WOOLPERT

East Tennessee QL2 LiDAR

USGS/Eastern Tennessee

February 22, 2017

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Ground Control Survey Report

UNITED STATES GEOLOGICAL SURVEY East Tennessee QL2 LiDAR

Task Order G15PD01037

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Section 1: Survey Report

Introduction

Report Date:	2/22/2017
Project Name:	East Tennessee FY16 LIDAR
Client Information:	USGS / NGTOC
Contract Number:	G10PC00057
Requisition/Reference Number:	G15PD01037
Date of Contract:	2/1/2016
Delivery Date:	2/24/2017
Prepared By:	Michael Zarlengo, PLS
Woolpert Project Number:	76269

This report contains a comprehensive outline of the LiDAR Ground Control Survey that supported the East Tennessee QL2 LiDAR. All surveys were performed in such a way as to achieve ground control accuracies that meet or exceed the National Mapping Accuracy Standards.

Project Area

The project area consists of approximately 7,863 square miles of Eastern Tennessee along with Davidson and Macon counties.

Purpose

The purpose of this survey was to establish three-dimensional coordinates for 177 ground control points (GCPs) and 402 quality control (QC) points spread over 2 land cover classifications Vegetated Vertical Accuracies (VVA) and Non-Vegetated Vertical Accuracies (NVA).
The QC points were collected uniformly dispersed over the project area in the appropriate land cover categories to verify fundamental, supplemental, and consolidated vertical accuracies throughout the task order AOI.

Date of Survey

Ground control field operations took place on February 9th 2016 thru March 17th 2016.

Monumentation

Prior to aerial imagery acquisition, Woolpert field crews performed a field reconnaissance to verify the existence and suitability of pre-selected existing National Geodetic Survey (NGS) control stations. These existing bench marks were utilized as checks to ensure that quality x, y, and z coordinate values were computed for each of the newly established photogrammetric control stations. Recovery information sheets for the existing NGS control stations can be found in Section 5 of this report. A control diagram showing the ground control stations used to support this LiDAR mapping project can be found in Section 6 of this report.

Accuracy Standards

The data collected under this task order shall meet the National Standard for spatial Database Accuracy (NSSDA) standards. The NSSDA standards specify that vertical accuracy be reported at the 95 percent confidence level for data tested by an independent source of higher accuracy.
The Fundamental Vertical Accuracy (FVA): 19.6 cm at a 95% confidence level, derived according to NSSDA, i.e., based on RMSEZ of 10.0 cm in the “open terrain” land cover category.

The Supplemental Vertical Accuracy (SVA): The SVA will be reported for each of the land cover classes within the task order AOI. The target SVA is 29.4 cm at a 95th percentile level, derived according to ASPRS Guidelines, Vertical Accuracy Reporting for Lidar Data, i.e., based on the 95th percentile error for each required land cover class.

The Consolidated Vertical Accuracy (CVA): 26.9 cm at a 95th percentile level, derived according to ASPRS Guidelines, Vertical Accuracy Reporting for Lidar Data, i.e., based on the 95th percentile error in all land cover categories combined.

Automated and manual filtering for lidar products shall use the following minimum performance for artifact/feature removal from the bare earth model: The bare earth surface model shall have a minimum of 95% of surface canopy artifacts, including buildings, vegetation, bridges or overpass structures removed.

GPS Equipment

Woolpert utilized 1 Trimble Navigation R8 Model 3 GNSS dual-frequency GPS receivers, 2 Trimble Navigation Model R10 GNSS dual-frequency GPS receivers, and 3 TSC3 data collectors for this project.

Methodology

VRS Virtual Reference System or RTN Real Time Network.

The "Virtual Reference Station" (VRS) concept is based on having a network (spaced at 50-60kms) of GNSS (GPS or GPS/GLONASS) reference stations permanently connected to the control center via the Internet. The networked stations collectively and precisely, model Ionospheric errors for the individual GNSS rover in the network coverage area. The rover interprets and uses the VRS network-correction data as if it is operating with a single physical base station on a very short baseline which increases the RTK performance. Corrections (vectors) are from the closest base, but because the ionospheric error (which is traditionally baseline dependent) is practically negated, the rover's degradation in accuracy due to baseline length starts when the rover is first initialized, that is, at the work site. Thus accuracies are increased and more consistent throughout the working region

GPS Data Analysis and Processing

The field crew chief processed all session baselines each day using Trimble Navigation's Trimble Business Center (TBC) Version 3.40 baseline processor with the accompanying broadcast ephemeris. Daily processing ensured the integrity of the network as it was constructed, and allowed the field crews to immediately reschedule observations of poor baselines.

Datum Reference and Final Coordinates

The spatial reference system for the Eastern Tennessee AOI is Tennessee State Plane East Zone, NAD83(2011), U.S. Survey Feet, horizontal and NAVD88 U.S. Survey Feet vertical using the geoid model of 2012 (GEOID12A). Units for both the horizontal and vertical datums will be expressed in U.S. Survey Feet to two (2) decimal places.

Quality Assurance

Existing NGS published bench marks were surveyed to assure that there were no discrepancies in the field observation data. Close examinations of the residuals showed no distortions in orientation or scale.
The ground control data meets positional accuracies necessary to support 1.0 point per 0.3 meters squared (1' GSD) data at 95% confidence level as outlined in the Geospatial Positioning Accuracy Standards, Part 3: National Standard for Spatial Data Accuracy (NSSDA), published by the Federal Geographic Data Committee (FGDC-STD-007.3-1998).

Section 2: Ground/Geodetic Control Coordinate Listings

Coordinate System: Grid

HORIZONTAL DATUM: NAD83 2011 Tennessee State Plane East Zone
VERTICAL DATUM: NAVD88
GEOID MODEL: GEOID 12A
UNITS: US Survey Feet

LiDAR Ground Control

EASTERN TENNESSEE PRIMARY LiDAR GROUND CONTROL POINTS				
Point No.	NAD-83 (2011) SPC (FIPS Zone 4100)		Ortho Height NAVD88 (sft)	Description
	Northing (sft)	Easting (sft)		
1	838667.00	1941575.18	864.86	LIDAR CTL
2	827005.26	2014929.59	934.31	LIDAR CTL
3	817837.91	1979530.98	936.96	LIDAR CTL
4	807358.09	1899258.19	923.33	LIDAR CTL
5	796722.83	1960056.54	959.34	LIDAR CTL
6	795422.25	2009404.55	952.61	LIDAR CTL
7	782470.81	1910638.54	661.06	LIDAR CTL
8	768462.92	1950994.98	561.59	LIDAR CTL
9	763684.25	1998571.29	1087.82	LIDAR CTL
10	827690.13	1919775.49	946.94	LIDAR CTL
11	785222.93	1980490.49	968.29	LIDAR CTL
12	805596.69	1923046.39	915.64	LIDAR CTL
13	606882.47	1647469.26	863.49	LIDAR CTL
14	638777.18	1661218.29	530.33	LIDAR CTL
15	682142.88	1676765.72	432.33	LIDAR CTL
16	744738.14	1696043.38	692.02	LIDAR CTL
17	721580.96	1708399.70	802.54	LIDAR CTL
18	677813.84	1723509.13	473.33	LIDAR CTL
19	622236.52	1736147.59	738.94	LIDAR CTL
20	624305.90	1698329.77	634.34	LIDAR CTL
21	677038.58	1703520.78	449.34	LIDAR CTL
22	745920.47	1754473.69	569.86	LIDAR CTL
23	702618.16	1748589.01	629.43	LIDAR CTL

EASTERN TENNESSEE PRIMARY LiDAR GROUND CONTROL POINTS				
Point No.	NAD-83 (2011) SPC (FIPS Zone 4100)		Ortho Height NAVD88 (sft)	Description
	Northing (sft)	Easting (sft)		
24	659417.44	1772971.94	543.91	LIDAR CTL
25	592017.96	1785836.57	800.31	LIDAR CTL
26	628778.48	1794868.07	514.93	LIDAR CTL
27	665661.90	1810289.25	605.37	LIDAR CTL
28	650302.39	1826832.66	580.61	LIDAR CTL
29	635331.06	1682904.28	559.03	LIDAR CTL
30	713359.38	1779918.45	501.62	LIDAR CTL
31	640883.37	1761479.05	481.32	LIDAR CTL
32	463114.60	2416326.66	1001.18	LIDAR CTL
33	424117.64	2431008.15	879.32	LIDAR CTL
34	350739.61	2443822.88	1116.62	LIDAR CTL
35	400057.83	2456528.73	1037.86	LIDAR CTL
36	515041.53	2439725.94	822.11	LIDAR CTL
37	473338.74	2466647.80	983.24	LIDAR CTL
38	547584.41	2480723.79	925.85	LIDAR CTL
39	388707.47	2485808.99	916.57	LIDAR CTL
40	437762.32	2459887.96	1001.58	LIDAR CTL
41	341093.55	2478600.80	1648.45	LIDAR CTL
42	517465.71	2500378.07	1029.86	LIDAR CTL
43	549897.19	2527638.25	824.85	LIDAR CTL
44	487588.33	2510181.72	877.51	LIDAR CTL
45	454149.11	2491299.82	901.95	LIDAR CTL
46	443989.07	2531022.78	858.56	LIDAR CTL
47	416417.92	2502748.12	912.49	LIDAR CTL
48	376586.65	2526125.81	2921.82	LIDAR CTL
49	358990.45	2558186.23	5238.00	LIDAR CTL
50	363081.48	2567854.74	5297.85	LIDAR CTL
51	375300.26	2553522.52	4504.49	LIDAR CTL
52	409405.13	2519493.20	1039.10	LIDAR CTL
53	412990.27	2581815.04	1149.25	LIDAR CTL
54	447456.15	2545795.71	841.17	LIDAR CTL
55	432601.36	2566133.02	886.52	LIDAR CTL
56	427717.45	2541549.00	1349.13	LIDAR CTL
60	497966.04	2639633.85	1062.95	LIDAR CTL
61	556030.95	2628361.90	987.90	LIDAR CTL
62	540683.65	2668776.80	1123.19	LIDAR CTL
63	556454.54	2668734.50	950.09	LIDAR CTL
64	510834.58	2665224.64	1448.17	LIDAR CTL
67	475155.34	2733713.20	5045.29	LIDAR CTL

EASTERN TENNESSEE PRIMARY LiDAR GROUND CONTROL POINTS				
Point No.	NAD-83 (2011) SPC (FIPS Zone 4100)		Ortho Height NAVD88 (sft)	Description
	Northing (sft)	Easting (sft)		
68	485089.92	2717538.21	3206.21	LIDAR CTL
69	501523.96	2699498.40	1476.06	LIDAR CTL
70	546553.88	2869133.97	4350.13	LIDAR CTL
71	572624.42	2885625.24	2297.89	LIDAR CTL
72	587082.98	2904269.99	1365.94	LIDAR CTL
73	605275.48	2930562.40	1788.09	LIDAR CTL
74	654081.68	2932687.12	1520.25	LIDAR CTL
75	637445.12	2914144.04	1498.07	LIDAR CTL
76	628922.16	2904068.86	1413.33	LIDAR CTL
77	646591.47	2884492.97	1200.06	LIDAR CTL
78	657973.43	2837953.33	1127.31	LIDAR CTL
79	653524.10	2769282.53	1126.48	LIDAR CTL
80	652368.10	2690582.95	1005.75	LIDAR CTL
81	612503.10	2678937.68	1099.46	LIDAR CTL
82	595493.87	2696599.81	945.04	LIDAR CTL
83	558433.67	2712989.25	988.73	LIDAR CTL
84	520022.48	2725642.13	1661.67	LIDAR CTL
85	552638.28	2739605.65	1146.63	LIDAR CTL
86	612576.70	2718881.94	1086.37	LIDAR CTL
87	635197.79	2756812.79	1225.16	LIDAR CTL
88	602979.49	2775086.92	1333.47	LIDAR CTL
89	542334.57	2788795.95	1536.61	LIDAR CTL
90	552248.75	2816074.40	1265.03	LIDAR CTL
91	612721.47	2808780.59	1059.50	LIDAR CTL
92	592526.18	2850554.02	1138.56	LIDAR CTL
93	571173.51	2860410.28	1680.59	LIDAR CTL
94	625397.79	2870687.68	1289.68	LIDAR CTL
95	637518.40	2793745.41	1011.29	LIDAR CTL
96	592697.19	2754593.48	1092.25	LIDAR CTL
97	724633.55	2668717.21	1248.35	LIDAR CTL
98	675017.89	2645581.91	1102.66	LIDAR CTL
99	725567.87	2628577.79	1186.25	LIDAR CTL
100	758246.79	2606202.79	1085.03	LIDAR CTL
101	709782.89	2592942.79	1044.22	LIDAR CTL
102	666433.82	2584696.41	1162.74	LIDAR CTL
103	641857.28	2543963.12	904.44	LIDAR CTL
104	610663.85	2533042.99	981.26	LIDAR CTL
105	580271.61	2506666.22	966.83	LIDAR CTL
106	562984.49	2472782.96	855.38	LIDAR CTL

EASTERN TENNESSEE PRIMARY LiDAR GROUND CONTROL POINTS				
Point No.	NAD-83 (2011) SPC (FIPS Zone 4100)		Ortho Height NAVD88 (sft)	Description
	Northing (sft)	Easting (sft)		
107	585886.78	2558860.30	891.55	LIDAR CTL
108	579156.71	2601201.24	953.08	LIDAR CTL
109	678708.01	2619434.76	1122.45	LIDAR CTL
110	645987.31	2616381.84	1057.41	LIDAR CTL
111	635589.38	2595466.72	1031.71	LIDAR CTL
112	614647.07	2627198.77	938.87	LIDAR CTL
114	610657.46	2650107.29	900.40	LIDAR CTL
115	689103.53	2683264.84	1149.03	LIDAR CTL
116	741155.19	2713084.09	1425.69	LIDAR CTL
117	677312.24	2730353.58	1384.45	LIDAR CTL
118	831314.76	2725352.14	1570.98	LIDAR CTL
119	796522.30	2755479.30	1209.18	LIDAR CTL
120	731345.87	2760896.42	1161.02	LIDAR CTL
121	711329.15	2793176.42	1283.29	LIDAR CTL
122	834391.77	2782969.57	1559.09	LIDAR CTL
123	783240.06	2804999.57	1552.60	LIDAR CTL
124	745849.03	2823229.66	1241.17	LIDAR CTL
125	709005.36	2856033.82	1181.71	LIDAR CTL
126	827260.21	2837029.19	1168.85	LIDAR CTL
127	798205.72	2883588.74	1364.90	LIDAR CTL
128	757212.54	2873360.89	1150.34	LIDAR CTL
129	677894.19	2903614.18	1556.50	LIDAR CTL
130	837749.60	2923560.56	1428.89	LIDAR CTL
131	787340.30	2945300.58	1356.08	LIDAR CTL
132	761973.73	2935182.46	1349.48	LIDAR CTL
133	713348.70	2961629.51	1564.20	LIDAR CTL
134	607276.52	2986178.59	3721.57	LIDAR CTL
135	640622.83	3013114.95	2744.93	LIDAR CTL
136	673729.12	3088524.12	2957.92	LIDAR CTL
137	692549.00	3108884.65	3525.30	LIDAR CTL
137	692549.00	3108884.65	3525.30	LIDAR CTL
138	668155.34	3117204.90	5513.44	LIDAR CTL
139	687927.42	3158315.07	3079.18	LIDAR CTL
140	730747.06	3183628.96	2797.67	LIDAR CTL
141	761454.47	3207565.49	3740.19	LIDAR CTL
142	769897.57	3231023.46	3284.29	LIDAR CTL
143	752839.24	3224416.27	3379.09	LIDAR CTL
144	859517.68	3258399.34	3743.37	LIDAR CTL
145	861404.95	3248063.24	3254.10	LIDAR CTL

EASTERN TENNESSEE PRIMARY LiDAR GROUND CONTROL POINTS				
Point No.	NAD-83 (2011) SPC (FIPS Zone 4100)		Ortho Height NAVD88 (sft)	Description
	Northing (sft)	Easting (sft)		
146	860423.09	3203286.03	1971.49	LIDAR CTL
147	827645.47	3207231.32	2541.55	LIDAR CTL
149	788442.45	3211174.33	2372.05	LIDAR CTL
150	774224.29	3183916.51	2162.36	LIDAR CTL
151	760436.73	3164275.56	2194.65	LIDAR CTL
151	760436.74	3164275.55	2194.65	LIDAR CTL
152	731638.55	3149714.07	1984.31	LIDAR CTL
153	810904.59	3191469.62	2561.79	LIDAR CTL
154	795231.42	3174359.56	2354.26	LIDAR CTL
155	820482.61	3164466.97	2774.99	LIDAR CTL
156	861021.05	3169816.16	1857.34	LIDAR CTL
157	851359.06	3132652.76	1768.86	LIDAR CTL
158	853321.71	3089806.38	1825.88	LIDAR CTL
159	828146.79	3105583.65	1631.11	LIDAR CTL
160	807351.57	3098199.53	1496.29	LIDAR CTL
161	797725.34	3138681.43	2231.92	LIDAR CTL
162	828014.07	3145051.20	2169.34	LIDAR CTL
163	781225.45	3122664.86	1870.19	LIDAR CTL
164	760033.21	3093658.76	1536.72	LIDAR CTL
165	744078.41	3117923.13	2054.36	LIDAR CTL
166	732871.57	3097813.46	1792.02	LIDAR CTL
167	693931.27	3071576.38	2372.66	LIDAR CTL
168	681238.69	3025238.56	1655.73	LIDAR CTL
169	680648.28	2969045.60	1526.09	LIDAR CTL
170	712113.65	2995799.54	1660.92	LIDAR CTL
171	753078.10	2972295.58	1856.10	LIDAR CTL
172	835145.76	2983446.60	1532.15	LIDAR CTL
173	804054.59	3003024.91	1270.12	LIDAR CTL
174	763003.38	3017982.05	1616.97	LIDAR CTL
175	722968.66	3058112.87	1815.86	LIDAR CTL
176	794537.41	3037793.80	1398.52	LIDAR CTL
177	844180.45	3088584.88	1682.84	LIDAR CTL
178	773511.93	3064488.76	1487.26	LIDAR CTL
179	834185.07	3027786.65	1380.05	LIDAR CTL
180	822460.43	3072012.60	1474.56	LIDAR CTL
181	638137.38	2988248.82	2134.94	LIDAR CTL
182	365567.43	2570309.04	4959.44	LIDAR CTL

Quality Control Points

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	NAD-83 (2011) SPC (FIPS Zone 4100)		Ortho Height NAVD88 (sft)	Description
	Northing (sft)	Easting (sft)		
2001	839624.18	1942282.65	888.27	NVA
2002	827963.53	2014977.80	941.28	NVA
2003	816630.86	1979766.94	930.24	NVA
2004	808322.29	1898687.27	943.39	NVA
2005	800240.29	1959625.13	971.87	NVA
2006	795733.06	2010004.75	933.98	NVA
2007	781689.86	1911389.04	659.54	NVA
2008	767415.15	1951709.17	591.97	NVA
2009	767156.88	2002940.26	1014.01	NVA
2010	828095.33	1919363.07	942.59	NVA
2011	785472.88	1979198.71	972.56	NVA
2012	804972.36	1926103.58	999.38	NVA
2013	789021.98	1908557.66	1018.41	NVA
2014	793720.91	1950651.92	987.17	NVA
2015	822266.15	1953844.38	902.53	NVA
2016	833974.50	1976616.55	873.73	NVA
2017	806728.81	1980233.61	935.83	NVA
2018	768863.70	1982848.04	667.78	NVA
2019	777782.74	1933883.84	551.74	NVA
2020	795805.05	1929563.55	972.15	NVA
2021	814226.66	1917683.89	943.38	NVA
2022	825321.89	1972094.71	871.82	NVA
2023	820995.55	2022244.29	909.69	NVA
2024	814002.63	1999857.43	938.26	NVA
2024A	814002.66	1999857.39	938.20	NVA
2024B	814002.68	1999857.40	938.13	NVA
2025	775830.74	1966219.73	612.70	NVA
2026	804480.96	1995142.17	981.13	NVA
2027	778991.78	2004303.79	1025.20	NVA
2028	763172.98	1967722.73	618.93	NVA
2029	811906.72	1951303.27	903.42	NVA
2030	610251.16	1655559.25	858.72	NVA
2031	639431.04	1660758.90	547.13	NVA
2032	682392.43	1676094.37	403.45	NVA
2033	744176.97	1697866.28	740.86	NVA
2034	722540.90	1708587.75	822.94	NVA
2035	678144.96	1722876.95	497.86	NVA

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	NAD-83 (2011) SPC (FIPS Zone 4100)		Ortho Height NAVD88 (sft)	Description
	Northing (sft)	Easting (sft)		
2036	621543.67	1736474.53	762.65	NVA
2037	625503.75	1698291.68	582.83	NVA
2038	673805.47	1703567.01	416.32	NVA
2039	745802.01	1753753.12	525.35	NVA
2040	703046.09	1748048.93	654.05	NVA
2041	659769.61	1773578.73	473.86	NVA
2042	595098.21	1786839.04	820.44	NVA
2043	628730.69	1794328.85	521.62	NVA
2044	668944.57	1805037.31	619.53	NVA
2045	647031.49	1821389.10	597.46	NVA
2046	634133.38	1683113.22	560.67	NVA
2047	716620.89	1778794.70	500.97	NVA
2048	641900.97	1760278.86	499.77	NVA
2049	668677.41	1693535.81	437.20	NVA
2050	710955.09	1687636.75	785.51	NVA
2051	748615.93	1733194.96	712.33	NVA
2052	729178.59	1738976.57	785.58	NVA
2053	712949.58	1735461.81	602.68	NVA
2054	703215.63	1705188.26	822.87	NVA
2055	696118.91	1769940.11	502.23	NVA
2056	678974.70	1752301.80	557.38	NVA
2057	680314.51	1785351.92	484.44	NVA
2058	655347.10	1792766.60	502.39	NVA
2060	610702.99	1761202.73	543.45	NVA
2061	630455.32	1781842.70	599.30	NVA
2062	649070.38	1739221.54	486.71	NVA
2063	635690.60	1721584.07	631.82	NVA
2064	658239.71	1706897.31	428.59	NVA
2065	621485.19	1680628.50	658.73	NVA
2066	605900.63	1670387.96	628.32	NVA
2067	695321.15	1730181.26	500.39	NVA
2068	741009.96	1707815.90	741.12	NVA
2069	623699.54	1661002.08	538.19	NVA
2070	658501.84	1684086.29	464.80	NVA
2070E	819154.48	2737997.12	1183.21	NVA
2071	695555.94	1691047.08	490.18	NVA
2072	738347.42	1695599.62	780.70	NVA
2073	734321.47	1725363.56	813.99	NVA
2074	692619.34	1753867.78	495.90	NVA

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	NAD-83 (2011) SPC (FIPS Zone 4100)		Ortho Height NAVD88 (sft)	Description
	Northing (sft)	Easting (sft)		
2075	633043.21	1753202.77	593.97	NVA
2075E	669437.23	2582810.98	1142.41	NVA
2076	649783.96	1706451.36	531.86	NVA
2076E	653009.66	2553590.92	943.35	NVA
2077	668842.66	1746071.15	515.59	NVA
2078	725633.97	1758454.04	498.53	NVA
2079	681621.13	1774066.58	470.00	NVA
2080	461596.70	2419487.51	991.58	NVA
2081	425675.24	2434231.20	932.57	NVA
2082	352408.11	2445097.30	1136.97	NVA
2083	400439.13	2456640.93	1027.55	NVA
2084	513525.43	2443745.69	895.88	NVA
2085	474028.06	2466468.64	935.37	NVA
2086	548590.44	2480026.67	876.14	NVA
2087	388145.63	2484058.01	868.76	NVA
2088	437817.54	2459342.80	993.01	NVA
2089	341248.79	2477364.42	1641.52	NVA
2090	518642.45	2500193.58	1055.38	NVA
2091	549787.81	2526921.18	908.39	NVA
2092	488369.07	2510447.14	895.80	NVA
2093	454201.95	2491242.64	901.80	NVA
2094	443472.25	2531617.70	831.61	NVA
2095	416086.69	2502475.87	928.80	NVA
2096	380354.93	2529828.98	3355.05	NVA
2097	360276.98	2561357.92	5383.78	NVA
2098	364229.13	2558633.21	4890.12	NVA
2099	374206.73	2554377.51	4458.80	NVA
2100	410233.39	2518019.62	976.58	NVA
2102	447215.79	2549989.10	889.45	NVA
2102E	619926.66	2543428.22	1038.73	NVA
2103	432321.40	2566014.84	879.87	NVA
2104	427845.00	2541425.05	1342.28	NVA
2105E	598275.54	2510235.51	1009.98	NVA
2109	554369.00	2626983.41	1012.78	NVA
2110	540759.09	2671376.88	1053.28	NVA
2111	557002.54	2669589.58	947.39	NVA
2112	506684.32	2659793.95	1543.05	NVA
2115	474822.69	2733403.07	5048.07	NVA
2116	484728.26	2714949.23	3006.73	NVA

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	NAD-83 (2011) SPC (FIPS Zone 4100)		Ortho Height NAVD88 (sft)	Description
	Northing (sft)	Easting (sft)		
2117	501265.19	2699630.55	1477.69	NVA
2118	547726.67	2869352.08	4252.45	NVA
2119	572336.49	2885406.36	2321.12	NVA
2120	591707.59	2884516.16	1435.64	NVA
2121	617578.70	2919468.29	2232.68	NVA
2122	653427.71	2935565.45	1616.61	NVA
2123	637245.83	2914914.86	1507.59	NVA
2124	628854.51	2905460.93	1402.54	NVA
2125	647007.14	2884265.49	1227.25	NVA
2126	657172.89	2833001.41	1095.57	NVA
2127	652885.63	2769453.47	1176.45	NVA
2128	652413.91	2691797.38	1006.15	NVA
2129	612419.20	2677848.95	1130.60	NVA
2130	591050.54	2695651.93	946.92	NVA
2131	559238.46	2713468.55	1030.22	NVA
2132	519914.97	2727314.39	1715.11	NVA
2133	554799.22	2741684.52	1083.91	NVA
2134	612759.02	2721134.19	1087.22	NVA
2135	634081.42	2755704.25	1096.06	NVA
2136	602138.88	2776821.39	1425.61	NVA
2137	543031.87	2788221.53	1519.45	NVA
2138	553175.61	2817693.49	1299.10	NVA
2139	614266.04	2807859.13	1040.27	NVA
2140	593299.76	2850172.08	1174.77	NVA
2141	571456.71	2859984.75	1641.37	NVA
2142	625001.93	2871366.75	1311.75	NVA
2143	636760.42	2793694.21	995.96	NVA
2144	591633.69	2752817.09	1096.44	NVA
2145	724762.91	2668679.68	1242.92	NVA
2146	673459.40	2646357.88	996.06	NVA
2147	725746.39	2628154.92	1159.14	NVA
2148	756992.70	2606284.95	1068.92	NVA
2149	709617.17	2592700.78	1034.78	NVA
2150	666583.78	2584034.82	1146.35	NVA
2151	642935.17	2544387.06	905.69	NVA
2152	610577.23	2533479.85	980.25	NVA
2153	579639.45	2506125.63	952.73	NVA
2154	563610.08	2471958.50	890.98	NVA
2155	586146.42	2559721.16	918.36	NVA

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	NAD-83 (2011) SPC (FIPS Zone 4100)		Ortho Height NAVD88 (sft)	Description
	Northing (sft)	Easting (sft)		
2156	579919.23	2599858.03	1041.49	NVA
2157	677933.35	2619086.79	1141.60	NVA
2158	645753.12	2615143.43	1028.68	NVA
2159	637064.74	2594836.98	1088.92	NVA
2160	614318.90	2626279.47	933.07	NVA
2161	582422.30	2653008.25	1015.22	NVA
2162	607807.81	2650464.70	863.50	NVA
2163	685898.92	2681547.43	1166.43	NVA
2164	740856.70	2712244.55	1435.07	NVA
2165	677107.97	2729281.96	1337.76	NVA
2166	830607.25	2724081.45	1650.60	NVA
2167	798927.17	2757949.37	1272.36	NVA
2168	731198.94	2762746.78	1149.62	NVA
2169	711513.39	2794587.42	1271.27	NVA
2170	833565.96	2782684.16	1535.00	NVA
2171	783202.61	2804745.75	1552.55	NVA
2172	745290.78	2822572.33	1248.73	NVA
2173	709590.59	2857714.56	1160.06	NVA
2174	828469.16	2836114.61	1208.01	NVA
2175	797065.53	2882020.27	1402.70	NVA
2176	758958.74	2875421.06	1114.65	NVA
2177	676707.98	2902861.79	1453.15	NVA
2178	838503.49	2925073.12	1412.43	NVA
2179	788615.24	2946609.67	1404.64	NVA
2180	760524.12	2933403.18	1323.29	NVA
2181	714452.60	2960137.29	1502.02	NVA
2182	607790.89	2986008.54	3745.62	NVA
2183	639817.43	3019981.74	2983.24	NVA
2184	680188.97	3080431.29	3712.85	NVA
2185	692693.74	3107532.97	3529.69	NVA
2186	667823.10	3117824.78	5494.90	NVA
2188	734675.17	3169620.93	2685.93	NVA
2190	767400.23	3227193.39	3463.12	NVA
2191	754629.88	3223983.79	3342.26	NVA
2192	860098.33	3235994.68	3264.01	NVA
2193	860501.04	3246735.94	3188.93	NVA
2194	854737.84	3198142.10	2057.62	NVA
2195	828558.92	3207921.09	2531.90	NVA
2196	851810.40	3222191.91	2634.26	NVA

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	NAD-83 (2011) SPC (FIPS Zone 4100)		Ortho Height NAVD88 (sft)	Description
	Northing (sft)	Easting (sft)		
2197	788261.63	3211905.25	2386.06	NVA
2198	773705.47	3183295.41	2167.25	NVA
2199	760964.51	3165254.01	2221.71	NVA
2200	730421.64	3149734.35	1986.53	NVA
2201	810684.48	3193651.79	2513.81	NVA
2202	796984.38	3174359.99	2394.59	NVA
2203	821422.77	3163339.54	2771.00	NVA
2204	855762.82	3168416.60	2009.65	NVA
2205	847973.47	3130253.43	1754.39	NVA
2206	843015.41	3064983.06	1837.79	NVA
2207	828587.90	3106068.26	1638.97	NVA
2208	807743.13	3099570.25	1493.94	NVA
2209	798423.37	3140376.74	2267.08	NVA
2210	829133.92	3143894.45	2106.03	NVA
2211	780299.88	3121773.90	1852.71	NVA
2212	760848.35	3093303.79	1537.81	NVA
2213	746390.53	3121401.39	1986.31	NVA
2214	732182.04	3098271.71	1814.95	NVA
2215	699374.74	3075854.36	2432.99	NVA
2216	679425.51	3026439.53	1675.90	NVA
2217	679781.90	2971858.38	1452.82	NVA
2218	712790.18	2997195.56	1699.02	NVA
2219	751579.55	2974738.86	1729.71	NVA
2220	836187.09	2982988.19	1500.38	NVA
2221	804146.20	3002173.31	1269.99	NVA
2222	761896.04	3019452.87	1528.92	NVA
2223	722098.83	3058003.17	1773.05	NVA
2224	793742.33	3037170.69	1434.37	NVA
2225	843746.74	3088398.19	1699.78	NVA
2226	773525.12	3063415.76	1496.84	NVA
2227	834791.38	3028978.47	1444.96	NVA
2228	822499.23	3072513.98	1466.99	NVA
2229	637589.06	2987755.57	2138.40	NVA
2230	734249.41	2916499.92	1211.82	NVA
2231	715814.17	2906547.99	1319.83	NVA
2231E	796167.59	2752495.01	1230.95	NVA
2232	691070.34	2820732.77	1124.29	NVA
3001	838692.74	1941616.95	862.92	VVA
3002	827029.26	2014876.55	933.60	VVA

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	NAD-83 (2011) SPC (FIPS Zone 4100)		Ortho Height NAVD88 (sft)	Description
	Northing (sft)	Easting (sft)		
3003	817802.93	1979450.67	931.42	VVA
3004	807367.34	1899371.41	921.81	VVA
3005	797443.63	1960044.98	962.89	VVA
3006	795377.33	2009453.60	951.01	VVA
3007	782449.91	1910523.84	662.06	VVA
3008	769162.33	1951132.66	537.67	VVA
3009	763320.44	1998630.35	1088.98	VVA
3010	827477.74	1920084.58	957.62	VVA
3011	785173.49	1980454.34	969.00	VVA
3012	805117.77	1926231.03	991.33	VVA
3013	788840.29	1908621.61	1012.65	VVA
3014	793655.42	1950618.95	987.80	VVA
3014 A	793655.47	1950618.95	987.59	VVA
3015	821931.87	1955773.44	887.26	VVA
3016	833783.60	1977447.86	861.97	VVA
3017	806689.63	1980256.16	935.67	VVA
3018	768898.42	1982826.82	667.25	VVA
3019	610320.22	1655450.17	866.34	VVA
3020	638746.29	1661221.23	530.18	VVA
3021	682219.39	1676854.67	424.42	VVA
3022	740563.84	1697579.00	750.47	VVA
3023	721653.01	1708443.36	803.73	VVA
3024	677767.85	1723628.21	475.51	VVA
3025	622336.07	1736066.25	756.68	VVA
3026	625433.31	1698241.30	583.15	VVA
3027	677020.13	1703468.57	447.70	VVA
3028	745971.49	1754477.66	570.46	VVA
3029	703093.63	1748805.85	590.97	VVA
3030	659258.69	1773168.16	502.81	VVA
3031	594980.20	1789700.57	802.13	VVA
3032	628689.60	1794315.82	520.63	VVA
3033	668467.45	1805638.44	618.92	VVA
3034	647044.23	1821339.85	603.19	VVA
3035	635348.77	1682953.84	557.54	VVA
3036	716489.80	1778820.48	509.13	VVA
3037	641525.66	1761495.90	475.28	VVA
3038	668228.56	1693871.58	453.46	VVA
3039	711006.40	1687730.34	781.17	VVA
3040	748627.16	1721936.77	651.69	VVA

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	NAD-83 (2011) SPC (FIPS Zone 4100)		Ortho Height NAVD88 (sft)	Description
	Northing (sft)	Easting (sft)		
3041	729218.15	1739259.15	801.98	VVA
3042	713012.60	1735216.40	605.73	VVA
3043	703171.27	1705177.08	822.96	VVA
3044	696108.81	1769988.35	502.34	VVA
3045	679542.50	1752082.56	557.10	VVA
3046	680352.23	1785419.56	479.74	VVA
3047	655378.97	1792705.28	502.19	VVA
3048	635464.43	1821450.03	538.47	VVA
3049	610535.02	1761384.46	540.76	VVA
3050	630893.25	1781954.38	604.95	VVA
3051	649184.62	1739218.02	484.13	VVA
3052	635645.32	1721815.97	644.43	VVA
3053	658113.75	1706884.48	428.08	VVA
3054	621343.40	1680553.73	659.05	VVA
3055	605783.06	1670316.58	613.32	VVA
3056	695456.14	1730192.68	497.75	VVA
3056E	819082.06	2738004.68	1182.00	VVA
3057	741049.75	1707828.59	741.16	VVA
3058	461543.25	2419608.13	988.33	VVA
3059	424063.61	2430912.79	884.90	VVA
3060	350693.08	2443871.65	1121.05	VVA
3061	400012.59	2456528.16	1037.98	VVA
3062	514774.97	2439655.61	840.83	VVA
3063	473383.45	2466672.07	983.29	VVA
3064	548271.67	2480485.99	889.25	VVA
3065	388849.30	2485781.75	926.51	VVA
3066	438246.41	2460383.22	1004.67	VVA
3066E	669543.25	2583015.56	1162.76	VVA
3067	341344.85	2478583.70	1639.95	VVA
3068	549796.03	2526808.37	903.76	VVA
3069	487606.59	2509959.20	889.92	VVA
3070	451564.41	2493771.54	860.76	VVA
3071	443520.78	2531582.26	830.44	VVA
3072	416332.20	2502829.94	911.96	VVA
3073	376533.94	2526141.45	2925.43	VVA
3074	364356.68	2557503.41	4819.36	VVA
3075	375332.20	2553489.88	4505.53	VVA
3076	408927.62	2519141.84	1032.34	VVA
3077	432458.27	2566108.43	879.78	VVA

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	NAD-83 (2011) SPC (FIPS Zone 4100)		Ortho Height NAVD88 (sft)	Description
	Northing (sft)	Easting (sft)		
3078	427649.19	2541512.13	1346.51	VVA
3082	556015.70	2628416.62	985.12	VVA
3083	540745.18	2671303.04	1050.32	VVA
3084	556470.54	2668594.81	959.67	VVA
3085	506598.40	2659824.51	1548.58	VVA
3088	474841.27	2733294.71	5051.28	VVA
3089	485014.43	2717538.74	3206.60	VVA
3089E	652449.04	2553089.86	928.78	VVA
3090	502232.66	2699738.76	1453.61	VVA
3090E	598206.36	2510202.54	1010.07	VVA
3091	546522.98	2869187.35	4354.30	VVA
3093	591639.19	2884402.47	1436.79	VVA
3094	617573.58	2919626.56	2229.65	VVA
3095	654101.56	2932606.97	1518.14	VVA
3096	637366.08	2913984.34	1494.90	VVA
3097	628769.09	2904179.95	1386.30	VVA
3098	646578.40	2884400.07	1192.86	VVA
3099	657850.79	2837857.01	1119.13	VVA
3100	612089.31	2676349.49	1001.11	VVA
3101	595626.10	2696659.21	948.58	VVA
3102	558413.91	2713947.07	1061.83	VVA
3103	554061.16	2742107.85	1056.87	VVA
3104	612732.59	2720081.55	1087.44	VVA
3105	633979.95	2755760.00	1077.49	VVA
3106	601987.68	2776737.50	1432.93	VVA
3107	542477.10	2788623.48	1535.09	VVA
3108	553150.13	2817548.86	1298.13	VVA
3109	614196.52	2807800.94	1037.59	VVA
3110	592554.02	2850670.72	1141.27	VVA
3111	571082.47	2860404.67	1675.66	VVA
3112	625348.45	2870665.20	1286.92	VVA
3113	636839.39	2793602.84	991.62	VVA
3114	591828.31	2754423.44	1055.76	VVA
3115	724437.00	2668872.81	1263.28	VVA
3116	673432.26	2646268.57	990.48	VVA
3117	725499.98	2628549.82	1184.65	VVA
3118	758207.59	2606149.70	1080.86	VVA
3120	666424.98	2584756.69	1163.80	VVA
3121	641626.86	2543925.76	882.82	VVA

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	NAD-83 (2011) SPC (FIPS Zone 4100)		Ortho Height NAVD88 (sft)	Description
	Northing (sft)	Easting (sft)		
3122	562934.85	2472725.57	855.42	VVA
3123	585918.30	2559150.47	901.73	VVA
3124	579183.37	2506236.04	928.83	VVA
3125	611709.20	2533649.15	971.18	VVA
3126	634807.24	2594619.94	1021.10	VVA
3127	579983.55	2599833.43	1041.71	VVA
3128	678695.41	2619326.83	1117.37	VVA
3129	614726.92	2627116.39	943.38	VVA
3130	582978.27	2653896.60	979.65	VVA
3131	606733.38	2647857.65	913.93	VVA
3132	689049.90	2683329.92	1143.68	VVA
3133	741064.92	2713061.06	1429.20	VVA
3134	677903.37	2730257.88	1397.59	VVA
3135	831253.59	2725455.98	1574.83	VVA
3136	796578.10	2755430.44	1209.01	VVA
3137	731275.98	2760749.93	1152.42	VVA
3138	711392.98	2793225.65	1286.85	VVA
3139	834520.35	2782951.63	1561.64	VVA
3140	783196.37	2804820.33	1551.68	VVA
3141	745637.21	2823096.10	1242.42	VVA
3142	709019.41	2856158.97	1178.30	VVA
3143	827830.19	2837805.21	1153.50	VVA
3144	798327.69	2883533.17	1372.73	VVA
3145	757277.37	2873377.88	1151.61	VVA
3146	837815.62	2923553.68	1424.50	VVA
3147	734690.23	3169562.09	2687.10	VVA
3148	761380.17	3207655.82	3753.75	VVA
3149	767196.71	3227257.67	3453.46	VVA
3150	854738.47	3198265.69	2055.16	VVA
3151	827682.49	3207119.12	2542.25	VVA
3152	852523.59	3224271.62	2788.97	VVA
3153	774093.88	3183889.56	2156.63	VVA
3154	760446.52	3164341.87	2196.45	VVA
3155	731567.00	3149690.44	1981.21	VVA
3156	810975.55	3191474.10	2557.43	VVA
3157	795126.82	3174236.13	2351.77	VVA
3158	855413.49	3167966.35	2045.84	VVA
3159	848038.73	3130322.43	1739.72	VVA
3160	828101.32	3105462.63	1632.65	VVA

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	NAD-83 (2011) SPC (FIPS Zone 4100)		Ortho Height NAVD88 (sft)	Description
	Northing (sft)	Easting (sft)		
3161	807269.72	3098096.61	1493.05	VVA
3162	797595.22	3138356.80	2225.27	VVA
3162 A	797595.22	3138356.80	2225.28	VVA
3163	759932.16	3093615.36	1535.50	VVA
3164	746033.02	3121581.07	1977.53	VVA
3165	693865.13	3071475.28	2366.82	VVA
3166	680696.96	2969001.62	1525.50	VVA
3167	712737.83	2997229.26	1696.11	VVA
3168	752897.80	2972204.96	1849.83	VVA
3169	763012.43	3017891.70	1615.59	VVA
3170	794656.87	3037801.49	1386.04	VVA
3171	773563.18	3064597.55	1513.67	VVA
3172	834319.05	3027830.71	1390.56	VVA
3173	638225.78	2988211.74	2136.23	VVA

Geodetic Control Points

EAST TENNESSEE GEODETIC CONTROL POINTS				
Point No.	NAD-83 (2011) Epoch 2010.00 SPC (FIPS Zone 4100)		Ortho Height (sft)	Description
	Northing (sft)	Easting (sft)		
10000TSM	380333.78	2529855.00	3357.92	TSM
30000TSM	617562.08	2919482.57	2232.54	TSM
30001TSM	668143.50	3117279.42	5514.26	TSM
30002TSM	546499.62	2869113.95	4346.47	TSM
30003TSM	571417.90	2860017.32	1645.12	TSM
30004TSM	591761.24	2884428.84	1436.86	TSM
30005TSM	485111.68	2717545.38	3207.14	TSM
30006TSM	413003.89	2581775.48	1145.48	TSM
40001TSM	797631.53	3138549.34	2228.83	TSM
40002TSM	731580.85	3149856.88	1981.64	TSM
40004TSM	859599.02	3258393.32	3742.57	TSM
40006TSM	851266.89	3222019.10	2619.39	TSM
BETHEL	739831.58	3199025.25	2756.27	DF8569
BRISTOL 2	845168.10	3091615.88	1776.96	GA3309
C 37	870984.01	3202888.78	2012.15	FZ1073
DAUGHERTY	824201.60	3235585.34	3391.80	AJ1561
DOLINGER	850647.18	3254243.29	3498.02	DK3633
E 116	716509.74	3007426.08	1732.24	GA0589

EAST TENNESSEE GEODETIC CONTROL POINTS				
Point No.	NAD-83 (2011) Epoch 2010.00 SPC (FIPS Zone 4100)		Ortho Height (sft)	Description
	Northing (sft)	Easting (sft)		
EXPO	597453.58	1798764.09	655.93	DG7713
GPS 0004	586365.18	2549870.84	996.41	FC2000
GPS 10	760523.94	1914834.84	505.61	GC2718
GPS 20	613247.14	2645705.61	1012.66	FB3325
GPS 4	744392.60	2736031.49	1940.74	GA3643
GREER	859170.57	3235549.85	3291.50	DK3635
HIGGINS	632504.90	3047200.81	2110.13	DN4539
JOELTON	725514.90	1700156.04	817.69	GC0869
LAUREL CREEK	836066.40	3210703.28	2443.33	DK3634
LHT 682	557256.12	2592821.60	1074.24	FB1956
LOVE	657984.80	1727705.91	746.12	GC0454
MANLY	611926.28	1705712.69	597.43	GC1920
MOHAWK	695888.46	2836397.79	1168.82	GA2087
NEWFOUND	475022.26	2733723.21	5041.88	FB4079
OAK	538900.40	2468194.38	894.10	FC0259
P 114	641360.93	2863326.24	1232.03	GA0902
S 82	795723.10	2009077.09	956.91	GB1968
SUE	650111.55	2585613.22	1090.00	GA2573
TEL AZ MK	708585.87	1734298.68	518.03	GC0890
TIE	736030.39	2769343.24	1131.48	GA2134
VAUGHN	805365.84	1897951.23	931.79	GC0118
WEST	586223.81	2547478.35	1071.25	FC0240
Y 108	842005.19	3035000.69	1793.91	GA0276

NGS Base Station Check Points

Grid Deltas Published vs. Surveyed			
Point	Δ Northing (sFT)	Δ Easting (sFT)	Δ Elev. (sFT)
DOWDY	-0.059	0.05	0.079
DOWDY	-0.035	0.053	0.09
E 116	0.016	0.008	-0.047
E 116	0.024	0.005	-0.052
EXPO	-0.102	0.047	0.115
EXPO	-0.102	0.047	0.115
LHT 682	-0.129	0.019	0.106
LHT 682	-0.124	0.006	0.083
MOHAWK	N/A	N/A	0.041

Coordinate System: Geodetic

HORIZONTAL DATUM: NAD83 (2011) Epoch 2010.00
VERTICAL DATUM: NAVD88
UNITS: US Survey Feet
DATE: 3/5/2015

LiDAR GROUND CONTROL

EASTERN TENNESSEE PRIMARY LiDAR GROUND CONTROL POINTS			
Point No.	Geodetic Coordinates NAD-83 (2011) Epoch 2010.00		Ellipsoid Height (sft)
	Latitude (N)	Longitude (W)	
1	36°38'13.94714"	-86°05'30.33481"	766.99
2	36°36'18.39403"	-85°50'30.59707"	835.27
3	36°34'48.09963"	-85°57'44.76142"	838.77
4	36°33'03.67327"	-86°14'08.58611"	826.40
5	36°31'19.32450"	-86°01'43.43990"	861.73
6	36°31'06.18896"	-85°51'38.90580"	854.18
7	36°28'57.83633"	-86°11'48.50245"	564.13
8	36°26'39.84580"	-86°03'34.24160"	464.27
9	36°25'52.49018"	-85°53'52.02278"	989.88
10	36°36'25.12821"	-86°09'57.56166"	849.56
11	36°29'25.60027"	-85°57'33.16449"	870.55
12	36°32'46.72590"	-86°09'17.01870"	818.39
13	35°59'44.43119"	-87°05'06.96181"	769.07
14	36°05'01.31027"	-87°02'23.77263"	435.03
15	36°12'11.73314"	-86°59'19.70139"	336.03
16	36°22'32.55953"	-86°55'31.71491"	595.16
17	36°18'44.70535"	-86°52'58.07075"	705.84
18	36°11'33.22063"	-86°49'48.92666"	376.75
19	36°02'24.65204"	-86°47'09.29741"	643.58
20	36°02'41.86845"	-86°54'50.00593"	539.01
21	36°11'23.80905"	-86°53'52.68762"	352.82
22	36°22'49.12859"	-86°43'37.34158"	472.76
23	36°15'40.49928"	-86°44'45.26705"	532.64

EASTERN TENNESSEE PRIMARY LiDAR GROUND CONTROL POINTS			
Point No.	Geodetic Coordinates NAD-83 (2011) Epoch 2010.00		Ellipsoid Height (sft)
	Latitude (N)	Longitude (W)	
24	36°08'35.03089"	-86°39'43.97483"	447.81
25	35°57'29.33424"	-86°37'01.94470"	705.51
26	36°03'33.42123"	-86°35'14.77096"	419.48
27	36°09'39.04139"	-86°32'09.41083"	509.42
28	36°07'07.99876"	-86°28'46.74616"	485.05
29	36°04'29.43036"	-86°57'59.16414"	463.56
30	36°17'28.90821"	-86°38'23.58201"	404.69
31	36°05'30.95551"	-86°42'02.47926"	385.47
32	35°35'46.09917"	-84°29'37.06359"	901.44
33	35°29'18.18805"	-84°26'46.80424"	780.29
34	35°17'10.51438"	-84°24'26.30019"	1019.54
35	35°25'16.14608"	-84°21'43.10481"	939.65
36	35°44'15.93895"	-84°24'43.55803"	721.90
37	35°37'19.11245"	-84°19'25.69485"	883.67
38	35°49'30.87165"	-84°16'19.34275"	825.36
39	35°23'18.91337"	-84°15'51.81281"	819.20
40	35°31'28.44228"	-84°20'54.83564"	902.61
41	35°15'29.32426"	-84°17'28.89655"	1552.61
42	35°44'29.55188"	-84°12'27.40364"	929.68
43	35°49'45.17394"	-84°06'49.18807"	724.48
44	35°39'32.32233"	-84°10'35.24867"	777.96
45	35°34'05.07551"	-84°14'31.31085"	802.87
46	35°32'17.28478"	-84°06'32.94078"	760.49
47	35°27'49.91198"	-84°12'21.12788"	814.67
48	35°21'11.71021"	-84°07'47.76751"	2826.63
49	35°18'11.48118"	-84°01'25.09304"	5145.02
50	35°18'49.98747"	-83°59'27.45621"	5205.01
51	35°20'53.68557"	-84°02'17.40411"	4410.93
52	35°26'37.48257"	-84°09'00.33559"	942.13
53	35°27'00.62401"	-83°56'26.37241"	1053.97
54	35°32'48.70845"	-84°03'33.38869"	743.34
55	35°30'17.76363"	-83°59'31.01637"	789.87
56	35°29'34.35570"	-84°04'29.46883"	1252.05
60	35°40'48.22846"	-83°44'23.99181"	965.22
61	35°50'24.89293"	-83°46'24.58057"	888.14
62	35°47'43.78343"	-83°38'18.33882"	1024.22
63	35°50'19.72040"	-83°38'14.23070"	850.41
64	35°42'49.50714"	-83°39'10.13634"	1350.48
67	35°36'39.71654"	-83°25'31.25583"	4951.39

EASTERN TENNESSEE PRIMARY LiDAR GROUND CONTROL POINTS			
Point No.	Geodetic Coordinates NAD-83 (2011) Epoch 2010.00		Ellipsoid Height (sft)
	Latitude (N)	Longitude (W)	
68	35°38'22.10192"	-83°28'43.99074"	3111.56
69	35°41'09.12504"	-83°32'17.47590"	1379.60
70	35°47'47.16755"	-82°57'45.09341"	4252.38
71	35°51'59.76540"	-82°54'14.98998"	2198.38
72	35°54'16.79172"	-82°50'22.90102"	1265.50
73	35°57'08.09785"	-82°44'56.12457"	1687.59
74	36°05'09.80026"	-82°44'10.50233"	1418.28
75	36°02'31.41819"	-82°48'02.92880"	1396.32
76	36°01'10.41371"	-82°50'08.90401"	1311.68
77	36°04'11.25857"	-82°54'00.27887"	1097.72
78	36°06'17.97357"	-83°03'22.75984"	1024.98
79	36°05'53.60688"	-83°17'20.80195"	1024.63
80	36°06'02.67521"	-83°33'19.85105"	904.37
81	35°59'31.40457"	-83°35'53.63702"	998.58
82	35°56'38.90360"	-83°32'23.97229"	844.30
83	35°50'28.38838"	-83°29'16.27904"	889.04
84	35°44'05.39457"	-83°26'54.80832"	1564.23
85	35°49'24.21629"	-83°23'54.97547"	1047.45
86	35°59'22.16640"	-83°27'47.68512"	985.23
87	36°02'55.82718"	-83°19'58.78067"	1123.56
88	35°57'32.34553"	-83°16'27.25178"	1232.57
89	35°47'29.01252"	-83°14'01.40759"	1438.50
90	35°48'59.26993"	-83°08'26.91052"	1166.25
91	35°58'59.17626"	-83°09'34.12899"	958.12
92	35°55'27.25809"	-83°01'13.55036"	1037.88
93	35°51'53.20171"	-82°59'21.75127"	1581.08
94	36°00'46.05769"	-82°56'56.40848"	1188.01
95	36°03'08.58240"	-83°12'28.39390"	909.43
96	35°55'56.26692"	-83°20'39.83956"	991.64
97	36°18'02.42031"	-83°37'24.84512"	1147.08
98	36°09'57.37114"	-83°42'21.60996"	1001.39
99	36°18'21.01836"	-83°45'34.82516"	1085.46
100	36°23'49.06679"	-83°49'59.28475"	985.11
101	36°15'52.80860"	-83°52'54.26608"	943.69
102	36°08'45.97877"	-83°54'46.22860"	1061.89
103	36°04'51.28887"	-84°03'08.74888"	803.95
104	35°59'44.98990"	-84°05'29.17258"	880.74
105	35°54'49.44145"	-84°10'56.98648"	866.37
106	35°52'04.52869"	-84°17'52.50750"	755.02

EASTERN TENNESSEE PRIMARY LiDAR GROUND CONTROL POINTS			
Point No.	Geodetic Coordinates NAD-83 (2011) Epoch 2010.00		Ellipsoid Height (sft)
	Latitude (N)	Longitude (W)	
107	35°55'34.91225"	-84°00'21.18898"	790.98
108	35°54'19.53227"	-83°51'48.26559"	852.72
109	36°10'39.79733"	-83°47'39.40332"	1021.34
110	36°05'16.97475"	-83°48'25.57480"	956.39
111	36°03'38.72922"	-83°52'43.08974"	930.80
112	36°00'04.70075"	-83°46'22.50450"	837.99
114	35°59'20.01153"	-83°41'44.91282"	799.53
115	36°12'07.64581"	-83°34'37.92053"	1047.54
116	36°20'34.75387"	-83°28'17.79696"	1324.09
117	36°09'59.17499"	-83°25'07.36208"	1282.74
118	36°35'22.80257"	-83°25'18.86720"	1469.98
119	36°29'30.90320"	-83°19'21.27380"	1107.47
120	36°18'45.18411"	-83°18'36.89318"	1058.80
121	36°15'18.37292"	-83°12'09.63102"	1180.91
122	36°35'37.63851"	-83°13'31.61132"	1457.71
123	36°27'05.80585"	-83°09'19.82035"	1450.50
124	36°20'50.93385"	-83°05'50.35450"	1138.48
125	36°14'36.96334"	-82°59'23.39996"	1078.88
126	36°34'11.50105"	-83°02'31.67551"	1066.88
127	36°29'10.07161"	-82°53'12.54989"	1262.21
128	36°22'28.11606"	-82°55'33.49593"	1047.43
129	36°09'14.60720"	-82°49'55.14161"	1453.90
130	36°35'28.01896"	-82°44'47.25745"	1326.63
131	36°27'02.63246"	-82°40'41.81795"	1253.09
132	36°22'55.31695"	-82°42'56.01016"	1246.49
133	36°14'45.86782"	-82°37'53.23828"	1461.25
134	35°57'09.07983"	-82°33'39.21782"	3622.42
135	36°02'29.16246"	-82°27'57.15537"	2644.63
136	36°07'28.42229"	-82°12'23.97942"	2857.56
137	36°10'26.51763"	-82°08'06.93029"	3424.62
137	36°10'26.51763"	-82°08'06.93029"	3424.62
138	36°06'22.21394"	-82°06'37.34896"	5413.84
139	36°09'21.13697"	-81°58'06.85207"	2978.02
140	36°16'13.78771"	-81°52'36.44680"	2695.70
141	36°21'07.09711"	-81°47'28.28206"	3638.54
142	36°22'20.44029"	-81°42'37.27126"	3182.85
143	36°19'34.77274"	-81°44'07.07197"	3277.62
144	36°36'53.73316"	-81°36'13.65547"	3642.56
145	36°37'16.94616"	-81°38'19.27396"	3153.22

EASTERN TENNESSEE PRIMARY LiDAR GROUND CONTROL POINTS			
Point No.	Geodetic Coordinates NAD-83 (2011) Epoch 2010.00		Ellipsoid Height (sft)
	Latitude (N)	Longitude (W)	
146	36°37'26.62587"	-81°47'28.53570"	1869.96
147	36°32'01.14904"	-81°46'57.50571"	2440.04
149	36°25'32.18246"	-81°46'29.96843"	2269.98
150	36°23'23.21761"	-81°52'10.53709"	2060.09
151	36°21'15.12465"	-81°56'17.54382"	2092.30
151	36°21'15.12478"	-81°56'17.54392"	2092.30
152	36°16'36.52476"	-81°59'29.82269"	1882.20
153	36°29'22.43541"	-81°50'19.17359"	2460.00
154	36°26'54.73344"	-81°53'56.55721"	2252.26
155	36°31'08.28620"	-81°55'44.68078"	2673.55
156	36°37'46.56791"	-81°54'18.43573"	1755.65
157	36°36'26.24517"	-82°01'58.77015"	1666.88
158	36°37'02.48859"	-82°10'42.90380"	1723.70
159	36°32'47.62683"	-82°07'41.74868"	1528.67
160	36°29'25.04030"	-82°09'22.17552"	1393.73
161	36°27'33.93412"	-82°01'11.63776"	2130.11
162	36°32'30.61354"	-81°59'38.55738"	2067.59
163	36°24'57.30428"	-82°04'35.63714"	1768.02
164	36°21'39.25642"	-82°10'40.36363"	1433.96
165	36°18'52.14134"	-82°05'51.71995"	1951.99
166	36°17'09.26235"	-82°10'02.60850"	1689.66
167	36°10'54.50483"	-82°15'41.00950"	2271.22
168	36°09'06.20381"	-82°25'11.53931"	1553.86
169	36°09'20.15273"	-82°36'36.57994"	1423.77
170	36°14'21.83434"	-82°30'56.88313"	1558.11
171	36°21'14.85538"	-82°35'26.21003"	1753.10
172	36°34'41.99093"	-82°32'34.54292"	1429.24
173	36°29'27.85894"	-82°28'48.38126"	1166.91
174	36°22'36.84430"	-82°26'03.64786"	1513.72
175	36°15'46.50462"	-82°18'11.74871"	1713.37
176	36°27'41.24648"	-82°21'47.22216"	1295.27
177	36°35'32.64254"	-82°11'02.24572"	1580.47
178	36°24'03.56069"	-82°16'30.46609"	1384.23
179	36°34'16.67684"	-82°23'31.75351"	1277.25
180	36°32'04.37710"	-82°14'35.52309"	1371.75
181	36°02'13.37063"	-82°33'00.82413"	2034.70
182	35°19'14.06976"	-83°58'57.22965"	4866.53

Quality Control Points

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	Geodetic Coordinates NAD-83 (2011) Epoch 2010.00		Ellipsoid Height (sft)	Description
	Latitude (N)	Longitude (W)		
2001	36°38'23.41776"	-86°05'21.66564"	790.38	NVA
2002	36°36'27.86826"	-85°50'29.98674"	842.22	NVA
2003	36°34'36.16370"	-85°57'41.87436"	832.07	NVA
2004	36°33'13.19351"	-86°14'15.61163"	846.46	NVA
2005	36°31'54.10384"	-86°01'48.73839"	874.23	NVA
2006	36°31'09.25378"	-85°51'31.54760"	835.53	NVA
2007	36°28'50.12904"	-86°11'39.29375"	562.60	NVA
2008	36°26'29.48936"	-86°03'25.49327"	494.64	NVA
2009	36°26'26.78027"	-85°52'58.50957"	915.96	NVA
2010	36°36'29.12777"	-86°10'02.62806"	845.21	NVA
2011	36°29'28.07682"	-85°57'48.98253"	874.85	NVA
2012	36°32'40.59875"	-86°08'39.54268"	902.08	NVA
2013	36°30'02.57281"	-86°12'14.14957"	921.49	NVA
2014	36°30'49.59894"	-86°03'38.63201"	889.68	NVA
2015	36°35'31.86906"	-86°02'59.70398"	804.68	NVA
2016	36°37'27.66302"	-85°58'20.43606"	775.32	NVA
2017	36°32'58.25180"	-85°57'36.20278"	837.82	NVA
2018	36°26'43.82609"	-85°57'04.39382"	570.09	NVA
2019	36°28'11.84925"	-86°07'03.79960"	454.49	NVA
2020	36°31'10.00112"	-86°07'56.99080"	874.87	NVA
2021	36°34'11.96906"	-86°10'22.92119"	846.15	NVA
2022	36°36'02.11809"	-85°59'15.91780"	773.63	NVA
2023	36°35'18.84571"	-85°49'01.02908"	810.62	NVA
2024	36°34'10.02891"	-85°53'35.61271"	839.74	NVA
2024	36°34'10.02928"	-85°53'35.61320"	839.68	NVA
2024	36°34'10.02946"	-85°53'35.61308"	839.61	NVA
2025	36°27'52.75241"	-86°00'27.91510"	515.19	NVA
2026	36°32'35.92685"	-85°54'33.52161"	882.88	NVA
2027	36°28'23.79016"	-85°52'41.64210"	927.05	NVA
2028	36°25'47.58977"	-86°00'09.51115"	521.47	NVA
2029	36°33'49.42323"	-86°03'30.78656"	805.72	NVA
2030	36°00'18.62005"	-87°03'28.95712"	764.11	NVA
2031	36°05'07.72787"	-87°02'29.45399"	451.82	NVA
2032	36°12'14.13361"	-86°59'27.92332"	307.15	NVA
2033	36°22'27.18051"	-86°55'09.36049"	644.00	NVA
2034	36°18'54.21431"	-86°52'55.87883"	726.24	NVA
2035	36°11'36.44191"	-86°49'56.67328"	401.28	NVA

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	Geodetic Coordinates NAD-83 (2011) Epoch 2010.00		Ellipsoid Height (sft)	Description
	Latitude (N)	Longitude (W)		
2036	36°02'17.82628"	-86°47'05.24877"	667.30	NVA
2037	36°02'53.71053"	-86°54'50.60599"	487.48	NVA
2038	36°10'51.84209"	-86°53'51.76191"	319.84	NVA
2039	36°22'47.90413"	-86°43'46.14231"	428.26	NVA
2040	36°15'44.69016"	-86°44'51.90155"	557.25	NVA
2041	36°08'38.55402"	-86°39'36.60575"	377.76	NVA
2042	35°57'59.85852"	-86°36'49.98586"	725.57	NVA
2043	36°03'32.91658"	-86°35'21.33481"	426.17	NVA
2044	36°10'11.21453"	-86°33'13.68436"	523.48	NVA
2045	36°06'35.38336"	-86°29'52.89221"	501.93	NVA
2046	36°04'17.60705"	-86°57'56.47499"	465.22	NVA
2047	36°18'01.08702"	-86°38'37.57067"	404.01	NVA
2048	36°05'40.93334"	-86°42'17.19200"	403.90	NVA
2049	36°10'00.20522"	-86°55'53.52395"	340.89	NVA
2050	36°16'57.70759"	-86°57'10.48604"	688.94	NVA
2051	36°23'14.14087"	-86°47'57.81869"	615.31	NVA
2052	36°20'02.40071"	-86°46'45.21904"	688.68	NVA
2053	36°17'21.64279"	-86°47'26.57182"	505.87	NVA
2054	36°15'42.81355"	-86°53'35.26023"	726.24	NVA
2055	36°14'37.76142"	-86°40'24.01791"	405.46	NVA
2056	36°11'46.97369"	-86°43'57.77155"	460.85	NVA
2057	36°12'02.48276"	-86°37'14.65208"	388.01	NVA
2058	36°07'56.03667"	-86°35'42.33308"	406.50	NVA
2060	36°00'32.47667"	-86°42'03.21251"	448.19	NVA
2061	36°03'49.20163"	-86°37'53.54253"	503.73	NVA
2062	36°06'50.25621"	-86°46'34.45977"	390.67	NVA
2063	36°04'36.50735"	-86°50'08.02409"	536.17	NVA
2064	36°08'18.21622"	-86°53'09.42088"	332.39	NVA
2065	36°02'12.28639"	-86°58'25.20811"	563.60	NVA
2066	35°59'37.14535"	-87°00'27.93745"	533.64	NVA
2067	36°14'26.89676"	-86°48'29.29304"	403.66	NVA
2068	36°21'56.77179"	-86°53'07.35112"	644.25	NVA
2069	36°02'32.18706"	-87°02'24.45436"	443.21	NVA
2070	36°08'18.67724"	-86°57'47.54364"	368.82	NVA
2070E	36°33'19.28626"	-83°22'47.86882"	329.76	NVA
2071	36°14'25.76066"	-86°56'27.02652"	393.66	NVA
2072	36°21'29.32583"	-86°55'36.40097"	683.92	NVA
2073	36°20'52.15140"	-86°49'32.11885"	717.12	NVA
2074	36°14'02.01756"	-86°43'39.90413"	399.18	NVA

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	Geodetic Coordinates NAD-83 (2011) Epoch 2010.00		Ellipsoid Height (sft)	Description
	Latitude (N)	Longitude (W)		
2075	36°04'12.82575"	-86°43'42.60813"	498.26	NVA
2075E	36°09'16.07038"	-83°55'08.43360"	317.471	NVA
2076	36°06'54.55868"	-86°53'13.92301"	435.87	NVA
2076E	36°06'39.64539"	-84°01'08.72889"	256.887	NVA
2077	36°10'06.31195"	-86°45'12.83515"	419.18	NVA
2078	36°19'28.81848"	-86°42'46.85999"	401.53	NVA
2079	36°12'14.67403"	-86°39'32.45178"	373.48	NVA
2080	35°35'30.60580"	-84°28'59.07838"	891.87	NVA
2081	35°29'33.08342"	-84°26'07.53290"	833.55	NVA
2082	35°17'26.80883"	-84°24'10.60156"	1039.86	NVA
2083	35°25'19.89814"	-84°21'41.67222"	929.33	NVA
2084	35°44'00.29892"	-84°23'55.10398"	795.65	NVA
2085	35°37'25.95930"	-84°19'27.72174"	835.78	NVA
2086	35°49'40.94120"	-84°16'27.59161"	775.66	NVA
2087	35°23'13.66407"	-84°16'13.07705"	771.36	NVA
2088	35°31'29.07930"	-84°21'01.41890"	894.03	NVA
2089	35°15'31.07266"	-84°17'43.76998"	1545.63	NVA
2090	35°44'41.22129"	-84°12'29.37997"	955.18	NVA
2091	35°49'44.22894"	-84°06'57.92037"	808.01	NVA
2092	35°39'39.99363"	-84°10'31.85636"	796.24	NVA
2093	35°34'05.60816"	-84°14'31.99133"	802.72	NVA
2094	35°32'12.06052"	-84°06'25.86446"	733.56	NVA
2095	35°27'46.68593"	-84°12'24.49186"	830.98	NVA
2096	35°21'48.27062"	-84°07'02.19491"	3259.98	NVA
2097	35°18'23.56756"	-84°00'46.52013"	5290.88	NVA
2098	35°19'03.19346"	-84°01'18.42398"	4797.08	NVA
2099	35°20'42.70279"	-84°02'07.35009"	4365.31	NVA
2100	35°26'45.94797"	-84°09'17.95332"	879.51	NVA
2102	35°32'45.50636"	-84°02'42.71064"	791.74	NVA
2102E	36°01'14.55553"	-84°03'20.57174"	285.951	NVA
2103	35°30'15.01927"	-83°59'32.51496"	783.23	NVA
2104	35°29'35.64109"	-84°04'30.93719"	1245.19	NVA
2105E	35°57'46.80566"	-84°10'09.50720"	277.254	NVA
2109	35°50'08.77053"	-83°46'41.77770"	913.05	NVA
2110	35°47'43.90766"	-83°37'46.76286"	954.28	NVA
2111	35°50'24.93426"	-83°38'03.68720"	847.69	NVA
2112	35°42'09.75542"	-83°40'17.17203"	1445.47	NVA
2115	35°36'36.50838"	-83°25'35.11652"	4954.17	NVA
2116	35°38'19.18464"	-83°29'15.45980"	2912.02	NVA

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	Geodetic Coordinates NAD-83 (2011) Epoch 2010.00		Ellipsoid Height (sft)	Description
	Latitude (N)	Longitude (W)		
2117	35°41'06.53376"	-83°32'15.95322"	1381.24	NVA
2118	35°47'58.69379"	-82°57'42.00506"	4154.64	NVA
2119	35°51'56.98769"	-82°54'17.75872"	2221.64	NVA
2120	35°55'08.74582"	-82°54'21.12946"	1335.02	NVA
2121	35°59'13.32924"	-82°47'06.07622"	2131.84	NVA
2122	36°05'02.38605"	-82°43'35.71988"	1514.76	NVA
2123	36°02'29.19910"	-82°47'53.62690"	1405.87	NVA
2124	36°01'09.29970"	-82°49'51.99323"	1300.92	NVA
2125	36°04'15.43845"	-82°54'02.88822"	1124.91	NVA
2126	36°06'11.52888"	-83°04'23.37141"	993.28	NVA
2127	36°05'47.24844"	-83°17'18.93531"	1074.61	NVA
2128	36°06'02.82792"	-83°33'05.04280"	904.78	NVA
2129	35°59'30.83911"	-83°36'06.90706"	1029.73	NVA
2130	35°55'55.20977"	-83°32'36.85290"	846.26	NVA
2131	35°50'36.22331"	-83°29'10.20822"	930.50	NVA
2132	35°44'03.90002"	-83°26'34.56476"	1617.70	NVA
2133	35°49'45.03298"	-83°23'29.04033"	984.64	NVA
2134	35°59'23.39075"	-83°27'20.22940"	986.06	NVA
2135	36°02'45.08954"	-83°20'12.64532"	994.47	NVA
2136	35°57'23.55726"	-83°16'06.44689"	1324.76	NVA
2137	35°47'36.06654"	-83°14'08.13834"	1421.27	NVA
2138	35°49'07.96435"	-83°08'06.92981"	1200.28	NVA
2139	35°59'14.70929"	-83°09'44.79161"	938.84	NVA
2140	35°55'35.01998"	-83°01'17.90598"	1074.06	NVA
2141	35°51'56.13049"	-82°59'26.81312"	1541.83	NVA
2142	36°00'41.93529"	-82°56'48.29689"	1210.09	NVA
2143	36°03'01.10395"	-83°12'29.28045"	894.11	NVA
2144	35°55'46.22914"	-83°21'01.78293"	995.86	NVA
2145	36°18'03.70813"	-83°37'25.26517"	1141.65	NVA
2146	36°09'41.78323"	-83°42'12.59488"	894.78	NVA
2147	36°18'22.87894"	-83°45'39.94033"	1058.36	NVA
2148	36°23'36.65078"	-83°49'58.61967"	968.97	NVA
2149	36°15'51.22193"	-83°52'57.26440"	934.25	NVA
2150	36°08'47.60091"	-83°54'54.25446"	1045.50	NVA
2151	36°05'01.86294"	-84°03'03.32366"	805.21	NVA
2152	35°59'44.04918"	-84°05'23.87763"	879.72	NVA
2153	35°54'43.28993"	-84°11'03.70012"	852.27	NVA
2154	35°52'10.85642"	-84°18'02.39145"	790.64	NVA
2155	35°55'37.30581"	-84°00'10.65938"	817.79	NVA

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	Geodetic Coordinates NAD-83 (2011) Epoch 2010.00		Ellipsoid Height (sft)	Description
	Latitude (N)	Longitude (W)		
2156	35°54'27.36135"	-83°52'04.38779"	941.12	NVA
2157	36°10'32.21609"	-83°47'43.85952"	1040.49	NVA
2158	36°05'14.93347"	-83°48'40.72354"	927.66	NVA
2159	36°03'53.45113"	-83°52'50.36887"	988.02	NVA
2160	36°00'01.66283"	-83°46'33.78081"	832.19	NVA
2161	35°54'40.17684"	-83°41'17.73675"	914.87	NVA
2162	35°58'51.75426"	-83°41'41.38146"	762.67	NVA
2163	36°11'36.38477"	-83°34'59.83456"	1064.95	NVA
2164	36°20'32.01752"	-83°28'28.14956"	1333.46	NVA
2165	36°09'57.43491"	-83°25'20.49257"	1236.05	NVA
2166	36°35'16.13992"	-83°25'34.67029"	1549.61	NVA
2167	36°29'54.00474"	-83°18'50.22797"	1170.65	NVA
2168	36°18'43.22826"	-83°18'14.34259"	1047.38	NVA
2169	36°15'19.79501"	-83°11'52.34586"	1168.88	NVA
2170	36°35'29.55629"	-83°13'35.39653"	1433.61	NVA
2171	36°27'05.50867"	-83°09'22.93909"	1450.46	NVA
2172	36°20'45.60872"	-83°05'58.58820"	1146.05	NVA
2173	36°14'42.23631"	-82°59'02.67139"	1057.22	NVA
2174	36°34'23.72269"	-83°02'42.43423"	1106.06	NVA
2175	36°28'59.29582"	-82°53'32.18992"	1299.99	NVA
2176	36°22'44.73433"	-82°55'07.64434"	1011.73	NVA
2177	36°09'03.12337"	-82°50'04.77934"	1350.56	NVA
2178	36°35'34.97162"	-82°44'28.41349"	1310.16	NVA
2179	36°27'14.79254"	-82°40'25.27388"	1301.64	NVA
2180	36°22'41.58034"	-82°43'18.35097"	1220.29	NVA
2181	36°14'57.28525"	-82°38'10.98175"	1399.07	NVA
2182	35°57'14.22273"	-82°33'41.06513"	3646.46	NVA
2183	36°02'18.74295"	-82°26'33.95147"	2883.07	NVA
2184	36°08'35.34808"	-82°13'59.52444"	3612.18	NVA
2185	36°10'28.47526"	-82°08'23.33444"	3429.00	NVA
2186	36°06'18.68724"	-82°06'29.96155"	5395.29	NVA
2188	36°16'58.39918"	-81°55'25.36713"	2583.93	NVA
2190	36°21'57.42580"	-81°43'25.39351"	3361.66	NVA
2191	36°19'52.64924"	-81°44'11.39912"	3240.77	NVA
2192	36°37'09.33029"	-81°40'47.87387"	3163.01	NVA
2193	36°37'08.60187"	-81°38'36.03227"	3088.01	NVA
2194	36°36'32.64569"	-81°48'34.56218"	1956.15	NVA
2195	36°32'09.87885"	-81°46'48.57960"	2430.40	NVA
2196	36°35'53.44969"	-81°43'41.45313"	2533.03	NVA

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	Geodetic Coordinates NAD-83 (2011) Epoch 2010.00		Ellipsoid Height (sft)	Description
	Latitude (N)	Longitude (W)		
2197	36°25'30.08411"	-81°46'21.12876"	2284.01	NVA
2198	36°23'18.35095"	-81°52'18.39428"	2064.99	NVA
2199	36°21'19.93749"	-81°56'05.32474"	2119.38	NVA
2200	36°16'24.49281"	-81°59'30.18375"	1884.44	NVA
2201	36°29'19.34290"	-81°49'52.59006"	2411.98	NVA
2202	36°27'12.05175"	-81°53'55.65309"	2292.63	NVA
2203	36°31'18.03788"	-81°55'58.00190"	2669.56	NVA
2204	36°36'55.20048"	-81°54'38.28456"	1907.99	NVA
2205	36°35'53.75721"	-82°02'29.85065"	1652.36	NVA
2206	36°35'30.13278"	-82°15'51.98121"	1735.34	NVA
2207	36°32'51.79553"	-82°07'35.60065"	1536.54	NVA
2208	36°29'28.37651"	-82°09'05.21411"	1391.40	NVA
2209	36°27'40.14865"	-82°00'50.55447"	2165.30	NVA
2210	36°32'42.14510"	-81°59'52.15930"	2004.23	NVA
2211	36°24'48.51218"	-82°04'46.98227"	1750.52	NVA
2212	36°21'47.44787"	-82°10'44.31118"	1435.05	NVA
2213	36°19'13.61379"	-82°05'08.12418"	1883.92	NVA
2214	36°17'02.27149"	-82°09'57.34539"	1712.61	NVA
2215	36°11'46.67741"	-82°14'46.31723"	2331.46	NVA
2216	36°08'47.85029"	-82°24'57.71433"	1574.10	NVA
2217	36°09'10.62546"	-82°36'02.66756"	1350.56	NVA
2218	36°14'28.02854"	-82°30'39.55809"	1596.20	NVA
2219	36°20'59.20327"	-82°34'56.99898"	1626.70	NVA
2220	36°34'52.44105"	-82°32'39.70868"	1397.49	NVA
2221	36°29'29.06685"	-82°28'58.76301"	1166.78	NVA
2222	36°22'25.37149"	-82°25'46.16800"	1425.69	NVA
2223	36°15'37.95005"	-82°18'13.48834"	1670.58	NVA
2224	36°27'33.61883"	-82°21'55.20615"	1331.12	NVA
2225	36°35'28.42937"	-82°11'04.74037"	1597.41	NVA
2226	36°24'04.09455"	-82°16'43.57556"	1393.80	NVA
2227	36°34'22.23328"	-82°23'16.87922"	1342.17	NVA
2228	36°32'04.57013"	-82°14'29.36607"	1364.18	NVA
2229	36°02'08.12334"	-82°33'07.06143"	2038.17	NVA
2230	36°18'27.44888"	-82°46'55.50555"	1108.77	NVA
2231	36°15'28.46094"	-82°49'04.35335"	1216.86	NVA
2231E	36°29'28.20277"	-83°19'57.92490"	344.203	NVA
2232	36°11'50.20339"	-83°06'40.62441"	1021.73	NVA
3001	36°38'14.20199"	-86°05'29.82254"	765.05	VVA
3002	36°36'18.63220"	-85°50'31.24706"	834.56	VVA

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	Geodetic Coordinates NAD-83 (2011) Epoch 2010.00		Ellipsoid Height (sft)	Description
	Latitude (N)	Longitude (W)		
3003	36°34'47.75412"	-85°57'45.74614"	833.24	VVA
3004	36°33'03.76741"	-86°14'07.19882"	824.88	VVA
3005	36°31'26.45175"	-86°01'43.58414"	865.27	VVA
3006	36°31'05.74414"	-85°51'38.30564"	852.57	VVA
3007	36°28'57.62735"	-86°11'49.90647"	565.13	VVA
3008	36°26'46.76258"	-86°03'32.56164"	440.33	VVA
3009	36°25'48.89211"	-85°53'51.30473"	991.04	VVA
3010	36°36'23.03331"	-86°09'53.76652"	860.23	VVA
3011	36°29'25.11149"	-85°57'33.60752"	871.27	VVA
3012	36°32'42.03845"	-86°08'37.98347"	894.04	VVA
3013	36°30'00.77758"	-86°12'13.36162"	915.73	VVA
3014	36°30'48.95114"	-86°03'39.03549"	890.30	VVA
3014	36°30'48.95164"	-86°03'39.03544"	890.09	VVA
3015	36°35'28.57283"	-86°02'36.04846"	789.37	VVA
3016	36°37'25.77306"	-85°58'10.23923"	763.55	VVA
3017	36°32'57.86433"	-85°57'35.92665"	837.66	VVA
3018	36°26'44.16953"	-85°57'04.65333"	569.56	VVA
3019	36°00'19.29132"	-87°03'30.29378"	771.73	VVA
3020	36°05'01.00508"	-87°02'23.73281"	434.88	VVA
3021	36°12'12.49857"	-86°59'18.62546"	328.12	VVA
3022	36°21'51.42674"	-86°55'12.45784"	653.65	VVA
3023	36°18'45.42168"	-86°52'57.54518"	707.03	VVA
3024	36°11'32.77585"	-86°49'47.46910"	378.93	VVA
3025	36°02'25.63002"	-86°47'10.29751"	661.32	VVA
3026	36°02'53.00931"	-86°54'51.21148"	487.80	VVA
3027	36°11'23.62186"	-86°53'53.32252"	351.18	VVA
3028	36°22'49.63336"	-86°43'37.29772"	473.37	VVA
3029	36°15'45.21734"	-86°44'42.66355"	494.17	VVA
3030	36°08'33.47413"	-86°39'41.56932"	406.71	VVA
3031	35°57'58.86758"	-86°36'15.16617"	707.29	VVA
3032	36°03'32.50941"	-86°35'21.49045"	425.18	VVA
3033	36°10'06.52987"	-86°33'06.32000"	522.89	VVA
3034	36°06'35.50694"	-86°29'53.49320"	507.67	VVA
3035	36°04'29.61032"	-86°57'58.56256"	462.06	VVA
3036	36°17'59.79241"	-86°38'37.24513"	412.17	VVA
3037	36°05'37.30835"	-86°42'02.32995"	379.42	VVA
3038	36°09'55.79827"	-86°55'49.37698"	357.15	VVA
3039	36°16'58.22397"	-86°57'09.34914"	684.60	VVA
3040	36°23'13.32084"	-86°50'15.50284"	554.70	VVA

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	Geodetic Coordinates NAD-83 (2011) Epoch 2010.00		Ellipsoid Height (sft)	Description
	Latitude (N)	Longitude (W)		
3041	36°20'02.81411"	-86°46'41.76935"	705.08	VVA
3042	36°17'22.24631"	-86°47'29.57563"	508.91	VVA
3043	36°15'42.37389"	-86°53'35.39172"	726.33	VVA
3044	36°14'37.66477"	-86°40'23.42815"	405.58	VVA
3045	36°11'52.57229"	-86°44'00.49837"	460.56	VVA
3046	36°12'02.86002"	-86°37'13.82978"	383.32	VVA
3047	36°07'56.34809"	-86°35'43.08288"	406.29	VVA
3048	36°04'40.99741"	-86°29'51.43288"	443.15	VVA
3049	36°00'30.82849"	-86°42'00.98594"	445.51	VVA
3050	36°03'53.53955"	-86°37'52.21674"	509.37	VVA
3051	36°06'51.38562"	-86°46'34.51374"	388.09	VVA
3052	36°04'36.07916"	-86°50'05.19442"	548.78	VVA
3053	36°08'16.96952"	-86°53'09.56339"	331.87	VVA
3054	36°02'10.87688"	-86°58'26.10129"	563.93	VVA
3055	35°59'35.97543"	-87°00'28.79129"	518.65	VVA
3056	36°14'28.23264"	-86°48'29.16726"	401.03	VVA
3056E	36°33'18.56843"	-83°22'47.79996"	329.391	VVA
3057	36°21'57.16639"	-86°53'07.20032"	644.3	VVA
3058	35°35'30.05873"	-84°28'57.62809"	888.62	VVA
3059	35°29'17.66874"	-84°26'47.96767"	785.87	VVA
3060	35°17'10.04639"	-84°24'25.72118"	1023.97	VVA
3061	35°25'15.69879"	-84°21'43.12080"	939.77	VVA
3062	35°44'13.31435"	-84°24'44.46348"	740.62	VVA
3063	35°37'19.55042"	-84°19'25.39171"	883.72	VVA
3064	35°49'37.70899"	-84°16'22.08272"	788.77	VVA
3065	35°23'20.32067"	-84°15'52.11134"	829.13	VVA
3066	35°31'33.14671"	-84°20'48.74594"	905.69	VVA
3066E	36°09'17.07558"	-83°55'05.91199"	323.673	VVA
3067	35°15'31.81230"	-84°17'29.04989"	1544.10	VVA
3068	35°49'44.33172"	-84°06'59.28820"	803.38	VVA
3069	35°39'32.54383"	-84°10'37.94064"	790.37	VVA
3070	35°33'39.07638"	-84°14'01.96082"	761.76	VVA
3071	35°32'12.54718"	-84°06'26.28180"	732.39	VVA
3072	35°27'49.04952"	-84°12'20.15794"	814.14	VVA
3073	35°21'11.18598"	-84°07'47.59089"	2830.23	VVA
3074	35°19'04.68031"	-84°01'32.02332"	4726.28	VVA
3075	35°20'54.00788"	-84°02'17.79026"	4411.97	VVA
3076	35°26'32.82642"	-84°09'04.69037"	935.37	VVA
3077	35°30'16.35366"	-83°59'31.34927"	783.13	VVA

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	Geodetic Coordinates NAD-83 (2011) Epoch 2010.00		Ellipsoid Height (sft)	Description
	Latitude (N)	Longitude (W)		
3078	35°29'33.68795"	-84°04'29.93095"	1249.44	VVA
3082	35°50'24.72989"	-83°46'23.92026"	885.36	VVA
3083	35°47'43.78789"	-83°37'47.66296"	951.33	VVA
3084	35°50'19.91199"	-83°38'15.92210"	859.99	VVA
3085	35°42'08.89871"	-83°40'16.82632"	1451.01	VVA
3088	35°36'36.72027"	-83°25'36.42247"	4957.38	VVA
3089	35°38'21.35541"	-83°28'44.00788"	3111.95	VVA
3089E	36°06'34.20263"	-84°01'14.97246"	252.448	VVA
3090	35°41'16.07216"	-83°32'14.34683"	1357.09	VVA
3090E	35°57'46.12772"	-84°10'09.92395"	277.281	VVA
3091	35°47'46.84569"	-82°57'44.45728"	4256.55	VVA
3093	35°55'08.10523"	-82°54'22.53727"	1336.17	VVA
3094	35°59'13.22725"	-82°47'04.15341"	2128.82	VVA
3095	36°05'10.02319"	-82°44'11.47025"	1416.17	VVA
3096	36°02'30.68852"	-82°48'04.90376"	1393.15	VVA
3097	36°01'08.86523"	-82°50'07.61259"	1284.67	VVA
3098	36°04'11.15842"	-82°54'01.41504"	1090.52	VVA
3099	36°06'16.78989"	-83°03'23.97814"	1016.81	VVA
3100	35°59'27.94048"	-83°36'25.24700"	900.23	VVA
3101	35°56'40.19617"	-83°32'23.20966"	847.84	VVA
3102	35°50'27.94981"	-83°29'04.65518"	962.15	VVA
3103	35°49'37.62465"	-83°23'24.14007"	957.64	VVA
3104	35°59'23.39986"	-83°27'33.04295"	986.28	VVA
3105	36°02'44.07142"	-83°20'12.00023"	975.90	VVA
3106	35°57'22.08568"	-83°16'07.51820"	1332.09	VVA
3107	35°47'30.46975"	-83°14'03.45139"	1436.96	VVA
3108	35°49'07.75433"	-83°08'08.69439"	1199.31	VVA
3109	35°59'14.03880"	-83°09'45.52393"	936.16	VVA
3110	35°55'27.49816"	-83°01'12.12178"	1040.59	VVA
3111	35°51'52.30339"	-82°59'21.85338"	1576.15	VVA
3112	36°00'45.57691"	-82°56'56.70075"	1185.25	VVA
3113	36°03'01.91038"	-83°12'30.36533"	889.78	VVA
3114	35°55'47.72275"	-83°20'42.19312"	955.19	VVA
3115	36°18'00.43985"	-83°37'23.00310"	1162.01	VVA
3116	36°09'41.53568"	-83°42'13.69151"	889.19	VVA
3117	36°18'20.35358"	-83°45'35.18578"	1083.86	VVA
3118	36°23'48.69091"	-83°49'59.94457"	980.94	VVA
3120	36°08'45.87868"	-83°54'45.49614"	1062.94	VVA
3121	36°04'49.01796"	-84°03'09.25983"	782.33	VVA

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	Geodetic Coordinates NAD-83 (2011) Epoch 2010.00		Ellipsoid Height (sft)	Description
	Latitude (N)	Longitude (W)		
3122	35°52'04.04773"	-84°17'53.21521"	755.07	VVA
3123	35°55'35.16535"	-84°00'17.65364"	801.16	VVA
3124	35°54'38.75994"	-84°11'02.46096"	828.37	VVA
3125	35°59'55.20906"	-84°05'21.54882"	870.66	VVA
3126	36°03'31.17750"	-83°52'53.60702"	920.20	VVA
3127	35°54'28.00261"	-83°52'04.66975"	941.33	VVA
3128	36°10'39.69676"	-83°47'40.72288"	1016.26	VVA
3129	36°00'05.50870"	-83°46'23.48475"	842.50	VVA
3130	35°54'45.46604"	-83°41'06.78035"	879.29	VVA
3131	35°58'41.73758"	-83°42'13.40093"	813.11	VVA
3132	36°12'07.09975"	-83°34'37.14298"	1042.19	VVA
3133	36°20'33.86743"	-83°28'18.10684"	1327.59	VVA
3134	36°10'05.04368"	-83°25'08.33865"	1295.87	VVA
3135	36°35'22.17089"	-83°25'17.61413"	1473.82	VVA
3136	36°29'31.46800"	-83°19'21.85326"	1107.31	VVA
3137	36°18'44.53309"	-83°18'38.70583"	1050.20	VVA
3138	36°15'18.98997"	-83°12'09.00786"	1184.47	VVA
3139	36°35'38.91431"	-83°13'31.78652"	1460.25	VVA
3140	36°27'05.42550"	-83°09'22.02877"	1449.59	VVA
3141	36°20'48.87932"	-83°05'52.06316"	1139.73	VVA
3142	36°14'37.06414"	-82°59'21.86762"	1075.47	VVA
3143	36°34'16.90237"	-83°02'21.95585"	1051.53	VVA
3144	36°29'11.29458"	-82°53'13.18254"	1270.04	VVA
3145	36°22'28.75144"	-82°55'33.26333"	1048.71	VVA
3146	36°35'28.67367"	-82°44'47.31482"	1322.23	VVA
3147	36°16'58.57218"	-81°55'26.07752"	2585.09	VVA
3148	36°21'06.32469"	-81°47'27.21798"	3652.10	VVA
3149	36°21'55.38745"	-81°43'24.71700"	3352.01	VVA
3150	36°36'32.59967"	-81°48'33.04744"	1953.69	VVA
3151	36°32'01.56249"	-81°46'58.85972"	2440.74	VVA
3152	36°35'59.59670"	-81°43'15.59236"	2687.76	VVA
3153	36°23'21.94047"	-81°52'10.93377"	2054.36	VVA
3154	36°21'15.19418"	-81°56'16.72887"	2094.11	VVA
3155	36°16'35.82737"	-81°59'30.14672"	1879.10	VVA
3156	36°29'23.13455"	-81°50'19.08187"	2455.63	VVA
3157	36°26'53.75122"	-81°53'58.12021"	2249.78	VVA
3158	36°36'51.93532"	-81°54'43.98106"	1944.18	VVA
3159	36°35'54.37438"	-82°02'28.97290"	1637.69	VVA
3160	36°32'47.22487"	-82°07'43.25259"	1530.21	VVA

EAST TENNESSEE GROUND CLASSIFICATION CHECK POINTS				
Point No.	Geodetic Coordinates NAD-83 (2011) Epoch 2010.00		Ellipsoid Height (sft)	Description
	Latitude (N)	Longitude (W)		
3161	36°29'24.27148"	-82°09'23.47427"	1390.49	VVA
3162	36°27'32.77903"	-82°01'15.67314"	2123.45	VVA
3162	36°27'32.77902"	-82°01'15.67314"	2123.46	VVA
3163	36°21'38.27465"	-82°10'40.94200"	1432.74	VVA
3164	36°19'10.01025"	-82°05'06.10502"	1875.14	VVA
3165	36°10'53.88945"	-82°15'42.27257"	2265.38	VVA
3166	36°09'20.64882"	-82°36'37.09536"	1423.18	VVA
3167	36°14'27.49922"	-82°30'39.16972"	1593.30	VVA
3168	36°21'13.10473"	-82°35'27.39395"	1746.83	VVA
3169	36°22'36.96622"	-82°26'04.74803"	1512.35	VVA
3170	36°27'42.42409"	-82°21'47.07381"	1282.79	VVA
3171	36°24'04.02623"	-82°16'29.11238"	1410.65	VVA
3172	36°34'17.98463"	-82°23'31.15322"	1287.76	VVA
3173	36°02'14.25729"	-82°33'01.23738"	2035.98	VVA

Geodetic Control Points

EAST TENNESSEE GEODETIC CONTROL POINTS				
Point No.	Geodetic Coordinates NAD-83 (2011) Epoch 2010.00		Ellipsoid Height (sft)	Description
	Latitude (N)	Longitude (W)		
10000TSM	35°21'48.05646"	-84°07'01.88570"	3262.85	TSM
30000TSM	35°59'13.16034"	-82°47'05.90924"	2131.71	TSM
30001TSM	36°06'22.06768"	-82°06'36.44721"	5414.66	TSM
30002TSM	35°47'46.63739"	-82°57'45.35677"	4248.72	TSM
30003TSM	35°51'55.73702"	-82°59'26.43203"	1545.58	TSM
30004TSM	35°55'09.30342"	-82°54'22.16996"	1336.24	TSM
30005TSM	35°38'22.31523"	-83°28'43.89714"	3112.49	TSM
30006TSM	35°27'00.76690"	-83°56'26.84701"	1050.19	TSM
40001TSM	36°27'33.06034"	-82°01'13.30007"	2127.02	TSM
40002TSM	36°16'35.89681"	-81°59'28.10880"	1879.53	TSM
40004TSM	36°36'54.53928"	-81°36'13.68445"	3641.76	TSM
40006TSM	36°35'48.15527"	-81°43'43.86100"	2518.16	TSM
BETHEL	36°17'37.08807"	-81°49'23.86530"	2654.39	DF8569
BRISTOL 2	36°35'41.23087"	-82°10'24.63516"	1674.63	GA3309
C 37	36°39'11.11987"	-81°47'27.83441"	1910.50	FZ1073
DAUGHERTY	36°31'14.91335"	-81°41'12.28904"	3290.52	AJ1561
DOLINGER	36°35'27.95454"	-81°37'09.44808"	3397.12	DK3633
E 116	36°15'01.16327"	-82°28'33.11542"	1629.52	GA0589

EAST TENNESSEE GEODETIC CONTROL POINTS				
Point No.	Geodetic Coordinates NAD-83 (2011) Epoch 2010.00		Ellipsoid Height (sft)	Description
	Latitude (N)	Longitude (W)		
EXPO	35°58'23.86729"	-86°34'25.08382"	561.08	DG7713
GPS 0004	35°55'41.44001"	-84°02'10.35499"	895.82	FC2000
GPS 10	36°25'20.90068"	-86°10'56.61892"	408.72	GC2718
GPS 20	35°59'46.63683"	-83°42'37.72401"	911.78	FB3325
GPS 4	36°21'00.80401"	-83°23'36.35219"	1838.66	GA3643
GREER	36°37'00.35991"	-81°40'53.82674"	3190.50	DK3635
HIGGINS	36°00'56.56763"	-82°21'06.07068"	2010.03	DN4539
JOELTON	36°19'22.85830"	-86°54'39.23857"	721.00	GC0869
LAUREL CREEK	36°33'22.85575"	-81°46'10.54605"	2341.91	DK3634
LHT 682	35°50'44.78742"	-83°53'35.83519"	974.05	FB1956
LOVE	36°08'17.48416"	-86°48'55.71189"	649.90	GC0454
MANLY	36°00'40.11793"	-86°53'18.73660"	502.39	GC1920
MOHAWK	36°12'33.21468"	-83°03'27.81905"	1066.13	GA2087
NEWFOUND	35°36'38.39822"	-83°25'31.17700"	4947.83	FB4079
OAK	35°48'07.16143"	-84°18'53.29041"	793.68	FC0259
P 114	36°03'26.10910"	-82°58'19.96172"	1129.97	GA0902
S 82	36°31'09.16839"	-85°51'42.91206"	858.48	GB1968
SUE	36°06'04.40703"	-83°54'39.30046"	989.10	GA2573
TEL AZ MK	36°16'38.39911"	-86°47'40.34609"	421.24	GC0890
TIE	36°19'29.18251"	-83°16'52.13571"	1029.18	GA2134
VAUGHN	36°32'43.94268"	-86°14'24.54353"	834.89	GC0118
WEST	35°55'40.51598"	-84°02'39.47495"	970.65	FC0240
Y 108	36°35'31.30935"	-82°21'59.82273"	1691.24	GA0276

Section 3: Ground/Geodetic Control Logs and Photos

This section contains the station recovery information sheets and photographs for the ground control, geodetic control and checkpoint stations established for the project. The stations appear as they are ordered in the final coordinate listing of Section 2.

The data is assembled on the following pages.


10000, 1, 11FEB2016


10000, 2, 11FEB2016


10000, E, 11FEB2016


10000, N, 11FEB2016


10000, S, 11FEB2016


10000, W, 11FEB2016


30000, 1, 18FEB2016


30000, 2, 18FEB2016


30000, 3E, 18FEB2016


30000, 3N, 18FEB2016


30000, 3S, 18FEB2016


MOM'S
30000, 3W, 18FEB2016


30001, 1, 19FEB2016


30001, 2, 19FEB2016


30001, 3E, 19FEB2016


30001, 3N, 19FEB2016


30001, 3S, 19FEB2016


30001, 3W, 19FEB2016


30002, 1, 29FEB2016


30002, 2, 29FEB2016


30002, 3N, 29FEB2016


30002, 3S, 29FEB2016


30002, 3W, 29FEB2016


30002, 3E, 29FEB2016


30003, 1, 02MAR2016


30003, 3N, 02MAR2016


30003, 3S, 02MAR2016


30003, 3W, 02MAR2016


30003, 2, 02MAR2016


30003, 3E, 02MAR2016


SURVEY MARKER
DO NOT REMOVE
30004, 1, 02MAR2016


30004, 2, 02MAR2016


30004, 3E, 02MAR2016


30004, 3N, 02MAR2016


30004, 3S, 02MAR2016


30004, 3W, 02MAR2016

30005, 1, 15MAR2016


30005, 2, 15MAR2016


30005, 3E, 15MAR2016


30005, 3N, 15MAR2016


30005, 3S, 15MAR2016


30005, 3W, 15MAR2016

30006, 1, 16MAR2016


30006, 2, 16MAR2016


30006, 3E, 16MAR2016


30006, 3N, 16MAR2016


30006, 3S, 16MAR2016


30006, 3W, 16MAR2016


02.22.2016
40001TSM, 1, 22FEB2016


02.22.2016
40001TSM, 2, 22FEB2016


02.22.2016
40001TSM, 3E, 22FEB2016


02.22.2016
40001TSM, 3N, 22FEB2016


02.22.2016
40001TSM, 3S, 22FEB2016


02.22.2016
40001TSM, 3W, 22FEB2016


40002TSM
40002TSM, 1, 22FEB2016


40002TSM, 2, 22FEB2016


40002TSM, 3E, 22FEB2016


40002TSM, 3N, 22FEB2016


40002TSM, 3S, 22FEB2016


40002TSM, 3W, 22FEB2016


DO NOT REMOVE
MARKER
02 25 2016
40003TSM, 1, 25FEB2016


40003TSM, 2, 25FEB2016


02.25.2016
40003TSM, 3E, 25FEB2016


02.25.2016
40003TSM, 3N, 25FEB2016


02.25.2016
40003TSM, 3S, 25FEB2016


02.25.2016
40003TSM, 3W, 25FEB2016

BETHEL 2003, 1, 23FEB2016


BETHEL 2003, 2, 23FEB2016

BETHEL 2003, 3E, 23FEB2016


BETHEL 2003, 3N, 23FEB2016

BETHEL 2003, 3S, 23FEB2016

BETHEL 2003, 3W, 23FEB2016


U.S. COAST & GEODETIC SURVEY
BRISTOL
1935
BRISTOL 2, 1, 16FEB2016


BRISTOL 2, 2, 16FEB2016


02.16.2016
BRISTOL 2, 3N, 16FEB2016
02.16.2016
BRISTOL 2, 3S, 16FEB2016
BRISTOL 2, 3W, 16FEB2016


U.S. COAST & GEODETIC SURVEY
ELEV.
FEET
ABOVE MEAN SEA LEVEL
$250 FINE OR IMPRISONMENT
FOR DISTURBING THIS MARK
C37 1934, 1, 24FEB2016


C37 1934, 2, 24FEB2016


C37 1934, 3E, 24FEB2016


C37 1934, 3N, 24FEB2016


02.24.2016
C37 1934, 3S, 24FEB2016


02.24.2016
C37 1934, 3W, 24FEB2016


STATION
DOWDY 1 02102016


DOWDY 2 02102016


DOWDY 3E 02102016


DOWDY 3N 02102016


DOWDY 3S 02102016


DOWDY 3W 02102016


U.S.COAST & GEODETIC SURVEY
1936
E 116, 1, 11FEB2016


E 116, 2, 11FEB2016


E 116, 3E, 11FEB2016


E 116, 3N, 11FEB2016


E 116, 3S, 11FEB2016


E 116, 3W, 11FEB2016

EXPO, 1, 16FEB2016


EXPO, 2, 16FEB2016


EXPO, 3E, 16FEB2016


EXPO, 3N, 16FEB2016


EXPO, 3S, 16FEB2016


EXPO, 3W, 16FEB2016

GPS 0004 1 02112016


GPS 0004 2 02112016


GPS 0004 3E 02112016


GPS 0004 3N 02112016


GPS 0004 3S 02112016


GPS 0004 3W 02112016

GPS 4, 1, 17FEB2016


GPS 4, 2, 17FEB2016


GPS 4, 3E, 17FEB2016


GPS 4, 3N, 17FEB2016


GPS 4, 3S, 17FEB2016


GPS 4, 3W, 17FEB2016


GPS 10
GPS 10, 1, 23FEB2016


GPS 10, 2, 23FEB2016


GPS 10, E, 23FEB2016


GPS 10, N, 23FEB2016


GPS 10, S, 23FEB2016


GPS 10, W, 23FEB2016


ACCESS
COVER
GPS 20 1 02122016


GPS 20 1A 02122016


GPS 20 3E 02122016


GPS 20 3N 02122016


GPS 20 3S 02122016


GPS 20 3W 02122016

HIGGINS, 1, 14FEB2016


HIGGINS, 2, 14FEB2016

HIGGINS, 3E, 14FEB2016

HIGGINS, 3N, 14FEB2016


HIGGINS, 3S, 14FEB2016

HIGGINS, 3W, 14FEB2016


U.S. COAST & GEODETIC SURVEY
JOELTON
19 53
JOELTON, 1, 19FEB2016


JOELTON, 2, 19FEB2016


JOELTON, E, 19FEB2016


JOELTON, N, 19FEB2016


JOELTON, S, 19FEB2016


JOELTON, W, 19FEB2016


LAUREL
CREEK
TAL CONTROL
02.24.2016
LAUREL CREEK, 1, 24FEB2016


02.24.2016
LAUREL CREEK, 2, 24FEB2016


02.24.2016
LAUREL CREEK, 3E, 24FEB2016


02.24.2016
LAUREL CREEK, 3N, 24FEB2016


02.24.2016
LAUREL CREEK, 3S, 24FEB2016


02.24.2016
LAUREL CREEK, 3W, 24FEB2016


LHT 682 1 02112016


LHT 682 2 02112016


LHT 682 3E 02112016


LHT 682 3N 02112016


LHT 682 3S 02112016


LHT 682 3W 02112016


U.S. COAST & GEODETIC SURVEY
LOVE, 1, 02172016


LOVE, 2, 02172016


LOVE, 3E, 02172016


LOVE, 3N, 02172016


LOVE, 3S, 02172016


LOVE, 3W, 02172016


MANLY,1,02162016


MANLY,2,02162016


MANLY,3E,02162016


MANLY,3N,02162016


MANLY,3S,02162016


MANLY,3W,02162016


MOHAWK
1961
MOHAWK, 1, 10FEB2016


MOHAWK, 2, 10FEB2016


MOHAWK, 3E, 10FEB2016


MOHAWK, 3N, 10FEB2016


MOHAWK, 3S, 10FEB2016


MOHAWK, 3W, 10FEB2016


Monroe 1 02092016


Monroe 2 02092016


Monroe 3E 02092016


Monroe 3N 02092019


Monroe 3S 02092016


Monroe 3W 02092016

NEWFOUND, 1, 14MAR2016


NEWFOUND, 2, 14MAR2016


NEWFOUND, 3E, 14MAR2016


NEWFOUND, 3N, 14MAR2016


NEWFOUND, 3S, 14MAR2016


NEWFOUND, 3W, 14MAR2016

P 114, 1, 18FEB2016


P 114, 2, 18FEB2016


P 114, 3E, 18FEB2016


P 114, 3N, 18FEB2016


P 114, 3S, 18FEB2016


P 114, 3W, 18FEB2016

SUE 1 02132016


SUE 2 02132016


SUE 3E 02132016


SUE 3N 02132016


SUE 3S 02132016


SUE 3W 02132016

TEL AZ MK, 1, 18FEB2016


TEL AZ MK, 2, 18FEB2016


TEL AZ MK, E, 18FEB2016


TEL AZ MK, N, 18FEB2016

TEL AZ MK, S, 18FEB2016


TEL AZ MK, W, 18FEB2016


1963
TIE, 1, 17FEB2016


TIE, 2, 17FEB2016


TIE, 3E, 17FEB2016


TIE, 3N, 17FEB2016


TIE, 3S, 17FEB2016


TIE, 3W, 17FEB2016

VAUGHN, 1, 22FEB2016


VAUGHN, 2, 22FEB2016


VAUGHN, N, 22FEB2016


VAUGHN, S, 22FEB2016


VAUGHN, SE, 22FEB2016


VAUGHN, W, 22FEB2016


Y108 1935, 1 25FEB2016


Y108 1935, 2, 25FEB2016


Y108 1935, 3E, 25FEB2016


02.25.2016
Y108 1935, 3N, 25FEB2016


02.25.2016
Y108 1935, 3S, 25FEB2016


02.25.2016
Y108 1935, 3W, 25FEB2016

Section 4: Existing NGS Data Sheets

This section contains the published National Geodetic Survey (NGS) Data Sheets used in the final control network for this project.

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.11
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 DF8569 ***********************************************************************
 DF8569  HT_MOD      -  This is a Height Modernization Survey Station.
 DF8569  DESIGNATION -  BETHEL
 DF8569  PID         -  DF8569
 DF8569  STATE/COUNTY-  NC/WATAUGA
 DF8569  COUNTRY     -  US
 DF8569  USGS QUAD   -  SHERWOOD (1994)
 DF8569
 DF8569                         *CURRENT SURVEY CONTROL
 DF8569  ______________________________________________________________________
 DF8569* NAD 83(2011) POSITION- 36 17 37.08807(N) 081 49 23.86530(W)   ADJUSTED
 DF8569* NAD 83(2011) ELLIP HT-   809.061 (meters)        (06/27/12)   ADJUSTED
 DF8569* NAD 83(2011) EPOCH   -  2010.00
 DF8569* NAVD 88 ORTHO HEIGHT -   840.10  (meters)     2756.2   (feet) GPS OBS
 DF8569  ______________________________________________________________________
 DF8569  NAVD 88 orthometric height was determined with geoid model    GEOID99
 DF8569  GEOID HEIGHT    -        -31.018 (meters)                     GEOID99
 DF8569  GEOID HEIGHT    -        -31.051 (meters)                     GEOID12B
 DF8569  NAD 83(2011) X  -    732,101.179 (meters)                     COMP
 DF8569  NAD 83(2011) Y  - -5,095,103.943 (meters)                     COMP
 DF8569  NAD 83(2011) Z  -  3,754,981.030 (meters)                     COMP
 DF8569  LAPLACE CORR    -          1.95  (seconds)                    DEFLEC12B
 DF8569
 DF8569  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 DF8569  Standards:
 DF8569         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 DF8569            Horiz  Ellip           SD_N   SD_E   SD_h      (unitless)
 DF8569  ------------------------------------------------------------------
 DF8569  NETWORK    0.89   1.39           0.39   0.33   0.71      0.08900021
 DF8569  ------------------------------------------------------------------
 DF8569  Click here for local accuracies and other accuracy information.
 DF8569
 DF8569
 DF8569.The horizontal coordinates were established by GPS observations
 DF8569.and adjusted by the National Geodetic Survey in June 2012.
 DF8569
 DF8569.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
 DF8569.been affixed to the stable North American tectonic plate. See
 DF8569.NA2011 for more information.
 DF8569
 DF8569.The horizontal coordinates are valid at the epoch date displayed above
 DF8569.which is a decimal equivalence of Year/Month/Day.
 DF8569
 DF8569.The orthometric height was determined by GPS observations and a
 DF8569.high-resolution geoid model using precise GPS observation and
 DF8569.processing techniques.
 DF8569
 DF8569.Significant digits in the geoid height do not necessarily reflect accuracy.
```

```
DF8569.GEOID12B height accuracy estimate available here.
DF8569
DF8569.Photographs are available for this station.
DF8569
DF8569.The X, Y, and Z were computed from the position and the ellipsoidal ht.
DF8569
DF8569.The Laplace correction was computed from DEFLEC12B derived deflections.
DF8569
DF8569.The ellipsoidal height was determined by GPS observations
DF8569.and is referenced to NAD 83.
DF8569
DF8569. The following values were computed from the NAD 83(2011) position.
DF8569
DF8569;                    North         East     Units Scale Factor Converg.
DF8569;SPC NC       -   285,789.201   356,014.048   MT  1.00003791   -1 37 46.3
DF8569;SPC NC       -   937,626.74  1,168,022.76   sFT  1.00003791   -1 37 46.3
DF8569;UTM  17      - 4,016,832.133   426,073.578   MT  0.99966733   -0 29 14.5
DF8569
DF8569!             -  Elev Factor  x  Scale Factor =   Combined Factor
DF8569!SPC NC       -   0.99987304  x   1.00003791  =   0.99991094
DF8569!UTM  17      -   0.99987304  x   0.99966733  =   0.99954041
DF8569
DF8569_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SMA2607316832(NAD 83)
DF8569
DF8569                           SUPERSEDED SURVEY CONTROL
DF8569
DF8569  NAD 83(2007)-  36 17 37.08811(N)    081 49 23.86572(W) AD(2002.00) 0
DF8569  ELLIP H (02/10/07)  809.088  (m)                       GP(2002.00)
DF8569  NAD 83(1986)-  36 17 37.09945(N)    081 49 23.87178(W) AD(       ) 1
DF8569  NAD 83(2001)-  36 17 37.08893(N)    081 49 23.86603(W) AD(       ) 1
DF8569  ELLIP H (10/17/03)  809.063  (m)                       GP(       ) 4 2
DF8569
DF8569.Superseded values are not recommended for survey control.
DF8569
DF8569.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DF8569.See file dsdata.txt to determine how the superseded data were derived.
DF8569
DF8569_MARKER: DD = SURVEY DISK
DF8569_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
DF8569_STAMPING: BETHEL 2003
DF8569_MARK LOGO: NGS
DF8569_PROJECTION: RECESSED 8 CENTIMETERS
DF8569_MAGNETIC: N = NO MAGNETIC MATERIAL
DF8569_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
DF8569+STABILITY: SURFACE MOTION
DF8569_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DF8569+SATELLITE: SATELLITE OBSERVATIONS - December 12, 2002
DF8569
DF8569  HISTORY     - Date     Condition        Report By
DF8569  HISTORY     - 20021212 MONUMENTED       GEOMET
DF8569
DF8569                           STATION DESCRIPTION
DF8569
DF8569'DESCRIBED BY GEOMETRICS GPS INCORPORATED 2002 (FJJ)
DF8569'THE STATION IS LOCATED IN NORTHWESTERN WATAUGA COUNTY, NORTH
DF8569'CAROLINA, ABOUT 12.9 KM (8 MILES) NORTHWEST OF BOONE AND 4.8 KM (3
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 DF8569'MILES) SOUTHWEST OF MABEL.  TO REACH THE STATION FROM THE
 DF8569'INTERSECTION OF US HIGHWAYS 421 AND 321, ABOUT 9.7 KM (6 MILES)
 DF8569'NORTHWEST OF BOONE, GO WEST ON US HIGHWAY 321 FOR 1.8 KM (1.1 MILES)
 DF8569'TO AN INTERSECTION.  TURN RIGHT AND GO NORTH ON STATE ROUTE 1233 (OLD
 DF8569'US HIGHWAY 421) FOR 0.5 KM (0.3 MILE) TO AN INTERSECTION.  TURN LEFT
 DF8569'AND GO NORTHWEST ON STATE ROUTE 1213 (GEORGES GAP ROAD) FOR 7.5 KM
 DF8569'(4.7 MILES) TO AN INTERSECTION. CONTINUE STRAIGHT AND GO NORTHWEST ON
 DF8569'STATE ROUTE 1201 (BETHEL ROAD) FOR 0.3 KM (0.2 MILE) TO ITS
 DF8569'INTERSECTION WITH STATE ROUTE 1221 (BEAVER DAM ROAD) AND THE STATION
 DF8569'ON THE RIGHT.  THE STATION IS ACROSS THE ROAD FROM A WHITE FRAME
 DF8569'BUILDING (305 BETHEL ROAD) AND IS LOCATED IN THE NORTHWEST CORNER OF
 DF8569'THE INTERSECTION.  THE STATION IS 16.8 METERS (55.0 FEET) NORTHWEST
 DF8569'(MAGNETIC BEARING OF 340 DEGREES) FROM THE NORTHWEST CORNER OF A
 DF8569'PORCH TO A WHITE FRAME BUILDING AT 305 BETHEL ROAD, 12.5 METERS (41.0
 DF8569'FEET) NORTHWEST (MAGNETIC BEARING OF 350 DEGREES) FROM THE CENTERLINE
 DF8569'OF STATE ROUTE 1201 (BETHEL ROAD), 6.7 METERS (22.0 FEET) NORTHWEST
 DF8569'(MAGNETIC BEARING OF 275 DEGREES) FROM THE CENTERLINE OF STATE ROUTE
 DF8569'1225 (BEAVER DAM ROAD), 3.7 METERS (12.1 FEET) NORTHWEST (MAGNETIC
 DF8569'BEARING OF 355 DEGREES) FROM A STOP SIGN POST, 3.7 METERS (12.0 FEET)
 DF8569'SOUTHWEST (MAGNETIC BEARING OF 190 DEGREES) FROM A TELEPHONE
 DF8569'PEDESTAL, 3.4 METERS (11.2 FEET) NORTHEAST (MAGNETIC BEARING OF 25
 DF8569'DEGREES) FROM A WOOD CORNER FENCE POST WITH AN NCGS REFERENCE TAG,
 DF8569'1.5 METERS (4.9 FEET) SOUTH (MAGNETIC BEARING OF 180 DEGREES) FROM A
 DF8569'WOOD FENCE POST WITH AN NCGS REFERENCE TAG, AND 0.6 METER (2.0 FEET)
 DF8569'NORTHEAST (MAGNETIC BEARING OF 60 DEGREES) FROM AN NGS WITNESS POST.
 DF8569'THE STATION IS A STANDARD NGS BRASS DISK SET INTO A 12 INCH DIAMETER
 DF8569'CONCRETE MONUMENT 36 INCHES DEEP RECESSED. IT IS THREE INCHES BELOW
 DF8569'THE GROUND SURFACE AND STAMPED BETHEL 2003.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 GA3309 ***********************************************************************
 GA3309  CBN         -  This is a Cooperative Base Network Control Station.
 GA3309  DESIGNATION -  BRISTOL 2
 GA3309  PID         -  GA3309
 GA3309  STATE/COUNTY-  VA/C OF BRISTOL
 GA3309  COUNTRY     -  US
 GA3309  USGS QUAD   -  BRISTOL (1991)
 GA3309
 GA3309                        *CURRENT SURVEY CONTROL
 GA3309  ______________________________________________________________________
 GA3309* NAD 83(2011) POSITION- 36 35 41.23087(N) 082 10 24.63516(W)   ADJUSTED
 GA3309* NAD 83(2011) ELLIP HT-   510.427 (meters)        (06/27/12)   ADJUSTED
 GA3309* NAD 83(2011) EPOCH   -  2010.00
 GA3309* NAVD 88 ORTHO HEIGHT -   541.617 (meters)     1776.96  (feet) ADJUSTED
 GA3309  ______________________________________________________________________
 GA3309  GEOID HEIGHT    -        -31.192 (meters)                     GEOID12B
 GA3309  NAD 83(2011) X  -    698,208.214 (meters)                     COMP
 GA3309  NAD 83(2011) Y  - -5,079,576.977 (meters)                     COMP
 GA3309  NAD 83(2011) Z  -  3,781,688.920 (meters)                     COMP
 GA3309  LAPLACE CORR    -          1.11  (seconds)                    DEFLEC12B
 GA3309  DYNAMIC HEIGHT  -       541.123 (meters)     1775.33  (feet) COMP
 GA3309  MODELED GRAVITY -    979,701.9   (mgal)                       NAVD 88
 GA3309
 GA3309  VERT ORDER      -  FIRST     CLASS II
 GA3309
 GA3309  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 GA3309  Standards:
```

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GA3309         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
GA3309            Horiz  Ellip           SD_N   SD_E   SD_h      (unitless)
GA3309  ------------------------------------------------------------------------
GA3309  NETWORK    0.34   0.90           0.15   0.13   0.46     -0.07089115
GA3309  ------------------------------------------------------------------------
GA3309  Click here for local accuracies and other accuracy information.
GA3309
GA3309
GA3309.The horizontal coordinates were established by GPS observations
GA3309.and adjusted by the National Geodetic Survey in June 2012.
GA3309
GA3309.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
GA3309.been affixed to the stable North American tectonic plate. See
GA3309.NA2011 for more information.
GA3309
GA3309.The horizontal coordinates are valid at the epoch date displayed above
GA3309.which is a decimal equivalence of Year/Month/Day.
GA3309
GA3309.The orthometric height was determined by differential leveling and
GA3309.adjusted by the NATIONAL GEODETIC SURVEY
GA3309.in June 1991.
GA3309
GA3309.Significant digits in the geoid height do not necessarily reflect accuracy.
GA3309.GEOID12B height accuracy estimate available here.
GA3309
GA3309.Photographs are available for this station.
GA3309
GA3309.The X, Y, and Z were computed from the position and the ellipsoidal ht.
GA3309
GA3309.The Laplace correction was computed from DEFLEC12B derived deflections.
GA3309
GA3309.The ellipsoidal height was determined by GPS observations
GA3309.and is referenced to NAD 83.
GA3309
GA3309.The dynamic height is computed by dividing the NAVD 88
GA3309.geopotential number by the normal gravity value computed on the
GA3309.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
GA3309.degrees latitude (g = 980.6199 gals.).
GA3309
GA3309.The modeled gravity was interpolated from observed gravity values.
GA3309
GA3309. The following values were computed from the NAD 83(2011) position.
GA3309
GA3309;                    North         East     Units Scale Factor Converg.
GA3309;SPC TN       -   257,607.752   942,326.405   MT  1.00003644   +2 14 24.6
GA3309;SPC TN       -   845,168.10  3,091,615.88   sFT  1.00003644   +2 14 24.6
GA3309;SPC VA S     - 1,035,409.830 3,171,359.042   MT  1.00003564   -2 13 46.4
GA3309;SPC VA S     - 3,397,007.08 10,404,700.46   sFT  1.00003564   -2 13 46.4
GA3309;UTM  17      - 4,050,563.127   395,032.117   MT  0.99973575   -0 41 58.8
GA3309
GA3309!             -  Elev Factor  x  Scale Factor =   Combined Factor
GA3309!SPC TN       -   0.99991990  x   1.00003644  =   0.99995634
GA3309!SPC VA S     -   0.99991990  x   1.00003564  =   0.99995554
GA3309!UTM  17      -   0.99991990  x   0.99973575  =   0.99965567
GA3309
GA3309:               Primary Azimuth Mark                    Grid Az
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GA3309:SPC TN       -  BRISTOL 2 AZ MK                          029 41 33.3
GA3309:SPC VA S     -  BRISTOL 2 AZ MK                          034 09 44.3
GA3309:UTM  17      -  BRISTOL 2 AZ MK                          032 37 56.7
GA3309
GA3309_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SLA9503250563(NAD 83)
GA3309
GA3309|----------------------------------------------------------------------|
GA3309| PID    Reference Object                      Distance      Geod. Az  |
GA3309|                                                            dddmmss.s |
GA3309| GA3347 BRISTOL COLUMBIS PULP MILL STK      APPROX. 0.9 KM 0052945.8 |
GA3309| GA3354 BRISTOL RAD STA WCYB MAST           APPROX. 4.2 KM 0174835.5 |
GA3309| DB8824 BRISTOL 2 AZ MK                                    0315557.9 |
GA3309| GA3349 BRISTOL RAD STA WFHG CEN MAST       APPROX. 2.3 KM 0403728.3 |
GA3309| DB8825 BRISTOL 2 RM 1                      28.608 METERS 04951     |
GA3309| GA3350 BRISTOL RAD STA WOPI MAST           APPROX. 1.1 KM 0823309.6 |
GA3309| DB8826 BRISTOL 2 RM 2                        6.766 METERS 13952     |
GA3309| GA3366 RYE PATCH KNOB TV STA WCYB MAST     APPROX.17.2 KM 1600329.0 |
GA3309| DB8827 BRISTOL 2 RM 3                                     2511811.7 |
GA3309|----------------------------------------------------------------------|
GA3309
GA3309                          SUPERSEDED SURVEY CONTROL
GA3309
GA3309  NAD 83(2007)-  36 35 41.23083(N)    082 10 24.63624(W) AD(2002.00) A
GA3309  ELLIP H (10/16/11)  510.434  (m)                       GP(2002.00) 3 2
GA3309  NAD 83(2007)-  36 35 41.23097(N)    082 10 24.63598(W) AD(2002.00) 0
GA3309  ELLIP H (02/10/07)  510.443  (m)                       GP(2002.00)
GA3309  ELLIP H (07/14/04)  510.471  (m)                       GP(       ) 3 2
GA3309  ELLIP H (08/14/01)  510.434  (m)                       GP(       ) 4 1
GA3309  NAD 83(1993)-  36 35 41.23147(N)    082 10 24.63592(W) AD(       ) B
GA3309  ELLIP H (06/29/94)  510.456  (m)                       GP(       ) 4 1
GA3309  NAD 83(1993)-  36 35 41.23297(N)    082 10 24.63916(W) AD(       ) B
GA3309  ELLIP H (04/04/94)  510.399  (m)                       GP(       ) 4 1
GA3309  NAD 83(1986)-  36 35 41.24565(N)    082 10 24.64239(W) AD(       ) 1
GA3309  NAD 27      -  36 35 40.84571(N)    082 10 25.17176(W) AD(       ) 3
GA3309  NAVD 88             541.62   (m)         1777.0    (f) LEVELING    3
GA3309  NAVD 88             541.62   (m)         1777.0    (f) LEVELING    3
GA3309  NGVD 29 (07/19/86)  541.3    (m)         1776.     (f) VERT ANG
GA3309
GA3309.Superseded values are not recommended for survey control.
GA3309
GA3309.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
GA3309.See file dsdata.txt to determine how the superseded data were derived.
GA3309
GA3309_MARKER: DS = TRIANGULATION STATION DISK
GA3309_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
GA3309_STAMPING: BRISTOL 2 1933
GA3309_MARK LOGO: CGS
GA3309_PROJECTION: PROJECTING 15 CENTIMETERS
GA3309_MAGNETIC: N = NO MAGNETIC MATERIAL
GA3309_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
GA3309+STABILITY: SURFACE MOTION
GA3309_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
GA3309+SATELLITE: SATELLITE OBSERVATIONS - October 19, 2015
GA3309
GA3309  HISTORY     - Date     Condition        Report By
GA3309  HISTORY     - 1933     MONUMENTED       CGS
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GA3309  HISTORY     - 1937     GOOD            CGS
GA3309  HISTORY     - 1958     GOOD            CGS
GA3309  HISTORY     - 1961     GOOD            CGS
GA3309  HISTORY     - 1984     GOOD            NGS
GA3309  HISTORY     - 19930628 GOOD            NGS
GA3309  HISTORY     - 19950823 GOOD            NGS
GA3309  HISTORY     - 20000217 GOOD            MAC
GA3309  HISTORY     - 20000218 GOOD            NGS
GA3309  HISTORY     - 20000227 GOOD            NGS
GA3309  HISTORY     - 20031010 GOOD            TNDT
GA3309  HISTORY     - 20081023 GOOD            JCLS
GA3309  HISTORY     - 20141115 GOOD            WOOLPT
GA3309  HISTORY     - 20151019 GOOD            COMPDA
GA3309
GA3309                          STATION DESCRIPTION
GA3309
GA3309'DESCRIBED BY COAST AND GEODETIC SURVEY 1933 (MAH)
GA3309'STATION IS ABOUT 1/2 MILE E OF BRISTOL, NEAR WESTERN END OF
GA3309'EAST HILL CEMETERY, 8 FEET W OF CENTER LINE OF MOST WESTERLY
GA3309'CIRCULAR DRIVE IN CEMETERY, 38.2 FEET NNE OF LETTER S IN NAME
GA3309'SMITH ON N FACE OF TALLEST MONUMENT 20.4 FEET SSE OF LETTER
GA3309'P IN PALMER ON E FACE OF LARGE MARBLE MONUMENT, AND ON
GA3309'VIRGINIA-TENNESSEE BOUNDARY LINE.
GA3309'
GA3309'SURFACE AND UNDERGROUND MARKS ARE STANDARD BRONZE DISKS SET IN
GA3309'CONCRETE, AS DESCRIBED.
GA3309'
GA3309'REFERENCE MARKS ARE STANDARD REFERENCE DISKS.
GA3309'
GA3309'REFERENCE MARK NO. 1 IS IN TOP OF NW CORNER OF CONCRETE WALL
GA3309'AROUND BURIAL PLOT OF THE GALLAHAM FAMILY, ABOUT 6 FEET SE
GA3309'OF CENTER LINE OF CIRCULAR DRIVE, 7 FEET W OF TWIN 6-INCH
GA3309'CEDAR TREES IN N EDGE OF PLOT, AND 28.620 METERS (93.90 FEET)
GA3309'FROM STATION N 49 DEG 52 MIN E.
GA3309'
GA3309'REFERENCE MARK NO. 2 IS IN TOP OF LARGE CONCRETE VAULT OF THE
GA3309'BONDURANT FAMILY, 1.2 FEET E OF W EDGE, 1.3 FEET E OF N EDGE,
GA3309'AND 6.771 METERS (22.21 FEET) FROM STATION S 40 DEG 23 MIN E.
GA3309'
GA3309'REFERENCE MARK NO. 3 (AZIMUTH MARK) IS IN TOP OF CURBING ON
GA3309'W SIDE OF PENNSYLVANIA AVENUE (PENNSYLVANIA AVENUE IS U.S.
GA3309'HIGHWAY 421 GOING E FROM BRISTOL), ABOUT 13 PACES N OF CENTER
GA3309'LINE OF MC DOWELL STREET EXTENDED, AND ABOUT 0.4 MILE FROM
GA3309'STATION S 71 DEG 18 MIN W.  FOLLOWING AZIMUTHS
GA3309'ARE FROM STATION--V.I. COLLEGE, SPIRE, 346 DEG 35 MIN 02 SEC.
GA3309'COLUMBIA PAPER CO., STACK, 005 DEG 29 MIN 48 SEC.  AND TANNERY,
GA3309'STACK, 074 DEG 18 MIN 17 SEC.
GA3309
GA3309                          STATION RECOVERY (1937)
GA3309
GA3309'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1937 (WSM)
GA3309'THE STATEMENT AT END OF CONCRETE WALK EAST FROM SOUTHWEST
GA3309'ENTRANCE OF CEMETERY IS MISLEADING AND SHOULD BE DELETED FROM
GA3309'THE DESCRIPTION.  IT SHOULD BE REPLACED BY THE FOLLOWING--ON
GA3309'WEST EDGE OF CIRCULAR DRIVEWAY, 175 FEET EAST OF SOUTHWEST
GA3309'ENTRANCE OF CEMETERY.
GA3309'
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GA3309'ADDITIONAL DESCRIPTION--18 FEET N 2 DEG 30 MIN W TO SOUTHEAST
GA3309'CORNER OF PALMER MONUMENT, 33 FEET SOUTH 48 DEG WEST TO
GA3309'NORTHEAST CORNER OF SMITH MONUMENT, 34 FEET N 58 DEG 30 MIN
GA3309'E TO SOUTHWEST CORNER OF NICHOLS MONUMENT, AND 70 FEET S 78 DEG
GA3309'W FROM TOP OF CEMETERY HILL. (ALL MONUMENTS ARE PROMINENT.)
GA3309
GA3309   STATION RECOVERY (1958)
GA3309
GA3309'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1958 (JCC)
GA3309'THE STATION AND REFERENCE MARKS WERE RECOVERED AS DESCRIBED AND
GA3309'FOUND IN GOOD CONDITION. THE AZIMUTH MARK (R.M. 3) WAS NOT
GA3309'RECOVERED, THEREFORE A NEW AZIMUTH MARK WAS ESTABLISHED.
GA3309'
GA3309'AZIMUTH MARK, STAMPED BRISTOL 2 1933 1958, CEMENTED IN A DRILL
GA3309'HOLE IN THE SIDEWALK ON THE NORTH SIDE OF NORFOLK AVE., IT
GA3309'IS 15 FEET NORTHWEST OF THE CENTERLINE OF NORFOLK AVE., 45
GA3309'FEET SOUTHWEST OF THE CENTERLINE OF MARY STREET AND 1 FOOT SOUTH
GA3309'OF A POWER POLE.
GA3309
GA3309   STATION RECOVERY (1961)
GA3309
GA3309'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1961 (ELH)
GA3309'THE STATION MARK, REFERENCE MARKS, AND AZIMUTH MARK WERE
GA3309'RECOVERED AS DESCRIBED IN 1933 AND 1958 AND WERE FOUND IN GOOD
GA3309'CONDITION.
GA3309
GA3309   STATION RECOVERY (1984)
GA3309
GA3309'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1984
GA3309'IN BRISTOL.
GA3309'IN BRISTOL, IN THE SOUTHWEST END OF THE EAST HILL CEMETERY ON STATE
GA3309'STREET, 11.6 METERS (38.2 FT) NORTH-NORTHEAST OF THE LETTER S IN THE
GA3309'NAME SMITH ON THE NORTH FACE OF THE TALLEST MONUMENT, 6.2 METERS
GA3309'(20.4 FT) SOUTH-SOUTHEAST OF THE LETTER P IN PALMER ON THE EAST FACE
GA3309'OF A LARGE MARBLE MONUMENT.
GA3309
GA3309   STATION RECOVERY (1993)
GA3309
GA3309'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1993
GA3309'THE STATION IS LOCATED IN BRISTOL, IN THE SOUTHWEST END OF THE EAST
GA3309'HILL CEMETERY ON STATE STREET. OWNERSHIP--UNKNOWN.
GA3309'TO REACH THE STATION FROM THE JUNCTION OF INTERSTATE HIGHWAY 81 AND
GA3309'U.S. HIGHWAY 11 (LEE HIGHWAY) (EXIT 5) IN NORTHEAST BRISTOL, GO
GA3309'SOUTHEAST ON LEE HIGHWAY 1.9 MI (3.1 KM) TO THE RANDALL STREET
GA3309'EXPRESSWAY ON THE LEFT, TURN LEFT AND GO SOUTHERLY ON THE RANDALL
GA3309'STREET EXPRESSWAY 0.6 MI (1.0 KM) TO WEST MARY STREET, CONTINUE AHEAD
GA3309'SOUTH ON RANDALL STREET EXPRESSWAY 0.45 MI (0.72 KM) TO STATE STREET
GA3309'ON THE LEFT, TURN LEFT AND GO EAST ON STATE STREET 0.05 MI (0.08 KM)
GA3309'TO A RAILROAD CROSSING, CONTINUE AHEAD EAST FOR 0.6 MI (1.0 KM) ON
GA3309'STATE STREET TO AN ENTRANCE TO THE CEMETERY ON THE LEFT, TURN LEFT
GA3309'AND GO NORTH ON PAVED DRIVE FOR 0.05 MI (0.08 KM) TO A PAVED DRIVE
GA3309'CROSSROAD, TURN LEFT AND GO WEST ON PAVED DRIVE 0.15 MI (0.24 KM) TO
GA3309'THE END OF PAVEMENT AND A GRAVEL ROAD (WHICH IS A CIRCLE AROUND THE
GA3309'CEMETERY), CONTINUE AHEAD ON GRAVEL ROAD FOR ABOUT 50 M (164.0 FT) TO
GA3309'A FORK, TAKE THE LEFT FORK AND GO SOUTHERLY THEN WESTERLY AROUND
GA3309'GRAVESITES FOR ABOUT 50 M (164.0 FT) TO THE STATION ON THE LEFT.
GA3309'THE STATION PROJECTS 15 CM ABOVE THE LEVEL OF THE GROUND. LOCATED

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 GA3309'11.6 M (38.1 FT) NORTH-NORTHEAST FROM THE LETTER (S) IN THE NAME
 GA3309'SMITH ON THE NORTH FACE OF THE TALLEST MONUMENT, 6.2 M (20.3 FT)
 GA3309'SOUTH FROM THE LETTER (P) IN PALMER ON THE EAST FACE OF A LARGE MARBLE
 GA3309'MONUMENT AND 2.3 M (7.5 FT) WEST-NORTHWEST FROM THE CENTER OF THE
 GA3309'GRAVEL ROAD.
 GA3309
 GA3309                          STATION RECOVERY (1995)
 GA3309
 GA3309'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1995 (CLS)
 GA3309'RECOVERED AS DESCRIBED.
 GA3309
 GA3309                          STATION RECOVERY (2000)
 GA3309
 GA3309'RECOVERY NOTE BY MATTERN AND CRAIG 2000 (TS)
 GA3309'RECOVERED AS DESCRIBED.
 GA3309
 GA3309                          STATION RECOVERY (2000)
 GA3309
 GA3309'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2000 (AJL)
 GA3309'RECOVERED AS DESCRIBED.
 GA3309
 GA3309                          STATION RECOVERY (2000)
 GA3309
 GA3309'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2000 (KRN)
 GA3309'RECOVERED AS DESCRIBED.
 GA3309
 GA3309                          STATION RECOVERY (2003)
 GA3309
 GA3309'RECOVERY NOTE BY TN DEPT OF TRANSP 2003
 GA3309'RECOVERED AS DESCRIBED.
 GA3309
 GA3309                          STATION RECOVERY (2008)
 GA3309
 GA3309'RECOVERY NOTE BY JOHN CHANCE LAND SURVEYS INC 2008 (MD)
 GA3309'RECOVERED IN GOOD CONDITION.
 GA3309
 GA3309                          STATION RECOVERY (2014)
 GA3309
 GA3309'RECOVERY NOTE BY WOOLPERT CONSULTANTS 2014 (DPM)
 GA3309'RECOVERED AS DESCRIBED.
 GA3309
 GA3309                          STATION RECOVERY (2015)
 GA3309
 GA3309'RECOVERY NOTE BY COMPASSDATA INC 2015 (NK)
 GA3309'RECOVERED IN GOOD CONDITION.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 FZ1073 ***********************************************************************
 FZ1073  HT_MOD      -  This is a Height Modernization Survey Station.
 FZ1073  DESIGNATION -  C 37
 FZ1073  PID         -  FZ1073
 FZ1073  STATE/COUNTY-  VA/WASHINGTON
 FZ1073  COUNTRY     -  US
 FZ1073  USGS QUAD   -  DAMASCUS (1969)
 FZ1073
 FZ1073                        *CURRENT SURVEY CONTROL
 FZ1073 _______________________________________________________________________
 FZ1073* NAD 83(2011) POSITION- 36 39 11.11987(N) 081 47 27.83441(W)   ADJUSTED
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FZ1073* NAD 83(2011) ELLIP HT-   582.323 (meters)        (06/27/12)   ADJUSTED
FZ1073* NAD 83(2011) EPOCH   -  2010.00
FZ1073* NAVD 88 ORTHO HEIGHT -   613.30  (meters)     2012.1   (feet) GPS OBS
FZ1073  ____________________________________________________________________
FZ1073  NAVD 88 orthometric height was determined with geoid model    GEOID03
FZ1073  GEOID HEIGHT    -        -30.988 (meters)                     GEOID03
FZ1073  GEOID HEIGHT    -        -30.983 (meters)                     GEOID12B
FZ1073  NAD 83(2011) X  -    731,555.266 (meters)                     COMP
FZ1073  NAD 83(2011) Y  - -5,071,040.035 (meters)                     COMP
FZ1073  NAD 83(2011) Z  -  3,786,924.764 (meters)                     COMP
FZ1073  LAPLACE CORR    -          2.04  (seconds)                    DEFLEC12B
FZ1073
FZ1073  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
FZ1073  Standards:
FZ1073         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
FZ1073            Horiz  Ellip           SD_N   SD_E   SD_h      (unitless)
FZ1073  ------------------------------------------------------------------
FZ1073  NETWORK    1.74   2.88           0.77   0.64   1.47     -0.15175019
FZ1073  ------------------------------------------------------------------
FZ1073  Click here for local accuracies and other accuracy information.
FZ1073
FZ1073
FZ1073.The horizontal coordinates were established by GPS observations
FZ1073.and adjusted by the National Geodetic Survey in June 2012.
FZ1073
FZ1073.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
FZ1073.been affixed to the stable North American tectonic plate. See
FZ1073.NA2011 for more information.
FZ1073
FZ1073.The horizontal coordinates are valid at the epoch date displayed above
FZ1073.which is a decimal equivalence of Year/Month/Day.
FZ1073
FZ1073.The orthometric height was determined by GPS observations and a
FZ1073.high-resolution geoid model using precise GPS observation and
FZ1073.processing techniques.
FZ1073
FZ1073.Significant digits in the geoid height do not necessarily reflect accuracy.
FZ1073.GEOID12B height accuracy estimate available here.
FZ1073
FZ1073.Photographs are available for this station.
FZ1073
FZ1073.The X, Y, and Z were computed from the position and the ellipsoidal ht.
FZ1073
FZ1073.The Laplace correction was computed from DEFLEC12B derived deflections.
FZ1073
FZ1073.The ellipsoidal height was determined by GPS observations
FZ1073.and is referenced to NAD 83.
FZ1073
FZ1073. The following values were computed from the NAD 83(2011) position.
FZ1073
FZ1073;                   North         East      Units Scale Factor Converg.
FZ1073;SPC VA S     - 1,040,613.842 3,205,784.298   MT  1.00002256   -1 59 50.7
FZ1073;SPC VA S     - 3,414,080.58 10,517,643.98   sFT  1.00002256   -1 59 50.7
FZ1073;UTM  17      - 4,056,680.906   429,295.016   MT  0.99966159   -0 28 20.1
FZ1073
FZ1073!             -  Elev Factor  x  Scale Factor =   Combined Factor
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FZ1073!SPC VA S     -   0.99990862  x   1.00002256  =   0.99993118
FZ1073!UTM  17      -   0.99990862  x   0.99966159  =   0.99957024
FZ1073
FZ1073_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SMA2929556680(NAD 83)
FZ1073
FZ1073                          SUPERSEDED SURVEY CONTROL
FZ1073
FZ1073  NAD 83(2007)-  36 39 11.11990(N)    081 47 27.83499(W) AD(2002.00) 1
FZ1073  ELLIP H (04/15/08)  582.350  (m)                        GP(2002.00) 4 2
FZ1073  NAVD 88 (06/15/91)  613.295  (m)         2012.12   (f) ADJUSTED    2 0
FZ1073  NGVD 29 (??/??/92)  613.368  (m)         2012.36   (f) ADJ UNCH    2 0
FZ1073
FZ1073.Superseded values are not recommended for survey control.
FZ1073
FZ1073.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
FZ1073.See file dsdata.txt to determine how the superseded data were derived.
FZ1073
FZ1073_MARKER: DB = BENCH MARK DISK
FZ1073_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
FZ1073_STAMPING: C 37 1934
FZ1073_MARK LOGO: CGS
FZ1073_MAGNETIC: N = NO MAGNETIC MATERIAL
FZ1073_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
FZ1073+STABILITY: SURFACE MOTION
FZ1073_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
FZ1073+SATELLITE: SATELLITE OBSERVATIONS - December 15, 2003
FZ1073
FZ1073  HISTORY     - Date     Condition        Report By
FZ1073  HISTORY     - 1934     MONUMENTED       CGS
FZ1073  HISTORY     - 20031215 GOOD             NCGS
FZ1073
FZ1073                          STATION DESCRIPTION
FZ1073
FZ1073'DESCRIBED BY COAST AND GEODETIC SURVEY 1934
FZ1073'2.1 MI N FROM DAMASCUS.
FZ1073'2.1 MILES NORTH ALONG U.S. HIGHWAY 58 FROM DAMASCUS, WASHINGTON
FZ1073'COUNTY, ON THE PROPERTY OF D.A. BLACKBURN, ON THE TOP OF A SMALL
FZ1073'RISE, 100 YARDS SOUTH OF THE HOUSE, 20 FEET WEST OF THE CENTERLINE
FZ1073'OF THE HIGHWAY, AND 10 FEET NORTH OF THE GATE TO THE BARNYARD.
FZ1073'A STANDARD DISK, STAMPED C 37 1934 AND SET IN THE TOP OF A CONCRETE
FZ1073'POST PROJECTING 6 INCHES ABOVE GROUND.
FZ1073
FZ1073                          STATION RECOVERY (2003)
FZ1073
FZ1073'RECOVERY NOTE BY NORTH CAROLINA GEODETIC SURVEY 2003 (MDB)
FZ1073'THE MARK IS LOCATED ABOUT 24.0 MI (38.6 KM) NORTHWEST OF W. JEFFERSON
FZ1073'AND 2.1 MI (3.4 KM) NORTH OF DAMASCUS ON THE TOP OF A SMALL RISE.
FZ1073'
FZ1073'ALONG VA HIGHWAY 91 FOR 2.0 MI (3.2 KM) NORTH FROM US 58 (IN
FZ1073'DAMASCUS), ON THE LEFT INSIDE THE BARN YARD NEAR THE THE NORTH GATE
FZ1073'POST.
FZ1073'
FZ1073'MARK IS ABOUT 3.0-FT HIGHER THAN VA HIGHWAY 91 AND PROJECTS 3 INCHES
FZ1073'(8 CM) ABOVE THE GROUND.  LOCATED 62.0 FT (18.9 M) SOUTHWEST OF THE
FZ1073'CENTERLINE OF VA HIGHWAY 91, 53.5 FT (16.3 M) SOUTHEAST OF THE
FZ1073'SOUTHERN MOST CORNER OF A BARN--AND 1.5 FT (0.5 M) NORTHWEST OF THE
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 FZ1073'NORTH GATE POST TO THE BARN YARD, 16.7 FT (5.1 M) SOUTH OF A 10-INCH
 FZ1073'(25 CM) MAPLE--BOTH WITH REFERENCE TAGS.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 AJ1561 ***********************************************************************
 AJ1561  HT_MOD      -  This is a Height Modernization Survey Station.
 AJ1561  CBN         -  This is a Cooperative Base Network Control Station.
 AJ1561  DESIGNATION -  DAUGHERTY
 AJ1561  PID         -  AJ1561
 AJ1561  STATE/COUNTY-  NC/ASHE
 AJ1561  COUNTRY     -  US
 AJ1561  USGS QUAD   -  GRAYSON (1976)
 AJ1561
 AJ1561                        *CURRENT SURVEY CONTROL
 AJ1561  ______________________________________________________________________
 AJ1561* NAD 83(2011) POSITION- 36 31 14.91335(N) 081 41 12.28904(W)   ADJUSTED
 AJ1561* NAD 83(2011) ELLIP HT-  1002.951 (meters)        (06/27/12)   ADJUSTED
 AJ1561* NAD 83(2011) EPOCH   -  2010.00
 AJ1561* NAVD 88 ORTHO HEIGHT -  1033.83  (meters)     3391.8   (feet) GPS OBS
 AJ1561  ______________________________________________________________________
 AJ1561  NAVD 88 orthometric height was determined with geoid model    GEOID03
 AJ1561  GEOID HEIGHT    -        -30.856 (meters)                     GEOID03
 AJ1561  GEOID HEIGHT    -        -30.871 (meters)                     GEOID12B
 AJ1561  NAD 83(2011) X  -    742,100.880 (meters)                     COMP
 AJ1561  NAD 83(2011) Y  - -5,078,692.363 (meters)                     COMP
 AJ1561  NAD 83(2011) Z  -  3,775,387.413 (meters)                     COMP
 AJ1561  LAPLACE CORR    -         -0.49  (seconds)                    DEFLEC12B
 AJ1561
 AJ1561  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 AJ1561  Standards:
 AJ1561         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 AJ1561            Horiz  Ellip           SD_N   SD_E   SD_h      (unitless)
 AJ1561  ---------------------------------------------------------------------
 AJ1561  NETWORK    0.58   1.10           0.26   0.21   0.56     -0.00618720
 AJ1561  ---------------------------------------------------------------------
 AJ1561  Click here for local accuracies and other accuracy information.
 AJ1561
 AJ1561
 AJ1561.The horizontal coordinates were established by GPS observations
 AJ1561.and adjusted by the National Geodetic Survey in June 2012.
 AJ1561
 AJ1561.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
 AJ1561.been affixed to the stable North American tectonic plate. See
 AJ1561.NA2011 for more information.
 AJ1561
 AJ1561.The horizontal coordinates are valid at the epoch date displayed above
 AJ1561.which is a decimal equivalence of Year/Month/Day.
 AJ1561
 AJ1561.The orthometric height was determined by GPS observations and a
 AJ1561.high-resolution geoid model using precise GPS observation and
 AJ1561.processing techniques.
 AJ1561
 AJ1561.Significant digits in the geoid height do not necessarily reflect accuracy.
 AJ1561.GEOID12B height accuracy estimate available here.
 AJ1561
 AJ1561.Photographs are available for this station.
 AJ1561
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AJ1561.The X, Y, and Z were computed from the position and the ellipsoidal ht.
AJ1561
AJ1561.The Laplace correction was computed from DEFLEC12B derived deflections.
AJ1561
AJ1561.The ellipsoidal height was determined by GPS observations
AJ1561.and is referenced to NAD 83.
AJ1561
AJ1561. The following values were computed from the NAD 83(2011) position.
AJ1561
AJ1561;                    North         East     Units Scale Factor Converg.
AJ1561;SPC NC       -   310,650.202   368,957.986   MT  1.00011812   -1 33 02.6
AJ1561;SPC NC       - 1,019,191.54  1,210,489.66   sFT  1.00011812   -1 33 02.6
AJ1561;UTM  17      - 4,041,935.628   438,514.222   MT  0.99964658   -0 24 31.3
AJ1561
AJ1561!             -  Elev Factor  x  Scale Factor =   Combined Factor
AJ1561!SPC NC       -   0.99984262  x   1.00011812  =   0.99996072
AJ1561!UTM  17      -   0.99984262  x   0.99964658  =   0.99948926
AJ1561
AJ1561_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SMA3851441935(NAD 83)
AJ1561
AJ1561                           SUPERSEDED SURVEY CONTROL
AJ1561
AJ1561  NAD 83(2007)-  36 31 14.91333(N)    081 41 12.28962(W) AD(2002.00) 0
AJ1561  ELLIP H (02/10/07) 1002.975  (m)                       GP(2002.00)
AJ1561  NAD 83(2001)-  36 31 14.91366(N)    081 41 12.28969(W) AD(       ) A
AJ1561  ELLIP H (09/24/02) 1002.994  (m)                       GP(       ) 4 1
AJ1561  NAD 83(1986)-  36 31 14.92491(N)    081 41 12.29302(W) AD(       ) 1
AJ1561  NAVD 88 (01/09/01) 1033.8    (m)  GEOID99 model used   GPS OBS
AJ1561  NGVD 29 (01/09/01) 1033.8    (m)  UNKNOWN model used   GPS OBS
AJ1561
AJ1561.Superseded values are not recommended for survey control.
AJ1561
AJ1561.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AJ1561.See file dsdata.txt to determine how the superseded data were derived.
AJ1561
AJ1561_MARKER: DH = HORIZONTAL CONTROL DISK
AJ1561_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
AJ1561_STAMPING: DAUGHERTY 1994
AJ1561_MARK LOGO: NCGS
AJ1561_MAGNETIC: B = BAR MAGNET IMBEDDED IN MONUMENT
AJ1561_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
AJ1561+STABILITY: SURFACE MOTION
AJ1561_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AJ1561+SATELLITE: SATELLITE OBSERVATIONS - December 03, 2003
AJ1561
AJ1561  HISTORY     - Date     Condition        Report By
AJ1561  HISTORY     - 1994     MONUMENTED       NCGS
AJ1561  HISTORY     - 20010625 GOOD             NCGS
AJ1561  HISTORY     - 20031203 GOOD             NCGS
AJ1561
AJ1561                           STATION DESCRIPTION
AJ1561
AJ1561'DESCRIBED BY NORTH CAROLINA GEODETIC SURVEY 1994 (PAC)
AJ1561'STATION IS LOCATED ABOUT 13.8 MI (22.2 KM) NORTHWEST OF JEFFERSON IN
AJ1561'THE GRAYSON COMMUNITY.
AJ1561'PROCEED ALONG TN 167 (FORGE CREEK ROAD) FOR 7.2 MI (11.6 KM) EAST FROM
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 AJ1561'US 421 (IN MOUNTAIN CITY, TENNESSEE) TO THE NORTH CAROLINA-TENNESSEE
 AJ1561'STATE LINE, THENCE CONTINUE EAST FOR 0.4 MI (0.6 KM) ALONG SR 1315
 AJ1561'(BIG LAUREL ROAD) , THENCE NORTH FOR 0.4 MI (0.6 KM) ALONG SR 1322
 AJ1561'(HEMLOCK ROAD) , THENCE NORTH FOR 1.95 MI (3.14 KM) ALONG SR 1323 (CUT
 AJ1561'LAUREL GAP ROAD) , THENCE EAST FOR 0.2 MI (0.3 KM) ALONG SR 1389 TO A
 AJ1561'PASTURE ROAD (ON RIGHT) AND STATION IN PASTURE ON SOUTH SIDE OF
 AJ1561'PASTURE ROAD.
 AJ1561'MARK IS ABOUT FLUSH WITH GROUND.  LOCATED 18.0 FT (5.5 M)
 AJ1561'SOUTH-SOUTHWEST OF THE CENTERLINE OF PASTURE ROAD, 183.5 FT (55.9 M)
 AJ1561'EAST-SOUTHEAST OF THE CENTERLINE INTERSECTION OF ROAD AND PASTURE
 AJ1561'ROAD, 154.5 FT (47.1 M) NORTHEAST OF THE NORTHEAST CORNER OF BARN--AND
 AJ1561'70.7 FT (21.5 M) SOUTHWEST OF A FENCE POST, 154.8 FT (47.2 M) WEST OF
 AJ1561'A FENCE POST, 152.2 FT (46.4 M) NORTHWEST OF A FENCE POST--ALL WITH
 AJ1561'REFERENCE TAGS.
 AJ1561
 AJ1561                          STATION RECOVERY (2001)
 AJ1561
 AJ1561'RECOVERY NOTE BY NORTH CAROLINA GEODETIC SURVEY 2001 (MDB)
 AJ1561'THE TO REACH PORTION HAS BEEN REVISED. PROCEED ALONG NC 88 FOR 8.0 MI
 AJ1561'(12.9 KM) WEST FROM
 AJ1561'NC 194, IN WARRENSVILLE, THENCE NORTHWEST FOR 7.15 MI (11.51 KM) ALONG
 AJ1561'SR 1315 (BIG LAUREL
 AJ1561'ROAD), THENCE NORTH FOR 0.45 MI (0.72 KM) ALONG SR 1322 (SOUTH
 AJ1561'FLATWOODS ROAD). AT THIS
 AJ1561'POINT SR 1322 TURNS TO THE EAST, CONTINUE NORTH FOR 2.2 MI (3.5 KM)
 AJ1561'ALONG SR 1323 (NORTH
 AJ1561'FLATWOODS ROAD). STATION IS IN THE PASTURE ON THE EAST SIDE OF ROAD.
 AJ1561
 AJ1561                          STATION RECOVERY (2003)
 AJ1561
 AJ1561'RECOVERY NOTE BY NORTH CAROLINA GEODETIC SURVEY 2003 (MDB)
 AJ1561'RECOVERED AS DESCRIBED.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 DK3633 ***********************************************************************
 DK3633  HT_MOD      -  This is a Height Modernization Survey Station.
 DK3633  DESIGNATION -  DOLINGER
 DK3633  PID         -  DK3633
 DK3633  STATE/COUNTY-  VA/GRAYSON
 DK3633  COUNTRY     -  US
 DK3633  USGS QUAD   -  PARK (1978)
 DK3633
 DK3633                        *CURRENT SURVEY CONTROL
 DK3633 ______________________________________________________________________
 DK3633* NAD 83(2011) POSITION- 36 35 27.95454(N) 081 37 09.44808(W)   ADJUSTED
 DK3633* NAD 83(2011) ELLIP HT-  1035.443 (meters)        (06/27/12)   ADJUSTED
 DK3633* NAD 83(2011) EPOCH   -  2010.00
 DK3633* NAVD 88 ORTHO HEIGHT -  1066.22  (meters)     3498.1   (feet) GPS OBS
 DK3633 ______________________________________________________________________
 DK3633  NAVD 88 orthometric height was determined with geoid model    GEOID03
 DK3633  GEOID HEIGHT    -        -30.755 (meters)                     GEOID03
 DK3633  GEOID HEIGHT    -        -30.756 (meters)                     GEOID12B
 DK3633  NAD 83(2011) X  -    747,406.226 (meters)                     COMP
 DK3633  NAD 83(2011) Y  - -5,073,244.135 (meters)                     COMP
 DK3633  NAD 83(2011) Z  -  3,781,673.278 (meters)                     COMP
 DK3633  LAPLACE CORR    -         -1.32  (seconds)                    DEFLEC12B
 DK3633
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DK3633  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
DK3633  Standards:
DK3633         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
DK3633            Horiz  Ellip           SD_N   SD_E   SD_h      (unitless)
DK3633  ------------------------------------------------------------------
DK3633  NETWORK    0.77   1.37           0.35   0.27   0.70      0.00679114
DK3633  ------------------------------------------------------------------
DK3633  Click here for local accuracies and other accuracy information.
DK3633
DK3633
DK3633.The horizontal coordinates were established by GPS observations
DK3633.and adjusted by the National Geodetic Survey in June 2012.
DK3633
DK3633.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
DK3633.been affixed to the stable North American tectonic plate. See
DK3633.NA2011 for more information.
DK3633
DK3633.The horizontal coordinates are valid at the epoch date displayed above
DK3633.which is a decimal equivalence of Year/Month/Day.
DK3633
DK3633.The orthometric height was determined by GPS observations and a
DK3633.high-resolution geoid model using precise GPS observation and
DK3633.processing techniques.
DK3633
DK3633.Significant digits in the geoid height do not necessarily reflect accuracy.
DK3633.GEOID12B height accuracy estimate available here.
DK3633
DK3633.Photographs are available for this station.
DK3633
DK3633.The X, Y, and Z were computed from the position and the ellipsoidal ht.
DK3633
DK3633.The Laplace correction was computed from DEFLEC12B derived deflections.
DK3633
DK3633.The ellipsoidal height was determined by GPS observations
DK3633.and is referenced to NAD 83.
DK3633
DK3633. The following values were computed from the NAD 83(2011) position.
DK3633
DK3633;                    North         East     Units Scale Factor Converg.
DK3633;SPC VA S     - 1,033,216.906 3,220,907.595   MT  1.00003650   -1 53 35.4
DK3633;SPC VA S     - 3,389,812.47 10,567,261.00   sFT  1.00003650   -1 53 35.4
DK3633;UTM  17      - 4,049,691.623   444,603.942   MT  0.99963781   -0 22 09.0
DK3633
DK3633!             -  Elev Factor  x  Scale Factor =   Combined Factor
DK3633!SPC VA S     -   0.99983752  x   1.00003650  =   0.99987402
DK3633!UTM  17      -   0.99983752  x   0.99963781  =   0.99947539
DK3633
DK3633_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SMA4460349691(NAD 83)
DK3633
DK3633                           SUPERSEDED SURVEY CONTROL
DK3633
DK3633  NAD 83(2007)-  36 35 27.95456(N)    081 37 09.44869(W) AD(2002.00) 1
DK3633  ELLIP H (04/15/08) 1035.463  (m)                       GP(2002.00) 4 2
DK3633
DK3633.Superseded values are not recommended for survey control.
DK3633
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 DK3633.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 DK3633.See file dsdata.txt to determine how the superseded data were derived.
 DK3633
 DK3633_MARKER: DH = HORIZONTAL CONTROL DISK
 DK3633_SETTING: 36 = SET IN A MASSIVE STRUCTURE
 DK3633_SP_SET: BRIDGE FLOOR
 DK3633_STAMPING: DOLINGER 2005
 DK3633_MARK LOGO: NCGS
 DK3633_MAGNETIC: N = NO MAGNETIC MATERIAL
 DK3633_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 DK3633_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 DK3633+SATELLITE: SATELLITE OBSERVATIONS - 2005
 DK3633
 DK3633  HISTORY     - Date     Condition        Report By
 DK3633  HISTORY     - 2005     MONUMENTED       NCGS
 DK3633
 DK3633                          STATION DESCRIPTION
 DK3633
 DK3633'DESCRIBED BY NORTH CAROLINA GEODETIC SURVEY 2005
 DK3633'THE STATION IS LOCATED ABOUT 14.4 MI (23.2 KM) NORTHWEST OF JEFFERSON
 DK3633'AND 1.0 MI (1.6 KM) NORTH-NORTHEAST OF FARMERS STORE.
 DK3633'
 DK3633'PROCEED ALONG VA RT 726-WHITETOP GAP ROAD FOR 1.55 MI (2.49 KM)
 DK3633'SOUTHWEST FROM US 58 (AT WHITETOP GAP) TO THE COMMUNITY OF WHITETOP,
 DK3633'CONTINUE ALONG WHITE TOP GAP ROAD FOR 0.7 MI (1.1 KM) SOUTHEAST,
 DK3633'THENCE EAST 0.05 MI (0.08 KM) ALONG DOLINGER ROAD TO THE BRIDGE OVER
 DK3633'BIG HORSE CREEK, IN THE BRIDGE FLOOR ABOVE THE ABUTMENT AT THE
 DK3633'SOUTHWEST CORNER.
 DK3633'
 DK3633'MARK IS ABOUT LEVEL WITH DOLINGER ROAD SET FLUSH IN A DRILL HOLE.
 DK3633'LOCATED 11.5 FT (3.5 M) SOUTHWEST OF THE CENTERLINE OF DOLINGER ROAD,
 DK3633'76.0 FT (23.2 M) WEST-NORTHWEST OF THE CENTERLINE INTERSECTION OF THE
 DK3633'DOLINGER ROAD AND VIRGINIA CREEPER TRAIL, 58.2 FT (17.7 M) EAST OF THE
 DK3633'WEST END OF THE SOUTH GUARD RAIL.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 GA0589 ***********************************************************************
 GA0589  CBN         -  This is a Cooperative Base Network Control Station.
 GA0589  DESIGNATION -  E 116
 GA0589  PID         -  GA0589
 GA0589  STATE/COUNTY-  TN/WASHINGTON
 GA0589  COUNTRY     -  US
 GA0589  USGS QUAD   -  JONESBOROUGH (1968)
 GA0589
 GA0589                        *CURRENT SURVEY CONTROL
 GA0589  ______________________________________________________________________
 GA0589* NAD 83(2011) POSITION- 36 15 01.16327(N) 082 28 33.11542(W)   ADJUSTED
 GA0589* NAD 83(2011) ELLIP HT-   496.679 (meters)        (06/27/12)   ADJUSTED
 GA0589* NAD 83(2011) EPOCH   -  2010.00
 GA0589* NAVD 88 ORTHO HEIGHT -   527.987 (meters)     1732.24  (feet) ADJUSTED
 GA0589  ______________________________________________________________________
 GA0589  GEOID HEIGHT    -        -31.331 (meters)                    GEOID12B
 GA0589  NAD 83(2011) X  -    674,363.720 (meters)                    COMP
 GA0589  NAD 83(2011) Y  - -5,105,681.075 (meters)                    COMP
 GA0589  NAD 83(2011) Z  -  3,750,921.039 (meters)                    COMP
 GA0589  LAPLACE CORR    -          0.97  (seconds)                   DEFLEC12B
 GA0589  DYNAMIC HEIGHT  -        527.482 (meters)     1730.58  (feet) COMP
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GA0589  MODELED GRAVITY -    979,660.1   (mgal)                        NAVD 88
GA0589
GA0589  VERT ORDER      -  SECOND    CLASS 0
GA0589
GA0589  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
GA0589  Standards:
GA0589         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
GA0589            Horiz  Ellip           SD_N   SD_E   SD_h      (unitless)
GA0589  ------------------------------------------------------------------
GA0589  NETWORK    0.72   1.61           0.32   0.26   0.82     -0.16388879
GA0589  ------------------------------------------------------------------
GA0589  Click here for local accuracies and other accuracy information.
GA0589
GA0589
GA0589.The horizontal coordinates were established by GPS observations
GA0589.and adjusted by the National Geodetic Survey in June 2012.
GA0589
GA0589.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
GA0589.been affixed to the stable North American tectonic plate. See
GA0589.NA2011 for more information.
GA0589
GA0589.The horizontal coordinates are valid at the epoch date displayed above
GA0589.which is a decimal equivalence of Year/Month/Day.
GA0589
GA0589.The orthometric height was determined by differential leveling and
GA0589.adjusted by the NATIONAL GEODETIC SURVEY
GA0589.in June 1991.
GA0589
GA0589.Significant digits in the geoid height do not necessarily reflect accuracy.
GA0589.GEOID12B height accuracy estimate available here.
GA0589
GA0589.The X, Y, and Z were computed from the position and the ellipsoidal ht.
GA0589
GA0589.The Laplace correction was computed from DEFLEC12B derived deflections.
GA0589
GA0589.The ellipsoidal height was determined by GPS observations
GA0589.and is referenced to NAD 83.
GA0589
GA0589.The dynamic height is computed by dividing the NAVD 88
GA0589.geopotential number by the normal gravity value computed on the
GA0589.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
GA0589.degrees latitude (g = 980.6199 gals.).
GA0589
GA0589.The modeled gravity was interpolated from observed gravity values.
GA0589
GA0589. The following values were computed from the NAD 83(2011) position.
GA0589
GA0589;                    North         East     Units Scale Factor Converg.
GA0589;SPC TN       -   218,392.605   916,665.303   MT  0.99997472   +2 03 47.4
GA0589;SPC TN       -   716,509.74  3,007,426.08   sFT  0.99997472   +2 03 47.4
GA0589;UTM  17      - 4,012,723.499   367,400.953   MT  0.99981664   -0 52 22.2
GA0589
GA0589!             -  Elev Factor  x  Scale Factor =   Combined Factor
GA0589!SPC TN       -   0.99992205  x   0.99997472  =   0.99989678
GA0589!UTM  17      -   0.99992205  x   0.99981664  =   0.99973871
GA0589
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GA0589_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SLA6740012723(NAD 83)
GA0589
GA0589                           SUPERSEDED SURVEY CONTROL
GA0589
GA0589  NAD 83(2007)-  36 15 01.16316(N)    082 28 33.11619(W) AD(2002.00) A
GA0589  ELLIP H (10/16/11)  496.694  (m)                       GP(2002.00) 3 2
GA0589  NAD 83(2007)-  36 15 01.16319(N)    082 28 33.11633(W) AD(2002.00) 0
GA0589  ELLIP H (02/10/07)  496.641  (m)                       GP(2002.00)
GA0589  NAD 83(1995)-  36 15 01.16332(N)    082 28 33.11611(W) AD(       ) A
GA0589  ELLIP H (08/03/04)  496.622  (m)                       GP(       ) 4 1
GA0589  NAVD 88             527.99   (m)         1732.2    (f) LEVELING    3
GA0589  NGVD 29 (??/??/92)  528.130  (m)         1732.71   (f) ADJ UNCH    2 0
GA0589
GA0589.Superseded values are not recommended for survey control.
GA0589
GA0589.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
GA0589.See file dsdata.txt to determine how the superseded data were derived.
GA0589
GA0589_MARKER: DB = BENCH MARK DISK
GA0589_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
GA0589_STAMPING: E 116 1935
GA0589_MARK LOGO: CGS
GA0589_MAGNETIC: N = NO MAGNETIC MATERIAL
GA0589_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
GA0589+STABILITY: SURFACE MOTION
GA0589_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
GA0589+SATELLITE: SATELLITE OBSERVATIONS - October 10, 2003
GA0589
GA0589  HISTORY     - Date     Condition        Report By
GA0589  HISTORY     - 1935     MONUMENTED       CGS
GA0589  HISTORY     - 1979     GOOD             TVA
GA0589  HISTORY     - 20031010 GOOD             TNDT
GA0589
GA0589                           STATION DESCRIPTION
GA0589
GA0589'DESCRIBED BY COAST AND GEODETIC SURVEY 1935
GA0589'4.1 MI S FROM JONESBORO.
GA0589'4.1 MILES SOUTH ALONG STATE HIGHWAY 81 FROM THE POST OFFICE AT
GA0589'JONESBORO, WASHINGTON COUNTY, 27 YARDS WEST OF THE JUNCTION OF
GA0589'A ROAD LEADING NORTHEAST, 43 FEET NORTHWEST OF AN ABANDONED
GA0589'SERVICE STATION, 35 FEET SOUTHWEST OF THE CENTERLINE OF THE
GA0589'HIGHWAY, 8-1/2 FEET NORTHWEST OF A FENCE CORNER, 1 FOOT
GA0589'NORTHEAST OF A FENCE LINE, AND 2 FEET LOWER THAN THE HIGHWAY.
GA0589'A STANDARD DISK, STAMPED E 116 1935 AND SET IN THE TOP OF A
GA0589'CONCRETE POST.
GA0589
GA0589                           STATION RECOVERY (1979)
GA0589
GA0589'RECOVERY NOTE BY TENNESSEE VALLEY AUTHORITY 1979
GA0589'LOCATED 4.1 MILES SOUTH OF POST OFFICE AT JONESBORO BY HIGHWAY, ALONG
GA0589'STATE HIGHWAY 81, 42 FEET WEST OF NORTHWEST CORNER OF OLD GARAGE, 27
GA0589'YARDS WEST OF CENTERLINE OF JUNCTION OF GRAVEL ROAD TO NORTHEAST, 34
GA0589'FEET SOUTH OF CENTERLINE OF HIGHWAY 81, 2 FEET BELOW LEVEL OF
GA0589'HIGHWAY, AT GROUND LEVEL IN GARDEN PLOT. A STANDARD USC AND GS DISK,
GA0589'STAMPED E 116 1935 AND SET ON TOP OF A CONCRETE POST.
GA0589
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 GA0589                          STATION RECOVERY (2003)
 GA0589
 GA0589'RECOVERY NOTE BY TN DEPT OF TRANSP 2003
 GA0589'RECOVERED AS DESCRIBED.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 DG7713 ***********************************************************************
 DG7713  CBN         -  This is a Cooperative Base Network Control Station.
 DG7713  DESIGNATION -  EXPO
 DG7713  PID         -  DG7713
 DG7713  STATE/COUNTY-  TN/RUTHERFORD
 DG7713  COUNTRY     -  US
 DG7713  USGS QUAD   -  SMYRNA (1998)
 DG7713
 DG7713                         *CURRENT SURVEY CONTROL
 DG7713  ______________________________________________________________________
 DG7713* NAD 83(2011) POSITION- 35 58 23.86729(N) 086 34 25.08382(W)   ADJUSTED
 DG7713* NAD 83(2011) ELLIP HT-   171.017 (meters)        (06/27/12)   ADJUSTED
 DG7713* NAD 83(2011) EPOCH   -  2010.00
 DG7713* NAVD 88 ORTHO HEIGHT -   199.9   (meters)      656.    (feet) GPS OBS
 DG7713  ______________________________________________________________________
 DG7713  NAVD 88 orthometric height was determined with an earlier geoid model
 DG7713  GEOID HEIGHT    -        -28.909 (meters)                    GEOID12B
 DG7713  NAD 83(2011) X  -    308,861.983 (meters)                    COMP
 DG7713  NAD 83(2011) Y  - -5,158,640.287 (meters)                    COMP
 DG7713  NAD 83(2011) Z  -  3,725,894.617 (meters)                    COMP
 DG7713  LAPLACE CORR    -          0.88  (seconds)                   DEFLEC12B
 DG7713
 DG7713  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 DG7713  Standards:
 DG7713         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 DG7713            Horiz  Ellip           SD_N   SD_E   SD_h      (unitless)
 DG7713  ------------------------------------------------------------------
 DG7713  NETWORK    0.87   1.88           0.40   0.30   0.96      0.04343353
 DG7713  ------------------------------------------------------------------
 DG7713  Click here for local accuracies and other accuracy information.
 DG7713
 DG7713
 DG7713.The horizontal coordinates were established by GPS observations
 DG7713.and adjusted by the National Geodetic Survey in June 2012.
 DG7713
 DG7713.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
 DG7713.been affixed to the stable North American tectonic plate. See
 DG7713.NA2011 for more information.
 DG7713
 DG7713.The horizontal coordinates are valid at the epoch date displayed above
 DG7713.which is a decimal equivalence of Year/Month/Day.
 DG7713
 DG7713.The orthometric height was determined by GPS observations and a
 DG7713.high-resolution geoid model.
 DG7713
 DG7713.Significant digits in the geoid height do not necessarily reflect accuracy.
 DG7713.GEOID12B height accuracy estimate available here.
 DG7713
 DG7713.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 DG7713
 DG7713.The Laplace correction was computed from DEFLEC12B derived deflections.
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DG7713
DG7713.The ellipsoidal height was determined by GPS observations
DG7713.and is referenced to NAD 83.
DG7713
DG7713. The following values were computed from the NAD 83(2011) position.
DG7713
DG7713;                    North         East     Units Scale Factor Converg.
DG7713;SPC TN       -   182,104.215   548,264.390   MT  0.99995134   -0 20 09.0
DG7713;SPC TN       -   597,453.58  1,798,764.09   sFT  0.99995134   -0 20 09.0
DG7713;UTM  16      - 3,981,070.664   538,440.380   MT  0.99961821   +0 15 01.6
DG7713
DG7713!             -  Elev Factor  x  Scale Factor =   Combined Factor
DG7713!SPC TN       -   0.99997316  x   0.99995134  =   0.99992450
DG7713!UTM  16      -   0.99997316  x   0.99961821  =   0.99959138
DG7713
DG7713_U.S. NATIONAL GRID SPATIAL ADDRESS: 16SEE3844081070(NAD 83)
DG7713
DG7713                           SUPERSEDED SURVEY CONTROL
DG7713
DG7713  NAD 83(2007)-  35 58 23.86720(N)    086 34 25.08460(W) AD(2002.00) A
DG7713  ELLIP H (10/16/11)  171.040  (m)                       GP(2002.00) 3 2
DG7713  NAD 83(2007)-  35 58 23.86747(N)    086 34 25.08442(W) AD(2002.00) 0
DG7713  ELLIP H (02/10/07)  171.027  (m)                       GP(2002.00)
DG7713  NAD 83(1995)-  35 58 23.86740(N)    086 34 25.08443(W) AD(       ) A
DG7713  ELLIP H (08/03/04)  171.020  (m)                       GP(       ) 4 1
DG7713  NAVD 88 (08/03/04)  199.9    (m)  GEOID03 model used   GPS OBS
DG7713
DG7713.Superseded values are not recommended for survey control.
DG7713
DG7713.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DG7713.See file dsdata.txt to determine how the superseded data were derived.
DG7713
DG7713_MARKER: DD = SURVEY DISK
DG7713_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
DG7713_STAMPING: EXPO 2001
DG7713_MARK LOGO: TNDT
DG7713_PROJECTION: FLUSH
DG7713_MAGNETIC: N = NO MAGNETIC MATERIAL
DG7713_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
DG7713+STABILITY: SURFACE MOTION
DG7713_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DG7713+SATELLITE: SATELLITE OBSERVATIONS - March 24, 2011
DG7713
DG7713  HISTORY     - Date     Condition        Report By
DG7713  HISTORY     - 2001     MONUMENTED       TNDT
DG7713  HISTORY     - 20031010 GOOD             TNDT
DG7713  HISTORY     - 20110324 GOOD             NOGUCO
DG7713
DG7713                           STATION DESCRIPTION
DG7713
DG7713'DESCRIBED BY TN DEPT OF TRANSP 2003 (DWB)
DG7713'THE STATION IS LOCATED IN RUTHERFORD COUNTY, TN AT THE INTERSTATE 24
DG7713'EXCHANGE WITH STATE ROUTE 266 ABOUT 3 MILES WEST OF SMYRNA, 4 MILES
DG7713'SOUTH OF LA VERGNE AND 5 MILES EAST OF NOLENSVILLE.
DG7713'
DG7713'TO REACH THE STATION FROM THE INTERSECTION OF I 24 AND SR 266 (SAM
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 DG7713'RIDLEY PARKWAY), GO SOUTH WESTERLY ON SR 266 FOR 0.2 MILE TO THE
 DG7713'STATION ON THE LEFT AT THE RIGHT OF WAY FENCE.
 DG7713'
 DG7713'THE STATION IS A STANDARD TNDOT ALUMINUM DISK STAMPED--EXPO 2001--
 DG7713'AFFIXED ATOP A 5 FOOT LONG .625 INCH REBAR, SET FLUSH WITH THE GROUND.
 DG7713'IT IS 166 FT SOUTH OF THE METAL SIGN (I 24 E AND I 24 W), 50 FEET
 DG7713'NORTH NORTHEAST OF A POWER POLE (TAGGED 8), 29 FEET NORTHEAST OF A
 DG7713'CONCRETE RIGHT OF WAY MONUMENT AT THE TURN IN THE FENCE, 24.8 FEET
 DG7713'NORTH OF AN ORANGE FIBERGLASS WITNESS POST AT THE FENCE.
 DG7713
 DG7713                          STATION RECOVERY (2011)
 DG7713
 DG7713'RECOVERY NOTE BY NORTHROP GRUMMON CORPORATION 2011 (CLR)
 DG7713'RECOVERED IN GOOD CONDITION.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 FC2000 ***********************************************************************
 FC2000  DESIGNATION -  GPS 0004
 FC2000  PID         -  FC2000
 FC2000  STATE/COUNTY-  TN/KNOX
 FC2000  COUNTRY     -  US
 FC2000  USGS QUAD   -  BEARDEN (1990)
 FC2000
 FC2000                         *CURRENT SURVEY CONTROL
 FC2000  ______________________________________________________________________
 FC2000* NAD 83(2011) POSITION- 35 55 41.44001(N) 084 02 10.35499(W)   ADJUSTED
 FC2000* NAD 83(2011) ELLIP HT-   273.048 (meters)        (06/27/12)   ADJUSTED
 FC2000* NAD 83(2011) EPOCH   -  2010.00
 FC2000* NAVD 88 ORTHO HEIGHT -   303.7   (meters)      996.    (feet) VERTCON
 FC2000  ______________________________________________________________________
 FC2000  GEOID HEIGHT    -        -30.660 (meters)                    GEOID12B
 FC2000  NAD 83(2011) X  -    537,256.132 (meters)                    COMP
 FC2000  NAD 83(2011) Y  - -5,142,913.888 (meters)                    COMP
 FC2000  NAD 83(2011) Z  -  3,721,901.680 (meters)                    COMP
 FC2000  LAPLACE CORR    -          0.36  (seconds)                   DEFLEC12B
 FC2000
 FC2000  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 FC2000  Standards:
 FC2000         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 FC2000            Horiz  Ellip           SD_N   SD_E   SD_h      (unitless)
 FC2000  ----------------------------------------------------------------------
 FC2000  NETWORK    5.74   7.74           2.81   1.39   3.95      0.20450671
 FC2000  ----------------------------------------------------------------------
 FC2000  Click here for local accuracies and other accuracy information.
 FC2000
 FC2000
 FC2000.The horizontal coordinates were established by GPS observations
 FC2000.and adjusted by the National Geodetic Survey in June 2012.
 FC2000
 FC2000.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
 FC2000.been affixed to the stable North American tectonic plate. See
 FC2000.NA2011 for more information.
 FC2000
 FC2000.The horizontal coordinates are valid at the epoch date displayed above
 FC2000.which is a decimal equivalence of Year/Month/Day.
 FC2000
 FC2000.The NAVD 88 height was computed by applying the VERTCON shift value to
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FC2000.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)
FC2000
FC2000.Significant digits in the geoid height do not necessarily reflect accuracy.
FC2000.GEOID12B height accuracy estimate available here.
FC2000
FC2000.The X, Y, and Z were computed from the position and the ellipsoidal ht.
FC2000
FC2000.The Laplace correction was computed from DEFLEC12B derived deflections.
FC2000
FC2000.The ellipsoidal height was determined by GPS observations
FC2000.and is referenced to NAD 83.
FC2000
FC2000. The following values were computed from the NAD 83(2011) position.
FC2000
FC2000;                     North         East     Units Scale Factor Converg.
FC2000;SPC TN       -   178,724.464   777,202.187   MT  0.99994975   +1 08 58.9
FC2000;SPC TN       -   586,365.18  2,549,870.84   sFT  0.99994975   +1 08 58.9
FC2000;UTM  16      - 3,980,042.578   767,398.816   MT  1.00048115   +1 44 24.3
FC2000;UTM  17      - 3,980,243.562   226,065.468   MT  1.00052476   -1 46 57.6
FC2000
FC2000!             -  Elev Factor  x  Scale Factor =   Combined Factor
FC2000!SPC TN       -   0.99995715  x   0.99994975  =   0.99990690
FC2000!UTM  16      -   0.99995715  x   1.00048115  =   1.00043828
FC2000!UTM  17      -   0.99995715  x   1.00052476  =   1.00048188
FC2000
FC2000_U.S. NATIONAL GRID SPATIAL ADDRESS: 16SGE6739880042(NAD 83)
FC2000
FC2000                           SUPERSEDED SURVEY CONTROL
FC2000
FC2000  NAD 83(2007)-  35 55 41.44030(N)    084 02 10.35571(W) AD(2002.00) 0
FC2000  ELLIP H (02/10/07)  273.051  (m)                       GP(2002.00)
FC2000  NAD 83(1995)-  35 55 41.44213(N)    084 02 10.35365(W) AD(       ) 1
FC2000  ELLIP H (04/12/99)  272.995  (m)                       GP(       ) 4 1
FC2000  NAD 83(1990)-  35 55 41.44300(N)    084 02 10.36017(W) AD(       ) 1
FC2000  ELLIP H (05/28/93)  272.961  (m)                       GP(       ) 4 2
FC2000  NGVD 29 (05/28/93)  303.9    (m)  GEOID93 model used   GPS OBS
FC2000
FC2000.Superseded values are not recommended for survey control.
FC2000
FC2000.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
FC2000.See file dsdata.txt to determine how the superseded data were derived.
FC2000
FC2000_MARKER: DD = SURVEY DISK
FC2000_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
FC2000_MAGNETIC: A = STEEL ROD ADJACENT TO MONUMENT
FC2000_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
FC2000+STABILITY: SURFACE MOTION
FC2000_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
FC2000+SATELLITE: SATELLITE OBSERVATIONS - 1988
FC2000
FC2000  HISTORY     - Date     Condition        Report By
FC2000  HISTORY     - 1988     MONUMENTED       AEROS
FC2000
FC2000                           STATION DESCRIPTION
FC2000
FC2000'DESCRIBED BY AERO SERVICE CORPORATION 1988 (JKP)
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 FC2000'THE STATION IS LOCATED ABOUT 11.3 KM (7.0 MI)
 FC2000'SOUTHWEST OF DOWNTOWN KNOXVILLE,
 FC2000'1.4 KM (0.9 MI) SOUTH OF THE JUNCTION OF MIDDLEBROOK PIKE AND
 FC2000'VANOSDALE ROAD, AT THE JUNCTION OF KINGSTON PIKE AND MORRELL ROAD.
 FC2000'OWNERSHIP--CITY OF KNOXVILLE.
 FC2000'
 FC2000'TO REACH THE STATION FROM THE JUNCTION OF INTERSTATES 40 AND 275,  GO
 FC2000'WEST-SOUTHWEST FOR 11.3 KM (7.0 MI) ON INTERSTATE 40 TO THE WEST
 FC2000'HILLS EXIT TO KINGSTON PIKE.
 FC2000'TURN LEFT AND GO EAST FOR 0.23 KM (0.14 MI) ON KINGSTON PIKE TO THE
 FC2000'INTERSECTION OF MORRELL ROAD.
 FC2000'TURN RIGHT AND GO SOUTH-SOUTHEAST FOR 15 METERS (50 FT) ON MORRELL
 FC2000'ROAD TO THE STATION ON THE RIGHT.
 FC2000'
 FC2000'THE STATION IS A 3-1/4 INCH DIAMETER CITY OF KNOXVILLE ALUMINUM DISK
 FC2000'STAMPED---GPS 0004 1988---,
 FC2000'SET INTO THE TOP OF A ROUND CONCRETE MONUMENT
 FC2000'30 CM IN DIAMETER FLUSH WITH GROUND.  LOCATED
 FC2000'1.8 METERS (6.0 FT) WEST FROM THE FACE OF A CURB,
 FC2000'6.2 METERS (20.5 FT) SOUTHEAST FROM A METAL LIGHT POLE, AND
 FC2000'12.5 METERS (41.0 FT) WEST FROM THE CENTERLINE OF THE CONCRETE LANE
 FC2000'DIVIDER IN THE MIDDLE OF MORRELL ROAD.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 GC2718 ***********************************************************************
 GC2718  CBN         -  This is a Cooperative Base Network Control Station.
 GC2718  DESIGNATION -  GPS 10
 GC2718  PID         -  GC2718
 GC2718  STATE/COUNTY-  TN/TROUSDALE
 GC2718  COUNTRY     -  US
 GC2718  USGS QUAD   -  HARTSVILLE (1994)
 GC2718
 GC2718                         *CURRENT SURVEY CONTROL
 GC2718  ______________________________________________________________________
 GC2718* NAD 83(2011) POSITION- 36 25 20.90068(N) 086 10 56.61892(W)   ADJUSTED
 GC2718* NAD 83(2011) ELLIP HT-   124.579 (meters)        (06/27/12)   ADJUSTED
 GC2718* NAD 83(2011) EPOCH    -  2010.00
 GC2718* NAVD 88 ORTHO HEIGHT -   154.11  (meters)      505.6   (feet) LEVELING
 GC2718  ______________________________________________________________________
 GC2718  GEOID HEIGHT    -        -29.525 (meters)                    GEOID12B
 GC2718  NAD 83(2011) X  -    342,117.570 (meters)                    COMP
 GC2718  NAD 83(2011) Y  - -5,127,002.965 (meters)                    COMP
 GC2718  NAD 83(2011) Z  -  3,766,089.435 (meters)                    COMP
 GC2718  LAPLACE CORR    -         -1.78  (seconds)                   DEFLEC12B
 GC2718  VERT ORDER      -  THIRD
 GC2718
 GC2718  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 GC2718  Standards:
 GC2718         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 GC2718            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 GC2718  ----------------------------------------------------------------------
 GC2718  NETWORK    1.04   2.41           0.46   0.38   1.23     -0.10461886
 GC2718  ----------------------------------------------------------------------
 GC2718  Click here for local accuracies and other accuracy information.
 GC2718
 GC2718
 GC2718.The horizontal coordinates were established by GPS observations
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GC2718.and adjusted by the National Geodetic Survey in June 2012.
GC2718
GC2718.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
GC2718.been affixed to the stable North American tectonic plate. See
GC2718.NA2011 for more information.
GC2718
GC2718.The horizontal coordinates are valid at the epoch date displayed above
GC2718.which is a decimal equivalence of Year/Month/Day.
GC2718
GC2718.The orthometric height was determined by differential leveling.
GC2718.The vertical network tie was performed by a horz. field party for horz.
GC2718.obs reductions. Reset procedures were used to establish the elevation.
GC2718
GC2718.Significant digits in the geoid height do not necessarily reflect accuracy.
GC2718.GEOID12B height accuracy estimate available here.
GC2718
GC2718.The X, Y, and Z were computed from the position and the ellipsoidal ht.
GC2718
GC2718.The Laplace correction was computed from DEFLEC12B derived deflections.
GC2718
GC2718.The ellipsoidal height was determined by GPS observations
GC2718.and is referenced to NAD 83.
GC2718
GC2718. The following values were computed from the NAD 83(2011) position.
GC2718
GC2718;                    North         East     Units Scale Factor Converg.
GC2718;SPC TN       -   231,808.160   583,642.825   MT  1.00000103   -0 06 24.4
GC2718;SPC TN       -   760,523.94  1,914,834.84   sFT  1.00000103   -0 06 24.4
GC2718;UTM  16      - 4,031,118.983   573,294.576   MT  0.99966619   +0 29 07.7
GC2718
GC2718!             -  Elev Factor  x  Scale Factor =   Combined Factor
GC2718!SPC TN       -   0.99998045  x   1.00000103  =   0.99998148
GC2718!UTM  16      -   0.99998045  x   0.99966619  =   0.99964665
GC2718
GC2718_U.S. NATIONAL GRID SPATIAL ADDRESS: 16SEF7329431118(NAD 83)
GC2718
GC2718                           SUPERSEDED SURVEY CONTROL
GC2718
GC2718  NAD 83(2007)-  36 25 20.90055(N)    086 10 56.61974(W) AD(2002.00) A
GC2718  ELLIP H (10/16/11)  124.594  (m)                       GP(2002.00) 3 2
GC2718  NAD 83(2007)-  36 25 20.90078(N)    086 10 56.61990(W) AD(2002.00) 0
GC2718  ELLIP H (02/10/07)  124.607  (m)                       GP(2002.00)
GC2718  ELLIP H (08/03/04)  124.590  (m)                       GP(       ) 4 1
GC2718  NAD 83(1990)-  36 25 20.90063(N)    086 10 56.62007(W) AD(       ) B
GC2718  ELLIP H (09/07/94)  124.633  (m)                       GP(       ) 4 1
GC2718  NAD 83(1986)-  36 25 20.91064(N)    086 10 56.62493(W) AD(       ) 1
GC2718  NAD 83(1990)-  36 25 20.90323(N)    086 10 56.62532(W) AD(       ) B
GC2718  ELLIP H (09/07/90)  124.529  (m)                       GP(       ) 4 1
GC2718  NAVD 88 (08/03/04)  154.1    (m)  GEOID03 model used   GPS OBS
GC2718  NAVD 88 (12/14/95)  154.1    (m)  UNKNOWN model used   GPS OBS
GC2718  NAVD 88 (09/07/94)  154.2    (m)  GEOID93 model used   GPS OBS
GC2718  NGVD 29 (??/??/??)  154.18   (m)          505.8    (f) N HEIGHT    3
GC2718  NGVD 29 (05/21/91)  154.2    (m)  UNKNOWN model used   GPS OBS
GC2718  NGVD 29 (??/??/90)  154.1    (m)  RAPSU86 model used   GPS OBS
GC2718  NGVD 29             154.18   (m)          505.8    (f) LEVELING    3
GC2718
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GC2718.Superseded values are not recommended for survey control.
GC2718
GC2718.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
GC2718.See file dsdata.txt to determine how the superseded data were derived.
GC2718
GC2718_MARKER: DH = HORIZONTAL CONTROL DISK
GC2718_SETTING: 66 = SET IN ROCK OUTCROP
GC2718_STAMPING: GPS 10 1987
GC2718_MARK LOGO: NGS
GC2718_MAGNETIC: N = NO MAGNETIC MATERIAL
GC2718_STABILITY: A = MOST RELIABLE AND EXPECTED TO HOLD
GC2718+STABILITY: POSITION/ELEVATION WELL
GC2718_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
GC2718+SATELLITE: SATELLITE OBSERVATIONS - November 17, 2008
GC2718
GC2718  HISTORY     - Date     Condition        Report By
GC2718  HISTORY     - 1987     MONUMENTED       NGS
GC2718  HISTORY     - 1987     GOOD             NGS
GC2718  HISTORY     - 19890410 GOOD             NGS
GC2718  HISTORY     - 19901219 GOOD             NGS
GC2718  HISTORY     - 19910129 GOOD
GC2718  HISTORY     - 19931013 GOOD             NGS
GC2718  HISTORY     - 19940124 GOOD
GC2718  HISTORY     - 19950609 GOOD             NGS
GC2718  HISTORY     - 20031010 GOOD             TNDT
GC2718  HISTORY     - 20081117 GOOD             TNDOT
GC2718
GC2718                          STATION DESCRIPTION
GC2718
GC2718'DESCRIBED BY NATIONAL GEODETIC SURVEY 1987 (DAC)
GC2718'THE STATION IS LOCATED ABOUT 3.2 KM (2 MI) NORTHWEST OF HARTSVILLE,
GC2718'JUST SOUTHEAST OF THE JUNCTION OF STATE ROUTES 141 AND 260, ON THE
GC2718'EAST RIGHT-OF-WAY OF STATE ROUTE 141 IN A FLAT ROCK OUTCROP BETWEEN
GC2718'THE ROAD AND AN ABANDONED RAILROAD BED.
GC2718'OWNERSHIP--STATE RIGHT-OF-WAY.
GC2718'
GC2718'TO REACH THE STATION FROM THE COURTHOUSE IN HARTSVILLE GO
GC2718'NORTHWEST FOR 0.2 KM (0.1 MI) ON STATE ROUTE 141 TO A BEND.
GC2718'TURN RIGHT AND GO NORTH FOR 1.1 KM (0.7 MI) ON STATE ROUTE 141 TO
GC2718'THE JUNCTION OF STATE ROUTE 25.
GC2718'TURN LEFT AND GO WEST FOR 0.3 KM (0.2 MI) ON STATE ROUTES 141 AND
GC2718'25 TO A JUNCTION WHERE STATE ROUTE 25 CONTINUES WEST.
GC2718'TURN RIGHT AND GO NORTH FOR 2.9 KM (1.8 MI) ON STATE ROUTE 141 TO
GC2718'THE JUNCTION OF STATE ROUTE 260 AND THE STATION ON THE RIGHT.
GC2718'
GC2718'THE STATION IS A STANDARD NGS DISK
GC2718'STAMPED---GPS 10 1987---,
GC2718'SET INTO A DRILL HOLE IN BEDROCK OUTCROP FLUSH WITH GROUND AND
GC2718'LEVEL WITH ROAD.  LOCATED
GC2718'30.8 METERS (101 FT) SOUTHEAST FROM THE SOUTHEAST CORNER OF THE
GC2718'STATE ROUTE 260 BRIDGE OVER A CREEK,
GC2718'27.4 METERS (90 FT) SOUTH-SOUTHEAST FROM THE CENTER OF THE ROAD
GC2718'JUNCTION,
GC2718'14.0 METERS (46 FT) WEST FROM A FIBERGLASS WITNESS POST IN THE EAST
GC2718'RIGHT-OF-WAY FENCE,
GC2718'7.3 METERS (24 FT) EAST FROM THE CENTER OF STATE ROUTE 141.
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GC2718
GC2718                          STATION RECOVERY (1987)
GC2718
GC2718'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1987
GC2718'RECOVERED IN GOOD CONDITION.
GC2718
GC2718                          STATION RECOVERY (1989)
GC2718
GC2718'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1989
GC2718'THE STATION IS LOCATED ABOUT 3.2 KM (2.00 MI) NORTHWEST OF HARTSVILLE,
GC2718'JUST SOUTHEAST OF THE JUNCTION OF STATE ROUTES 141 AND 260, ON THE
GC2718'EAST RIGHT-OF-WAY OF STATE ROUTE 141 IN A FLAT OUTCROP BETWEEN THE
GC2718'ROAD AND AN ABANDONED RAILROAD BED.  OWNERSHIP--TENNESSEE DEPARTMENT
GC2718'OF TRANSPORTATION, P.O. BOX 23170, NASHVILLE, TN 37202, PHONE
GC2718'615-741-2158.
GC2718'TO REACH THE STATION FROM THE COURTHOUSE IN HARTSVILLE GO NORTHWEST
GC2718'FOR 0.2 KM (0.10 MI) ON STATE ROUTE 141 TO THE JUNCTION OF STATE ROUTE
GC2718'25.  TURN LEFT AND GO WEST FOR 0.3 KM (0.20 MI) ON STATE ROUTES 141
GC2718'AND 25 TO A JUNCTION WHERE STATE ROUTE 25 CONTINUES WEST.  TURN RIGHT
GC2718'AND GO NORTH FOR 2.9 KM (1.80 MI) ON STATE ROUTE 141 TO THE JUNCTION
GC2718'OF STATE ROUTE 260 AND THE STATION ON THE RIGHT.
GC2718'THE STATION IS A STANDARD NGS HORIZONTAL DISK STAMPED---GPS 10
GC2718'1987---, SET INTO A DRILL HOLE IN OUTCROP FLUSH WITH GROUND AND LEVEL
GC2718'WITH THE ROAD.  LOCATED 30.8 M (101.0 FT) SOUTHEAST OF THE SOUTHEAST
GC2718'CORNER OF THE STATE ROUTE 260 BRIDGE OVER A CREEK, 27.4 M (89.9 FT)
GC2718'SOUTH-SOUTHEAST FROM THE CENTER OF THE ROAD JUNCTION, 14.0 M
GC2718'(45.9 FT) WEST OF A FIBERGLASS WITNESS POST AND 7.3 M (24.0 FT) EAST
GC2718'FROM THE CENTER OF STATE ROUTE 141.
GC2718'DESCRIBED BY D.A. CONNERS.
GC2718
GC2718                          STATION RECOVERY (1990)
GC2718
GC2718'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1990
GC2718'THE STATION IS LOCATED ABOUT 3.2 KM (2.0 MI) NORTHWEST OF HARTSVILLE,
GC2718'19.31 KM (12.00 MI) EAST-NORTHEAST OF GALLATIN, 32.18 KM (20.00 MI)
GC2718'NORTH OF LEBANON IN ROCK OUTCROP ON THE EAST SIDE OF STATE HIGHWAY 141
GC2718'AND JUST SOUTH OF THE JUNCTION OF STATE HIGHWAY 260.
GC2718'OWNERSHIP--TENNESSEE DEPARTMENT OF TRANSPORTATION, P.O. BOX 23107,
GC2718'NASHVILLE, TN 37202, PHONE 615-741-2158.
GC2718'TO REACH THE STATION FROM THE JUNCTION OF STATE HIGHWAYS 25 AND 141
GC2718'NORTH, ON THE WEST SIDE OF HARTSVILLE, GO NORTH ON STATE HIGHWAY 141
GC2718'FOR 2.9 KM (1.8 MI) TO THE STATION ON THE RIGHT JUST BEFORE THE
GC2718'JUNCTION OF STATE HIGHWAY 260.
GC2718'THE STATION IS LOCATED 30.8 M (101.0 FT) SOUTHEAST OF THE SOUTHEAST
GC2718'CORNER OF THE EAST ABUTMENT OF THE HIGHWAY 260 BRIDGE OVER A CREEK,
GC2718'24.6 M (80.7 FT) SOUTH-SOUTHEAST OF THE EAST LEG OF A HIGHWAY SIGN
GC2718'(WEST 260), 14.0 M (45.9 FT) WEST OF A FIBERGLASS WITNESS POST AND
GC2718'7.3 M (24.0 FT) EAST OF THE CENTER OF HIGHWAY 141.
GC2718
GC2718                          STATION RECOVERY (1991)
GC2718
GC2718'RECOVERED 1991
GC2718'RECOVERED IN GOOD CONDITION.
GC2718
GC2718                          STATION RECOVERY (1993)
GC2718
GC2718'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1993
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 GC2718'THE STATION IS LOCATED ABOUT 32.18 KM (20.00 MI) NORTH OF LEBANON,
 GC2718'19.31 KM (12.00 MI) EAST-NORTHEAST OF GALLATIN, 3.2 KM (2.00 MI)
 GC2718'NORTHWEST OF HARTSVILLE IN BEDROCK ON THE EAST SIDE OF STATE HIGHWAY
 GC2718'141.  OWNERSHIP-- TENNESSEE DEPARTMENT OF TRANSPORTATION, P.O. BOX
 GC2718'23107, NASHVILLE TN 37202, PHONE 615-741-2158.
 GC2718'TO REACH THE STATION FROM THE JUNCTION OF STATE HIGHWAY 25 AND 141
 GC2718'NORTH, ON THE WEST SIDE OF HARTSVILLE, GO NORTH ON STATE HIGHWAY 141
 GC2718'FOR 2.9 KM (1.80 MI) TO THE STATION ON THE RIGHT JUST BEFORE THE
 GC2718'JUNCTION OF STATE HIGHWAY 260.
 GC2718'THE STATION IS LOCATED 30.8 M (101.0 FT) SOUTHEAST OF THE SOUTHEAST
 GC2718'CORNER OF THE EAST ABUTMENT OF THE HIGHWAY BRIDGE OVER A CREEK, 22.8
 GC2718'M (74.8 FT) SOUTH-SOUTHEAST OF THE EAST LEG OF A HIGHWAY SIGN (WEST
 GC2718'260), 14.0 M (45.9 FT) WEST OF A FIBERGLASS WITNESS POST IN A FENCE
 GC2718'LINE AND 7.3 M (24.0 FT) EAST OF THE CENTERLINE OF HIGHWAY 141.
 GC2718
 GC2718                          STATION RECOVERY (1994)
 GC2718
 GC2718'RECOVERED 1994
 GC2718'RECOVERED IN GOOD CONDITION.
 GC2718
 GC2718                          STATION RECOVERY (1995)
 GC2718
 GC2718'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1995 (CFS)
 GC2718'THE STATION IS LOCATED ABOUT 3.2 KM (2.00 MI) NORTHWEST OF HARTSVILLE,
 GC2718'JUST SOUTHEAST OF THE JUNCTION OF STATE HIGHWAYS 141 AND 260, ON THE
 GC2718'EAST RIGHT-OF-WAY OF STATE HIGHWAY 141, IN A FLAT ROCK OUTCROP BETWEEN
 GC2718'THE ROAD AND AN ABANDONED RAILROAD BED.  OWNERSHIP--TENNESSEE
 GC2718'DEPARTMENT OF TRANSPORTATION.  TO REACH THE STATION FROM THE
 GC2718'COURTHOUSE IN HARTSVILLE, GO NORTHWEST FOR 0.2 KM (0.10 MI) ON STATE
 GC2718'HIGHWAY 141 TO A BEND.  TURN RIGHT AND GO NORTH FOR 1.1 KM (0.70 MI)
 GC2718'ON STATE HIGHWAY 141 TO THE JUNCTION OF STATE HIGHWAY 25.  TURN LEFT
 GC2718'AND GO WEST FOR 0.3 KM (0.20 MI) ON STATE HIGHWAY 141, 25 TO A
 GC2718'JUNCTION WHERE STATE HIGHWAY 25 CONTINUES WEST.  TURN RIGHT AND GO
 GC2718'NORTH FOR 2.9 KM (1.80 MI) ON STATE HIGHWAY 141 TO THE JUNCTION OF
 GC2718'STATE HIGHWAY 260 AND THE STATION ON RIGHT.  THE STATION IS SET INTO A
 GC2718'DRILL HOLE IN OUTCROPPING BEDROCK FLUSH WITH GROUND.  LOCATED 88.6 M
 GC2718'(290.7 FT) NORTH-NORTHWEST OF A SIGN (JUNCTION S.R. 141 SOUTH), 31.0 M
 GC2718'(101.7 FT) EAST-SOUTHEAST OF THE SOUTHEAST CORNER OF THE HIGHWAY 260
 GC2718'BRIDGE OVER LITTLE GOOSE CREEK, 27.6 M (90.6 FT) SOUTH-SOUTHEAST OF
 GC2718'THE APPROXIMATE CENTER OF THE JUNCTION OF STATE HIGHWAYS 141 AND 260,
 GC2718'22.8 M (74.8 FT) SOUTH-SOUTHEAST OF A SIGN (JUNCTION S.R. 260 WEST),
 GC2718'7.3 M (24.0 FT) EAST-NORTHEAST OF THE APPROXIMATE CENTER OF HIGHWAY
 GC2718'141 AND 7.06 M (23.16 FT) WEST-SOUTHWEST OF AN ORANGE WITNESS POST SET
 GC2718'AT A WOODEN FENCE.
 GC2718
 GC2718                          STATION RECOVERY (2003)
 GC2718
 GC2718'RECOVERY NOTE BY TN DEPT OF TRANSP 2003
 GC2718'RECOVERED AS DESCRIBED.
 GC2718
 GC2718                          STATION RECOVERY (2008)
 GC2718
 GC2718'RECOVERY NOTE BY TENNESSEE DEPT. OF 2008 (JTZ)
 GC2718'RECOVERED AS DESCRIBED
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 FB3325 ***********************************************************************
 FB3325  CBN         -  This is a Cooperative Base Network Control Station.
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FB3325  DESIGNATION -  GPS 20
FB3325  PID         -  FB3325
FB3325  STATE/COUNTY-  TN/KNOX
FB3325  COUNTRY     -  US
FB3325  USGS QUAD   -  BOYDS CREEK (1986)
FB3325
FB3325                        *CURRENT SURVEY CONTROL
FB3325  ______________________________________________________________________
FB3325* NAD 83(2011) POSITION- 35 59 46.63683(N) 083 42 37.72401(W)   ADJUSTED
FB3325* NAD 83(2011) ELLIP HT-   277.912 (meters)        (06/27/12)   ADJUSTED
FB3325* NAD 83(2011) EPOCH   -  2010.00
FB3325* NAVD 88 ORTHO HEIGHT -   308.66  (meters)     1012.7   (feet) N HEIGHT
FB3325  ______________________________________________________________________
FB3325  GEOID HEIGHT    -        -30.753 (meters)                    GEOID12B
FB3325  NAD 83(2011) X  -    565,999.351 (meters)                    COMP
FB3325  NAD 83(2011) Y  - -5,135,368.795 (meters)                    COMP
FB3325  NAD 83(2011) Z  -  3,728,021.789 (meters)                    COMP
FB3325  LAPLACE CORR    -         -0.45  (seconds)                   DEFLEC12B
FB3325  DYNAMIC HEIGHT  -        308.38  (meters)     1011.7   (feet) COMP
FB3325  MODELED GRAVITY -    979,697.6   (mgal)                      NAVD 88
FB3325
FB3325  VERT ORDER      -  THIRD
FB3325
FB3325  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
FB3325  Standards:
FB3325         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
FB3325            Horiz  Ellip           SD_N   SD_E   SD_h      (unitless)
FB3325  ------------------------------------------------------------------
FB3325  NETWORK    0.33   0.43           0.14   0.13   0.22     -0.09993696
FB3325  ------------------------------------------------------------------
FB3325  Click here for local accuracies and other accuracy information.
FB3325
FB3325
FB3325.The horizontal coordinates were established by GPS observations
FB3325.and adjusted by the National Geodetic Survey in June 2012.
FB3325
FB3325.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
FB3325.been affixed to the stable North American tectonic plate. See
FB3325.NA2011 for more information.
FB3325
FB3325.The horizontal coordinates are valid at the epoch date displayed above
FB3325.which is a decimal equivalence of Year/Month/Day.
FB3325
FB3325.The orthometric height was determined by differential leveling
FB3325.and adjusted by the NATIONAL GEODETIC SURVEY in August 1996.
FB3325
FB3325.The height was determined by precise leveling from only one NSRS
FB3325.bench mark.  This was not adequate "tie leveling" to NSRS and was
FB3325.allowed ONLY to validate the GPS-derived height.
FB3325
FB3325.Significant digits in the geoid height do not necessarily reflect accuracy.
FB3325.GEOID12B height accuracy estimate available here.
FB3325
FB3325.Photographs are available for this station.
FB3325
FB3325.The X, Y, and Z were computed from the position and the ellipsoidal ht.
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FB3325
FB3325.The Laplace correction was computed from DEFLEC12B derived deflections.
FB3325
FB3325.The ellipsoidal height was determined by GPS observations
FB3325.and is referenced to NAD 83.
FB3325
FB3325.The dynamic height is computed by dividing the NAVD 88
FB3325.geopotential number by the normal gravity value computed on the
FB3325.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
FB3325.degrees latitude (g = 980.6199 gals.).
FB3325
FB3325.The modeled gravity was interpolated from observed gravity values.
FB3325
FB3325. The following values were computed from the NAD 83(2011) position.
FB3325
FB3325;                     North         East     Units Scale Factor Converg.
FB3325;SPC TN       -   186,918.102   806,412.684   MT  0.99995239   +1 20 25.4
FB3325;SPC TN       -   613,247.14  2,645,705.61   sFT  0.99995239   +1 20 25.4
FB3325;UTM  17      - 3,986,934.845   255,671.121   MT  1.00033564   -1 35 37.8
FB3325
FB3325!             -  Elev Factor  x  Scale Factor =   Combined Factor
FB3325!SPC TN       -   0.99995638  x   0.99995239  =   0.99990878
FB3325!UTM  17      -   0.99995638  x   1.00033564  =   1.00029201
FB3325
FB3325_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SKV5567186934(NAD 83)
FB3325
FB3325                           SUPERSEDED SURVEY CONTROL
FB3325
FB3325  NAD 83(2007)-  35 59 46.63657(N)    083 42 37.72440(W) AD(2002.00) A
FB3325  ELLIP H (10/16/11)  277.929  (m)                       GP(2002.00) 3 2
FB3325  NAD 83(2007)-  35 59 46.63690(N)    083 42 37.72466(W) AD(2002.00) 0
FB3325  ELLIP H (02/10/07)  277.932  (m)                       GP(2002.00)
FB3325  ELLIP H (08/03/04)  277.910  (m)                       GP(       ) 4 1
FB3325  NAD 83(1986)-  35 59 46.64255(N)    083 42 37.72996(W) AD(       ) 1
FB3325  NAD 83(1995)-  35 59 46.63703(N)    083 42 37.72458(W) AD(       ) B
FB3325  ELLIP H (12/14/95)  277.894  (m)                       GP(       ) 1 2
FB3325  NAD 83(1990)-  35 59 46.63984(N)    083 42 37.73100(W) AD(       ) B
FB3325  NAD 27      -  35 59 46.33472(N)    083 42 38.09703(W) AD(       ) 3
FB3325  ELLIP H (09/07/90)  277.746  (m)                       GP(       ) 4 1
FB3325  NAVD 88             308.66   (m)         1012.7    (f) LEVELING    3
FB3325  NAVD 88             308.66   (m)         1012.7    (f) LEVELING    3
FB3325  NGVD 29 (??/??/??)  308.80   (m)         1013.1    (f) N HEIGHT    3
FB3325  NGVD 29             308.80   (m)         1013.1    (f) LEVELING    3
FB3325
FB3325.Superseded values are not recommended for survey control.
FB3325
FB3325.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
FB3325.See file dsdata.txt to determine how the superseded data were derived.
FB3325
FB3325_MARKER: I = METAL ROD
FB3325_SETTING: 59 = STAINLESS STEEL ROD IN SLEEVE (10 FT.+)
FB3325_STAMPING: GPS 20 1987
FB3325_MARK LOGO: NGS
FB3325_PROJECTION: FLUSH
FB3325_MAGNETIC: N = NO MAGNETIC MATERIAL
FB3325_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
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FB3325_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
FB3325+SATELLITE: SATELLITE OBSERVATIONS - December 01, 2008
FB3325_ROD/PIPE-DEPTH: 9.10 meters
FB3325_SLEEVE-DEPTH  : 0.90 meters
FB3325
FB3325  HISTORY     - Date     Condition        Report By
FB3325  HISTORY     - 1987     MONUMENTED       NGS
FB3325  HISTORY     - 1988     GOOD             AEROS
FB3325  HISTORY     - 19950330 GOOD             NGS
FB3325  HISTORY     - 19950607 GOOD             NGS
FB3325  HISTORY     - 20020131 GOOD             NGS
FB3325  HISTORY     - 20031010 GOOD             TNDT
FB3325  HISTORY     - 20050218 GOOD             CAS
FB3325  HISTORY     - 20080210 GOOD             TVA
FB3325  HISTORY     - 20081201 GOOD             TNDOT
FB3325
FB3325                          STATION DESCRIPTION
FB3325
FB3325'DESCRIBED BY NATIONAL GEODETIC SURVEY 1987 (DAC)
FB3325'THE STATION IS LOCATED ABOUT 23 KM (14 MI) EAST OF KNOXVILLE,
FB3325'0.6 KM (0.4 MI) WEST OF INTERSTATE 40 EXIT 402 (MIDWAY ROAD), AT
FB3325'THE SOUTH CORNER OF THE THORNGROVE ROAD BRIDGE OVER INTERSTATE 40.
FB3325'OWNERSHIP--ROAD RIGHT-OF-WAY.
FB3325'
FB3325'TO REACH THE STATION FROM INTERSTATE 40 EXIT 402 GO
FB3325'NORTH FOR 0.72 KM (0.45 MI) ON MIDWAY ROAD TO THE JUNCTION OF
FB3325'THORNGROVE ROAD.
FB3325'TURN LEFT AND GO SOUTHWEST FOR 1.1 KM (0.7 MI) ON THORNGROVE ROAD
FB3325'TO THE BRIDGE OVER INTERSTATE 40 AND THE STATION ON THE LEFT.
FB3325'
FB3325'THE STATION IS A 3-D MARK WITH STAINLESS STEEL ROD DRIVEN 9.1 METERS
FB3325'(30 FT).  THE LOGO CAP IS STAMPED---GPS 20 1987---.  LOCATED 7.0
FB3325'METERS (23 FT) SOUTHEAST FROM THE CENTER OF THORNGROVE ROAD AND 0.5
FB3325'METERS (1.5 FT) BELOW SAME, 1.77 METERS (5.8 FT) SOUTH FROM THE
FB3325'SOUTH CORNER OF THE BRIDGE, 1.16 METERS (3.8 FT) SOUTHEAST FROM A
FB3325'GUARDRAIL, 0.3 METERS (1.0 FT) NORTH FROM A FIBERGLASS WITNESS POST.
FB3325
FB3325                          STATION RECOVERY (1988)
FB3325
FB3325'RECOVERY NOTE BY AERO SERVICE CORPORATION 1988 (JKP)
FB3325'THE STATION WAS RECOVERED AT THIS DATE.
FB3325'THE STATION WAS RECOVERED IN GOOD CONDITION AS DESCRIBED BY D. A.
FB3325'C. IN 1987.
FB3325
FB3325                          STATION RECOVERY (1995)
FB3325
FB3325'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1995 (CFS)
FB3325'RECOVERED AS DESCRIBED.
FB3325
FB3325                          STATION RECOVERY (1995)
FB3325
FB3325'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1995 (CFS)
FB3325'RECOVERED AS DESCRIBED.
FB3325
FB3325                          STATION RECOVERY (2002)
FB3325
FB3325'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2002 (AJL)
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 FB3325'RECOVERED AS DESCRIBED
 FB3325
 FB3325                          STATION RECOVERY (2003)
 FB3325
 FB3325'RECOVERY NOTE BY TN DEPT OF TRANSP 2003
 FB3325'RECOVERED AS DESCRIBED.
 FB3325
 FB3325                          STATION RECOVERY (2005)
 FB3325
 FB3325'RECOVERY NOTE BY CONTINENTAL AERIAL SURVEY INCO 2005 (JCA)
 FB3325'RECOVERED IN GOOD CONDITION.
 FB3325
 FB3325                          STATION RECOVERY (2008)
 FB3325
 FB3325'RECOVERY NOTE BY TENNESSEE VALLEY AUTHORITY 2008 (MWN)
 FB3325'RECOVERED IN GOOD CONDITION.
 FB3325
 FB3325                          STATION RECOVERY (2008)
 FB3325
 FB3325'RECOVERY NOTE BY TENNESSEE DEPT. OF 2008 (JTZ)
 FB3325'RECOVERED AS DESCRIBED
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 GA3643 ***********************************************************************
 GA3643  CBN         -  This is a Cooperative Base Network Control Station.
 GA3643  DESIGNATION -  GPS 4
 GA3643  PID         -  GA3643
 GA3643  STATE/COUNTY-  TN/GRAINGER
 GA3643  COUNTRY     -  US
 GA3643  USGS QUAD   -  AVONDALE (1979)
 GA3643
 GA3643                         *CURRENT SURVEY CONTROL
 GA3643  ______________________________________________________________________
 GA3643* NAD 83(2011) POSITION- 36 21 00.80401(N) 083 23 36.35219(W)   ADJUSTED
 GA3643* NAD 83(2011) ELLIP HT-   560.424 (meters)        (06/27/12)   ADJUSTED
 GA3643* NAD 83(2011) EPOCH   -  2010.00
 GA3643* NAVD 88 ORTHO HEIGHT -   591.54  (meters)     1940.7   (feet) N HEIGHT
 GA3643  ______________________________________________________________________
 GA3643  GEOID HEIGHT    -        -31.030 (meters)                    GEOID12B
 GA3643  NAD 83(2011) X  -    591,766.387 (meters)                    COMP
 GA3643  NAD 83(2011) Y  - -5,109,356.873 (meters)                    COMP
 GA3643  NAD 83(2011) Z  -  3,759,893.512 (meters)                    COMP
 GA3643  LAPLACE CORR    -         -2.22  (seconds)                   DEFLEC12B
 GA3643  DYNAMIC HEIGHT  -        590.99  (meters)     1938.9   (feet) COMP
 GA3643  MODELED GRAVITY -    979,678.1   (mgal)                      NAVD 88
 GA3643
 GA3643  VERT ORDER      -  THIRD
 GA3643
 GA3643  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 GA3643  Standards:
 GA3643         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 GA3643            Horiz  Ellip           SD_N   SD_E   SD_h      (unitless)
 GA3643  ------------------------------------------------------------------
 GA3643  NETWORK    0.39   1.18           0.17   0.15   0.60     -0.10016000
 GA3643  ------------------------------------------------------------------
 GA3643  Click here for local accuracies and other accuracy information.
 GA3643
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GA3643
GA3643.The horizontal coordinates were established by GPS observations
GA3643.and adjusted by the National Geodetic Survey in June 2012.
GA3643
GA3643.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
GA3643.been affixed to the stable North American tectonic plate. See
GA3643.NA2011 for more information.
GA3643
GA3643.The horizontal coordinates are valid at the epoch date displayed above
GA3643.which is a decimal equivalence of Year/Month/Day.
GA3643
GA3643.The orthometric height was determined by differential leveling
GA3643.and adjusted by the NATIONAL GEODETIC SURVEY in August 1996.
GA3643
GA3643.The height was determined by precise leveling from only one NSRS
GA3643.bench mark.  This was not adequate "tie leveling" to NSRS and was
GA3643.allowed ONLY to validate the GPS-derived height.
GA3643
GA3643.Significant digits in the geoid height do not necessarily reflect accuracy.
GA3643.GEOID12B height accuracy estimate available here.
GA3643
GA3643.The X, Y, and Z were computed from the position and the ellipsoidal ht.
GA3643
GA3643.The Laplace correction was computed from DEFLEC12B derived deflections.
GA3643
GA3643.The ellipsoidal height was determined by GPS observations
GA3643.and is referenced to NAD 83.
GA3643
GA3643.The dynamic height is computed by dividing the NAVD 88
GA3643.geopotential number by the normal gravity value computed on the
GA3643.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
GA3643.degrees latitude (g = 980.6199 gals.).
GA3643
GA3643.The modeled gravity was interpolated from observed gravity values.
GA3643
GA3643. The following values were computed from the NAD 83(2011) position.
GA3643
GA3643;                    North         East     Units Scale Factor Converg.
GA3643;SPC TN       -   226,891.317   833,944.067   MT  0.99998889   +1 31 33.6
GA3643;SPC TN       -   744,392.60  2,736,031.49   sFT  0.99998889   +1 31 33.6
GA3643;UTM  17      - 4,025,454.272   285,224.820   MT  1.00016838   -1 25 09.0
GA3643
GA3643!             -  Elev Factor  x  Scale Factor =   Combined Factor
GA3643!SPC TN       -   0.99991205  x   0.99998889  =   0.99990094
GA3643!UTM  17      -   0.99991205  x   1.00016838  =   1.00008042
GA3643
GA3643_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SKA8522425454(NAD 83)
GA3643
GA3643                           SUPERSEDED SURVEY CONTROL
GA3643
GA3643  NAD 83(2007)-  36 21 00.80362(N)    083 23 36.35283(W) AD(2002.00) A
GA3643  ELLIP H (10/16/11)  560.449  (m)                       GP(2002.00) 3 2
GA3643  NAD 83(2007)-  36 21 00.80410(N)    083 23 36.35291(W) AD(2002.00) 0
GA3643  ELLIP H (02/10/07)  560.442  (m)                       GP(2002.00)
GA3643  ELLIP H (08/03/04)  560.418  (m)                       GP(       ) 4 1
GA3643  NAD 83(1990)-  36 21 00.80437(N)    083 23 36.35207(W) AD(       ) B
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GA3643  NAD 83(1993)-  36 21 00.80437(N)    083 23 36.35206(W) AD(       ) B
GA3643  ELLIP H (06/29/94)  560.426  (m)                       GP(       ) 4 1
GA3643  ELLIP H (04/04/94)  560.254  (m)                       GP(       ) 4 1
GA3643  NAD 83(1990)-  36 21 00.80714(N)    083 23 36.35904(W) AD(       ) B
GA3643  ELLIP H (09/07/90)  560.254  (m)                       GP(       ) 4 1
GA3643  NAVD 88 (02/01/05)  591.5    (m)  UNKNOWN model used   GPS OBS
GA3643  NAVD 88 (08/03/04)  591.4    (m)  GEOID03 model used   GPS OBS
GA3643  NAVD 88             591.37   (m)         1940.2    (f) LEVELING    3
GA3643  NAVD 88             591.55   (m)         1940.8    (f) LEVELING    3
GA3643  NGVD 29 (??/??/??)  591.65   (m)         1941.1    (f) N HEIGHT    3
GA3643  NGVD 29             591.65   (m)         1941.1    (f) LEVELING    3
GA3643
GA3643.Superseded values are not recommended for survey control.
GA3643
GA3643.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
GA3643.See file dsdata.txt to determine how the superseded data were derived.
GA3643
GA3643_MARKER: DH = HORIZONTAL CONTROL DISK
GA3643_SETTING: 66 = SET IN ROCK OUTCROP
GA3643_STAMPING: GPS 4 1987
GA3643_MARK LOGO: NGS
GA3643_MAGNETIC: N = NO MAGNETIC MATERIAL
GA3643_STABILITY: A = MOST RELIABLE AND EXPECTED TO HOLD
GA3643+STABILITY: POSITION/ELEVATION WELL
GA3643_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
GA3643+SATELLITE: SATELLITE OBSERVATIONS - December 02, 2008
GA3643
GA3643  HISTORY     - Date     Condition        Report By
GA3643  HISTORY     - 1987     MONUMENTED       NGS
GA3643  HISTORY     - 1987     GOOD             NGS
GA3643  HISTORY     - 19881209 GOOD
GA3643  HISTORY     - 19930628 GOOD             NGS
GA3643  HISTORY     - 19950606 GOOD             NGS
GA3643  HISTORY     - 20020118 GOOD             NGS
GA3643  HISTORY     - 20031010 GOOD             TNDT
GA3643  HISTORY     - 20050428 GOOD             CAS
GA3643  HISTORY     - 20081202 GOOD             TNDOT
GA3643
GA3643                          STATION DESCRIPTION
GA3643
GA3643'DESCRIBED BY NATIONAL GEODETIC SURVEY 1987 (DAC)
GA3643'THE STATION IS LOCATED ABOUT 9.7 KM (6 MI) WEST OF BEAN STATION,
GA3643'2.4 KM (1.5 MI) EAST OF THORN HILL,
GA3643'0.3 KM (0.2 MI) EAST OF THE CLINCH MOUNTAIN LOOKOUT STORE.
GA3643'OWNERSHIP--ROAD RIGHT-OF-WAY.
GA3643'
GA3643'THE STATION IS LOCATED AT THE U.S. ROUTE 25 SCENIC OVERLOOK AT THE
GA3643'TOP SOUTH SIDE OF CLINCH MOUNTAIN.
GA3643'
GA3643'THE STATION IS A STANDARD NGS DISK
GA3643'STAMPED---GPS 4 1987---,
GA3643'SET INTO A DRILL HOLE IN BEDROCK.  LOCATED
GA3643'90.5 METERS (297 FT) EAST FROM THE OVERLOOK ENTRANCE DRIVE
GA3643'CENTERLINE,
GA3643'41.8 METERS (137 FT) WEST-NORTHWEST FROM THE DRAIN AT THE EAST END
GA3643'OF THE PARKING LOT,
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GA3643'2.1 METERS (7.0 FT) NORTH-NORTHWEST FROM A 1.2 METER (4 FT) HIGH
GA3643'WIRE FENCE AND FIGERGLASS WITNESS POST,
GA3643'1.2 METERS (4 FT) SOUTH-SOUTHEAST FROM THE TOP OF CUT AT THE SOUTH
GA3643'EDGE OF THE ROAD.  THE MARK IS ABOUT 4.6 METERS (15 FT) ABOVE THE
GA3643'ROAD AND LEVEL WITH THE PARKING LOT.
GA3643
GA3643                          STATION RECOVERY (1987)
GA3643
GA3643'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1987
GA3643'RECOVERED IN GOOD CONDITION.
GA3643
GA3643                          STATION RECOVERY (1988)
GA3643
GA3643'RECOVERED 1988
GA3643'RECOVERED IN GOOD CONDITION.
GA3643
GA3643                          STATION RECOVERY (1993)
GA3643
GA3643'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1993
GA3643'THE STATION IS LOCATED ABOUT 9.7 KM (6.00 MI) WEST OF BEAN STATION,
GA3643'0.3 KM (0.20 MI) EAST OF THE CLINCH MOUNTAIN LOOKOUT STORE AND AT THE
GA3643'U.S. HIGHWAY 25E SCENIC OVERLOOK AT THE TOP SOUTH SIDE OF CLINCH
GA3643'MOUNTAIN.  OWNERSHIP--HIGHWAY RIGHT-OF-WAY.
GA3643'TO REACH THE STATION FROM THE JUNCTION OF U.S HIGHWAY 25E AND STATE
GA3643'HIGHWAY 131 IN THORN HILL, GO 2.4 KM (1.50 MI) EAST-SOUTHEAST ALONG
GA3643'U.S. HIGHWAY 25E TO THE SCENIC OVERLOOK AND THE STATION ON THE RIGHT.
GA3643'THE STATION IS ABOUT 4.6 M (15.1 FT) ABOVE THE HIGHWAY AND LEVEL WITH
GA3643'THE PARKING LOT.  LOCATED 90.5 M (296.9 FT) EAST FROM THE OVERLOOK
GA3643'ENTRANCE DRIVE CENTERLINE, 41.8 M (137.1 FT) WEST-NORTHWEST FROM THE
GA3643'DRAIN AT THE EAST END OF THE PARKING LOT, 2.1 M (6.9 FT)
GA3643'NORTH-NORTHWEST FROM A 1.2 M (3.9 FT) HIGH WIRE FENCE AND FIBERGLASS
GA3643'WITNESS POST AND 1.2 M (3.9 FT) SOUTH-SOUTHEAST FROM THE TOP OF CUT
GA3643'AT THE SOUTH EDGE OF THE ROAD.
GA3643
GA3643                          STATION RECOVERY (1995)
GA3643
GA3643'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1995 (CFS)
GA3643'RECOVERED AS DESCRIBED.
GA3643
GA3643                          STATION RECOVERY (2002)
GA3643
GA3643'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2002 (AJL)
GA3643'RECOVERED AS DESCRIBED.
GA3643
GA3643                          STATION RECOVERY (2003)
GA3643
GA3643'RECOVERY NOTE BY TN DEPT OF TRANSP 2003
GA3643'RECOVERED AS DESCRIBED.
GA3643
GA3643                          STATION RECOVERY (2005)
GA3643
GA3643'RECOVERY NOTE BY CONTINENTAL AERIAL SURVEY INCO 2005 (JCA)
GA3643'RECOVERED IN GOOD CONDITION.
GA3643
GA3643                          STATION RECOVERY (2008)
GA3643
GA3643'RECOVERY NOTE BY TENNESSEE DEPT. OF 2008 (JTZ)
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 GA3643'RECOVERED AS DESCRIBED
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 DK3635 ***********************************************************************
 DK3635  HT_MOD      -  This is a Height Modernization Survey Station.
 DK3635  DESIGNATION -  GREER
 DK3635  PID         -  DK3635
 DK3635  STATE/COUNTY-  VA/WASHINGTON
 DK3635  COUNTRY     -  US
 DK3635  USGS QUAD   -  GRAYSON (1976)
 DK3635
 DK3635                        *CURRENT SURVEY CONTROL
 DK3635  ______________________________________________________________________
 DK3635* NAD 83(2011) POSITION- 36 37 00.35991(N) 081 40 53.82674(W)   ADJUSTED
 DK3635* NAD 83(2011) ELLIP HT-   972.466 (meters)        (06/27/12)   ADJUSTED
 DK3635* NAD 83(2011) EPOCH   -  2010.00
 DK3635* NAVD 88 ORTHO HEIGHT -  1003.28  (meters)     3291.6   (feet) GPS OBS
 DK3635  ______________________________________________________________________
 DK3635  NAVD 88 orthometric height was determined with geoid model    GEOID03
 DK3635  GEOID HEIGHT    -        -30.802 (meters)                     GEOID03
 DK3635  GEOID HEIGHT    -        -30.785 (meters)                     GEOID12B
 DK3635  NAD 83(2011) X  -    741,633.943 (meters)                     COMP
 DK3635  NAD 83(2011) Y  - -5,072,323.309 (meters)                     COMP
 DK3635  NAD 83(2011) Z  -  3,783,922.717 (meters)                     COMP
 DK3635  LAPLACE CORR    -          3.59  (seconds)                    DEFLEC12B
 DK3635
 DK3635  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 DK3635  Standards:
 DK3635         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 DK3635            Horiz  Ellip           SD_N   SD_E   SD_h      (unitless)
 DK3635  ----------------------------------------------------------------------
 DK3635  NETWORK    1.29   2.20           0.57   0.48   1.12     -0.10024788
 DK3635  ----------------------------------------------------------------------
 DK3635  Click here for local accuracies and other accuracy information.
 DK3635
 DK3635
 DK3635.The horizontal coordinates were established by GPS observations
 DK3635.and adjusted by the National Geodetic Survey in June 2012.
 DK3635
 DK3635.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
 DK3635.been affixed to the stable North American tectonic plate. See
 DK3635.NA2011 for more information.
 DK3635
 DK3635.The horizontal coordinates are valid at the epoch date displayed above
 DK3635.which is a decimal equivalence of Year/Month/Day.
 DK3635
 DK3635.The orthometric height was determined by GPS observations and a
 DK3635.high-resolution geoid model using precise GPS observation and
 DK3635.processing techniques.
 DK3635
 DK3635.Significant digits in the geoid height do not necessarily reflect accuracy.
 DK3635.GEOID12B height accuracy estimate available here.
 DK3635
 DK3635.Photographs are available for this station.
 DK3635
 DK3635.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 DK3635
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DK3635.The Laplace correction was computed from DEFLEC12B derived deflections.
DK3635
DK3635.The ellipsoidal height was determined by GPS observations
DK3635.and is referenced to NAD 83.
DK3635
DK3635. The following values were computed from the NAD 83(2011) position.
DK3635
DK3635;                    North         East     Units Scale Factor Converg.
DK3635;SPC VA S     - 1,036,249.889 3,215,429.047   MT  1.00003059   -1 55 51.6
DK3635;SPC VA S     - 3,399,763.18 10,549,286.80   sFT  1.00003059   -1 55 51.6
DK3635;UTM  17      - 4,052,576.676   439,048.834   MT  0.99964577   -0 24 23.7
DK3635
DK3635!             -  Elev Factor  x  Scale Factor =   Combined Factor
DK3635!SPC VA S     -   0.99984741  x   1.00003059  =   0.99987799
DK3635!UTM  17      -   0.99984741  x   0.99964577  =   0.99949323
DK3635
DK3635_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SMA3904852576(NAD 83)
DK3635
DK3635                           SUPERSEDED SURVEY CONTROL
DK3635
DK3635  NAD 83(2007)-  36 37 00.35997(N)    081 40 53.82734(W) AD(2002.00) 1
DK3635  ELLIP H (04/15/08)  972.496  (m)                       GP(2002.00) 4 2
DK3635
DK3635.Superseded values are not recommended for survey control.
DK3635
DK3635.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DK3635.See file dsdata.txt to determine how the superseded data were derived.
DK3635
DK3635_MARKER: DH = HORIZONTAL CONTROL DISK
DK3635_SETTING: 66 = SET IN ROCK OUTCROP
DK3635_STAMPING: GREER 2005
DK3635_MARK LOGO: NCGS
DK3635_MAGNETIC: N = NO MAGNETIC MATERIAL
DK3635_STABILITY: A = MOST RELIABLE AND EXPECTED TO HOLD
DK3635+STABILITY: POSITION/ELEVATION WELL
DK3635_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DK3635+SATELLITE: SATELLITE OBSERVATIONS - 2005
DK3635
DK3635  HISTORY     - Date     Condition        Report By
DK3635  HISTORY     - 2005     MONUMENTED       NCGS
DK3635
DK3635                           STATION DESCRIPTION
DK3635
DK3635'DESCRIBED BY NORTH CAROLINA GEODETIC SURVEY 2005
DK3635'STATION IS LOCATED ABOUT 18.2 MI (29.3 KM) NORTHWEST OF W. JEFFERSON,
DK3635'6.0 MI (9.7 KM) EAST-SOUTHEAST OF DAMASCUS NEAR THE VIRGINIA/TENNESSEE
DK3635'STATE LINE.
DK3635'
DK3635'PROCEED ALONG TAYLOR VALLEY ROAD FOR 1.15 MI (1.85 KM) NORTHEAST FROM
DK3635'TN HIGHWAY 91 TO THE VIRGINIA/TENNESSEE STATE LINE. CONTINUE NORTHEAST
DK3635'FOR 1.45 MI (2.33 KM) ALONG VA RT 726-TAYLOR VALLEY ROAD TO TAYLORS
DK3635'VALLEY, THENCE SOUTHEAST FOR 2.9 MI (4.7 KM) ALONG VA RT 725-CHESTNUT
DK3635'MOUNTAIN ROAD TO THE GREER RESIDENCE AND THE STATION IN THE TOP OF A
DK3635'LARGE EXPOSED ROCK OUTCROPPING.
DK3635'
DK3635'MARK IS ABOUT 8-FEET HIGHER THAN VA RT 725 AND PROJECTS 36 INCHES
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 DK3635'ABOVE THE GROUND. LOCATED 48.0 FT (14.6 M) WEST OF THE CENTERLINE OF
 DK3635'VA RT 725, 88.2 FT (26.9 M) SOUTH-SOUTHEAST OF THE SOUTHWEST CORNER OF
 DK3635'THE GREER RESIDENCE--AND 81.2 FT (24.7 M) SOUTHWEST OF A POWER POLE
 DK3635'WITH REFERENCE TAG.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 DN4539 ***********************************************************************
 DN4539  DESIGNATION -  HIGGINS
 DN4539  PID         -  DN4539
 DN4539  STATE/COUNTY-  NC/YANCEY
 DN4539  COUNTRY     -  US
 DN4539  USGS QUAD   -  HUNTDALE (1939)
 DN4539
 DN4539                        *CURRENT SURVEY CONTROL
 DN4539  ______________________________________________________________________
 DN4539* NAD 83(2011) POSITION- 36 00 56.56763(N) 082 21 06.07068(W)   ADJUSTED
 DN4539* NAD 83(2011) ELLIP HT-   612.658 (meters)        (06/27/12)   ADJUSTED
 DN4539* NAD 83(2011) EPOCH   -  2010.00
 DN4539* NAVD 88 ORTHO HEIGHT -   643.160 (meters)     2110.10  (feet) ADJUSTED
 DN4539  ______________________________________________________________________
 DN4539  GEOID HEIGHT    -        -30.493 (meters)                    GEOID12B
 DN4539  NAD 83(2011) X  -    687,483.515 (meters)                    COMP
 DN4539  NAD 83(2011) Y  - -5,119,515.571 (meters)                    COMP
 DN4539  NAD 83(2011) Z  -  3,729,962.325 (meters)                    COMP
 DN4539  LAPLACE CORR    -         -1.53  (seconds)                   DEFLEC12B
 DN4539  DYNAMIC HEIGHT  -        642.510 (meters)     2107.97  (feet) COMP
 DN4539  MODELED GRAVITY -    979,602.5   (mgal)                      NAVD 88
 DN4539
 DN4539  VERT ORDER      -  SECOND    CLASS II
 DN4539
 DN4539  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 DN4539  Standards:
 DN4539         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 DN4539            Horiz  Ellip           SD_N   SD_E   SD_h      (unitless)
 DN4539  ------------------------------------------------------------------
 DN4539  NETWORK    0.62   1.06           0.28   0.22   0.54      0.10994324
 DN4539  ------------------------------------------------------------------
 DN4539  Click here for local accuracies and other accuracy information.
 DN4539
 DN4539
 DN4539.The horizontal coordinates were established by GPS observations
 DN4539.and adjusted by the National Geodetic Survey in June 2012.
 DN4539
 DN4539.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
 DN4539.been affixed to the stable North American tectonic plate. See
 DN4539.NA2011 for more information.
 DN4539
 DN4539.The horizontal coordinates are valid at the epoch date displayed above
 DN4539.which is a decimal equivalence of Year/Month/Day.
 DN4539
 DN4539.The orthometric height was determined by differential leveling and
 DN4539.adjusted by the NATIONAL GEODETIC SURVEY
 DN4539.in December 2016.
 DN4539
 DN4539.Significant digits in the geoid height do not necessarily reflect accuracy.
 DN4539.GEOID12B height accuracy estimate available here.
 DN4539
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DN4539.The X, Y, and Z were computed from the position and the ellipsoidal ht.
DN4539
DN4539.The Laplace correction was computed from DEFLEC12B derived deflections.
DN4539
DN4539.The ellipsoidal height was determined by GPS observations
DN4539.and is referenced to NAD 83.
DN4539
DN4539.The dynamic height is computed by dividing the NAVD 88
DN4539.geopotential number by the normal gravity value computed on the
DN4539.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
DN4539.degrees latitude (g = 980.6199 gals.).
DN4539
DN4539.The modeled gravity was interpolated from observed gravity values.
DN4539
DN4539. The following values were computed from the NAD 83(2011) position.
DN4539
DN4539;                     North         East     Units Scale Factor Converg.
DN4539;SPC NC       -   256,444.115   307,529.856   MT  0.99996137   -1 56 04.2
DN4539;SPC NC       -   841,350.40  1,008,954.20   sFT  0.99996137   -1 56 04.2
DN4539;UTM  17      - 3,986,536.197   378,196.382   MT  0.99978281   -0 47 41.6
DN4539
DN4539!             -  Elev Factor  x  Scale Factor =   Combined Factor
DN4539!SPC NC       -   0.99990385  x   0.99996137  =   0.99986523
DN4539!UTM  17      -   0.99990385  x   0.99978281  =   0.99968668
DN4539
DN4539_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SLV7819686536(NAD 83)
DN4539
DN4539                           SUPERSEDED SURVEY CONTROL
DN4539
DN4539  NAD 83(2007)-  36 00 56.56781(N)    082 21 06.07122(W) AD(2002.00) 1
DN4539  ELLIP H (11/10/11)  612.683  (m)                        GP(2002.00) 2 1
DN4539  NAVD 88 (11/10/11)  643.17   (m)  GEOID09 model used   GPS OBS
DN4539
DN4539.Superseded values are not recommended for survey control.
DN4539
DN4539.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DN4539.See file dsdata.txt to determine how the superseded data were derived.
DN4539
DN4539_MARKER: DH = HORIZONTAL CONTROL DISK
DN4539_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
DN4539_STAMPING: HIGGINS 2005
DN4539_MARK LOGO: NCGS
DN4539_PROJECTION: FLUSH
DN4539_MAGNETIC: T = STEEL SPIKE ADJACENT TO MONUMENT
DN4539_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
DN4539+STABILITY: SURFACE MOTION
DN4539_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DN4539+SATELLITE: SATELLITE OBSERVATIONS - June 24, 2014
DN4539
DN4539  HISTORY     - Date     Condition        Report By
DN4539  HISTORY     - 2005     MONUMENTED       NCGS
DN4539  HISTORY     - 20140624 GOOD             NCGS
DN4539
DN4539                           STATION DESCRIPTION
DN4539
DN4539'DESCRIBED BY NORTH CAROLINA GEODETIC SURVEY 2005 (MDB)
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 DN4539'THE STATION IS LOCATED ABOUT 8.2 MI (13.2 KM) NORTH-NORTHEAST OF BALD
 DN4539'CREEK, 7.4 MI (11.9 KM) NORTH-NORTHWEST OF BURNSVILLE AND 2.0 MI (3.3
 DN4539'KM) WEST-SOUTHWEST OF HUNTDALE.
 DN4539'
 DN4539'ALONG US 19 W FOR 1.65 MI (2.66 KM) NORTH FROM SR 1354-COXES CREEK
 DN4539'ROAD (IN RAMSEYTOWN) TO THE CANE RIVER BRIDGE AND STATION NEAR THE
 DN4539'SOUTHWEST CORNER OF THE BRIDGE.
 DN4539'
 DN4539'MARK IS ABOUT LEVEL WITH US 19 W AND IS FLUSH WITH THE GROUND.
 DN4539'LOCATED 18.5 FT (5.6 M) SOUTH OF THE CENTERLINE OF US 19 W, 40.0 FT
 DN4539'(12.2 M) SOUTHEAST OF THE CENTERLINE INTERSECTION OF US 19 W AND SR
 DN4539'1444-WILL HIGGINS ROAD, 27.8 FT (8.5 M) WEST OF THE SOUTHWEST CORNER
 DN4539'OF BRIDGE AND 49.5 FT (15.1 M) NORTHEAST OF GTE CABLE MARKER.
 DN4539
 DN4539                          STATION RECOVERY (2014)
 DN4539
 DN4539'RECOVERY NOTE BY NORTH CAROLINA GEODETIC SURVEY 2014 (MDB)
 DN4539'RECOVERED AS DESCRIBED.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 GC0869 ***********************************************************************
 GC0869  DESIGNATION -  JOELTON
 GC0869  PID         -  GC0869
 GC0869  STATE/COUNTY-  TN/DAVIDSON
 GC0869  COUNTRY     -  US
 GC0869  USGS QUAD   -  FOREST GROVE (1994)
 GC0869
 GC0869                         *CURRENT SURVEY CONTROL
 GC0869  ______________________________________________________________________
 GC0869* NAD 83(1995) POSITION- 36 19 22.85830(N) 086 54 39.23857(W)   ADJUSTED
 GC0869* NAVD 88 ORTHO HEIGHT -   249.231 (meters)      817.69  (feet) ADJUSTED
 GC0869  ______________________________________________________________________
 GC0869  GEOID HEIGHT    -        -29.471 (meters)                    GEOID12B
 GC0869  LAPLACE CORR    -         -0.73  (seconds)                   DEFLEC12B
 GC0869  DYNAMIC HEIGHT  -        249.016 (meters)      816.98  (feet) COMP
 GC0869  MODELED GRAVITY -    979,765.0   (mgal)                      NAVD 88
 GC0869
 GC0869  HORZ ORDER      -  THIRD
 GC0869  VERT ORDER      -  SECOND    CLASS 0
 GC0869
 GC0869.The horizontal coordinates were established by classical geodetic methods
 GC0869.and adjusted by the National Geodetic Survey in April 1999.
 GC0869.
 GC0869.The orthometric height was determined by differential leveling and
 GC0869.adjusted by the NATIONAL GEODETIC SURVEY
 GC0869.in June 1991.
 GC0869
 GC0869.Significant digits in the geoid height do not necessarily reflect accuracy.
 GC0869.GEOID12B height accuracy estimate available here.
 GC0869
 GC0869.The Laplace correction was computed from DEFLEC12B derived deflections.
 GC0869
 GC0869.The dynamic height is computed by dividing the NAVD 88
 GC0869.geopotential number by the normal gravity value computed on the
 GC0869.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 GC0869.degrees latitude (g = 980.6199 gals.).
 GC0869
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GC0869.The modeled gravity was interpolated from observed gravity values.
GC0869
GC0869. The following values were computed from the NAD 83(1995) position.
GC0869
GC0869;                     North         East     Units Scale Factor Converg.
GC0869;SPC TN       -   221,137.384   518,208.599   MT  0.99998473   -0 31 59.8
GC0869;SPC TN       -   725,514.90  1,700,156.05   sFT  0.99998473   -0 31 59.8
GC0869;UTM  16      - 4,019,780.322   507,997.532   MT  0.99960079   +0 03 10.0
GC0869
GC0869!             -  Elev Factor  x  Scale Factor =   Combined Factor
GC0869!SPC TN       -   0.99996551  x   0.99998473  =   0.99995024
GC0869!UTM  16      -   0.99996551  x   0.99960079  =   0.99956631
GC0869
GC0869:                Primary Azimuth Mark                    Grid Az
GC0869:SPC TN       -  25035                                   300 25 31.6
GC0869:UTM  16      -  25035                                   299 50 21.8
GC0869
GC0869_U.S. NATIONAL GRID SPATIAL ADDRESS: 16SEF0799719780(NAD 83)
GC0869
GC0869|---------------------------------------------------------------------|
GC0869| PID    Reference Object                    Distance      Geod. Az  |
GC0869|                                                          dddmmss.s |
GC0869| GC0871 JOELTON RM 1                        26.676 METERS 05120     |
GC0869| GC0870 JOELTON RM 2                        27.305 METERS 12205     |
GC0869| CG6202 25035                                             2995331.8 |
GC0869|---------------------------------------------------------------------|
GC0869
GC0869                          SUPERSEDED SURVEY CONTROL
GC0869
GC0869  NAD 83(1993)-  36 19 22.85979(N)    086 54 39.24025(W) AD(       ) 3
GC0869  NAD 83(1990)-  36 19 22.86232(N)    086 54 39.24183(W) AD(       ) 3
GC0869  NAD 83(1986)-  36 19 22.86824(N)    086 54 39.24179(W) AD(       ) 3
GC0869  NAD 27      -  36 19 22.68200(N)    086 54 39.24300(W) AD(       ) 3
GC0869  NGVD 29 (??/??/92)  249.278  (m)          817.84   (f) ADJ UNCH    2 0
GC0869  NGVD 29             249.28   (m)          817.8    (f) LEVELING    3
GC0869
GC0869.Superseded values are not recommended for survey control.
GC0869
GC0869.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
GC0869.See file dsdata.txt to determine how the superseded data were derived.
GC0869
GC0869_MARKER: DD = SURVEY DISK
GC0869_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
GC0869_STAMPING: JOELTON 1965
GC0869_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
GC0869+STABILITY: SURFACE MOTION
GC0869
GC0869  HISTORY     - Date     Condition        Report By
GC0869  HISTORY     - 1953     MONUMENTED       CGS
GC0869  HISTORY     - 1965     GOOD             CGS
GC0869  HISTORY     - 1965     GOOD             CGS
GC0869
GC0869                           STATION DESCRIPTION
GC0869
GC0869'DESCRIBED BY COAST AND GEODETIC SURVEY 1953 (ELJ)
GC0869'STATION IS LOCATED AT THE INTERSECTION OF U.S. HIGHWAY 41A AND OLD
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GC0869'CLARKSVILLE PIKE, ABOUT 2-1/2 MILES WEST OF JOELTON AND ON PROPERTY
GC0869'OWNED BY THOMAS R. SIMMONS. IT IS 99 FEET WEST OF THE INTERSECTION,
GC0869'44 FEET SOUTH OF THE CENTER OF HIGHWAY 41A AND 28 FEET NORTH OF
GC0869'THE CENTER OF OLD CLARKSVILLE PIKE. THE MARK IS FLUSH AND THE DISK
GC0869'IS STAMPED JOELTON 1953.
GC0869'
GC0869'REFERENCE MARK NO. 1 IS 3 FEET SOUTH OF A FENCE LINE AND 2 FEET EAST
GC0869'OF A WHITE WITNESS POST. THE MARK PROJECTS 2 INCHES AND THE
GC0869'DISK IS STAMPED JOELTON NO 1 1953.
GC0869'
GC0869'REFERENCE MARK NO. 2 IS 40 FEET SOUTHEAST OF THE INTERSECTION, 14
GC0869'FEET NORTH OF A FENCE LINE AND 2 FEET SOUTHWEST OF A POWER LINE
GC0869'POLE. THE MARK PROJECTS 4 INCHES AND THE DISK IS STAMPED JOELTON NO
GC0869'2 1953.
GC0869'
GC0869'NO. 25035 (TENN. GEOD. S) WAS USED AS AN AZIMUTH MARK. IT IS 48 FEET
GC0869'NORTHEAST OF THE NORTHEAST CORNER OF A BUILDING, 31 FEET SOUTHWEST
GC0869'OF U.S. HIGHWAY 41A. THE MARK IS A 4 X 4 INCH CONCRETE POST THAT
GC0869'PROJECTS 2 INCHES WITH A STANDARD USC AND GS AND SS DISK STAMPED
GC0869'STATION NO. 25035.
GC0869'
GC0869'TO REACH THE STATION FROM THE JUNCTION OF STATE HIGHWAY 65 AND OLD
GC0869'CLARKSVILLE PIKE IN JOELTON, GO NORTHWEST ON OLD CLARKSVILLE
GC0869'PIKE FOR 1.55 MILE TO THE JUNCTION OF U.S. HIGHWAY 41A, TURN RIGHT
GC0869'AND GO NORTHWEST ON HIGHWAY 41A FOR 01.0 TO THE JUNCTION WITH
GC0869'OLD CLARKSVILLE PIKE AND THE STATION AS DESCRIBED.
GC0869'
GC0869'TO REACH NO. 25035 (TENN. GEOD. S) FROM THE STATION, GO NORTHWEST ON
GC0869'U.S. HIGHWAY 41A FOR 0.2 MILE TO THE MARK ON THE LEFT AS
GC0869'DESCRIBED.
GC0869'
GC0869'HEIGHT OF LIGHT ABOVE STATION MARK 26 METERS.
GC0869
GC0869   STATION RECOVERY (1965)
GC0869
GC0869'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1965 (JAG)
GC0869'THE STATION AND REFERENCE MARKS NO. 1 AND NO. 2 WERE RECOVERED IN
GC0869'GOOD CONDITION AS DESCRIBED. DUE TO EXCAVATION AND PAVING FOR THE
GC0869'DRIVE AT A GARAGE, NO. 25035 (TENN. GEOD. S.), WHICH HAD SERVED AS
GC0869'THE AZIMUTH MARK, COULD NOT BE FOUND AND IS PRESUMED LOST.
GC0869'
GC0869'NO SIGNAL WAS BUILT AT THIS TIME SINCE THE STATION MARK IS NOW UNDER
GC0869'OVERHEAD POWER LINES. NO OTHER STATIONS ARE VISIBLE FROM THE
GC0869'GROUND, THEREFORE, A NEW AZIMUTH MARK WAS NOT ESTABLISHED.
GC0869
GC0869   STATION RECOVERY (1965)
GC0869
GC0869'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1965
GC0869'2.5 MI W FROM JOELTON.
GC0869'FROM THE POST OFFICE IN JOELTON, GO 1.45 MILES NORTHWESTERLY
GC0869'ON OLD CLARKSVILLE PIKE TO THE JUNCTION OF U.S. HIGHWAY 41A,
GC0869'TURN RIGHT AND GO NORTHWESTERLY ON U.S. HIGHWAY 41A FOR 1.0
GC0869'MILE TO THE JUNCTION OF OLD CLARKSVILLE PIKE AND THE MARK
GC0869'ON THE LEFT, 99 FEET WEST OF THE JUNCTION, 44 FEET SOUTH OF THE
GC0869'APPROXIMATE CENTER OF U.S. HIGHWAY 41A AND 28 FEET NORTH OF THE
GC0869'APPROXIMATE CENTER OF OLD CLARKSVILLE PIKE. IT IS A STANDARD
GC0869'U.S.C. AND G.S. TRIANGULATION STATION DISK SET IN THE TOP OF A

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 GC0869'SQUARE, FLUSH, CONCRETE MONUMENT.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 DK3634 ***********************************************************************
 DK3634  HT_MOD      -  This is a Height Modernization Survey Station.
 DK3634  DESIGNATION -  LAUREL CREEK
 DK3634  PID         -  DK3634
 DK3634  STATE/COUNTY-  TN/JOHNSON
 DK3634  COUNTRY     -  US
 DK3634  USGS QUAD   -  LAUREL BLOOMERY (1969)
 DK3634
 DK3634                         *CURRENT SURVEY CONTROL
 DK3634  ______________________________________________________________________
 DK3634* NAD 83(2011) POSITION- 36 33 22.85575(N) 081 46 10.54605(W)   ADJUSTED
 DK3634* NAD 83(2011) ELLIP HT-   713.815 (meters)        (06/27/12)   ADJUSTED
 DK3634* NAD 83(2011) EPOCH   -  2010.00
 DK3634* NAVD 88 ORTHO HEIGHT -   744.77  (meters)     2443.5   (feet) GPS OBS
 DK3634  ______________________________________________________________________
 DK3634  NAVD 88 orthometric height was determined with geoid model    GEOID03
 DK3634  GEOID HEIGHT    -        -30.939 (meters)                     GEOID03
 DK3634  GEOID HEIGHT    -        -30.913 (meters)                     GEOID12B
 DK3634  NAD 83(2011) X  -    734,386.939 (meters)                     COMP
 DK3634  NAD 83(2011) Y  - -5,077,206.088 (meters)                     COMP
 DK3634  NAD 83(2011) Z  -  3,778,384.362 (meters)                     COMP
 DK3634  LAPLACE CORR    -         -0.05  (seconds)                    DEFLEC12B
 DK3634
 DK3634  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 DK3634  Standards:
 DK3634         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 DK3634            Horiz  Ellip           SD_N   SD_E   SD_h      (unitless)
 DK3634  ----------------------------------------------------------------------
 DK3634  NETWORK    1.12   1.92           0.49   0.42   0.98     -0.03034951
 DK3634  ----------------------------------------------------------------------
 DK3634  Click here for local accuracies and other accuracy information.
 DK3634
 DK3634
 DK3634.The horizontal coordinates were established by GPS observations
 DK3634.and adjusted by the National Geodetic Survey in June 2012.
 DK3634
 DK3634.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
 DK3634.been affixed to the stable North American tectonic plate. See
 DK3634.NA2011 for more information.
 DK3634
 DK3634.The horizontal coordinates are valid at the epoch date displayed above
 DK3634.which is a decimal equivalence of Year/Month/Day.
 DK3634
 DK3634.The orthometric height was determined by GPS observations and a
 DK3634.high-resolution geoid model using precise GPS observation and
 DK3634.processing techniques.
 DK3634
 DK3634.Significant digits in the geoid height do not necessarily reflect accuracy.
 DK3634.GEOID12B height accuracy estimate available here.
 DK3634
 DK3634.Photographs are available for this station.
 DK3634
 DK3634.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 DK3634
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DK3634.The Laplace correction was computed from DEFLEC12B derived deflections.
DK3634
DK3634.The ellipsoidal height was determined by GPS observations
DK3634.and is referenced to NAD 83.
DK3634
DK3634. The following values were computed from the NAD 83(2011) position.
DK3634
DK3634;                    North         East     Units Scale Factor Converg.
DK3634;SPC TN       -   254,833.548   978,624.316   MT  1.00002776   +2 28 35.9
DK3634;SPC TN       -   836,066.40  3,210,703.28   sFT  1.00002776   +2 28 35.9
DK3634;UTM  17      - 4,045,934.050   431,127.981   MT  0.99965844   -0 27 30.2
DK3634
DK3634!             -  Elev Factor  x  Scale Factor =   Combined Factor
DK3634!SPC TN       -   0.99988799  x   1.00002776  =   0.99991574
DK3634!UTM  17      -   0.99988799  x   0.99965844  =   0.99954646
DK3634
DK3634_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SMA3112745934(NAD 83)
DK3634
DK3634                           SUPERSEDED SURVEY CONTROL
DK3634
DK3634  NAD 83(2007)-  36 33 22.85575(N)    081 46 10.54662(W) AD(2002.00) 1
DK3634  ELLIP H (04/15/08)  713.840  (m)                       GP(2002.00) 4 2
DK3634
DK3634.Superseded values are not recommended for survey control.
DK3634
DK3634.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DK3634.See file dsdata.txt to determine how the superseded data were derived.
DK3634
DK3634_MARKER: DH = HORIZONTAL CONTROL DISK
DK3634_SETTING: 36 = SET IN A MASSIVE STRUCTURE
DK3634_SP_SET: BRIDGE
DK3634_STAMPING: LAUREL CREEK 2005
DK3634_MARK LOGO: NCGS
DK3634_MAGNETIC: N = NO MAGNETIC MATERIAL
DK3634_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
DK3634_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DK3634+SATELLITE: SATELLITE OBSERVATIONS - November 15, 2014
DK3634
DK3634  HISTORY     - Date     Condition        Report By
DK3634  HISTORY     - 2005     MONUMENTED       NCGS
DK3634  HISTORY     - 20141115 SEE DESCRIPTION  WOOLPT
DK3634
DK3634                           STATION DESCRIPTION
DK3634
DK3634'DESCRIBED BY NORTH CAROLINA GEODETIC SURVEY 2005
DK3634'STATION IS LOCATED ABOUT 6.5 MI (10.5 KM) NORTH OF MOUNTAIN CITY, 18.8
DK3634'MI (30.2 KM) NORTHWEST OF W. JEFFERSON AND 4.1 MI (6.6 KM) SOUTH OF
DK3634'THE TENNESSEE/VIRGINIA STATE LINE.
DK3634'
DK3634'ALONG TN HIGHWAY 91 FOR 6.75 MI (10.86 KM) NORTH FROM US 421 (IN
DK3634'MOUNTAIN CITY) TO THE BRIDGE OVER LAUREL CREEK AND STATION IN THE
DK3634'BRIDGE FLOOR ABOVE THE ABUTMENT AT THE NORTHEAST CORNER.
DK3634'
DK3634'MARK IS ABOUT LEVEL WITH TN HIGHWAY 91 SET FLUSH IN A DRILL HOLE.
DK3634'LOCATE 17.0 FT (5.2 M) SOUTHEAST OF THE CENTERLINE OF TN HIGHWAY
DK3634'91--AND 76.3 FT (23.3 M) SOUTHWEST OF POWER POLE WITH REFERENCE TAG.
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 DK3634
 DK3634                          STATION RECOVERY (2014)
 DK3634
 DK3634'RECOVERY NOTE BY WOOLPERT CONSULTANTS 2014 (DPM)
 DK3634'THE DISK SURFACE HAS BEEN PARTIALLY ABRADED BUT THE MARK CAN STILL BE
 DK3634'USED.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 FB1956 ***********************************************************************
 FB1956  DESIGNATION -  LHT 682
 FB1956  PID         -  FB1956
 FB1956  STATE/COUNTY-  TN/BLOUNT
 FB1956  COUNTRY     -  US
 FB1956  USGS QUAD   -  MARYVILLE (1979)
 FB1956
 FB1956                         *CURRENT SURVEY CONTROL
 FB1956  ______________________________________________________________________
 FB1956* NAD 83(2011) POSITION- 35 50 44.78742(N) 083 53 35.83519(W)   ADJUSTED
 FB1956* NAD 83(2011) ELLIP HT-   296.890 (meters)        (06/27/12)   ADJUSTED
 FB1956* NAD 83(2011) EPOCH   -  2010.00
 FB1956* NAVD 88 ORTHO HEIGHT -   327.43  (+/-2cm)     1074.2   (feet) VERTCON
 FB1956  ______________________________________________________________________
 FB1956  GEOID HEIGHT    -        -30.490 (meters)                    GEOID12B
 FB1956  NAD 83(2011) X  -    550,655.496 (meters)                    COMP
 FB1956  NAD 83(2011) Y  - -5,146,906.414 (meters)                    COMP
 FB1956  NAD 83(2011) Z  -  3,714,507.703 (meters)                    COMP
 FB1956  LAPLACE CORR    -          0.66  (seconds)                   DEFLEC12B
 FB1956  VERT ORDER      -  ? (See Below)
 FB1956
 FB1956  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 FB1956  Standards:
 FB1956         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 FB1956            Horiz  Ellip           SD_N   SD_E   SD_h      (unitless)
 FB1956  ------------------------------------------------------------------
 FB1956  NETWORK    4.13   4.74           2.02   1.04   2.42      0.04007218
 FB1956  ------------------------------------------------------------------
 FB1956  Click here for local accuracies and other accuracy information.
 FB1956
 FB1956
 FB1956.The horizontal coordinates were established by GPS observations
 FB1956.and adjusted by the National Geodetic Survey in June 2012.
 FB1956
 FB1956.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
 FB1956.been affixed to the stable North American tectonic plate. See
 FB1956.NA2011 for more information.
 FB1956
 FB1956.The horizontal coordinates are valid at the epoch date displayed above
 FB1956.which is a decimal equivalence of Year/Month/Day.
 FB1956
 FB1956.The NAVD 88 height was computed by applying the VERTCON shift value to
 FB1956.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)
 FB1956
 FB1956.Significant digits in the geoid height do not necessarily reflect accuracy.
 FB1956.GEOID12B height accuracy estimate available here.
 FB1956
 FB1956.The vertical order pertains to the NGVD 29 superseded value.
 FB1956
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FB1956.The X, Y, and Z were computed from the position and the ellipsoidal ht.
FB1956
FB1956.The Laplace correction was computed from DEFLEC12B derived deflections.
FB1956
FB1956.The ellipsoidal height was determined by GPS observations
FB1956.and is referenced to NAD 83.
FB1956
FB1956. The following values were computed from the NAD 83(2011) position.
FB1956
FB1956;                    North         East     Units Scale Factor Converg.
FB1956;SPC TN       -   169,852.006   790,293.606   MT  0.99994842   +1 14 00.1
FB1956;SPC TN       -   557,256.12  2,592,821.61   sFT  0.99994842   +1 14 00.1
FB1956;UTM  17      - 3,970,708.333   238,692.911   MT  1.00044147   -1 41 43.0
FB1956
FB1956!             -  Elev Factor  x  Scale Factor =   Combined Factor
FB1956!SPC TN       -   0.99995340  x   0.99994842  =   0.99990183
FB1956!UTM  17      -   0.99995340  x   1.00044147  =   1.00039485
FB1956
FB1956_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SKV3869270708(NAD 83)
FB1956
FB1956                           SUPERSEDED SURVEY CONTROL
FB1956
FB1956  NAD 83(2007)-  35 50 44.78813(N)    083 53 35.83597(W) AD(2002.00) 0
FB1956  ELLIP H (02/10/07)  296.878  (m)                        GP(2002.00)
FB1956  NAD 83(1995)-  35 50 44.78956(N)    083 53 35.83349(W) AD(       ) 1
FB1956  ELLIP H (04/12/99)  296.827  (m)                        GP(       ) 4 1
FB1956  NAD 83(1990)-  35 50 44.79062(N)    083 53 35.84004(W) AD(       ) 1
FB1956  ELLIP H (05/28/93)  296.783  (m)                        GP(       ) 4 2
FB1956  NGVD 29             327.56   (m)         1074.7    (f) LEVELING    3
FB1956  NGVD 29 (??/??/92)  327.557  (m)         1074.66   (f) ADJ UNCH
FB1956
FB1956.Superseded values are not recommended for survey control.
FB1956
FB1956.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
FB1956.See file dsdata.txt to determine how the superseded data were derived.
FB1956
FB1956_MARKER: DD = SURVEY DISK
FB1956_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
FB1956_STAMPING: LHT 682 1938
FB1956_MAGNETIC: N = NO MAGNETIC MATERIAL
FB1956_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
FB1956+STABILITY: SURFACE MOTION
FB1956_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
FB1956+SATELLITE: SATELLITE OBSERVATIONS - 1988
FB1956
FB1956  HISTORY     - Date     Condition        Report By
FB1956  HISTORY     - 1938     MONUMENTED       TVA
FB1956  HISTORY     - 1988     GOOD             AEROS
FB1956
FB1956                          STATION DESCRIPTION
FB1956
FB1956'DESCRIBED BY TENNESSEE VALLEY AUTHORITY 1938
FB1956'3.5 MI E FROM ROCKFORD.
FB1956'3.5 MILES EAST ALONG THE NEUBERT-ROCKFORD ROAD FROM ROCKFORD,
FB1956'0.1 MILE SOUTHWEST OF THE BLOUNT-KNOX COUNTY LINE, 175 FEET NORTH
FB1956'OF A 1-STORY FARMHOUSE, 85 FEET SOUTHEAST OF A 10-INCH ELM TREE
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 FB1956'IN A GULLY, 91.1 FEET NORTH OF A 5-INCH WALNUT TREE, 48.1 FEET
 FB1956'SOUTH WEST OF A 4-INCH WALNUT SNAG, 35.0 FEET NORTHWEST OF A
 FB1956'FENCE CORNER, AND AT THE NORTHEAST CORNER OF A GARDEN FENCE.  A
 FB1956'TENNESSEE VALLEY AUTHORITY STANDARD DISK, STAMPED LHT 682 1938
 FB1956'AND SET IN THE TOP OF A CONCRETE POST.
 FB1956
 FB1956                          STATION RECOVERY (1988)
 FB1956
 FB1956'RECOVERY NOTE BY AERO SERVICE CORPORATION 1988 (JKP)
 FB1956'THE STATION IS LOCATED ABOUT 14.6 KM (9.0 MI) SOUTH-SOUTHEAST OF
 FB1956'DOWNTOWN KNOXVILLE, 4.9 KM (3.0 MI) EAST-NORTHEAST OF ROCKFORD,
 FB1956'11.3 KM (7.0 MI) SOUTHWEST OF SEYMOUR.
 FB1956'OWNERSHIP--STATE OF TENNESSEE.
 FB1956'
 FB1956'TO REACH THE STATION FROM THE JUNCTION OF INTERSTATE 40 AND U.S.
 FB1956'HIGHWAY 129 (ALCOA HIGHWAY) AT EXIT 386B, GO SOUTHERLY ON U.S.
 FB1956'HIGHWAY 129 TO A LARGE BRIDGE OVER THE TENNESSE RIVER.  CONTINUE
 FB1956'STRAIGHT AHEAD AND GO SOUTHERLY FOR 11.7 KM (7.25 MI) ON U.S.
 FB1956'HIGHWAY 129 TO THE INTERSECTION OF SINGLETON ROAD (TOWARD ROCKFORD)
 FB1956'ON THE LEFT.  TURN LEFT AND GO 3.32 KM (2.05 MI) ON SINGLETON ROAD
 FB1956'TO A STOP SIGN AT A (T) JUNCTION IN THE TOWN OF ROCKFORD.  TURN
 FB1956'LEFT AND GO 0.3 KM (0.2 MI) CROSSING OVER A BRIDGE TO A STOP SIGN
 FB1956'AT THE (T) JUNCTION OF OLD KNOXVILLE HIGHWAY (UNMARKED).  TURN LEFT
 FB1956'AND GO 0.2 KM (0.1 MI) ON OLD KNOXVILLE HIGHWAY TO THE INTERSECTION
 FB1956'OF SELF HOLLOW ROAD.  TURN RIGHT AND GO 3.81 KM (2.35 MI) ON SELF
 FB1956'HOLLOW ROAD TO THE INTERSECTION OF BLAZER ROAD ON THE LEFT.  TURN
 FB1956'LEFT AND GO 1.54 KM (0.95 MI) ON BLAZER ROAD TO THE STATION ON THE
 FB1956'LEFT AS DESCRIBED.
 FB1956'
 FB1956'THE STATION IS A STANDARD TVA DISK
 FB1956'STAMPED---LHT 682 1938---,
 FB1956'SET INTO THE TOP OF A SQUARE CONCRETE MONUMENT
 FB1956'7.0 CM ON SIDE FLUSH WITH GROUND.  LOCATED
 FB1956'4.36 METERS (14.3 FT) WEST FROM THE EDGE OF BLAZER ROAD, AND
 FB1956'4.66 METERS (15.3 FT) NORTH FROM A POWER POLE.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 GC0454 ***********************************************************************
 GC0454  DESIGNATION -  LOVE
 GC0454  PID         -  GC0454
 GC0454  STATE/COUNTY-  TN/DAVIDSON
 GC0454  COUNTRY     -  US
 GC0454  USGS QUAD   -  NASHVILLE WEST (1983)
 GC0454
 GC0454                         *CURRENT SURVEY CONTROL
 GC0454  ______________________________________________________________________
 GC0454* NAD 83(1995) POSITION- 36 08 17.48416(N) 086 48 55.71189(W)   ADJUSTED
 GC0454* NAVD 88 ORTHO HEIGHT -   227.419 (meters)      746.12  (feet) ADJUSTED
 GC0454  ______________________________________________________________________
 GC0454  GEOID HEIGHT    -        -29.329 (meters)                    GEOID12B
 GC0454  LAPLACE CORR    -          0.08  (seconds)                   DEFLEC12B
 GC0454  DYNAMIC HEIGHT  -        227.224 (meters)      745.48  (feet) COMP
 GC0454  MODELED GRAVITY -    979,769.6   (mgal)                      NAVD 88
 GC0454
 GC0454  HORZ ORDER      -  SECOND
 GC0454  VERT ORDER      -  FIRST     CLASS II
 GC0454
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GC0454.The horizontal coordinates were established by classical geodetic methods
GC0454.and adjusted by the National Geodetic Survey in April 1999.
GC0454.
GC0454.The orthometric height was determined by differential leveling and
GC0454.adjusted by the NATIONAL GEODETIC SURVEY
GC0454.in June 1991.
GC0454
GC0454.Significant digits in the geoid height do not necessarily reflect accuracy.
GC0454.GEOID12B height accuracy estimate available here.
GC0454
GC0454.The Laplace correction was computed from DEFLEC12B derived deflections.
GC0454
GC0454.The dynamic height is computed by dividing the NAVD 88
GC0454.geopotential number by the normal gravity value computed on the
GC0454.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
GC0454.degrees latitude (g = 980.6199 gals.).
GC0454
GC0454.The modeled gravity was interpolated from observed gravity values.
GC0454
GC0454. The following values were computed from the NAD 83(1995) position.
GC0454
GC0454;                    North         East     Units Scale Factor Converg.
GC0454;SPC TN       -   200,554.168   526,605.816   MT  0.99996244   -0 28 38.7
GC0454;SPC TN       -   657,984.80  1,727,705.91   sFT  0.99996244   -0 28 38.7
GC0454;UTM  16      - 3,999,291.692   516,601.698   MT  0.99960340   +0 06 31.8
GC0454
GC0454!             -  Elev Factor  x  Scale Factor =   Combined Factor
GC0454!SPC TN       -   0.99996891  x   0.99996244  =   0.99993135
GC0454!UTM  16      -   0.99996891  x   0.99960340  =   0.99957232
GC0454
GC0454:                Primary Azimuth Mark                    Grid Az
GC0454:SPC TN       -  NASHVILLE STATE CAPITOL FLAGPOLE        042 59 32.8
GC0454:UTM  16      -  NASHVILLE STATE CAPITOL FLAGPOLE        042 24 22.3
GC0454
GC0454_U.S. NATIONAL GRID SPATIAL ADDRESS: 16SEE1660199291(NAD 83)
GC0454
GC0454|-----------------------------------------------------------------------|
GC0454| PID    Reference Object                     Distance      Geod. Az  |
GC0454|                                                           dddmmss.s |
GC0454| GC2275 NASHVILLE ST THOMAS HOSP STACK      APPROX. 2.0 KM 0371645.0 |
GC0454| GC2293 NASHVILLE STATE CAPITOL CUPOLA      APPROX. 4.2 KM 0423048.0 |
GC0454| GC2290 NASHVILLE STATE CAPITOL FLAGPOLE    APPROX. 4.2 KM 0423054.1 |
GC0454| GC2286 VANDERBILT UNIV COLL HALL TWR       APPROX. 1.6 KM 0461224.0 |
GC0454| GC2285 VANDERBILT U POWERHOUSE STACK       APPROX. 1.4 KM 0520146.8 |
GC0454| GC2267 NASHVILLE L AND N RR STA BALL       APPROX. 3.5 KM 0521451.0 |
GC0454| GC2269 NASHVILLE OLD PO BLDG CLOCKTWR      APPROX. 3.8 KM 0530429.1 |
GC0454| GC2264 NASHVILLE FIRST BAP CH SPIRE        APPROX. 3.9 KM 0531223.1 |
GC0454| GC2270 NASHVILLE OLD WSM N RADIO TWR       APPROX. 2.2 KM 0833157.6 |
GC0454| GC2271 NASHVILLE OLD WSM S RADIO TWR       APPROX. 2.1 KM 0855156.3 |
GC0454| GC0456 LOVE RM 2                           43.233 METERS 10128     |
GC0454| GC2221 SE OF NASHVILLE LARGE TANK          APPROX. 7.6 KM 1222107.1 |
GC0454| GC2262 NASHVILLE CITY POLICE RAD TWR       61.691 METERS 25528     |
GC0454| GC2277 NASHVILLE TV STA WSM NEW MAST       APPROX. 4.5 KM 2735346.7 |
GC0454| GC0455 LOVE RM 1                           35.372 METERS 35719     |
GC0454|-----------------------------------------------------------------------|
GC0454
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GC0454                          SUPERSEDED SURVEY CONTROL
GC0454
GC0454  NAD 83(1993)-  36 08 17.48624(N)    086 48 55.71382(W) AD(       ) 2
GC0454  NAD 83(1990)-  36 08 17.48806(N)    086 48 55.71395(W) AD(       ) 2
GC0454  NAD 83(1986)-  36 08 17.49435(N)    086 48 55.71503(W) AD(       ) 2
GC0454  NAD 27      -  36 08 17.28700(N)    086 48 55.71400(W) AD(       ) 2
GC0454  NGVD 29 (??/??/92)  227.439  (m)          746.19   (f) ADJ UNCH    1 2
GC0454  NGVD 29             227.44   (m)          746.2    (f) LEVELING    3
GC0454
GC0454.Superseded values are not recommended for survey control.
GC0454
GC0454.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
GC0454.See file dsdata.txt to determine how the superseded data were derived.
GC0454
GC0454_MARKER: DS = TRIANGULATION STATION DISK
GC0454_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
GC0454_STAMPING: LOVE 1933
GC0454_MARK LOGO: CGS
GC0454_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
GC0454+STABILITY: SURFACE MOTION
GC0454
GC0454  HISTORY     - Date     Condition        Report By
GC0454  HISTORY     - 1933     MONUMENTED       CGS
GC0454  HISTORY     - 1948     GOOD             CGS
GC0454  HISTORY     - 1959     GOOD             CGS
GC0454  HISTORY     - 1963     GOOD             TNHD
GC0454
GC0454                           STATION DESCRIPTION
GC0454
GC0454'DESCRIBED BY COAST AND GEODETIC SURVEY 1933 (GLA)
GC0454'ABOUT 5 MILES SOUTHWEST OF STATE CAPITOL IN NASHVILLE, 1 MILE WEST OF
GC0454'VANDERBILT UNIVERSITY, IN SOUTHWEST EDGE OF TOWN, AND ON TOP OF LOVE
GC0454'CIRCLE RESERVOIR.  TO REACH FROM NASHVILLE POST OFFICE, GO WEST ON
GC0454'BROADWAY TO WEST END DRIVE, CONTINUE ON THIS STREET TO ORLEANS
GC0454'STREET, TURN LEFT AND GO UP HILL TO RESERVOIR AND STATION SITE.
GC0454'STATION IS ON EAST EDGE OF RESERVOIR, 103.8 FEET EAST OF NORTHEAST
GC0454'CORNER OF SMALL BRICK VALVE HOUSE, 76.5 FEET SOUTHEAST OF
GC0454'NORTHERNMOST VENTILATOR, AND 54.5 FEET EAST OF SOUTHERNMOST
GC0454'VENTILATOR.  SURFACE AND UNDERGROUND MARKS ARE STANDARD STATION DISKS
GC0454'IN CONCRETE.  SURFACE MARK PROJECTS 2 INCHES ABOVE
GC0454'GROUND.  REFERENCE MARKS ARE STANDARD REFERENCE DISKS IN CONCRETE.
GC0454'NO. 1, PROJECTING 2 INCHES ABOVE GROUND, IS 21.4 FEET EAST
GC0454'OF RESERVOIR WALL, BESIDE EAST CURB OF ROAD, AND ABOUT 30 FEET
GC0454'BELOW AND 118.80 FEET (SLOPE DISTANCE) FROM STATION.
GC0454'NO. 2, FLUSH WITH GROUND, IS 21 FEET EAST OF
GC0454'RESERVOIR WALL, BESIDE EAST CURB OF ROAD, AND ABOUT 28 FEET BELOW AND
GC0454'146.50 FEET (SLOPE DISTANCE) FROM STATION.
GC0454'REFERENCE MARKS ARE 204.30 FEET (SLOPE DISTANCE) APART.
GC0454'STATION DILLON
GC0454'(SEE DESCRIPTION AND GEOGRAPHIC POSITION THEREOF) IS VISIBLE FROM
GC0454'GROUND.
GC0454
GC0454                           STATION RECOVERY (1948)
GC0454
GC0454'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1948
GC0454'AT NASHVILLE.
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GC0454'AT NASHVILLE, IN THE WEST PART OF THE CITY, ABOUT 4 1/2 MILES
GC0454'SOUTHWEST OF THE CAPITOL BUILDING, ABOUT 1.0 MILE WEST OF VANDERBILT
GC0454'UNIVERSITY, ABOUT 0.3 MILE SOUTH OF WEST END AVENUE, AT THE TOP
GC0454'OF A HILL ON LOVE CIRCLE RESERVOIR, 179 FEET EAST OF THE SOUTHEAST
GC0454'LEG OF CITY POLICE RADIO TOWER, ON THE EAST EDGE OF THE RESERVOIR,
GC0454'103.8 FEET NORTHEAST OF THE NORTHEAST CORNER OF A BRICK VALVE
GC0454'HOUSE, 76.5 FEET EAST OF THE EAST CORNER OF THE NORTHERN MOST
GC0454'VENTILATOR, 54.5 FEET NORTHEAST OF THE NORTH CORNER OF A VENTILATOR,
GC0454'AND SET IN THE TOP OF A CONCRETE POST PROJECTING 3 INCHES.
GC0454
GC0454 STATION RECOVERY (1959)
GC0454
GC0454'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1959 (CAA)
GC0454'THE STATION MARK, REFERENCE MARK NO. 1 AND REFERENCE MARK NO. 2 WERE
GC0454'RECOVERED AND FOUND IN GOOD CONDITION. A DISCREPANCY WAS
GC0454'FOUND IN THE DIRECTIONS OF BOTH THE REFERENCE MARKS.
GC0454'
GC0454'FOLLOWING IS A NEW AND COMPLETE DESCRIPTION-
GC0454'
GC0454'THE STATION IS LOCATED ON CITY PROPERTY AT THE TOP OF A PROMINENT
GC0454'HILL KNOWN AS LOVE CIRCLE RESERVOIR BESIDE A LARGE CONCRETE AND
GC0454'EARTH COVERED WATER RESERVOIR. IT IS ABOUT 5 MILES SOUTHWEST OF THE
GC0454'TENNESSEE STATE CAPITOL BUILDING AND 1 MILE WEST OF VANDERBILT
GC0454'UNIVERSITY. IT IS 103.8 FEET EAST OF THE NORTHEAST CORNER OF A SMALL
GC0454'BRICK VALVE HOUSE, 76.5 FEET SOUTHEAST OF THE MOST NORTHERLY
GC0454'VENTILATOR AND 54.5 FEET EAST OF THE MOST SOUTHERLY VENTILATOR. THE
GC0454'SURFACE AND UNDERGROUND MARKS ARE STANDARD DISKS SET IN CONCRETE.
GC0454'THE SURFACE MARK IS FLUSH WITH THE
GC0454'SURROUNDING SURFACE AND THE DISK IS STAMPED LOVE 1933.
GC0454'
GC0454'REFERENCE MARK NO. 1 IS 21.4 FEET NORTHEAST OF THE RETAINING WALL
GC0454'AROUND THE RESERVOIR, JUST OUTSIDE OF THE OUTSIDE EDGE OF LOVE CIRCLE
GC0454'DRIVE AND ABOUT 23 FEET BELOW THE ELEVATION OF THE STATION. IT IS A
GC0454'STANDARD REFERENCE MARK DISK SET IN THE TOP OF A CONCRETE MONUMENT
GC0454'FLUSH WITH THE SURROUNDING SURFACE AND THE DISK IS STAMPED LOVE NO 1
GC0454'1933.
GC0454'
GC0454'REFERENCE MARK NO. 2 IS 21.4 FEET EAST OF THE RETAININING WALL AROUND
GC0454'THE RESERVOIR, JUST OUTSIDE OF THE OUTSIDE EDGE OF LOVE CIRCLE
GC0454'DRIVE AND ABOUT 36 FEET BELOW THE ELEVATION OF THE STATION. IT IS A
GC0454'STANDARD REFERENCE MARK DISK SET IN THE TOP OF A CONCRETE MONUMENT
GC0454'PROJECTING 2 INCHES ABOVE THE SURROUNDING SURFACE AND THE DISK IS
GC0454'STAMPED LOVE NO 2 1933.
GC0454'
GC0454'A TRAVERSE CONNECTION WAS MADE TO THE NASHVILLE CITY POLICE RADIO
GC0454'TOWER ON THE WEST SIDE OF THE RESERVOIR, DISTANCE BEING 202.42
GC0454'FEET, (61.698 METERS) WEST-SOUTHWEST OF LOVE 1933.
GC0454
GC0454 STATION RECOVERY (1963)
GC0454
GC0454'RECOVERY NOTE BY TN HIGHWAY DEPT 1963 (JAG)
GC0454'THE STATION WAS RECOVERED AND FOUND IN GOOD CONDITION AS DESCRIBED IN
GC0454'1959 AND THE 1959 DESCRIPTION IS COMPLETELY ADEQUATE. ALL
GC0454'OBSERVATIONS WERE MADE FROM A 64 FOOT STEEL TOWER.
1 National Geodetic Survey, Retrieval Date = FEBRUARY 22, 2017
GC1920 **
GC1920 DESIGNATION - MANLY

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GC1920  PID         -  GC1920
GC1920  STATE/COUNTY-  TN/WILLIAMSON
GC1920  COUNTRY     -  US
GC1920  USGS QUAD   -  BELLEVUE (1983)
GC1920
GC1920                        *CURRENT SURVEY CONTROL
GC1920  ______________________________________________________________________
GC1920* NAD 83(1995) POSITION- 36 00 40.11793(N) 086 53 18.73660(W)   ADJUSTED
GC1920* NAVD 88 ORTHO HEIGHT -   182.098 (meters)      597.43  (feet) ADJUSTED
GC1920  ______________________________________________________________________
GC1920  GEOID HEIGHT    -        -28.970 (meters)                    GEOID12B
GC1920  LAPLACE CORR    -          0.39  (seconds)                   DEFLEC12B
GC1920  DYNAMIC HEIGHT  -        181.938 (meters)      596.91  (feet) COMP
GC1920  MODELED GRAVITY -    979,751.5   (mgal)                      NAVD 88
GC1920
GC1920  HORZ ORDER      -  SECOND
GC1920  VERT ORDER      -  SECOND    CLASS 0
GC1920
GC1920.The horizontal coordinates were established by classical geodetic methods
GC1920.and adjusted by the National Geodetic Survey in April 1999.
GC1920.
GC1920.The orthometric height was determined by differential leveling and
GC1920.adjusted by the NATIONAL GEODETIC SURVEY
GC1920.in June 1991.
GC1920
GC1920.Significant digits in the geoid height do not necessarily reflect accuracy.
GC1920.GEOID12B height accuracy estimate available here.
GC1920
GC1920.The Laplace correction was computed from DEFLEC12B derived deflections.
GC1920
GC1920.The dynamic height is computed by dividing the NAVD 88
GC1920.geopotential number by the normal gravity value computed on the
GC1920.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
GC1920.degrees latitude (g = 980.6199 gals.).
GC1920
GC1920.The modeled gravity was interpolated from observed gravity values.
GC1920
GC1920. The following values were computed from the NAD 83(1995) position.
GC1920
GC1920;                    North         East     Units Scale Factor Converg.
GC1920;SPC TN       -   186,515.503   519,902.267   MT  0.99995316   -0 31 12.7
GC1920;SPC TN       -   611,926.28  1,705,712.69   sFT  0.99995316   -0 31 12.7
GC1920;UTM  16      - 3,985,190.217   510,044.398   MT  0.99960124   +0 03 55.9
GC1920
GC1920!             -  Elev Factor  x  Scale Factor =   Combined Factor
GC1920!SPC TN       -   0.99997597  x   0.99995316  =   0.99992913
GC1920!UTM  16      -   0.99997597  x   0.99960124  =   0.99957722
GC1920
GC1920:                Primary Azimuth Mark                     Grid Az
GC1920:SPC TN       -  MANLY AZ MK                              161 56 25.2
GC1920:UTM  16      -  MANLY AZ MK                              161 21 16.6
GC1920
GC1920_U.S. NATIONAL GRID SPATIAL ADDRESS: 16SEE1004485190(NAD 83)
GC1920
GC1920|----------------------------------------------------------------------|
GC1920| PID    Reference Object                    Distance      Geod. Az  |
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GC1920|                                                                 dddmmss.s |
GC1920| GC1918 MANLY AZ MK                                              1612512.5 |
GC1920| GC1919 MANLY RM 1                          11.807 METERS 17154     |
GC1920| GC1921 MANLY RM 2                          12.232 METERS 35211     |
GC1920|-------------------------------------------------------------------------|
GC1920
GC1920                          SUPERSEDED SURVEY CONTROL
GC1920
GC1920  NAD 83(1993)-  36 00 40.12061(N)    086 53 18.73852(W) AD(       ) 2
GC1920  NAD 83(1990)-  36 00 40.12090(N)    086 53 18.73876(W) AD(       ) 2
GC1920  NAD 83(1986)-  36 00 40.12865(N)    086 53 18.74008(W) AD(       ) 2
GC1920  NAD 27      -  36 00 39.90490(N)    086 53 18.73100(W) AD(       ) 2
GC1920  NGVD 29 (??/??/92)  182.107  (m)          597.46   (f) ADJ UNCH    2 0
GC1920  NGVD 29             182.11   (m)          597.5    (f) LEVELING    3
GC1920
GC1920.Superseded values are not recommended for survey control.
GC1920
GC1920.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
GC1920.See file dsdata.txt to determine how the superseded data were derived.
GC1920
GC1920_MARKER: DD = SURVEY DISK
GC1920_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
GC1920
GC1920  HISTORY     - Date     Condition        Report By
GC1920  HISTORY     - 1963     MONUMENTED       TNHD
GC1920
GC1920                          STATION DESCRIPTION
GC1920
GC1920'DESCRIBED BY TN HIGHWAY DEPT 1963 (JAG)
GC1920'THE STATION IS LOCATED ABOUT 6 MILES NORTH OF FRANKLIN AND ON EAST
GC1920'SIDE OF U.S. HIGHWAY 431.
GC1920'
GC1920'TO REACH THE STATION FROM THE POST OFFICE IN FRANKLIN AND JUNCTION OF
GC1920'U.S. HIGHWAY 31 AND 431, GO NORTH ON U.S.  HIGHWAY 431 FOR
GC1920'6.0 MILES TO THE AZIMUTH MARK ON THE RIGHT, CONTINUE ON U.S. HIGHWAY
GC1920'431 FOR 0.6 MILE TO MANLY ROAD ON RIGHT AND THE STATION.
GC1920'
GC1920'THE STATION IS 39 FEET EAST OF THE APPROXIMATE CENTER OF U.S. HIGHWAY
GC1920'431, 2.5 FEET WEST OF A WHITE WOODEN FENCE AND 2.1 FEET WEST OF A
GC1920'WITNESS POST.  THE SURFACE AND UNDERGROUND MARKS ARE STANDARD
GC1920'TENNESSEE HIGHWAY DEPARTMENT DISKS AND ARE STAMPED MANLY 1963.  THE
GC1920'UNDERGROUND MARK IS ABOUT 30 INCHES BELOW THE SURFACE.  THE SURFACE
GC1920'DISK IS SET IN A 10-INCH SQUARE, FLUSH, CONCRETE MONUMENT.
GC1920'
GC1920'REFERENCE MARK NO. 1 IS 38 FEET EAST OF THE APPROXIMATE CENTER OF
GC1920'U.S. HIGHWAY 431, 21 FEET NORTH OF THE APPROXIMATE CENTER OF
GC1920'MANLY ROAD, 7 FEET NORTH OF A 30-INCH WALNUT TREE AND 2 FEET WEST OF
GC1920'A WHITE WOODEN FENCE.  IT IS A STANDARD TENNESSEE HIGHWAY
GC1920'DEPARTMENT DISK SET IN A 10-INCH SQUARE, FLUSH, CONCRETE MONUMENT AND
GC1920'THE DISK IS STAMPED MANLY RM-1 1963.
GC1920'
GC1920'REFERENCE MARK NO. 2 IS 39 FEET EAST OF THE APPROXIMATE CENTER U.S.
GC1920'HIGHWAY 431 AND 1.9 FEET WEST OF A WHITE WOODEN FENCE.  IT IS A
GC1920'STANDARD TENNESSEE HIGHWAY DEPARTMENT DISK SET IN A 10-INCH SQUARE,
GC1920'FLUSH, CONCRETE MONUMENT AND THE DISK IS STAMPED MANLY RM-2 1963.
GC1920'
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 GC1920'THE AZIMUTH MARK IS 30 FEET EAST OF THE APPROXIMATE CENTER U.S.
 GC1920'HIGHWAY 431, 37 FEET NORTH OF THE APPROXIMATE CENTER OF HARPETH
 GC1920'HILLS ROAD, 2.6 FEET WEST OF UTILITY POLE NO. 185-1/2 AND 1.7 FEET
 GC1920'WEST OF A WITNESS POST.  IT IS A STANDARD TENNESSEE HIGHWAY
 GC1920'DEPARTMENT DISK SET IN A 10-INCH SQUARE CONCRETE MONUMENT AND THE
 GC1920'DISK IS STAMPED MANLY AZI 1963.
 GC1920'
 GC1920'ALL OBSERVATIONS WERE MADE FROM A 4 FOOT STAND.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 GA2087 ***********************************************************************
 GA2087  DESIGNATION -  MOHAWK
 GA2087  PID         -  GA2087
 GA2087  STATE/COUNTY-  TN/GREENE
 GA2087  COUNTRY     -  US
 GA2087  USGS QUAD   -  MOHAWK (1980)
 GA2087
 GA2087                        *CURRENT SURVEY CONTROL
 GA2087  ______________________________________________________________________
 GA2087* NAD 83(1995) POSITION- 36 12 33.21468(N) 083 03 27.81905(W)   ADJUSTED
 GA2087* NAVD 88 ORTHO HEIGHT -   356.257 (meters)     1168.82  (feet) ADJUSTED
 GA2087  ______________________________________________________________________
 GA2087  GEOID HEIGHT    -        -31.299 (meters)                    GEOID12B
 GA2087  LAPLACE CORR    -         -0.92  (seconds)                   DEFLEC12B
 GA2087  DYNAMIC HEIGHT  -        355.929 (meters)     1167.74  (feet) COMP
 GA2087  MODELED GRAVITY -    979,700.3   (mgal)                      NAVD 88
 GA2087
 GA2087  HORZ ORDER      -  SECOND
 GA2087  VERT ORDER      -  SECOND    CLASS 0
 GA2087
 GA2087.The horizontal coordinates were established by classical geodetic methods
 GA2087.and adjusted by the National Geodetic Survey in April 1999.
 GA2087.
 GA2087.The orthometric height was determined by differential leveling and
 GA2087.adjusted by the NATIONAL GEODETIC SURVEY
 GA2087.in June 1991.
 GA2087
 GA2087.Significant digits in the geoid height do not necessarily reflect accuracy.
 GA2087.GEOID12B height accuracy estimate available here.
 GA2087
 GA2087.The Laplace correction was computed from DEFLEC12B derived deflections.
 GA2087
 GA2087.The dynamic height is computed by dividing the NAVD 88
 GA2087.geopotential number by the normal gravity value computed on the
 GA2087.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 GA2087.degrees latitude (g = 980.6199 gals.).
 GA2087
 GA2087.The modeled gravity was interpolated from observed gravity values.
 GA2087
 GA2087. The following values were computed from the NAD 83(1995) position.
 GA2087
 GA2087;                    North         East     Units Scale Factor Converg.
 GA2087;SPC TN       -   212,107.225   864,535.775   MT  0.99996978   +1 43 21.1
 GA2087;SPC TN       -   695,888.45  2,836,397.79   sFT  0.99996978   +1 43 21.1
 GA2087;UTM  17      - 4,009,117.839   315,020.910   MT  1.00002162   -1 12 57.3
 GA2087
 GA2087!             -  Elev Factor  x  Scale Factor =   Combined Factor
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GA2087!SPC TN       -   0.99994900  x   0.99996978  =   0.99991878
GA2087!UTM  17      -   0.99994900  x   1.00002162  =   0.99997062
GA2087
GA2087:                Primary Azimuth Mark                    Grid Az
GA2087:SPC TN       -  RED                                     255 24 44.1
GA2087:UTM  17      -  RED                                     258 21 02.5
GA2087
GA2087_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SLA1502009117(NAD 83)
GA2087
GA2087|---------------------------------------------------------------------|
GA2087| PID    Reference Object                    Distance      Geod. Az  |
GA2087|                                                          dddmmss.s |
GA2087| GA2085 MOHAWK AZ MK                                      1783500.8 |
GA2087| GA2086 MOHAWK RM 1                        7.099 METERS 20419     |
GA2087| GA2076 RED                               APPROX. 5.9 KM 2570805.2 |
GA2087| GA2088 MOHAWK RM 2                        7.993 METERS 31325     |
GA2087|---------------------------------------------------------------------|
GA2087
GA2087                          SUPERSEDED SURVEY CONTROL
GA2087
GA2087  NAD 83(1993)-  36 12 33.21875(N)    083 03 27.82310(W) AD(       ) 2
GA2087  NAD 83(1993)-  36 12 33.22641(N)    083 03 27.82699(W) AD(       ) 2
GA2087  NAD 83(1990)-  36 12 33.22024(N)    083 03 27.82209(W) AD(       ) 2
GA2087  NAD 83(1986)-  36 12 33.22310(N)    083 03 27.82243(W) AD(       ) 2
GA2087  NAD 27      -  36 12 32.87170(N)    083 03 28.24400(W) AD(       ) 2
GA2087  NGVD 29 (??/??/92)  356.420  (m)         1169.35   (f) ADJ UNCH    2 0
GA2087  NGVD 29             356.42   (m)         1169.4    (f) LEVELING    3
GA2087
GA2087.Superseded values are not recommended for survey control.
GA2087
GA2087.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
GA2087.See file dsdata.txt to determine how the superseded data were derived.
GA2087
GA2087_MARKER: DE = TRAVERSE STATION DISK
GA2087_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
GA2087_STAMPING: MOHAWK 1961
GA2087_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
GA2087+STABILITY: SURFACE MOTION
GA2087
GA2087  HISTORY     - Date     Condition        Report By
GA2087  HISTORY     - 1961     MONUMENTED       CGS
GA2087  HISTORY     - 1961     GOOD             CGS
GA2087  HISTORY     - 1980     GOOD             NGS
GA2087  HISTORY     - 1980     GOOD             NGS
GA2087
GA2087                           STATION DESCRIPTION
GA2087
GA2087'DESCRIBED BY COAST AND GEODETIC SURVEY 1961 (ELH)
GA2087'STATION IS LOCATED ABOUT 1 MILE NORTH OF MOHAWK, 2 MILES SOUTHWEST OF
GA2087'MOHAWK CROSSROAD ON THE
GA2087'EAST SIDE OF A BLACK TOP ROAD.
GA2087'
GA2087'TO REACH FROM THE POST OFFICE IN MOHAWK, GO EAST FOR 0.05 MILE TO A
GA2087'T JUNCTION, JUST
GA2087'AFTER CROSSING RAILROAD TRACK, TURN LEFT AND FOLLOW
GA2087'BLACK TOP ROAD NORTHERLY FOR 0.45
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GA2087'MILE TO THE AZIMUTH MARK ON THE
GA2087'LEFT, CONTINUE NORTHERLY ON BLACK TOP ROAD FOR 0.15
GA2087'MILE TO THE
GA2087'STATION ON THE RIGHT.
GA2087'
GA2087'STATION IS 35 FEET EAST OF THE CENTER OF BLACK TOP ROAD, 15 FEET EAST
GA2087'OF SOUTHWEST CORNER
GA2087'POST OF BARN LOT, 4.4 FEET WEST OF TRANSFORMER POWER
GA2087'POLE AND 3 FEET SOUTH OF BARN LOT
GA2087'FENCE.  MARK IS A STANDARD TRAVERSE
GA2087'DISK SET IN THE TOP OF A SQUARE CONCRETE MONUMENT
GA2087'AND IS STAMPED
GA2087'MOHAWK 1961.  IT PROJECTS 5 INCHES.
GA2087'
GA2087'REFERENCE MARK NO. 1 IS 26 FEET SOUTHWEST OF TRANSFORMER POWER POLE,
GA2087'22 FEET EAST OF CENTER OF
GA2087'BLACK TOP ROAD AND 21 FEET SOUTH OF SOUTHWEST
GA2087'CORNER POST OF BARN LOT.  IT IS A
GA2087'STANDARD DISK SET IN THE TOP OF A
GA2087'SQUARE CONCRETE MONUMENT AND IS STAMPED MOHAWK NO 1
GA2087'1961.  IT
GA2087'PROJECTS 1 INCH.
GA2087'
GA2087'REFERENCE MARK NO. 2 IS 28 FEET NORTHWEST OF TRANSFORMER POWER POLE,
GA2087'22 FEET EAST OF CENTER OF
GA2087'BLACK TOP ROAD AND 19.5 FEET NORTH OF SOUTHWEST
GA2087'CORNER POST OF BARN LOT.  IT IS A
GA2087'STANDARD DISK SET IN THE TOP OF A
GA2087'SQUARE CONCRETE MONUMENT AND IS STAMPED MOHAWK NO 2
GA2087'1961.  IT
GA2087'PROJECTS 2 INCHES.
GA2087'
GA2087'AZIMUTH MARK IS 23 FEET SOUTHWEST OF THE CENTER OF BLACK TOP ROAD, 8
GA2087'FEET SOUTHEAST OF THE
GA2087'NORTHEAST CORNER POST OF THE YARD OF PAUL RILEY AND
GA2087'4 FEET SOUTHWEST OF TWIN 16-INCH
GA2087'OAK TREES.  IT IS A STANDARD DISK
GA2087'SET IN THE TOP OF A SQUARE CONCRETE POST AND IS
GA2087'STAMPED MOHAWK 1961.
GA2087'IT PROJECTS 3 INCHES.
GA2087
GA2087                          STATION RECOVERY (1961)
GA2087
GA2087'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1961
GA2087'0.6 MI N FROM MOHAWK.
GA2087'TO REACH FROM THE POST OFFICE IN MOHAWK, GO EAST FOR 0.05 MILE TO
GA2087'A T JUNCTION, THEN GO 0.6 MILE NORTH ON A PAVED ROAD TO THE CREST
GA2087'OF A SMALL HILL TO A HOUSE ON THE LEFT AND STATION ON THE RIGHT.
GA2087'THE STATION MARK IS 35 FT. EAST OF THE CENTER OF BLACK TOP
GA2087'ROAD, 15 FT. EAST OF SOUTHWEST CORNER POST OF BARN LOT, 4.4 FT.
GA2087'WEST OF A POWER LINE POLE WITH TRANSFORMER AND 3 FT. SOUTH
GA2087'OF BARN LOT FENCE.  THE DISK IS SET IN TOP OF A CONCRETE POST
GA2087'PROJECTING 5 INCHES AND IS ABOUT 5 FT. ABOVE THE LEVEL OF THE
GA2087'ROAD.
GA2087
GA2087                          STATION RECOVERY (1980)
GA2087
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 GA2087'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1980 (CLN)
 GA2087'THE STATION MARK, REFERENCE MARK 2 AND THE AZIMUTH MARK WERE FOUND
 GA2087'IN GOOD CONDITION.  REFERENCE MARK 1 WAS FOUND DESTROYED BY
 GA2087'GRADING.  THE DIRECTION TO REFERENCE MARK 2 WAS FOUND TO BE IN ERROR
 GA2087'BY 6 MINUTES AND 19 SECONDS BUT THE DISTANCE WAS FOUND TO BE
 GA2087'ACCURATE.  REFERENCE MARK 3 WAS SET.  A NEW DESCRIPTION FOLLOWS.
 GA2087'
 GA2087'THE STATION IS LOCATED ABOUT 1 MILE NORTH OF MOHAWK, ABOUT 2 MILES
 GA2087'SOUTHWEST OF MOHAWK CROSSROADS, ON THE PROPERTY OF GLENN BARNARD JR,
 GA2087'ROUTE NO 2, MOHAWK, TENN., 38 FEET SOUTHEAST OF THE SOUTHEAST CORNER
 GA2087'OF A CONCRETE BLOCK WELL HOUSE, 74 FEET NORTHWEST OF THE NORTHWEST
 GA2087'CORNER OF THE CARPORT OF HOUSE, 5 FEET WEST OF POWER POLE C 61 E 98,
 GA2087'1 FOOT SOUTH OF A METAL WITNESS POST, 17 FEET EAST OF FENCE CORNER
 GA2087'AND 36 FEET OF THE CENTERLINE OF A PAVED ROAD.  THE MONUMENT PROJECTS
 GA2087'4 INCHES AND THE DISK IS STAMPED---MOHAWK 1961---.
 GA2087'
 GA2087'REFERENCE MARK 2 IS 20 FEET NORTH OF THE FENCE CORNER, 28 FEET
 GA2087'NORTHWEST OF THE POWER POLE, 22 FEET EAST OF THE CENTERLINE OF THE
 GA2087'ROAD AND 14 FEET SOUTH OF THE SOUTHWEST CORNER OF THE WELL HOUSE.  THE
 GA2087'MONUMENT PROJECTS 2 INCHES AND THE DISK IS STAMPED---MOHAWK NO 2
 GA2087'1961---.
 GA2087'
 GA2087'REFERENCE MARK 3 IS 24 FEET SOUTHWEST OF THE POWER POLE, 19 FEET
 GA2087'SOUTH OF THE FENCE CORNER, 23 FEET EAST OF THE CENTERLINE OF THE
 GA2087'ROAD AND 85 FEET NORTH OF THE CENTERLINE OF A DRIVEWAY.  THE MONUMENT
 GA2087'PROJECTS 2 INCHES AND THE DISK IS STAMPED---MOHAWK 1961 NO 3 1980---.
 GA2087'
 GA2087'THE AZIMUTH MARK IS 37 FEET SOUTHEAST OF THE SOUTHEAST CORNER OF THE
 GA2087'PORCH OF FRAME HOUSE, 14 FEET SOUTH OF THE CENTERLINE OF A DRIVEWAY,
 GA2087'24 FEET WEST OF THE CENTERLINE OF THE ROAD AND 16 FEET EAST OF
 GA2087'TELEPHONE POLE NO. 39.  THE MONUMENT PROJECTS 4 INCHES AND THE DISK
 GA2087'IS STAMPED---MOHAWK 1961---.
 GA2087'
 GA2087'TO REACH THE STATION FROM THE POST OFFICE AT MOHAWK, GO EAST FOR
 GA2087'0.05 MILE TO A T ROAD JUST AFTER CROSSING RAILROAD TRACKS.  TURN
 GA2087'LEFT AND FOLLOW PAVED ROAD NORTHERLY FOR 0.45 MILE TO THE AZIMUTH
 GA2087'MARK ON THE LEFT.  CONTINUE NORTH ON THE PAVED ROAD FOR 0.15 MILE
 GA2087'TO THE STATION ON THE RIGHT.
 GA2087
 GA2087                          STATION RECOVERY (1980)
 GA2087
 GA2087'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1980
 GA2087'IT IS 38 FEET SOUTHEAST OF THE SOUTHEAST CORNER OF A CONCRETE BLOCK
 GA2087'WELL HOUSE 74 FEET NORTHWEST OF THE NORTHWEST CORNER OF A CARPORT OF
 GA2087'A HOUSE AND 1 FEET SOUTH OF A METAL WITNESS POST.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 FB4079 ***********************************************************************
 FB4079  CBN         -  This is a Cooperative Base Network Control Station.
 FB4079  DESIGNATION -  NEWFOUND
 FB4079  PID         -  FB4079
 FB4079  STATE/COUNTY-  NC/SWAIN
 FB4079  COUNTRY     -  US
 FB4079  USGS QUAD   -  CLINGMANS DOME (1964)
 FB4079
 FB4079                         *CURRENT SURVEY CONTROL
 FB4079 _______________________________________________________________________
 FB4079* NAD 83(2011) POSITION- 35 36 38.39822(N) 083 25 31.17700(W)   ADJUSTED
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FB4079* NAD 83(2011) ELLIP HT-  1508.101 (meters)        (06/27/12)   ADJUSTED
FB4079* NAD 83(2011) EPOCH   -  2010.00
FB4079* NAVD 88 ORTHO HEIGHT -  1536.769 (meters)     5041.88  (feet) ADJUSTED
FB4079  ____________________________________________________________________
FB4079  GEOID HEIGHT    -        -28.619 (meters)                     GEOID12B
FB4079  NAD 83(2011) X  -    594,530.732 (meters)                     COMP
FB4079  NAD 83(2011) Y  - -5,158,348.883 (meters)                     COMP
FB4079  NAD 83(2011) Z  -  3,694,035.331 (meters)                     COMP
FB4079  LAPLACE CORR    -         -0.04  (seconds)                    DEFLEC12B
FB4079  DYNAMIC HEIGHT  -       1534.982 (meters)     5036.02  (feet) COMP
FB4079  MODELED GRAVITY -    979,414.2   (mgal)                       NAVD 88
FB4079
FB4079  VERT ORDER      -  SECOND    CLASS II
FB4079
FB4079  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
FB4079  Standards:
FB4079         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
FB4079            Horiz  Ellip           SD_N   SD_E   SD_h      (unitless)
FB4079  ------------------------------------------------------------------
FB4079  NETWORK    0.39   0.90           0.16   0.16   0.46     -0.06170467
FB4079  ------------------------------------------------------------------
FB4079  Click here for local accuracies and other accuracy information.
FB4079
FB4079
FB4079.The horizontal coordinates were established by GPS observations
FB4079.and adjusted by the National Geodetic Survey in June 2012.
FB4079
FB4079.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
FB4079.been affixed to the stable North American tectonic plate. See
FB4079.NA2011 for more information.
FB4079
FB4079.The horizontal coordinates are valid at the epoch date displayed above
FB4079.which is a decimal equivalence of Year/Month/Day.
FB4079
FB4079.The orthometric height was determined by differential leveling and
FB4079.adjusted by the NATIONAL GEODETIC SURVEY
FB4079.in January 2005.
FB4079
FB4079.No vertical observational check was made to the station.
FB4079
FB4079.Significant digits in the geoid height do not necessarily reflect accuracy.
FB4079.GEOID12B height accuracy estimate available here.
FB4079
FB4079.Photographs are available for this station.
FB4079
FB4079.The X, Y, and Z were computed from the position and the ellipsoidal ht.
FB4079
FB4079.The Laplace correction was computed from DEFLEC12B derived deflections.
FB4079
FB4079.The ellipsoidal height was determined by GPS observations
FB4079.and is referenced to NAD 83.
FB4079
FB4079.The dynamic height is computed by dividing the NAVD 88
FB4079.geopotential number by the normal gravity value computed on the
FB4079.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
FB4079.degrees latitude (g = 980.6199 gals.).
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FB4079
FB4079.The modeled gravity was interpolated from observed gravity values.
FB4079
FB4079. The following values were computed from the NAD 83(2011) position.
FB4079
FB4079;                    North         East     Units Scale Factor Converg.
FB4079;SPC NC       -   215,340.018   208,821.469   MT  0.99989215   -2 33 15.0
FB4079;SPC NC       -   706,494.71    685,108.44   sFT  0.99989215   -2 33 15.0
FB4079;SPC TN       -   144,787.074   833,240.502   MT  0.99995596   +1 30 26.3
FB4079;SPC TN       -   475,022.26  2,733,723.21   sFT  0.99995596   +1 30 26.3
FB4079;UTM  17      - 3,943,475.282   280,320.389   MT  1.00019473   -1 24 46.0
FB4079
FB4079!             -  Elev Factor  x  Scale Factor =   Combined Factor
FB4079!SPC NC       -   0.99976335  x   0.99989215  =   0.99965553
FB4079!SPC TN       -   0.99976335  x   0.99995596  =   0.99971932
FB4079!UTM  17      -   0.99976335  x   1.00019473  =   0.99995803
FB4079
FB4079_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SKV8032043475(NAD 83)
FB4079
FB4079                           SUPERSEDED SURVEY CONTROL
FB4079
FB4079  NAD 83(2007)-  35 36 38.39832(N)    083 25 31.17764(W) AD(2002.00) 0
FB4079  ELLIP H (02/10/07) 1508.128  (m)                       GP(2002.00)
FB4079  NAD 83(2001)-  35 36 38.39822(N)    083 25 31.17775(W) AD(       ) B
FB4079  ELLIP H (01/30/03) 1508.124  (m)                       GP(       ) 4 2
FB4079  NAD 83(1995)-  35 36 38.39829(N)    083 25 31.17751(W) AD(       ) B
FB4079  ELLIP H (09/11/96) 1508.124  (m)                       GP(       ) 4 1
FB4079  NAD 83(1986)-  35 36 38.40216(N)    083 25 31.18659(W) AD(       ) 1
FB4079  ELLIP H (05/28/93) 1508.019  (m)                       GP(       ) 4 2
FB4079  NAVD 88            1536.77   (m)         5041.9    (f) LEVELING    3
FB4079  NAVD 88 (06/02/98) 1536.8    (m)  GEOID96 model used   GPS OBS
FB4079  NAVD 88 (09/11/96) 1536.9    (m)  GEOID93 model used   GPS OBS
FB4079  NGVD 29 (05/28/93) 1536.7    (m)  GEOID90 model used   GPS OBS
FB4079
FB4079.Superseded values are not recommended for survey control.
FB4079
FB4079.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
FB4079.See file dsdata.txt to determine how the superseded data were derived.
FB4079
FB4079_MARKER: DH = HORIZONTAL CONTROL DISK
FB4079_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
FB4079_STAMPING: NEWFOUND 1990
FB4079_MARK LOGO: NCGS
FB4079_MAGNETIC: T = STEEL SPIKE ADJACENT TO MONUMENT
FB4079_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
FB4079+STABILITY: SURFACE MOTION
FB4079_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
FB4079+SATELLITE: SATELLITE OBSERVATIONS - September 27, 2008
FB4079
FB4079  HISTORY     - Date     Condition        Report By
FB4079  HISTORY     - 1990     MONUMENTED       NCGS
FB4079  HISTORY     - 19950201 GOOD             NCGS
FB4079  HISTORY     - 20010619 GOOD             NCGS
FB4079  HISTORY     - 20040216 GOOD             NCGS
FB4079  HISTORY     - 20080316 GOOD             USPSQD
FB4079  HISTORY     - 20080927 GOOD             GEOCAC
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 FB4079
 FB4079                          STATION DESCRIPTION
 FB4079
 FB4079'DESCRIBED BY NORTH CAROLINA GEODETIC SURVEY 1990
 FB4079'STATION IS LOCATED APPROXIMATELY 12.7 MI (20.4 KM)  NORTH OF BRYSON
 FB4079'CITY, IN THE GREAT SMOKEY MOUNTAINS NATIONAL PARK AT NEWFOUND GAP.
 FB4079'ALONG US 441 FOR 16.3 MI (26.2 KM)  NORTHWEST FROM THE BLUE RIDGE
 FB4079'PARKWAY INTERSECTION (NEAR CHEROKEE) TO NEWFOUND GAP, AT NORTHEAST
 FB4079'END OF PARKING LOT OVERLOOK, NEAR EXHIBIT SIGN.
 FB4079'MARK IS ABOUT 2 FEET LOWER THAN THE PARKING LOT AND FLUSH WITH THE
 FB4079'GROUND SURFACE. LOCATED 98.0 FT (29.9 M)  SOUTHWEST OF NORTHEAST END
 FB4079'OF STONE WALL, 9.0 FT (2.7 M)  SOUTHEAST OF STONE WALL FACE, 51.1 FT
 FB4079'(15.6 M)  NORTHEAST OF AN 8 IN MAPLE, AND 106.4 FT (32.4 M) SOUTHEAST
 FB4079'OF A ROCK BASE WATER FOUNTAIN.
 FB4079
 FB4079                          STATION RECOVERY (1995)
 FB4079
 FB4079'RECOVERY NOTE BY NORTH CAROLINA GEODETIC SURVEY 1995 (PAC)
 FB4079'RECOVERED AS DESCRIBED.
 FB4079
 FB4079                          STATION RECOVERY (2001)
 FB4079
 FB4079'RECOVERY NOTE BY NORTH CAROLINA GEODETIC SURVEY 2001 (MDB)
 FB4079'RECOVERED AS DESCRIBED.
 FB4079
 FB4079                          STATION RECOVERY (2004)
 FB4079
 FB4079'RECOVERY NOTE BY NORTH CAROLINA GEODETIC SURVEY 2004 (MDB)
 FB4079'RECOVERED AS DESCRIBED.
 FB4079
 FB4079                          STATION RECOVERY (2008)
 FB4079
 FB4079'RECOVERY NOTE BY US POWER SQUADRON 2008 (CSB)
 FB4079'RECOVERED IN GOOD CONDITION.
 FB4079
 FB4079                          STATION RECOVERY (2008)
 FB4079
 FB4079'RECOVERY NOTE BY GEOCACHING 2008 (MPS)
 FB4079'RECOVERED IN GOOD CONDITION AS PER DESCRIPTION.
 FB4079'
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 FC0259 ***********************************************************************
 FC0259  DESIGNATION -  OAK
 FC0259  PID         -  FC0259
 FC0259  STATE/COUNTY-  TN/LOUDON
 FC0259  COUNTRY     -  US
 FC0259  USGS QUAD   -  LENOIR CITY (1986)
 FC0259
 FC0259                         *CURRENT SURVEY CONTROL
 FC0259 ______________________________________________________________________
 FC0259* NAD 83(1995) POSITION- 35 48 07.16143(N) 084 18 53.29041(W)   ADJUSTED
 FC0259* NAVD 88 ORTHO HEIGHT -   272.523 (meters)      894.10  (feet) ADJUSTED
 FC0259 ______________________________________________________________________
 FC0259  GEOID HEIGHT    -        -30.609 (meters)                    GEOID12B
 FC0259  LAPLACE CORR    -         -0.72  (seconds)                   DEFLEC12B
 FC0259  DYNAMIC HEIGHT  -        272.264 (meters)      893.25  (feet) COMP
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FC0259  MODELED GRAVITY -    979,675.0   (mgal)                        NAVD 88
FC0259
FC0259  HORZ ORDER      -  SECOND
FC0259  VERT ORDER      -  SECOND    CLASS 0
FC0259
FC0259.The horizontal coordinates were established by classical geodetic methods
FC0259.and adjusted by the National Geodetic Survey in April 1999.
FC0259.
FC0259.The orthometric height was determined by differential leveling and
FC0259.adjusted by the NATIONAL GEODETIC SURVEY
FC0259.in June 1991.
FC0259
FC0259.Significant digits in the geoid height do not necessarily reflect accuracy.
FC0259.GEOID12B height accuracy estimate available here.
FC0259
FC0259.The Laplace correction was computed from DEFLEC12B derived deflections.
FC0259
FC0259.The dynamic height is computed by dividing the NAVD 88
FC0259.geopotential number by the normal gravity value computed on the
FC0259.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
FC0259.degrees latitude (g = 980.6199 gals.).
FC0259
FC0259.The modeled gravity was interpolated from observed gravity values.
FC0259
FC0259. The following values were computed from the NAD 83(1995) position.
FC0259
FC0259;                     North         East     Units Scale Factor Converg.
FC0259;SPC TN       -   164,257.171   752,307.151   MT  0.99994856   +0 59 11.7
FC0259;SPC TN       -   538,900.40  2,468,194.38   sFT  0.99994856   +0 59 11.7
FC0259;UTM  16      - 3,965,314.057   742,642.242   MT  1.00032555   +1 34 17.6
FC0259
FC0259!             -  Elev Factor  x  Scale Factor =   Combined Factor
FC0259!SPC TN       -   0.99996203  x   0.99994856  =   0.99991059
FC0259!UTM  16      -   0.99996203  x   1.00032555  =   1.00028757
FC0259
FC0259:                Primary Azimuth Mark                    Grid Az
FC0259:SPC TN       -  OAK AZ MK                               262 52 54.2
FC0259:UTM  16      -  OAK AZ MK                               262 17 48.3
FC0259
FC0259_U.S. NATIONAL GRID SPATIAL ADDRESS: 16SGE4264265314(NAD 83)
FC0259
FC0259|-----------------------------------------------------------------------|
FC0259| PID    Reference Object                    Distance      Geod. Az   |
FC0259|                                                          dddmmss.s |
FC0259| FC0257 OAK RM 1                            15.194 METERS 03657     |
FC0259| FC0260 OAK AZ MK                                         2635205.9 |
FC0259| FC0258 OAK RM 2                             8.858 METERS 30129     |
FC0259|-----------------------------------------------------------------------|
FC0259
FC0259                          SUPERSEDED SURVEY CONTROL
FC0259
FC0259  NAD 83(1990)-  35 48 07.16866(N)    084 18 53.28947(W) AD(       ) 2
FC0259  NAD 83(1986)-  35 48 07.17423(N)    084 18 53.28767(W) AD(       ) 2
FC0259  NAD 27      -  35 48 06.89860(N)    084 18 53.56980(W) AD(       ) 2
FC0259  NGVD 29 (??/??/92)  272.635  (m)          894.47   (f) ADJ UNCH    2 0
FC0259  NGVD 29             272.64   (m)          894.5    (f) LEVELING    3
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FC0259
FC0259.Superseded values are not recommended for survey control.
FC0259
FC0259.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
FC0259.See file dsdata.txt to determine how the superseded data were derived.
FC0259
FC0259_MARKER: DE = TRAVERSE STATION DISK
FC0259_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
FC0259_STAMPING: OAK 1961
FC0259_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
FC0259+STABILITY: SURFACE MOTION
FC0259
FC0259  HISTORY     - Date     Condition        Report By
FC0259  HISTORY     - 1961     MONUMENTED       CGS
FC0259  HISTORY     - 1961     GOOD             CGS
FC0259
FC0259                          STATION DESCRIPTION
FC0259
FC0259'DESCRIBED BY COAST AND GEODETIC SURVEY 1961 (ELH)
FC0259'THE STATION IS LOCATED ABOUT 2-1/2 MILES WEST OF LENIOR CITY AND
FC0259'ABOUT 200 YARDS WEST OF THE OAK GROVE CHURCH.
FC0259'
FC0259'TO REACH THE STATION FROM THE EATON CROSSROAD AND EATON SCHOOL, ABOUT
FC0259'20 MILES WEST OF KNOXVILLE, GO SOUTH ON STATE HIGHWAY 95 FOR 1.6
FC0259'MILES TO A T ROAD RIGHT, TURN RIGHT, AND GO 1.8 MILES TO A CROSSROAD,
FC0259'TURN RIGHT, AND GO ABOUT 50 YARDS TO THE STATION ON THE RIGHT.
FC0259'
FC0259'STATION MARK IS 27 FEET SOUTH OF THE CENTER OF A GRAVELED ROAD AND 3
FC0259'FEET SOUTHWEST OF A WITNESS SIGN. THE MARK IS A STANDARD TRAVERSE
FC0259'DISK, FLUSH AND IS STAMPED OAK 1961.
FC0259'
FC0259'REFERENCE MARK NO. 1 IS 24 FEET NORTH OF THE CENTER OF A GRAVELED
FC0259'ROAD AND 1 FOOT NORTH OF A WIRE FENCE. THE MARK IS A STANDARD
FC0259'DISK, FLUSH AND IS STAMPED OAK NO. 1 1961.
FC0259'
FC0259'REFERENCE MARK NO. 2 IS 27 FEET SOUTH OF THE CENTER OF A GRAVELED
FC0259'ROAD. THE MARK IS A STANDARD DISK, FLUSH AND IS STAMPED OAK
FC0259'NO. 2 1961.
FC0259'
FC0259'AZIMUTH MARK IS 17 FEET SOUTH OF THE CENTER OF A GRAVELED ROAD, 2
FC0259'FEET WEST OF A WITNESS SIGN AND 1 FOOT SOUTH OF A WIRE FENCE.
FC0259'THE MARK IS A STANDARD DISK, FLUSH AND IS STAMPED OAK 1961.
FC0259'
FC0259'TO REACH THE AZIMUTH MARK FROM THE STATION, GO WEST FOR ABOUT 50
FC0259'YARDS TO A CROSSROAD, CONTINUE STRAIGHT AHEAD FOR 0.1 MILE TO A
FC0259'FORK, TAKE LEFT FORK, AND GO 0.15 MILE TO THE MARK ON THE LEFT.
FC0259'
FC0259'HEIGHT OF LIGHT ABOVE STATION MARK 1.6 METERS.
FC0259
FC0259                          STATION RECOVERY (1961)
FC0259
FC0259'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1961
FC0259'3.4 MI SW FROM EATON CROSSROADS.
FC0259'FROM THE JUNCTION OF U.S. HIGHWAY 70 AND STATE HIGHWAY 95 AT
FC0259'EATON SCHOOL, GO 1.65 MILE SOUTH ON STATE HIGHWAY 95, THEN
FC0259'1.75 MILE SOUTHWEST ON A PAVED ROAD TO A CROSSROADS AND OAK
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 FC0259'GROVE CHURCH ABOUT 0.1 MILE SOUTH OF THE PAVED ROAD, THEN GO
 FC0259'ABOUT 50 YARDS SOUTH ON THE GRAVELED ROAD TOWARDS THE CHURCH.
 FC0259'THE STATION MARK 27 FT. SOUTH OF THE CENTER OF THE GRAVELED
 FC0259'ROAD AND 3 FT. SOUTHWEST OF A WITNESS SIGN.  THE DISK IS SET
 FC0259'IN TOP OF A CONCRETE POST FLUSH WITH THE GROUND AND ABOUT 6 FT.
 FC0259'ABOVE THE LEVEL OF THE ROAD.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 GA0902 ***********************************************************************
 GA0902  CBN         -  This is a Cooperative Base Network Control Station.
 GA0902  DESIGNATION -  P 114
 GA0902  PID         -  GA0902
 GA0902  STATE/COUNTY-  TN/GREENE
 GA0902  COUNTRY     -  US
 GA0902  USGS QUAD   -  CEDAR CREEK (1980)
 GA0902
 GA0902                        *CURRENT SURVEY CONTROL
 GA0902  ______________________________________________________________________
 GA0902* NAD 83(2011) POSITION- 36 03 26.10910(N) 082 58 19.96172(W)   ADJUSTED
 GA0902* NAD 83(2011) ELLIP HT-   344.416 (meters)        (06/27/12)   ADJUSTED
 GA0902* NAD 83(2011) EPOCH   -  2010.00
 GA0902* NAVD 88 ORTHO HEIGHT -   375.525 (meters)     1232.03  (feet) ADJUSTED
 GA0902  ______________________________________________________________________
 GA0902  GEOID HEIGHT    -        -31.118 (meters)                     GEOID12B
 GA0902  NAD 83(2011) X  -    631,640.526 (meters)                     COMP
 GA0902  NAD 83(2011) Y  - -5,123,754.077 (meters)                     COMP
 GA0902  NAD 83(2011) Z  -  3,733,531.984 (meters)                     COMP
 GA0902  LAPLACE CORR    -         -0.94  (seconds)                    DEFLEC12B
 GA0902  DYNAMIC HEIGHT  -        375.166 (meters)     1230.86  (feet) COMP
 GA0902  MODELED GRAVITY -    979,667.0   (mgal)                       NAVD 88
 GA0902
 GA0902  VERT ORDER      -  SECOND    CLASS 0
 GA0902
 GA0902  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 GA0902  Standards:
 GA0902         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 GA0902            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 GA0902  ------------------------------------------------------------------
 GA0902  NETWORK    0.95   2.14           0.43   0.33   1.09     -0.20379109
 GA0902  ------------------------------------------------------------------
 GA0902  Click here for local accuracies and other accuracy information.
 GA0902
 GA0902
 GA0902.The horizontal coordinates were established by GPS observations
 GA0902.and adjusted by the National Geodetic Survey in June 2012.
 GA0902
 GA0902.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
 GA0902.been affixed to the stable North American tectonic plate. See
 GA0902.NA2011 for more information.
 GA0902
 GA0902.The horizontal coordinates are valid at the epoch date displayed above
 GA0902.which is a decimal equivalence of Year/Month/Day.
 GA0902
 GA0902.The orthometric height was determined by differential leveling and
 GA0902.adjusted by the NATIONAL GEODETIC SURVEY
 GA0902.in June 1991.
 GA0902
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GA0902.Significant digits in the geoid height do not necessarily reflect accuracy.
GA0902.GEOID12B height accuracy estimate available here.
GA0902
GA0902.The X, Y, and Z were computed from the position and the ellipsoidal ht.
GA0902
GA0902.The Laplace correction was computed from DEFLEC12B derived deflections.
GA0902
GA0902.The ellipsoidal height was determined by GPS observations
GA0902.and is referenced to NAD 83.
GA0902
GA0902.The dynamic height is computed by dividing the NAVD 88
GA0902.geopotential number by the normal gravity value computed on the
GA0902.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
GA0902.degrees latitude (g = 980.6199 gals.).
GA0902
GA0902.The modeled gravity was interpolated from observed gravity values.
GA0902
GA0902. The following values were computed from the NAD 83(2011) position.
GA0902
GA0902;                    North         East     Units Scale Factor Converg.
GA0902;SPC TN       -   195,487.204   872,743.582   MT  0.99995596   +1 46 21.3
GA0902;SPC TN       -   641,360.94  2,863,326.24   sFT  0.99995596   +1 46 21.3
GA0902;UTM  17      - 3,992,098.490   322,366.957   MT  0.99998880   -1 09 40.1
GA0902
GA0902!             -  Elev Factor  x  Scale Factor =   Combined Factor
GA0902!SPC TN       -   0.99994595  x   0.99995596  =   0.99990191
GA0902!UTM  17      -   0.99994595  x   0.99998880  =   0.99993475
GA0902
GA0902_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SLV2236692098(NAD 83)
GA0902
GA0902                           SUPERSEDED SURVEY CONTROL
GA0902
GA0902  NAD 83(2007)-  36 03 26.10897(N)    082 58 19.96249(W) AD(2002.00) A
GA0902  ELLIP H (10/16/11)  344.431  (m)                       GP(2002.00) 3 2
GA0902  NAD 83(2007)-  36 03 26.10940(N)    082 58 19.96222(W) AD(2002.00) 0
GA0902  ELLIP H (02/10/07)  344.444  (m)                       GP(2002.00)
GA0902  NAD 83(1995)-  36 03 26.10952(N)    082 58 19.96200(W) AD(       ) A
GA0902  ELLIP H (08/03/04)  344.430  (m)                       GP(       ) 4 1
GA0902  NAVD 88             375.53   (m)         1232.1    (f) LEVELING    3
GA0902  NGVD 29 (??/??/92)  375.676  (m)         1232.53   (f) ADJ UNCH    2 0
GA0902
GA0902.Superseded values are not recommended for survey control.
GA0902
GA0902.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
GA0902.See file dsdata.txt to determine how the superseded data were derived.
GA0902
GA0902_MARKER: DB = BENCH MARK DISK
GA0902_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
GA0902_STAMPING: P 114 1935
GA0902_MARK LOGO: CGS
GA0902_MAGNETIC: N = NO MAGNETIC MATERIAL
GA0902_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
GA0902+STABILITY: SURFACE MOTION
GA0902_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
GA0902+SATELLITE: SATELLITE OBSERVATIONS - October 10, 2003
GA0902
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 GA0902  HISTORY     - Date     Condition        Report By
 GA0902  HISTORY     - 1935     MONUMENTED       CGS
 GA0902  HISTORY     - 1950     GOOD             TVA
 GA0902  HISTORY     - 20031010 GOOD             TNDT
 GA0902
 GA0902                          STATION DESCRIPTION
 GA0902
 GA0902'DESCRIBED BY COAST AND GEODETIC SURVEY 1935
 GA0902'1 MI NE FROM CANEY BRANCH.
 GA0902'1.0 MILE NORTHEAST ALONG STATE HIGHWAY 35 FROM THE POST OFFICE AT
 GA0902'CANEY BRANCH, GREENE COUNTY, 0.25 MILE NORTHEAST OF A CONCRETE
 GA0902'BRIDGE OVER A CREEK, 100 YARDS NORTHEAST OF THE L.A. NIECE RESIDENCE,
 GA0902'43 FEET NORTH OF THE NORTH CORNER OF THE BARN, 27 FEET SOUTHEAST
 GA0902'OF THE CENTERLINE OF THE HIGHWAY, 30 FEET WEST OF A 24-INCH PINE
 GA0902'TREE, 25 FEET SOUTHWEST OF A FENCE CORNER, 14.5 FEET SOUTHWEST
 GA0902'OF THE CENTER OF A GATE, 1-1/2 FEET SOUTHEAST OF A FENCE LINE,
 GA0902'3 FEET HIGHER THAN THE HIGHWAY, AND 2 FEET SOUTHEAST OF STEEL
 GA0902'WITNESS POST.  A STANDARD DISK, STAMPED P 114 1935 AND SET IN THE
 GA0902'TOP OF A CONCRETE POST.  NOTE-- HIGHWAY 35 AT THIS POINT IS NOW
 GA0902'U.S. HIGHWAY 411.
 GA0902
 GA0902                          STATION RECOVERY (1950)
 GA0902
 GA0902'RECOVERY NOTE BY TENNESSEE VALLEY AUTHORITY 1950
 GA0902'RECOVERED IN GOOD CONDITION.
 GA0902
 GA0902                          STATION RECOVERY (2003)
 GA0902
 GA0902'RECOVERY NOTE BY TN DEPT OF TRANSP 2003
 GA0902'RECOVERED AS DESCRIBED.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 GB1968 ***********************************************************************
 GB1968  DESIGNATION -  S 82
 GB1968  PID         -  GB1968
 GB1968  STATE/COUNTY-  TN/MACON
 GB1968  COUNTRY     -  US
 GB1968  USGS QUAD   -  RED BOILING SPRINGS (1968)
 GB1968
 GB1968                        *CURRENT SURVEY CONTROL
 GB1968 ______________________________________________________________________
 GB1968* NAD 83(1995) POSITION- 36 31 09.16839(N) 085 51 42.91206(W)   ADJUSTED
 GB1968* NAVD 88 ORTHO HEIGHT -   291.666 (meters)      956.91  (feet) ADJUSTED
 GB1968 ______________________________________________________________________
 GB1968  GEOID HEIGHT    -        -30.001 (meters)                    GEOID12B
 GB1968  LAPLACE CORR    -         -3.45  (seconds)                   DEFLEC12B
 GB1968  DYNAMIC HEIGHT  -        291.418 (meters)      956.09  (feet) COMP
 GB1968  MODELED GRAVITY -    979,775.0   (mgal)                      NAVD 88
 GB1968
 GB1968  HORZ ORDER      -  SECOND
 GB1968  VERT ORDER      -  SECOND    CLASS 0
 GB1968
 GB1968.The horizontal coordinates were established by classical geodetic methods
 GB1968.and adjusted by the National Geodetic Survey in April 1999.
 GB1968.
 GB1968.The orthometric height was determined by differential leveling and
 GB1968.adjusted by the NATIONAL GEODETIC SURVEY
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GB1968.in June 1991.
GB1968
GB1968.Significant digits in the geoid height do not necessarily reflect accuracy.
GB1968.GEOID12B height accuracy estimate available here.
GB1968
GB1968.The Laplace correction was computed from DEFLEC12B derived deflections.
GB1968
GB1968.The dynamic height is computed by dividing the NAVD 88
GB1968.geopotential number by the normal gravity value computed on the
GB1968.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
GB1968.degrees latitude (g = 980.6199 gals.).
GB1968
GB1968.The modeled gravity was interpolated from observed gravity values.
GB1968
GB1968. The following values were computed from the NAD 83(1995) position.
GB1968
GB1968;                    North         East     Units Scale Factor Converg.
GB1968;SPC TN       -   242,536.886   612,367.921   MT  1.00001980   +0 04 51.0
GB1968;SPC TN       -   795,723.10  2,009,077.09   sFT  1.00001980   +0 04 51.0
GB1968;UTM  16      - 4,042,141.602   601,897.840   MT  0.99972792   +0 40 38.4
GB1968
GB1968!             -  Elev Factor  x  Scale Factor =   Combined Factor
GB1968!SPC TN       -   0.99995894  x   1.00001980  =   0.99997874
GB1968!UTM  16      -   0.99995894  x   0.99972792  =   0.99968687
GB1968
GB1968_U.S. NATIONAL GRID SPATIAL ADDRESS: 16SFF0189742141(NAD 83)
GB1968
GB1968                           SUPERSEDED SURVEY CONTROL
GB1968
GB1968  NAD 83(1993)-  36 31 09.16937(N)    085 51 42.91245(W) AD(       ) 2
GB1968  NAD 83(1990)-  36 31 09.17697(N)    085 51 42.91703(W) AD(       ) 2
GB1968  NAD 83(1986)-  36 31 09.17855(N)    085 51 42.91577(W) AD(       ) 2
GB1968  NAD 27      -  36 31 08.96800(N)    085 51 42.99700(W) AD(       ) 2
GB1968  NGVD 29 (??/??/92)  291.762  (m)          957.22   (f) ADJ UNCH    2 0
GB1968  NGVD 29             291.76   (m)          957.2    (f) LEVELING    3
GB1968
GB1968.Superseded values are not recommended for survey control.
GB1968
GB1968.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
GB1968.See file dsdata.txt to determine how the superseded data were derived.
GB1968
GB1968_MARKER: DB = BENCH MARK DISK
GB1968_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
GB1968_STAMPING: S 82 1935
GB1968_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
GB1968+STABILITY: SURFACE MOTION
GB1968
GB1968  HISTORY     - Date     Condition        Report By
GB1968  HISTORY     - 1935     MONUMENTED       CGS
GB1968  HISTORY     - 1950     GOOD             CGS
GB1968
GB1968                           STATION DESCRIPTION
GB1968
GB1968'DESCRIBED BY COAST AND GEODETIC SURVEY 1935
GB1968'1.2 MI W FROM RED BOILING SPRINGS.
GB1968'1.2 MILES WEST ALONG STATE HIGHWAY 52 FROM RED BOILING SPRINGS,
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 GB1968'MACON COUNTY, ABOUT 175 YARDS NORTHWEST OF THE INTERSECTION
 GB1968'OF STATE HIGHWAY 56, 55 YARDS NORTHEAST OF THE NORTHEAST CORNER
 GB1968'OF A BRICK HOUSE, 26 FEET WEST OF THE CENTERLINE OF THE HIGHWAY,
 GB1968'2.5 FEET HIGHER THAN THE HIGHWAY.  A STANDARD DISK, STAMPED S
 GB1968'82 1935 AND SET IN THE TOP OF A CONCRETE POST.
 GB1968
 GB1968                          STATION RECOVERY (1950)
 GB1968
 GB1968'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1950 (LWS)
 GB1968'STATION IS LOCATED ABOUT 1.5 MILES SOUTHWEST OF RED BOILING SPRINGS
 GB1968'ON THE SOUTH SIDE OF STATE HIGHWAY 52 AND 0.1 MILE WEST OF THE
 GB1968'JUNCTION OF STATE HIGHWAYS 52 AND 56.  IT IS 95 FEET NORTHEAST OF THE
 GB1968'NORTHEAST CORNER OF A RED BRICK HOUSE, 27 FEET SOUTHWEST OF THE
 GB1968'CENTER OF HIGHWAY 52 AND 5 FEET SOUTH OF A FENCELINE.  THE MARK IS AN
 GB1968'8X8 INCH CONCRETE POST THAT PROJECTS ABOUT 6 INCHES WITH A
 GB1968'STANDARD USC AND GS BENCH MARK DISK STAMPED S 82 1935.
 GB1968'
 GB1968'A TRAVERSE CONNECTION WAS MADE FROM TRIAGULATION STATION RED BOILING
 GB1968'AND THE DISTANCE WAS FOUND TO BE 122.166 METERS (400.81 FEET).
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 GA2573 ***********************************************************************
 GA2573  CBN         -  This is a Cooperative Base Network Control Station.
 GA2573  DESIGNATION -  SUE
 GA2573  PID         -  GA2573
 GA2573  STATE/COUNTY-  TN/KNOX
 GA2573  COUNTRY     -  US
 GA2573  USGS QUAD   -  FOUNTAIN CITY (1978)
 GA2573
 GA2573                        *CURRENT SURVEY CONTROL
 GA2573  ______________________________________________________________________
 GA2573* NAD 83(2011) POSITION- 36 06 04.40703(N) 083 54 39.30046(W)   ADJUSTED
 GA2573* NAD 83(2011) ELLIP HT-   301.477 (meters)        (06/27/12)   ADJUSTED
 GA2573* NAD 83(2011) EPOCH   -  2010.00
 GA2573* NAVD 88 ORTHO HEIGHT -   332.232 (meters)     1090.00  (feet) ADJUSTED
 GA2573  ______________________________________________________________________
 GA2573  GEOID HEIGHT    -        -30.751 (meters)                     GEOID12B
 GA2573  NAD 83(2011) X  -    547,306.020 (meters)                     COMP
 GA2573  NAD 83(2011) Y  - -5,130,522.684 (meters)                     COMP
 GA2573  NAD 83(2011) Z  -  3,737,450.214 (meters)                     COMP
 GA2573  LAPLACE CORR    -         -1.49  (seconds)                    DEFLEC12B
 GA2573  DYNAMIC HEIGHT  -        331.924 (meters)     1088.99  (feet) COMP
 GA2573  MODELED GRAVITY -    979,696.5   (mgal)                       NAVD 88
 GA2573
 GA2573  VERT ORDER      -  SECOND    CLASS 0
 GA2573
 GA2573  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 GA2573  Standards:
 GA2573         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 GA2573            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 GA2573  ------------------------------------------------------------------
 GA2573  NETWORK    0.91   2.02           0.42   0.30   1.03     -0.12397994
 GA2573  ------------------------------------------------------------------
 GA2573  Click here for local accuracies and other accuracy information.
 GA2573
 GA2573
 GA2573.The horizontal coordinates were established by GPS observations
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GA2573.and adjusted by the National Geodetic Survey in June 2012.
GA2573
GA2573.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
GA2573.been affixed to the stable North American tectonic plate. See
GA2573.NA2011 for more information.
GA2573
GA2573.The horizontal coordinates are valid at the epoch date displayed above
GA2573.which is a decimal equivalence of Year/Month/Day.
GA2573
GA2573.The orthometric height was determined by differential leveling and
GA2573.adjusted by the NATIONAL GEODETIC SURVEY
GA2573.in June 1991.
GA2573
GA2573.Significant digits in the geoid height do not necessarily reflect accuracy.
GA2573.GEOID12B height accuracy estimate available here.
GA2573
GA2573.The X, Y, and Z were computed from the position and the ellipsoidal ht.
GA2573
GA2573.The Laplace correction was computed from DEFLEC12B derived deflections.
GA2573
GA2573.The ellipsoidal height was determined by GPS observations
GA2573.and is referenced to NAD 83.
GA2573
GA2573.The dynamic height is computed by dividing the NAVD 88
GA2573.geopotential number by the normal gravity value computed on the
GA2573.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
GA2573.degrees latitude (g = 980.6199 gals.).
GA2573
GA2573.The modeled gravity was interpolated from observed gravity values.
GA2573
GA2573. The following values were computed from the NAD 83(2011) position.
GA2573

		North	East	Units	Scale Factor	Converg.
GA2573;SPC TN	-	198,154.398	788,096.486	MT	0.99995924	+1 13 22.9
GA2573;SPC TN	-	650,111.55	2,585,613.22	sFT	0.99995924	+1 13 22.9
GA2573;UTM 17	-	3,999,100.038	237,946.924	MT	1.00044623	-1 42 58.1

GA2573

		Elev Factor	x	Scale Factor	=	Combined Factor
GA2573!SPC TN	-	0.99995269	x	0.99995924	=	0.99991193
GA2573!UTM 17	-	0.99995269	x	1.00044623	=	1.00039889

GA2573

		Primary Azimuth Mark	Grid Az
GA2573:SPC TN	-	HALLS	216 03 33.5
GA2573:UTM 17	-	HALLS	218 59 54.5

GA2573
GA2573_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SKV3794699100(NAD 83)
GA2573

PID	Reference Object	Distance	Geod. Az dddmmss.s
GA2572	SUE RM 1	11.632 METERS	02331
GA2574	SUE RM 2	8.718 METERS	20935
GA2576	HALLS	APPROX. 2.0 KM	2171656.4

GA2573
GA2573 SUPERSEDED SURVEY CONTROL

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GA2573
GA2573  NAD 83(2007)-  36 06 04.40695(N)    083 54 39.30123(W) AD(2002.00) A
GA2573  ELLIP H (10/16/11)  301.496  (m)                       GP(2002.00) 3 2
GA2573  NAD 83(2007)-  36 06 04.40732(N)    083 54 39.30103(W) AD(2002.00) 0
GA2573  ELLIP H (02/10/07)  301.483  (m)                       GP(2002.00)
GA2573  NAD 83(1995)-  36 06 04.40740(N)    083 54 39.30088(W) AD(       ) A
GA2573  ELLIP H (08/03/04)  301.473  (m)                       GP(       ) 4 1
GA2573  NAD 83(1995)-  36 06 04.41228(N)    083 54 39.30981(W) AD(       ) 2
GA2573  NAD 83(1993)-  36 06 04.41874(N)    083 54 39.30930(W) AD(       ) 2
GA2573  NAD 83(1993)-  36 06 04.41953(N)    083 54 39.30883(W) AD(       ) 2
GA2573  NAD 83(1990)-  36 06 04.41989(N)    083 54 39.30944(W) AD(       ) 2
GA2573  NAD 83(1986)-  36 06 04.42489(N)    083 54 39.30735(W) AD(       ) 2
GA2573  NAD 27      -  36 06 04.13271(N)    083 54 39.63656(W) AD(       ) 2
GA2573  NAVD 88             332.23   (m)         1090.0    (f) LEVELING    3
GA2573  NGVD 29 (??/??/92)  332.339  (m)         1090.35   (f) ADJ UNCH    2 0
GA2573  NGVD 29             332.34   (m)         1090.4    (f) LEVELING    3
GA2573
GA2573.Superseded values are not recommended for survey control.
GA2573
GA2573.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
GA2573.See file dsdata.txt to determine how the superseded data were derived.
GA2573
GA2573_MARKER: DD = SURVEY DISK
GA2573_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
GA2573_STAMPING: SUE 1964
GA2573_MARK LOGO: TNHD
GA2573_MAGNETIC: N = NO MAGNETIC MATERIAL
GA2573_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
GA2573+STABILITY: SURFACE MOTION
GA2573_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
GA2573+SATELLITE: SATELLITE OBSERVATIONS - February 04, 2014
GA2573
GA2573  HISTORY     - Date     Condition        Report By
GA2573  HISTORY     - 1964     MONUMENTED       TNHD
GA2573  HISTORY     - 1964     GOOD             TNHD
GA2573  HISTORY     - 1980     GOOD             NGS
GA2573  HISTORY     - 1980     GOOD             NGS
GA2573  HISTORY     - 20031010 GOOD             TNDT
GA2573  HISTORY     - 20060731 GOOD             CAS
GA2573  HISTORY     - 20140204 GOOD             INDIV
GA2573
GA2573                          STATION DESCRIPTION
GA2573
GA2573'DESCRIBED BY TN HIGHWAY DEPT 1964 (JAG)
GA2573'THE STATION IS LOCATED ABOUT 13 MILES NORTH OF DOWNTOWN KNOXVILLE.
GA2573'
GA2573'TO REACH THE STATION FROM THE JUNCTION OF STATE ROUTE 33 AND STATE
GA2573'ROUTE 131 AT HALLS
GA2573'CROSSROADS, GO 1.35 MILES NORTH ON STATE ROUTE 33 TO THE
GA2573'STATION ON THE RIGHT.
GA2573'
GA2573'THE STATION IS 45 FEET NORTHWEST OF THE APPROXIMATE CENTER OF ST. RT.
GA2573'33, 15 FEET SOUTHEAST OF
GA2573'THE APPROXIMATE CENTER OF A GRAVELED DRIVE, 3 FEET
GA2573'NORTHWEST OF THE EDGE OF THE BANK OF
GA2573'A HIGHWAY CUT AND 2.9 FEET
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GA2573'NORTHEAST OF A WITNESS POST.  THE SURFACE AND
GA2573'UNDERGROUND MARKS ARE
GA2573'STANDARD TENNESSEE HIGHWAY DEPARTMENT DISKS AND THE DISKS ARE
GA2573'STAMPED SUE 1964.
GA2573'THE UNDERGROUND MARK IS ABOUT 36 INCHES BELOW THE SURFACE.
GA2573'THE SURFACE DISK IS SET IN A
GA2573'10-INCH SQUARE, FLUSH, CONCRETE
GA2573'MONUMENT.
GA2573'
GA2573'REFERENCE MARK NO. 1 IS 51 FEET NORTHWEST OF THE APPROXIMATE CENTER
GA2573'OF ST. RT.  33 AND 12 FEET
GA2573'SOUTHEAST OF THE APPROXIMATE CENTER OF A GRAVELED
GA2573'DRIVE.  IT IS A STANDARD
GA2573'TENNESSEE HIGHWAY DEPARTMENT DISK SET IN A
GA2573'10-INCH SQUARE, FLUSH, CONCRETE MONUMENT
GA2573'AND THE DISK IS STAMPED SUE
GA2573'RM-1 1964.
GA2573'
GA2573'REFERENCE MARK NO. 2 IS 45 FEET NORTHWEST OF THE APPROXIMATE CENTER
GA2573'OF ST. RT.  33 AND 14 FEET
GA2573'SOUTHEAST OF THE APPROXIMATE CENTER OF A GRAVELED
GA2573'DRIVE.  IT IS A STANDARD
GA2573'TENNESSEE HIGHWAY DEPARTMENT DISK SET IN A
GA2573'10-INCH SQUARE, FLUSH, CONCRETE MONUMENT
GA2573'AND THE DISK IS STAMPED SUE
GA2573'RM-2 1964.
GA2573'
GA2573'THE TRAVERSE GROUND STATION HALLS WILL SERVE AS THE AZIMUTH MARK.
GA2573'
GA2573'ALL OBSERVATIONS WERE MADE FROM A TRIPOD.
GA2573'
GA2573'HEIGHT OF LIGHT ABOVE STATION MARK 1 METERS.
GA2573
GA2573                          STATION RECOVERY (1964)
GA2573
GA2573'RECOVERY NOTE BY TN HIGHWAY DEPT 1964
GA2573'13 MI N FROM KNOXVILLE.
GA2573'FROM THE JUNCTION OF STATE ROUTE 33 AND STATE ROUTE 131 NEAR HALLS
GA2573'CROSSROADS, GO 1.35 MILES NORTH ON STATE ROUTE 33 TO THE STATION
GA2573'ON THE LEFT.  THE STATION MARK IS 45 FEET NORTHWEST OF THE
GA2573'APPROXIMATE CENTER OF STATE ROUTE 33, 15 FEET SOUTHEAST OF THE
GA2573'APPROXIMATE CENTER OF A GRAVELED DRIVE, 3 FEET NORTHWEST OF THE
GA2573'EDGE OF A BANK OF A HIGHWAY CUT AND 2.9 FEET NORTHEAST OF A METAL
GA2573'WITNESS POST WITH SIGN.  THE MARK IS A STANDARD TENNESSEE HIGHWAY
GA2573'DEPARTMENT DISK SET IN A 10-INCH SQUARE, CONCRETE MONUMENT FLUSH
GA2573'WITH THE GROUND.
GA2573
GA2573                          STATION RECOVERY (1980)
GA2573
GA2573'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1980 (CLN)
GA2573'ALL MARKS WERE FOUND AS DESCRIBED AND IN GOOD CONDITION.  THE
GA2573'DESCRIPTION IS GOOD EXCEPT THAT THE DRIVEWAY IS NOW PAVED.
GA2573
GA2573                          STATION RECOVERY (1980)
GA2573
GA2573'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1980
GA2573'RECOVERED IN GOOD CONDITION.
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 GA2573
 GA2573                          STATION RECOVERY (2003)
 GA2573
 GA2573'RECOVERY NOTE BY TN DEPT OF TRANSP 2003
 GA2573'RECOVERED AS DESCRIBED.
 GA2573
 GA2573                          STATION RECOVERY (2006)
 GA2573
 GA2573'RECOVERY NOTE BY CONTINENTAL AERIAL SURVEY INCO 2006 (JDA)
 GA2573'RECOVERED IN GOOD CONDITION.
 GA2573
 GA2573                          STATION RECOVERY (2014)
 GA2573
 GA2573'RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2014 (JEH)
 GA2573'RECOVERED AS DESCRIBED OTHER THAN NOTING THAT MARK CAN BE LOCATED WITH
 GA2573'
 GA2573'METAL DETECTOR. ALSO, DUE TO HIGHWAY WIDENING, MARK MAY BE DESTROYED
 GA2573'IN
 GA2573'THE NEAR FUTURE.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 GC0890 ***********************************************************************
 GC0890  DESIGNATION -  TEL AZ MK
 GC0890  PID         -  GC0890
 GC0890  STATE/COUNTY-  TN/DAVIDSON
 GC0890  COUNTRY     -  US
 GC0890  USGS QUAD   -  WHITES CREEK (1994)
 GC0890
 GC0890                        *CURRENT SURVEY CONTROL
 GC0890  ______________________________________________________________________
 GC0890* NAD 83(1995) POSITION- 36 16 38.39911(N) 086 47 40.34609(W)   ADJUSTED
 GC0890* NAVD 88 ORTHO HEIGHT -   157.896 (meters)      518.03  (feet) ADJUSTED
 GC0890  ______________________________________________________________________
 GC0890  GEOID HEIGHT    -        -29.501 (meters)                    GEOID12B
 GC0890  LAPLACE CORR    -         -0.34  (seconds)                   DEFLEC12B
 GC0890  DYNAMIC HEIGHT  -        157.761 (meters)      517.59  (feet) COMP
 GC0890  MODELED GRAVITY -    979,777.9   (mgal)                      NAVD 88
 GC0890
 GC0890  HORZ ORDER      -  SECOND
 GC0890  VERT ORDER      -  SECOND    CLASS 0
 GC0890
 GC0890.The horizontal coordinates were established by classical geodetic methods
 GC0890.and adjusted by the National Geodetic Survey in April 1999.
 GC0890.
 GC0890.The orthometric height was determined by differential leveling and
 GC0890.adjusted by the NATIONAL GEODETIC SURVEY
 GC0890.in June 1991.
 GC0890
 GC0890.Significant digits in the geoid height do not necessarily reflect accuracy.
 GC0890.GEOID12B height accuracy estimate available here.
 GC0890
 GC0890.The Laplace correction was computed from DEFLEC12B derived deflections.
 GC0890
 GC0890.The dynamic height is computed by dividing the NAVD 88
 GC0890.geopotential number by the normal gravity value computed on the
 GC0890.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 GC0890.degrees latitude (g = 980.6199 gals.).
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GC0890
GC0890.The modeled gravity was interpolated from observed gravity values.
GC0890
GC0890. The following values were computed from the NAD 83(1995) position.
GC0890
GC0890;                    North         East     Units Scale Factor Converg.
GC0890;SPC TN       -   215,977.405   528,615.296   MT  0.99997825   -0 27 54.6
GC0890;SPC TN       -   708,585.87  1,734,298.68   sFT  0.99997825   -0 27 54.6
GC0890;UTM  16      - 4,014,729.036   518,452.528   MT  0.99960420   +0 07 17.7
GC0890
GC0890!             -  Elev Factor  x  Scale Factor =   Combined Factor
GC0890!SPC TN       -   0.99997985  x   0.99997825  =   0.99995810
GC0890!UTM  16      -   0.99997985  x   0.99960420  =   0.99958406
GC0890
GC0890_U.S. NATIONAL GRID SPATIAL ADDRESS: 16SEF1845214729(NAD 83)
GC0890
GC0890                           SUPERSEDED SURVEY CONTROL
GC0890
GC0890  NAD 83(1993)-  36 16 38.40080(N)    086 47 40.34791(W) AD(       ) 2
GC0890  NAD 83(1990)-  36 16 38.40374(N)    086 47 40.34880(W) AD(       ) 2
GC0890  NAD 83(1986)-  36 16 38.40937(N)    086 47 40.34926(W) AD(       ) 2
GC0890  NAD 27      -  36 16 38.21788(N)    086 47 40.35669(W) AD(       ) 2
GC0890  NGVD 29 (??/??/92)  157.936  (m)          518.16   (f) ADJ UNCH    2 0
GC0890  NGVD 29             157.94   (m)          518.2    (f) LEVELING    3
GC0890
GC0890.Superseded values are not recommended for survey control.
GC0890
GC0890.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
GC0890.See file dsdata.txt to determine how the superseded data were derived.
GC0890
GC0890_MARKER: DD = SURVEY DISK
GC0890_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
GC0890_STAMPING: TEL AZI 1965
GC0890_MARK LOGO: TNHD
GC0890_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
GC0890+STABILITY: SURFACE MOTION
GC0890_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
GC0890+SATELLITE: SATELLITE OBSERVATIONS - October 26, 2011
GC0890
GC0890  HISTORY     - Date     Condition        Report By
GC0890  HISTORY     - 1965     MONUMENTED       TNHD
GC0890  HISTORY     - 20111026 GOOD             USGS
GC0890
GC0890                           STATION DESCRIPTION
GC0890
GC0890'DESCRIBED BY TN HIGHWAY DEPT 1965
GC0890'2 MI E FROM WHITE CREEK.
GC0890'FROM THE JUNCTION OF OLD HICKORY BOULEVARD AND U.S. HIGHWAY
GC0890'431, JUST NORTH OF THE POST OFFICE IN WHITE CREEK, GO EASTERLY
GC0890'ON OLD HICKORY BOULEVARD FOR 2.3 MILES TO THE MARK ON THE LEFT,
GC0890'36 FEET SOUTHWEST OF POWER POLE NO. 5525-5, 24 FEET NORTHWEST
GC0890'OF THE APPROXIMATE CENTER OF OLD HICKORY BOULEVARD, 14 FEET
GC0890'SOUTHWEST OF A METAL WITNESS POST WITH SIGN AND 1 FOOT SOUTHEAST
GC0890'OF A BARBED WIRE FENCE.  IT IS A STANDARD TENNESSEE HIGHWAY
GC0890'DEPARTMENT DISK SET IN THE TOP OF A 10-INCH, SQUARE, FLUSH,
GC0890'CONCRETE MONUMENT.
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 GC0890
 GC0890                          STATION RECOVERY (2011)
 GC0890
 GC0890'RECOVERY NOTE BY US GEOLOGICAL SURVEY 2011 (PDB)
 GC0890'CONCRETE POST LEANING SLIGHTLY, BUT IN GOOD CONDITION OTHERWISE.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 GA2134 ***********************************************************************
 GA2134  DESIGNATION -  TIE
 GA2134  PID         -  GA2134
 GA2134  STATE/COUNTY-  TN/GRAINGER
 GA2134  COUNTRY     -  US
 GA2134  USGS QUAD   -  BEAN STATION (1976)
 GA2134
 GA2134                         *CURRENT SURVEY CONTROL
 GA2134  ______________________________________________________________________
 GA2134* NAD 83(1995) POSITION- 36 19 29.18251(N) 083 16 52.13571(W)   ADJUSTED
 GA2134* NAVD 88 ORTHO HEIGHT -   344.875 (meters)     1131.48  (feet) ADJUSTED
 GA2134  ______________________________________________________________________
 GA2134  GEOID HEIGHT    -        -31.180 (meters)                    GEOID12B
 GA2134  LAPLACE CORR    -         -1.50  (seconds)                   DEFLEC12B
 GA2134  DYNAMIC HEIGHT  -        344.563 (meters)     1130.45  (feet) COMP
 GA2134  MODELED GRAVITY -    979,718.7   (mgal)                      NAVD 88
 GA2134
 GA2134  HORZ ORDER      -  SECOND
 GA2134  VERT ORDER      -  SECOND    CLASS 0
 GA2134
 GA2134.The horizontal coordinates were established by classical geodetic methods
 GA2134.and adjusted by the National Geodetic Survey in April 1999.
 GA2134.
 GA2134.The orthometric height was determined by differential leveling and
 GA2134.adjusted by the NATIONAL GEODETIC SURVEY
 GA2134.in June 1991.
 GA2134
 GA2134.Significant digits in the geoid height do not necessarily reflect accuracy.
 GA2134.GEOID12B height accuracy estimate available here.
 GA2134
 GA2134.The Laplace correction was computed from DEFLEC12B derived deflections.
 GA2134
 GA2134.The dynamic height is computed by dividing the NAVD 88
 GA2134.geopotential number by the normal gravity value computed on the
 GA2134.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 GA2134.degrees latitude (g = 980.6199 gals.).
 GA2134
 GA2134.The modeled gravity was interpolated from observed gravity values.
 GA2134
 GA2134. The following values were computed from the NAD 83(1995) position.
 GA2134
 GA2134;                    North         East     Units Scale Factor Converg.
 GA2134;SPC TN       -   224,342.512   844,097.509   MT  0.99998499   +1 35 30.2
 GA2134;SPC TN       -   736,030.39  2,769,343.24   sFT  0.99998499   +1 35 30.2
 GA2134;UTM  17      - 4,022,386.821   295,235.494   MT  1.00011663   -1 21 06.2
 GA2134
 GA2134!             -  Elev Factor  x  Scale Factor =   Combined Factor
 GA2134!SPC TN       -   0.99995077  x   0.99998499  =   0.99993576
 GA2134!UTM  17      -   0.99995077  x   1.00011663  =   1.00006739
 GA2134
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GA2134:                 Primary Azimuth Mark                      Grid Az
GA2134:SPC TN       -   TIE AZ MK                                 193 06 17.2
GA2134:UTM  17      -   TIE AZ MK                                 196 02 53.6
GA2134
GA2134_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SKA9523522386(NAD 83)
GA2134
GA2134|-----------------------------------------------------------------------|
GA2134| PID    Reference Object                    Distance      Geod. Az  |
GA2134|                                                          dddmmss.s |
GA2134| GA2133 TIE RM 1                            15.951 METERS 00859     |
GA2134| GA2136 TIE AZ MK                                         1944147.4 |
GA2134| GA2135 TIE RM 2                            16.140 METERS 19811     |
GA2134|-----------------------------------------------------------------------|
GA2134
GA2134                          SUPERSEDED SURVEY CONTROL
GA2134
GA2134  NAD 83(1993)-  36 19 29.18670(N)    083 16 52.13929(W) AD(       ) 2
GA2134  NAD 83(1993)-  36 19 29.19588(N)    083 16 52.13251(W) AD(       ) 2
GA2134  NAD 83(1990)-  36 19 29.18892(N)    083 16 52.13780(W) AD(       ) 2
GA2134  NAD 83(1986)-  36 19 29.19113(N)    083 16 52.13791(W) AD(       ) 2
GA2134  NAD 27      -  36 19 28.86020(N)    083 16 52.51713(W) AD(       ) 2
GA2134  NGVD 29 (??/??/92)  345.012  (m)         1131.93   (f) ADJ UNCH    2 0
GA2134  NGVD 29             345.01   (m)         1131.9    (f) LEVELING    3
GA2134
GA2134.Superseded values are not recommended for survey control.
GA2134
GA2134.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
GA2134.See file dsdata.txt to determine how the superseded data were derived.
GA2134
GA2134_MARKER: DD = SURVEY DISK
GA2134_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
GA2134_STAMPING: TIE 1963
GA2134_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
GA2134+STABILITY: SURFACE MOTION
GA2134
GA2134  HISTORY     - Date     Condition        Report By
GA2134  HISTORY     - 1963     MONUMENTED       TNHD
GA2134  HISTORY     - 1963     GOOD             TNHD
GA2134
GA2134                           STATION DESCRIPTION
GA2134
GA2134'DESCRIBED BY TN HIGHWAY DEPT 1963 (JAG)
GA2134'THE STATION IS LOCATED ABOUT 1-1/2 MILES SOUTH OF BEAN STATION.
GA2134'
GA2134'TO REACH THE STATION FROM THE INTERSECTION OF U.S. HIGHWAYS 25E AND
GA2134'11W AT BEAN STATION, GO 1.35
GA2134'MILES SOUTH ON U.S.  HIGHWAY 25E TO THE STATION ON
GA2134'THE LEFT AS DESCRIBED.
GA2134'
GA2134'THE STATION IS 98 FEET NORTH OF THE APPROXIMATE CENTER OF A GRAVELED
GA2134'ROAD AND 41 FEET EAST OF
GA2134'THE APPROXIMATE CENTER OF U.S.  HIGHWAY 25 E.  THE
GA2134'SURFACE AND UNDERGROUND MARKS ARE
GA2134'STANDARD TENNESSEE HIGHWAY
GA2134'DEPARTMENT DISKS AND THE DISKS ARE STAMPED TIE 1963.
GA2134'THE UNDERGROUND
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 GA2134'MARK IS ABOUT 30 INCHES BELOW THE SURFACE.  THE SURFACE DISK IS SET
 GA2134'IN A 10-INCH
 GA2134'SQUARE, FLUSH, CONCRETE MONUMENT.
 GA2134'
 GA2134'REFERENCE MARK NO. 1 IS 32 FEET EAST OF THE APPROXIMATE CENTER OF
 GA2134'U.S.  HIGHWAY 25E.
 GA2134'IT IS A STANDARD TENNESSEE HIGHWAY DEPARTMENT DISK SET
 GA2134'IN A 10-INCH SQUARE, FLUSH,
 GA2134'CONCRETE MONUMENT AND THE DISK IS STAMPED
 GA2134'TIE RM-1 1963.
 GA2134'
 GA2134'REFERENCE MARK NO. 2 IS 46 FEET NORTH OF THE APPROXIMATE CENTER OF
 GA2134'GRAVELED ROAD AND 32
 GA2134'FEET EAST OF THE APPROXIMATE CENTER OF U.S.  HIGHWAY 25E.
 GA2134'IT IS A STANDARD TENNESSEE
 GA2134'HIGHWAY DEPARTMENT DISK SET IN A 10-INCH
 GA2134'SQUARE, FLUSH, CONCRETE MONUMENT AND THE DISK
 GA2134'IS STAMPED TIE RM-2
 GA2134'1963.
 GA2134'
 GA2134'THE AZIMUTH MARK IS 43 FEET SOUTHWEST OF THE END OF A WIRE FENCE, 35
 GA2134'FEET EAST OF THE
 GA2134'APPROXIMATE CENTER OF U.S.  HIGHWAY 25E, AND 1.7 FEET EAST OF
 GA2134'A WITNESS POST.  IT IS A
 GA2134'STANDARD TENNESSEE HIGHWAY DEPARTMENT DISK
 GA2134'SET IN A 10-INCH SQUARE, FLUSH, CONCRETE
 GA2134'MONUMENT AND THE DISK IS
 GA2134'STAMPED TIE AZI 1963.
 GA2134'
 GA2134'TO REACH THE AZIMUTH MARK FROM THE STATION, CONTINUE SOUTH ON U.S.
 GA2134'HIGHWAY 25E FOR 0.3
 GA2134'MILE TO THE MARK ON THE LEFT AS DESCRIBED.
 GA2134'
 GA2134'ALL OBSERVATIONS WERE MADE FROM A 50 FOOT STEEL TOWER.
 GA2134
 GA2134                          STATION RECOVERY (1963)
 GA2134
 GA2134'RECOVERY NOTE BY TN HIGHWAY DEPT 1963
 GA2134'1.5 MI S FROM BEAN STATION.
 GA2134'FROM THE INTERSECTION OF U.S. HIGHWAYS 25E AND 11W AT BEAN STATION,
 GA2134'GO 1.35 MILES SOUTH ON U.S. HIGHWAY 25E TO THE STATION ON THE
 GA2134'LEFT.  THE MARK IS 98 FEET NORTH OF THE CENTERLINE OF A GRAVELED
 GA2134'ROAD AND 41 FEET EAST OF THE CENTERLINE OF U.S. HIGHWAY 25E.  THE
 GA2134'MARK IS A STANDARD TENNESSEE HIGHWAY DEPARTMENT DISK SET IN THE
 GA2134'TOP OF A 10-INCH SQUARE, CONCRETE MONUMENT, FLUSH WITH THE GROUND.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 GC0118 ***********************************************************************
 GC0118  DESIGNATION -  VAUGHN
 GC0118  PID         -  GC0118
 GC0118  STATE/COUNTY-  TN/SUMNER
 GC0118  COUNTRY     -  US
 GC0118  USGS QUAD   -  WESTMORELAND (1979)
 GC0118
 GC0118                         *CURRENT SURVEY CONTROL
 GC0118 _______________________________________________________________________
 GC0118* NAD 83(1995) POSITION- 36 32 43.94268(N) 086 14 24.54353(W)   ADJUSTED
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GC0118* NAVD 88 ORTHO HEIGHT -   284.009 (meters)      931.79  (feet) ADJUSTED
GC0118  ____________________________________________________________________
GC0118  GEOID HEIGHT    -        -29.533 (meters)                     GEOID12B
GC0118  LAPLACE CORR    -         -1.69  (seconds)                    DEFLEC12B
GC0118  DYNAMIC HEIGHT  -        283.778 (meters)      931.03  (feet) COMP
GC0118  MODELED GRAVITY -    979,809.3   (mgal)                       NAVD 88
GC0118
GC0118  HORZ ORDER      -  SECOND
GC0118  VERT ORDER      -  SECOND    CLASS 0
GC0118
GC0118.The horizontal coordinates were established by classical geodetic methods
GC0118.and adjusted by the National Geodetic Survey in April 1999.
GC0118.
GC0118.The orthometric height was determined by differential leveling and
GC0118.adjusted by the NATIONAL GEODETIC SURVEY
GC0118.in June 1991.
GC0118
GC0118.Significant digits in the geoid height do not necessarily reflect accuracy.
GC0118.GEOID12B height accuracy estimate available here.
GC0118
GC0118.The Laplace correction was computed from DEFLEC12B derived deflections.
GC0118
GC0118.The dynamic height is computed by dividing the NAVD 88
GC0118.geopotential number by the normal gravity value computed on the
GC0118.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
GC0118.degrees latitude (g = 980.6199 gals.).
GC0118
GC0118.The modeled gravity was interpolated from observed gravity values.
GC0118
GC0118. The following values were computed from the NAD 83(1995) position.
GC0118
GC0118;                    North         East     Units Scale Factor Converg.
GC0118;SPC TN       -   245,475.998   578,496.691   MT  1.00002540   -0 08 26.1
GC0118;SPC TN       -   805,365.84  1,897,951.23   sFT  1.00002540   -0 08 26.1
GC0118;UTM  16      - 4,044,728.077   568,009.195   MT  0.99965698   +0 27 08.9
GC0118
GC0118!             -  Elev Factor  x  Scale Factor =   Combined Factor
GC0118!SPC TN       -   0.99996006  x   1.00002540  =   0.99998546
GC0118!UTM  16      -   0.99996006  x   0.99965698  =   0.99961706
GC0118
GC0118:                Primary Azimuth Mark                    Grid Az
GC0118:SPC TN       -  VAUGHN AZ MK                           010 06 06.9
GC0118:UTM  16      -  VAUGHN AZ MK                           009 30 31.9
GC0118
GC0118_U.S. NATIONAL GRID SPATIAL ADDRESS: 16SEF6800944728(NAD 83)
GC0118
GC0118|---------------------------------------------------------------------|
GC0118| PID    Reference Object                    Distance      Geod. Az   |
GC0118|                                                          dddmmss.s  |
GC0118| GC0116 VAUGHN AZ MK                                      0095740.8  |
GC0118| GC0117 VAUGHN RM 1                       17.135 METERS 04250      |
GC0118| GC0119 VAUGHN RM 2                        7.940 METERS 11317      |
GC0118|---------------------------------------------------------------------|
GC0118
GC0118                         SUPERSEDED SURVEY CONTROL
GC0118
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GC0118  NAD 83(1993)-  36 32 43.94300(N)    086 14 24.54410(W) AD(       ) 2
GC0118  NAD 83(1990)-  36 32 43.95130(N)    086 14 24.54671(W) AD(       ) 2
GC0118  NAD 83(1986)-  36 32 43.95252(N)    086 14 24.54702(W) AD(       ) 2
GC0118  NAD 27      -  36 32 43.79380(N)    086 14 24.59030(W) AD(       ) 2
GC0118  NGVD 29 (??/??/??)  284.15   (m)          932.2    (f) RESET       3
GC0118  NGVD 29             284.10   (m)          932.1    (f) LEVELING    3
GC0118
GC0118.Superseded values are not recommended for survey control.
GC0118
GC0118.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
GC0118.See file dsdata.txt to determine how the superseded data were derived.
GC0118
GC0118_MARKER: DD = SURVEY DISK
GC0118_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
GC0118_STAMPING: VAUGHN 1961
GC0118_MARK LOGO: TNHD
GC0118_PROJECTION: FLUSH
GC0118_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
GC0118+STABILITY: SURFACE MOTION
GC0118
GC0118  HISTORY     - Date     Condition        Report By
GC0118  HISTORY     - 1961     MONUMENTED       TNHD
GC0118  HISTORY     - 1961     GOOD             TNHD
GC0118
GC0118                          STATION DESCRIPTION
GC0118
GC0118'DESCRIBED BY TN HIGHWAY DEPT 1961
GC0118'1.5 MI SE FROM WESTMORELAND.
GC0118'FROM THE RAILROAD STATION IN WESTMORELAND, GO EAST ON STATE
GC0118'ROUTE NO. 52 FOR 0.2 MILE TO A PAVED ROAD RIGHT, TURN RIGHT AND
GC0118'GO SOUTHEASTERLY FOR 0.4 MILE ON PAVED ROAD TO A GRAVELED ROAD,
GC0118'CONTINUE ON GRAVELED ROAD FOR 0.7 MILE TO A ROAD RIGHT, TURN
GC0118'RIGHT, SOUTH, AND GO 0.15 MILE TO THE STATION ON THE RIGHT.
GC0118'THE MARK IS LOCATED 12 FEET SOUTHWEST OF THE CENTERLINE OF A
GC0118'GRAVELED ROAD, 9 FEET NORTHEAST OF A FENCE, AND 1.7 FEET NORTH
GC0118'OF A WITNESS POST.  THE MARK IS SET IN TOP OF A 10-INCH SQUARE,
GC0118'CONCRETE POST FLUSH WITH THE GROUND.
GC0118
GC0118                          STATION RECOVERY (1961)
GC0118
GC0118'RECOVERY NOTE BY TN HIGHWAY DEPT 1961 (CEG)
GC0118'THE STATION IS LOCATED ABOUT 1.5 MILES SOUTHEAST OF WESTMORELAND.
GC0118'
GC0118'TO REACH THE STATION FROM THE RAILROAD STATION IN WESTMORELAND, GO
GC0118'EAST ON STATE ROUTE NO. 52 FOR 0.2 MILE TO A PAVED ROAD RIGHT,
GC0118'TURN RIGHT, SOUTHEASTERLY, AND GO 0.4 MILE ON PAVED ROAD TO A
GC0118'GRAVELED ROAD, CONTINUE ON GRAVELED ROAD FOR 0.7 MILE TO A ROAD
GC0118'RIGHT, TURN RIGHT, SOUTH, AND GO 0.15 MILE TO THE STATION ON THE
GC0118'RIGHT AS DESCRIBED.
GC0118'
GC0118'THE STATION IS 12 FEET SOUTHWEST OF APPROXIMATE CENTER OF A GRAVELED
GC0118'ROAD, 9 FEET NORTHEAST OF A FENCE, AND 1.7 FEET NORTH OF A
GC0118'WITNESS POST. THE SURFACE MARK IS A STANDARD TENNESSEE HIGHWAY
GC0118'DEPARTMENT DISK STAMPED VAUGHN 1961. THIS STATION HAS NO
GC0118'UNDERGROUND MARK. THE SURFACE STATION MARK DISK IS SET IN A 10-INCH
GC0118'SQUARE, FLUSH, CONCRETE MONUMENT.
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 GC0118'
 GC0118'REFERENCE MARK NO. 1 IS 13 FEET NORTHEAST OF APPROXIMATE CENTER OF A
 GC0118'GRAVELED ROAD AND 2 FEET WEST OF A FENCE. THE MARK IS A STANDARD
 GC0118'TENNESSEE HIGHWAY DEPARTMENT DISK SET IN A 10-INCH SQUARE, FLUSH,
 GC0118'CONCRETE MONUMENT AND THE DISK IS STAMPED VAUGHN RM-1 1961.
 GC0118'
 GC0118'REFERENCE MARK NO. 2 IS 13 FEET EAST OF APPROXIMATE CENTER OF A
 GC0118'GRAVELED ROAD AND 1 FOOT WEST OF A FENCE. THE MARK IS A STANDARD
 GC0118'TENNESSEE HIGHWAY DEPARTMENT DISK SET IN A 10-INCH SQUARE, FLUSH,
 GC0118'CONCRETE MONUMENT AND THE DISK IS STAMPED VAUGHN RM-2 1961.
 GC0118'
 GC0118'THE AZIMUTH MARK IS 26 FEET WEST OF A FENCE CORNER, 15 FEET NORTH OF
 GC0118'APPROXIMATE CENTER OF A GRAVELED ROAD, 13 FEET EAST OF A POWER
 GC0118'POLE, 1 FOOT SOUTH OF A FENCE, AND 1.3 FEET WEST OF A WITNESS POST.
 GC0118'THE MARK IS A STANDARD TENNESSEE HIGHWAY DEPARTMENT DISK SET IN A
 GC0118'10-INCH SQUARE, FLUSH, CONCRETE MONUMENT AND THE DISK IS STAMPED
 GC0118'VAUGHN AZI 1961.
 GC0118'
 GC0118'TO REACH THE AZIMUTH MARK FROM THE STATION, GO NORTH ON THE GRAVELED
 GC0118'ROAD 0.2 MILE TO THE MARK AS DESCRIBED.
 GC0118'
 GC0118'ALL OBSERVATIONS WERE MADE FROM AN INSTRUMENT TRIPOD.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
 FC0240 ***********************************************************************
 FC0240  DESIGNATION -  WEST
 FC0240  PID         -  FC0240
 FC0240  STATE/COUNTY-  TN/KNOX
 FC0240  COUNTRY     -  US
 FC0240  USGS QUAD   -  BEARDEN (1990)
 FC0240
 FC0240                        *CURRENT SURVEY CONTROL
 FC0240  ______________________________________________________________________
 FC0240* NAD 83(1995) POSITION- 35 55 40.51598(N) 084 02 39.47495(W)   ADJUSTED
 FC0240* NAVD 88 ORTHO HEIGHT -   326.518 (meters)     1071.25  (feet) ADJUSTED
 FC0240  ______________________________________________________________________
 FC0240  GEOID HEIGHT    -        -30.662 (meters)                    GEOID12B
 FC0240  LAPLACE CORR    -          0.43  (seconds)                   DEFLEC12B
 FC0240  DYNAMIC HEIGHT  -        326.214 (meters)     1070.25  (feet) COMP
 FC0240  MODELED GRAVITY -    979,692.7   (mgal)                      NAVD 88
 FC0240
 FC0240  HORZ ORDER      -  SECOND
 FC0240  VERT ORDER      -  SECOND    CLASS 0
 FC0240
 FC0240.The horizontal coordinates were established by classical geodetic methods
 FC0240.and adjusted by the National Geodetic Survey in April 1999.
 FC0240.
 FC0240.The orthometric height was determined by differential leveling and
 FC0240.adjusted by the NATIONAL GEODETIC SURVEY
 FC0240.in June 1991.
 FC0240
 FC0240.Significant digits in the geoid height do not necessarily reflect accuracy.
 FC0240.GEOID12B height accuracy estimate available here.
 FC0240
 FC0240.The Laplace correction was computed from DEFLEC12B derived deflections.
 FC0240
 FC0240.The dynamic height is computed by dividing the NAVD 88
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FC0240.geopotential number by the normal gravity value computed on the
FC0240.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
FC0240.degrees latitude (g = 980.6199 gals.).
FC0240
FC0240.The modeled gravity was interpolated from observed gravity values.
FC0240
FC0240. The following values were computed from the NAD 83(1995) position.
FC0240
FC0240;                    North         East     Units Scale Factor Converg.
FC0240;SPC TN       -   178,681.375   776,472.955   MT  0.99994974   +1 08 41.8
FC0240;SPC TN       -   586,223.81  2,547,478.35   sFT  0.99994974   +1 08 41.8
FC0240;UTM  16      - 3,979,991.951   766,669.681   MT  1.00047635   +1 44 07.2
FC0240;UTM  17      - 3,980,237.831   225,334.565   MT  1.00052970   -1 47 14.7
FC0240
FC0240!             -  Elev Factor  x  Scale Factor =   Combined Factor
FC0240!SPC TN       -   0.99995357  x   0.99994974  =   0.99990331
FC0240!UTM  16      -   0.99995357  x   1.00047635  =   1.00042990
FC0240!UTM  17      -   0.99995357  x   1.00052970  =   1.00048324
FC0240
FC0240:                Primary Azimuth Mark                    Grid Az
FC0240:SPC TN       -  WEST AZ MK                              070 25 47.1
FC0240:UTM  16      -  WEST AZ MK                              069 50 21.7
FC0240:UTM  17      -  WEST AZ MK                              073 21 43.6
FC0240
FC0240_U.S. NATIONAL GRID SPATIAL ADDRESS: 16SGE6666979991(NAD 83)
FC0240
FC0240|-----------------------------------------------------------------------|
FC0240| PID    Reference Object                    Distance      Geod. Az  |
FC0240|                                                          dddmmss.s |
FC0240| FC0241 WEST RM 1                           27.365 METERS 06937     |
FC0240| FC0242 WEST AZ MK                                        0713428.9 |
FC0240| FC0239 WEST RM 2                           21.434 METERS 26750     |
FC0240|-----------------------------------------------------------------------|
FC0240
FC0240                          SUPERSEDED SURVEY CONTROL
FC0240
FC0240  NAD 83(1990)-  35 55 40.52274(N)    084 02 39.47329(W) AD(       ) 2
FC0240  NAD 83(1986)-  35 55 40.52871(N)    084 02 39.47122(W) AD(       ) 2
FC0240  NAD 27      -  35 55 40.23820(N)    084 02 39.79510(W) AD(       ) 2
FC0240  NGVD 29 (??/??/92)  326.645  (m)         1071.67   (f) ADJ UNCH    2 0
FC0240  NGVD 29             326.65   (m)         1071.7    (f) LEVELING    3
FC0240
FC0240.Superseded values are not recommended for survey control.
FC0240
FC0240.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
FC0240.See file dsdata.txt to determine how the superseded data were derived.
FC0240
FC0240_MARKER: DS = TRIANGULATION STATION DISK
FC0240_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
FC0240_STAMPING: WEST 1960
FC0240_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
FC0240+STABILITY: SURFACE MOTION
FC0240
FC0240  HISTORY     - Date     Condition        Report By
FC0240  HISTORY     - 1960     MONUMENTED       CGS
FC0240  HISTORY     - 1960     GOOD             CGS
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 FC0240  HISTORY     - 1982     GOOD             LOCENG
 FC0240
 FC0240                          STATION DESCRIPTION
 FC0240
 FC0240'DESCRIBED BY COAST AND GEODETIC SURVEY 1960 (SLH)
 FC0240'THE STATION IS LOCATED ABOUT 7 MILES WEST OF THE CENTER OF KNOXVILLE
 FC0240'AND ON THE SOUTH RIGHT-OF-WAY OF THE INTERSTATE HIGHWAY WHICH IS
 FC0240'NOW UNDER CONSTRUCTION.
 FC0240'
 FC0240'TO REACH THE STATION FROM THE JUNCTION OF U.S. HIGHWAY 70 AND U.S.
 FC0240'HIGHWAY 70 TRUCK ROUTE IN THE WEST EDGE OF KNOXVILLE GO WEST ON U.S.
 FC0240'HIGHWAY 70 FOR 1.4 MILES TO A DRIVEWAY ON THE RIGHT, TURN RIGHT,
 FC0240'NORTH, FOR 0.15 MILE TO THE STATION.
 FC0240'
 FC0240'STATION MARK IS 45 FEET EAST OF A 24-INCH OAK TREE. THE MARK IS A
 FC0240'STANDARD DISK SET IN A CONCRETE POST, SET FLUSH, AND IS STAMPED
 FC0240'WEST 1960.
 FC0240'
 FC0240'REFERENCE MARK NO. 1 IS 1.6 FEET WEST OF A WITNESS SIGN. THE MARK IS
 FC0240'A STANDARD DISK SET IN A CONCRETE POST, SET FLUSH, AND IS
 FC0240'STAMPED WEST NO. 1 1960.
 FC0240'
 FC0240'REFERENCE MARK NO. 2 IS 1.8 FEET SOUTH OF A WITNESS SIGN AND IS ABOUT
 FC0240'6 FEET LOWER THAN THE STATION. THE MARK IS A STANDARD DISK SET
 FC0240'IN A CONCRETE POST, SET FLUSH, AND IS STAMPED WEST NO. 2 1960.
 FC0240'
 FC0240'AZIMUTH MARK IS A STANDARD DISK CEMENTED IN A DRILL HOLE IN THE
 FC0240'NORTHEAST CORNER OF THE SOUTH BRIDGE ON THE INTERSTATE HIGHWAY. THE
 FC0240'MARK IS SET FLUSH WITH THE SIDE WALK, AND IS STAMPED WEST 1960.
 FC0240'
 FC0240'TO REACH THE AZIMUTH MARK FROM THE STATION GO EAST ON THE INTERSTATE
 FC0240'HIGHWAY FOR 0.4 MILE TO THE MARK.
 FC0240'
 FC0240'HEIGHT OF LIGHT ABOVE STATION MARK 26.3 METERS.
 FC0240
 FC0240                          STATION RECOVERY (1960)
 FC0240
 FC0240'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1960
 FC0240'4.2 MI W FROM BEARDEN.
 FC0240'FROM THE POST OFFICE IN BEARDEN, GO 1.2 MILES WEST ON KINGSTON
 FC0240'PIKE, THEN 0.6 MILE NORTH ON BEARDEN ROAD, THEN 2.4 MILES WEST
 FC0240'ON INTERSTATE HIGHWAY 40.  THE STATION IS ABOUT 0.1 MILE EAST
 FC0240'OF AN OVERPASS OVER INTERSTATE 40, ON THE SOUTH RIGHT-OF-WAY, AT
 FC0240'THE CREST OF THE FIRST CUT EAST OF THE OVERPASS, 45 FT. EAST OF A
 FC0240'24-INCH OAK TREE.  THE DISK IS SET IN TOP OF A CONCRETE POST
 FC0240'PROJECTING 1 INCH.
 FC0240
 FC0240                          STATION RECOVERY (1982)
 FC0240
 FC0240'RECOVERY NOTE BY LOCAL ENGINEER (INDIVIDUAL OR FIRM) 1982
 FC0240'ADDITIONALLY NOTED: 'THE STATION MARK IS ALSO APPROX. 175 FT.
 FC0240'NORTHEAST OF THE NORTHEAST CORNER OF THE TRAVELERS INSURANCE BLDG. AT
 FC0240'1900 NORTH WINSTON RD. AND 1 FT. NORTH OF THE S.R.O.W. FENCE LINE,
 FC0240'ALSO 1 FT. NORTH OF A WITNESS POST AND CONCRETE RETAINING WALL .
 FC0240''CHANGE THE DESCRIPTION TO READ: 'THE MARK IS 3' (INCHES) BELOW THE
 FC0240'SURFACE OF THE GROUND.
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 22, 2017
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GA0276 ***********************************************************************
GA0276  CBN          -  This is a Cooperative Base Network Control Station.
GA0276  DESIGNATION  -  Y 108
GA0276  PID          -  GA0276
GA0276  STATE/COUNTY-   TN/SULLIVAN
GA0276  COUNTRY      -  US
GA0276  USGS QUAD    -  BLOUNTVILLE (1978)
GA0276
GA0276                        *CURRENT SURVEY CONTROL
GA0276  ______________________________________________________________________
GA0276* NAD 83(2011) POSITION- 36 35 31.30935(N) 082 21 59.82273(W)   ADJUSTED
GA0276* NAD 83(2011) ELLIP HT-   515.492 (meters)        (06/27/12)   ADJUSTED
GA0276* NAD 83(2011) EPOCH    -  2010.00
GA0276* NAVD 88 ORTHO HEIGHT -   546.786 (meters)     1793.91  (feet) ADJUSTED
GA0276  ______________________________________________________________________
GA0276  GEOID HEIGHT    -        -31.289 (meters)                     GEOID12B
GA0276  NAD 83(2011) X  -    681,109.015 (meters)                     COMP
GA0276  NAD 83(2011) Y  - -5,082,086.084 (meters)                     COMP
GA0276  NAD 83(2011) Z  -  3,781,446.372 (meters)                     COMP
GA0276  LAPLACE CORR    -          1.52  (seconds)                    DEFLEC12B
GA0276  DYNAMIC HEIGHT  -        546.285 (meters)     1792.27  (feet) COMP
GA0276  MODELED GRAVITY -    979,698.5   (mgal)                       NAVD 88
GA0276
GA0276  VERT ORDER      -  SECOND    CLASS 0
GA0276
GA0276  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
GA0276  Standards:
GA0276         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
GA0276            Horiz  Ellip           SD_N   SD_E   SD_h      (unitless)
GA0276  ------------------------------------------------------------------
GA0276  NETWORK    0.73   1.63           0.33   0.25   0.83     -0.17058014
GA0276  ------------------------------------------------------------------
GA0276  Click here for local accuracies and other accuracy information.
GA0276
GA0276
GA0276.The horizontal coordinates were established by GPS observations
GA0276.and adjusted by the National Geodetic Survey in June 2012.
GA0276
GA0276.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
GA0276.been affixed to the stable North American tectonic plate. See
GA0276.NA2011 for more information.
GA0276
GA0276.The horizontal coordinates are valid at the epoch date displayed above
GA0276.which is a decimal equivalence of Year/Month/Day.
GA0276
GA0276.The orthometric height was determined by differential leveling and
GA0276.adjusted by the NATIONAL GEODETIC SURVEY
GA0276.in June 1991.
GA0276
GA0276.Significant digits in the geoid height do not necessarily reflect accuracy.
GA0276.GEOID12B height accuracy estimate available here.
GA0276
GA0276.The X, Y, and Z were computed from the position and the ellipsoidal ht.
GA0276
GA0276.The Laplace correction was computed from DEFLEC12B derived deflections.
GA0276
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GA0276.The ellipsoidal height was determined by GPS observations
GA0276.and is referenced to NAD 83.
GA0276
GA0276.The dynamic height is computed by dividing the NAVD 88
GA0276.geopotential number by the normal gravity value computed on the
GA0276.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
GA0276.degrees latitude (g = 980.6199 gals.).
GA0276
GA0276.The modeled gravity was interpolated from observed gravity values.
GA0276
GA0276. The following values were computed from the NAD 83(2011) position.
GA0276
GA0276;                    North         East     Units Scale Factor Converg.
GA0276;SPC TN       -   256,643.696   925,070.061   MT  1.00003581   +2 07 37.7
GA0276;SPC TN       -   842,005.19  3,035,000.69   sFT  1.00003581   +2 07 37.7
GA0276;UTM  17      - 4,050,485.703   377,753.822   MT  0.99978411   -0 48 53.1
GA0276
GA0276!             -  Elev Factor  x  Scale Factor =   Combined Factor
GA0276!SPC TN       -   0.99991911  x   1.00003581  =   0.99995491
GA0276!UTM  17      -   0.99991911  x   0.99978411  =   0.99970323
GA0276
GA0276_U.S. NATIONAL GRID SPATIAL ADDRESS: 17SLA7775350485(NAD 83)
GA0276
GA0276                           SUPERSEDED SURVEY CONTROL
GA0276
GA0276  NAD 83(2007)-  36 35 31.30924(N)    082 21 59.82351(W) AD(2002.00) A
GA0276  ELLIP H (10/16/11)  515.507  (m)                       GP(2002.00) 3 2
GA0276  NAD 83(2007)-  36 35 31.30939(N)    082 21 59.82345(W) AD(2002.00) 0
GA0276  ELLIP H (02/10/07)  515.519  (m)                       GP(2002.00)
GA0276  NAD 83(1995)-  36 35 31.30956(N)    082 21 59.82323(W) AD(       ) A
GA0276  ELLIP H (08/03/04)  515.503  (m)                       GP(       ) 4 1
GA0276  NAVD 88             546.79   (m)         1793.9    (f) LEVELING    3
GA0276  NGVD 29 (??/??/92)  546.937  (m)         1794.41   (f) ADJ UNCH    2 0
GA0276
GA0276.Superseded values are not recommended for survey control.
GA0276
GA0276.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
GA0276.See file dsdata.txt to determine how the superseded data were derived.
GA0276
GA0276_MARKER: DB = BENCH MARK DISK
GA0276_SETTING: 66 = SET IN ROCK OUTCROP
GA0276_STAMPING: Y 108 1935
GA0276_MARK LOGO: CGS
GA0276_MAGNETIC: N = NO MAGNETIC MATERIAL
GA0276_STABILITY: A = MOST RELIABLE AND EXPECTED TO HOLD
GA0276+STABILITY: POSITION/ELEVATION WELL
GA0276_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
GA0276+SATELLITE: SATELLITE OBSERVATIONS - October 10, 2003
GA0276
GA0276  HISTORY     - Date     Condition        Report By
GA0276  HISTORY     - 1935     MONUMENTED       CGS
GA0276  HISTORY     - 1959     MARK NOT FOUND   TVA
GA0276  HISTORY     - 1964     GOOD             TVA
GA0276  HISTORY     - 20031010 GOOD             TNDT
GA0276
GA0276                           STATION DESCRIPTION
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GA0276
GA0276'DESCRIBED BY TENNESSEE VALLEY AUTHORITY 1959
GA0276'1.2 MI N FROM MILL POINT.
GA0276'1.2 MILES NORTH ALONG A COUNTY ROAD LEADING TO THE STATE LINE
GA0276'FROM THE POST OFFICE AT MILL POINT, SULLIVAN COUNTY, 25 YARDS
GA0276'SOUTH OF THE JUNCTION OF A ROAD LEADING EAST, 45 YARDS NORTH
GA0276'OF THE J.A. LETTURE BARN, 24 FEET WEST OF THE CENTERLINE OF THE
GA0276'ROAD, 12 FEET WEST OF A WIRE FENCE, IN THE TOP OF A ROCK OUTCROP,
GA0276'AND 1 FOOT LOWER THAN THE ROAD.  A STANDARD DISK, STAMPED Y 108
GA0276'1935.
GA0276
GA0276                          STATION RECOVERY (1964)
GA0276
GA0276'RECOVERY NOTE BY TENNESSEE VALLEY AUTHORITY 1964
GA0276'RECOVERED IN GOOD CONDITION.
GA0276
GA0276                          STATION RECOVERY (2003)
GA0276
GA0276'RECOVERY NOTE BY TN DEPT OF TRANSP 2003
GA0276'RECOVERED AS DESCRIBED.

*** retrieval complete.
Elapsed Time = 00:00:21
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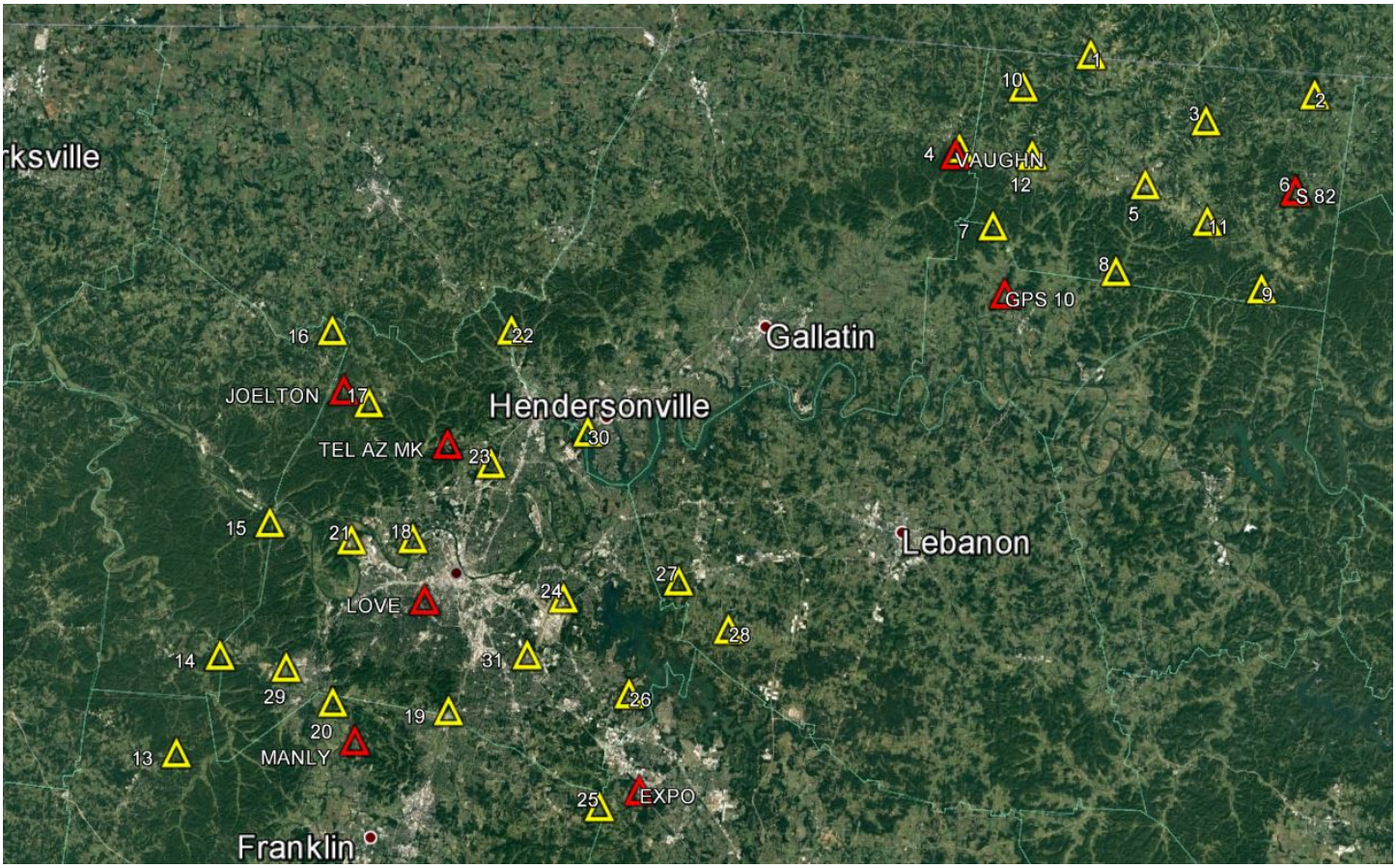
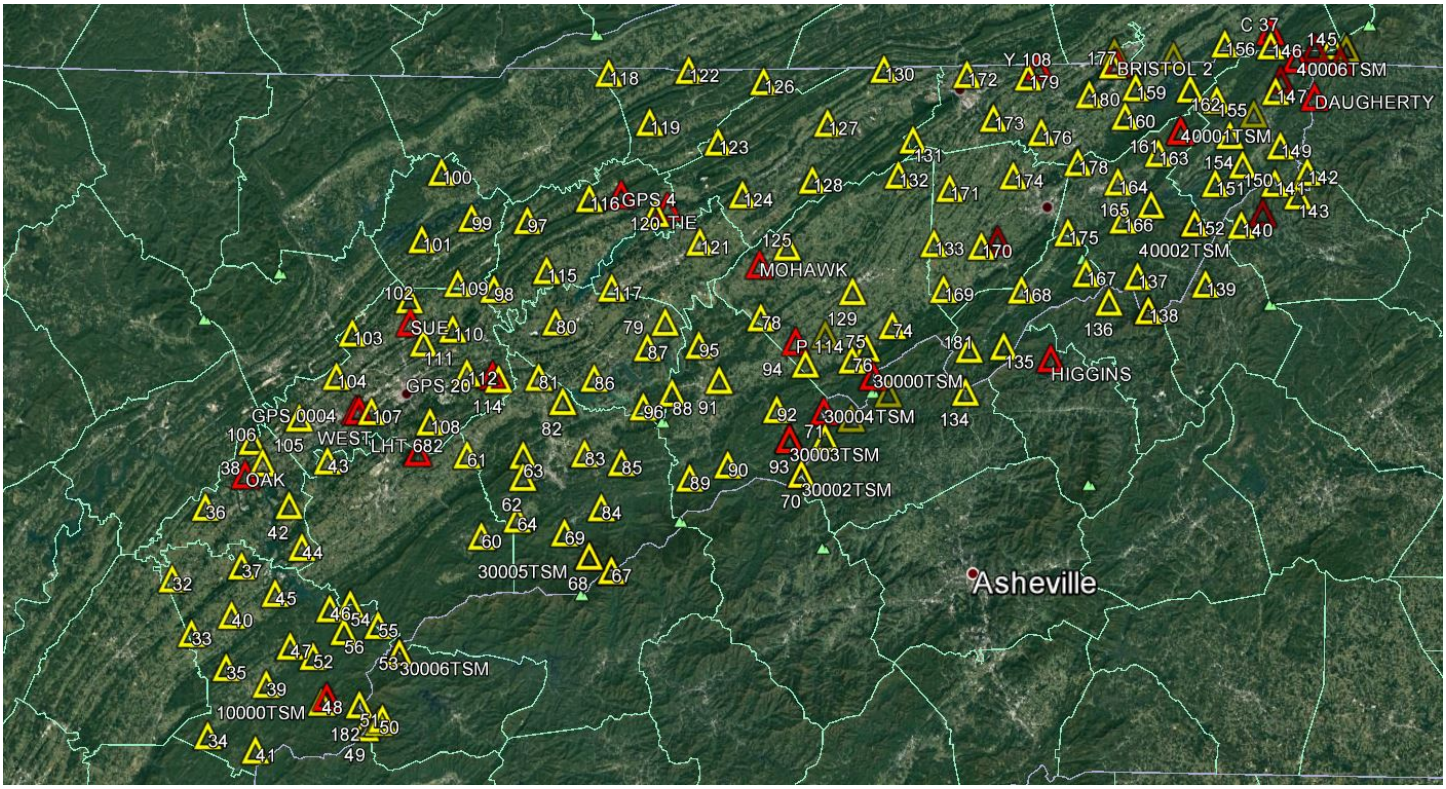
Section 5: GPS Control Diagram

This section contains a graphical representation of the new and existing control stations used for the project.



N

Not to Scale


C 37
Y 108
BRISTOL 2
40006TSM
DAUGHERTY
40001TSM
GPS 4
THE
MOHAWK
40002TSM
SUE
GPS 26
P 114
30000TSM
HIGGINS
GPS 0004
WEST
LHT 682
OAK
30004TSM
30003TSM
30002TSM
30005TSM
30006TSM
10000TSM
Asheville
N
Not to Scale