

## Appendix E

### National Cooperative Soil Survey Reports



## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

### Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

### Water Features



Streams and Canals

### Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

### Background



Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>

Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Cascade County Area, Montana

Survey Area Data: Version 12, Sep 28, 2015

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

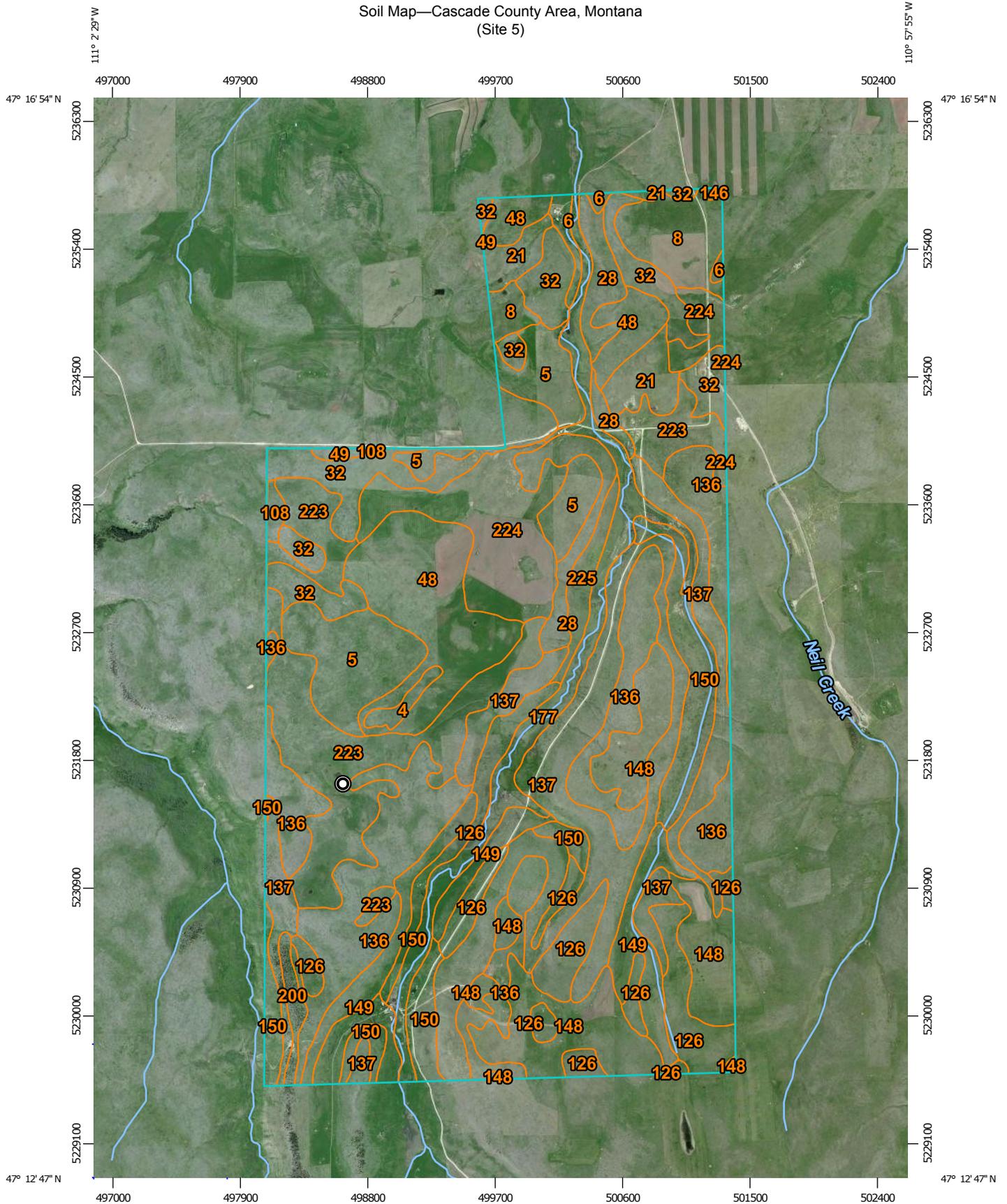
Date(s) aerial images were photographed: Jun 13, 2010—Aug 26, 2010

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

## Map Unit Legend

| Cascade County Area, Montana (MT613) |   |                |                |
|--------------------------------------|---|----------------|----------------|
| Map Unit Symbol                      | Map Unit Name   | Acres in AOI   | Percent of AOI |
| 4                                    | Absarokee clay loam, 0 to 4 percent slopes                  | 1,039.8        | 20.4%          |
| 5                                    | Absarokee clay loam, 4 to 8 percent slopes                  | 503.6          | 9.9%           |
| 6                                    | Absarokee clay loam, 8 to 15 percent slopes                 | 244.1          | 4.8%           |
| 7                                    | Absarokee, Borky, and Blythe soils, 15 to 45 percent slopes | 281.1          | 5.5%           |
| 8                                    | Absarokee-Sinnigam complex, 2 to 8 percent slopes           | 255.0          | 5.0%           |
| 22                                   | Big Timber-Castner complex, 30 to 70 percent slopes         | 198.6          | 3.9%           |
| 28                                   | Bitton and Roy soils, 10 to 65 percent slopes               | 1,830.2        | 35.9%          |
| 32                                   | Borky-Sinnigam very stony loams, 2 to 15 percent slopes     | 91.3           | 1.8%           |
| 38                                   | Castner-Sinnigam complex, 2 to 15 percent slopes            | 6.6            | 0.1%           |
| 48                                   | Darret silty clay loam, 8 to 20 percent slopes              | 223.2          | 4.4%           |
| 49                                   | Darret-Castner complex, 2 to 8 percent slopes               | 91.0           | 1.8%           |
| 78                                   | Fergus clay loam, 2 to 4 percent slopes                     | 153.4          | 3.0%           |
| 107                                  | Ipano-Ticell loams, 0 to 4 percent slopes                   | 21.9           | 0.4%           |
| 108                                  | Ipano-Ticell loams, 4 to 10 percent slopes                  | 0.8            | 0.0%           |
| 182                                  | Sinnigam loam, 0 to 4 percent slopes                        | 58.2           | 1.1%           |
| 187                                  | Tally fine sandy loam, 2 to 8 percent slopes                | 11.0           | 0.2%           |
| 188                                  | Tally fine sandy loam, 8 to 15 percent slopes               | 15.7           | 0.3%           |
| 203                                  | Timberg-Big Timber complex, 15 to 40 percent slopes         | 59.6           | 1.2%           |
| 207                                  | Twin Creek loam, 2 to 8 percent slopes                      | 8.8            | 0.2%           |
| <b>Totals for Area of Interest</b>   |   | <b>5,093.9</b> | <b>100.0%</b>  |

Soil Map—Cascade County Area, Montana  
(Site 5)



Map Scale: 1:37,000 if printed on A portrait (8.5" x 11") 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 Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

### Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

### Water Features



Streams and Canals

### Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

### Background



Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>

Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Cascade County Area, Montana

Survey Area Data: Version 12, Sep 28, 2015

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

Date(s) aerial images were photographed: Jun 13, 2010—Aug 26, 2010

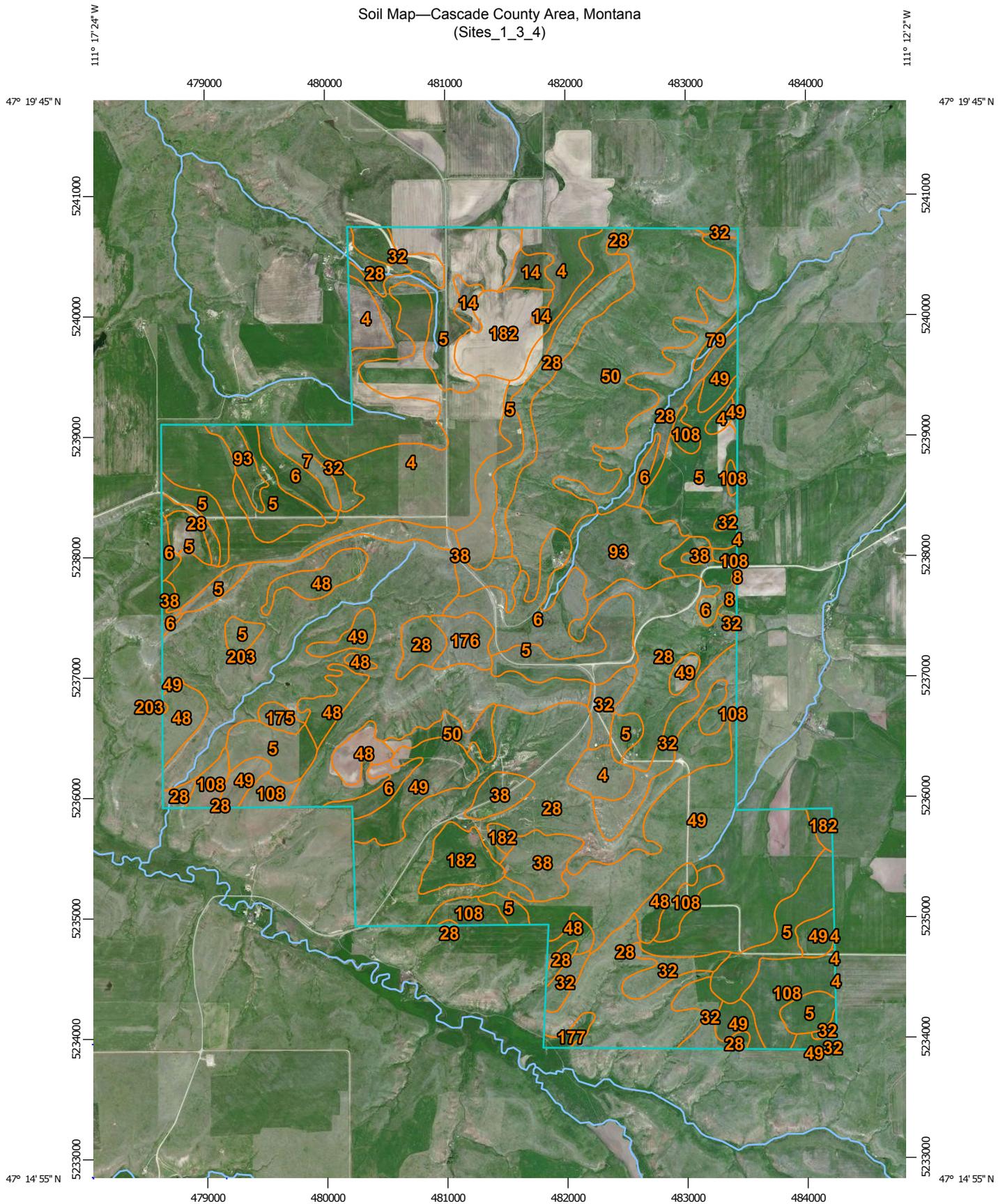
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

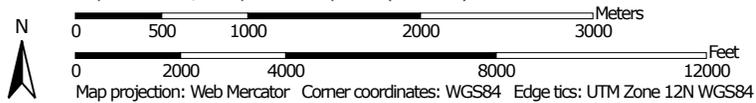
| Cascade County Area, Montana (MT613) |   |                |                |
|--------------------------------------|---|----------------|----------------|
| Map Unit Symbol                      | Map Unit Name   | Acres in AOI   | Percent of AOI |
| 4                                    | Absarokee clay loam, 0 to 4 percent slopes              | 16.1           | 0.4%           |
| 5                                    | Absarokee clay loam, 4 to 8 percent slopes              | 256.4          | 5.9%           |
| 6                                    | Absarokee clay loam, 8 to 15 percent slopes             | 26.0           | 0.6%           |
| 8                                    | Absarokee-Sinnigam complex, 2 to 8 percent slopes       | 118.4          | 2.7%           |
| 21                                   | Big Timber-Castner complex, 8 to 30 percent slopes      | 82.7           | 1.9%           |
| 28                                   | Bitton and Roy soils, 10 to 65 percent slopes           | 127.0          | 2.9%           |
| 32                                   | Borky-Sinnigam very stony loams, 2 to 15 percent slopes | 298.7          | 6.9%           |
| 48                                   | Darret silty clay loam, 8 to 20 percent slopes          | 313.1          | 7.2%           |
| 49                                   | Darret-Castner complex, 2 to 8 percent slopes           | 7.1            | 0.2%           |
| 108                                  | Ipano-Ticell loams, 4 to 10 percent slopes              | 11.7           | 0.3%           |
| 126                                  | Libeg stony loam, 2 to 15 percent slopes                | 276.6          | 6.4%           |
| 136                                  | Loggert extremely stony loam, 2 to 15 percent slopes    | 548.1          | 12.6%          |
| 137                                  | Loggert extremely stony loam, 15 to 50 percent slopes   | 597.3          | 13.7%          |
| 146                                  | McKenzie silty clay loam                                | 2.2            | 0.1%           |
| 148                                  | Monad loam, 2 to 10 percent slopes                      | 320.9          | 7.4%           |
| 149                                  | Monad loam, 10 to 20 percent slopes                     | 151.2          | 3.5%           |
| 150                                  | Monad and Libeg soils, steep                            | 271.6          | 6.2%           |
| 177                                  | Shawa loam, 2 to 10 percent slopes                      | 213.8          | 4.9%           |
| 200                                  | Tigeron-Loggert complex, 4 to 25 percent slopes         | 22.3           | 0.5%           |
| 223                                  | Work clay loam, 2 to 4 percent slopes                   | 404.2          | 9.3%           |
| 224                                  | Work clay loam, 4 to 8 percent slopes                   | 249.5          | 5.7%           |
| 225                                  | Work clay loam, 8 to 15 percent slopes                  | 40.3           | 0.9%           |
| <b>Totals for Area of Interest</b>   |   | <b>4,355.1</b> | <b>100.0%</b>  |



Soil Map—Cascade County Area, Montana  
(Sites\_1\_3\_4)



Map Scale: 1:43,600 if printed on A portrait (8.5" x 11") sheet.



## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

### Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

### Water Features



Streams and Canals

### Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

### Background



Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>

Coordinate System: Web Mercator (EPSG:3857)

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Soil Survey Area: Cascade County Area, Montana

Survey Area Data: Version 12, Sep 28, 2015

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

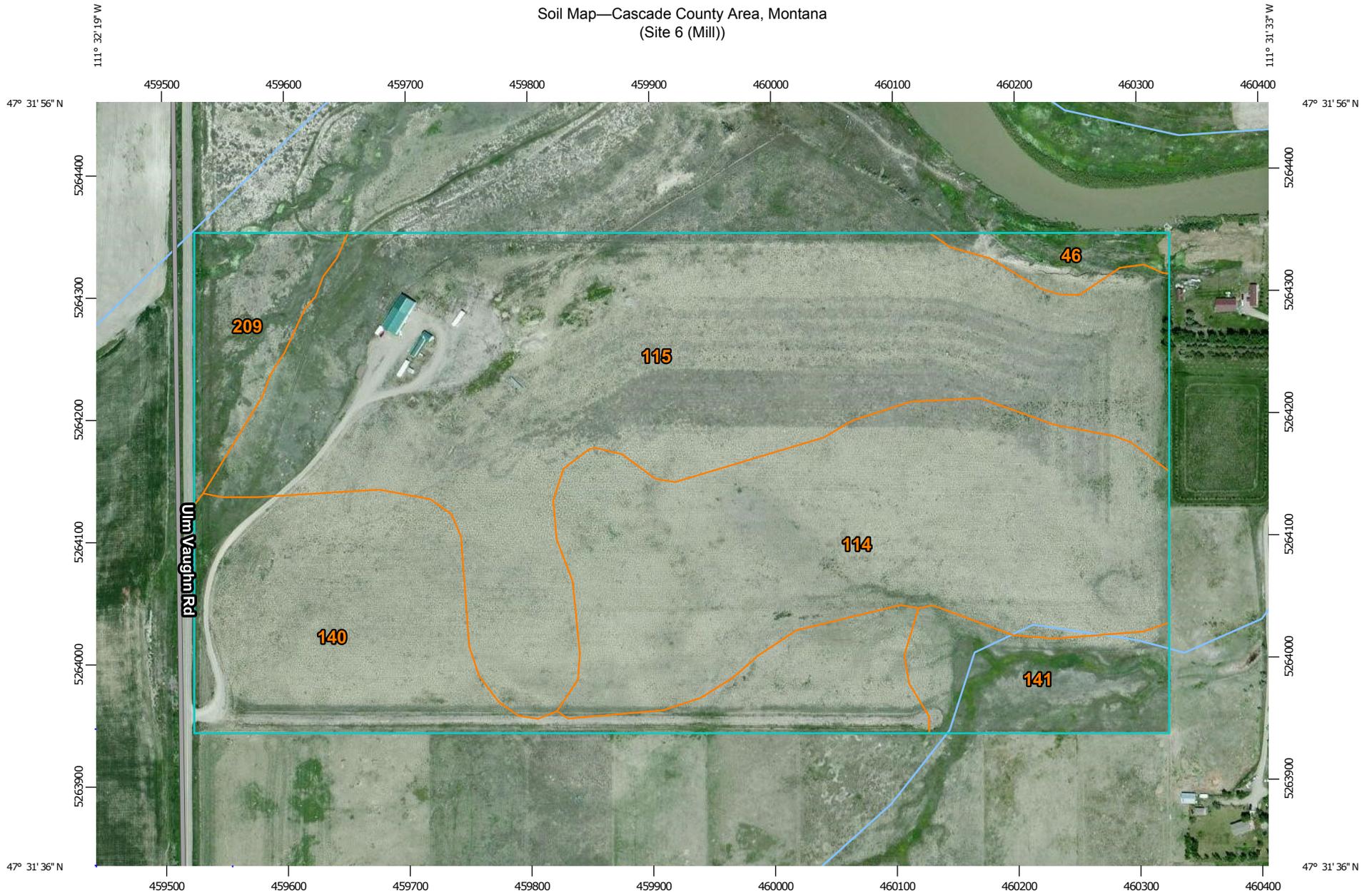
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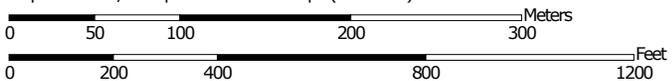
## Map Unit Legend

| Cascade County Area, Montana (MT613) |   |                |                |
|--------------------------------------|---|----------------|----------------|
| Map Unit Symbol                      | Map Unit Name   | Acres in AOI   | Percent of AOI |
| 4                                    | Absarokee clay loam, 0 to 4 percent slopes                  | 634.7          | 9.5%           |
| 5                                    | Absarokee clay loam, 4 to 8 percent slopes                  | 1,033.5        | 15.5%          |
| 6                                    | Absarokee clay loam, 8 to 15 percent slopes                 | 287.5          | 4.3%           |
| 7                                    | Absarokee, Borky, and Blythe soils, 15 to 45 percent slopes | 26.4           | 0.4%           |
| 8                                    | Absarokee-Sinnigam complex, 2 to 8 percent slopes           | 4.6            | 0.1%           |
| 14                                   | Aquepts and Aquolls, saline                                 | 44.1           | 0.7%           |
| 28                                   | Bitton and Roy soils, 10 to 65 percent slopes               | 1,229.3        | 18.5%          |
| 32                                   | Borky-Sinnigam very stony loams, 2 to 15 percent slopes     | 310.2          | 4.7%           |
| 38                                   | Castner-Sinnigam complex, 2 to 15 percent slopes            | 179.4          | 2.7%           |
| 48                                   | Darret silty clay loam, 8 to 20 percent slopes              | 211.0          | 3.2%           |
| 49                                   | Darret-Castner complex, 2 to 8 percent slopes               | 720.8          | 10.8%          |
| 50                                   | Darret-Castner complex, 8 to 20 percent slopes              | 547.2          | 8.2%           |
| 79                                   | Fergus clay loam, 4 to 8 percent slopes                     | 10.4           | 0.2%           |
| 93                                   | Hanson-Skaggs association, steep                            | 162.2          | 2.4%           |
| 108                                  | Ipano-Ticell loams, 4 to 10 percent slopes                  | 213.0          | 3.2%           |
| 175                                  | Shane silty clay loam, 2 to 10 percent slopes               | 15.7           | 0.2%           |
| 176                                  | Shane-Nobe complex, 4 to 15 percent slopes                  | 44.7           | 0.7%           |
| 177                                  | Shawa loam, 2 to 10 percent slopes                          | 13.6           | 0.2%           |
| 182                                  | Sinnigam loam, 0 to 4 percent slopes                        | 190.9          | 2.9%           |
| 203                                  | Timberg-Big Timber complex, 15 to 40 percent slopes         | 780.9          | 11.7%          |
| <b>Totals for Area of Interest</b>   |   | <b>6,660.0</b> | <b>100.0%</b>  |

Soil Map—Cascade County Area, Montana  
(Site 6 (Mill))



Map Scale: 1:4,400 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 Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

### Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

### Water Features



Streams and Canals

### Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

### Background



Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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: <http://websoilsurvey.nrcs.usda.gov>  
Coordinate System: Web Mercator (EPSG:3857)

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## Map Unit Legend

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|--------------------------------------|---|--------------|----------------|
| Map Unit Symbol                      | Map Unit Name                                 | Acres in AOI | Percent of AOI |
| 46                                   | Crago-Yawdim complex, 15 to 45 percent slopes | 1.5          | 1.9%           |
| 114                                  | Kobar silty clay loam, 0 to 2 percent slopes  | 21.3         | 26.2%          |
| 115                                  | Kobar silty clay loam, 2 to 4 percent slopes  | 35.3         | 43.4%          |
| 140                                  | Marias silty clay, 2 to 4 percent slopes      | 15.1         | 18.6%          |
| 141                                  | Marias silty clay, 4 to 8 percent slopes      | 4.5          | 5.5%           |
| 209                                  | Vanda clay                                    | 3.6          | 4.5%           |
| <b>Totals for Area of Interest</b>   |   | <b>81.3</b>  | <b>100.0%</b>  |