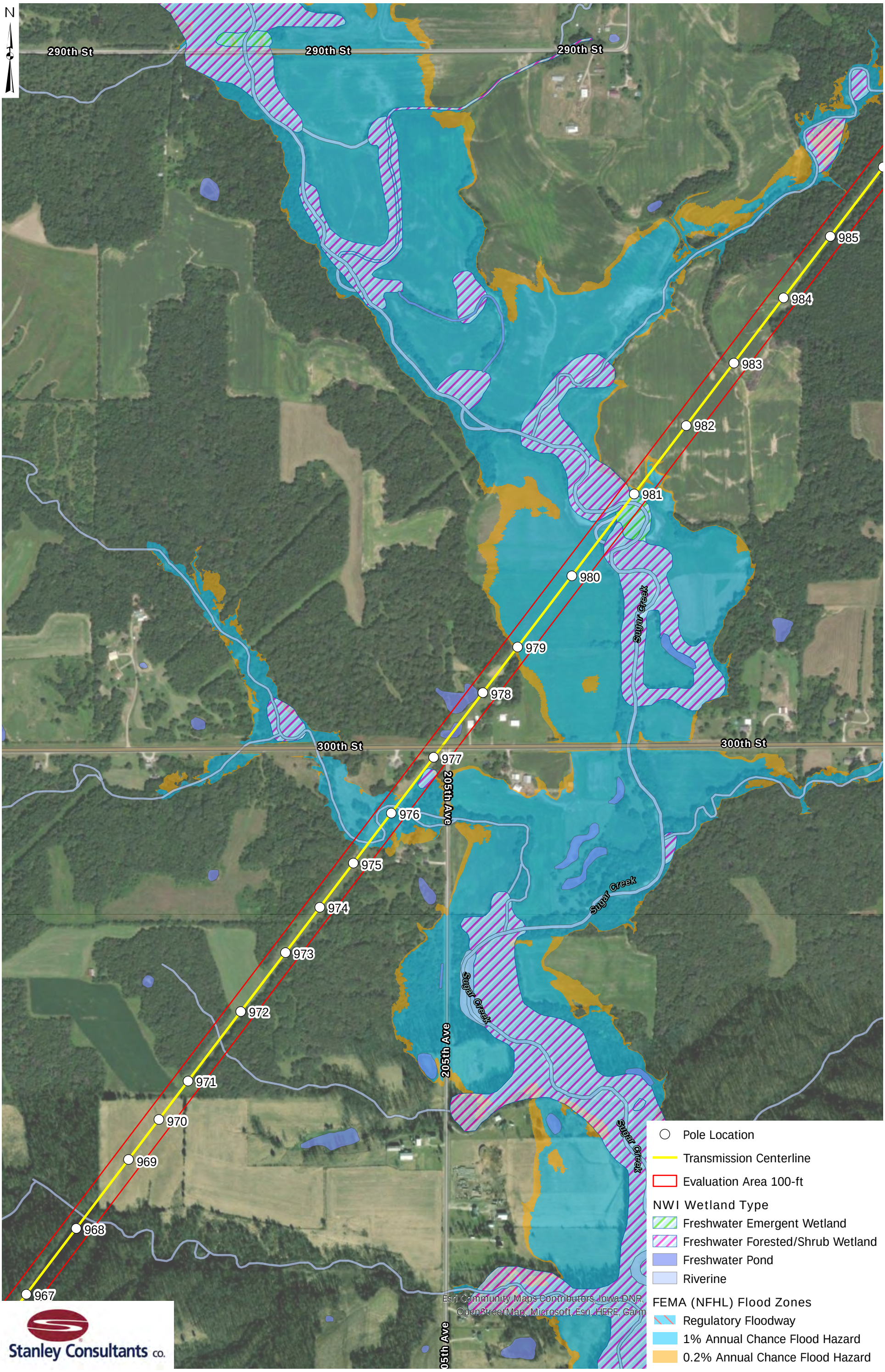
NEP MO-IA NWI Wetlands/FEMA

Map 07



NEP MO-IA NWI Wetlands/FEMA

Map 08

N

190th Ave

190th Ave

195th Ave

195th Ave

195th Ave

195th Ave

310th St

310th St

320th St

Argyle Rd

Argyle Rd

White Plains Rd

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Pole Location

Transmission Centerline

Evaluation Area 100-ft

NWI Wetland Type

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Riverine

FEMA (NFHL) Flood Zones

Regulatory Floodway

1% Annual Chance Flood Hazard

0.2% Annual Chance Flood Hazard

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NEP MO-IA NWI Wetlands/FEMA

Map 09

Stanley Consultants co.

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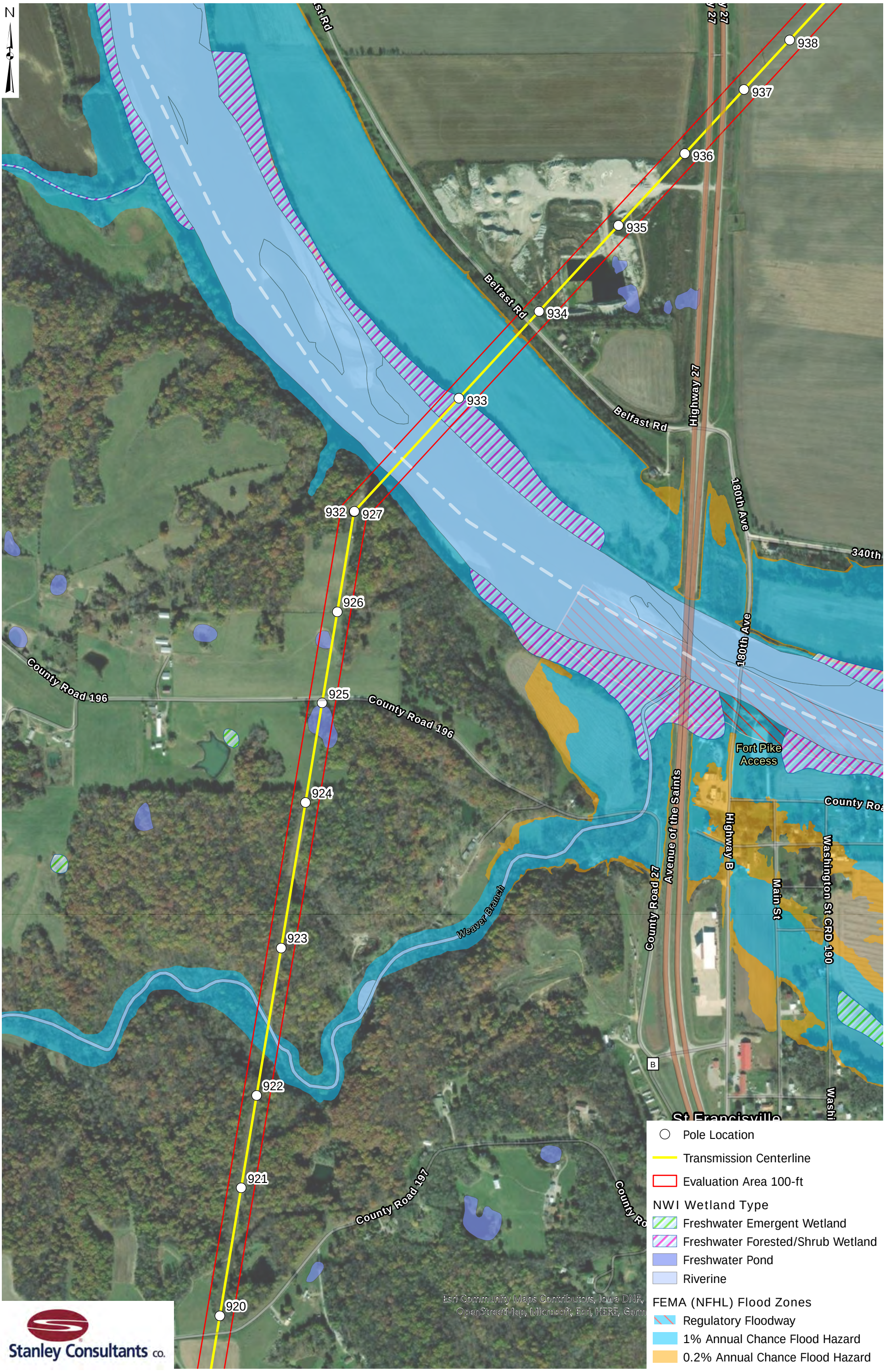
NEP MO-IA NWI Wetlands/FEMA

Map 10



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Map 11

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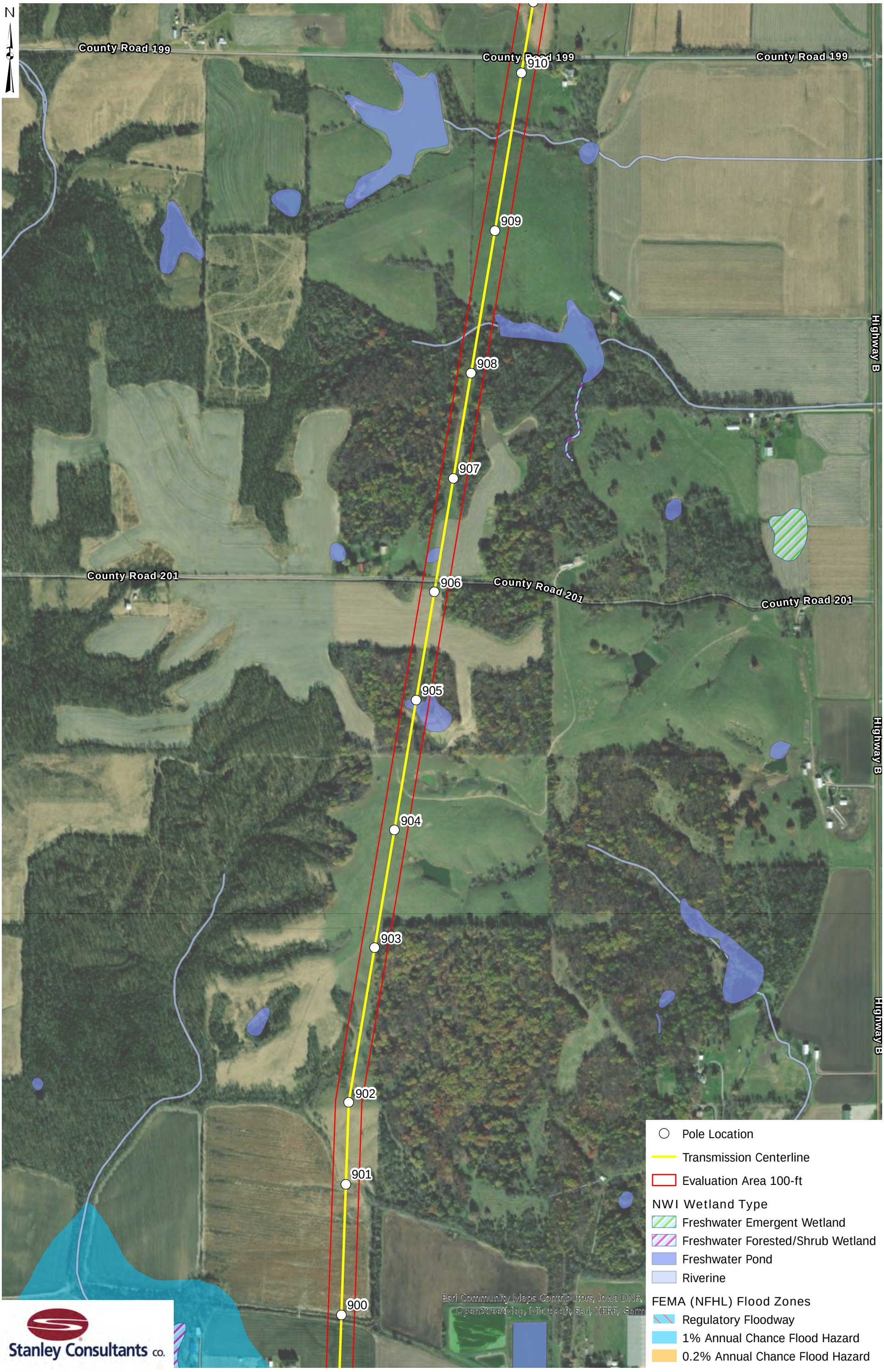
NEP MO-IA NWI Wetlands/FEMA

Map 12



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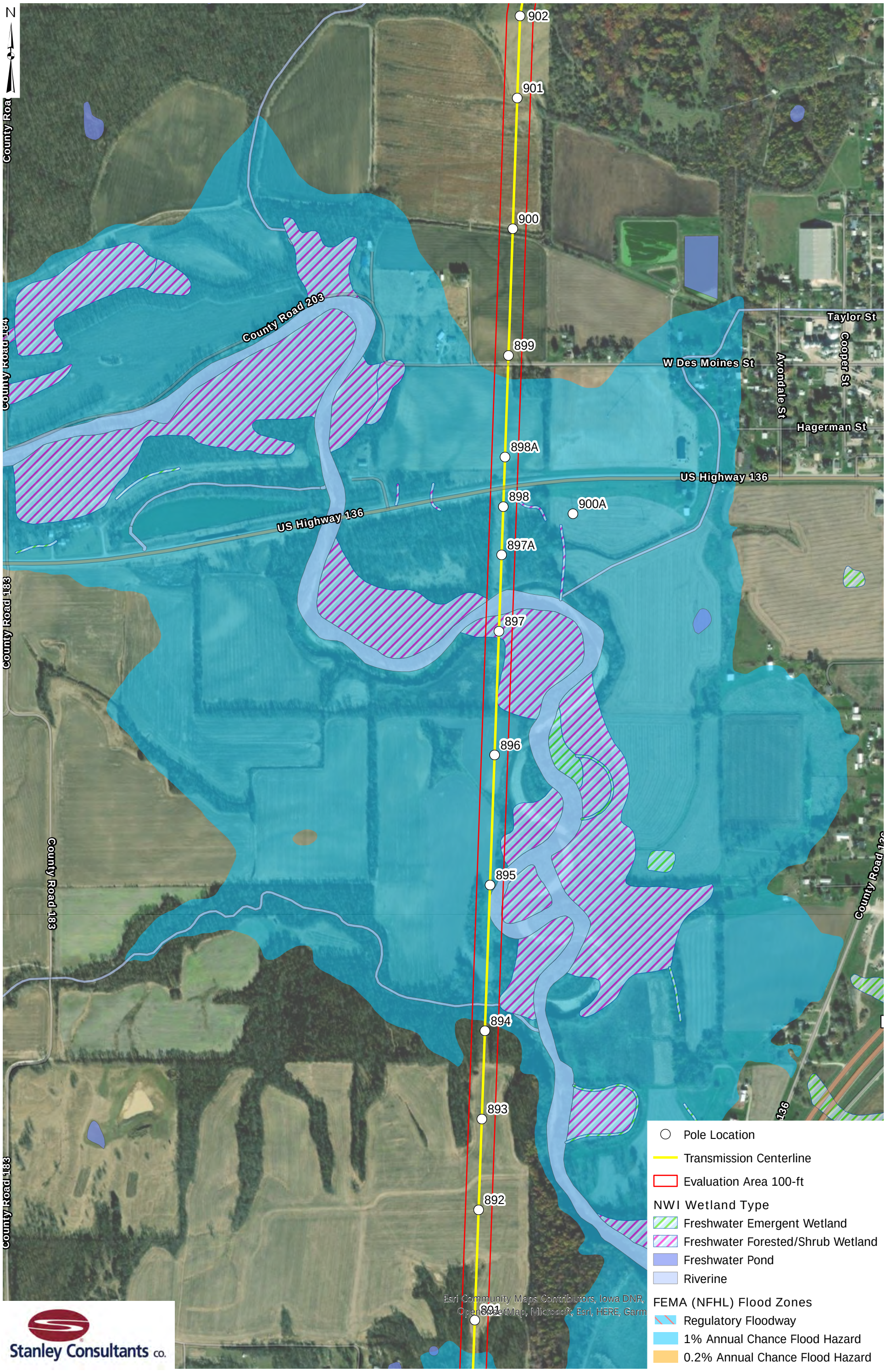
NEP MO-IA NWI Wetlands/FEMA

Map 13



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Map 14

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County Road 283

County Road 309

County Road 309

County Road 309

County Road 309

County Road 309

County Road 283

County Road 183

WINCHESTER SUB

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County Road 309

Avenue of the Saints

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Pole Location

Transmission Centerline

Evaluation Area 100-ft

NWI Wetland Type

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Riverine

FEMA (NFHL) Flood Zones

Regulatory Floodway

1% Annual Chance Flood Hazard

0.2% Annual Chance Flood Hazard

Stanley Consultants co.

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NEP MO-IA NWI Wetlands/FEMA

Map 15

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Sugar Creek

Sugar Creek

Sugar Creek

County Road 273

County Road 273

County Road 273

US Highway 136

136

County Road 283

County Road 283

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Pole Location

Transmission Centerline

Evaluation Area 100-ft

NWI Wetland Type

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Riverine

FEMA (NFHL) Flood Zones

Regulatory Floodway

1% Annual Chance Flood Hazard

0.2% Annual Chance Flood Hazard

Stanley Consultants co.

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0 500 1,000 2,000 3,000 4,000 Feet

NEP MO-IA NWI Wetlands/FEMA

Map 16

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Highway H

County Road 281

County Road 281

County Road 269

County Road 168

County Road 168

Sugar Creek

Sugar Creek

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Pole Location

Transmission Centerline

Evaluation Area 100-ft

NWI Wetland Type

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Riverine

FEMA (NFHL) Flood Zones

Regulatory Floodway

1% Annual Chance Flood Hazard

0.2% Annual Chance Flood Hazard

Stanley Consultants co.

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NEP MO-IA NWI Wetlands/FEMA

Map 17

N

State Route 81

State Route 81

State Route 81

County Road 163

County Road 162

County Road 280

Highway H

Highway H

Highway H

Highway H

Highway H

Pole Location

Transmission Centerline

Evaluation Area 100-ft

NWI Wetland Type

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Riverine

FEMA (NFHL) Flood Zones

Regulatory Floodway

1% Annual Chance Flood Hazard

0.2% Annual Chance Flood Hazard

Stanley Consultants co.

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NEP MO-IA NWI Wetlands/FEMA

Map 18

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County Road 241

County Road 241

County Road 163

County Road 247

County Road 247

County Road 163

County Road 145

County Road 145

County Road 247

County Road 163

County Road 162

y Road 245

Honey Creek

State Route 81

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Pole Location

Transmission Centerline

Evaluation Area 100-ft

NWI Wetland Type

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Riverine

FEMA (NFHL) Flood Zones

Regulatory Floodway

1% Annual Chance Flood Hazard

0.2% Annual Chance Flood Hazard

Stanley Consultants co.

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0 500 1,000 2,000 3,000 4,000 Feet

NEP MO-IA NWI Wetlands/FEMA

Map 19

N

County Road 163

County Road 163

County Road 241

County Road 247

County Road 247

County Road 241

County Road 249

County Road 250

County Road 250

County Road 241

County Road 244

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Pole Location

Transmission Centerline

Evaluation Area 100-ft

NWI Wetland Type

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Riverine

FEMA (NFHL) Flood Zones

Regulatory Floodway

1% Annual Chance Flood Hazard

0.2% Annual Chance Flood Hazard

Stanley Consultants co.

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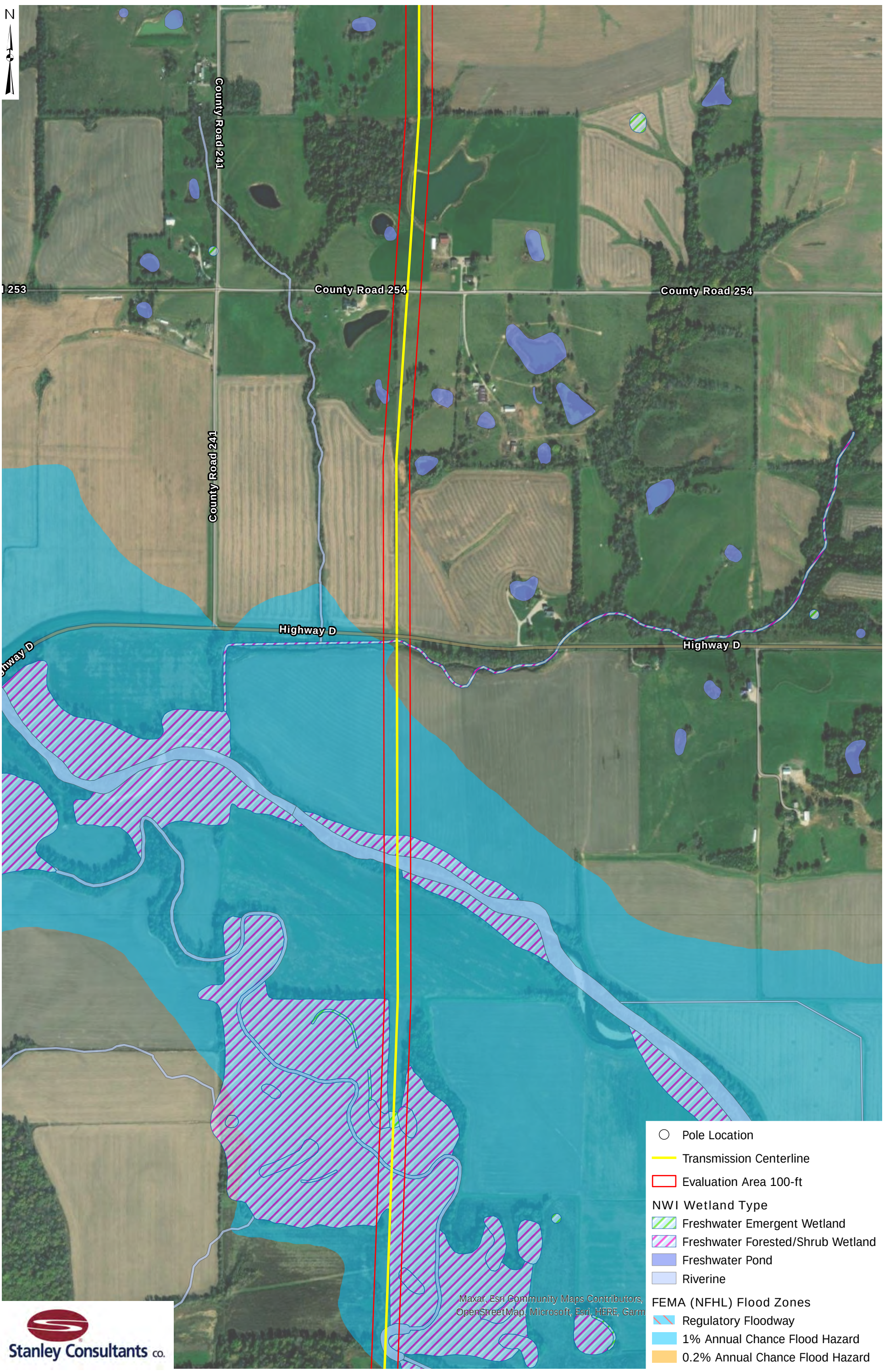
0 500 1,000 2,000 3,000 4,000 Feet

NEP MO-IA NWI Wetlands/FEMA

Map 20



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0 500 1,000 2,000 3,000 4,000 Feet

NEP MO-IA NWI Wetlands/FEMA

Map 21

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Neeper Conservation Area

County Road 257

County Road 257

County Road 257

County Road 242

County Road 261

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Pole Location

Transmission Centerline

Evaluation Area 100-ft

NWI Wetland Type

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Riverine

FEMA (NFHL) Flood Zones

Regulatory Floodway

1% Annual Chance Flood Hazard

0.2% Annual Chance Flood Hazard

Stanley Consultants co.

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0 500 1,000 2,000 3,000 4,000 Feet

NEP MO-IA NWI Wetlands/FEMA

Map 22

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County Road 260

County Road 261

County Road 261

Highway M

County Road 262

County Roa

Highway M

M

County Road 345

Highway M

Pole Location

Transmission Centerline

Evaluation Area 100-ft

NWI Wetland Type

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Riverine

FEMA (NFHL) Flood Zones

Regulatory Floodway

1% Annual Chance Flood Hazard

0.2% Annual Chance Flood Hazard

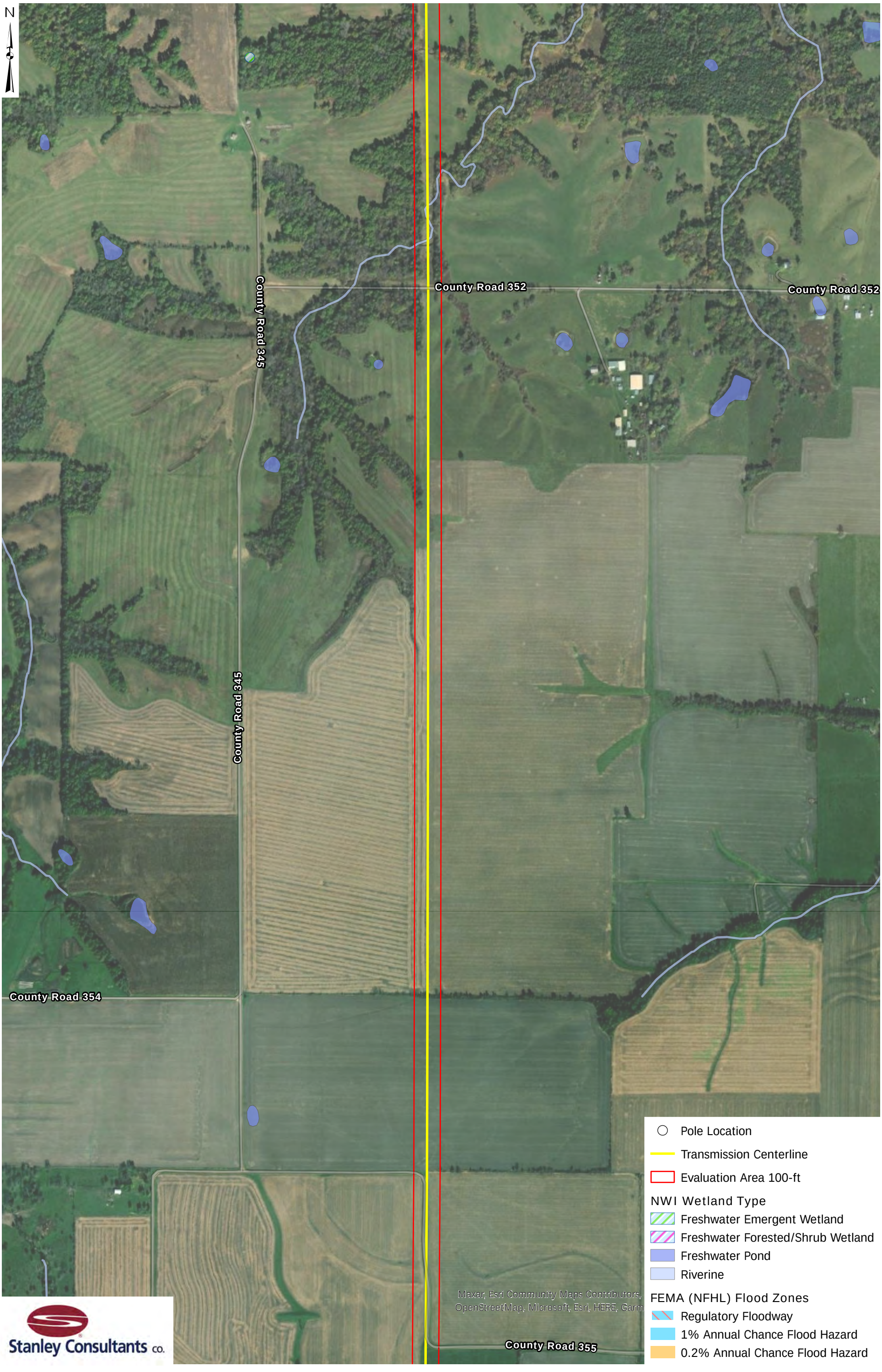
Stanley Consultants co.

1:8,000

0 500 1,000 2,000 3,000 4,000 Feet

NEP MO-IA NWI Wetlands/FEMA

Map 23



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0 500 1,000 2,000 3,000 4,000 Feet

NEP MO-IA NWI Wetlands/FEMA

Map 24

N

County Road 355

County Road 355

County Road 345

Sugar Creek

Sugar Creek

187th Ave

187th Ave

State Hwy E

State Hwy E

Esri Community Maps Contributors, Lewis Coun
© OpenStreetMap, Microsoft, Esri, HERE, Garm

Stanley Consultants co.

Pole Location

Transmission Centerline

Evaluation Area 100-ft

NWI Wetland Type

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Riverine

FEMA (NFHL) Flood Zones

Regulatory Floodway

1% Annual Chance Flood Hazard

0.2% Annual Chance Flood Hazard

1:8,000

0 500 1,000 2,000 3,000 4,000 Feet

NEP MO-IA NWI Wetlands/FEMA

Map 25

N

State Highway A

State Highway A

190th Ave

State Highway A

A

State Highway A

Esri Community Maps Contributors, Lewis Coun
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- Pole Location
- Transmission Centerline
- Evaluation Area 100-ft

NWI Wetland Type
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

FEMA (NFHL) Flood Zones
- Regulatory Floodway
- 1% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard

1:8,000

0 500 1,000 2,000 3,000 4,000 Feet

NEP MO-IA NWI Wetlands/FEMA

Map 26

N

Forsee Branch

130th St

183rd Ave

135th St

135th St

187th Ave

187th Ave

145th St

Stanley Consultants co.

- Pole Location
- Transmission Centerline
- Evaluation Area 100-ft

NWI Wetland Type

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

FEMA (NFHL) Flood Zones

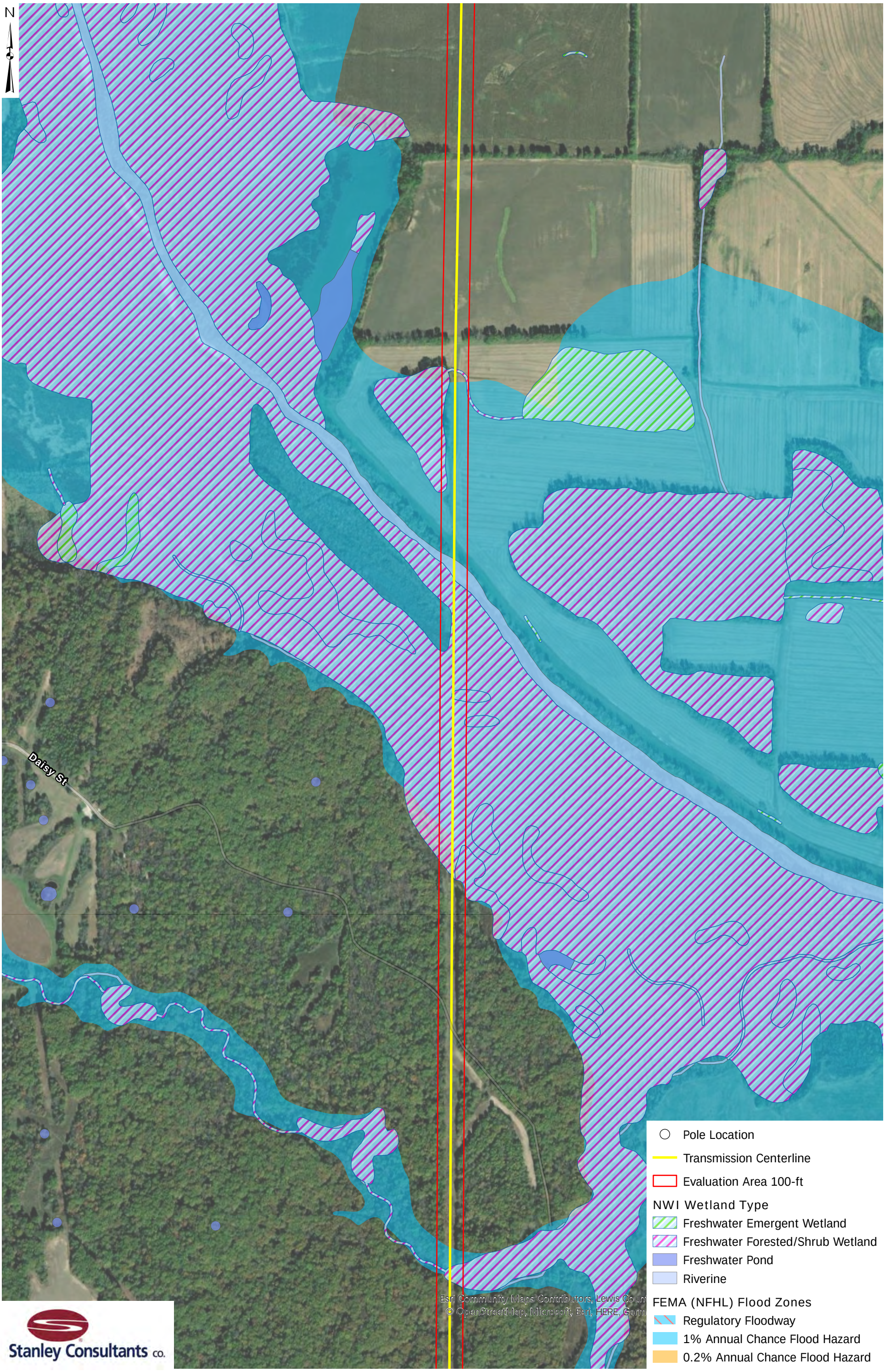
- Regulatory Floodway
- 1% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard

1:8,000

0 500 1,000 2,000 3,000 4,000 Feet

NEP MO-IA NWI Wetlands/FEMA

Map 27



Stanley Consultants co.

1:8,000

0 500 1,000 2,000 3,000 4,000 Feet

NEP MO-IA NWI Wetlands/FEMA

Map 28

N

Y

State Highway Y

Douglas Ave

Pole Location

Transmission Centerline

Evaluation Area 100-ft

NWI Wetland Type

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Riverine

FEMA (NFHL) Flood Zones

Regulatory Floodway

1% Annual Chance Flood Hazard

0.2% Annual Chance Flood Hazard

Stanley Consultants co.

1:8,000

0 500 1,000 2,000 3,000 4,000 Feet

NEP MO-IA NWI Wetlands/FEMA

Map 29

N

Douglas Ave

Y

Blair Branch

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Stanley Consultants co.

- Pole Location
- Transmission Centerline
- Evaluation Area 100-ft

NWI Wetland Type
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

FEMA (NFHL) Flood Zones
- Regulatory Floodway
- 1% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard

1:8,000
0 500 1,000 2,000 3,000 4,000 Feet

NEP MO-IA NWI Wetlands/FEMA
Map 30

N

Blair Branch

Blair Branch

Blair Branch

Blair Branch

Blair Branch

205th St

205th St

185th Ave

Ave

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Stanley Consultants co.

- Pole Location
- Transmission Centerline
- Evaluation Area 100-ft

NWI Wetland Type

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- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

FEMA (NFHL) Flood Zones

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1:8,000

0 500 1,000 2,000 3,000 4,000 Feet

NEP MO-IA NWI Wetlands/FEMA

Map 31