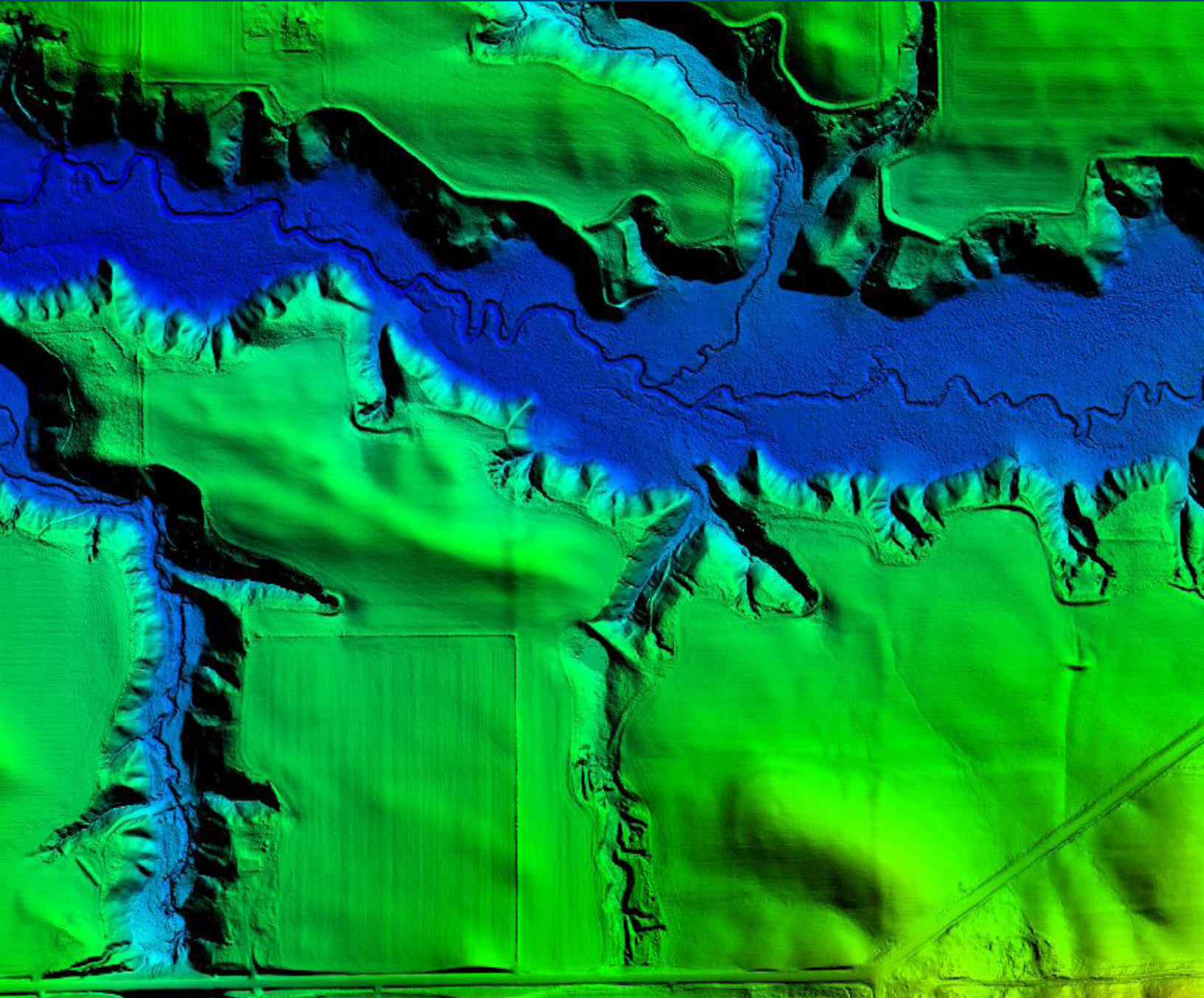


Fond du Lac County

Wisconsin WROC – 3DEP 2018

Fond du Lac County Lidar



July 2019

PROJECT INFORMATION

Prepared By: Ayres Associates

Project Name: Wisconsin WROC – 3DEP Fond du Lac County Lidar 2018

Sensor Info: Leica ALS80

USGS Quality Level: 2

Required Nominal Pulse Spacing: 0.7

Contractor Name: Ayres Associates

Units: US Survey Feet

Date of Acquisition: Start: 5/5/2018 Finish: 5/7/2018

REPORT INFORMATION

This report documents the absolute vertical accuracy of the lidar data collected for the Fond du Lac 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 from April 17, 2018, to May 16, 2018.

The checkpoints were collected under various land cover types that are predominant in the County. Each land cover type falls into either the Non-vegetated Vertical Accuracy (NVA) or the Vegetated Vertical Accuracy (VVA) group. For this project, 61 NVA points and 43 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.

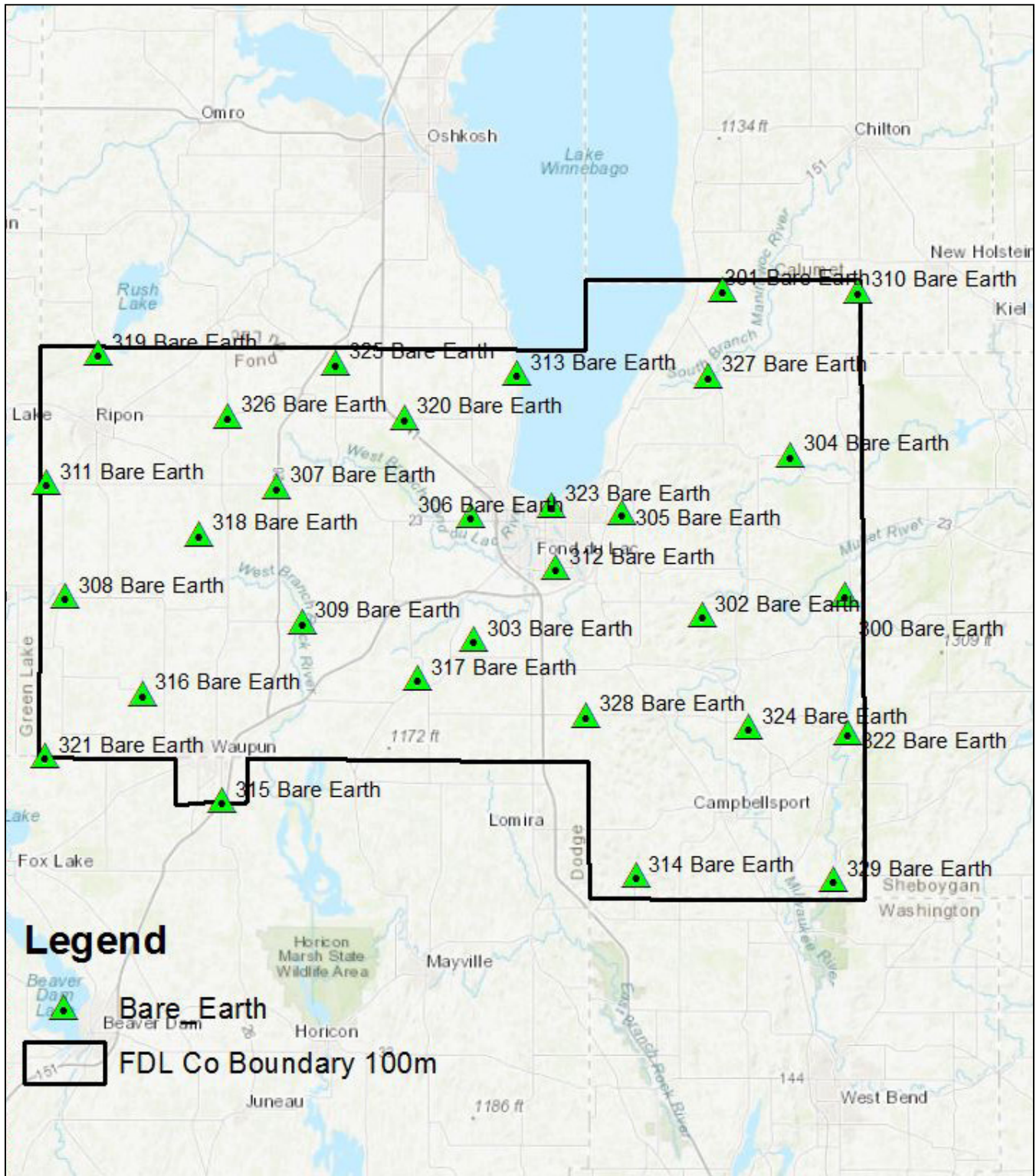
The NVA and VVA statistics for this project are within the above stated specifications.

LIDAR ACCURACY ASSESSMENT SUMMARY

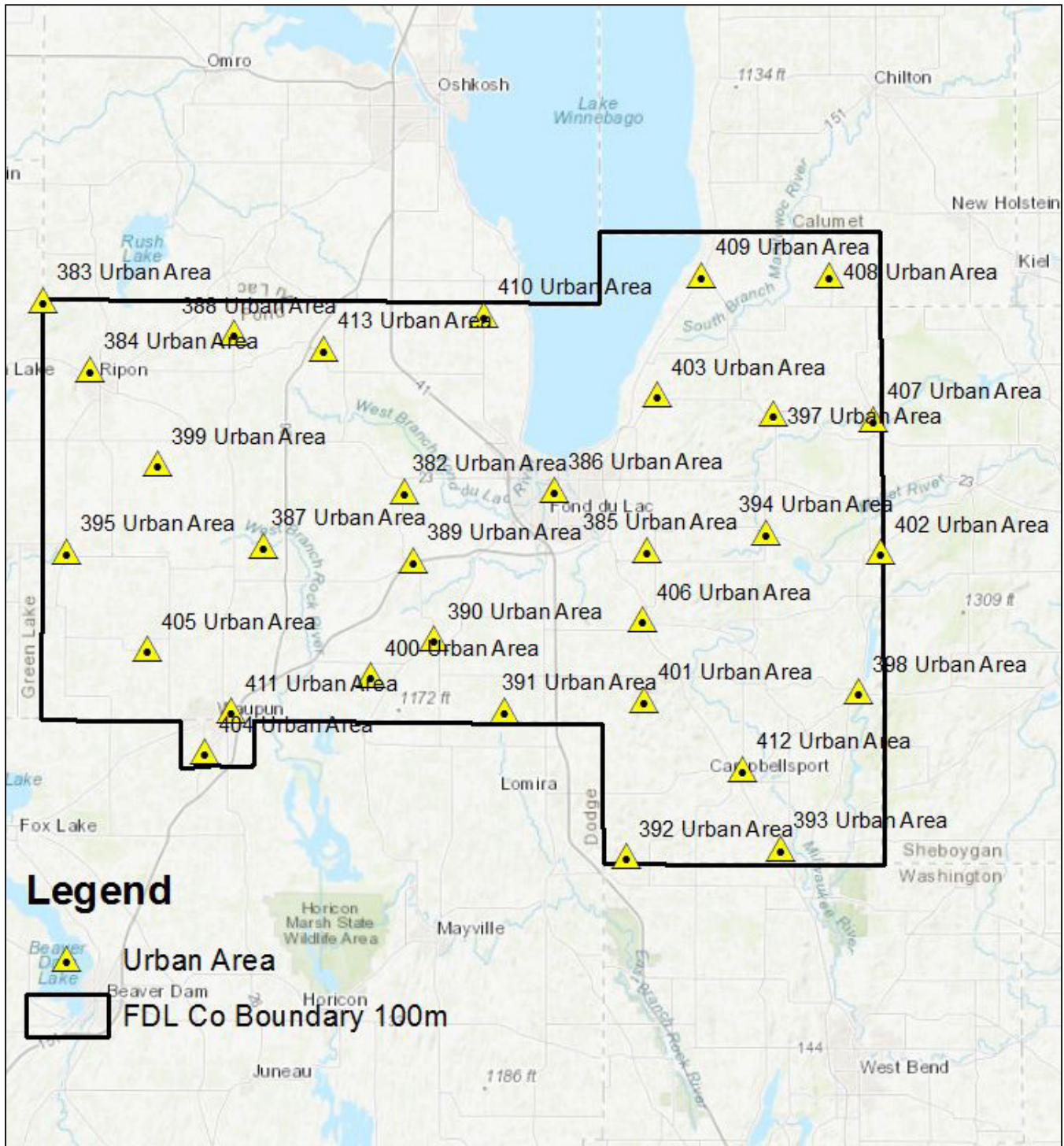
LAND COVER TYPE	# OF POINTS	NVA	VVA
LAS		95% confidence level	N/A
1. Bare Earth	30	0.307	N/A
2. Urban Areas	31	0.201	N/A
3. Tall Weeds	18	N/A	N/A
5. Forest	19	N/A	N/A
7. Swamp	6	N/A	N/A
TOTAL	104	0.259	N/A
DEM		95% confidence level	95th percentile
1. Bare Earth	30	0.283	N/A
2. Urban Areas	31	0.218	N/A
3. Tall Weeds	18	N/A	0.787
5. Forest	19	N/A	0.411
7. Swamp	6	N/A	0.713
TOTAL	104	0.252	0.629

Units: US Survey Feet

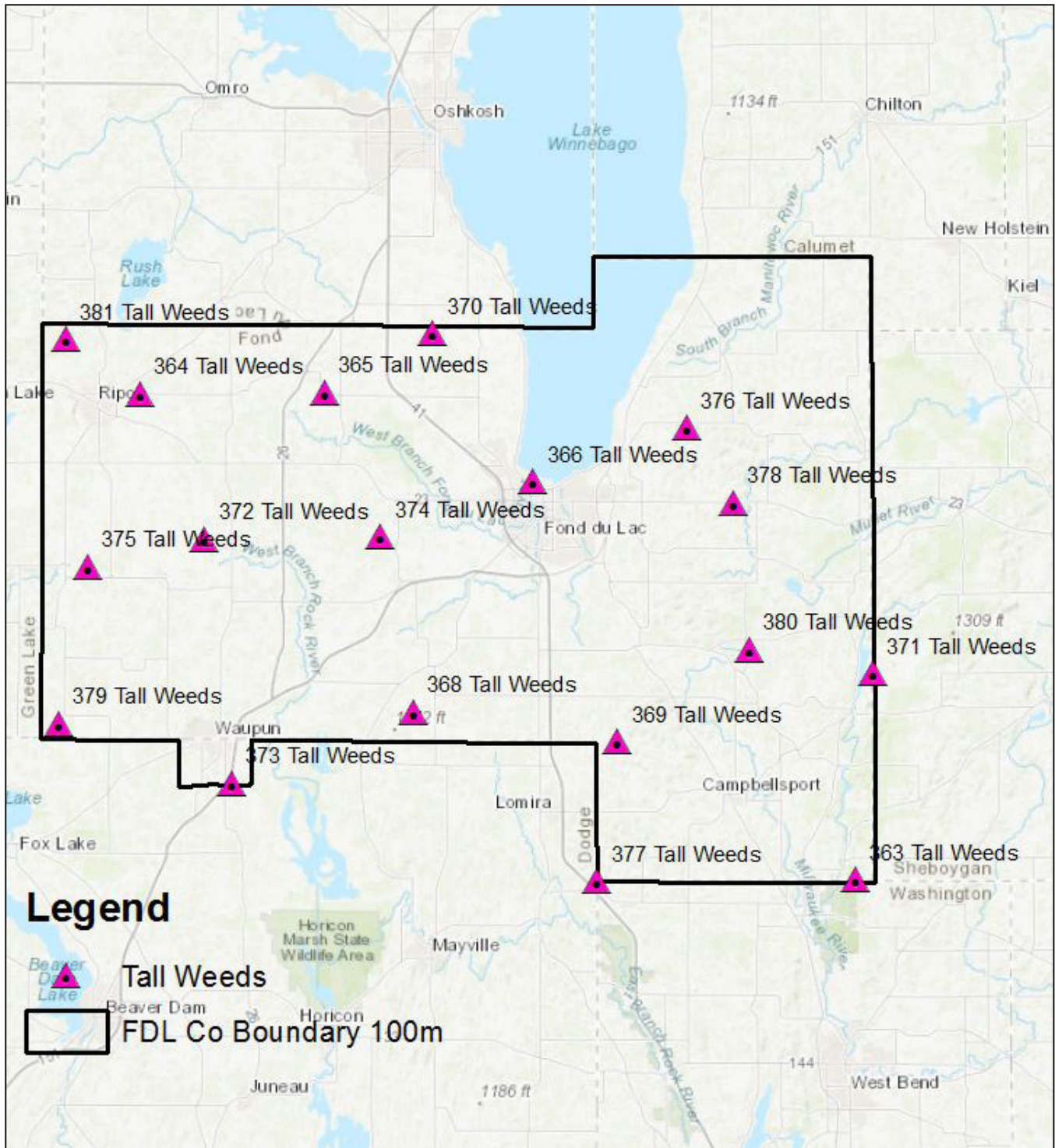
MAP OF NVA CHECKPOINT LOCATIONS - 1. BARE EARTH



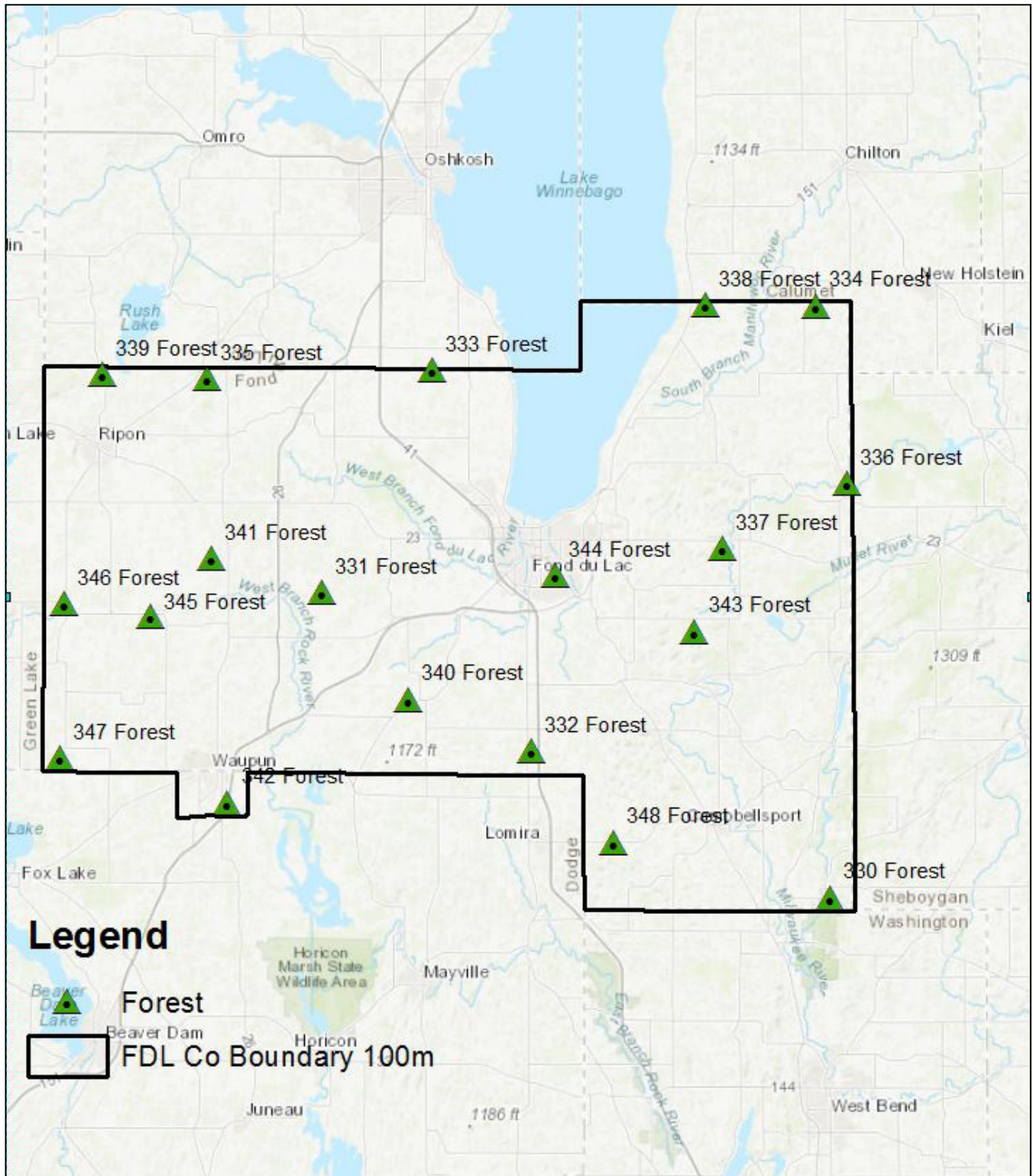
MAP OF NVA CHECKPOINT LOCATIONS - 2. URBAN AREA



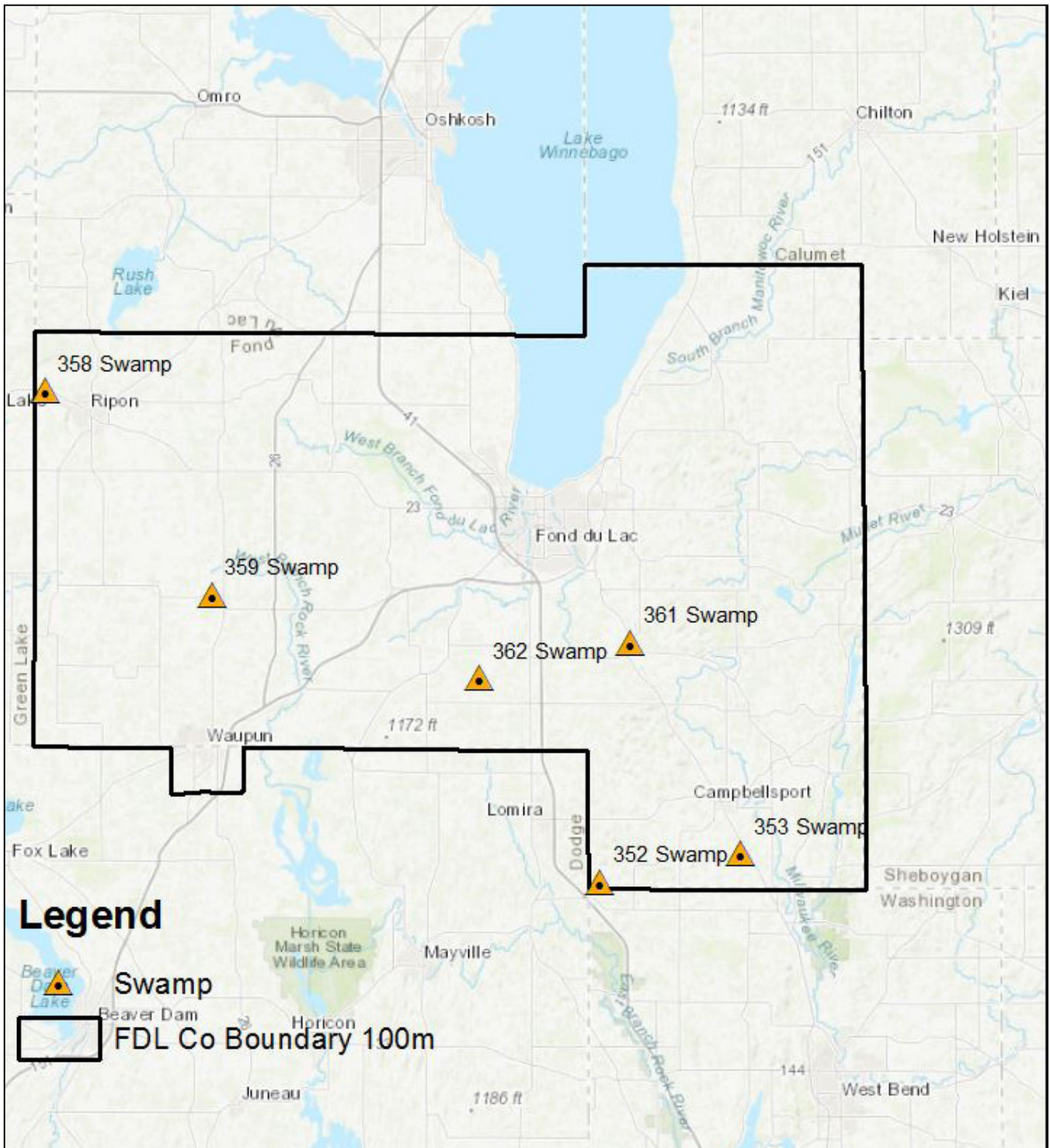
MAP OF VVA CHECKPOINT LOCATIONS - 3. TALL WEEDS



MAP OF VVA CHECKPOINT LOCATIONS - 5. FORESTED AREAS



MAP OF VVA CHECKPOINT LOCATIONS - 7. SWAMP



LAS

NONVEGETATED VERTICAL ACCURACY – OVERALL	
Land Cover Type	1. Bare Earth, 2 Urban Areas
Minimum DZ	-0.314
Maximum DZ	0.576
Mean DZ	0.016
Mean Magnitude DZ	0.309
Number Observations	61
Standard Deviation DZ	0.132
RMSE Z	0.132
95% Confidence Level Z	0.259
Units	US Survey Feet

DEM

NONVEGETATED VERTICAL ACCURACY – OVERALL	
Land Cover Type	1. Bare Earth, 2. Urban Area
Minimum DZ	-0.321
Maximum DZ	0.569
Mean DZ	0.009
Mean Magnitude DZ	0.307
Number Observations	61
Standard Deviation DZ	0.129
RMSE Z	0.129
95% Confidence Level Z	0.252
Units	US Survey Feet

DEM (CONTINUED)

VEGETATED VERTICAL ACCURACY	
Land Cover Type	3. Tall Weeds
Minimum DZ	-0.113
Maximum DZ	0.879
Mean DZ	0.311
Mean Magnitude DZ	0.568
Number Observations	18
Standard Deviation DZ	0.244
RMSE Z	0.391
95th Percentile	0.66
Units	US Survey Feet

DEM (CONTINUED)

VEGETATED VERTICAL ACCURACY	
Land Cover Type	5. Forest
Minimum DZ	-0.088
Maximum DZ	0.438
Mean DZ	0.201
Mean Magnitude DZ	0.468
Number Observations	19
Standard Deviation DZ	0.168
RMSE Z	0.259
95th Percentile	0.433
Units	US Survey Feet

DEM (CONTINUED)

VEGETATED VERTICAL ACCURACY	
Land Cover Type	7. Swamp
Minimum DZ	0.15
Maximum DZ	0.629
Mean DZ	0.408
Mean Magnitude DZ	0.639
Number Observations	6
Standard Deviation DZ	0.182
RMSE Z	0.44
95th Percentile	0.629
Units	US Survey Feet

Point: 300 Bare Earth

Survey X: 889059.07, Survey Y: 371129.58, Z1: 1028.73, Z DEM: 1028.65, Z LAS: 1028.64, LC Type: 1, ΔZ DEM: -0.08, ΔZ LAS: -0.09



North



South



East



West

Point: 301 Bare Earth

Survey X: 860331.79, Survey Y: 442281.32, Z1: 894.73, Z DEM: 894.86, Z LAS: 894.86, LC Type: 1, ΔZ DEM: 0.13, ΔZ LAS: 0.13



North



South



East



West

Point: 302 Bare Earth

Survey X: 855613.29, Survey Y: 366259.23, Z1: 1178.82, Z DEM: 1178.89, Z LAS: 1178.81, LC Type: 1, ΔZ DEM: 0.06, ΔZ LAS: -0.01



North



South



East



West

Point: 303 Bare Earth

Survey X: 802388.84, Survey Y: 360471.69, Z1: 847.93, Z DEM: 847.72, Z LAS: 847.72, LC Type: 1, ΔZ DEM: -0.21, ΔZ LAS: -0.21



North



South



East



West

Point: 304 Bare Earth

Survey X: 876278.02, Survey Y: 403596.55, Z1: 918.4, Z DEM: 918.37, Z LAS: 918.41, LC Type: 1, ΔZ DEM: -0.02, ΔZ LAS: 0.02



North



South



East



West

Point: 305 Bare Earth

Survey X: 836893.19, Survey Y: 390250.45, Z1: 990.58, Z DEM: 990.41, Z LAS: 990.4, LC Type: 1, ΔZ DEM: -0.17, ΔZ LAS: -0.18



North



South



East



West

Point: 306 Bare Earth

Survey X: 801658.24, Survey Y: 389448.93, Z1: 807.14, Z DEM: 807.24, Z LAS: 807.24, LC Type: 1, ΔZ DEM: 0.1, ΔZ LAS: 0.1



North



South



East



West

Point: 307 Bare Earth

Survey X: 756375.34, Survey Y: 396216.54, Z1: 898.5, Z DEM: 898.6, Z LAS: 898.63, LC Type: 1, ΔZ DEM: 0.1, ΔZ LAS: 0.13



North



South



East



West

Point: 308 Bare Earth

Survey X: 706976.98, Survey Y: 370545.04, Z1: 951.98, Z DEM: 951.9, Z LAS: 951.9, LC Type: 1, ΔZ DEM: -0.09, ΔZ LAS: -0.08



North



South



East



West

Point: 309 Bare Earth

Survey X: 762247.11, Survey Y: 364787.73, Z1: 918.57, Z DEM: 918.5, Z LAS: 918.46, LC Type: 1, ΔZ DEM: -0.07, ΔZ LAS: -0.11



North



South



East



West

Point: 310 Bare Earth

Survey X: 892087.87, Survey Y: 441920.93, Z1: 999.94, Z DEM: 1000.03, Z LAS: 1000.07, LC Type: 1, ΔZ DEM: 0.08, ΔZ LAS: 0.13



North



South



East



West

Point: 311 Bare Earth

Survey X: 702509.47, Survey Y: 397084.96, Z1: 1018.02, Z DEM: 1018.03, Z LAS: 1018.03, LC Type: 1, ΔZ DEM: 0.01, ΔZ LAS: 0



North



South



East



West

Point: 312 Bare Earth

Survey X: 821477.6, Survey Y: 377269.73, Z1: 815.2, Z DEM: 815.29, Z LAS: 815.31, LC Type: 1, ΔZ DEM: 0.09, ΔZ LAS: 0.12



North



South



East



West

Point: 313 Bare Earth

Survey X: 812529.58, Survey Y: 422638.44, Z1: 748.42, Z DEM: 748.51, Z LAS: 748.54, LC Type: 1, ΔZ DEM: 0.08, ΔZ LAS: 0.12



North



South



East



West

Point: 314 Bare Earth

Survey X: 840134.45, Survey Y: 305435.76, Z1: 1124.56, Z DEM: 1124.66, Z LAS: 1124.63, LC Type: 1, ΔZ DEM: 0.09, ΔZ LAS: 0.06



North



South



East



West

Point: 315 Bare Earth

Survey X: 743485.63, Survey Y: 322897.54, Z1: 905.14, Z DEM: 905.27, Z LAS: 905.32, LC Type: 1, ΔZ DEM: 0.13, ΔZ LAS: 0.18



North



South



East



West

Point: 316 Bare Earth

Survey X: 724985.67, Survey Y: 347925.58, Z1: 934.64, Z DEM: 934.63, Z LAS: 934.65, LC Type: 1, ΔZ DEM: -0.01, ΔZ LAS: 0.01



North



South



East



West

Point: 317 Bare Earth

Survey X: 789388.43, Survey Y: 351483.3, Z1: 895.06, Z DEM: 895.14, Z LAS: 895.11, LC Type: 1, ΔZ DEM: 0.08, ΔZ LAS: 0.06



North



South



East



West

Point: 318 Bare Earth

Survey X: 738261.68, Survey Y: 385141.21, Z1: 986.41, Z DEM: 986.42, Z LAS: 986.44, LC Type: 1, ΔZ DEM: 0.01, ΔZ LAS: 0.03



North



South



East



West

Point: 319 Bare Earth

Survey X: 714753.27, Survey Y: 427275.16, Z1: 849.03, Z DEM: 849.23, Z LAS: 849.19, LC Type: 1, ΔZ DEM: 0.19, ΔZ LAS: 0.16



North



South



East



West

Point: 320 Bare Earth

Survey X: 786092.47, Survey Y: 412383.26, Z1: 859.06, Z DEM: 859.16, Z LAS: 859.25, LC Type: 1, ΔZ DEM: 0.1, ΔZ LAS: 0.19



North



South



East



West

Point: 321 Bare Earth

Survey X: 702301.26, Survey Y: 333414.74, Z1: 951.49, Z DEM: 951.47, Z LAS: 951.45, LC Type: 1, ΔZ DEM: -0.02, ΔZ LAS: -0.04



North



South



East



West

Point: 322 Bare Earth

Survey X: 889799.73, Survey Y: 338691.67, Z1: 1013.99, Z DEM: 1013.89, Z LAS: 1013.94, LC Type: 1, ΔZ DEM: -0.1, ΔZ LAS: -0.05



North



South



East



West

Point: 323 Bare Earth

Survey X: 820443.35, Survey Y: 391992.28, Z1: 749.3, Z DEM: 749.37, Z LAS: 749.44, LC Type: 1, ΔZ DEM: 0.07, ΔZ LAS: 0.14



North



South



East



West

Point: 324 Bare Earth

Survey X: 866624.54, Survey Y: 339994.54, Z1: 1024.91, Z DEM: 1024.85, Z LAS: 1024.83, LC Type: 1, ΔZ DEM: -0.06, ΔZ LAS: -0.08



North



South



East



West

Point: 325 Bare Earth

Survey X: 770227.51, Survey Y: 425149.74, Z1: 883.51, Z DEM: 883.52, Z LAS: 883.55, LC Type: 1, ΔZ DEM: 0.01, ΔZ LAS: 0.03



North



South



East



West

Point: 326 Bare Earth

Survey X: 744933.52, Survey Y: 412746.25, Z1: 886.76, Z DEM: 887.32, Z LAS: 887.33, LC Type: 1, ΔZ DEM: 0.57, ΔZ LAS: 0.58



North



South



East



West

Point: 327 Bare Earth

Survey X: 857134.33, Survey Y: 422125.67, Z1: 950.54, Z DEM: 950.64, Z LAS: 950.67, LC Type: 1, ΔZ DEM: 0.11, ΔZ LAS: 0.13



North



South



East



West

Point: 328 Bare Earth

Survey X: 828661.64, Survey Y: 342949.39, Z1: 1050.8, Z DEM: 1050.62, Z LAS: 1050.56, LC Type: 1, ΔZ DEM: -0.19, ΔZ LAS: -0.25



North



South



East



West

Point: 329 Bare Earth

Survey X: 886427.92, Survey Y: 304518.58, Z1: 978.97, Z DEM: 978.91, Z LAS: 978.94, LC Type: 1, ΔZ DEM: -0.05, ΔZ LAS: -0.03



North



South



East



West

Point: 330 Forest

Survey X: 887654.38, Survey Y: 303011.38, Z1: 1027.08, Z DEM: 1026.99, Z LAS: 1026.94, LC Type: 5, ΔZ DEM: -0.09, ΔZ LAS: -0.14



North



South



East



West

Point: 331 Forest

Survey X: 767132.37, Survey Y: 375273.21, Z1: 906.13, Z DEM: 906.24, Z LAS: 906.22, LC Type: 5, ΔZ DEM: 0.11, ΔZ LAS: 0.09



North



South



East



West

Point: 332 Forest

Survey X: 816698.26, Survey Y: 337775.97, Z1: 1072.83, Z DEM: 1072.75, Z LAS: 1072.74, LC Type: 5, ΔZ DEM: -0.07, ΔZ LAS: -0.09



North



South



East



West

Point: 333 Forest

Survey X: 793323.48, Survey Y: 427972.71, Z1: 819.17, Z DEM: 819.6, Z LAS: 819.57, LC Type: 5, ΔZ DEM: 0.44, ΔZ LAS: 0.4



North



South



East



West

Point: 334 Forest

Survey X: 884368.51, Survey Y: 443287.51, Z1: 944.59, Z DEM: 945, Z LAS: 945, LC Type: 5, ΔZ DEM: 0.41, ΔZ LAS: 0.41



North



South



East



West

Point: 335 Forest

Survey X: 739941, Survey Y: 425942.76, Z1: 919.07, Z DEM: 919.36, Z LAS: 919.43, LC Type: 5, ΔZ DEM: 0.29, ΔZ LAS: 0.36



North



South



East



West

Point: 336 Forest

Survey X: 891769.89, Survey Y: 401116.26, Z1: 916.13, Z DEM: 916.29, Z LAS: 916.3, LC Type: 5, ΔZ DEM: 0.17, ΔZ LAS: 0.17



North



South



East



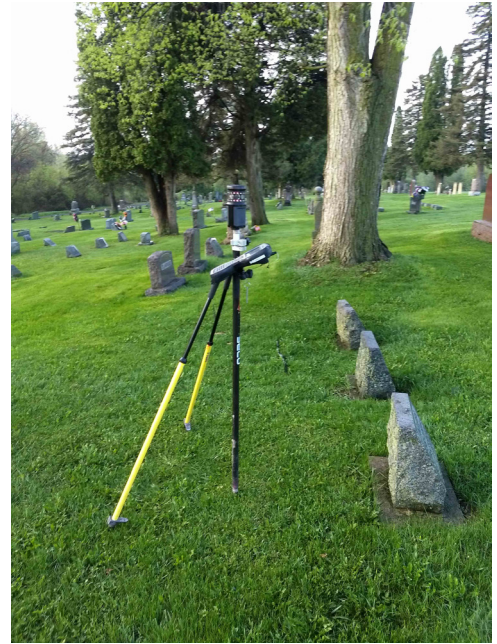
West

Point: 337 Forest

Survey X: 862196.44, Survey Y: 385699.12, Z1: 1028.33, Z DEM: 1028.54, Z LAS: 1028.54, LC Type: 5, ΔZ DEM: 0.21, ΔZ LAS: 0.22



North



South



East



West

Point: 338 Forest

Survey X: 858119.47, Survey Y: 443415.87, Z1: 851.1, Z DEM: 851.24, Z LAS: 851.29, LC Type: 5, ΔZ DEM: 0.15, ΔZ LAS: 0.2



North



South



East



West

Point: 339 Forest

Survey X: 714950.37, Survey Y: 426954.11, Z1: 854.01, Z DEM: 854.4, Z LAS: 854.23, LC Type: 5, ΔZ DEM: 0.39, ΔZ LAS: 0.22



North



South



East



West

Point: 340 Forest

Survey X: 787503.41, Survey Y: 349923.83, Z1: 905.29, Z DEM: 905.37, Z LAS: 905.37, LC Type: 5, ΔZ DEM: 0.09, ΔZ LAS: 0.09



North



South



East



West

Point: 341 Forest

Survey X: 740818.41, Survey Y: 383379.9, Z1: 975.26, Z DEM: 975.67, Z LAS: 975.69, LC Type: 5, ΔZ DEM: 0.41, ΔZ LAS: 0.43



North



South



East



West

Point: 342 Forest

Survey X: 744735.88, Survey Y: 325395.67, Z1: 901.56, Z DEM: 901.79, Z LAS: 901.82, LC Type: 5, ΔZ DEM: 0.23, ΔZ LAS: 0.26



North



South



East



West

Point: 343 Forest

Survey X: 855542.17, Survey Y: 365993.97, Z1: 1212.29, Z DEM: 1212.28, Z LAS: 1212.3, LC Type: 5, ΔZ DEM: 0, ΔZ LAS: 0.01



North



South



East



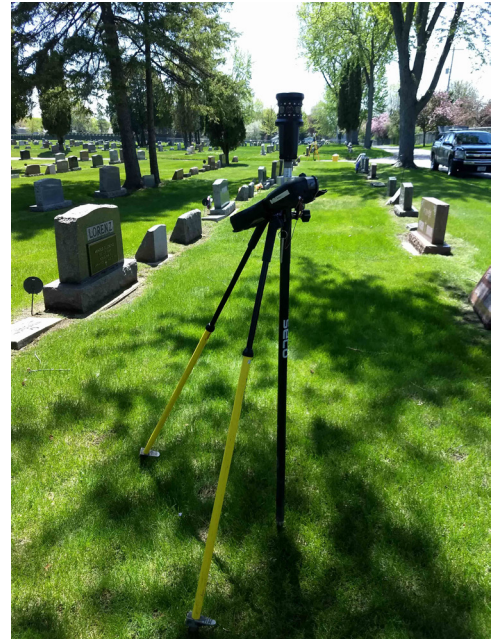
West

Point: 344 Forest

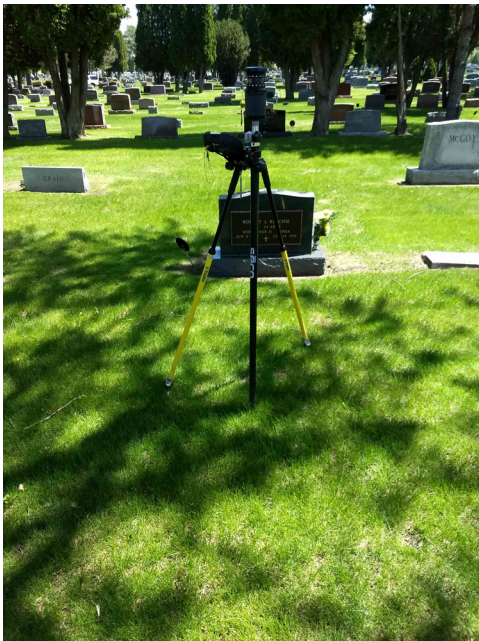
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North



South



East



West

Point: 345 Forest

Survey X: 726535.23, Survey Y: 369566.51, Z1: 1020.36, Z DEM: 1020.48, Z LAS: 1020.42, LC Type: 5, ΔZ DEM: 0.12, ΔZ LAS: 0.06



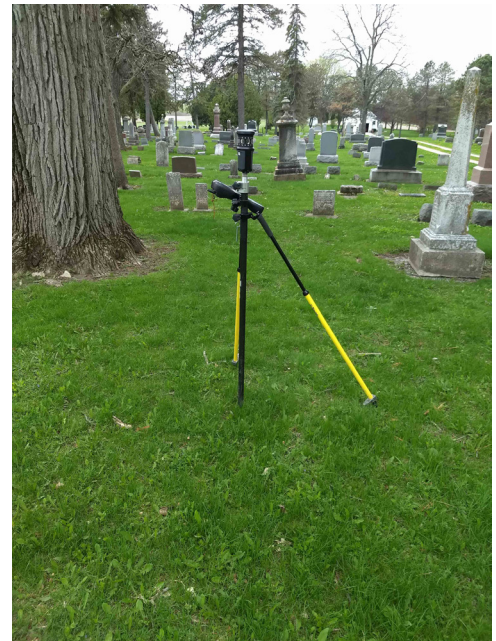
North



South



East



West

Point: 346 Forest

Survey X: 706071.95, Survey Y: 372637.08, Z1: 965.38, Z DEM: 965.46, Z LAS: 965.41, LC Type: 5, ΔZ DEM: 0.08, ΔZ LAS: 0.03



North



South



East



West

Point: 347 Forest

Survey X: 704971.9, Survey Y: 335959.08, Z1: 936.86, Z DEM: 937, Z LAS: 936.97, LC Type: 5, ΔZ DEM: 0.14, ΔZ LAS: 0.11



North



South



East



West

Point: 348 Forest

Survey X: 836178.8, Survey Y: 316107.01, Z1: 1046.8, Z DEM: 1047.12, Z LAS: 1047.15, LC Type: 5, ΔZ DEM: 0.33, ΔZ LAS: 0.35



North



South



East



West

Point: 352 Swamp

Survey X: 831966.54, Survey Y: 301615.64, Z1: 995.83, Z DEM: 996.25, Z LAS: 996.27, LC Type: 7, ΔZ DEM: 0.43, ΔZ LAS: 0.44



North



South



East



West

Point: 353 Swamp

Survey X: 864548.31, Survey Y: 308139.19, Z1: 964.5, Z DEM: 964.77, Z LAS: 964.83, LC Type: 7, ΔZ DEM: 0.27, ΔZ LAS: 0.33



North



South



East



West

Point: 358 Swamp

Survey X: 703481.83, Survey Y: 415283.14, Z1: 808.26, Z DEM: 808.65, Z LAS: 808.68, LC Type: 7, ΔZ DEM: 0.39, ΔZ LAS: 0.42



North



South



East



West

Point: 359 Swamp

Survey X: 742108.65, Survey Y: 368070.13, Z1: 951.73, Z DEM: 952.35, Z LAS: 952.44, LC Type: 7, ΔZ DEM: 0.63, ΔZ LAS: 0.71



North



South



East



West

Point: 361 Swamp

Survey X: 839110.8, Survey Y: 357000.83, Z1: 982.66, Z DEM: 982.81, Z LAS: 982.86, LC Type: 7, ΔZ DEM: 0.15, ΔZ LAS: 0.21



North



South



East



West

Point: 362 Swamp

Survey X: 803937.51, Survey Y: 348718.75, Z1: 912.97, Z DEM: 913.55, Z LAS: 913.58, LC Type: 7, ΔZ DEM: 0.58, ΔZ LAS: 0.61



North



South



East



West

Point: 363 Tall Weeds

Survey X: 888860.92, Survey Y: 300492.04, Z1: 985.56, Z DEM: 985.82, Z LAS: 985.83, LC Type: 3, ΔZ DEM: 0.25, ΔZ LAS: 0.27



North



South



East



West

Point: 364 Tall Weeds

Survey X: 723763.91, Survey Y: 412751.04, Z1: 932.75, Z DEM: 933.3, Z LAS: 933.35, LC Type: 3, ΔZ DEM: 0.55, ΔZ LAS: 0.6



North



South



East



West

Point: 365 Tall Weeds

Survey X: 766437.73, Survey Y: 413156.47, Z1: 891.23, Z DEM: 891.5, Z LAS: 891.63, LC Type: 3, ΔZ DEM: 0.26, ΔZ LAS: 0.39



North



South



East



West

Point: 366 Tall Weeds

Survey X: 814569.63, Survey Y: 392352.87, Z1: 751.38, Z DEM: 751.48, Z LAS: 751.46, LC Type: 3, ΔZ DEM: 0.11, ΔZ LAS: 0.09



North



South



East



West

Point: 368 Tall Weeds

Survey X: 786746.35, Survey Y: 339263.54, Z1: 1083.83, Z DEM: 1084.13, Z LAS: 1084.17, LC Type: 3, ΔZ DEM: 0.3, ΔZ LAS: 0.34



North



South



East



West

Point: 369 Tall Weeds

Survey X: 834018.32, Survey Y: 332295.4, Z1: 1049.84, Z DEM: 1049.94, Z LAS: 1049.95, LC Type: 3, ΔZ DEM: 0.1, ΔZ LAS: 0.11



North



South



East



West

Point: 370 Tall Weeds

Survey X: 791433.36, Survey Y: 426716.89, Z1: 829.02, Z DEM: 829.2, Z LAS: 829.24, LC Type: 3, ΔZ DEM: 0.18, ΔZ LAS: 0.22



North



South



East



West

Point: 371 Tall Weeds

Survey X: 892896.57, Survey Y: 348213.7, Z1: 1055.56, Z DEM: 1055.85, Z LAS: 1055.81, LC Type: 3, ΔZ DEM: 0.29, ΔZ LAS: 0.25



North



South



East



West

Point: 372 Tall Weeds

Survey X: 738691.46, Survey Y: 379154.54, Z1: 969.18, Z DEM: 970.06, Z LAS: 969.97, LC Type: 3, ΔZ DEM: 0.88, ΔZ LAS: 0.79



North



South



East



West

Point: 373 Tall Weeds

Survey X: 744812.35, Survey Y: 322767.54, Z1: 911.09, Z DEM: 911.14, Z LAS: 910.99, LC Type: 3, ΔZ DEM: 0.04, ΔZ LAS: -0.1



North



South



East



West

Point: 374 Tall Weeds

Survey X: 779341.11, Survey Y: 379632.2, Z1: 881.38, Z DEM: 881.7, Z LAS: 881.7, LC Type: 3, ΔZ DEM: 0.33, ΔZ LAS: 0.32



North



South



East



West

Point: 375 Tall Weeds

Survey X: 711668.48, Survey Y: 372816.84, Z1: 996.84, Z DEM: 997.49, Z LAS: 997.47, LC Type: 3, ΔZ DEM: 0.66, ΔZ LAS: 0.64



North



South



East



West

Point: 376 Tall Weeds

Survey X: 850044.09, Survey Y: 404922.98, Z1: 1002.22, Z DEM: 1002.33, Z LAS: 1002.4, LC Type: 3, ΔZ DEM: 0.11, ΔZ LAS: 0.17



North



South



East



West

Point: 377 Tall Weeds

Survey X: 829347.06, Survey Y: 300069.49, Z1: 954.41, Z DEM: 954.29, Z LAS: 954.29, LC Type: 3, ΔZ DEM: -0.11, ΔZ LAS: -0.12



North



South



East



West

Point: 378 Tall Weeds

Survey X: 860669.25, Survey Y: 387562.73, Z1: 991.91, Z DEM: 992.39, Z LAS: 992.72, LC Type: 3, ΔZ DEM: 0.48, ΔZ LAS: 0.81



North



South



East



West

Point: 379 Tall Weeds

Survey X: 704973.14, Survey Y: 336516.65, Z1: 930.5, Z DEM: 930.99, Z LAS: 930.92, LC Type: 3, ΔZ DEM: 0.49, ΔZ LAS: 0.42



North



South



East



West

Point: 380 Tall Weeds

Survey X: 864378.89, Survey Y: 353614.04, Z1: 1040.27, Z DEM: 1040.75, Z LAS: 1040.7, LC Type: 3, ΔZ DEM: 0.48, ΔZ LAS: 0.43



North



South



East



West

Point: 381 Tall Weeds

Survey X: 706604.94, Survey Y: 425277.73, Z1: 932.3, Z DEM: 932.49, Z LAS: 932.44, LC Type: 3, ΔZ DEM: 0.19, ΔZ LAS: 0.14



North



South



East



West

Point: 382 Urban Area

Survey X: 783804.49, Survey Y: 385253.01, Z1: 906.6, Z DEM: 906.6, Z LAS: 906.64, LC Type: 2, ΔZ DEM: 0.01, ΔZ LAS: 0.04



North



South



East



West

Point: 383 Urban Area

Survey X: 701359.99, Survey Y: 428801.71, Z1: 978.15, Z DEM: 978.19, Z LAS: 978.19, LC Type: 2, ΔZ DEM: 0.03, ΔZ LAS: 0.04



North



South



East



West

Point: 384 Urban Area

Survey X: 711991.47, Survey Y: 413129.85, Z1: 922.65, Z DEM: 922.83, Z LAS: 922.82, LC Type: 2, ΔZ DEM: 0.18, ΔZ LAS: 0.18



North



South



East



West

Point: 385 Urban Area

Survey X: 839122.57, Survey Y: 371775.33, Z1: 1084.03, Z DEM: 1084.02, Z LAS: 1084.01, LC Type: 2, ΔZ DEM: -0.01, ΔZ LAS: -0.02



North



South



East



West

Point: 386 Urban Area

Survey X: 818128.43, Survey Y: 385521.21, Z1: 758.76, Z DEM: 758.74, Z LAS: 758.74, LC Type: 2, ΔZ DEM: -0.02, ΔZ LAS: -0.02



North



South



East



West

Point: 387 Urban Area

Survey X: 751515.61, Survey Y: 372808.7, Z1: 944.05, Z DEM: 943.94, Z LAS: 943.96, LC Type: 2, ΔZ DEM: -0.11, ΔZ LAS: -0.09



North



South



East



West

Point: 388 Urban Area

Survey X: 745067.4, Survey Y: 421242.77, Z1: 894.43, Z DEM: 894.46, Z LAS: 894.44, LC Type: 2, ΔZ DEM: 0.03, ΔZ LAS: 0.01



North



South



East



West

Point: 389 Urban Area

Survey X: 785838.77, Survey Y: 369342.72, Z1: 875.2, Z DEM: 875.11, Z LAS: 875.1, LC Type: 2, ΔZ DEM: -0.09, ΔZ LAS: -0.1



North



South



East



West

Point: 390 Urban Area

Survey X: 790688.06, Survey Y: 351524.35, Z1: 901.93, Z DEM: 901.99, Z LAS: 902.01, LC Type: 2, ΔZ DEM: 0.07, ΔZ LAS: 0.09



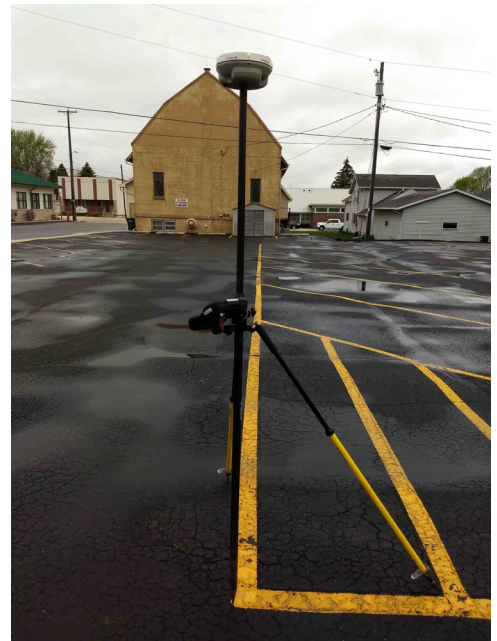
North



South



East



West

Point: 391 Urban Area

Survey X: 806620.5, Survey Y: 335139.53, Z1: 1033.18, Z DEM: 1033.11, Z LAS: 1033.11, LC Type: 2, ΔZ DEM: -0.07, ΔZ LAS: -0.07



North



South



East



West

Point: 392 Urban Area

Survey X: 834563.74, Survey Y: 301704.84, Z1: 1076.33, Z DEM: 1076.41, Z LAS: 1076.4, LC Type: 2, ΔZ DEM: 0.09, ΔZ LAS: 0.08



North



South



East



West

Point: 393 Urban Area

Survey X: 869678.61, Survey Y: 303570.09, Z1: 1004.04, Z DEM: 1004.11, Z LAS: 1004.06, LC Type: 2, ΔZ DEM: 0.07, ΔZ LAS: 0.02



North



South



East



West

Point: 394 Urban Area

Survey X: 866542.39, Survey Y: 375848.95, Z1: 1034.39, Z DEM: 1034.43, Z LAS: 1034.4, LC Type: 2, ΔZ DEM: 0.04, ΔZ LAS: 0.01



North



South



East



West

Point: 395 Urban Area

Survey X: 706632.73, Survey Y: 371522.78, Z1: 962.38, Z DEM: 962.48, Z LAS: 962.49, LC Type: 2, ΔZ DEM: 0.1, ΔZ LAS: 0.11



North



South



East



West

Point: 397 Urban Area

Survey X: 868199.29, Survey Y: 402788.3, Z1: 994.84, Z DEM: 994.7, Z LAS: 994.74, LC Type: 2, ΔZ DEM: -0.14, ΔZ LAS: -0.1



North



South



East



West

Point: 398 Urban Area

Survey X: 887644.88, Survey Y: 339449.51, Z1: 1023.11, Z DEM: 1023.17, Z LAS: 1023.18, LC Type: 2, ΔZ DEM: 0.07, ΔZ LAS: 0.07



North



South



East



West

Point: 399 Urban Area

Survey X: 727571.35, Survey Y: 391468.19, Z1: 988.84, Z DEM: 988.86, Z LAS: 988.87, LC Type: 2, ΔZ DEM: 0.01, ΔZ LAS: 0.03



North



South



East



West

Point: 400 Urban Area

Survey X: 776081.31, Survey Y: 343106.9, Z1: 899.63, Z DEM: 899.46, Z LAS: 899.47, LC Type: 2, ΔZ DEM: -0.17, ΔZ LAS: -0.15



North



South



East



West

Point: 401 Urban Area

Survey X: 838645, Survey Y: 337609.33, Z1: 1072.88, Z DEM: 1072.8, Z LAS: 1072.85, LC Type: 2, ΔZ DEM: -0.08, ΔZ LAS: -0.03



North



South



East



West

Point: 402 Urban Area

Survey X: 892699.32, Survey Y: 371343.95, Z1: 1124.57, Z DEM: 1124.41, Z LAS: 1124.43, LC Type: 2, ΔZ DEM: -0.16, ΔZ LAS: -0.13



North



South



East



West

Point: 403 Urban Area

Survey X: 841771.32, Survey Y: 407169.28, Z1: 1039.99, Z DEM: 1040, Z LAS: 1039.98, LC Type: 2, ΔZ DEM: 0.01, ΔZ LAS: -0.01



North



South



East



West

Point: 404 Urban Area

Survey X: 738127.35, Survey Y: 325663.85, Z1: 927.36, Z DEM: 927.33, Z LAS: 927.34, LC Type: 2, ΔZ DEM: -0.02, ΔZ LAS: -0.02



North



South



East



West

Point: 405 Urban Area

Survey X: 725093.88, Survey Y: 349122.08, Z1: 954.82, Z DEM: 954.79, Z LAS: 954.84, LC Type: 2, ΔZ DEM: -0.03, ΔZ LAS: 0.02



North



South



East



West

Point: 406 Urban Area

Survey X: 838404.99, Survey Y: 355898.05, Z1: 1010.06, Z DEM: 1009.86, Z LAS: 1009.93, LC Type: 2, ΔZ DEM: -0.2, ΔZ LAS: -0.12



North



South



East



West

Point: 407 Urban Area

Survey X: 890868.56, Survey Y: 401686.23, Z1: 939.07, Z DEM: 938.75, Z LAS: 938.76, LC Type: 2, ΔZ DEM: -0.32, ΔZ LAS: -0.31



North



South



East



West

Point: 408 Urban Area

Survey X: 880966.68, Survey Y: 434564.89, Z1: 1049.21, Z DEM: 1049.4, Z LAS: 1049.39, LC Type: 2, ΔZ DEM: 0.19, ΔZ LAS: 0.19



North



South



East



West

Point: 409 Urban Area

Survey X: 851614.3, Survey Y: 434641.56, Z1: 800.04, Z DEM: 800.15, Z LAS: 800.16, LC Type: 2, ΔZ DEM: 0.12, ΔZ LAS: 0.12



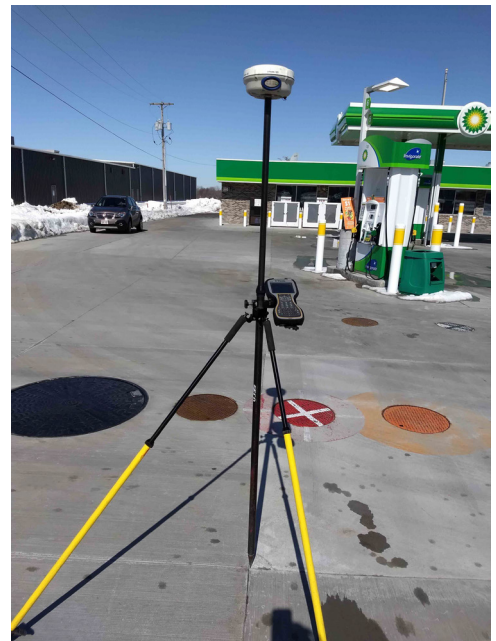
North



South



East



West

Point: 410 Urban Area

Survey X: 801984.32, Survey Y: 425507.67, Z1: 791.92, Z DEM: 791.98, Z LAS: 791.96, LC Type: 2, ΔZ DEM: 0.06, ΔZ LAS: 0.04



North



South



East



West

Point: 411 Urban Area

Survey X: 744289.74, Survey Y: 334936.82, Z1: 886.78, Z DEM: 886.81, Z LAS: 886.83, LC Type: 2, ΔZ DEM: 0.03, ΔZ LAS: 0.05



North



South



East



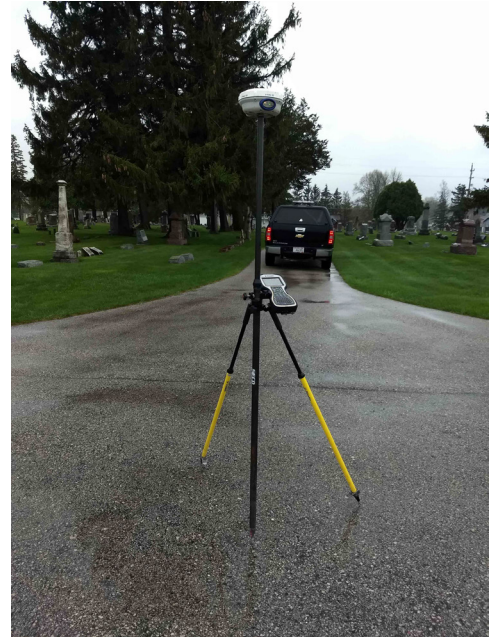
West

Point: 412 Urban Area

Survey X: 860961.05, Survey Y: 321787.9, Z1: 1066.44, Z DEM: 1066.33, Z LAS: 1066.33, LC Type: 2, ΔZ DEM: -0.11, ΔZ LAS: -0.11



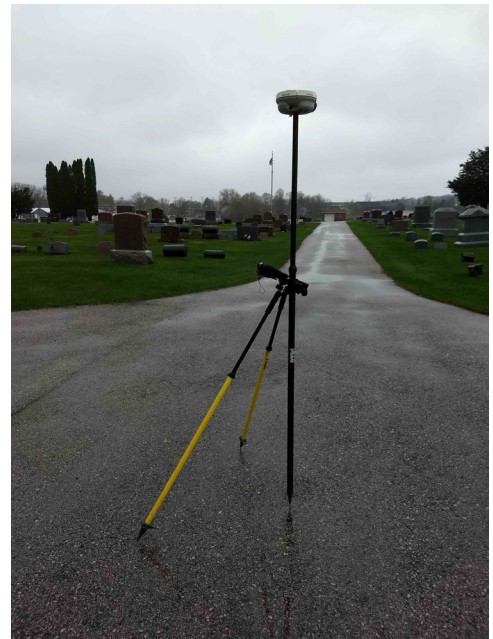
North



South



East



West

Point: 413 Urban Area

Survey X: 765286.88, Survey Y: 417820.25, Z1: 914.88, Z DEM: 914.9, Z LAS: 914.88, LC Type: 2, ΔZ DEM: 0.02, ΔZ LAS: 0



North



South



East



West