

AL_CoffeeDaleGenevaEscambia_2021_D21

Survey Report

Contract Number: G16PC00044

Task Order Number: 140G0221F0236



Contractor Point-of-Contact (POC)

Address: Digital Aerial Solutions, LLC

Telephone: (813) 628-0788

Joshua Helton (VP)

4027 Crescent Park Drive

Riverview, FL 33578

Overview

Digital Aerial Solutions, LLC (DAS) with contract number G16PC00044 was contracted by the United States Geological Survey under task order number 140G0221F0236 to collect a high-resolution LiDAR data set covering 2,803 square miles in Alabama. Each of these categories was spread out as evenly as possible throughout the Area of Interest (AOI). The survey was completed using the Global Positioning System (GPS). Each observation was identified in the field and surveyed utilizing GPS receivers, collecting GNSS and GLONASS information and utilizing a Leica Smart-Net RTK network. In accordance with section C.1.e.(i)(d) of the task order, the spatial reference system used was:

Spatial Reference System:

Coordinate System: Universal Transverse Mercator UTM Zone 16

Horizontal Datum: North American Datum 1983 (2011)

Vertical Datum: North American Vertical Datum of 1988

Units: Meters

Geoid Model: Geoid 18

Section C.1.b.(viii) of the task order outlines the ground control minimum requirements and specifications for this LiDAR project. 28 Supplemental ground control points were collected and used to support the airborne GPS solution and positional accuracy. DAS also collected more than the required number of Non-Vegetated Vertical Accuracy (NVA) and Vegetated Vertical Accuracy (VVA) Quality Checkpoints as stated in the task order. These checkpoints serve as an independent delivery to the client and were not incorporated into the vertical solution.

Glossary of Terms

Term - Definition

ATTN	- Attention
BE	- Bare Earth Checkpoint (see NVA)
CTRL	- Control
DAS	- Digital Aerial Solutions, LLC
Ellip	- Ellipsoid Height
FIPS	- Federal Information Processing Standard
GPS	- Global Positioning Systems
UT	- Urban Terrain (see NVA)
HV	- High Vegetation (see VVA)
ID	- Identification
LV	- Low Vegetation (see VVA)
LiDAR	- Light Detection and Ranging
MV	- Medium Vegetation (see VVA)
NAD83	- North American Datum of 1983
NAVD88	- North American Vertical Datum of 1988
NGS	- National Geodetic Survey
NGTOC	- National Geospatial Technical Operations Center
NVA	- Non-Vegetated Vertical Accuracy
Ortho	- Orthometric Height
POC	- Point of Contact
RTK	- Real Time Kinematics
USGS	- United States Geological Survey
VP	- Vice President
VVA	- Vegetated Vertical Accuracy

Supplemental Ground Control

The Map shows the overall distribution of the Supplemental Ground Control throughout the AOI. The following tables contain a list of the control using Easting, Northing, and Orthometric height. The coordinate system displayed is Universal Transverse Mercator UTM Zone 16, North American Datum 1983 (2011), North American Vertical Datum of 1988, Geoid 18 and using Meters for measurement.

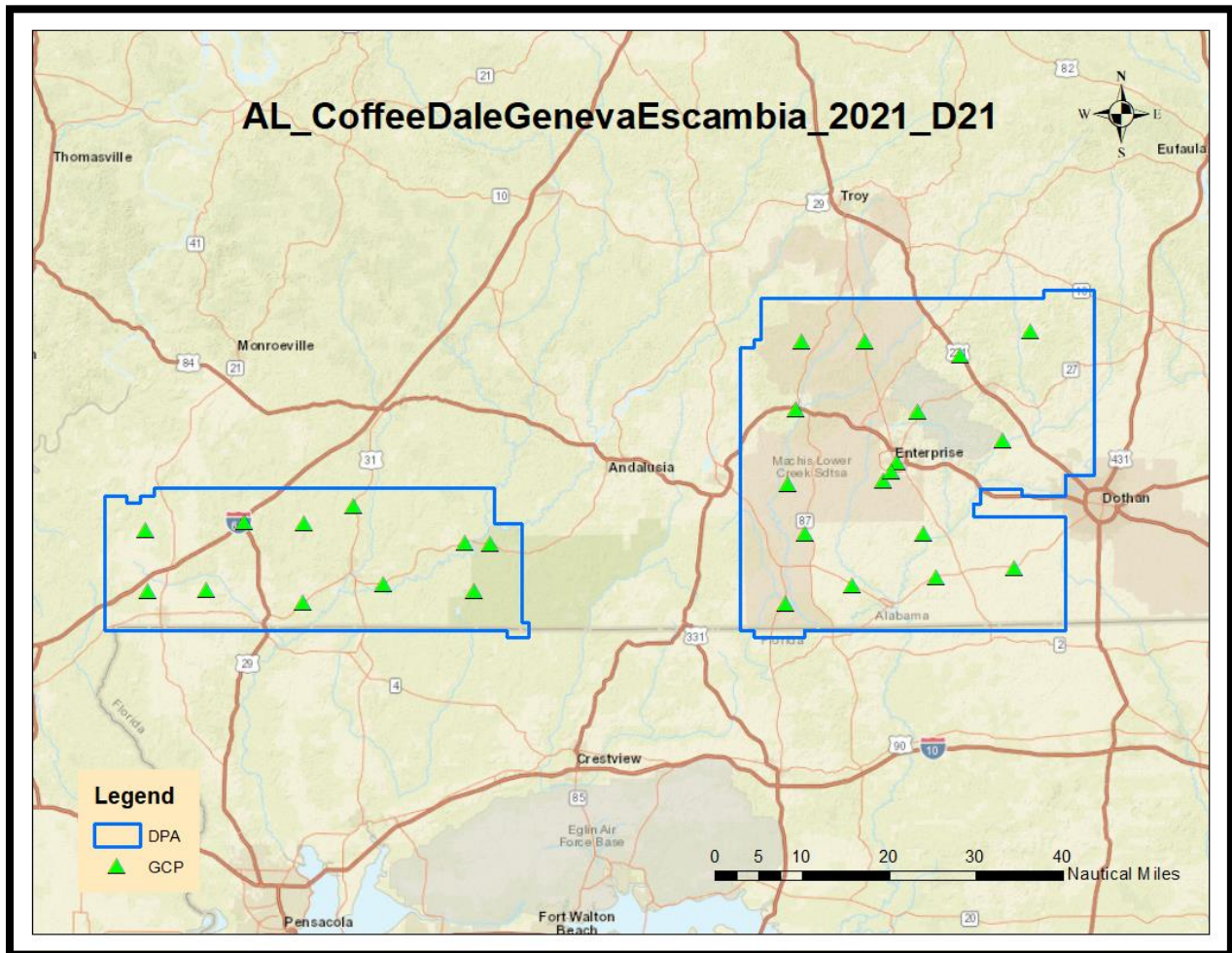


TABLE: Ground Control Points

Point ID	Easting	Northing	Ortho
GS0004	631991.65	3469221.29	52.037
GS0011	637732.41	3492327.63	135.485
GS0033	613709.21	3475373.32	112.99
GS0054	634258.27	3442229.42	82.98
GS0066	599930.6	3438501.93	54.817
GS0092	589770.37	3449374.76	81.938
GS0095	586188.53	3460048.6	95.204
GS0119	522872.01	3447201.52	54.478
GS0142	483289.46	3434823.38	37.899
GS0167	470625.38	3452008.51	104.993
GS0177	450318.42	3437298.23	90.305
GS0188	462643.23	3437525.06	84.108
GS0016	622907.65	3487211.2	101.229
GS0026	602694.01	3490291.66	111.661
GS0040	609429.23	3464602.84	107.637
GS0046	614950.41	3449351.53	40.21
GS0060	617835.29	3440256.97	77.545
GS0075	585705.17	3434451.91	47.804
GS0083	606568.44	3460734.12	107.791
GS0104	587979.52	3475921.88	59.873
GS0110	589194.23	3490240.06	91.139
GS0115	608243.05	3462522.22	109.459
GS0122	517708.89	3447562.71	40.215
GS0128	519686.37	3437321.11	71.105
GS0136	500349.06	3438762.27	27.257
GS0149	483379.54	3451764.78	88.074
GS0158	493827.02	3455314.25	79.533
GS0173	449790.91	3450172.66	92.906

GS0004



Point ID: GS0004

Northing: 3469221.29 Meters

Easting: 631991.65 Meters

Orthometric Height: 52.037 Meters

Latitude: 31 20 59.930356 N

Longitude: 85 36 44.517094 W

Ellipsoid Height: 25.286 Meters

GS0011



Point ID: GS0011

Northing: 3492327.63 Meters

Easting: 637732.41 Meters

Orthometric Height: 135.485 Meters

Latitude: 31 33 27.813294 N

Longitude: 85 32 55.747566 W

Ellipsoid Height: 109.133 Meters

GS0033



Point ID: GS0033

Northing: 3475373.32 Meters

Easting: 613709.21 Meters

Orthometric Height: 112.99 Meters

Latitude: 31 24 26.678961 N

Longitude: 85 48 13.782410 W

Ellipsoid Height: 86.42 Meters

GS0054



Point ID: GS0054

Northing: 3442229.42 Meters

Easting: 634258.27 Meters

Orthometric Height: 82.98 Meters

Latitude: 31 6 22.498741 N

Longitude: 85 35 31.767069 W

Ellipsoid Height: 55.572 Meters

GS0066



Point ID: GS0066

Northing: 3438501.93 Meters

Easting: 599930.6 Meters

Orthometric Height: 54.817 Meters

Latitude: 31 4 33.783794 N

Longitude: 85 57 8.746069 W

Ellipsoid Height: 27.569 Meters

GS0092



Point ID: GS0092

Northing: 3449374.76 Meters

Easting: 589770.37 Meters

Orthometric Height: 81.938 Meters

Latitude: 31 10 29.873958 N

Longitude: 86 3 28.646457 W

Ellipsoid Height: 54.89 Meters

GS0095



Point ID: GS0095

Northing: 3460048.6 Meters

Easting: 586188.53 Meters

Orthometric Height: 95.204 Meters

Latitude: 31 16 17.513830 N

Longitude: 86 5 40.644018 W

Ellipsoid Height: 68.341 Meters

GS0119



Point ID: GS0119

Northing: 3447201.52 Meters

Easting: 522872.01 Meters

Orthometric Height: 54.478 Meters

Latitude: 31 9 30.886181 N

Longitude: 86 45 36.070627 W

Ellipsoid Height: 27.338 Meters

GS0142



Point ID: GS0142

Northing: 3434823.38 Meters

Easting: 483289.46 Meters

Orthometric Height: 37.899 Meters

Latitude: 31 2 49.182816 N

Longitude: 87 10 30.458994 W

Ellipsoid Height: 10.13 Meters

GS0167



Point ID: GS0167

Northing: 3452008.51 Meters

Easting: 470625.38 Meters

Orthometric Height: 104.993 Meters

Latitude: 31 12 6.504915 N

Longitude: 87 18 30.051228 W

Ellipsoid Height: 77.03 Meters

GS0177



Point ID: GS0177

Northing: 3437298.23 Meters

Easting: 450318.42 Meters

Orthometric Height: 90.305 Meters

Latitude: 31 4 6.217279 N

Longitude: 87 31 14.806624 W

Ellipsoid Height: 62.153 Meters

GS0188



Point ID: GS0188

Northing: 3437525.06 Meters

Easting: 462643.23 Meters

Orthometric Height: 84.108 Meters

Latitude: 31 4 15.230074 N

Longitude: 87 23 29.752846 W

Ellipsoid Height: 56.092 Meters

GS0016



Point ID: GS0016

Northing: 3487211.2 Meters

Easting: 622907.65 Meters

Orthometric Height: 101.229 Meters

Latitude: 31 30 47.708333 N

Longitude: 85 42 20.220733 W

Ellipsoid Height: 74.858 Meters

GS0026



Point ID: GS0026

Northing: 3490291.66 Meters

Easting: 602694.01 Meters

Orthometric Height: 111.661 Meters

Latitude: 31 32 34.861880 N

Longitude: 85 55 5.296690 W

Ellipsoid Height: 85.265 Meters

GS0040



Point ID: GS0040

Northing: 3464602.84 Meters

Easting: 609429.23 Meters

Orthometric Height: 107.637 Meters

Latitude: 31 18 38.389122 N

Longitude: 85 51 0.098965 W

Ellipsoid Height: 80.855 Meters

GS0046



Point ID: GS0046

Northing: 3449351.53 Meters

Easting: 614950.41 Meters

Orthometric Height: 40.21 Meters

Latitude: 31 10 21.182745 N

Longitude: 85 47 37.561490 W

Ellipsoid Height: 13.087 Meters

GS0060



Point ID: GS0060

Northing: 3440256.97 Meters

Easting: 617835.29 Meters

Orthometric Height: 77.545 Meters

Latitude: 31 5 24.799730 N

Longitude: 85 45 52.431485 W

Ellipsoid Height: 50.248 Meters

GS0075



Point ID: GS0075

Northing: 3434451.91 Meters

Easting: 585705.17 Meters

Orthometric Height: 47.804 Meters

Latitude: 31 2 26.292218 N

Longitude: 86 6 6.771312 W

Ellipsoid Height: 20.606 Meters

GS0083



Point ID: GS0083

Northing: 3460734.12 Meters

Easting: 606568.44 Meters

Orthometric Height: 107.791 Meters

Latitude: 31 16 33.705364 N

Longitude: 85 52 49.795464 W

Ellipsoid Height: 80.933 Meters

GS0104



Point ID: GS0104

Northing: 3475921.88 Meters

Easting: 587979.52 Meters

Orthometric Height: 59.873 Meters

Latitude: 31 24 52.558446 N

Longitude: 86 4 27.878477 W

Ellipsoid Height: 33.22 Meters

GS0110



Point ID: GS0110

Northing: 3490240.06 Meters

Easting: 589194.23 Meters

Orthometric Height: 91.139 Meters

Latitude: 31 32 37.232712 N

Longitude: 86 3 37.233900 W

Ellipsoid Height: 64.574 Meters

GS0115



Point ID: GS0115

Northing: 3462522.22 Meters

Easting: 608243.05 Meters

Orthometric Height: 109.459 Meters

Latitude: 31 17 31.219265 N

Longitude: 85 51 45.778667 W

Ellipsoid Height: 82.635 Meters

GS0122



Point ID: GS0122

Northing: 3447562.71 Meters

Easting: 517708.89 Meters

Orthometric Height: 40.215 Meters

Latitude: 31 9 42.940704 N

Longitude: 86 48 51.069893 W

Ellipsoid Height: 12.967 Meters

GS0128



Point ID: GS0128

Northing: 3437321.11 Meters

Easting: 519686.37 Meters

Orthometric Height: 71.105 Meters

Latitude: 31 4 10.151190 N

Longitude: 86 47 37.093731 W

Ellipsoid Height: 43.879 Meters

GS0136



Point ID: GS0136

Northing: 3438762.27 Meters

Easting: 500349.06 Meters

Orthometric Height: 27.257 Meters

Latitude: 31 4 57.558684 N

Longitude: 86 59 46.825654 W

Ellipsoid Height: -0.313 Meters

GS0149



Point ID: GS0149

Northing: 3451764.78 Meters

Easting: 483379.54 Meters

Orthometric Height: 88.074 Meters

Latitude: 31 11 59.492387 N

Longitude: 87 10 28.066427 W

Ellipsoid Height: 60.255 Meters

GS0158



Point ID: GS0158

Northing: 3455314.25 Meters

Easting: 493827.02 Meters

Orthometric Height: 79.533 Meters

Latitude: 31 13 55.155097 N

Longitude: 87 3 53.348364 W

Ellipsoid Height: 51.84 Meters

GS0173



Point ID: GS0173

Northing: 3450172.66 Meters

Easting: 449790.91 Meters

Orthometric Height: 92.906 Meters

Latitude: 31 11 4.318504 N

Longitude: 87 31 37.022113 W

Ellipsoid Height: 64.729 Meters

Non-Vegetated Vertical Accuracy Checkpoints Bare Earth

The Map shows the overall distribution of the Non-Vegetated Vertical Accuracy Checkpoint, Bare Earth throughout the AOI. The following tables contain a list of the control using Easting, Northing, and Orthometric height. The coordinate system displayed is Universal Transverse Mercator UTM Zone 16, North American Datum 1983 (2011), North American Vertical Datum of 1988, Geoid 18 and using Meters for measurement.

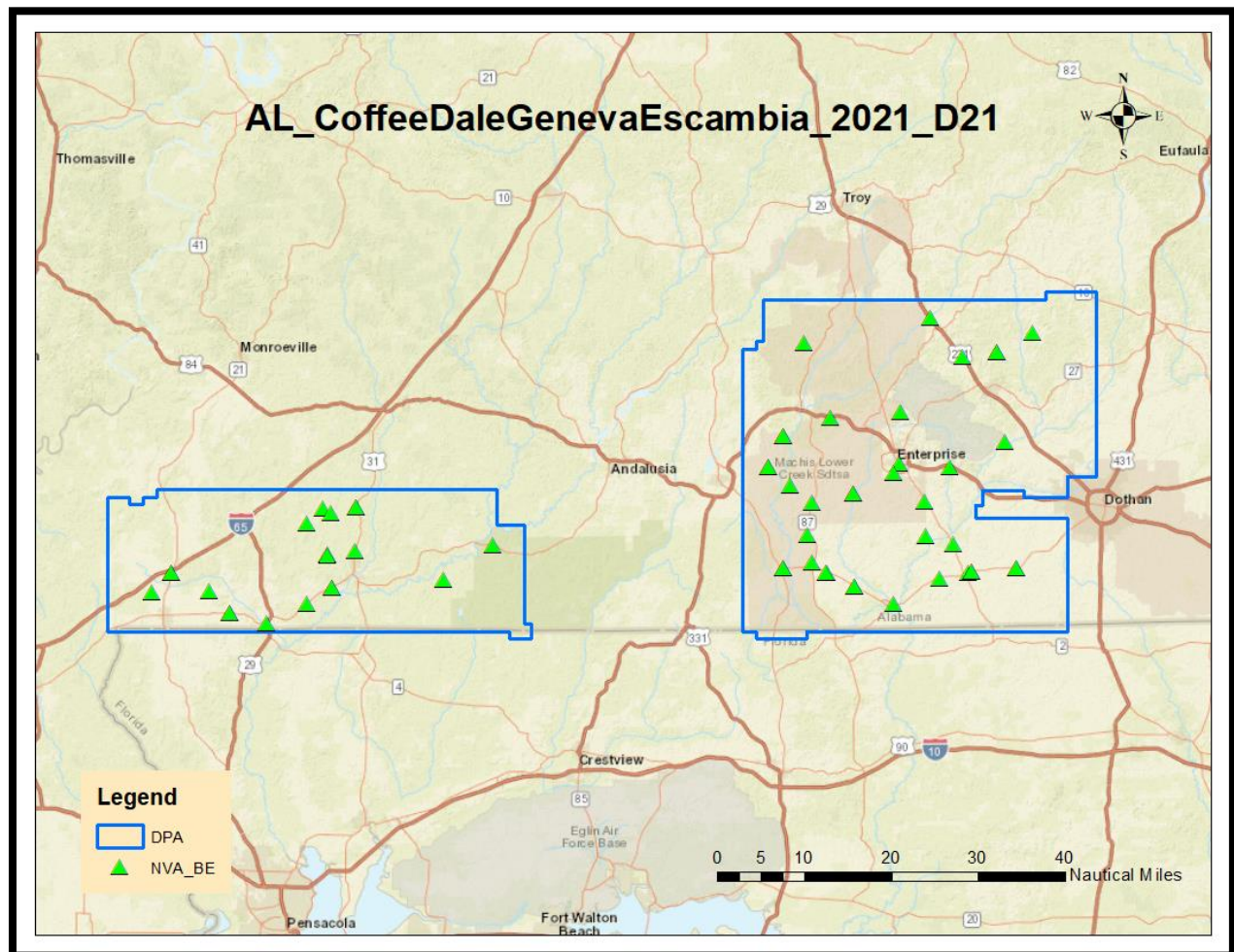


TABLE: Bare Earth

Point ID	Easting	Northing	Ortho
GS0003	620264.92	3463968.57	70.234
GS0006	632001.92	3469201.23	52.084
GS0013	637707.61	3492328.93	135.456
GS0014	630154.29	3488387.47	130.79
GS0015	630123.43	3488384.79	130.802
GS0018	622890.59	3487176.72	100.994
GS0021	615988.2	3495681.18	81.929
GS0031	609624.19	3475559.72	123.97
GS0041	609440.86	3464583.14	107.124
GS0047	614963.37	3449314.7	40.056
GS0049	620784.79	3447594.69	81.485
GS0052	623965.15	3441389.63	80.997
GS0055	634274.88	3442258.55	83.377
GS0056	634251.5	3442268.32	83.497
GS0058	624923.23	3441739.18	76.733
GS0059	624897.42	3441735.15	77.402
GS0062	617858.24	3440274.93	76.785
GS0064	608181.9	3434773.96	33.761
GS0067	599950.63	3438516.62	54.996
GS0068	599946.55	3438540.98	54.837
GS0072	584745.37	3442444.18	49.712
GS0073	584744.56	3442425.29	48.927
GS0079	590833.46	3443687.42	60.227
GS0087	599626.07	3458275.84	63.648
GS0088	599661.39	3458289.04	62.405
GS0091	590947.03	3456346.27	100.068
GS0094	589767.75	3449398.22	81.267
GS0097	586227.91	3460028.14	93.559
GS0099	581592.41	3463842.17	89.076
GS0100	581604.85	3463815.51	88.889
GS0101	584678.6	3470476.43	96.389
GS0102	584698.92	3470453.82	97.612
GS0112	589239.99	3490233.38	90.297
GS0114	594857.89	3474368.51	122.669
GS0116	608215.71	3462516.29	109.968
GS0121	522920.76	3447209.51	55.008
GS0131	512407.47	3439811.56	58.73
GS0143	483308.46	3434841.9	37.661
GS0147	487861.34	3445199.01	70.667
GS0148	487881.56	3445176.05	69.912
GS0150	483370.74	3451791.5	87.9
GS0154	486944.9	3455121.82	62.003

GS0155	493580.26	3445993.75	59.581
GS0157	493853.1	3455318.32	79.422
GS0159	493818.06	3455345.61	80.385
GS0162	488561.56	3454129.82	71.945
GS0170	454626.39	3441334.54	86.025
GS0171	454647.83	3441369.46	85.291
GS0180	450412.05	3437309.17	90.023
GS0190	462596.65	3437528.15	84.681
GS0193	466985.34	3432866.52	80.496
GS0194	466961.91	3432900.63	81.651
GS0198	474862	3430700.57	24.62
GS0199	488891.93	3438309.8	31.619
GS0200	488870.57	3438290.12	31.326
GS0042	614834.12	3456593.02	90.123
GS0071	593933.9	3441470.58	65.677
GS0070	593915.23	3441511.49	65.465

GS0003



Point ID: GS0003

Northing: 3463968.57 Meters

Easting: 620264.92 Meters

Orthometric Height: 70.234 Meters

Latitude: 31 18 13.939176 N

Longitude: 85 44 10.521879 W

Ellipsoid Height: 43.411 Meters

GS0006



Point ID: GS0006

Northing: 3469201.23 Meters

Easting: 632001.92 Meters

Orthometric Height: 52.084 Meters

Latitude: 31 20 59.274580 N

Longitude: 85 36 44.137966 W

Ellipsoid Height: 25.332 Meters

GS0013



Point ID: GS0013

Northing: 3492328.93 Meters

Easting: 637707.61 Meters

Orthometric Height: 135.456 Meters

Latitude: 31 33 27.866153 N

Longitude: 85 32 56.687251 W

Ellipsoid Height: 109.104 Meters

GS0014



Point ID: GS0014

Northing: 3488387.47 Meters

Easting: 630154.29 Meters

Orthometric Height: 130.79 Meters

Latitude: 31 31 23.042966 N

Longitude: 85 37 44.987286 W

Ellipsoid Height: 104.413 Meters

GS0015



Point ID: GS0015

Northing: 3488384.79 Meters

Easting: 630123.43 Meters

Orthometric Height: 130.802 Meters

Latitude: 31 31 22.968210 N

Longitude: 85 37 46.158350 W

Ellipsoid Height: 104.425 Meters

GS0018



Point ID: GS0018

Northing: 3487176.72 Meters

Easting: 622890.59 Meters

Orthometric Height: 100.994 Meters

Latitude: 31 30 46.595393 N

Longitude: 85 42 20.882975 W

Ellipsoid Height: 74.622 Meters

GS0021



Point ID: GS0021

Northing: 3495681.18 Meters

Easting: 615988.2 Meters

Orthometric Height: 81.929 Meters

Latitude: 31 35 25.336519 N

Longitude: 85 46 38.919331 W

Ellipsoid Height: 55.64 Meters

GS0031



Point ID: GS0031

Northing: 3475559.72 Meters

Easting: 609624.19 Meters

Orthometric Height: 123.97 Meters

Latitude: 31 24 34.149823 N

Longitude: 85 50 48.382974 W

Ellipsoid Height: 97.4 Meters

GS0041



Point ID: GS0041

Northing: 3464583.14 Meters

Easting: 609440.86 Meters

Orthometric Height: 107.124 Meters

Latitude: 31 18 37.745425 N

Longitude: 85 50 59.667161 W

Ellipsoid Height: 80.342 Meters

GS0047



Point ID: GS0047

Northing: 3449314.7 Meters

Easting: 614963.37 Meters

Orthometric Height: 40.056 Meters

Latitude: 31 10 19.982018 N

Longitude: 85 47 37.086905 W

Ellipsoid Height: 12.932 Meters

GS0049



Point ID: GS0049

Northing: 3447594.69 Meters

Easting: 620784.79 Meters

Orthometric Height: 81.485 Meters

Latitude: 31 9 22.012476 N

Longitude: 85 43 57.962430 W

Ellipsoid Height: 54.307 Meters

GS0052



Point ID: GS0052

Northing: 3441389.63 Meters

Easting: 623965.15 Meters

Orthometric Height: 80.997 Meters

Latitude: 31 5 59.308011 N

Longitude: 85 42 0.614515 W

Ellipsoid Height: 53.674 Meters

GS0055



Point ID: GS0055

Northing: 3442258.55 Meters

Easting: 634274.88 Meters

Orthometric Height: 83.377 Meters

Latitude: 31 6 23.437737 N

Longitude: 85 35 31.126529 W

Ellipsoid Height: 55.969 Meters

GS0056



Point ID: GS0056

Northing: 3442268.32 Meters

Easting: 634251.5 Meters

Orthometric Height: 83.497 Meters

Latitude: 31 6 23.764456 N

Longitude: 85 35 32.004076 W

Ellipsoid Height: 56.089 Meters

GS0058



Point ID: GS0058

Northing: 3441739.18 Meters

Easting: 624923.23 Meters

Orthometric Height: 76.733 Meters

Latitude: 31 6 10.293648 N

Longitude: 85 41 24.301521 W

Ellipsoid Height: 49.407 Meters

GS0059



Point ID: GS0059

Northing: 3441735.15 Meters

Easting: 624897.42 Meters

Orthometric Height: 77.402 Meters

Latitude: 31 6 10.172640 N

Longitude: 85 41 25.277220 W

Ellipsoid Height: 50.076 Meters

GS0062



Point ID: GS0062

Northing: 3440274.93 Meters

Easting: 617858.24 Meters

Orthometric Height: 76.785 Meters

Latitude: 31 5 25.374799 N

Longitude: 85 45 51.557653 W

Ellipsoid Height: 49.488 Meters

GS0064



Point ID: GS0064

Northing: 3434773.96 Meters

Easting: 608181.9 Meters

Orthometric Height: 33.761 Meters

Latitude: 31 2 30.077048 N

Longitude: 85 51 58.838298 W

Ellipsoid Height: 6.416 Meters

GS0067



Point ID: GS0067

Northing: 3438516.62 Meters

Easting: 599950.63 Meters

Orthometric Height: 54.996 Meters

Latitude: 31 4 34.254705 N

Longitude: 85 57 7.984942 W

Ellipsoid Height: 27.748 Meters

GS0068



Point ID: GS0068

Northing: 3438540.98 Meters

Easting: 599946.55 Meters

Orthometric Height: 54.837 Meters

Latitude: 31 4 35.047171 N

Longitude: 85 57 8.130111 W

Ellipsoid Height: 27.589 Meters

GS0072



Point ID: GS0072

Northing: 3442444.18 Meters

Easting: 584745.37 Meters

Orthometric Height: 49.712 Meters

Latitude: 31 6 46.126202 N

Longitude: 86 6 40.562043 W

Ellipsoid Height: 22.598 Meters

GS0073



Point ID: GS0073

Northing: 3442425.29 Meters

Easting: 584744.56 Meters

Orthometric Height: 48.927 Meters

Latitude: 31 6 45.512917 N

Longitude: 86 6 40.598142 W

Ellipsoid Height: 21.813 Meters

GS0079



Point ID: GS0079

Northing: 3443687.42 Meters

Easting: 590833.46 Meters

Orthometric Height: 60.227 Meters

Latitude: 31 7 24.862958 N

Longitude: 86 2 50.337590 W

Ellipsoid Height: 33.09 Meters

GS0087



Point ID: GS0087

Northing: 3458275.84 Meters

Easting: 599626.07 Meters

Orthometric Height: 63.648 Meters

Latitude: 31 15 16.081298 N

Longitude: 85 57 13.184568 W

Ellipsoid Height: 36.745 Meters

GS0088



Point ID: GS0088

Northing: 3458289.04 Meters

Easting: 599661.39 Meters

Orthometric Height: 62.405 Meters

Latitude: 31 15 16.498930 N

Longitude: 85 57 11.844621 W

Ellipsoid Height: 35.502 Meters

GS0091



Point ID: GS0091

Northing: 3456346.27 Meters

Easting: 590947.03 Meters

Orthometric Height: 100.068 Meters

Latitude: 31 14 15.967508 N

Longitude: 86 2 41.925387 W

Ellipsoid Height: 73.136 Meters

GS0094



Point ID: GS0094

Northing: 3449398.22 Meters

Easting: 589767.75 Meters

Orthometric Height: 81.267 Meters

Latitude: 31 10 30.636626 N

Longitude: 86 3 28.738016 W

Ellipsoid Height: 54.219 Meters

GS0097



Point ID: GS0097

Northing: 3460028.14 Meters

Easting: 586227.91 Meters

Orthometric Height: 93.559 Meters

Latitude: 31 16 16.838964 N

Longitude: 86 5 39.161294 W

Ellipsoid Height: 66.696 Meters

GS0099



Point ID: GS0099

Northing: 3463842.17 Meters

Easting: 581592.41 Meters

Orthometric Height: 89.076 Meters

Latitude: 31 18 21.915331 N

Longitude: 86 8 33.321814 W

Ellipsoid Height: 62.268 Meters

GS0100



Point ID: GS0100

Northing: 3463815.51 Meters

Easting: 581604.85 Meters

Orthometric Height: 88.889 Meters

Latitude: 31 18 21.046412 N

Longitude: 86 8 32.859065 W

Ellipsoid Height: 62.081 Meters

GS0101



Point ID: GS0101

Northing: 3470476.43 Meters

Easting: 584678.6 Meters

Orthometric Height: 96.389 Meters

Latitude: 31 21 56.588467 N

Longitude: 86 6 34.552976 W

Ellipsoid Height: 69.666 Meters

GS0102



Point ID: GS0102

Northing: 3470453.82 Meters

Easting: 584698.92 Meters

Orthometric Height: 97.612 Meters

Latitude: 31 21 55.848940 N

Longitude: 86 6 33.791001 W

Ellipsoid Height: 70.888 Meters

GS0112



Point ID: GS0112

Northing: 3490233.38 Meters

Easting: 589239.99 Meters

Orthometric Height: 90.297 Meters

Latitude: 31 32 37.002826 N

Longitude: 86 3 35.500872 W

Ellipsoid Height: 63.732 Meters

GS0114



Point ID: GS0114

Northing: 3474368.51 Meters

Easting: 594857.89 Meters

Orthometric Height: 122.669 Meters

Latitude: 31 24 0.155439 N

Longitude: 86 0 7.934525 W

Ellipsoid Height: 96.042 Meters

GS0116



Point ID: GS0116

Northing: 3462516.29 Meters

Easting: 608215.71 Meters

Orthometric Height: 109.968 Meters

Latitude: 31 17 31.035997 N

Longitude: 85 51 46.814914 W

Ellipsoid Height: 83.144 Meters

GS0121



Point ID: GS0121

Northing: 3447209.51 Meters

Easting: 522920.76 Meters

Orthometric Height: 55.008 Meters

Latitude: 31 9 31.142116 N

Longitude: 86 45 34.228849 W

Ellipsoid Height: 27.869 Meters

GS0131



Point ID: GS0131

Northing: 3439811.56 Meters

Easting: 512407.47 Meters

Orthometric Height: 58.73 Meters

Latitude: 31 5 31.406714 N

Longitude: 86 52 11.667321 W

Ellipsoid Height: 31.373 Meters

GS0143



Point ID: GS0143

Northing: 3434841.9 Meters

Easting: 483308.46 Meters

Orthometric Height: 37.661 Meters

Latitude: 31 2 49.785465 N

Longitude: 87 10 29.743452 W

Ellipsoid Height: 9.892 Meters

GS0147



Point ID: GS0147

Northing: 3445199.01 Meters

Easting: 487861.34 Meters

Orthometric Height: 70.667 Meters

Latitude: 31 8 26.417123 N

Longitude: 87 7 38.419649 W

Ellipsoid Height: 42.919 Meters

GS0148



Point ID: GS0148

Northing: 3445176.05 Meters

Easting: 487881.56 Meters

Orthometric Height: 69.912 Meters

Latitude: 31 8 25.672284 N

Longitude: 87 7 37.655211 W

Ellipsoid Height: 42.165 Meters

GS0150



Point ID: GS0150

Northing: 3451791.5 Meters

Easting: 483370.74 Meters

Orthometric Height: 87.9 Meters

Latitude: 31 12 0.359630 N

Longitude: 87 10 28.400463 W

Ellipsoid Height: 60.081 Meters

GS0154



Point ID: GS0154

Northing: 3455121.82 Meters

Easting: 486944.9 Meters

Orthometric Height: 62.003 Meters

Latitude: 31 13 48.700081 N

Longitude: 87 8 13.493744 W

Ellipsoid Height: 34.216 Meters

GS0155



Point ID: GS0155

Northing: 3445993.75 Meters

Easting: 493580.26 Meters

Orthometric Height: 59.581 Meters

Latitude: 31 8 52.395963 N

Longitude: 87 4 2.461581 W

Ellipsoid Height: 31.903 Meters

GS0157



Point ID: GS0157

Northing: 3455318.32 Meters

Easting: 493853.1 Meters

Orthometric Height: 79.422 Meters

Latitude: 31 13 55.287765 N

Longitude: 87 3 52.362372 W

Ellipsoid Height: 51.729 Meters

GS0159



Point ID: GS0159

Northing: 3455345.61 Meters

Easting: 493818.06 Meters

Orthometric Height: 80.385 Meters

Latitude: 31 13 56.173537 N

Longitude: 87 3 53.687712 W

Ellipsoid Height: 52.692 Meters

GS0162



Point ID: GS0162

Northing: 3454129.82 Meters

Easting: 488561.56 Meters

Orthometric Height: 71.945 Meters

Latitude: 31 13 16.538925 N

Longitude: 87 7 12.341724 W

Ellipsoid Height: 44.184 Meters

GS0170



Point ID: GS0170

Northing: 3441334.54 Meters

Easting: 454626.39 Meters

Orthometric Height: 86.025 Meters

Latitude: 31 6 17.952670 N

Longitude: 87 28 32.897248 W

Ellipsoid Height: 57.903 Meters

GS0171



Point ID: GS0171

Northing: 3441369.46 Meters

Easting: 454647.83 Meters

Orthometric Height: 85.291 Meters

Latitude: 31 6 19.089980 N

Longitude: 87 28 32.093423 W

Ellipsoid Height: 57.169 Meters

GS0180



Point ID: GS0180

Northing: 3437309.17 Meters

Easting: 450412.05 Meters

Orthometric Height: 90.023 Meters

Latitude: 31 4 6.586809 N

Longitude: 87 31 11.275348 W

Ellipsoid Height: 61.872 Meters

GS0190



Point ID: GS0190

Northing: 3437528.15 Meters

Easting: 462596.65 Meters

Orthometric Height: 84.681 Meters

Latitude: 31 4 15.324998 N

Longitude: 87 23 31.511239 W

Ellipsoid Height: 56.665 Meters

GS0193



Point ID: GS0193

Northing: 3432866.52 Meters

Easting: 466985.34 Meters

Orthometric Height: 80.496 Meters

Latitude: 31 1 44.376565 N

Longitude: 87 20 45.347593 W

Ellipsoid Height: 52.553 Meters

GS0194



Point ID: GS0194

Northing: 3432900.63 Meters

Easting: 466961.91 Meters

Orthometric Height: 81.651 Meters

Latitude: 87 20 46.235291 W

Longitude: 31 1 45.481993 N

Ellipsoid Height: 53.708 Meters

GS0198



Point ID: GS0198

Northing: 3430700.57 Meters

Easting: 474862 Meters

Orthometric Height: 24.62 Meters

Latitude: 87 15 48.041335 W

Longitude: 31 0 34.720864 N

Ellipsoid Height: -3.233 Meters

GS0199



Point ID: GS0199

Northing: 3438309.8 Meters

Easting: 488891.93 Meters

Orthometric Height: 31.619 Meters

Latitude: 87 6 59.226344 W

Longitude: 31 4 42.671805 N

Ellipsoid Height: 3.898 Meters

GS0200



Point ID: GS0200

Northing: 3438290.12 Meters

Easting: 488870.57 Meters

Orthometric Height: 31.326 Meters

Latitude: 87 7 0.031722 W

Longitude: 31 4 42.032042 N

Ellipsoid Height: 3.605 Meters

GS0042



Point ID: GS0042

Northing: 3456593.02 Meters

Easting: 614834.12 Meters

Orthometric Height: 90.123 Meters

Latitude: 31 14 16.393845 N

Longitude: 85 47 38.970690 W

Ellipsoid Height: 63.152 Meters

GS0071



Point ID: GS0071

Northing: 3441470.58 Meters

Easting: 593933.9 Meters

Orthometric Height: 65.677 Meters

Latitude: 31 6 11.983723 N

Longitude: 86 0 54.029955 W

Ellipsoid Height: 38.496 Meters

GS0070



Point ID: GS0070

Northing: 3441511.49 Meters

Easting: 593915.23 Meters

Orthometric Height: 65.465 Meters

Latitude: 31 6 13.317763 N

Longitude: 86 0 54.721243 W

Ellipsoid Height: 38.285 Meters

Non-Vegetated Vertical Accuracy Checkpoints Urban Terrain

The Map shows the overall distribution of the Non-Vegetated Vertical Accuracy Checkpoint, Urban Terrain throughout the AOI. The following tables contain a list of the control using Easting, Northing, and Orthometric height. The coordinate system displayed is Universal Transverse Mercator UTM Zone 16, North American Datum 1983 (2011), North American Vertical Datum of 1988, Geoid 18 and using Meters for measurement.

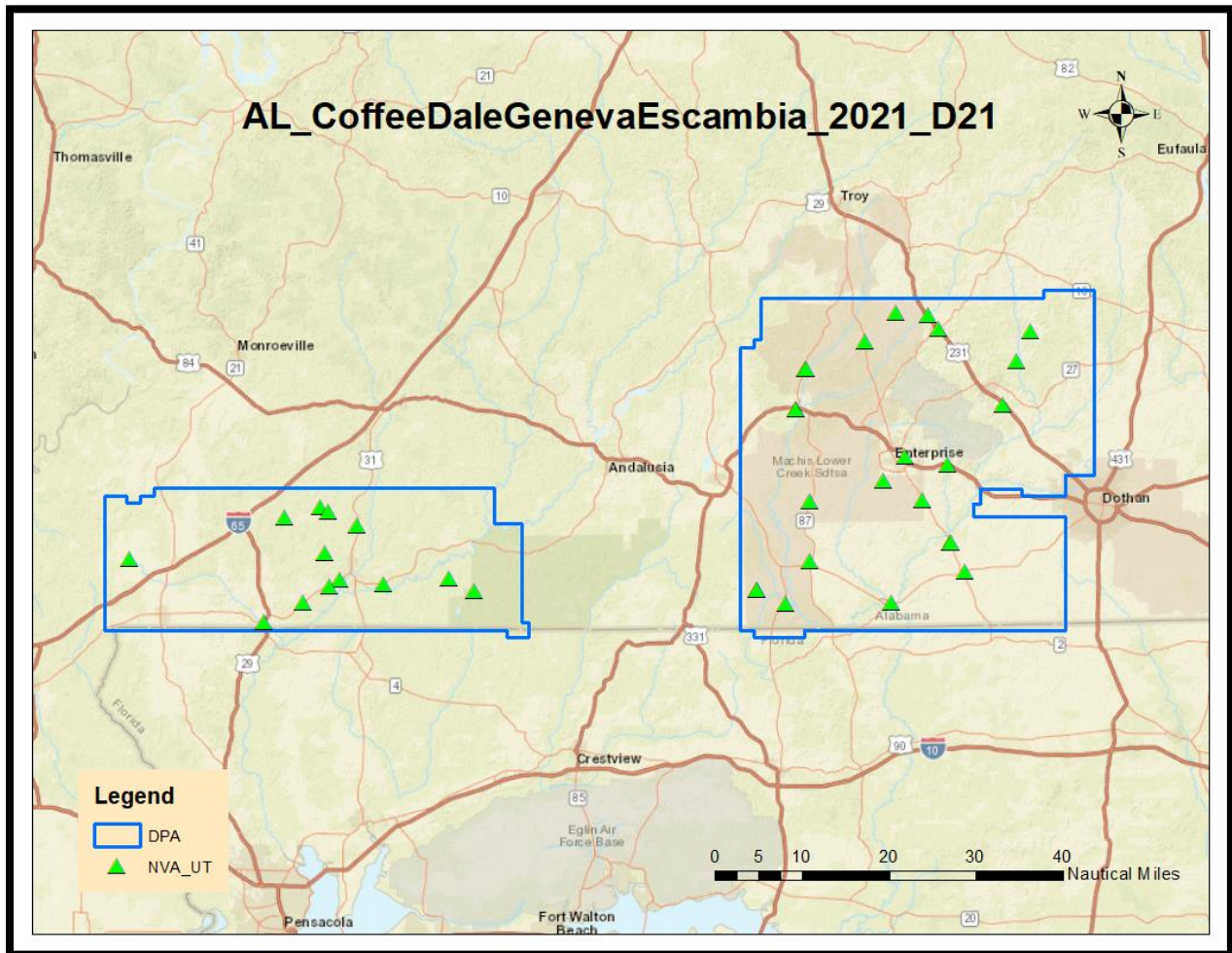


TABLE: Urban Terrain

Point ID	Easting	Northing	Ortho
GS0043	614800.99	3456571.81	89.889
GS0002	620285.29	3463985.38	70.967
GS0007	631878.37	3476678.43	103.403
GS0010	634751.14	3486158.58	83.014
GS0012	637755.82	3492332.31	135.824
GS0020	618331.13	3492812.48	149.192
GS0022	615985.59	3495735.9	82.381
GS0023	609118.84	3496377.4	92.716
GS0027	602673.76	3490296.48	111.759
GS0036	611191	3465806.56	107.861
GS0048	620771.85	3447573.89	81.476
GS0050	620806.41	3447589.17	82.063
GS0051	623940.12	3441372.25	80.926
GS0063	608159.25	3434775.2	33.915
GS0076	585679.56	3434460.32	48.685
GS0077	579572.68	3437510.33	45.757
GS0078	579598.98	3437497.19	45.316
GS0080	590865.26	3443700.19	60.844
GS0085	606596.75	3460710.33	107.836
GS0089	590961.35	3456392.69	98.656
GS0105	588009.36	3475921.58	59.674
GS0106	588037.3	3475919.46	59.701
GS0107	589967.69	3484320.96	66.535
GS0109	590011.21	3484326.86	66.195
GS0126	514239.4	3439888.05	72.518
GS0130	519659.57	3437297.12	70.795
GS0138	500337.14	3438787.71	27.633
GS0139	491082.2	3439640.2	38.82
GS0144	483282.54	3434862.47	37.646
GS0146	487839.64	3445218.4	71.49
GS0152	486904.76	3455113.88	64.194
GS0156	494718.48	3451274.71	72.429
GS0160	488582.39	3454120.87	71.72
GS0163	479215.61	3452827.1	50.181
GS0176	446209.71	3443979.04	94.433
GS0195	474833.62	3430671.32	24.602
GS0202	488836.51	3438240	30.913

GS0043



Point ID: GS0043

Northing: 3456571.81 Meters

Easting: 614800.99 Meters

Orthometric Height: 89.889 Meters

Latitude: 31 14 15.716994 N

Longitude: 85 47 40.231805 W

Ellipsoid Height: 62.918 Meters

GS0002



Point ID: GS0002

Northing: 3463985.38 Meters

Easting: 620285.29 Meters

Orthometric Height: 70.967 Meters

Latitude: 31 18 14.477491 N

Longitude: 85 44 9.744171 W

Ellipsoid Height: 44.144 Meters

GS0007



Point ID: GS0007

Northing: 3476678.43 Meters

Easting: 631878.37 Meters

Orthometric Height: 103.403 Meters

Latitude: 31 25 2.125767 N

Longitude: 85 36 45.244325 W

Ellipsoid Height: 76.808 Meters

GS0010



Point ID: GS0010

Northing: 3486158.58 Meters

Easting: 634751.14 Meters

Orthometric Height: 83.014 Meters

Latitude: 31 30 8.767870 N

Longitude: 85 34 51.829030 W

Ellipsoid Height: 56.57 Meters

GS0012



Point ID: GS0012

Northing: 3492332.31 Meters

Easting: 637755.82 Meters

Orthometric Height: 135.824 Meters

Latitude: 31 33 27.955139 N

Longitude: 85 32 54.857522 W

Ellipsoid Height: 109.472 Meters

GS0020



Point ID: GS0020

Northing: 3492812.48 Meters

Easting: 618331.13 Meters

Orthometric Height: 149.192 Meters

Latitude: 31 33 51.322430 N

Longitude: 85 45 11.277048 W

Ellipsoid Height: 122.892 Meters

GS0022



Point ID: GS0022

Northing: 3495735.9 Meters

Easting: 615985.59 Meters

Orthometric Height: 82.381 Meters

Latitude: 31 35 27.114411 N

Longitude: 85 46 38.995131 W

Ellipsoid Height: 56.093 Meters

GS0023



Point ID: GS0023

Northing: 3496377.4 Meters

Easting: 609118.84 Meters

Orthometric Height: 92.716 Meters

Latitude: 31 35 50.365451 N

Longitude: 85 50 59.247666 W

Ellipsoid Height: 66.404 Meters

GS0027



Point ID: GS0027

Northing: 3490296.48 Meters

Easting: 602673.76 Meters

Orthometric Height: 111.759 Meters

Latitude: 31 32 35.024904 N

Longitude: 85 55 6.062899 W

Ellipsoid Height: 85.362 Meters

GS0036



Point ID: GS0036

Northing: 3465806.56 Meters

Easting: 611191 Meters

Orthometric Height: 107.861 Meters

Latitude: 31 19 16.878480 N

Longitude: 85 49 52.977240 W

Ellipsoid Height: 81.101 Meters

GS0048



Point ID: GS0048

Northing: 3447573.89 Meters

Easting: 620771.85 Meters

Orthometric Height: 81.476 Meters

Latitude: 31 9 21.341806 N

Longitude: 85 43 58.459954 W

Ellipsoid Height: 54.297 Meters

GS0050



Point ID: GS0050

Northing: 3447589.17 Meters

Easting: 620806.41 Meters

Orthometric Height: 82.063 Meters

Latitude: 31 9 21.825118 N

Longitude: 85 43 57.148175 W

Ellipsoid Height: 54.884 Meters

GS0051



Point ID: GS0051

Northing: 3441372.25 Meters

Easting: 623940.12 Meters

Orthometric Height: 80.926 Meters

Latitude: 31 5 58.753226 N

Longitude: 85 42 1.566920 W

Ellipsoid Height: 53.603 Meters

GS0063



Point ID: GS0063

Northing: 3434775.2 Meters

Easting: 608159.25 Meters

Orthometric Height: 33.915 Meters

Latitude: 31 2 30.124857 N

Longitude: 85 51 59.691939 W

Ellipsoid Height: 6.57 Meters

GS0076



Point ID: GS0076

Northing: 3434460.32 Meters

Easting: 585679.56 Meters

Orthometric Height: 48.685 Meters

Latitude: 31 2 26.572375 N

Longitude: 86 6 7.734775 W

Ellipsoid Height: 21.488 Meters

GS0077



Point ID: GS0077

Northing: 3437510.33 Meters

Easting: 579572.68 Meters

Orthometric Height: 45.757 Meters

Latitude: 31 4 7.182114 N

Longitude: 86 9 57.231511 W

Ellipsoid Height: 18.624 Meters

GS0078



Point ID: GS0078

Northing: 3437497.19 Meters

Easting: 579598.98 Meters

Orthometric Height: 45.316 Meters

Latitude: 31 4 6.748787 N

Longitude: 86 9 56.242802 W

Ellipsoid Height: 18.183 Meters

GS0080



Point ID: GS0080

Northing: 3443700.19 Meters

Easting: 590865.26 Meters

Orthometric Height: 60.844 Meters

Latitude: 31 7 25.268912 N

Longitude: 86 2 49.133047 W

Ellipsoid Height: 33.707 Meters

GS0085



Point ID: GS0085

Northing: 3460710.33 Meters

Easting: 606596.75 Meters

Orthometric Height: 107.836 Meters

Latitude: 31 16 32.923571 N

Longitude: 85 52 48.734030 W

Ellipsoid Height: 80.977 Meters

GS0089



Point ID: GS0089

Northing: 3456392.69 Meters

Easting: 590961.35 Meters

Orthometric Height: 98.656 Meters

Latitude: 31 14 17.471183 N

Longitude: 86 2 41.368810 W

Ellipsoid Height: 71.725 Meters

GS0105



Point ID: GS0105

Northing: 3475921.58 Meters

Easting: 588009.36 Meters

Orthometric Height: 59.674 Meters

Latitude: 31 24 52.540536 N

Longitude: 86 4 26.748506 W

Ellipsoid Height: 33.021 Meters

GS0106



Point ID: GS0106

Northing: 3475919.46 Meters

Easting: 588037.3 Meters

Orthometric Height: 59.701 Meters

Latitude: 31 24 52.464071 N

Longitude: 86 4 25.691242 W

Ellipsoid Height: 33.048 Meters

GS0107



Point ID: GS0107

Northing: 3484320.96 Meters

Easting: 589967.69 Meters

Orthometric Height: 66.535 Meters

Latitude: 31 29 24.784348 N

Longitude: 86 3 9.843408 W

Ellipsoid Height: 39.958 Meters

GS0109



Point ID: GS0109

Northing: 3484326.86 Meters

Easting: 590011.21 Meters

Orthometric Height: 66.195 Meters

Latitude: 31 29 24.963851 N

Longitude: 86 3 8.191798 W

Ellipsoid Height: 39.618 Meters

GS0126



Point ID: GS0126

Northing: 3439888.05 Meters

Easting: 514239.4 Meters

Orthometric Height: 72.518 Meters

Latitude: 31 5 33.816408 N

Longitude: 86 51 2.515563 W

Ellipsoid Height: 45.198 Meters

GS0130



Point ID: GS0130

Northing: 3437297.12 Meters

Easting: 519659.57 Meters

Orthometric Height: 70.795 Meters

Latitude: 31 49.373531 N

Longitude: 86 47 38.106734 W

Ellipsoid Height: 43.568 Meters

GS0138



Point ID: GS0138

Northing: 3438787.71 Meters

Easting: 500337.14 Meters

Orthometric Height: 27.633 Meters

Latitude: 31 4 58.385213 N

Longitude: 86 59 47.275524 W

Ellipsoid Height: 0.063 Meters

GS0139



Point ID: GS0139

Northing: 3439640.2 Meters

Easting: 491082.2 Meters

Orthometric Height: 38.82 Meters

Latitude: 31 5 25.954628 N

Longitude: 87 5 36.606133 W

Ellipsoid Height: 11.12 Meters

GS0144



Point ID: GS0144

Northing: 3434862.47 Meters

Easting: 483282.54 Meters

Orthometric Height: 37.646 Meters

Latitude: 31 2 50.452426 N

Longitude: 87 10 30.722397 W

Ellipsoid Height: 9.877 Meters

GS0146



Point ID: GS0146

Northing: 3445218.4 Meters

Easting: 487839.64 Meters

Orthometric Height: 71.49 Meters

Latitude: 31 8 27.046248 N

Longitude: 87 7 39.240303 W

Ellipsoid Height: 43.742 Meters

GS0152



Point ID: GS0152

Northing: 3455113.88 Meters

Easting: 486904.76 Meters

Orthometric Height: 64.194 Meters

Latitude: 31 13 48.440708 N

Longitude: 87 8 15.010485 W

Ellipsoid Height: 36.407 Meters

GS0156



Point ID: GS0156

Northing: 3451274.71 Meters

Easting: 494718.48 Meters

Orthometric Height: 72.429 Meters

Latitude: 31 11 43.956342 N

Longitude: 87 3 19.572968 W

Ellipsoid Height: 44.761 Meters

GS0160



Point ID: GS0160

Northing: 3454120.87 Meters

Easting: 488582.39 Meters

Orthometric Height: 71.72 Meters

Latitude: 31 13 16.248689 N

Longitude: 87 7 11.554379 W

Ellipsoid Height: 43.96 Meters

GS0163



Point ID: GS0163

Northing: 3452827.1 Meters

Easting: 479215.61 Meters

Orthometric Height: 50.181 Meters

Latitude: 31 12 33.758764 N

Longitude: 87 13 5.494516 W

Ellipsoid Height: 22.305 Meters

GS0176



Point ID: GS0176

Northing: 3443979.04 Meters

Easting: 446209.71 Meters

Orthometric Height: 94.433 Meters

Latitude: 31 7 42.568211 N

Longitude: 87 33 51.130753 W

Ellipsoid Height: 66.218 Meters

GS0195



Point ID: GS0195

Northing: 3430671.32 Meters

Easting: 474833.62 Meters

Orthometric Height: 24.602 Meters

Latitude: 87 15 49.108964 W

Longitude: 31 0 33.768561 N

Ellipsoid Height: -3.252 Meters

GS0202



Point ID: GS0202

Northing: 3438240 Meters

Easting: 488836.51 Meters

Orthometric Height: 30.913 Meters

Latitude: 87 7 1.314847 W

Longitude: 31 4 40.402565 N

Ellipsoid Height: 3.192 Meters

Vegetated Vertical Accuracy Checkpoints Low Vegetation

The Map shows the overall distribution of the Vegetated Vertical Accuracy Checkpoint, Low Vegetation throughout the AOI. The following tables contain a list of the control using Easting, Northing, and Orthometric height. The coordinate system displayed is Universal Transverse Mercator UTM Zone 16, North American Datum 1983 (2011), North American Vertical Datum of 1988, Geoid 18 and using Meters for measurement.

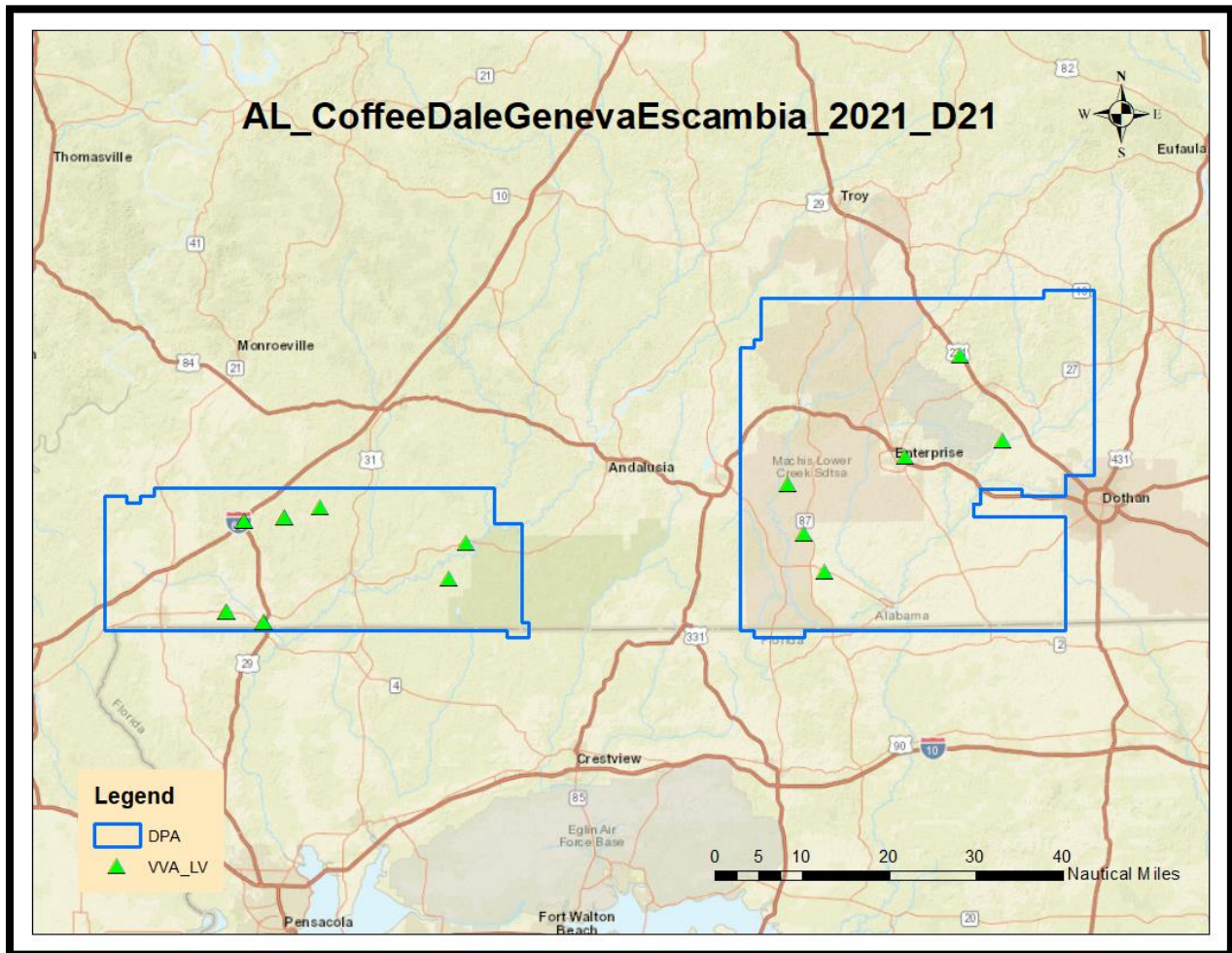


TABLE: Low Vegetation

Point ID	Easting	Northing	Ortho
GS0005	631961.39	3469210.69	51.563
GS0017	622925.69	3487186.4	101.131
GS0035	611198.14	3465781.65	107.183
GS0069	593940.63	3441498.92	66.013
GS0093	589738.79	3449380.99	81.727
GS0096	586196.8	3460011.59	94.224
GS0124	517750.63	3447594.57	38.49
GS0125	514227.72	3439913.49	71.897
GS0153	486868.59	3455097.79	66.641
GS0164	479239.75	3452814.78	50.041
GS0165	479199.72	3452830.47	50.04
GS0168	470666.65	3452023.03	104.697
GS0169	470649.89	3452048.85	104.774
GS0191	466946.77	3432819.47	81.307
GS0192	466970.73	3432842.53	80.609
GS0196	474851.53	3430651.84	24.129
GS0197	474866.92	3430674.11	24.553

GS0005



Point ID: GS0005

Northing: 3469210.69 Meters

Easting: 631961.39 Meters

Orthometric Height: 51.563 Meters

Latitude: 31 20 59.598266 N

Longitude: 85 36 45.666999 W

Ellipsoid Height: 24.812 Meters

GS0017



Point ID: GS0017

Northing: 3487186.4 Meters

Easting: 622925.69 Meters

Orthometric Height: 101.131 Meters

Latitude: 31 30 46.896316 N

Longitude: 85 42 19.548286 W

Ellipsoid Height: 74.759 Meters

GS0035



Point ID: GS0035

Northing: 3465781.65 Meters

Easting: 611198.14 Meters

Orthometric Height: 107.183 Meters

Latitude: 31 19 16.067131 N

Longitude: 85 49 52.717050 W

Ellipsoid Height: 80.422 Meters

GS0069



Point ID: GS0069

Northing: 3441498.92 Meters

Easting: 593940.63 Meters

Orthometric Height: 66.013 Meters

Latitude: 31 6 12.902126 N

Longitude: 86 0 53.766613 W

Ellipsoid Height: 38.832 Meters

GS0093



Point ID: GS0093

Northing: 3449380.99 Meters

Easting: 589738.79 Meters

Orthometric Height: 81.727 Meters

Latitude: 31 10 30.085081 N

Longitude: 86 3 29.837298 W

Ellipsoid Height: 54.679 Meters

GS0096



Point ID: GS0096

Northing: 3460011.59 Meters

Easting: 586196.8 Meters

Orthometric Height: 94.224 Meters

Latitude: 31 16 16.309738 N

Longitude: 86 5 40.342824 W

Ellipsoid Height: 67.361 Meters

GS0124



Point ID: GS0124

Northing: 3447594.57 Meters

Easting: 517750.63 Meters

Orthometric Height: 38.49 Meters

Latitude: 31 9 43.973504 N

Longitude: 86 48 49.491171 W

Ellipsoid Height: 11.243 Meters

GS0125



Point ID: GS0125

Northing: 3439913.49 Meters

Easting: 514227.72 Meters

Orthometric Height: 71.897 Meters

Latitude: 31 5 34.643288 N

Longitude: 86 51 2.954974 W

Ellipsoid Height: 44.577 Meters

GS0153



Point ID: GS0153

Northing: 3455097.79 Meters

Easting: 486868.59 Meters

Orthometric Height: 66.641 Meters

Latitude: 31 13 47.916480 N

Longitude: 87 8 16.377087 W

Ellipsoid Height: 38.853 Meters

GS0164



Point ID: GS0164

Northing: 3452814.78 Meters

Easting: 479239.75 Meters

Orthometric Height: 50.041 Meters

Latitude: 31 12 33.360353 N

Longitude: 87 13 4.581131 W

Ellipsoid Height: 22.165 Meters

GS0165



Point ID: GS0165

Northing: 3452830.47 Meters

Easting: 479199.72 Meters

Orthometric Height: 50.04 Meters

Latitude: 31 12 33.867212 N

Longitude: 87 13 6.095249 W

Ellipsoid Height: 22.164 Meters

GS0168



Point ID: GS0168

Northing: 3452023.03 Meters

Easting: 470666.65 Meters

Orthometric Height: 104.697 Meters

Latitude: 31 12 6.980498 N

Longitude: 87 18 28.493348 W

Ellipsoid Height: 76.734 Meters

GS0169



Point ID: GS0169

Northing: 3452048.85 Meters

Easting: 470649.89 Meters

Orthometric Height: 104.774 Meters

Latitude: 31 12 7.817538 N

Longitude: 87 18 29.129186 W

Ellipsoid Height: 76.811 Meters

GS0191



Point ID: GS0191

Northing: 3432819.47 Meters

Easting: 466946.77 Meters

Orthometric Height: 81.307 Meters

Latitude: 31 1 42.844337 N

Longitude: 87 20 46.796695 W

Ellipsoid Height: 53.364 Meters

GS0192



Point ID: GS0192

Northing: 3432842.53 Meters

Easting: 466970.73 Meters

Orthometric Height: 80.609 Meters

Latitude: 31 1 43.595653 N

Longitude: 87 20 45.895643 W

Ellipsoid Height: 52.666 Meters

GS0196



Point ID: GS0196

Northing: 3430651.84 Meters

Easting: 474851.53 Meters

Orthometric Height: 24.129 Meters

Latitude: 87 15 48.431610 W

Longitude: 31 0 33.137175 N

Ellipsoid Height: -3.724 Meters

GS0197



Point ID: GS0197

Northing: 3430674.11 Meters

Easting: 474866.92 Meters

Orthometric Height: 24.553 Meters

Latitude: 87 15 47.853192 W

Longitude: 31 0 33.861646 N

Ellipsoid Height: -3.3 Meters

Vegetated Vertical Accuracy Checkpoints Medium Vegetation

The Map shows the overall distribution of the Vegetated Vertical Accuracy Checkpoint, Medium Vegetation throughout the AOI. The following tables contain a list of the control using Easting, Northing, and Orthometric height. The coordinate system displayed is Universal Transverse Mercator UTM Zone 16, North American Datum 1983 (2011), North American Vertical Datum of 1988, Geoid 18 and using Meters for measurement.

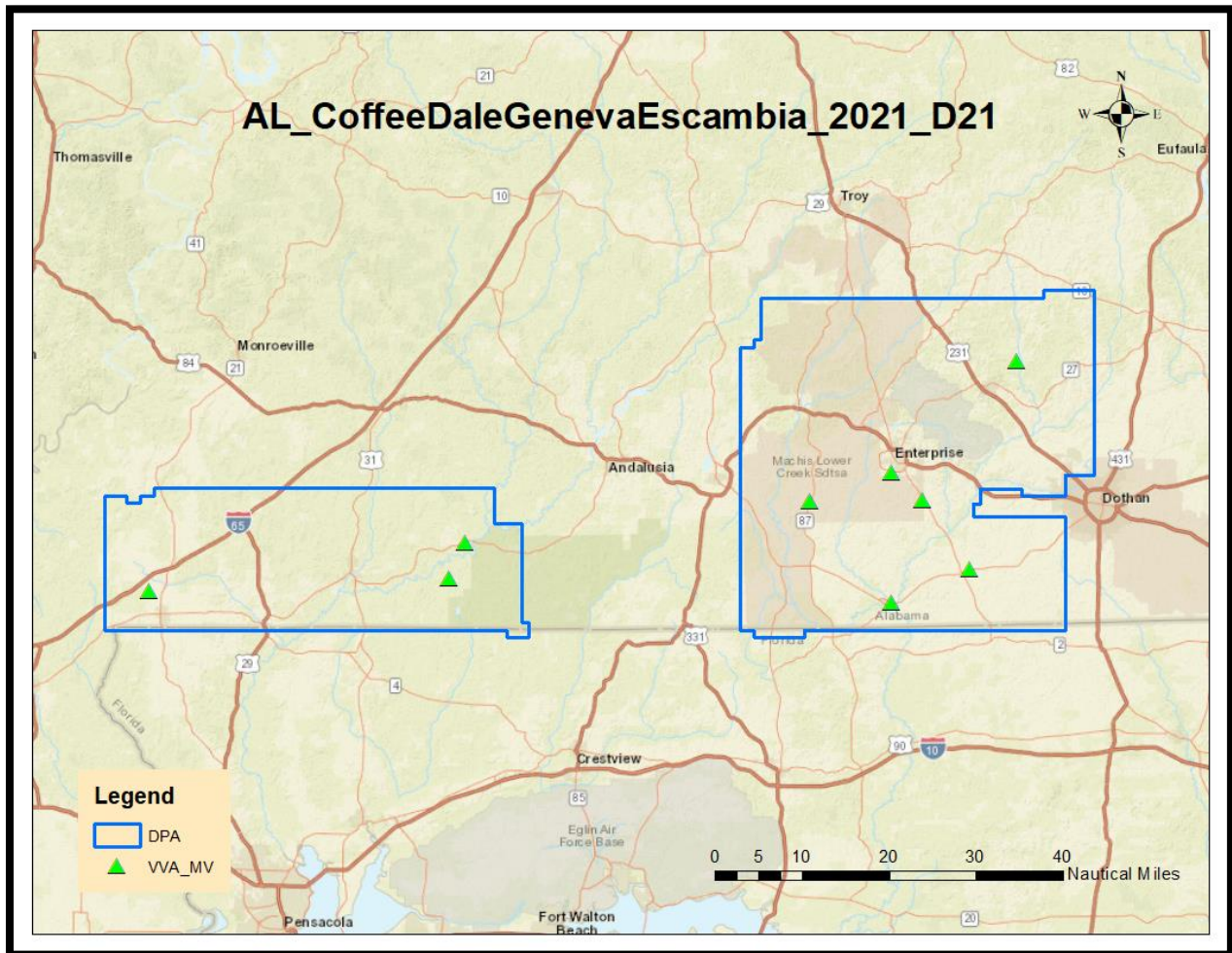


TABLE: Medium Vegetation

Point ID	Easting	Northing	Ortho
GS0009	634783.2	3486142.42	83.01
GS0044	614782.86	3456525.92	88.832
GS0057	624911.72	3441760.91	76.813
GS0065	608205.26	3434763.88	33.962
GS0090	590928.52	3456361.56	99.93
GS0117	608225.09	3462470.51	109.66
GS0123	517722.56	3447587.91	39.619
GS0127	514221.55	3439874.38	71.654
GS0179	450392.37	3437284.39	90.154

GS0009



Point ID: GS0009

Northing: 3486142.42 Meters

Easting: 634783.2 Meters

Orthometric Height: 83.01 Meters

Latitude: 31 30 8.229858 N

Longitude: 85 34 50.621758 W

Ellipsoid Height: 56.566 Meters

GS0044



Point ID: GS0044

Northing: 3456525.92 Meters

Easting: 614782.86 Meters

Orthometric Height: 88.832 Meters

Latitude: 31 14 14.232917 N

Longitude: 85 47 40.935910 W

Ellipsoid Height: 61.86 Meters

GS0057



Point ID: GS0057

Northing: 3441760.91 Meters

Easting: 624911.72 Meters

Orthometric Height: 76.813 Meters

Latitude: 31 6 11.003532 N

Longitude: 85 41 24.726342 W

Ellipsoid Height: 49.487 Meters

GS0065



Point ID: GS0065

Northing: 3434763.88 Meters

Easting: 608205.26 Meters

Orthometric Height: 33.962 Meters

Latitude: 31 2 29.741846 N

Longitude: 85 51 57.960799 W

Ellipsoid Height: 6.617 Meters

GS0090



Point ID: GS0090

Northing: 3456361.56 Meters

Easting: 590928.52 Meters

Orthometric Height: 99.93 Meters

Latitude: 31 14 16.469580 N

Longitude: 86 2 42.619814 W

Ellipsoid Height: 72.999 Meters

GS0117



Point ID: GS0117

Northing: 3462470.51 Meters

Easting: 608225.09 Meters

Orthometric Height: 109.66 Meters

Latitude: 31 17 29.545931 N

Longitude: 85 51 46.478035 W

Ellipsoid Height: 82.835 Meters

GS0123



Point ID: GS0123

Northing: 3447587.91 Meters

Easting: 517722.56 Meters

Orthometric Height: 39.619 Meters

Latitude: 31 9 43.758703 N

Longitude: 86 48 50.552167 W

Ellipsoid Height: 12.372 Meters

GS0127



Point ID: GS0127

Northing: 3439874.38 Meters

Easting: 514221.55 Meters

Orthometric Height: 71.654 Meters

Latitude: 31 5 33.373250 N

Longitude: 86 51 3.190117 W

Ellipsoid Height: 44.334 Meters

GS0179



Point ID: GS0179

Northing: 3437284.39 Meters

Easting: 450392.37 Meters

Orthometric Height: 90.154 Meters

Latitude: 31 4 5.778862 N

Longitude: 87 31 12.013428 W

Ellipsoid Height: 62.003 Meters

Vegetated Vertical Accuracy Checkpoints High Vegetation

The Map shows the overall distribution of the Vegetated Vertical Accuracy Checkpoint, High Vegetation throughout the AOI. The following tables contain a list of the control using Easting, Northing, and Orthometric height. The coordinate system displayed is Universal Transverse Mercator UTM Zone 16, North American Datum 1983 (2011), North American Vertical Datum of 1988, Geoid 18 and using Meters for measurement.

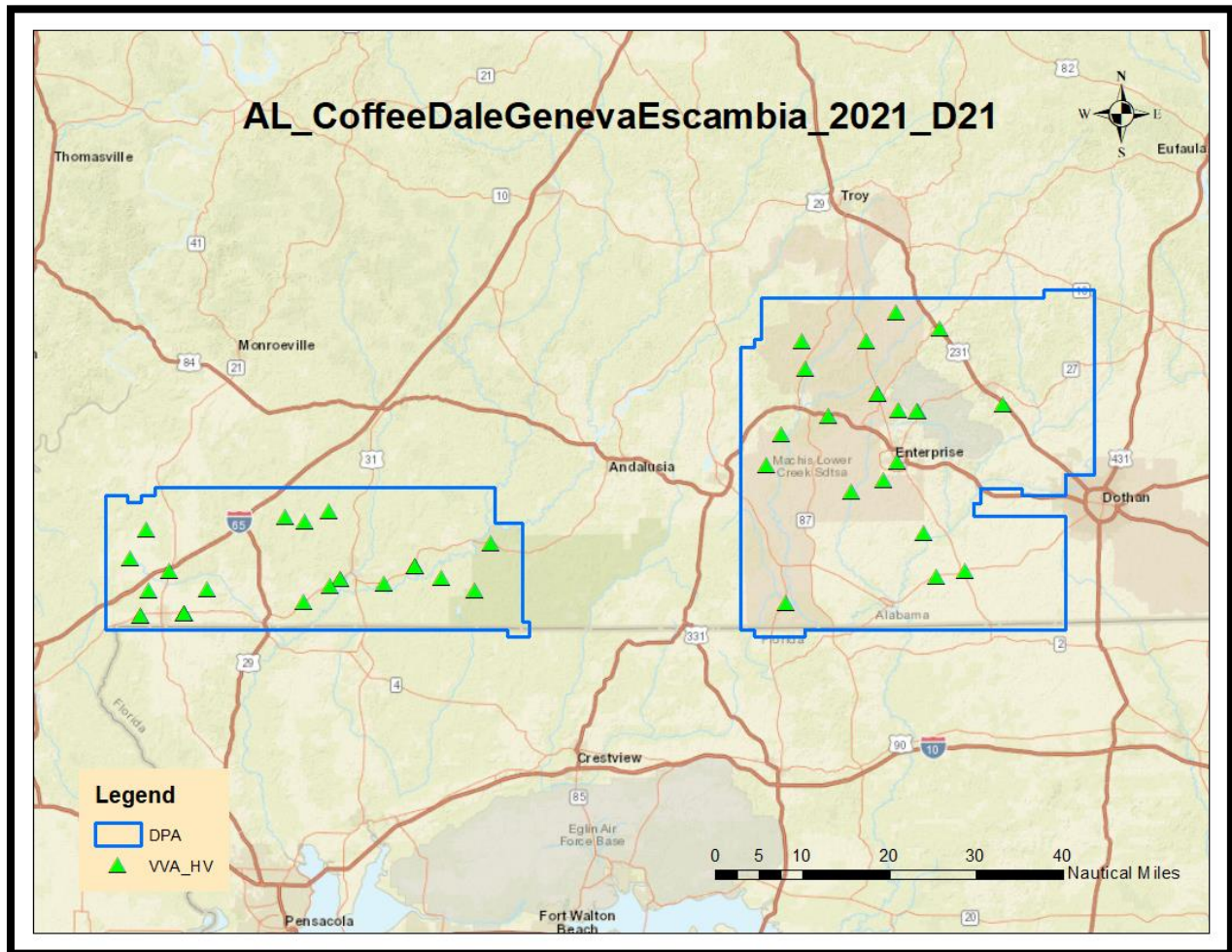


TABLE: High Vegetation

Point ID	Easting	Northing	Ortho
GS0008	631852.41	3476706.02	103.955
GS0019	618352.39	3492814.06	149.889
GS0024	609156.19	3496380.52	91.899
GS0025	602723.75	3490283.79	111.434
GS0028	605200.3	3479052.14	108.718
GS0029	605193.07	3479102.86	108.922
GS0030	609643.96	3475565.98	122.828
GS0032	613701.24	3475351.01	113.257
GS0034	613687.64	3475393.53	114.126
GS0039	609377.86	3464604.79	106.845
GS0045	614968.8	3449332.59	40.231
GS0053	623903.8	3441378.82	80.235
GS0061	617817.65	3440270.24	77.012
GS0074	585686.91	3434434.38	48.446
GS0084	606570.43	3460708.28	107.713
GS0086	599602.97	3458269	64.16
GS0098	581576.33	3463864.26	89.006
GS0103	584710.89	3470474.82	97.855
GS0108	589990.36	3484307.28	66
GS0111	589208.55	3490259.87	90.948
GS0113	594879.8	3474348.37	122.91
GS0120	522892.77	3447208.58	54.952
GS0129	519687.56	3437296.4	69.769
GS0132	512376.41	3439829.49	60.177
GS0133	506851.89	3442261.49	31.864
GS0134	506823.59	3442315.75	32.356
GS0135	506796.69	3442310.78	31.77
GS0137	500375.21	3438780.56	27.56
GS0140	491068.51	3439618.48	38.731
GS0141	491078.4	3439591.36	37.839
GS0145	483263	3434824.41	37.39
GS0151	483333.85	3451796.88	87.149
GS0161	488609.43	3454132.49	71.368
GS0166	479221.53	3452863.05	50.132
GS0172	454607.3	3441332.5	86.473
GS0174	449787.65	3450230.35	92.84
GS0175	446245.69	3443961.77	94.071
GS0178	450329.88	3437271.34	90.322
GS0182	448427.93	3431949.63	75.94
GS0183	448400.53	3431959.22	76.649
GS0184	457841.35	3432354.94	88.241
GS0185	457787.55	3432341.62	88.314

GS0186	457775.17	3432368.03	88.271
GS0187	457743.63	3432366.33	88.294
GS0189	462638.6	3437552.51	84.108
GS0201	488859.49	3438258.18	30.89

GS0008



Point ID: GS0008

Northing: 3476706.02 Meters

Easting: 631852.41 Meters

Orthometric Height: 103.955 Meters

Latitude: 31 25 3.032382 N

Longitude: 85 36 46.214256 W

Ellipsoid Height: 77.361 Meters

GS0019



Point ID: GS0019

Northing: 3492814.06 Meters

Easting: 618352.39 Meters

Orthometric Height: 149.889 Meters

Latitude: 31 33 51.365815 N

Longitude: 85 45 10.469740 W

Ellipsoid Height: 123.589 Meters

GS0024



Point ID: GS0024

Northing: 3496380.52 Meters

Easting: 609156.19 Meters

Orthometric Height: 91.899 Meters

Latitude: 31 35 50.454183 N

Longitude: 85 50 57.829448 W

Ellipsoid Height: 65.588 Meters

GS0025



Point ID: GS0025

Northing: 3490283.79 Meters

Easting: 602723.75 Meters

Orthometric Height: 111.434 Meters

Latitude: 31 32 34.596805 N

Longitude: 85 55 4.171801 W

Ellipsoid Height: 85.038 Meters

GS0028



Point ID: GS0028

Northing: 3479052.14 Meters

Easting: 605200.3 Meters

Orthometric Height: 108.718 Meters

Latitude: 31 26 29.044370 N

Longitude: 85 53 34.562185 W

Ellipsoid Height: 82.199 Meters

GS0029



Point ID: GS0029

Northing: 3479102.86 Meters

Easting: 605193.07 Meters

Orthometric Height: 108.922 Meters

Latitude: 31 26 30.693766 N

Longitude: 85 53 34.816486 W

Ellipsoid Height: 82.404 Meters

GS0030



Point ID: GS0030

Northing: 3475565.98 Meters

Easting: 609643.96 Meters

Orthometric Height: 122.828 Meters

Latitude: 31 24 34.346377 N

Longitude: 85 50 47.631778 W

Ellipsoid Height: 96.258 Meters

GS0032



Point ID: GS0032

Northing: 3475351.01 Meters

Easting: 613701.24 Meters

Orthometric Height: 113.257 Meters

Latitude: 31 24 25.957383 N

Longitude: 85 48 14.093642 W

Ellipsoid Height: 86.687 Meters

GS0034



Point ID: GS0034

Northing: 3475393.53 Meters

Easting: 613687.64 Meters

Orthometric Height: 114.126 Meters

Latitude: 31 24 27.342953 N

Longitude: 85 48 14.591036 W

Ellipsoid Height: 87.556 Meters

GS0039



Point ID: GS0039

Northing: 3464604.79 Meters

Easting: 609377.86 Meters

Orthometric Height: 106.845 Meters

Latitude: 31 18 38.469889 N

Longitude: 85 51 2.041624 W

Ellipsoid Height: 80.063 Meters

GS0045



Point ID: GS0045

Northing: 3449332.59 Meters

Easting: 614968.8 Meters

Orthometric Height: 40.231 Meters

Latitude: 31 10 20.561172 N

Longitude: 85 47 36.874367 W

Ellipsoid Height: 13.107 Meters

GS0053



Point ID: GS0053

Northing: 3441378.82 Meters

Easting: 623903.8 Meters

Orthometric Height: 80.235 Meters

Latitude: 31 5 58.980410 N

Longitude: 85 42 2.934587 W

Ellipsoid Height: 52.912 Meters

GS0061



Point ID: GS0061

Northing: 3440270.24 Meters

Easting: 617817.65 Meters

Orthometric Height: 77.012 Meters

Latitude: 31 5 25.237205 N

Longitude: 85 45 53.091478 W

Ellipsoid Height: 49.715 Meters

GS0074



Point ID: GS0074

Northing: 3434434.38 Meters

Easting: 585686.91 Meters

Orthometric Height: 48.446 Meters

Latitude: 31 2 25.727886 N

Longitude: 86 6 7.465310 W

Ellipsoid Height: 21.248 Meters

GS0084



Point ID: GS0084

Northing: 3460708.28 Meters

Easting: 606570.43 Meters

Orthometric Height: 107.713 Meters

Latitude: 31 16 32.865556 N

Longitude: 85 52 49.730128 W

Ellipsoid Height: 80.854 Meters

GS0086



Point ID: GS0086

Northing: 3458269 Meters

Easting: 599602.97 Meters

Orthometric Height: 64.16 Meters

Latitude: 31 15 15.866238 N

Longitude: 85 57 14.060241 W

Ellipsoid Height: 37.257 Meters

GS0098



Point ID: GS0098

Northing: 3463864.26 Meters

Easting: 581576.33 Meters

Orthometric Height: 89.006 Meters

Latitude: 31 18 22.636964 N

Longitude: 86 8 33.923298 W

Ellipsoid Height: 62.198 Meters

GS0103



Point ID: GS0103

Northing: 3470474.82 Meters

Easting: 584710.89 Meters

Orthometric Height: 97.855 Meters

Latitude: 31 21 56.527862 N

Longitude: 86 6 33.331443 W

Ellipsoid Height: 71.132 Meters

GS0108



Point ID: GS0108

Northing: 3484307.28 Meters

Easting: 589990.36 Meters

Orthometric Height: 66 Meters

Latitude: 31 29 24.333745 N

Longitude: 86 3 8.988675 W

Ellipsoid Height: 39.423 Meters

GS0111



Point ID: GS0111

Northing: 3490259.87 Meters

Easting: 589208.55 Meters

Orthometric Height: 90.948 Meters

Latitude: 31 32 37.872082 N

Longitude: 86 3 36.684392 W

Ellipsoid Height: 64.383 Meters

GS0113



Point ID: GS0113

Northing: 3474348.37 Meters

Easting: 594879.8 Meters

Orthometric Height: 122.91 Meters

Latitude: 31 23 59.494862 N

Longitude: 86 0 7.111897 W

Ellipsoid Height: 96.283 Meters

GS0120



Point ID: GS0120

Northing: 3447208.58 Meters

Easting: 522892.77 Meters

Orthometric Height: 54.952 Meters

Latitude: 31 9 31.113852 N

Longitude: 86 45 35.286204 W

Ellipsoid Height: 27.813 Meters

GS0129



Point ID: GS0129

Northing: 3437296.4 Meters

Easting: 519687.56 Meters

Orthometric Height: 69.769 Meters

Latitude: 31 49.348280 N

Longitude: 86 47 37.050476 W

Ellipsoid Height: 42.543 Meters

GS0132



Point ID: GS0132

Northing: 3439829.49 Meters

Easting: 512376.41 Meters

Orthometric Height: 60.177 Meters

Latitude: 31 5 31.990615 N

Longitude: 86 52 12.838973 W

Ellipsoid Height: 32.819 Meters

GS0133



Point ID: GS0133

Northing: 3442261.49 Meters

Easting: 506851.89 Meters

Orthometric Height: 31.864 Meters

Latitude: 31 6 51.152294 N

Longitude: 86 55 41.308173 W

Ellipsoid Height: 4.4 Meters

GS0134



Point ID: GS0134

Northing: 3442315.75 Meters

Easting: 506823.59 Meters

Orthometric Height: 32.356 Meters

Latitude: 31 6 52.915410 N

Longitude: 86 55 42.375533 W

Ellipsoid Height: 4.892 Meters

GS0135



Point ID: GS0135

Northing: 3442310.78 Meters

Easting: 506796.69 Meters

Orthometric Height: 31.77 Meters

Latitude: 31 6 52.754731 N

Longitude: 86 55 43.391293 W

Ellipsoid Height: 4.305 Meters

GS0137



Point ID: GS0137

Northing: 3438780.56 Meters

Easting: 500375.21 Meters

Orthometric Height: 27.56 Meters

Latitude: 31 4 58.152801 N

Longitude: 86 59 45.838745 W

Ellipsoid Height: -0.01 Meters

GS0140



Point ID: GS0140

Northing: 3439618.48 Meters

Easting: 491068.51 Meters

Orthometric Height: 38.731 Meters

Latitude: 31 5 25.248834 N

Longitude: 87 5 37.122402 W

Ellipsoid Height: 11.031 Meters

GS0141



Point ID: GS0141

Northing: 3439591.36 Meters

Easting: 491078.4 Meters

Orthometric Height: 37.839 Meters

Latitude: 31 5 24.368112 N

Longitude: 87 5 36.748040 W

Ellipsoid Height: 10.139 Meters

GS0145



Point ID: GS0145

Northing: 3434824.41 Meters

Easting: 483263 Meters

Orthometric Height: 37.39 Meters

Latitude: 31 2 49.215006 N

Longitude: 87 10 31.457481 W

Ellipsoid Height: 9.621 Meters

GS0151



Point ID: GS0151

Northing: 3451796.88 Meters

Easting: 483333.85 Meters

Orthometric Height: 87.149 Meters

Latitude: 31 12 0.532766 N

Longitude: 87 10 29.794824 W

Ellipsoid Height: 59.33 Meters

GS0161



Point ID: GS0161

Northing: 3454132.49 Meters

Easting: 488609.43 Meters

Orthometric Height: 71.368 Meters

Latitude: 31 13 16.627057 N

Longitude: 87 7 10.532818 W

Ellipsoid Height: 43.608 Meters

GS0166



Point ID: GS0166

Northing: 3452863.05 Meters

Easting: 479221.53 Meters

Orthometric Height: 50.132 Meters

Latitude: 31 12 34.926971 N

Longitude: 87 13 5.273294 W

Ellipsoid Height: 22.256 Meters

GS0172



Point ID: GS0172

Northing: 3441332.5 Meters

Easting: 454607.3 Meters

Orthometric Height: 86.473 Meters

Latitude: 31 6 17.883860 N

Longitude: 87 28 33.617622 W

Ellipsoid Height: 58.351 Meters

GS0174



Point ID: GS0174

Northing: 3450230.35 Meters

Easting: 449787.65 Meters

Orthometric Height: 92.84 Meters

Latitude: 31 11 6.191628 N

Longitude: 87 31 37.155667 W

Ellipsoid Height: 64.663 Meters

GS0175



Point ID: GS0175

Northing: 3443961.77 Meters

Easting: 446245.69 Meters

Orthometric Height: 94.071 Meters

Latitude: 31 7 42.013297 N

Longitude: 87 33 49.768811 W

Ellipsoid Height: 65.856 Meters

GS0178



Point ID: GS0178

Northing: 3437271.34 Meters

Easting: 450329.88 Meters

Orthometric Height: 90.322 Meters

Latitude: 31 4 5.345517 N

Longitude: 87 31 14.369241 W

Ellipsoid Height: 62.17 Meters

GS0182



Point ID: GS0182

Northing: 3431949.63 Meters

Easting: 448427.93 Meters

Orthometric Height: 75.94 Meters

Latitude: 31 1 12.190796 N

Longitude: 87 32 25.162577 W

Ellipsoid Height: 47.796 Meters

GS0183



Point ID: GS0183

Northing: 3431959.22 Meters

Easting: 448400.53 Meters

Orthometric Height: 76.649 Meters

Latitude: 31 1 12.498038 N

Longitude: 87 32 26.197850 W

Ellipsoid Height: 48.505 Meters

GS0184



Point ID: GS0184

Northing: 3432354.94 Meters

Easting: 457841.35 Meters

Orthometric Height: 88.241 Meters

Latitude: 31 1 26.706602 N

Longitude: 87 26 30.183994 W

Ellipsoid Height: 60.197 Meters

GS0185



Point ID: GS0185

Northing: 3432341.62 Meters

Easting: 457787.55 Meters

Orthometric Height: 88.314 Meters

Latitude: 31 1 26.267127 N

Longitude: 87 26 32.211182 W

Ellipsoid Height: 60.269 Meters

GS0186



Point ID: GS0186

Northing: 3432368.03 Meters

Easting: 457775.17 Meters

Orthometric Height: 88.271 Meters

Latitude: 31 1 27.123440 N

Longitude: 87 26 32.682216 W

Ellipsoid Height: 60.226 Meters

GS0187



Point ID: GS0187

Northing: 3432366.33 Meters

Easting: 457743.63 Meters

Orthometric Height: 88.294 Meters

Latitude: 31 1 27.064150 N

Longitude: 87 26 33.871478 W

Ellipsoid Height: 60.249 Meters

GS0189



Point ID: GS0189

Northing: 3437552.51 Meters

Easting: 462638.6 Meters

Orthometric Height: 84.108 Meters

Latitude: 31 4 16.121244 N

Longitude: 87 23 29.931376 W

Ellipsoid Height: 56.092 Meters

GS0201



Point ID: GS0201

Northing: 3438258.18 Meters

Easting: 488859.49 Meters

Orthometric Height: 30.89 Meters

Latitude: 87 7 0.448453 W

Longitude: 31 4 40.993947 N

Ellipsoid Height: 3.169 Meters