



Booker Grey Environmental, LLC

Consulting Biologist

Natural Resources Analysis

**Hill Parcel
6705 N 1000 E
Tetonia, ID 83452**

Prepared for

**Ms. Terri Ann Hill
6705 N 1000 E
Tetonia, ID 83452**

Prepared by

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31 July 2023

Natural Resources Analysis

Introduction

This report is a discussion of the natural resource conditions that currently exist on the proposed Hill Parcel two-lot subdivision. This narrative has been arranged in accordance with Teton County Idaho Land Development Code, Section 5, General Development Standards, 5-4 Natural Resource Protection.

This information summarizes the natural resources present, potential impacts and a mitigation plan to offset and minimize any impacts to areas within the Overlay. An Aquatic Resource Inventory was previously submitted to Teton County per the request of Ms. Jade Krueger and is currently under review by the US Army Corps of Engineers for a jurisdictional determination.

Site Location

The 80 +/- acre parcel is located at 6705 N 1000 E, Section 30, Township 6N, Range 44E, Teton, Teton County, Idaho (Appendix - Site Location Map). Situated among large agricultural operations, and rural single-family homes, the project site is bounded by County Road N 1000 E to the west, single family homes and farmland to the south, with cultivated cropland north and east.

The parcel is a working farm with hay and cow/calf production consisting of an existing single-family home (>50 years old), a workshop and farm out buildings.

Existing Vegetation Inventory

The parcel contains several vegetative communities and include,

North Leigh Creek

The southern portion of the parcel contains North Leigh Creek and *Merigliano* describes this area as deciduous closed tree canopy of *Populus tremuloides* (Quaking aspen) with an understory of three layers, tall shrubs dominated by *Amelanchier alnifolia* (serviceberry) and *Prunus virginiana* (chokecherry), low shrubs dominated by *Symphoricarpo soreophilus* (mountain snowberry), *Rosa woodsii* (Wood's rose), and *Pachistima myrsenites* (mountainbox). Tall grasses can be abundant in either variant and include *Bromus carinatus* (mountain brome) and *Elymus glaucus* (western ryegrass). *Thalictrum fendleri* (Fendler's meadowrue) and *Osmorhiza chilensis* are common low forbs in both variants.

Cultivated Cropland

Much of the parcel is primarily cultivated cropland planted and harvested in Timothy hay (*Phelum pratense*) and Kentucky bluegrass (*Poa pratensis*). Other associated species include, *Cirsium arvense* (Canada thistle), and *Potentilla gracilis* (slender cinquefoil).

North Leigh Canal/Irrigation Ditches

The North Leigh Canal is an irrigation ditch which has a north and south fork located in the approximate center and at the northern boundary of the parcel are vegetatively described as Riparian Willow by *Merigliano*. Common species include *Salix geyeriana*, (Geyers willow), *Cirsium arvense* (Canada thistle), *Junus baltis* (Baltic rush) and *Pas palustria* (fowl bluegrass).

Soils

The Natural Resources Conservation Service USDA - Soil Map of the site includes the following soils in order of dominance (Appendix Soil Map).

13425	Badgerton-Alpine complex, 2 to 8 percent slopes
13430	Alpine-St. Anthony complex, 0 to 2 percent slopes
13453	Bustle silt loam, 1 to 6 percent slopes

Topography

The parcel is composed of rolling terrain with an elevation 6369' near the middle of the parcel per USGS Topographical Map.

Floodplains, Wetlands, Waterways and Riparian Areas

There are Floodplains, Wetlands and Waterways within the parcel boundary. Please refer to previously submitted Aquatic Resources Inventory for descriptions.

Geology and Seismic Hazards

The Teton County Earthquake Overlay Map depicts the parcel within a low liquid susceptibility rating area.

Wildfire Danger

The parcel is depicted on the Teton County GIS Wildfire Hazard Overlay. Current and historical agricultural operations, tilling of soil after harvest, reduces wildlife danger within the parcel significantly. More than half of the parcel is pasture which lessens the available fuel for potential wildfire.

Ridges and Rock Outcroppings

There are no ridges and/or outcroppings located within the parcel.

Areas within 1 Mile of State Highway or Ski Hill Road

The proposed Hill Parcel subdivision is not within one mile of any State Highway or Ski Hill Road.

Bear Conflict Zone

The parcel is within the Teton County designated Bear Conflict Zone. The applicant will implement and maintain all required Bear Conflict Zone requirements e.g., bearproof garbage receptacles, etc.

Wildlife Habitat Assessment

The Teton County Natural Resources Overlay Map (2006-2022) depicted no wildlife or indicator species. However, the newly adopted Natural Resources Overlay (January 2022) depicts the entire parcel within the Big Game Migration Corridors and Seasonal Range (Appendix-Natural Resource Overlay Exhibit).

Methodology

A pre-survey literature search of potential wildlife indicator species was completed prior to pedestrian surveys within the parcel. As part of the Aquatic Resource Inventory the entire site was walked numerous times from May 15 to June 15 during early morning and/or late evening/dusk times of day. Site photographs are in the Appendix of this document.

Potential Indicator Species and Indicator Habitats

Habitats

Emergent Wetlands
Forested Riparian
Aspen

The forested and Aspen habitats are located within the North Leigh Creek area. Small emergent wetlands are found in the pasture/hay portions of the parcel.

Species

Long Billed Curlew
Rocky Mountain Elk
Mule Deer
Moose
Grizzly Bear
Yellowstone Cutthroat Trout

Results

There were several signs of (scat, rubbing, bedding, paths) past and current use by mule deer and whitetail deer within the +/- 30 acre forested North Leigh Creek area. However, no actual observations of Elk, Mule Deer and or Moose were observed. Mule deer probably utilize this area seasonally as the habit provides thermal protection and forage in the winter. No other sign and or indicators of additional Big Game species were observed.

Mitigation/Land Management

The 80-acre Hill Parcel proposes a two-lot subdivision (55 and 25 acre lots). There is an existing house, workshop and hay sheds to support the working hay and cow/calf production. The proposed development will consume approximately 2+/- acres for the allowed structures post development.

Mitigation for the loss of 2 +/- acres of habitat will be provided by the existing 78 +/- acres of forested riparian habitat and hay/pasture remaining in natural habitat.

There will be NO,

Fragmentation of wildlife corridors, or North Leigh Creek and Canal,

Development within wetlands or riparian areas,

Development within or near seasonal range habitat along North Leigh Creek.

Additional mitigation efforts include.

Lighting – All lighting within the subdivision shall meet the Teton County, Land Development Code, Section 5-8 Outdoor Lighting and will be designed to be downcast.

Wildlife Friendly Fencing – All fences within the subdivision will be designed as outlined in Teton County Land Development Code, Section 5-4, E.- 4).

REFERENCES

IDFG. 2017. Idaho State Wildlife Action Plan, 2015. Idaho Department of Fish and Game.

IDFG. 2019. Statewide Report Fall 2019 Season Elk. Idaho Department of Fish and Game Boise, ID. IDFG. 2021a. Raster Layers for Elk Winter Range, Elk Summer Range, and Elk Migration Corridors, and Mule Deer Winter Range and Mule Deer Summer Range.

Merigliano, M. 2009. A Field Manual for Classified Vegetation in the Upper Snake River Valley. Teton Regional Land Trust. Teton County, ID.

TRLT. 2006. Wildlife Overlay and Wildlife Conservation Measures for Teton County, Idaho Technical Support Document. Teton Regional Land Trust. Teton County, ID.

Teton County GIS, Natural Resources Overlay, USGS National Seismic Hazard Map Idaho 2014, 2016, Teton County Earthquake Map, Bear Conflict Area, Wildlife Hazard Zone Map, USGS Topography, Slopes (%).

Teton County. 2022 Land Development Code

APPENDIX

Site Location Map

Aerial Photograph 2021

NRCS Soil Map

Natural Resources Overlay Map

Site Photographs

Hill Parcel - Site Location Map

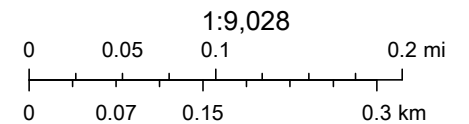


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County Boundary Impact Area Sections

City Boundaries Parcels

City Limits



Aerographics, Inc., Teton County GIS, Teton County, ID GIS, GIS, Teton County GIS

Teton County GIS



United States
Department of
Agriculture

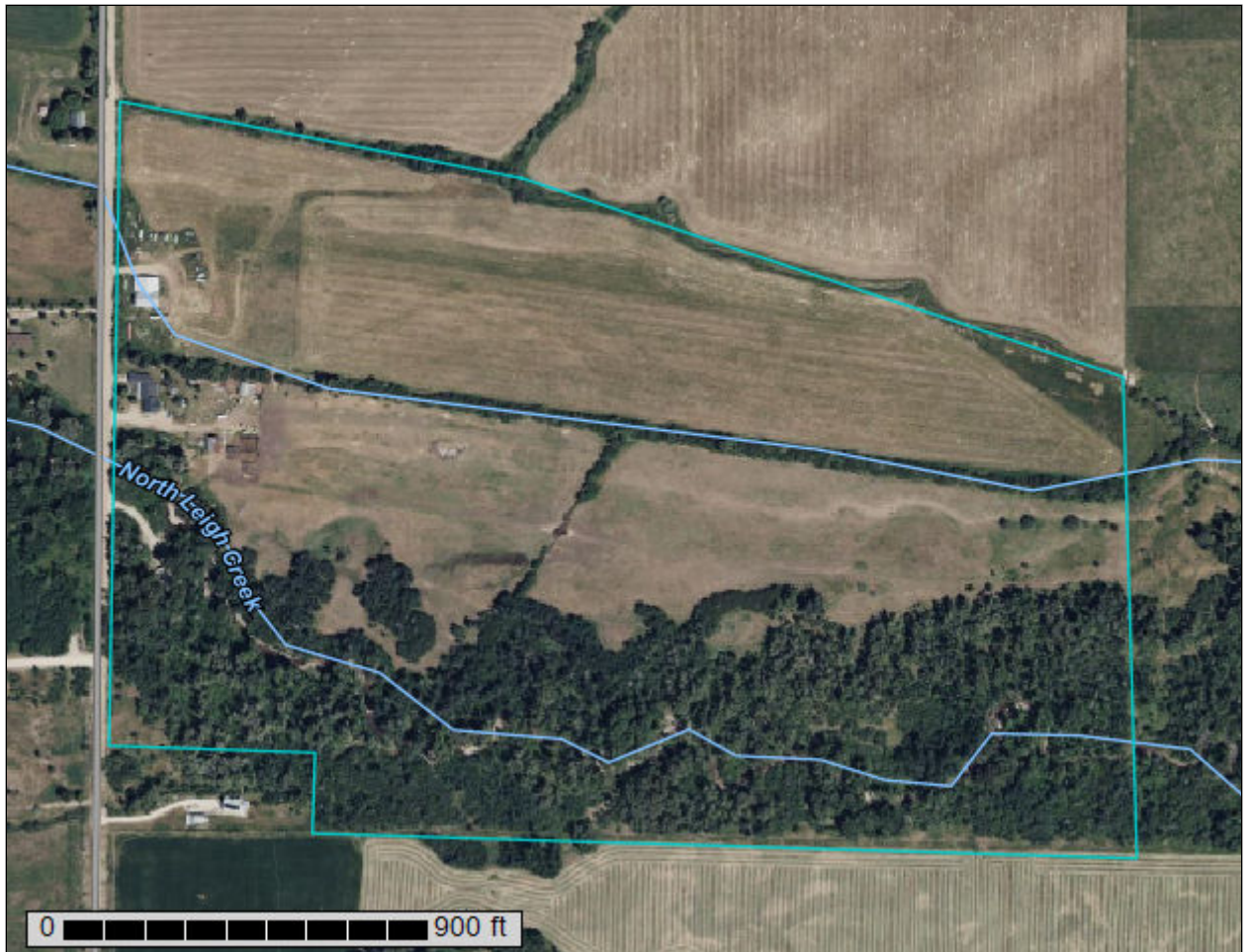
NRCS

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 Teton Area, Idaho and Wyoming

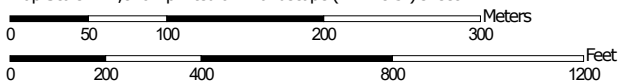
Hill Parcel



Custom Soil Resource Report Soil Map



Map Scale: 1:4,820 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
13425	Badgerton-Alpine complex, 2 to 8 percent slopes	36.6	42.4%
13430	Alpine-St. Anthony complex, 0 to 2 percent slopes	40.2	46.6%
13453	Bustle silt loam, 1 to 6 percent slopes	9.5	11.0%
Totals for Area of Interest		86.4	100.0%

Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

Teton Area, Idaho and Wyoming

13425—Badgerton-Alpine complex, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 1vgtt
Elevation: 6,040 to 6,680 feet
Mean annual precipitation: 16 to 26 inches
Mean annual air temperature: 36 to 44 degrees F
Frost-free period: 20 to 90 days
Farmland classification: Not prime farmland

Map Unit Composition

Badgerton, rarely flooded, and similar soils: 55 percent
Alpine and similar soils: 35 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Badgerton, Rarely Flooded

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Concave, linear
Parent material: Mixed alluvium

Typical profile

A - 0 to 9 inches: loam
AB - 9 to 17 inches: very gravelly loam
BC - 17 to 31 inches: extremely gravelly loamy sand
C1 - 31 to 43 inches: extremely gravelly loamy coarse sand
C2 - 43 to 60 inches: very gravelly sandy loam

Properties and qualities

Slope: 2 to 8 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 to high
(0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: NoneRare
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): 6c
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: B
Ecological site: R013XY050ID - Riparian Wet Meadow SALIX/CAREX
Hydric soil rating: No

Description of Alpine

Setting

Landform: Fan remnants, stream terraces
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Parent material: Mixed alluvium

Typical profile

A1 - 0 to 2 inches: gravelly loam
A2 - 2 to 11 inches: very gravelly loam
ABk - 11 to 17 inches: extremely gravelly loam
Bk - 17 to 25 inches: extremely gravelly sandy loam
Bkq - 25 to 31 inches: extremely gravelly loamy sand
Bk' - 31 to 35 inches: extremely gravelly sandy loam
Bkq' - 35 to 44 inches: extremely gravelly loamy sand
Bk1" - 44 to 51 inches: extremely gravelly sandy loam
Bk2" - 51 to 60 inches: gravel

Properties and qualities

Slope: 2 to 8 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 to high
(0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 75 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): 4c
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: R013XY004ID - Shallow Gravelly 12-16 PZ ARTRV/PSSPS
Hydric soil rating: No

Minor Components

Redfish, wooded

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: R013XY050ID - Riparian Wet Meadow SALIX/CAREX
Hydric soil rating: Yes

Foxcreek, wooded

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: R013XY050ID - Riparian Wet Meadow SALIX/CAREX

Custom Soil Resource Report

Hydric soil rating: Yes

13430—Alpine-St. Anthony complex, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 1vghp

Elevation: 5,910 to 6,480 feet

Mean annual precipitation: 16 to 18 inches

Mean annual air temperature: 38 to 44 degrees F

Frost-free period: 50 to 90 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Alpine and similar soils: 50 percent

St. anthony and similar soils: 35 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alpine

Setting

Landform: Fan remnants, stream terraces

Down-slope shape: Convex, linear

Across-slope shape: Linear, convex

Parent material: Mixed alluvium

Typical profile

A1 - 0 to 2 inches: gravelly loam

A2 - 2 to 11 inches: very gravelly loam

ABk - 11 to 17 inches: extremely gravelly loam

Bk - 17 to 25 inches: extremely gravelly sandy loam

Bkq - 25 to 31 inches: extremely gravelly loamy sand

Bk' - 31 to 35 inches: extremely gravelly sandy loam

Bkq' - 35 to 44 inches: extremely gravelly loamy sand

Bk1" - 44 to 51 inches: extremely gravelly sandy loam

Bk2" - 51 to 60 inches: gravel

Properties and qualities

Slope: 0 to 2 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 to high
(0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 75 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Custom Soil Resource Report

Interpretive groups

Land capability classification (irrigated): 4c

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B

Ecological site: R013XY004ID - Shallow Gravelly 12-16 PZ ARTRV/PSSPS

Hydric soil rating: No

Description of St. Anthony

Setting

Landform: Swales on fan remnants

Down-slope shape: Concave, linear, convex

Across-slope shape: Concave, linear

Parent material: Gravelly mixed alluvium

Typical profile

A1 - 0 to 7 inches: gravelly loam

A2 - 7 to 12 inches: gravelly loam

Bw - 12 to 23 inches: very gravelly sandy loam

BC - 23 to 47 inches: extremely gravelly coarse sandy loam

2C - 47 to 60 inches: extremely gravelly loamy sand

Properties and qualities

Slope: 0 to 2 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 to high
(0.57 to 1.98 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)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): 4c

Land capability classification (nonirrigated): 4s

Hydrologic Soil Group: B

Ecological site: R013XY004ID - Shallow Gravelly 12-16 PZ ARTRV/PSSPS

Hydric soil rating: No

13453—Bustle silt loam, 1 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2mf11

Elevation: 6,050 to 6,700 feet

Mean annual precipitation: 18 to 26 inches

Mean annual air temperature: 37 to 41 degrees F

Frost-free period: 35 to 55 days

Custom Soil Resource Report

Farmland classification: Not prime farmland

Map Unit Composition

Bustle and similar soils: 85 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bustle

Setting

Landform: Loess hills on fan remnants

Landform position (two-dimensional): Backslope

Down-slope shape: Convex, linear

Across-slope shape: Linear, convex

Parent material: Loess

Typical profile

Ap1 - 0 to 5 inches: silt loam

Ap2 - 5 to 13 inches: silt loam

Bt1 - 13 to 19 inches: silt loam

Bt2 - 19 to 39 inches: silt loam

Bt3 - 39 to 46 inches: silt loam

Bt4 - 46 to 60 inches: silt loam

Properties and qualities

Slope: 1 to 6 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 (0.06 to 0.57 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)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: Very high (about 12.1 inches)

Interpretive groups

Land capability classification (irrigated): 6c

Land capability classification (nonirrigated): 6c

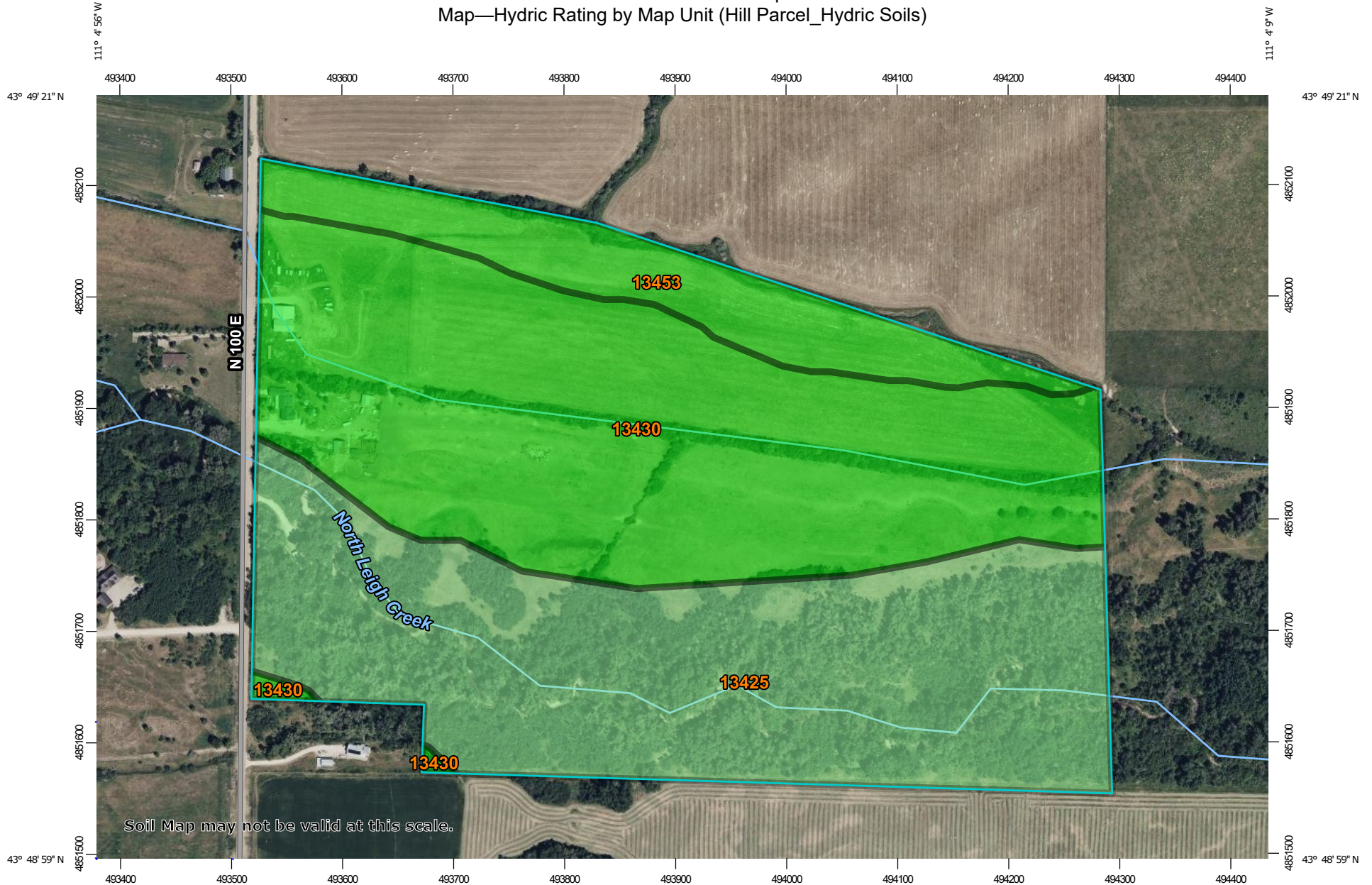
Hydrologic Soil Group: C

Ecological site: R013XY016ID - Moist Mountain Loam 20+ PZ POTR

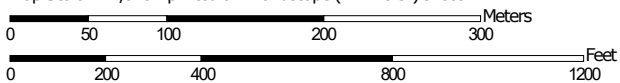
Hydric soil rating: No

Custom Soil Resource Report

Map—Hydric Rating by Map Unit (Hill Parcel_Hydric Soils)



Map Scale: 1:4,820 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N 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 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Teton Area, Idaho and Wyoming
 Survey Area Data: Version 11, Sep 2, 2022

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

Date(s) aerial images were photographed: Jul 20, 2022—Jul 25, 2022

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 (Hill Parcel_Hydric Soils)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
13425	Badgerton-Alpine complex, 2 to 8 percent slopes	10	36.6	42.4%
13430	Alpine-St. Anthony complex, 0 to 2 percent slopes	0	40.2	46.6%
13453	Bustle silt loam, 1 to 6 percent slopes	0	9.5	11.0%
Totals for Area of Interest			86.4	100.0%

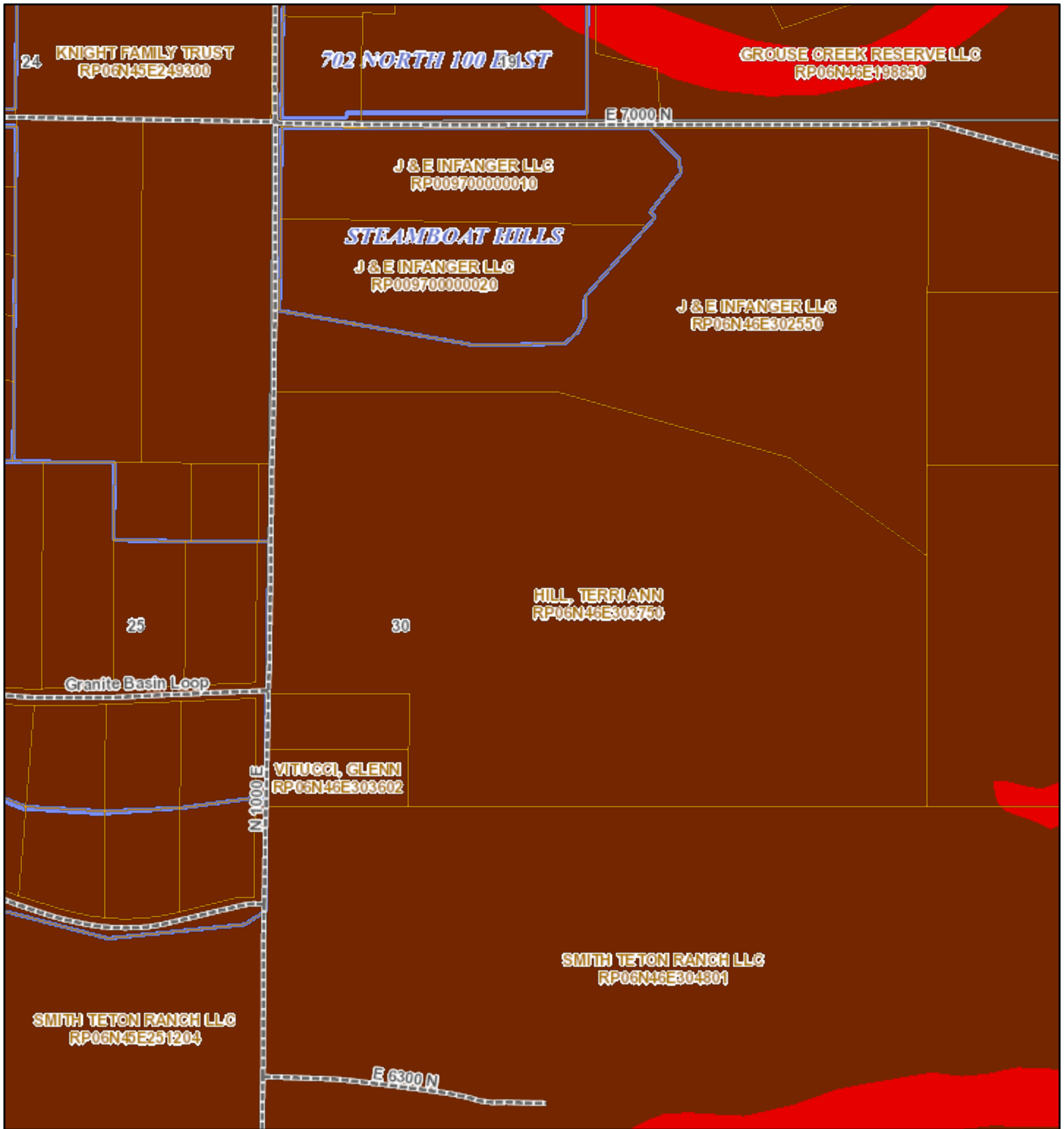
Rating Options—Hydric Rating by Map Unit (Hill Parcel_Hydric Soils)

Aggregation Method: Percent Present

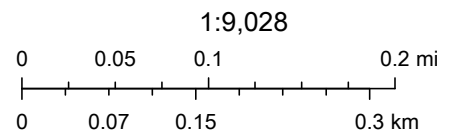
Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Hill Parcel_Natural Resource Overlay (2022) Exhibit



7/31/2023, 3:20:25 PM



Sources: Esri, USGS, CNES/Airbus DS, InterMap, Kartverket, LINZ, NASA/METI, NASA/NGS, NLS Finland, NLSI, Ordnance Survey, SKGeodesy, Teton County Idaho GIS, Teton Regional Land Trust, IDFG, Teton County Wildlife Advisory Committee, Teton County GIS, Teton County, ID GIS, GIS, Aero-