

WISCONSIN WROC – 3DEP
BUFFALO COUNTY
LIDAR 2016-17

Vertical Accuracy Report

April 28, 2017

Project Information

Prepared By: Ayres Associates

Project Name: Wisconsin WROC - 3DEP | Buffalo County LiDAR 2016-17

Sensor Info: Optech Orion H300

Required Nominal Pulse Spacing: 0.7 meter

Contractor Name: Ayres Associates

Units: US Survey Feet

Date of Acquisition: Start: 3/21/2016 Finish: 3/22/2016

Report Information

This report documents the absolute vertical accuracy of the LiDAR data collected for the Buffalo County, WI, QL2 LiDAR project. Independent ground control checkpoints were collected by land surveyors using Trimble GNSS equipment connected to WISCORS base stations. The checkpoints were collected in March 2016.

The checkpoints were collected under various land cover types that are predominant in the County. Each land cover type falls into either the Nonvegetated Vertical Accuracy (NVA) or the Vegetated Vertical Accuracy (VVA) group. For this project, there were 49 NVA points and 49 VVA points were collected throughout the County.

The following report shows the final statistics for the NVA checkpoints compared against the raw swath point cloud and the bare earth DEM, and the VVA statistics compared against the DEM. Statistics are reported for LAS and DEM by NVA and VVA categories and by land cover type.

Vertical Accuracy Specifications per USGS QL2 level:

LAS:

NVA equates to 10 cm RMSEz, or 19.6 cm (0.64 ft) at the 95% confidence level.

DEM:

NVA equates to 10 cm RMSEz, or 19.6 cm (0.64 ft) at the 95% confidence level.

VVA equates to 29.4 cm (0.96 ft) at the 95th percentile.

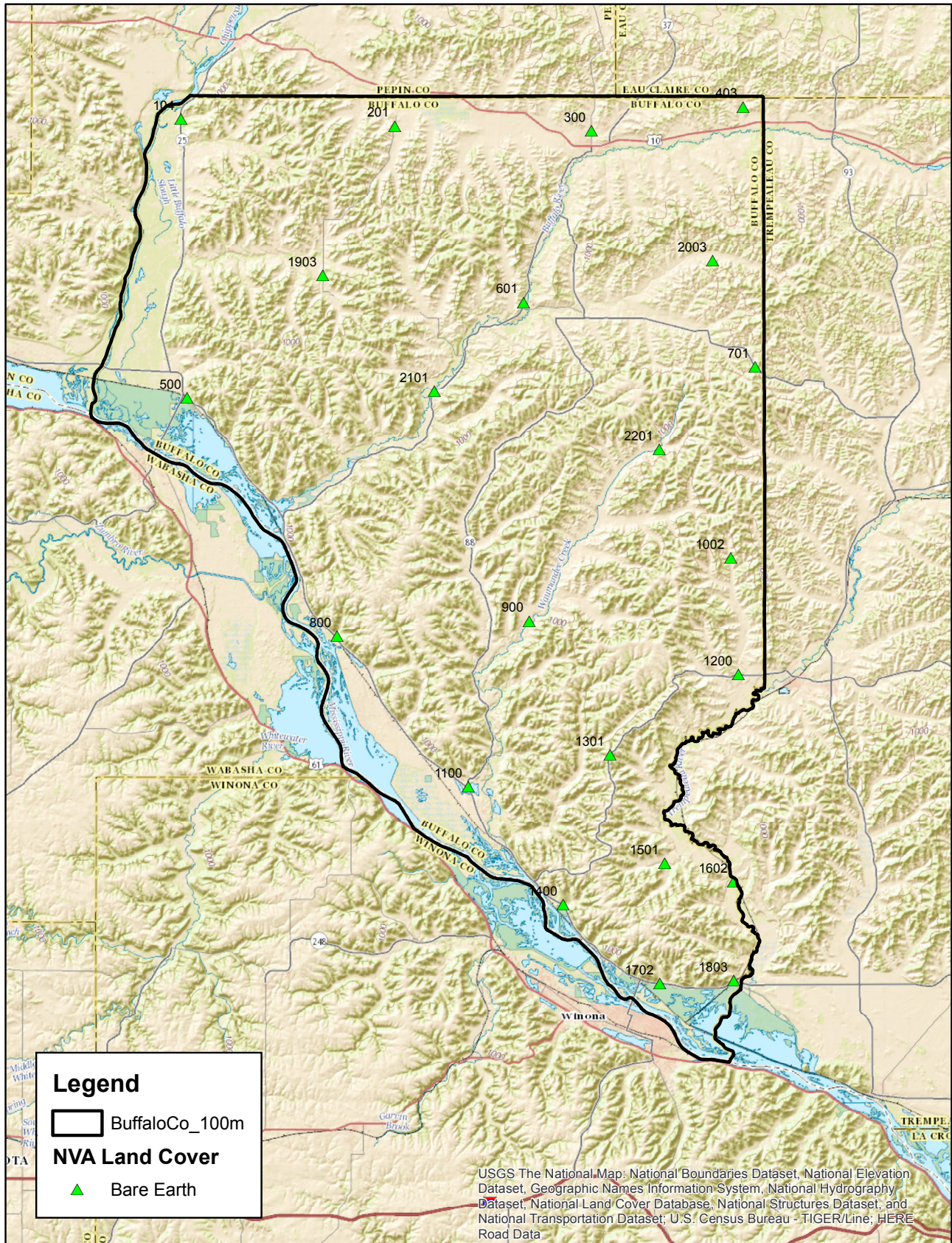
The NVA and VVA statistics for this project are within the above stated specifications.

LiDAR Accuracy Assessment Summary

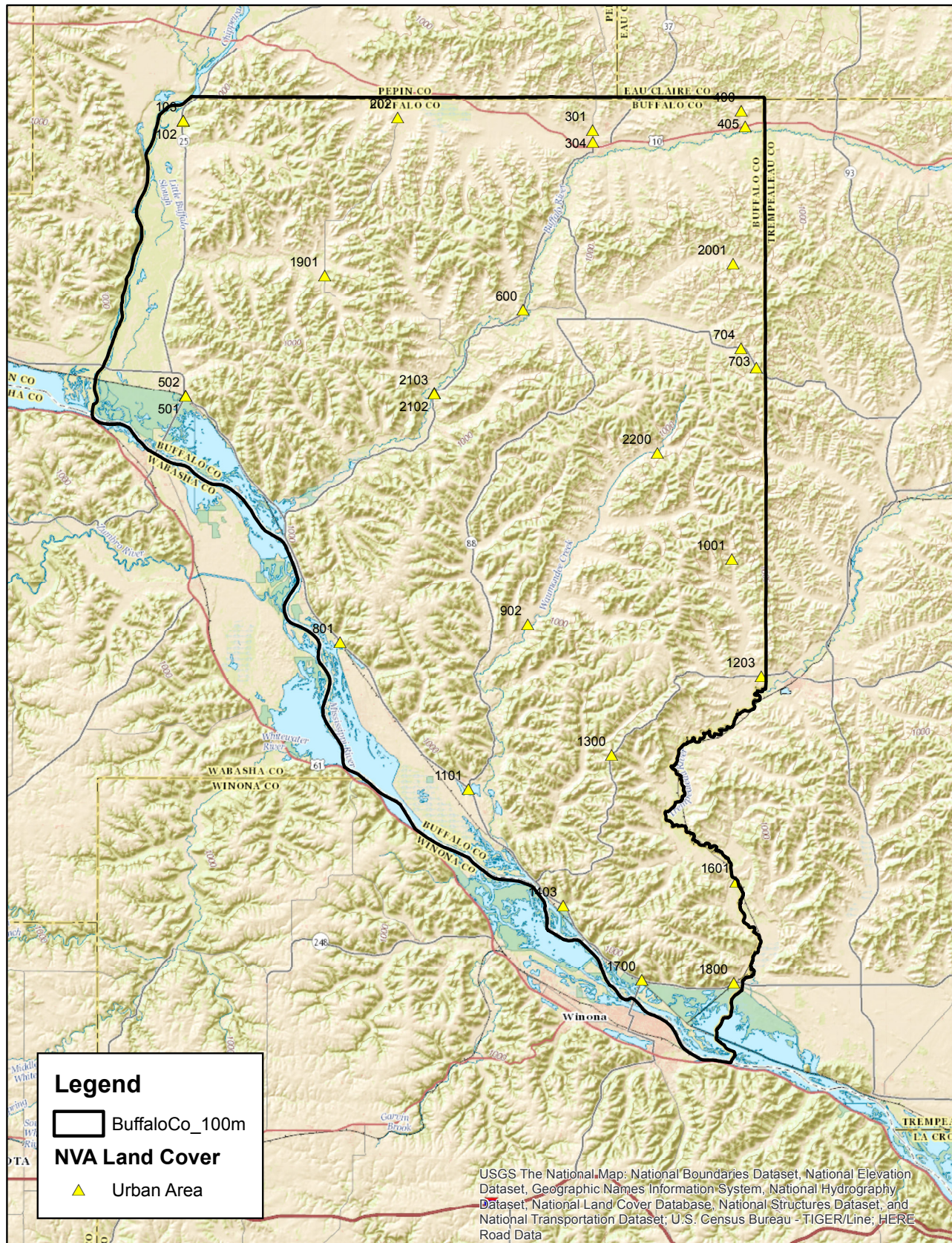
LAND COVER TYPE	# OF POINTS	NVA	VVA
LAS		95% confidence level	N/A
1. Bare Earth	22	0.278	N/A
2. Urban Areas	27	0.192	N/A
3. Tall Weeds	17	N/A	N/A
5. Forest	19	N/A	N/A
7. Swamp	13	N/A	N/A
TOTAL	98	0.235	N/A
DEM		95% confidence level	95th percentile
1. Bare Earth	22	0.312	N/A
2. Urban Areas	27	0.173	N/A
3. Tall Weeds	17	N/A	0.468
5. Forest	19	N/A	0.350
7. Swamp	13	N/A	0.540
TOTAL	98	0.246	0.540

Units: US Survey Feet

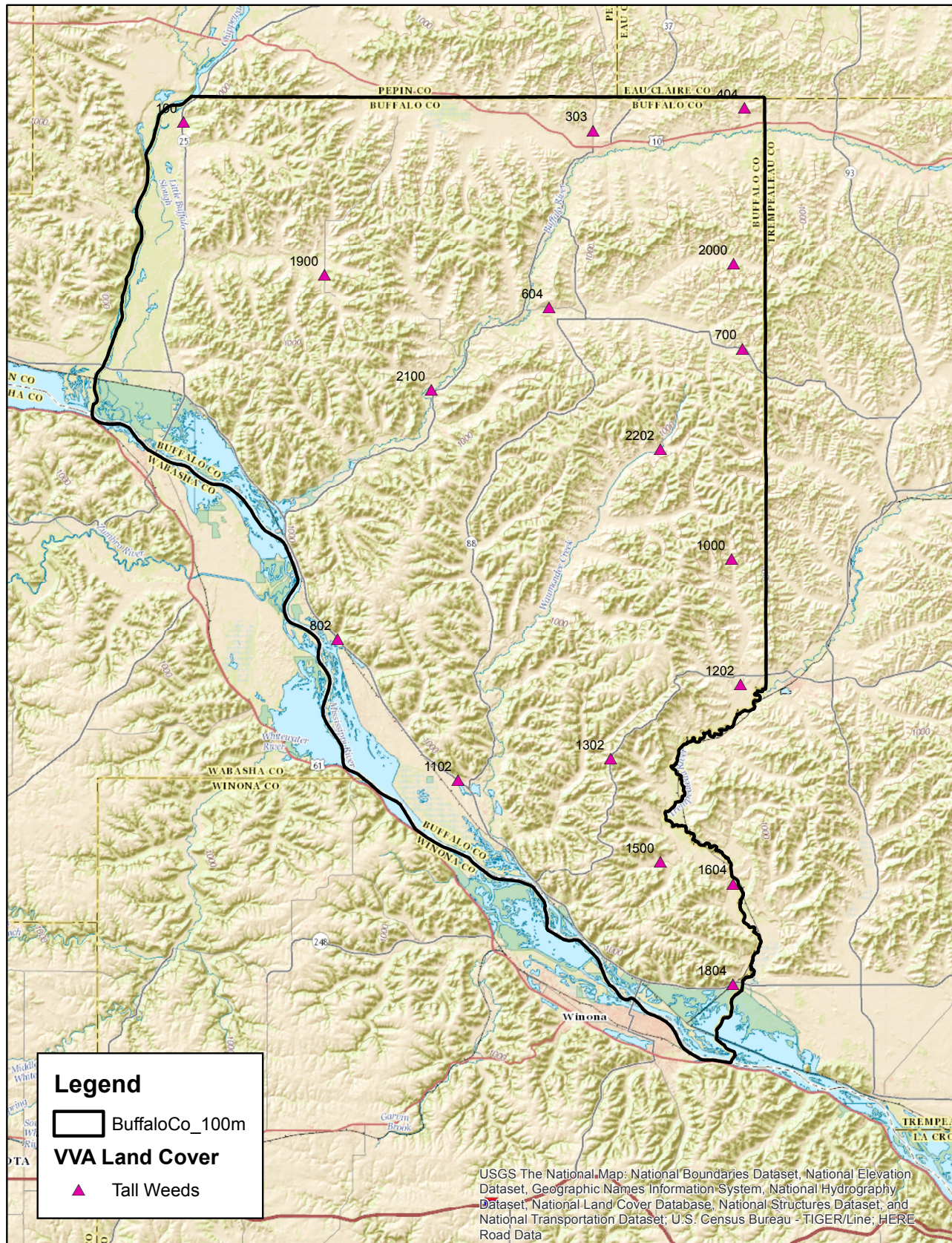
Map of NVA Checkpoint Locations - 1. Bare Earth



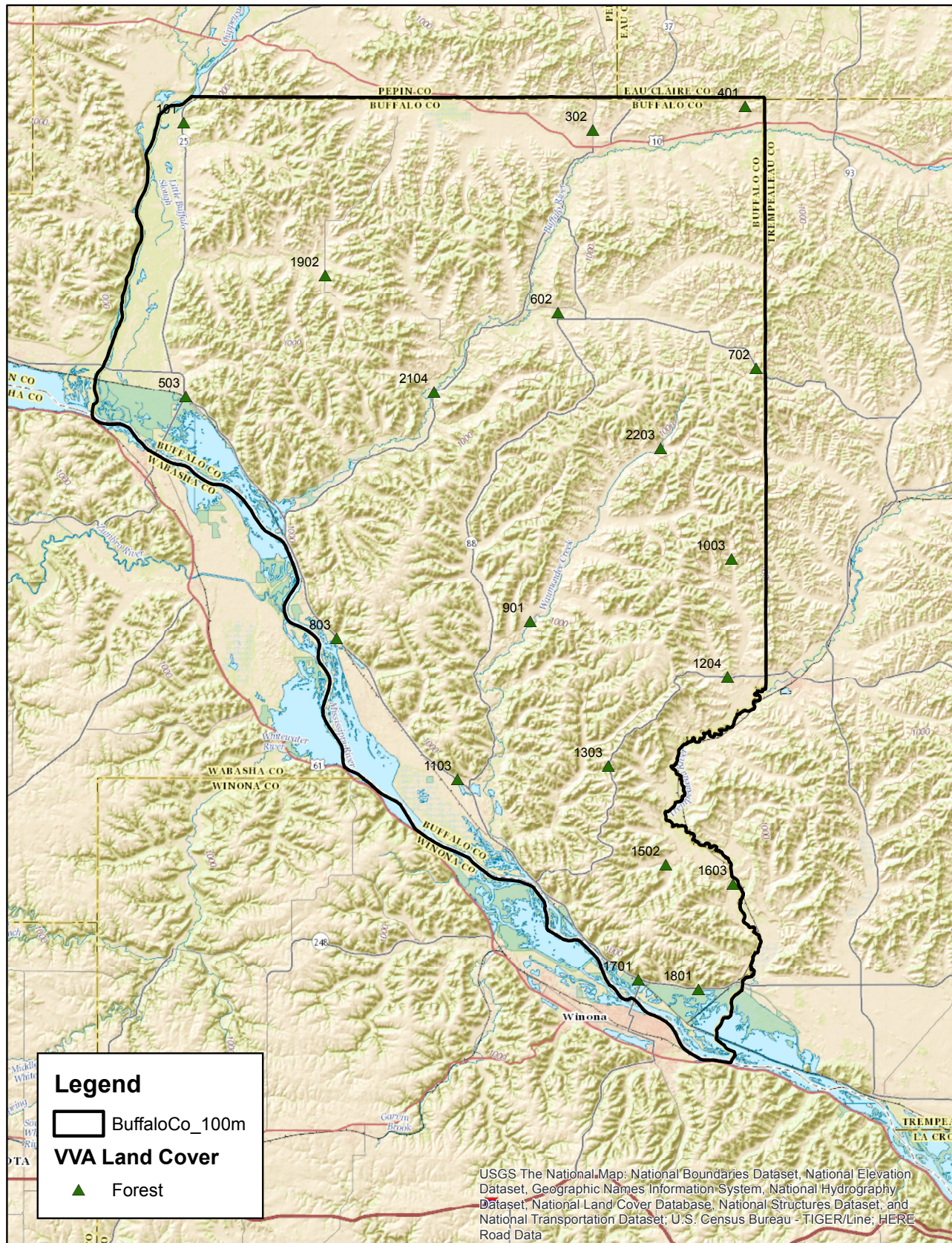
Map of NVA Checkpoint Locations - 2. Urban Area



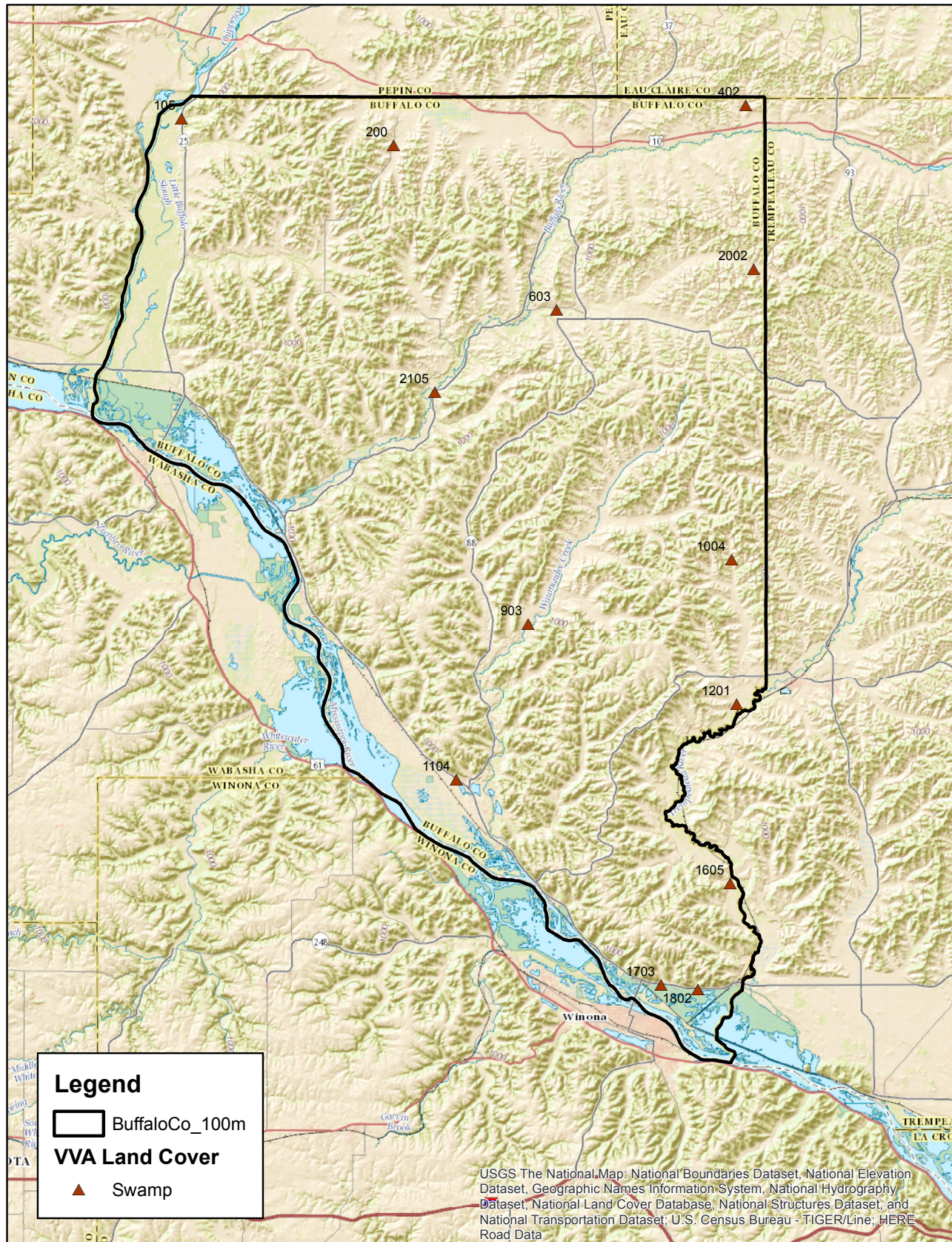
Map of NVA Checkpoint Locations - 3. Tall Weeds



Map of NVA Checkpoint Locations - 5. Forested Areas



Map of NVA Checkpoint Locations - 7. Swamp



LAS

NONVEGETATED VERTICAL ACCURACY – OVERALL	
Land Cover Type	1. Bare Earth, 2. Urban Areas
Minimum DZ	-0.199
Maximum DZ	0.302
Mean DZ	0.043
Mean Magnitude DZ	0.311
Number Observations	49
Standard Deviation DZ	0.113
RMSE Z	0.12
95% Confidence Level Z	0.235
Units	US Survey Feet

DEM

NONVEGETATED VERTICAL ACCURACY	
Land Cover Type	1. Bare Earth, 2. Urban Areas
Minimum DZ	-0.158
Maximum DZ	0.422
Mean DZ	0.054
Mean Magnitude DZ	0.312
Number Observations	49
Standard Deviation DZ	0.114
RMSE Z	0.125
95% Confidence Level Z	0.246
Units	US Survey Feet

DEM (Continued)

VEGETATED VERTICAL ACCURACY	
Land Cover Type	3. Tall Weeds
Minimum DZ	-0.086
Maximum DZ	0.562
Mean DZ	0.212
Mean Magnitude DZ	0.472
Number Observations	17
Standard Deviation DZ	0.158
RMSE Z	0.262
95% Percentile	0.468
Units	US Survey Feet

DEM (Continued)

VEGETATED VERTICAL ACCURACY	
Land Cover Type	5. Forest
Minimum DZ	-0.175
Maximum DZ	0.362
Mean DZ	0.148
Mean Magnitude DZ	0.419
Number Observations	19
Standard Deviation DZ	0.15
RMSE Z	0.208
95% Percentile	0.35
Units	US Survey Feet

DEM (Continued)

NONVEGETATED VERTICAL ACCURACY	
Land Cover Type	7. Swamp
Minimum DZ	0.103
Maximum DZ	0.753
Mean DZ	0.38
Mean Magnitude DZ	0.616
Number Observations	13
Standard Deviation DZ	0.191
RMSE Z	0.422
95% Percentile	0.54
Units	US Survey Feet

Point: 100 Tall Weeds

Survey X: 519465.13, Survey Y: 401458.36, Z1: 731.43, Z DEM: 731.54, Z LAS: 731.57, LC Type: 3, ΔZ DEM: 0.1, ΔZ LAS: 0.13



North



South



East



West



Point: 101 Forest

Survey X: 519498.83, Survey Y: 401351.08, Z1: 737.27, Z DEM: 737.63, Z LAS: 737.59, LC Type: 5, ΔZ DEM: 0.36, ΔZ LAS: 0.32



North



South



East



West



Point: 102 Urban Area

Survey X: 519372.34, Survey Y: 401728.7, Z1: 725.3, Z DEM: 725.35, Z LAS: 725.37, LC Type: 2, ΔZ DEM: 0.06, ΔZ LAS: 0.08



North



South



East



West



Point: 103 Urban Area

Survey X: 519385.84, Survey Y: 401802.5, Z1: 725.32, Z DEM: 725.34, Z LAS: 725.37, LC Type: 2, AZ DEM: 0.03, AZ LAS: 0.06



North



South



East



West



Point: 104 Bare Earth

Survey X: 519181.52, Survey Y: 401910.15, Z1: 715.25, Z DEM: 715.33, Z LAS: 715.28, LC Type: 1, ΔZ DEM: 0.09, ΔZ LAS: 0.03



North



South



East



West



Point: 105 Swamp

Survey X: 518985.74, Survey Y: 402084.73, Z1: 703.31, Z DEM: 703.85, Z LAS: 703.91, LC Type: 7, ΔZ DEM: 0.54, ΔZ LAS: 0.6



North



South



East



West

Point: 200 Swamp

Survey X: 564903.73, Survey Y: 396338.75, Z1: 849, Z DEM: 849.48, Z LAS: 849.64, LC Type: 7, ΔZ DEM: 0.48, ΔZ LAS: 0.64



North



South



East



West



Point: 201 Bare Earth

Survey X: 565483.29, Survey Y: 400399.46, Z1: 843.63, Z DEM: 843.54, Z LAS: 843.55, LC Type: 1, ΔZ DEM: -0.09, ΔZ LAS: -0.07



North



South



East



West



Point: 202 Urban Area

Survey X: 565794.74, Survey Y: 402534.18, Z1: 849.32, Z DEM: 849.38, Z LAS: 849.33, LC Type: 2, ΔZ DEM: 0.06, ΔZ LAS: 0.01



North



South



East



West



Point: 300 Bare Earth

Survey X: 608004.99, Survey Y: 399381.51, Z1: 823.26, Z DEM: 823.32, Z LAS: 823.28, LC Type: 1, ΔZ DEM: 0.06, ΔZ LAS: 0.02



North



South



East



West



Point: 301 Urban Area

Survey X: 607981.22, Survey Y: 399755.22, Z1: 816.96, Z DEM: 817.03, Z LAS: 817.02, LC Type: 2, ΔZ DEM: 0.07, ΔZ LAS: 0.06



North



South



East



West



Point: 302 Forest

Survey X: 608046.38, Survey Y: 399717.1, Z1: 812.83, Z DEM: 813.06, Z LAS: 813.05, LC Type: 5, ΔZ DEM: 0.23, ΔZ LAS: 0.22



North



South



East



West



Point: 304 Urban Area

Survey X: 607985.99, Survey Y: 397244.24, Z1: 813.05, Z DEM: 813.12, Z LAS: 813.09, LC Type: 2, ΔZ DEM: 0.07, ΔZ LAS: 0.04



North



South



East



West



Point: 400 Urban Area

Survey X: 640122.99, Survey Y: 403982.46, Z1: 851.52, Z DEM: 851.6, Z LAS: 851.58, LC Type: 2, ΔZ DEM: 0.08, ΔZ LAS: 0.06



North



South



East



West



Point: 401 Forest

Survey X: 640984.68, Survey Y: 404912.71, Z1: 852.26, Z DEM: 852.4, Z LAS: 852.43, LC Type: 5, ΔZ DEM: 0.15, ΔZ LAS: 0.17



North



South



East



West



Point: 402 Swamp

Survey X: 641078.74, Survey Y: 404967.95, Z1: 852.07, Z DEM: 852.17, Z LAS: 852.17, LC Type: 7, ΔZ DEM: 0.1, ΔZ LAS: 0.1



North



South



East



West



Point: 403 Bare Earth

Survey X: 640811.29, Survey Y: 404603.05, Z1: 855.66, Z DEM: 855.71, Z LAS: 855.74, LC Type: 1, ΔZ DEM: 0.05, ΔZ LAS: 0.08



North



South



East



West



Point: 404 Tall Weeds

Survey X: 640815.34, Survey Y: 404511.87, Z1: 860.28, Z DEM: 860.38, Z LAS: 860.33, LC Type: 3, ΔZ DEM: 0.1, ΔZ LAS: 0.04



North



South



East



West



Point: 405 Urban Area

Survey X: 640987.33, Survey Y: 400475.46, Z1: 841.56, Z DEM: 841.66, Z LAS: 841.65, LC Type: 2, ΔZ DEM: 0.1, ΔZ LAS: 0.09



North



South



East



West



Point: 500 Bare Earth

Survey X: 520539.62, Survey Y: 341603.91, Z1: 687.98, Z DEM: 688.08, Z LAS: 688.09, LC Type: 1, ΔZ DEM: 0.1, ΔZ LAS: 0.11



North



South



East



West



Point: 501 Urban Area

Survey X: 519934.15, Survey Y: 342269.55, Z1: 690.65, Z DEM: 690.68, Z LAS: 690.67, LC Type: 2, ΔZ DEM: 0.03, ΔZ LAS: 0.02



North



South



East



West



Point: 502 Urban Area

Survey X: 519974.51, Survey Y: 342248.91, Z1: 690.7, Z DEM: 690.81, Z LAS: 690.78, LC Type: 2, ΔZ DEM: 0.11, ΔZ LAS: 0.07



North



South



East



West



Point: 503 Forest

Survey X: 519977.88, Survey Y: 342155.26, Z1: 690.93, Z DEM: 691.12, Z LAS: 691.06, LC Type: 5, ΔZ DEM: 0.19, ΔZ LAS: 0.13



North



South



East



West



Point: 600 Urban Area

Survey X: 592970.67, Survey Y: 360860.48, Z1: 743.13, Z DEM: 743.01, Z LAS: 742.95, LC Type: 2, ΔZ DEM: -0.12, ΔZ LAS: -0.18



North



South



East



West



Point: 601 Bare Earth

Survey X: 593322.74, Survey Y: 362245.53, Z1: 739.77, Z DEM: 739.66, Z LAS: 739.66, LC Type: 1, ΔZ DEM: -0.11, ΔZ LAS: -0.11



North



South



East



West



Point: 602 Forest

Survey X: 600480, Survey Y: 360254.04, Z1: 752.45, Z DEM: 752.5, Z LAS: 752.5, LC Type: 5, ΔZ DEM: 0.05, ΔZ LAS: 0.05



North



South



East



West



Point: 603 Swamp

Survey X: 600178.83, Survey Y: 360747.76, Z1: 749.16, Z DEM: 749.57, Z LAS: 749.52, LC Type: 7, ΔZ DEM: 0.41, ΔZ LAS: 0.37



North



South



East



West



Point: 604 Tall Weeds

Survey X: 598598.89, Survey Y: 361265.36, Z1: 748.89, Z DEM: 749.35, Z LAS: 749.37, LC Type: 3, ΔZ DEM: 0.47, ΔZ LAS: 0.48



North



South



East



West



Point: 700 Bare Earth

Survey X: 640400.72, Survey Y: 352431.64, Z1: 906.59, Z DEM: 906.89, Z LAS: 906.85, LC Type: 3, ΔZ DEM: 0.3, ΔZ LAS: 0.27



North



South



East



West



Point: 702 Forest

Survey X: 643294.02, Survey Y: 348197.31, Z1: 1041.6, Z DEM: 1041.68, Z LAS: 1041.87, LC Type: 5, ΔZ DEM: 0.08, ΔZ LAS: 0.27



North



South



East



West



Point: 703 Urban Area

Survey X: 643389.98, Survey Y: 348334.9, Z1: 1043.39, Z DEM: 1043.39, Z LAS: 1043.39, LC Type: 2, ΔZ DEM: 0, ΔZ LAS: 0



North



South



East



West



Point: 704 Urban Area

Survey X: 640074.52, Survey Y: 352534.97, Z1: 908.79, Z DEM: 908.79, Z LAS: 908.74, LC Type: 2, ΔZ DEM: 0.01, ΔZ LAS: -0.05



North



South



East



West



Point: 800 Bare Earth

Survey X: 552979.5, Survey Y: 290153.58, Z1: 689.04, Z DEM: 689.17, Z LAS: 689.17, LC Type: 1, ΔZ DEM: 0.13, ΔZ LAS: 0.13



North



South



East



West



Point: 801 Urban Area

Survey X: 553359.53, Survey Y: 288936.65, Z1: 675.61, Z DEM: 675.64, Z LAS: 675.65, LC Type: 2, ΔZ DEM: 0.03, ΔZ LAS: 0.03



North



South



East



West



Point: 802 Tall Weeds

Survey X: 552783.31, Survey Y: 289593.34, Z1: 673.45, Z DEM: 673.64, Z LAS: 673.64, LC Type: 3, ΔZ DEM: 0.19, ΔZ LAS: 0.19



North



South



East



West



Point: 803 Forest

Survey X: 552603.35, Survey Y: 289772.31, Z1: 671.13, Z DEM: 671.13, Z LAS: 671.22, LC Type: 5, ΔZ DEM: 0, ΔZ LAS: 0.09



North



South



East



West



Point: 900 Bare Earth

Survey X: 594537.11, Survey Y: 293376.45, Z1: 762.74, Z DEM: 763.05, Z LAS: 763, LC Type: 1, ΔZ DEM: 0.3, ΔZ LAS: 0.25



North



South



East



West



Point: 901 Forest

Survey X: 594466.82, Survey Y: 293423.1, Z1: 764.47, Z DEM: 764.74, Z LAS: 764.77, LC Type: 5, ΔZ DEM: 0.27, ΔZ LAS: 0.3



North



South



East



West



Point: 902 Urban Area

Survey X: 593965.61, Survey Y: 292911.85, Z1: 731.35, Z DEM: 731.45, Z LAS: 731.45, LC Type: 2, ΔZ DEM: 0.1, ΔZ LAS: 0.1



North



South



East



West



Point: 903 Swamp

Survey X: 594038.66, Survey Y: 292862.99, Z1: 723.41, Z DEM: 723.86, Z LAS: 724.03, LC Type: 7, ΔZ DEM: 0.45, ΔZ LAS: 0.62



North



South



East



West



Point: 1000 Tall Weeds

Survey X: 638050.77, Survey Y: 306957.7, Z1: 847.84, Z DEM: 847.87, Z LAS: 847.87, LC Type: 3, ΔZ DEM: 0.03, ΔZ LAS: 0.03



North



South



East



West



Point: 1001 Urban Area

Survey X: 638091.5, Survey Y: 306946.87, Z1: 851.9, Z DEM: 851.74, Z LAS: 851.7, LC Type: 2, ΔZ DEM: -0.16, ΔZ LAS: -0.2



North



South



East



West



Point: 1002 Bare Earth

Survey X: 638134.82, Survey Y: 307001.98, Z1: 850.77, Z DEM: 850.65, Z LAS: 850.64, LC Type: 1, ΔZ DEM: -0.11, ΔZ LAS: -0.12



North



South



East



West



Point: 1003 Forest

Survey X: 638010.43, Survey Y: 307042.42, Z1: 847.35, Z DEM: 847.29, Z LAS: 847.36, LC Type: 5, ΔZ DEM: -0.06, ΔZ LAS: 0.01



North



South



East



West



Point: 1004 Swamp

Survey X: 637998.18, Survey Y: 306837.73, Z1: 840.87, Z DEM: 841.31, Z LAS: 841.33, LC Type: 7, ΔZ DEM: 0.44, ΔZ LAS: 0.46



North



South



East



West



Point: 1100 Bare Earth

Survey X: 581374.87, Survey Y: 257508.81, Z1: 681.71, Z DEM: 681.82, Z LAS: 681.78, LC Type: 1, ΔZ DEM: 0.1, ΔZ LAS: 0.06



North



South



East



West



Point: 1101 Urban Area

Survey X: 581155.72, Survey Y: 257255.83, Z1: 682.39, Z DEM: 682.44, Z LAS: 682.47, LC Type: 2, ΔZ DEM: 0.05, ΔZ LAS: 0.08



North



South



East



West



Point: 1102 Tall Weeds

Survey X: 578852.73, Survey Y: 259149.38, Z1: 674.43, Z DEM: 674.53, Z LAS: 674.57, LC Type: 3, ΔZ DEM: 0.1, ΔZ LAS: 0.14



North



South



East



West



Point: 1103 Forest

Survey X: 578792.19, Survey Y: 259275.06, Z1: 678.3, Z DEM: 678.32, Z LAS: 678.31, LC Type: 5, ΔZ DEM: 0.02, ΔZ LAS: 0.01



North



South



East



West



Point: 1104 Swamp

Survey X: 578445.13, Survey Y: 259225.19, Z1: 656.67, Z DEM: 656.8, Z LAS: 656.9, LC Type: 7, ΔZ DEM: 0.13, ΔZ LAS: 0.23



North



South



East



West



Point: 1200 Bare Earth

Survey X: 639794.59, Survey Y: 281850.23, Z1: 773.3, Z DEM: 773.49, Z LAS: 773.5, LC Type: 1, ΔZ DEM: 0.19, ΔZ LAS: 0.2



North



South



East



West



Point: 1201 Swamp

Survey X: 639107.36, Survey Y: 275525.03, Z1: 712.62, Z DEM: 712.86, Z LAS: 712.97, LC Type: 7, ΔZ DEM: 0.23, ΔZ LAS: 0.35



North



South



East



West



Point: 1202 Tall Weeds

Survey X: 639958.52, Survey Y: 279790.61, Z1: 732.37, Z DEM: 732.48, Z LAS: 732.47, LC Type: 3, ΔZ DEM: 0.11, ΔZ LAS: 0.1



North



South



East



West



Point: 1203 Urban Area

Survey X: 644492.64, Survey Y: 281696.23, Z1: 776.85, Z DEM: 777, Z LAS: 777.05, LC Type: 2, ΔZ DEM: 0.16, ΔZ LAS: 0.2



North



South



East



West



Point: 1204 Forest

Survey X: 637165.74, Survey Y: 281509.49, Z1: 831.08, Z DEM: 830.9, Z LAS: 831.07, LC Type: 5, ΔZ DEM: -0.18, ΔZ LAS: -0.01



North



South



East



West



Point: 1300 Urban Area

Survey X: 612131.66, Survey Y: 264546.02, Z1: 1205.61, Z DEM: 1205.8, Z LAS: 1205.78, LC Type: 2, ΔZ DEM: 0.2, ΔZ LAS: 0.17



North



South



East



West



Point: 1301 Bare Earth

Survey X: 612066.09, Survey Y: 264404.27, Z1: 1204.53, Z DEM: 1204.95, Z LAS: 1204.83, LC Type: 1, ΔZ DEM: 0.42, ΔZ LAS: 0.3



North



South



East



West



Point: 1302 Tall Weeds

Survey X: 611829.18, Survey Y: 263704.85, Z1: 1200.42, Z DEM: 1200.61, Z LAS: 1200.64, LC Type: 3, ΔZ DEM: 0.19, ΔZ LAS: 0.22



North



South



East



West



Point: 1303 Forest

Survey X: 611427.66, Survey Y: 262293.85, Z1: 1164.25, Z DEM: 1164.6, Z LAS: 1164.6, LC Type: 5, ΔZ DEM: 0.35, ΔZ LAS: 0.35



North



South



East



West



Point: 1400 Bare Earth

Survey X: 601914.98, Survey Y: 231976.93, Z1: 661.43, Z DEM: 661.45, Z LAS: 661.48, LC Type: 1, ΔZ DEM: 0.02, ΔZ LAS: 0.05



North



South



East



West



Point: 1403 Urban Area

Survey X: 601651.56, Survey Y: 232090.44, Z1: 667.82, Z DEM: 667.91, Z LAS: 667.9, LC Type: 2, ΔZ DEM: 0.09, ΔZ LAS: 0.08



North



South



East



West



Point: 1500 Tall Weeds

Survey X: 622656.31, Survey Y: 241418.38, Z1: 758.8, Z DEM: 759.15, Z LAS: 759.16, LC Type: 3, ΔZ DEM: 0.35, ΔZ LAS: 0.37



North



South



East



West



Point: 1501 Bare Earth

Survey X: 623862.76, Survey Y: 240914.55, Z1: 756.97, Z DEM: 757.2, Z LAS: 757.24, LC Type: 1, ΔZ DEM: 0.23, ΔZ LAS: 0.27



North



South



East



West



Point: 1502 Forest

Survey X: 623811.61, Survey Y: 240896.84, Z1: 758.52, Z DEM: 758.62, LC Type: 5, ΔZ DEM: 0.1



North



South



East



West



Point: 1601 Urban Area

Survey X: 638992.56, Survey Y: 237157.38, Z1: 675.89, Z DEM: 675.92, Z LAS: 675.93, LC Type: 2, ΔZ DEM: 0.03, ΔZ LAS: 0.05



North



South



East



West



Point: 1602 Bare Earth

Survey X: 638724.07, Survey Y: 236966.75, Z1: 672.12, Z DEM: 672.06, Z LAS: 672.06, LC Type: 1, ΔZ DEM: -0.06, ΔZ LAS: -0.06



North



South



East



West



Point: 1603 Forest

Survey X: 638319.82, Survey Y: 236683.72, Z1: 669.47, Z DEM: 669.45, Z LAS: 669.45, LC Type: 5, ΔZ DEM: -0.02, ΔZ LAS: -0.02



North



South



East

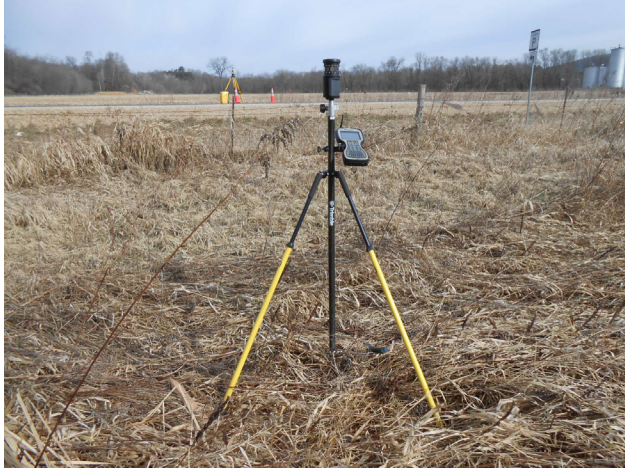


West



Point: 1604 Tall Weeds

Survey X: 638366.64, Survey Y: 236743.75, Z1: 669.23, Z DEM: 669.46, Z LAS: 669.48, LC Type: 3, ΔZ DEM: 0.22, ΔZ LAS: 0.24



North



South



East



West



Point: 1605 Swamp

Survey X: 637720.83, Survey Y: 236736.67, Z1: 671.01, Z DEM: 671.14, Z LAS: 671.13, LC Type: 7, ΔZ DEM: 0.12, ΔZ LAS: 0.12



North



South



East



West



Point: 1700 Urban Area

Survey X: 618585.11, Survey Y: 215916.47, Z1: 686.89, Z DEM: 686.99, Z LAS: 687, LC Type: 2, ΔZ DEM: 0.1, ΔZ LAS: 0.11



North



South



East



West



Point: 1701 Forest

Survey X: 617841.51, Survey Y: 215968.45, Z1: 655.7, Z DEM: 656.02, Z LAS: 656.04, LC Type: 5, ΔZ DEM: 0.31, ΔZ LAS: 0.34



North



South



East



West



Point: 1702 Bare Earth

Survey X: 622772.69, Survey Y: 214940.28, Z1: 677.76, Z DEM: 677.79, Z LAS: 677.81, LC Type: 1, ΔZ DEM: 0.03, ΔZ LAS: 0.05



North



South



East



West



Point: 1703 Swamp

Survey X: 622767.66, Survey Y: 214807.41, Z1: 647.19, Z DEM: 647.68, Z LAS: 647.74, LC Type: 7, ΔZ DEM: 0.49, ΔZ LAS: 0.55



North



South



East



West



Point: 1800 Urban Area

Survey X: 638541.84, Survey Y: 215243.11, Z1: 667.29, Z DEM: 667.14, Z LAS: 667.12, LC Type: 2, ΔZ DEM: -0.14, ΔZ LAS: -0.17



North



South



East



West



Point: 1801 Forest

Survey X: 630860.06, Survey Y: 213798.91, Z1: 651.45, Z DEM: 651.73, Z LAS: 651.7, LC Type: 5, ΔZ DEM: 0.28, ΔZ LAS: 0.26



North



South



East



West



Point: 1802 Swamp

Survey X: 630678.65, Survey Y: 213894.98, Z1: 650.51, Z DEM: 651, Z LAS: 650.91, LC Type: 7, ΔZ DEM: 0.49, ΔZ LAS: 0.4



North



South



East



West



Point: 1803 Bare Earth

Survey X: 638784.13, Survey Y: 215618.37, Z1: 666.27, Z DEM: 666.13, Z LAS: 666.14, LC Type: 1, ΔZ DEM: -0.14, ΔZ LAS: -0.13



North



South



East



West



Point: 1804 Tall Weeds

Survey X: 638291.66, Survey Y: 214984.55, Z1: 666.25, Z DEM: 666.16, Z LAS: 666.18, LC Type: 3, ΔZ DEM: -0.09, ΔZ LAS: -0.06



North



South



East



West



Point: 1900 Tall Weeds

Survey X: 549982.98, Survey Y: 368451.68, Z1: 848.21, Z DEM: 848.42, Z LAS: 848.39, LC Type: 3, ΔZ DEM: 0.21, ΔZ LAS: 0.18



North



South



East



West



Point: 1901 Urban Area

Survey X: 550033.59, Survey Y: 368336.86, Z1: 853.87, Z DEM: 853.92, Z LAS: 853.93, LC Type: 2, ΔZ DEM: 0.05, ΔZ LAS: 0.07



North



South



East



West



Point: 1902 Forest

Survey X: 550083.59, Survey Y: 368336.3, Z1: 852.61, Z DEM: 852.82, Z LAS: 852.75, LC Type: 5, ΔZ DEM: 0.21, ΔZ LAS: 0.14



North



South



East

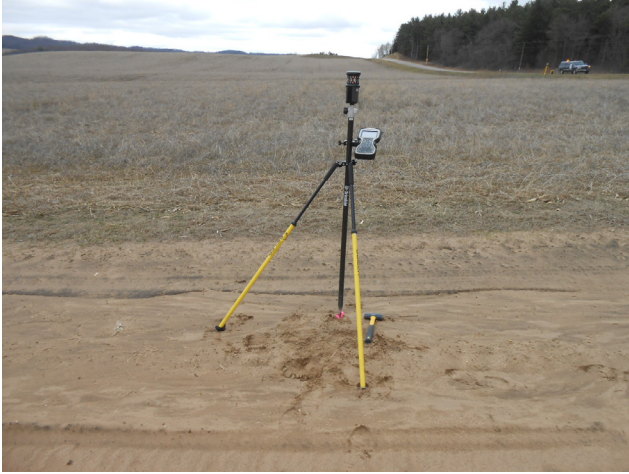


West

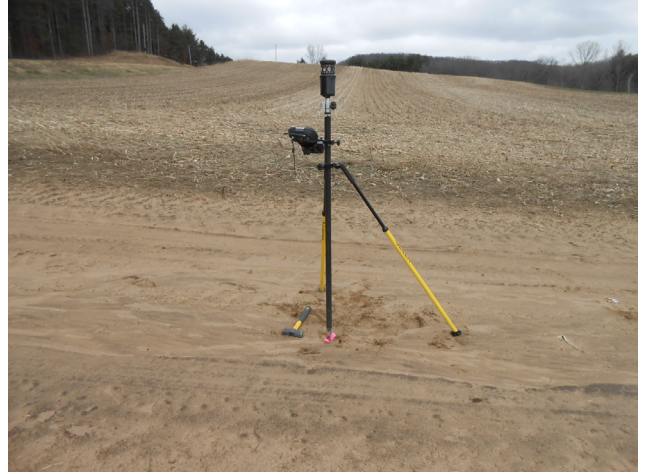


Point: 1903 Bare Earth

Survey X: 549896.67, Survey Y: 368092.49, Z1: 845.4, Z DEM: 845.62, Z LAS: 845.56, LC Type: 1, ΔZ DEM: 0.22, ΔZ LAS: 0.16



North



South



East



West



Point: 2000 Tall Weeds

Survey X: 638451.93, Survey Y: 370767.41, Z1: 888.03, Z DEM: 888.35, Z LAS: 888.3, LC Type: 3, ΔZ DEM: 0.31, ΔZ LAS: 0.27



North



South



East



West



Point: 2001 Urban Area

Survey X: 638337.81, Survey Y: 370878.3, Z1: 893.72, Z DEM: 893.69, Z LAS: 893.65, LC Type: 2, ΔZ DEM: -0.02, ΔZ LAS: -0.07



North



South



East



West



Point: 2002 Swamp

Survey X: 642767.15, Survey Y: 369631.02, Z1: 903.79, Z DEM: 904.09, Z LAS: 904.22, LC Type: 7, ΔZ DEM: 0.3, ΔZ LAS: 0.43



North



South



East



West



Point: 2003 Bare Earth

Survey X: 634217.39, Survey Y: 371326.63, Z1: 896.27, Z DEM: 896.34, Z LAS: 896.33, LC Type: 1, ΔZ DEM: 0.07, ΔZ LAS: 0.06



North



South



East



West



Point: 2100 Tall Weeds

Survey X: 573067.38, Survey Y: 343474.21, Z1: 702.6, Z DEM: 702.79, Z LAS: 703.05, LC Type: 3, ΔZ DEM: 0.18, ΔZ LAS: 0.45



North



South



East



West



Point: 2101 Bare Earth

Survey X: 574053.44, Survey Y: 343069.5, Z1: 719.18, Z DEM: 719.2, Z LAS: 719.22, LC Type: 1, ΔZ DEM: 0.02, ΔZ LAS: 0.04



North



South



East



West



Point: 2102 Urban Area

Survey X: 573761.86, Survey Y: 342877.37, Z1: 706.02, Z DEM: 705.96, Z LAS: 705.94, LC Type: 2, ΔZ DEM: -0.06, ΔZ LAS: -0.08



North



South



East



West



Point: 2103 Urban Area

Survey X: 573710.69, Survey Y: 342834.69, Z1: 705.71, Z DEM: 705.66, Z LAS: 705.64, LC Type: 2, ΔZ DEM: -0.05, ΔZ LAS: -0.06



North



South



East



West



Point: 2104 Forest

Survey X: 573681.15, Survey Y: 343007.38, Z1: 702.6, Z DEM: 702.84, Z LAS: 702.81, LC Type: 5, ΔZ DEM: 0.24, ΔZ LAS: 0.21



North



South



East



West



Point: 2105 Swamp

Survey X: 573798.87, Survey Y: 343041.89, Z1: 702.05, Z DEM: 702.8, Z LAS: 702.83, LC Type: 7, ΔZ DEM: 0.75, ΔZ LAS: 0.77



North



South



East



West



Point: 2200 Urban Area

Survey X: 621986.48, Survey Y: 329903.39, Z1: 867.44, Z DEM: 867.46, Z LAS: 867.47, LC Type: 2, ΔZ DEM: 0.02, ΔZ LAS: 0.03



North



South



East



West



Point: 2201 Bare Earth

Survey X: 622695.45, Survey Y: 330495.66, Z1: 864.18, Z DEM: 864.37, Z LAS: 864.39, LC Type: 1, ΔZ DEM: 0.19, ΔZ LAS: 0.21



North



South



East



West



Point: 2202 Tall Weeds

Survey X: 622644.43, Survey Y: 330757.18, Z1: 861.06, Z DEM: 861.63, Z LAS: 861.72, LC Type: 3, ΔZ DEM: 0.56, ΔZ LAS: 0.65



North



South



East



West



Point: 2203 Forest

Survey X: 622699.55, Survey Y: 330811.96, Z1: 861.24, Z DEM: 861.47, Z LAS: 861.51, LC Type: 5, ΔZ DEM: 0.23, ΔZ LAS: 0.27



North



South



East



West

