

**TENNESSEE DEPARTMENT  
OF  
TRANSPORTATION  
TENNESSEE GEODETIC REFERENCE NETWORK  
\* \* \* TGRN \* \* \*  
REFERENCE MANUAL**

***Second Edition***

***Issued by the Design Division***

***DISCLAIMER***

This information is provided as a service to the public. The agency providing it has no duty to do so.

While efforts have been made to assure accuracy, the user understands that the State of Tennessee assumes no liability for correctness of this information, and the user assumes any risk associated with its use.

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## **TENNESSEE GEODETIC REFERENCE NETWORK**

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### **NETWORK DESCRIPTION**

The Tennessee Geodetic Reference Network (TGRN) consists of sixty (60) highly accurate, three-dimensional marks spaced evenly across the state. Most locations in the state fall within 25 kilometers (15 miles) from a network station, a suitable reference distance for surveys performed by single or dual frequency Global Positioning System (GPS) receivers.

The network has been surveyed to Order B geodetic accuracy standards as specified in the "Proposed Geometric Geodetic Survey Standards and Specifications for Geodetic Surveys Using GPS Relative Positioning Techniques," (Hothem 1986). It is tied to the North American Datum of 1983 (NAD/83) by connections to three (3) stations of the National Geodetic Survey (NGS) Eastern United States Strain Network. Internal accuracies of the network stations exceed 1:1,000,000. Coordinates are described as NAD 83 (1995).

Azimuth points are located at twelve (12) of the TGRN stations and others may be added in the future. However, the TRGN is intended as a reference for GPS surveys, which require no azimuth marks, and their installation is of low priority. Existing azimuth marks and any future points will be fully described in this document.

Monuments at TGRN stations are brass caps in exposed bedrock outcroppings or driven steel rods encased in PVC pipe with access covers. Most stations have a fiberglass or conventional metal witness post nearby.

The T.D.O.T. is responsible for maintenance of the TRGN and any pertinent information concerning potential or existing problems at monument sites will be appreciated. Any destruction of the monument or witness post, new or proposed development in the immediate area, changes in visibility around the mark, etc., should be reported to the T.D.O.T. Survey Coordinator, Design Division, 1300 James K. Polk Bldg., Nashville, Tennessee 37243-0348, 615-741-5969. Users should also be careful to insure that access covers are tightly closed upon completion of a survey.



**USE OF THIS MANUAL**

This document is designed to provide the user with information necessary for locating and using the stations of the Tennessee Geodetic Reference Network (TGRN) as reference points for GPS surveys.

In addition to summary sheets listing station coordinates, etc., each of the sixty (60) network stations are described by three sheets as follows:

Description: Contains all pertinent written information relative to the mark, including coordinates, elevation, location, to reach, etc.

Visibility Diagram: A standard visibility diagram illustrating, in most cases, any obstructions extending above 10<sup>0</sup>. Obstructions below 10<sup>0</sup> may not be shown, however if clear visibility extends below 10<sup>0</sup>, it will be so noted.

Quad Sheet: The station is indicated on a portion of a USGS quadrangle map, scale 1:24,000.

The map is placed such that north is toward the top of the page. Stations with azimuth marks have an additional description sheet and visibility diagram for the azimuth marks.

Any error or inaccuracies in the descriptions, visibility diagrams or quad sheets should be reported to the T.D.O.T. Survey Coordinator as shown on the previous page.

**EXPLANATION OF DATA**

It should be noted that state plane coordinates and ellipsoid values are given in meters. The T.D.O.T. converts meters to U.S. Survey Feet for design computations. The conversion is accomplished by multiplying meters by 39.37/12, which is 3.28083333333 to 12 significant figures.

Elevations are given in feet and meters, referenced to the NAVD 1988 and are considered accurate to the nearest listed decimal. Elevations of the network stations were determined using conventional spirit leveling, performed to second order closure standards. Elevations for the replacement stations were computed using the WGS 84 Reference Ellipsoid and the Geoid 96 model, as noted throughout this document. Elevations for azimuth marks were determined from computations using the WGS 84 Reference Ellipsoid and the Geoid 96 Model.

Azimuth marks were surveyed as part of a GPS project separate from the TGRN survey previously described. The requirement for azimuth mark accuracy was First Order (1:100,000).

## **TENNESSEE GEODETIC REFERENCE NETWORK**

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### **USE OF THE NETWORK**

As previously stated, the TGRN is designed primarily as a reference system for GPS surveys. It was developed and is owned by T.D.O.T. However, it is also part of the NGRS and available for public use.

The T.D.O.T. reserves the right of access to TGRN stations at any time required to meet work schedules. To avoid potential conflicts, other users should contact T.D.O.T. offices, as noted below, before stations are occupied. Station occupation by other than T.D.O.T. crews will generally be on a first come first served basis. However, special consideration will be given to certain uses, e.g., crustal motion surveys, research projects, etc.

#### **T.D.O.T. Contacts – Special Projects**

All Regions:	Survey Coordinator Design Division 1300 James K. Polk Bldg. Nashville, TN 37234-0348	Phone - (615) 741-5969 Fax - (615) 532-2799
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#### **T.D.O.T. Contacts – Usual Survey Projects**

Region 1:	GPS Crew Supervisor Regional Survey Office Supervisor Survey Office 7345 Region Lane Knoxville, TN 37914	Phone - (865) 594-2357 Phone - (865) 594-2356
Region 2:	GPS Crew Supervisor Regional Survey Office Supervisor Survey Office P.O. Box 22368 Chattanooga, TN 37422	Phone - (423) 510-1146 Phone - (423) 510-1144
Region 3:	GPS Crew Supervisor Regional Survey Office Supervisor Survey Office 6601 Centennial Boulevard Nashville, TN 37243-0360	Phone - (615) 350-4487 Phone - (615) 350-4252
Region 4:	GPS Crew Supervisor Regional Survey Office Supervisor Survey Office 300 Benchmark Place Jackson, TN 38302	Phone - (731) 935-0239 Phone - (731) 935-0137

## ***TENNESSEE GEODETIC REFERENCE NETWORK***

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It is recommended that GPS survey projects utilizing the TGRN as a reference begin at a station of the TGRN and end at another station of the TGRN. Network points are relatively closely spaced across the state making this procedure easily possible. Projects should not be tied to conventional stations of the NGRS. Such factors as local distortion, extreme differences in accuracy etc. may result in closures worse than the published accuracy of the NGRS stations. The NGRS will, at some point, publish a re-adjustment of the NGRS in Tennessee relative to the TGRN. This adjustment should significantly improve the quality of ties between TGRN and NGRS points. However, for best results, GPS surveys should be adjusted to TGRN stations exclusively.

Some network stations are located at city/county airports and require permission for entry to the property. The station description includes directions for obtaining entry. If, however, those procedures fail, contact should be made with the local police or county sheriff's office. Contact with the airport office during working hours when nighttime observations are required is also strongly recommended. The fields are often locked and local police usually do not have keys.

There are a number of factors which influence the relationship between geoid height, ellipsoid height and orthometric elevation. Consequently, a precise geoid elevation is not always derived from differencing the elevation and ellipsoid height listed in this document. However, T.D.O.T. has in most cases found this procedure to be satisfactory for engineering work.

TENNESSEE GEODETIC REFERENCE NETWORK LISTING

1983 (1995) DATUM

STATION NAME	LATITUDE (NORTH)			LONGITUDE (WEST)			NORTHING (Y) (meters)	EASTING (X) (meters)	ZONE	CONVERGENCE			SCALE FACTOR	ELLIPSOID ELEVATION (meters)	NAVD88 ELEV. (meters)
										D	M	S			
GPS 1	36	22	6.43923	82	10	46.87679	232489.480	942754.124	TN	+ 2	14	11.6	0.99999180	442.787	475.044
GPS 2	36	24	5.68835	82	36	45.67357	234732.431	903795.239	TN	+ 1	58	59.0	0.99999736	501.520	532.898
GPS 3	36	27	23.98466	82	53	12.35190	240025.304	879028.538	TN	+ 1	49	21.4	1.00000734	349.671	381.081
GPS 4	36	21	0.80437	83	23	36.35206	226891.329	833944.070	TN	+ 1	31	33.6	0.99998889	560.426	591.542
GPS 5	36	21	19.01611	83	50	37.77662	226468.911	793515.132	TN	+ 1	15	44.3	0.99998969	347.467	378.005
GPS 6	36	24	50.17099	84	16	51.61977	232199.681	754168.868	TN	+ 1	0	22.9	0.99999952	532.285	561.711
GPS 7	36	21	32.15041	84	49	55.88927	225367.296	704811.214	TN	+ 0	41	1.3	0.99999027	456.818	485.650
GPS 8	36	26	26.05199	85	14	39.27422	234062.789	667760.442	TN	+ 0	26	32.8	1.00000433	283.553	314.137
GPS 9	36	23	12.08772	85	38	11.58508	227882.940	632608.894	TN	+ 0	12	46.0	0.99999482	134.525	164.757
GPS 10	36	25	20.90063	86	10	56.62007	231808.158	583642.796	TN	- 0	6	24.4	1.00000103	124.633	154.109
GPS 11	36	25	3.03384	86	43	2.18380	231477.921	535671.167	TN	- 0	25	11.7	1.00000015	220.749	250.351
GPS 12	36	26	56.15662	87	5	55.14863	235281.953	501507.416	TN	- 0	38	35.5	1.00000588	182.866	212.305
GPS 13	36	26	12.08662	87	28	39.59121	234370.897	467511.300	TN	- 0	51	54.3	1.00000361	104.652	134.104
GPS 14	36	27	55.87137	87	59	17.61954	238379.917	421804.201	TN	- 1	9	50.4	1.00000903	115.117	144.058
GPS 15	36	20	29.80229	88	22	43.77071	225415.400	386468.876	TN	- 1	23	33.6	0.99998755	144.686	173.017
GPS 16	36	18	40.14105	88	46	14.11174	222961.771	351216.147	TN	- 1	37	19.2	0.99998299	95.615	123.814
GPS 17	36	17	0.92962	89	12	15.25245	221094.024	312189.551	TN	- 1	52	33.2	0.99997910	66.419	94.670
GPS 18	36	11	36.69841	82	48	47.61259	211054.539	886567.843	TN	+ 1	51	56.4	0.99996802	457.171	488.499
GPS 19	35	58	12.57726	83	15	33.63286	185065.499	847156.481	TN	+ 1	36	16.2	0.99995121	368.487	399.303
GPS 20	35	59	46.63703	83	42	37.72458	186918.108	806412.669	TN	+ 1	20	25.4	0.99995239	277.894	308.663
GPS 21	35	58	32.57520	84	10	42.59261	183749.668	764266.219	TN	+ 1	3	59.0	0.99995145	272.178	302.843
GPS 22	35	58	13.97076	84	29	53.89903	182686.679	735436.740	TN	+ 0	52	44.9	0.99995123	218.050	248.072

**TENNESSEE GEODETIC REFERENCE NETWORK**

**TENNESSEE GEODETIC REFERENCE NETWORK LISTING**

**1983 (1995) DATUM**

STATION NAME	LATITUDE (NORTH)			LONGITUDE (WEST)			NORTHING (Y) (meters)	EASTING (X) (meters)	ZONE	CONVERGENCE			SCALE FACTOR	ELLIPSOID ELEVATION (meters)	NAVD88 ELEV. (meters)	
	D	M	S													
GPS 23	35	59	59.73334	85	2	40.17756	185327.762	686146.592	TN	+	0	33	33.8	0.99995258	504.701	533.472
GPS 24	36	0	18.93229	85	30	12.08369	185612.552	644773.926	TN	+	0	17	26.7	0.99995285	285.308	314.526
GPS 25	36	0	13.92199	85	58	26.32378	185344.838	602345.939	TN	+	0	0	54.8	0.99995278	156.497	185.733
GPS 26	36	0	42.03374	86	21	50.65409	186271.990	567180.505	TN	-	0	12	47.3	0.99995319	149.407	178.261
GPS 27	35	57	56.80756	86	48	18.24648	181417.276	527385.086	TN	-	0	28	16.7	0.99995103	195.362	224.232
GPS 28	36	1	9.46654	87	15	23.50236	187783.506	486742.735	TN	-	0	44	8.2	0.99995361	184.562	213.258
GPS 29	36	6	50.74940	87	44	30.11690	198970.353	443203.003	TN	-	1	1	10.8	0.99996031	200.418	229.182
GPS 30	36	0	43.56473	88	7	22.15355	188333.446	408651.887	TN	-	1	14	34.0	0.99995321	110.918	139.319
GPS 31	35	56	20.27975	88	34	22.61540	181195.087	367873.166	TN	-	1	30	22.7	0.99995007	131.773	160.107
GPS 32	35	55	40.36036	88	59	52.36166	181056.413	329510.244	TN	-	1	45	18.3	0.99994974	69.378	97.590
GPS 33	35	59	54.49354	89	24	13.70245	190081.966	293170.794	TN	-	1	59	33.8	0.99995250	71.660	99.801
GPS34-V2-9	35	44	25.59370	83	59	19.92189	157986.358	781901.535	TN	+	1	10	38.6	0.99994973	283.883	314.211
GPS 35	35	32	36.90156	84	22	59.97885	135487.098	746588.083	TN	+	0	56	47.3	0.99996118	287.116	317.376
GPS 36	35	37	25.02507	84	46	28.67730	143850.763	710998.362	TN	+	0	43	2.6	0.99995511	198.857	229.139
GPS 37	35	34	56.79049	85	13	4.09281	138870.791	670891.887	TN	+	0	27	28.5	0.99995799	222.754	251.899
GPS 38	35	36	22.02445	85	42	19.11789	141254.477	626700.578	TN	+	0	10	21.1	0.99995627	242.582	272.043
GPS 39	35	37	25.18832	86	8	31.33914	143170.237	587133.284	TN	-	0	4	59.4	0.99995511	329.255	354.782
GPS 40	35	36	39.00001	86	34	50.78192	141893.566	547381.950	TN	-	0	20	24.0	0.99995595	184.959	213.024
GPS 41	35	36	50.00367	87	4	45.27711	142615.670	502225.601	TN	-	0	37	54.6	0.99995574	168.868	196.620
GPS 42	35	34	35.65475	87	25	47.83248	138882.974	470394.430	TN	-	0	50	13.7	0.99995844	158.686	186.739
GPS 43	35	37	0.11024	87	50	10.44976	143948.562	433657.882	TN	-	1	4	30.0	0.99995556	141.384	169.531
GPS 44	35	39	16.41539	88	22	50.45988	149210.603	384447.938	TN	-	1	23	37.5	0.99995328	128.622	156.752

**TENNESSEE GEODETIC REFERENCE NETWORK**

**TENNESSEE GEODETIC REFERENCE NETWORK LISTING**

**1983 (1995) DATUM**

STATION NAME	LATITUDE (NORTH)			LONGITUDE (WEST)			NORTHING (Y) (meters)	EASTING (X) (meters)	ZONE	CONVERGENCE			SCALE FACTOR	ELLIPSOID ELEVATION (meters)	NAVD88 ELEV. (meters)	
										D	M	S				
GPS 45	35	34	11.15853	88	48	37.73490	140838.947	345272.828	TN	-	1	38	43.3	0.99995898	92.260	120.443
GPS 46	35	32	25.93758	89	14	21.79851	138799.476	306304.956	TN	-	1	53	47.3	0.99996145	88.510	116.327
GPS 47	35	35	23.72751	89	35	7.90381	145369.229	275136.637	TN	-	2	5	56.8	0.99995743	54.946	82.256
GPS 48	35	13	30.67645	84	34	54.50769	99887.197	729104.556	TN	+	0	49	49.0	1.00000447	213.890	243.645
GPS 48R	35	14	46.82218	84	34	3.03065	102252.571	730371.836	TN	+	0	50	19.1	1.00000065	195.306	**225.081
GPS 49	35	11	0.08451	85	3	41.11929	94720.735	685489.249	TN	+	0	32	58.1	1.00001243	231.325	261.396
GPS 50	35	11	23.59597	85	29	5.80634	95158.817	646909.746	TN	+	0	18	5.5	1.00001115	179.226	208.276
GPS 51*	35	12	18.47480	85	53	51.36649	96731.521	609324.431	TN	+	0	3	35.1	1.00000822	563.281	591.969
GPS 52	35	14	28.42030	86	24	38.98606	100809.803	562606.579	TN	-	0	14	25.9	1.00000156	201.404	229.638
GPS 53	35	11	36.35019	86	52	12.66117	95780.765	520750.132	TN	-	0	30	34.0	1.00001046	207.692	235.364
GPS 54	35	14	4.78742	87	15	35.36870	100741.095	485325.066	TN	-	0	44	15.2	1.00000274	257.388	285.054
GPS 55	35	13	3.70427	87	43	10.78428	99496.050	443439.219	TN	-	1	0	24.3	1.00000586	301.681	329.384
GPS 56	35	13	53.40625	88	11	22.03225	101881.560	400709.327	TN	-	1	16	54.5	1.00000332	96.501	124.062
GPS 57	35	12	21.02953	88	29	58.23938	99711.687	372420.007	TN	-	1	27	47.9	1.00000809	156.577	184.197
GPS 58	35	12	44.84620	89	2	36.18469	101847.588	322937.768	TN	-	1	46	54.2	1.00000684	123.473	151.291
GPS 59	35	9	21.84872	89	26	47.90713	96812.678	286020.331	TN	-	2	1	4.1	1.00001790	96.964	124.595
GPS 60	35	8	46.44496	89	54	24.04763	97296.815	244089.427	TN	-	2	17	13.7	1.00001993	56.712	84.091

\* GPS 51-RESET

\*\* GPS derived elevation using the Geoid 96 Model and the WGS 1984 Reference Ellipsoid

**GPS - 1**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 22' 6.43923"</b>	TN Northing:	<b>232489.480 m</b>
Longitude:	<b>82° 10' 46.87679"</b>	TN Easting:	<b>942754.124 m</b>
Elevation:	<b>475.044 m (1,558.54 ft)</b>		
Convergence:	<b>+2° 14' 11.6"</b>	Scale Factor:	<b>0.99999180</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Carter</b>	Nearest Town:	<b>Elizabethton</b>
USGS QUAD:	<b>Elizabethton</b>	TVA Designation:	<b>207-SW</b>

Description:

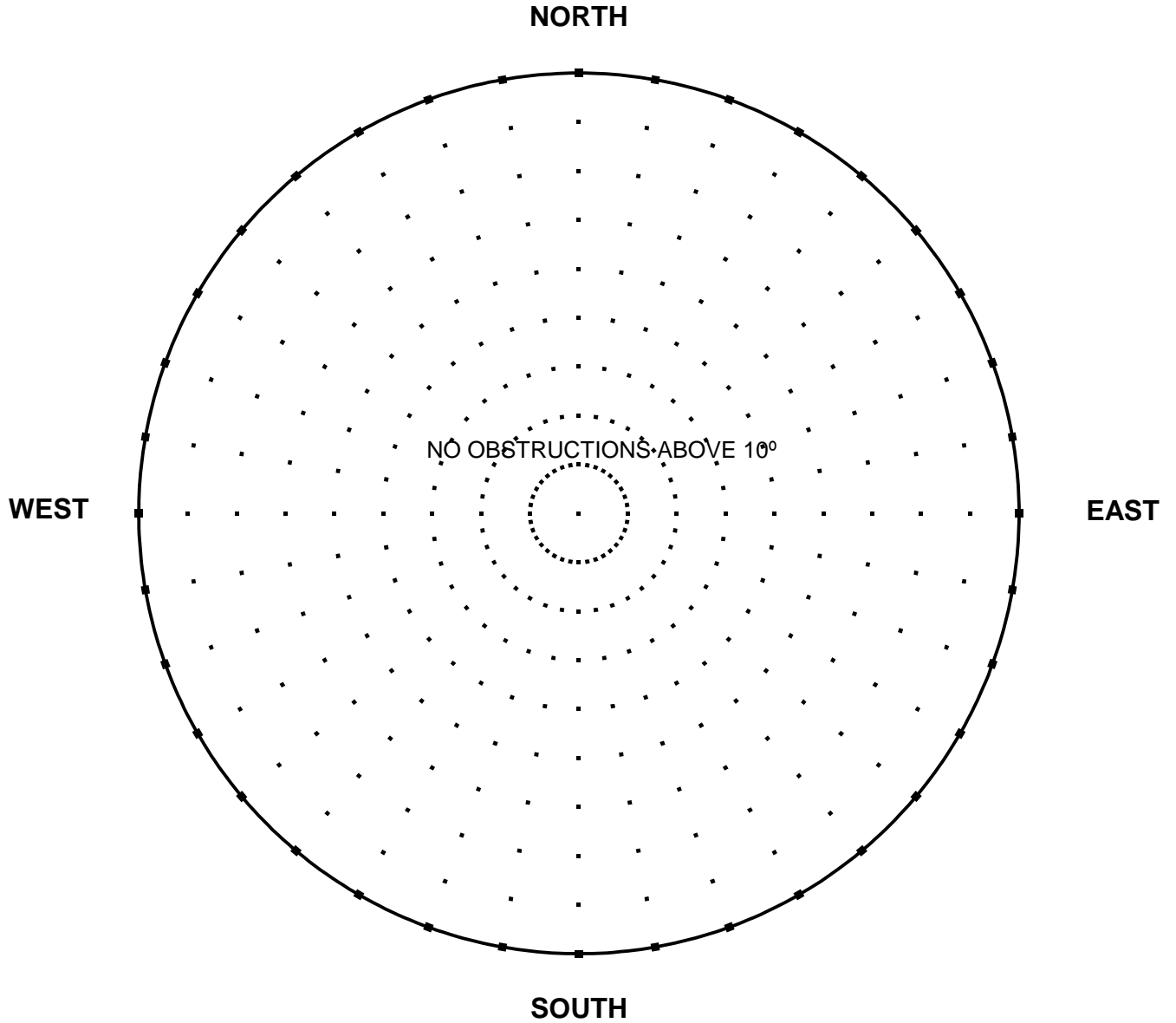
**The station is located about 3.2 km (2 mi.) east-northeast of Elizabethton on the Elizabethton Airport. The airport is located on the north side of State Route 91. Ownership--Airport Manager is Mr. Mike Shouse, telephone (615) 543-0281.**

**The station is located about 3.2 km (2 mi.) east-northeast of Elizabethton on the Elizabethton Airport at the southwest end of the runway, between the runway and the taxiway.**

**The station is a 3-D mark with stainless steel rod driven 2.7 m (9 ft.). The logo is stamped--GPS 1 1987--, and a steel spike is embedded in the concrete. Located 57.6 m (189 ft.) south from the southwest corner of the airport office, 67.4 m (221 ft.) southeast from a fire hydrant, 43.9 m (144 ft.) north-northwest from the runway centerline, 14.3 m (47 ft.) east-northeast from the taxiway crossover centerline, 5.03 m (16.5 ft.) west-northwest from the east end of a 900 mm (3 ft.) steel culvert pipe, 0.24 m (0.8 ft.) north from a fiberglass witness post.**



# STATION VISIBILITY DIAGRAM

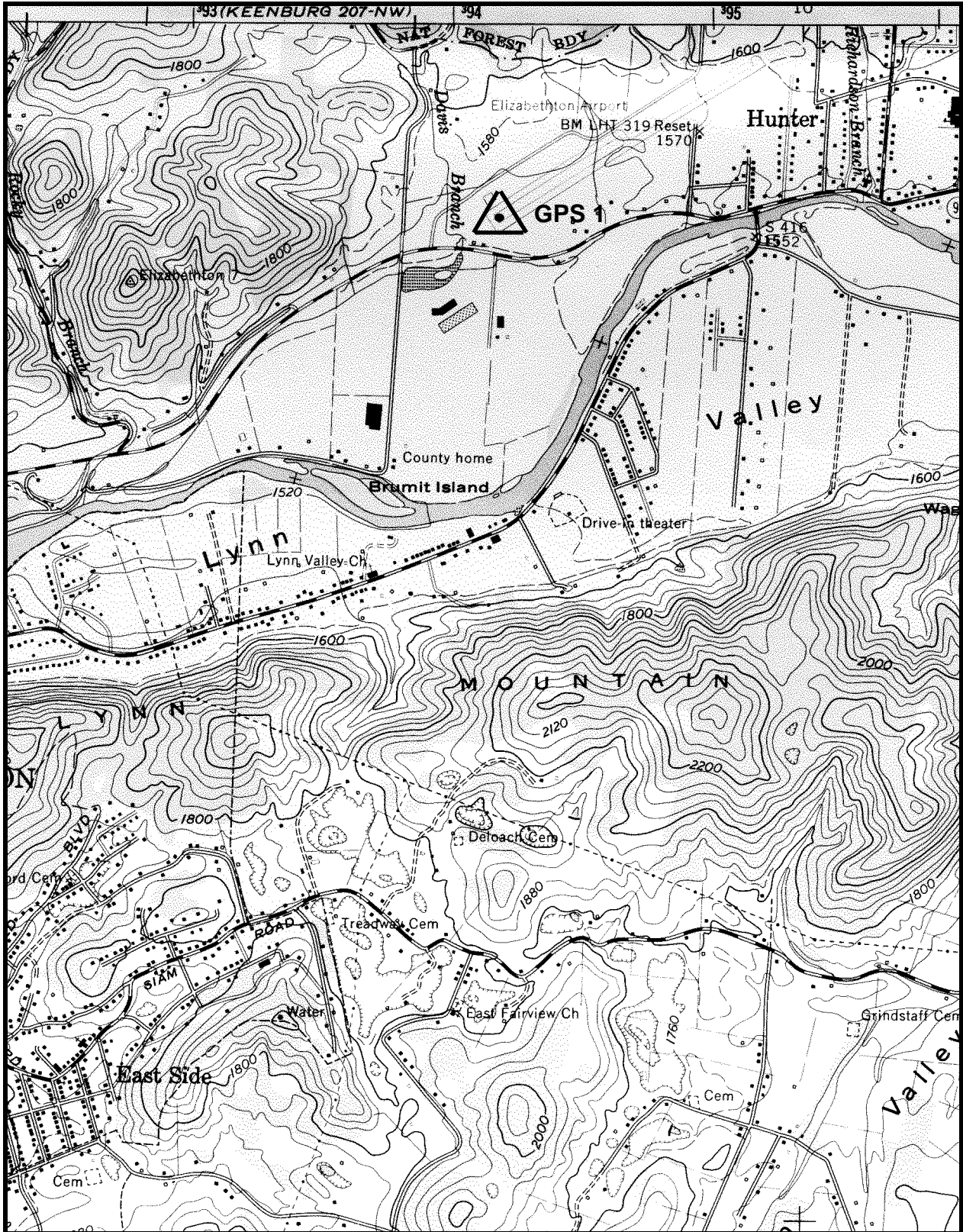


ELEVATION 475.044 m (1,558.54 ft)  
LATITUDE 36° 22' 6"  
LONGITUDE 82° 10' 47"  
STATION NAME GPS 1

DATE July 1997  
ORGANIZATION TDOT  
MAP SCALE 7 1/2' USGS  
MAP SHEET 207-SW, Elizabethton  
OBSERVER CLJ  
Observer's height 6'

NOTES:

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 1

207-SW, ELIZABETHTON

**GPS - 2**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 24' 5.68835"</b>	TN Northing:	<b>234732.431 m</b>
Longitude:	<b>82° 36' 45.67357"</b>	TN Easting:	<b>903795.239 m</b>
Elevation:	<b>532.898 m (1,748.35 ft)</b>		
Convergence:	<b>+1° 58' 59.0"</b>	Scale Factor:	<b>0.99999736</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Washington</b>	Nearest Town:	<b>Johnson City</b>
USGS QUAD:	<b>Sullivan Gardens</b>	TVA Designation:	<b>189-NE</b>

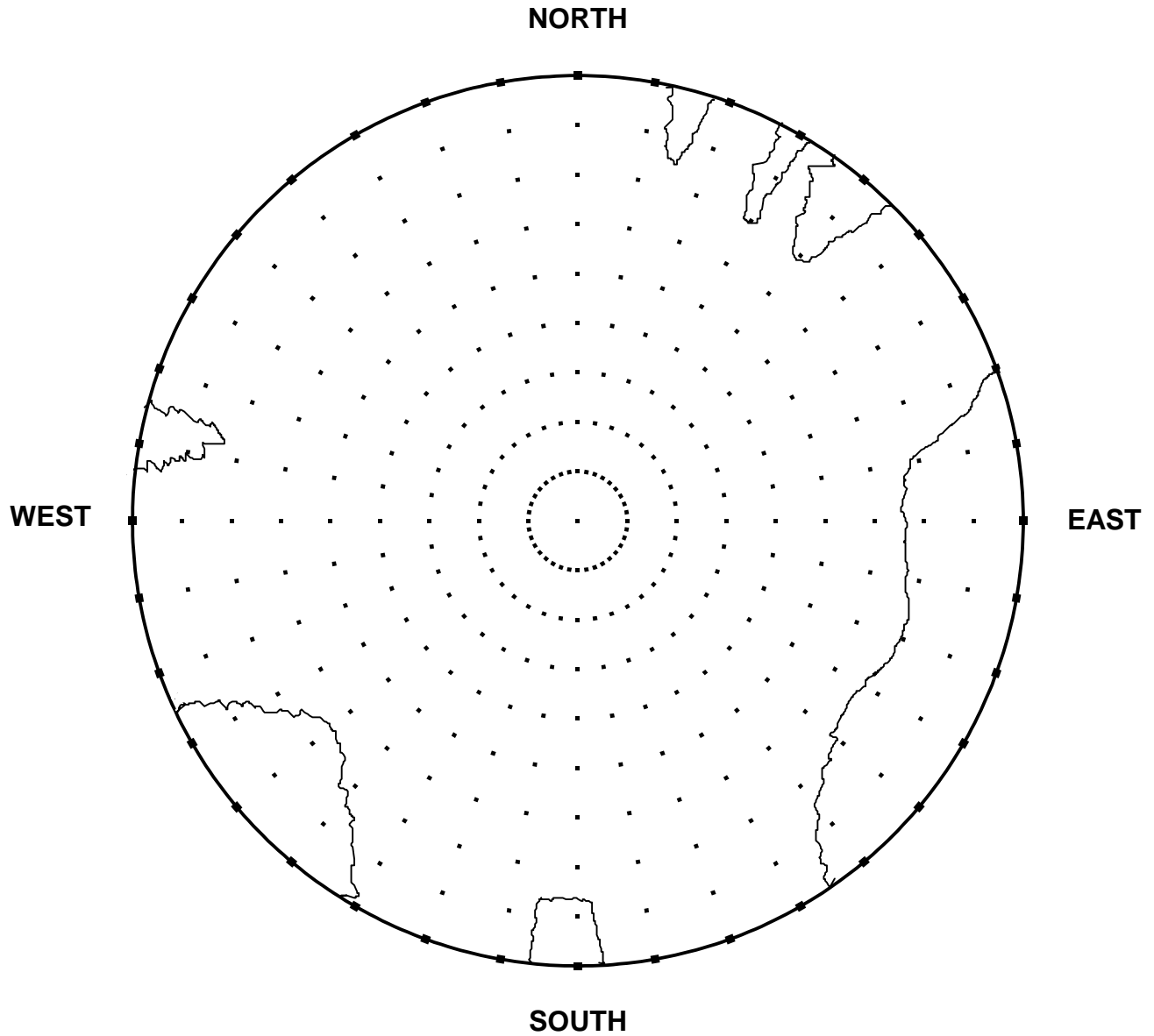
Description:

**The station is located about 24.1 km (11.5 mi.) northwest of Johnson City at the junction of Interstate 81 and State Route 93 at exit number 50. Ownership---Roadway Right-of-Way.**

**The station is located at the junction of Interstate 81 and State Route 93 at exit number 50 atop a 12.2 m (40 ft.) hill in the triangle plot of ground formed by the exit and entrance ramps of northbound Interstate 81.**

**The station is a standard NGS disk stamped---GPS 2 1987---, set into a drill hole in bedrock outcrop measuring 0.3 m (1.0 ft.) by 0.5 m (1.5 ft.) and projecting 0.06 m (0.2 ft.). Located 10.13 m (33.24 ft.) south from Station Mac 2, a plain brass disk stamped---Mac-2 T-DOT 1984---, and set into the top of a 300 mm concrete monument flush with ground, 6.7 m (22 ft.) northeast from the top of a 12.2 m (40 ft.) cut, 0.5 m (1.5 ft.) northeast from a fiberglass witness post.**

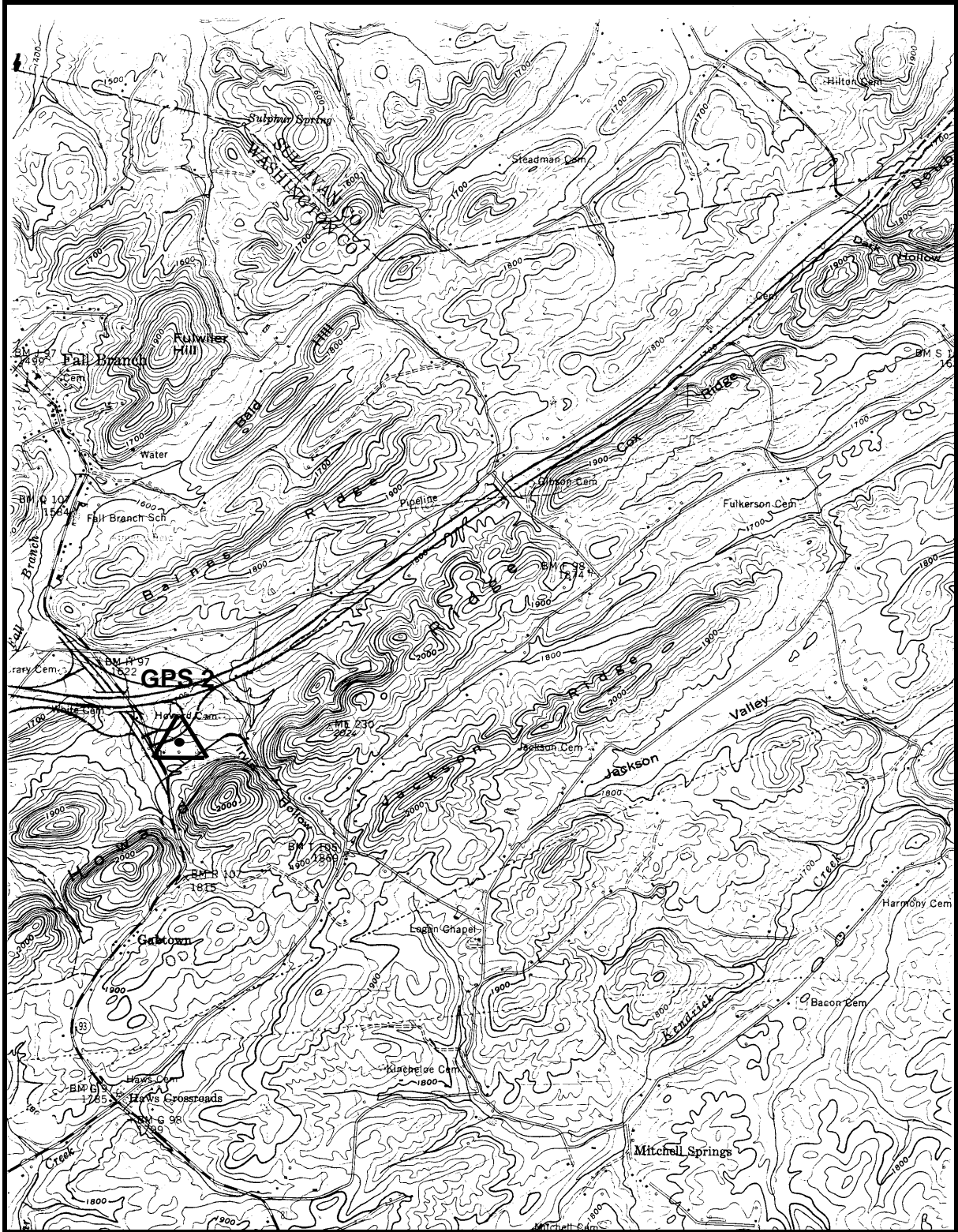
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>532.898 m (1,748.35 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 24' 6"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>82° 36' 46"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 2</u>	MAP SHEET	<u>189-NE, Sullivan Gardens</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

# TENNESSEE GEODETIC REFERENCE NETWORK



GPS 2

189-NE, SULLIVAN GARDENS

**GPS - 3**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 27' 23.98466"</b>	TN Northing:	<b>240025.304 m</b>
Longitude:	<b>82° 53' 12.35190"</b>	TN Easting:	<b>879028.538 m</b>
Elevation:	<b>381.081 m (1,250.26 ft)</b>		
Convergence:	<b>+1° 49' 21.4"</b>	Scale Factor:	<b>1.00000734</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Hawkins</b>	Nearest Town:	<b>Surgoinsville</b>
USGS QUAD:	<b>Burem</b>	TVA Designation:	<b>180-NW</b>

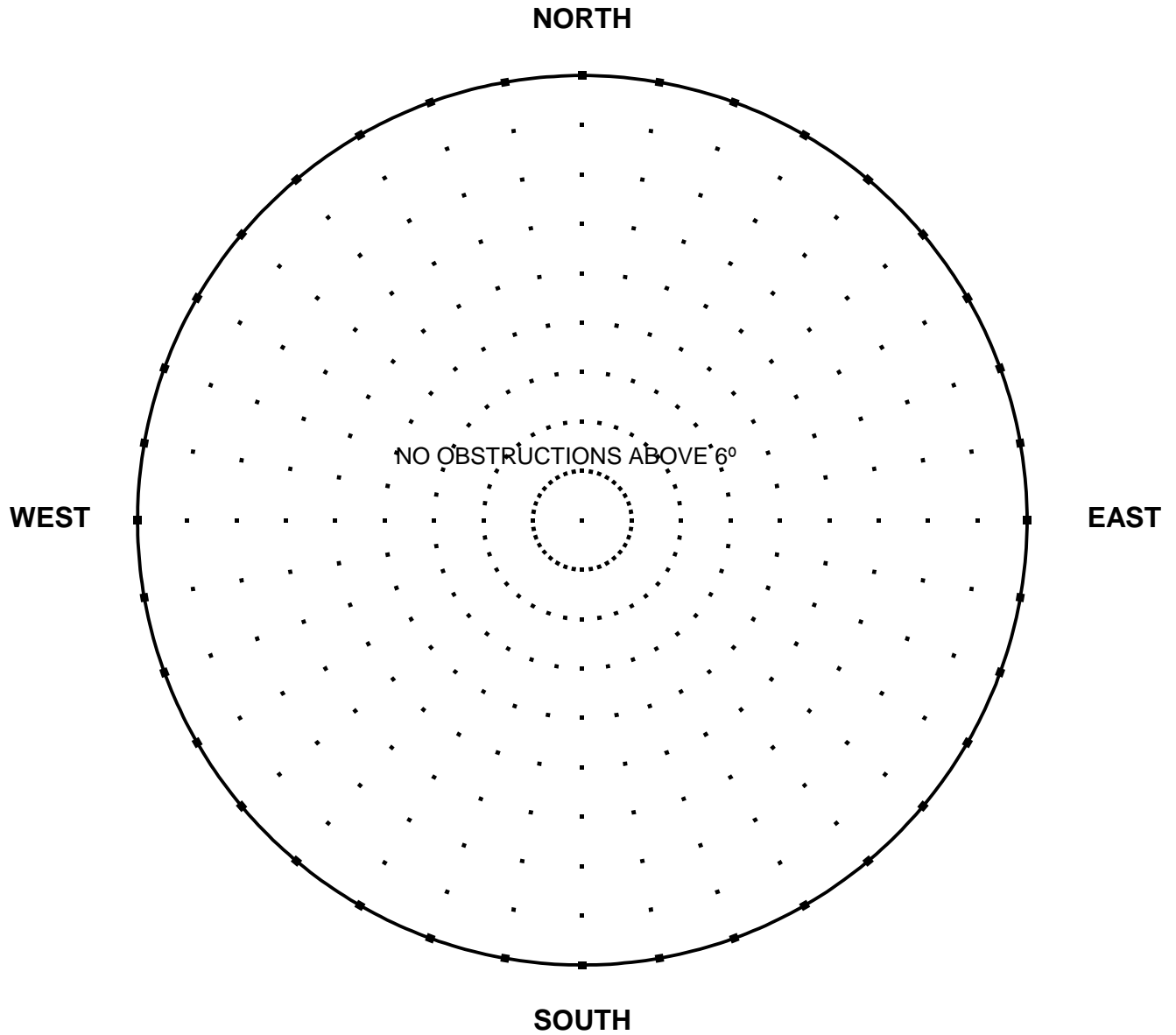
Description:

The station is located about 12.9 km (8 mi.) northeast of Rogersville, at the west edge of Surgoinsville, on the Rogersville/Hawkins County Airport, near the junction of the runway and the taxiway. Ownership--- Airport Manager is Mr. Earl Hayborn telephone (615) 345-0219.

To reach the station from the junction of TN 70N, State Route 347E, and U.S. Highway 11W at the northeast edge of Rogersville, go northeast for 8.7 km (5.4 mi.) on U.S. Highway 11W to the junction of State Route 346N on the right. Turn right and go southeast for 2.66 km (1.65 mi.) on State Route 346N to a paved road on the left leading to the airport, turn left and go north for 0.16 km (0.1 mi.) on the paved road to the airport office and hangar building. Pass on paved road west of hangar/office building through a gate and go west for 0.08 km (0.05 mi.) to the station.

The station is a 3-D mark with stainless rod driven 5.8 m (19 ft.). The logo cap is stamped---GPS 3 1987---, and a steel spike is set in the concrete. Located 23.6 m (77.5 ft.) south-southeast from the runway centerline, 14.9 m (49 ft.) north from the taxiway centerline, 6.7 m (22 ft.) east from the blue taxiway light at the junction of the runway and the taxiway, 0.4 m (1.3 ft.) east from a fiberglass witness post.

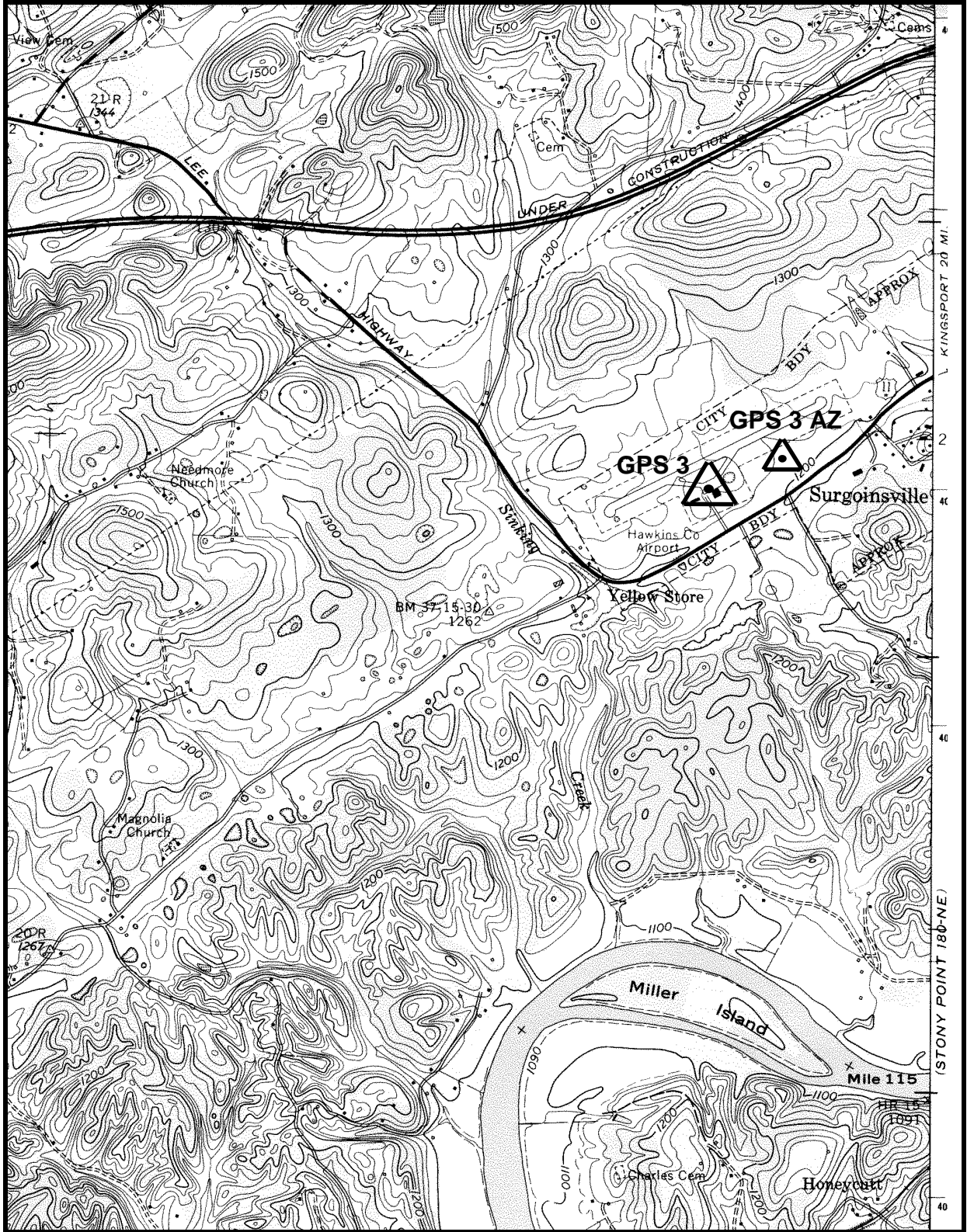
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>381.081 m (1,250.26 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 27' 24"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>82° 53' 12"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 3</u>	MAP SHEET	<u>180-NW, Burem</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 3

180-NW, BUREM



**GPS - 3 AZ MK**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 27' 30.34068 "</b>	TN Northing:	<b>240233.539 m</b>
Longitude:	<b>82° 52' 56.68910"</b>	TN Easting:	<b>879412.111 m</b>
Elevation:	<b>377.239 m* (1,237.66 ft)</b>		
Convergence:	<b>+1° 49' 30.6"</b>	Scale Factor:	<b>1.00000767</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Hawkins</b>	Nearest Town:	<b>Surgoinsville</b>
USGS QUAD:	<b>Burem</b>	TVA Designation:	<b>180-NW</b>

Description:

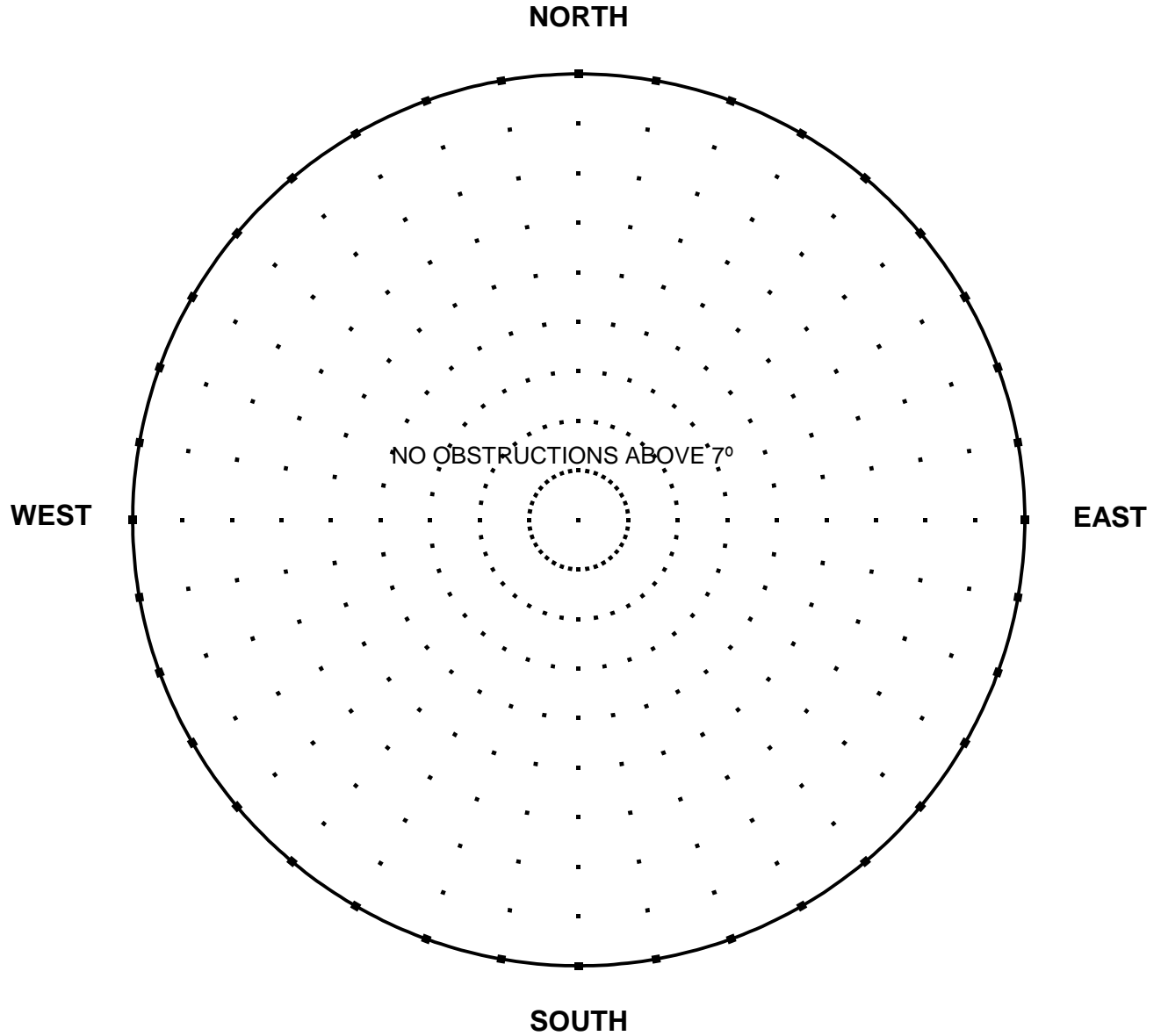
The azimuth mark is located about 12.9 km (8 mi.) northeast of Rogersville, at the west edge of Surgoinsville, on the Rogersville/Hawkins County Airport, near the junction of the runway and the taxiway. Ownership---Airport Manager is Mr. Earl Hayborn, telephone (615) 345-0219.

To reach the azimuth mark from the junction of TN 70N, State Route 347E, and U.S. Highway 11W at the northeast edge of Rogersville, go northeast for 8.7 km (5.4 mi.) on U.S. Highway 11W to the junction of State Route 346N on the right. Turn right and go southeast for 2.66 km (1.65 mi.) on State Route 346N to a paved road on the left leading to the airport, turn left and go north for 0.16 km (0.1 mi.) on the paved road to the airport office and hangar building. Pass on the paved road west of the hangar/office building through a gate and go east for 0.40 km (0.25 mi.) along the taxiway and runway to the mark on the right, 0.16 km (0.1 mi.) east of the Y junction of the taxiway and runway.

The azimuth is a 3-D mark with stainless rod driven 13.1 m (43 ft.). The logo cap is stamped---GPS 3 AZ MK 1987---, and a steel rebar is set in the concrete. Located 6.7 m (22 ft.) south of the south edge of the runway, 18.3 m (60 ft.) east of a runway light, 42.1 m (138 ft.) southwest of a runway light, 28.3 m (93 ft.) north of a pipe culvert under the ground in a ditch, and 0.6 m (2 ft.) west of a fiberglass witness post. The mark is 0.40 km (0.25 mi.) east of GPS 3 1987.

\* GPS derived elevation using the Geoid 96 Model and the WGS 1984 Reference Ellipsoid.

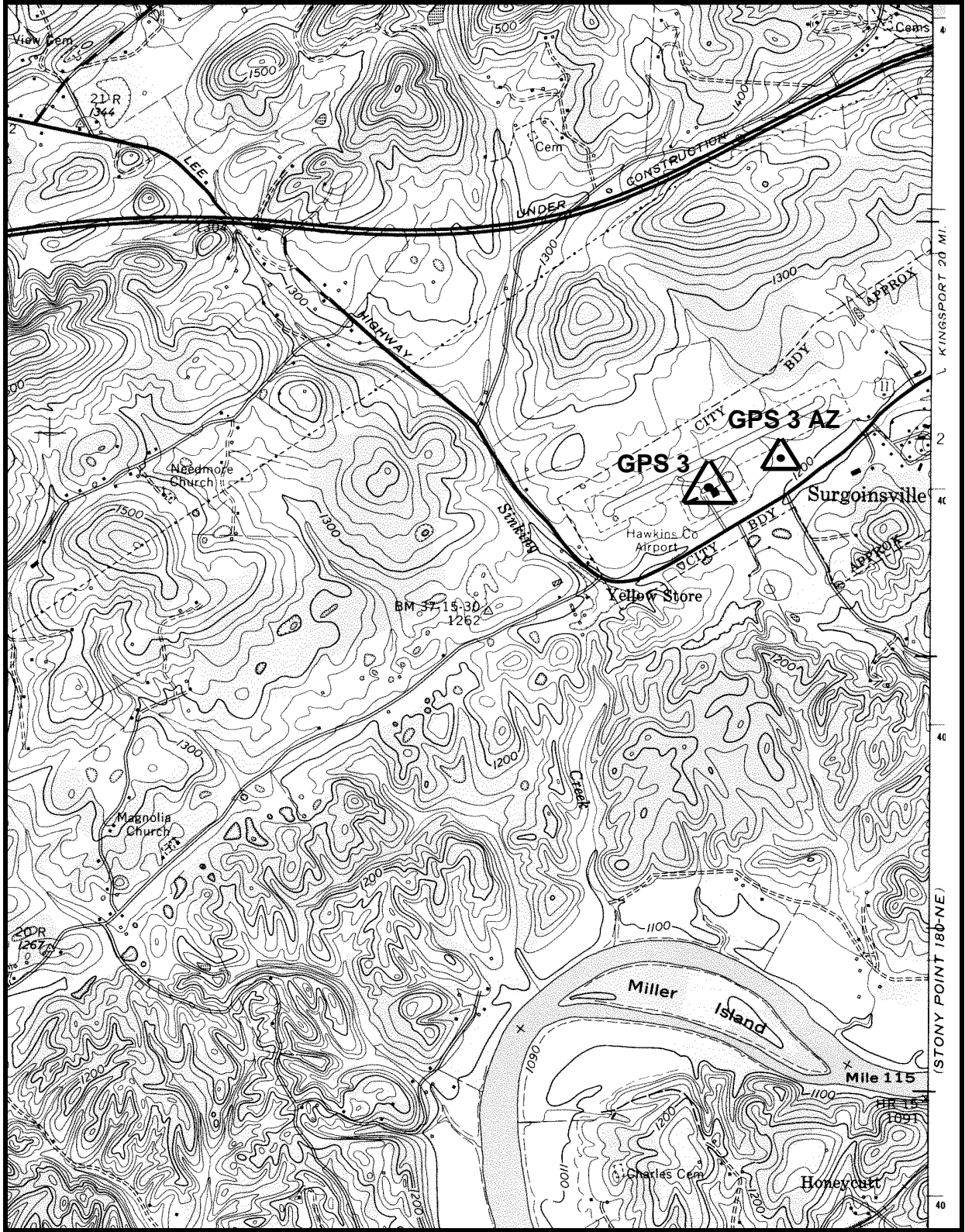
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>377.239 m (1,237.66 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 27' 30"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>82° 52" 57"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 3 AZ MK</u>	MAP SHEET	<u>180-NW, Burem</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 3 AZ

180-NW, BUREM

**GPS - 4**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 21' 0.80437"</b>	TN Northing:	<b>226891.329 m</b>
Longitude:	<b>83° 23' 36.35206"</b>	TN Easting:	<b>833944.070 m</b>
Elevation:	<b>591.542 m (1,940.75 ft)</b>		
Convergence:	<b>+1° 31' 33.6"</b>	Scale Factor:	<b>0.99998889</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Grainger</b>	Nearest Town:	<b>Thorn Hill</b>
USGS QUAD:	<b>Avondale</b>	TVA Designation:	<b>162-SW</b>

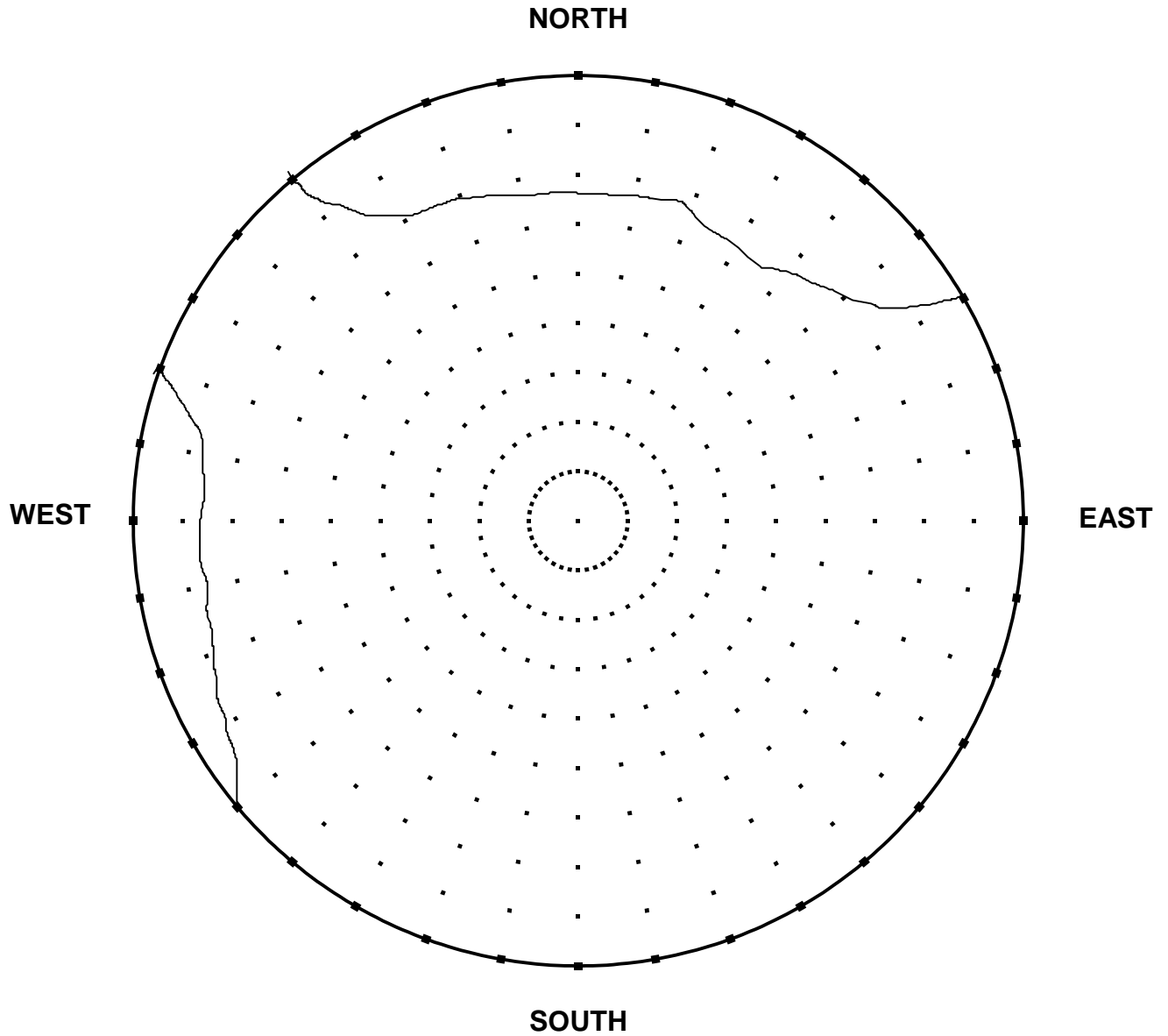
Description:

**The station is located about 9.7 km (6 mi.) west of Bean Station, 2.4 km (1.5 mi.) east of Thorn Hill, 0.3 km (0.2 mi.) east of the Clinch Mountain Lookout Store. Ownership--Road Right-of-Way.**

**The station is located at the U.S. Route 25 scenic overlook at the top south side of Clinch Mountain.**

**The station is a standard NGS disk stamped---GPS 4 1987---, set into a drill hole in bedrock. Located 90.5 m (297 ft.) east from the overlook entrance drive centerline, 41.8 m (137 ft.) west-northwest from the drain at the east end of the parking lot, 2.1 m (7.0 ft.) north-northwest from a 1.2 m (4 ft.) high wire fence and fiberglass witness post, 1.2 m (4 ft.) south-southeast from the top of cut at the south edge of the road. The mark is about 4.6 m (15 ft.) above the road and level with the parking lot.**

# STATION VISIBILITY DIAGRAM

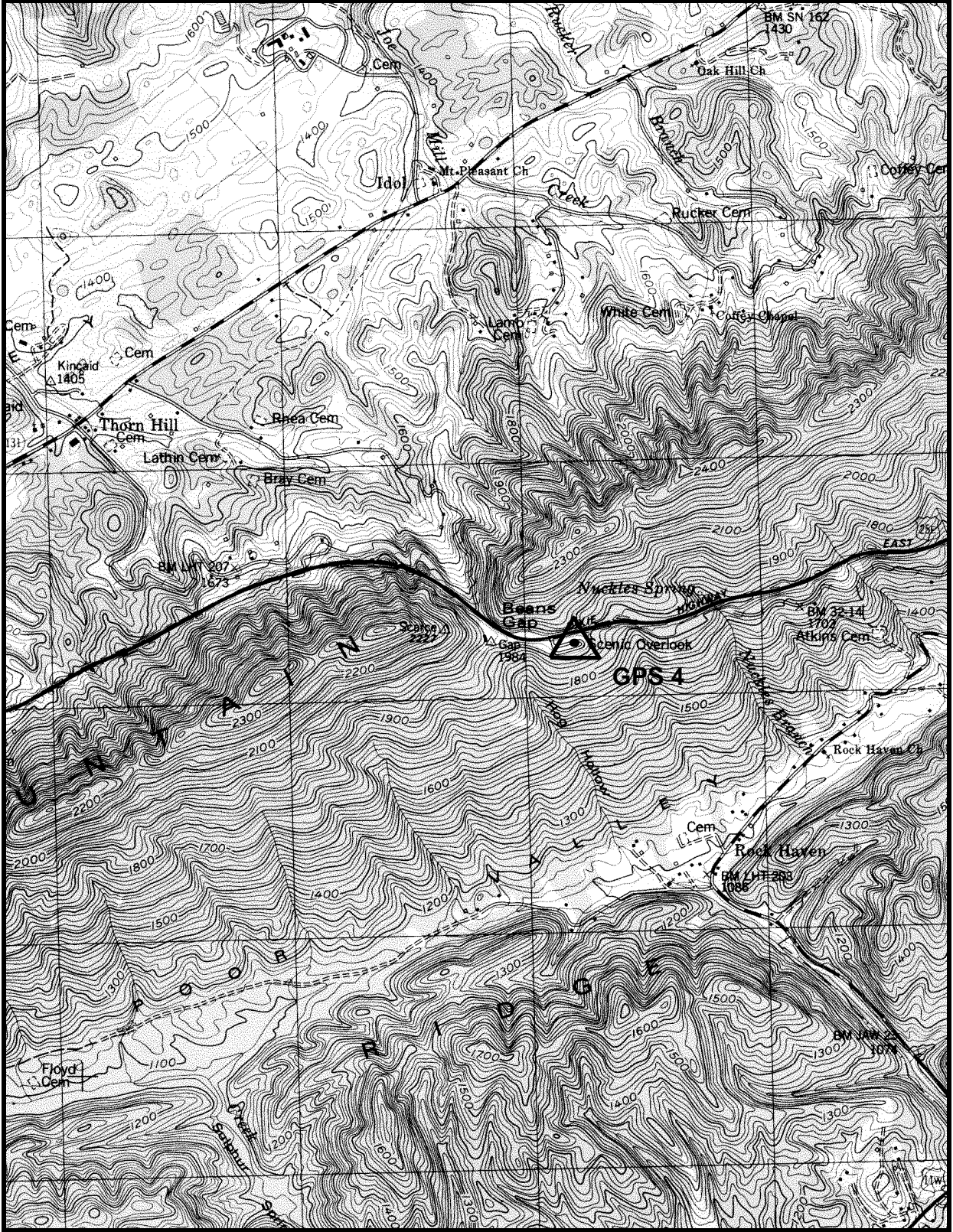


ELEVATION	<u>591.542 m (1,940.75 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 21' 1"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>83° 23' 36"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 4</u>	MAP SHEET	<u>162-SW, Avondale</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

1. Mountain is about 0.3 km (0.2 mi.) from station.

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 4

162-SW, AVONDALE

**GPS - 5**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 21' 19.01611"</b>	TN Northing:	<b>226468.911 m</b>
Longitude:	<b>83° 50' 37.77662"</b>	TN Easting:	<b>793515.132 m</b>
Elevation:	<b>378.005 m (1,240.17 ft)</b>		
Convergence:	<b>+1° 15' 44.3"</b>	Scale Factor:	<b>0.99998969</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Union</b>	Nearest Town:	<b>Sharps</b>
	<b>Chapel</b>		
USGS QUAD:	<b>Maynardville</b>	TVA Designation:	<b>145-SE</b>

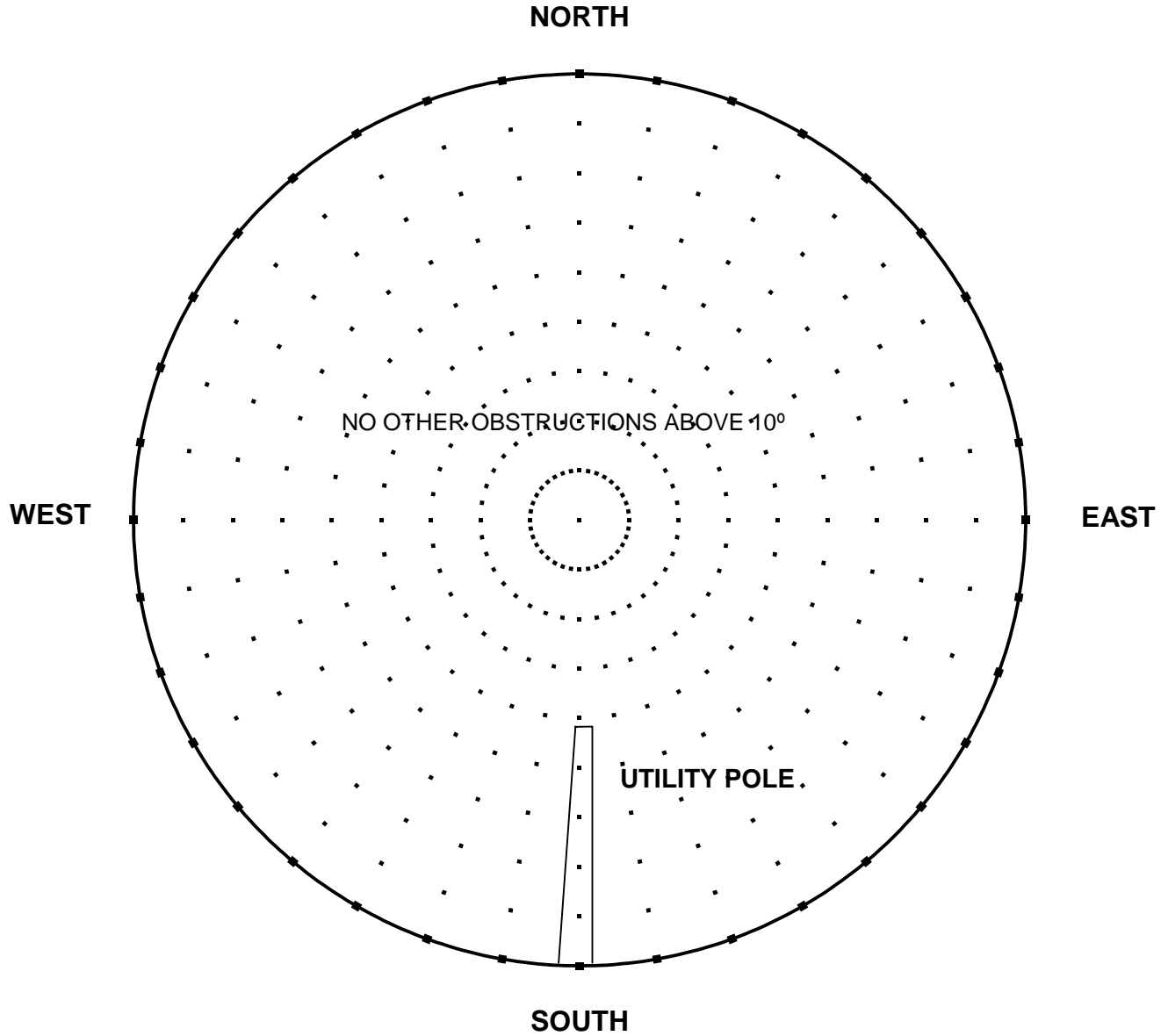
Description:

**The station is located about 12.8 km (8 mi.) north-northwest of Maynardville, 4.0 km (2.5 mi.) northwest of Sharps Chapel. Ownership--Road Right-of-Way.**

**To reach the station from the junction of State Route 33, Sharps Chapel Road and Chuck Swan Management Area (this junction is located just east of the Union/Claiborne County Line) go west for 7.48 km (4.65 mi.) on Sharps Chapel Road to Dr. Davis Road on the right. Continue straight ahead and go westerly for 2.01 km (1.25 mi.) on Sharps Chapel Road to the fork of Big Valley Road and Sharps Chapel Road. Veer right staying on Sharps Chapel Road and go northwest for 2.98 km (1.85 mi.) on Sharps Chapel Road leading northwest to the station on the left about 121.9 m (400 ft.) southeast to Welch Crossroad and a store.**

**The station is a 3-D mark with stainless steel rod driven 11.3 m (37 ft.). The logo cap is stamped---GPS 5 1987---, and a steel spike is set in the concrete. Located 10.7 m (35 ft.) southwest from the road center and 0.3 m (1 ft.) below same, 6.7 m (22 ft.) north from a utility pole with one guy wire, 0.5 m (1.8 ft.) northeast from a fiberglass witness post set in the fence line.**

## STATION VISIBILITY DIAGRAM



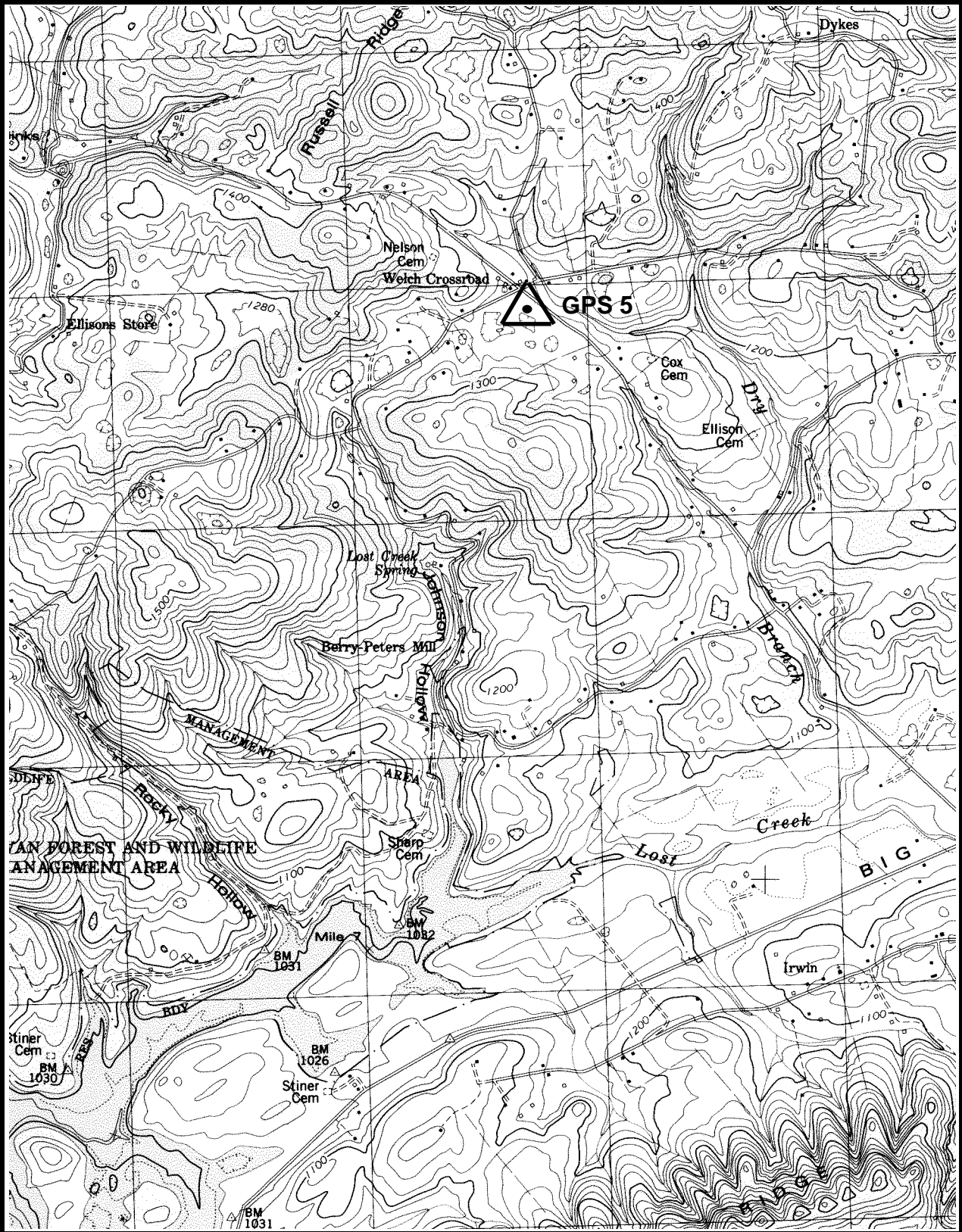
ELEVATION	<u>378.005 m (1,240.17 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 21' 19"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>83° 50' 38"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 5</u>	MAP SHEET	<u>145-SE, Maynardville</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

1. Utility pole is 6.7 m (22 ft.) S. of station.



**TENNESSEE GEODETIC REFERENCE NETWORK**



GPS 5

145-SE, MAYNARDVILLE

**GPS - 6**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 24' 50.17099"</b>	TN Northing:	<b>232199.681 m</b>
Longitude:	<b>84° 16' 51.61977"</b>	TN Easting:	<b>754168.868 m</b>
Elevation:	<b>561.711 m (1,842.88 ft)</b>		
Convergence:	<b>+1° 0' 22.9"</b>	Scale Factor:	<b>0.99999952</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Campbell</b>	Nearest Town:	<b>Pioneer</b>
USGS QUAD:	<b>Pioneer</b>	TVA Designation:	<b>128-NE</b>

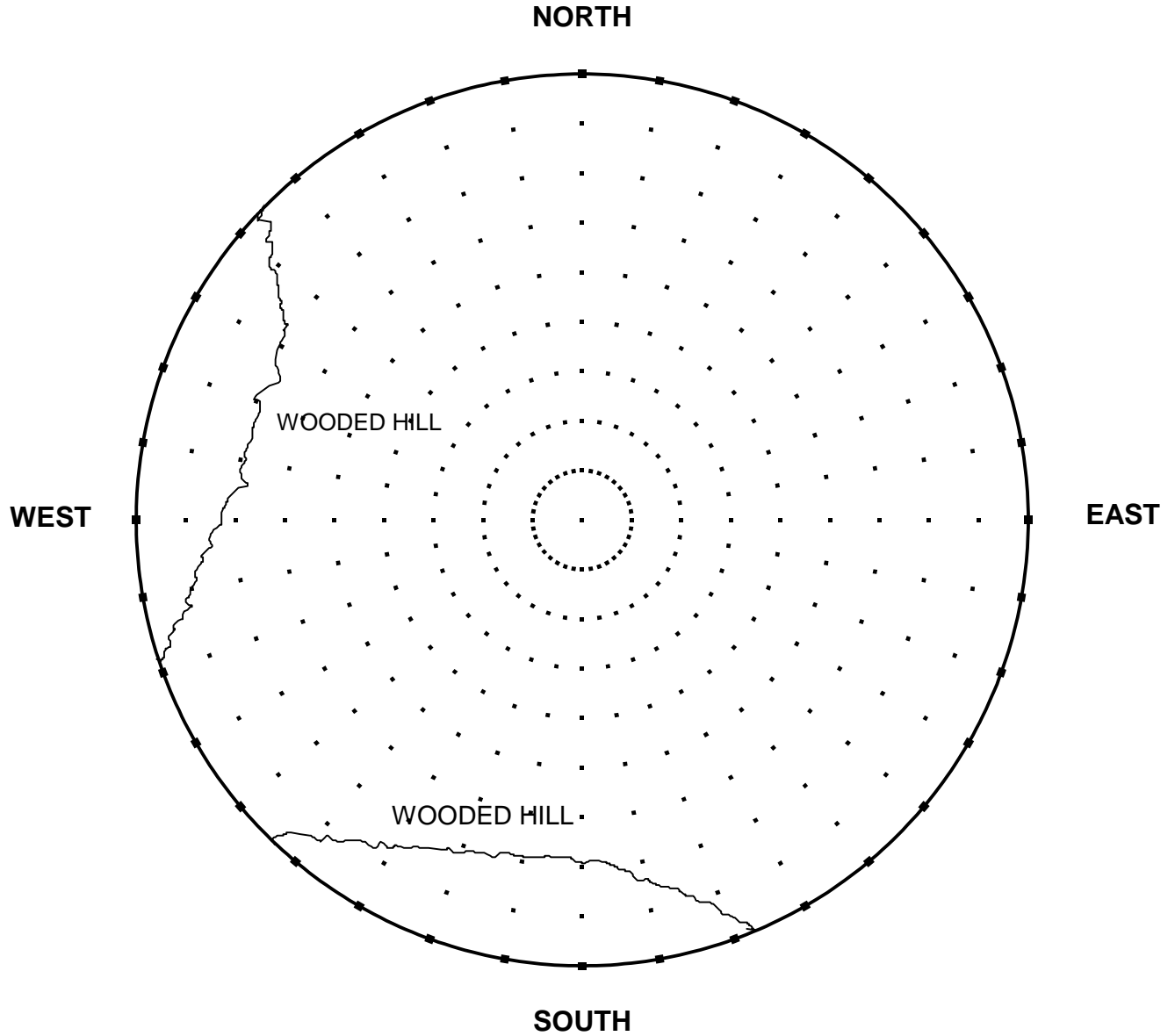
Description:

**The station is located about 3.2 km (2 mi.) east of Pioneer, at the junction of Interstate 75 and Stinking Creek Road (Exit 144). Ownership—Road Right-of-Way.**

**The station is located at the junction of Interstate 75 and Stinking Creek Road (Exit 144) on the high spot in the triangle plot of ground formed by the exit and entrance ramps of southbound Interstate 75.**

**The station is a standard NGS disk stamped---GPS 6 1987---, set into a drill hole in bedrock outcrop measuring 0.9 m (3 ft.) by 0.5 m (1.5 ft.). Located 39.3 m (129 ft.) north from the entrance ramp centerline, 35.4 m (116 ft.) east from the exit ramp centerline, 28.0 m (92 ft.) southwest from the centerline of the southbound lanes and 0.6 m (2ft.) above same, 0.75 m (2.46 ft.) northeast from a fiberglass witness post cemented in the rock.**

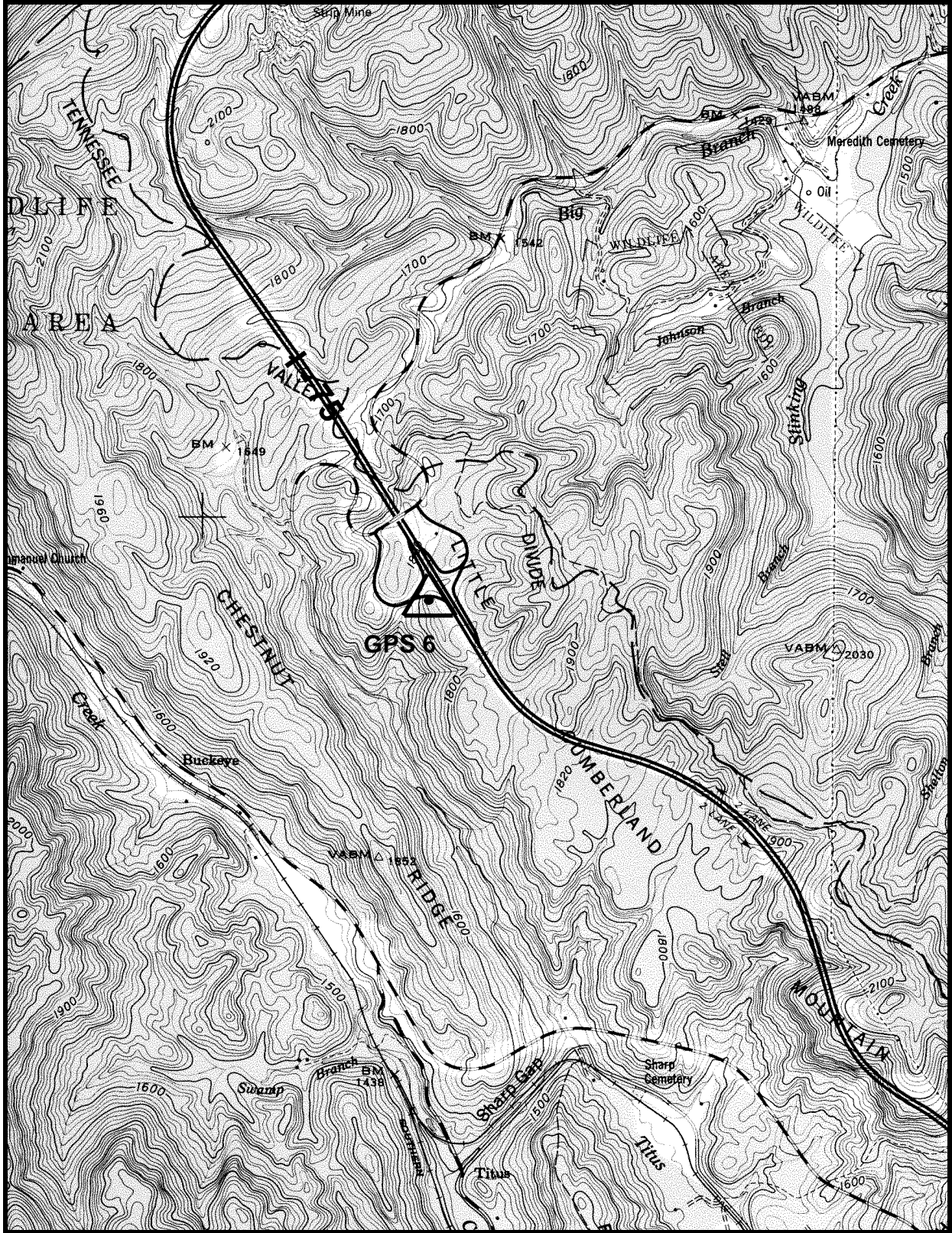
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>561.711 m (1,842.88 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 24' 50"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>84° 16' 52"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 6</u>	MAP SHEET	<u>128-NE, Pioneer</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 6

128-NE, PIONEER

**GPS - 7**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 21' 32.15041"</b>	TN Northing:	<b>225367.296 m</b>
Longitude:	<b>84° 49' 55.88927"</b>	TN Easting:	<b>704811.214 m</b>
Elevation:	<b>485.650 m (1,593.34 ft)</b>		
Convergence:	<b>+0° 41' 1.3"</b>	Scale Factor:	<b>0.99999027</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Fentress</b>	Nearest Town:	<b>Allardt</b>
USGS QUAD:	<b>Burrville</b>	TVA Designation:	<b>115-SE</b>

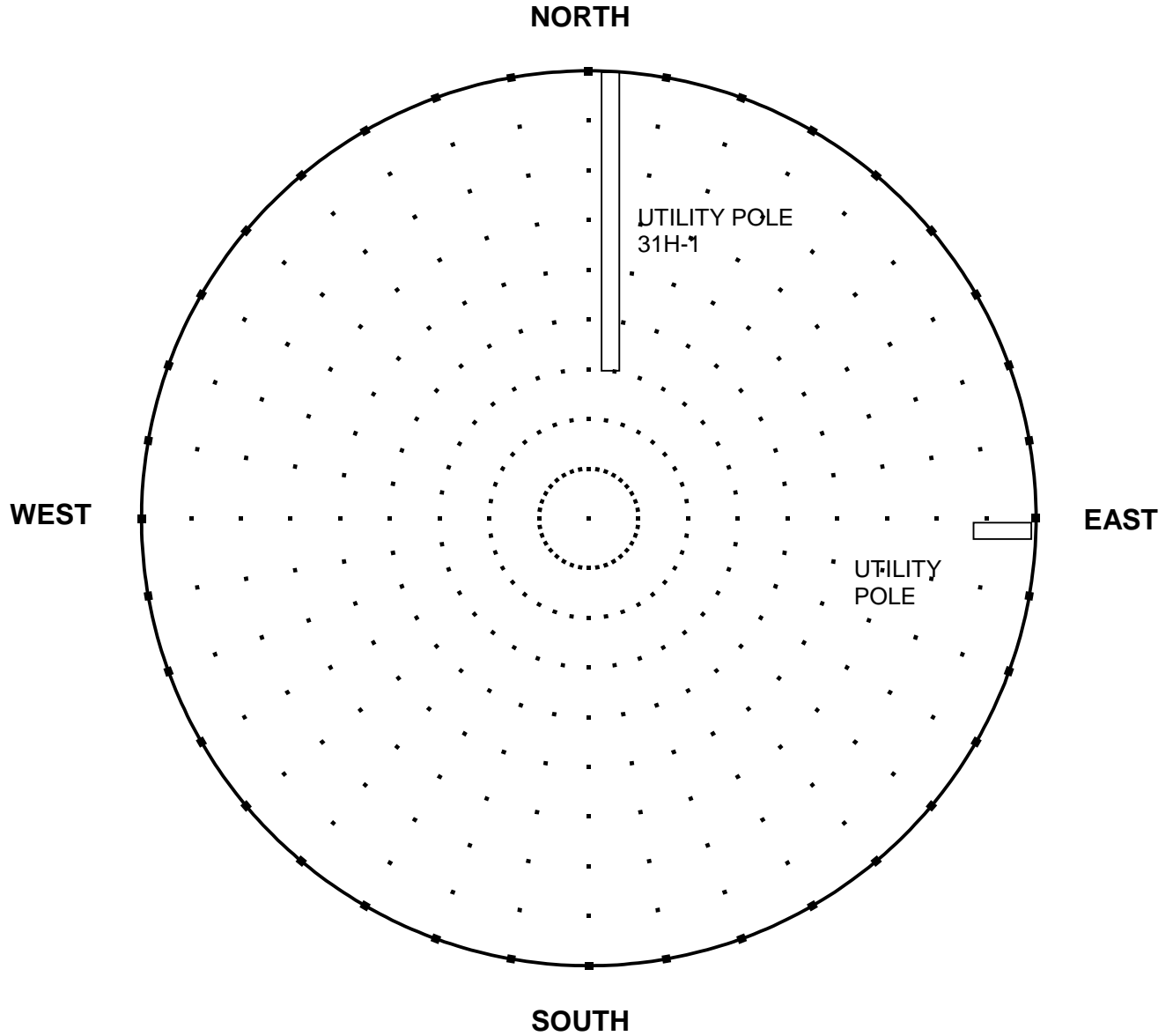
Description:

**The station is located about 25.7 km (16 mi.) west of Elgin, 5.6 km (3.5 mi.) east of Allardt, on the north side of State Route 52. Ownership—Road Right-of-Way.**

**To reach the station from the junction of State Routes 52 and 296 in Allardt go east for 5.3 km (3.3 mi.) on State Route 52 to the Pleasant View Church on the right near a road fork. Continue straight ahead and go east for 0.3 km (0.2 mi.) on State route 52 to the station on the left. The station can also be reached from the junction of State Route 52 and U.S. Highway 27 in Elgin by going west 25.9 km (16.1 mi.) on State Route 52 to the station on the right.**

**The station is a 3-D mark with stainless steel rod driven 1.8 m (6 ft.). The logo cap is stamped---GPS 7 1987---, and a steel spike is set in the concrete. Located 91.1 m (299 ft.) west from the center of a paved drive leading north, 7.0 m (23 ft.) north from the centerline of State Route 52, 2.3 m (7.4 ft.) south from a property corner marked by an iron pin and a steel fence post, 4.3 m (14.1 ft.) south from utility pole marked 31H-1, 13.8 m (45.3 ft.) east from center of paved drive leading north, 0.4 m (1.2 ft.) south from a fiberglass witness post.**

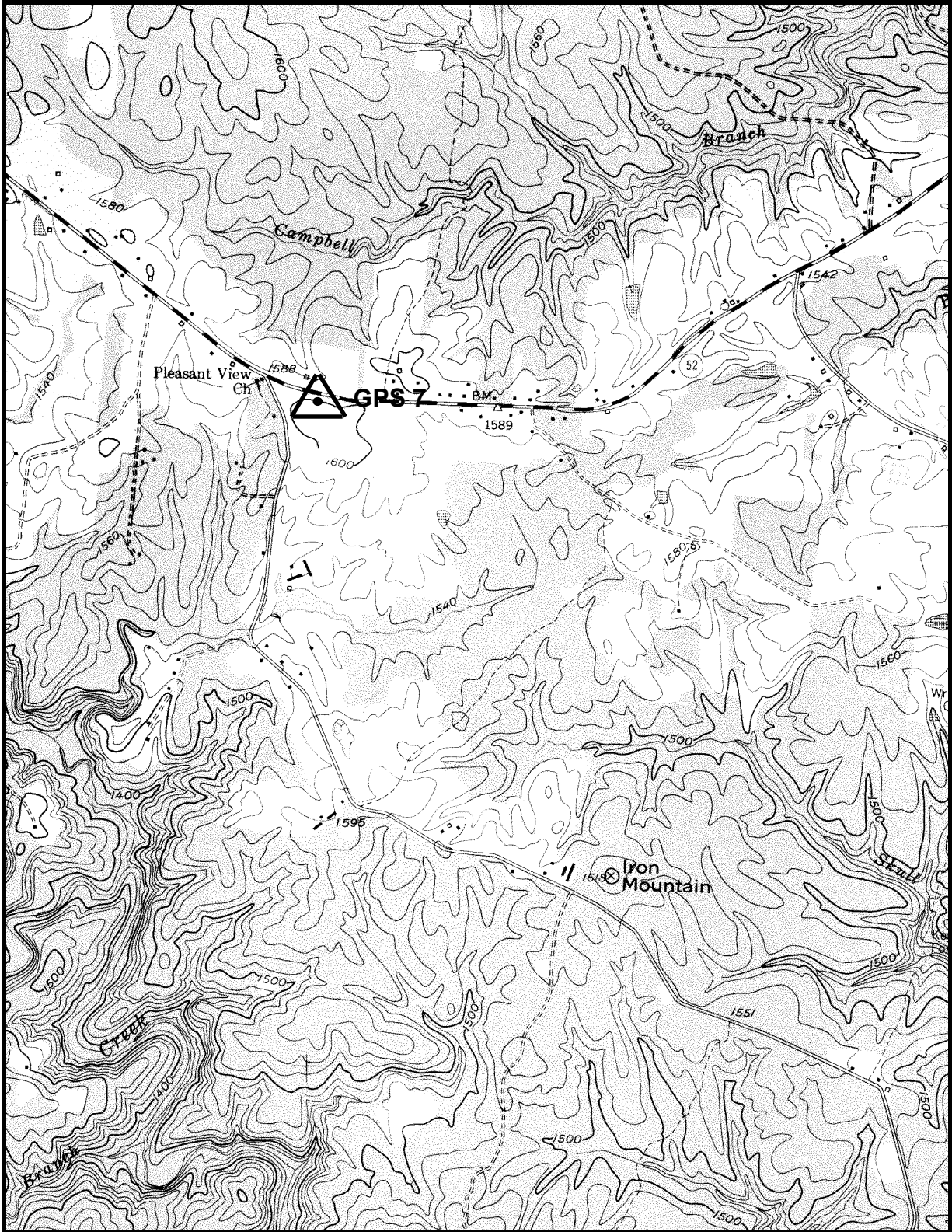
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>485.650 m (1,593.34 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 21' 32"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>84° 49' 56"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 7</u>	MAP SHEET	<u>115-SE, Burrville</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 7

115-SE, BURRVILLE



**GPS - 8 (DESTROYED - SOON TO BE RESET)**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 26' 26.05199"</b>	TN Northing:	<b>234062.789 m</b>
Longitude:	<b>85° 14' 39.27422"</b>	TN Easting:	<b>667760.442 m</b>
Elevation:	<b>314.137 m (1030.63 ft.)</b>		
Convergence:	<b>+0° 26' 32.8"</b>	Scale Factor:	<b>1.00000433</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Overton</b>	Nearest Town:	<b>Monroe</b>
USGS QUAD:	<b>Alpine</b>	TVA Designation:	<b>334-NW</b>

Description:

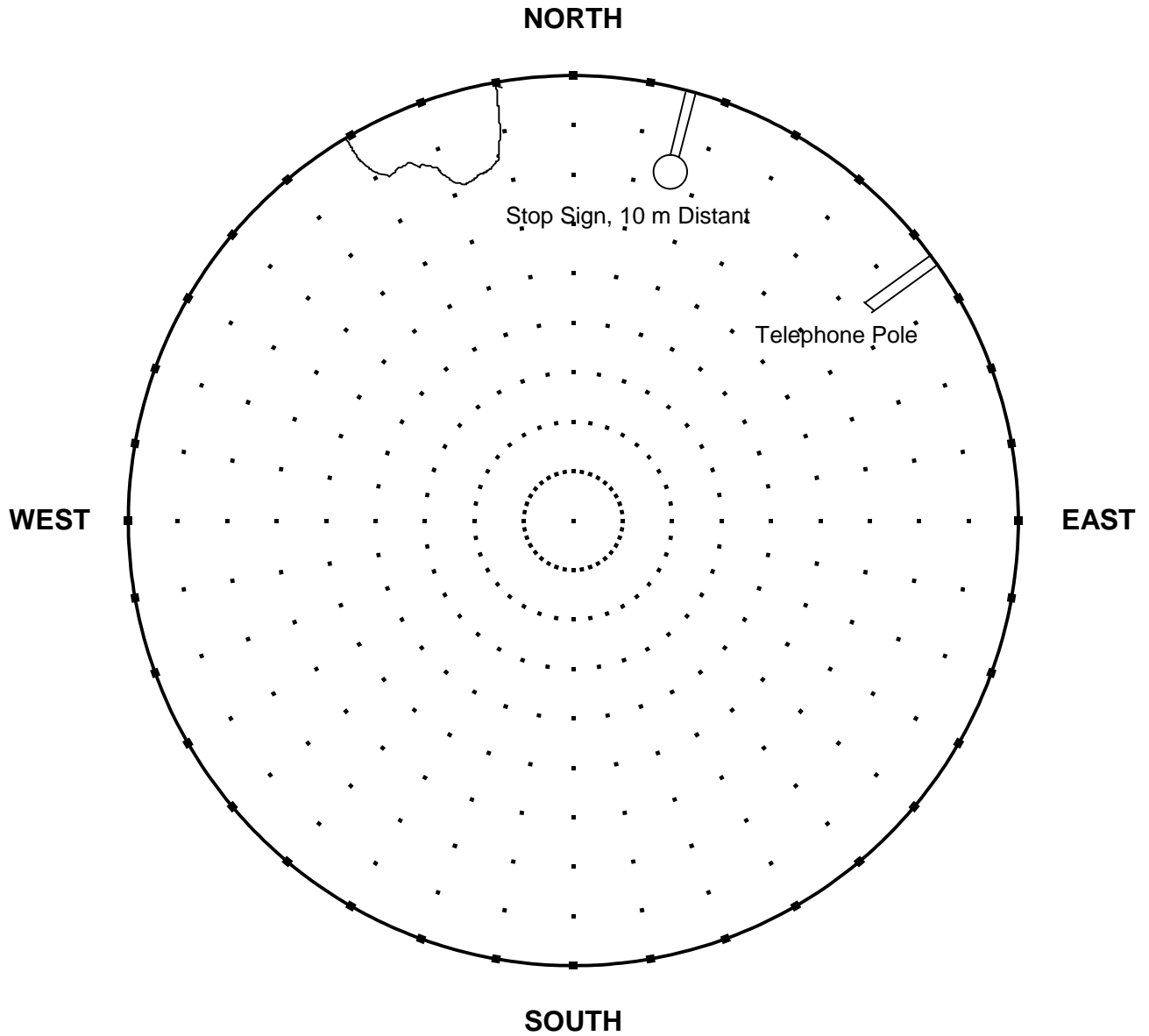
The station is located about 8.0 km ( 5 mi.) north east of Livingston, in front of the Monroe Post Office, in a bedrock out crop in a cut on the north right-of-way of State Route 111. Ownership—State Road Right-of-Way.

To reach the station from the junction of State Routes 294 and 111 Bypass at the northeast edge of Livingston go northeast for 8.0 km (5.0 mi.) on State Route 111 to the Monroe Post Office on the left and the station.

The station is a standard NGS disk stamped---GPS 8 1987---, set into a drill hole in bedrock outcrop measuring 0.6 m (2 ft.) by 0.5 m (1.5 ft.) and projecting 0.2 m (0.5 ft.) above ground. Located 9.4 m (31 ft.) north from the center of State Route 42, 44.2 m ( 145 ft.) east-northeast from the junction of State Route 42 and the road to the post office, 28.3 m (93 ft.) southwest from the southwest corner of the post office, 0.8 m ( 2.5 ft.) south-southeast from a fiberglass witness post.



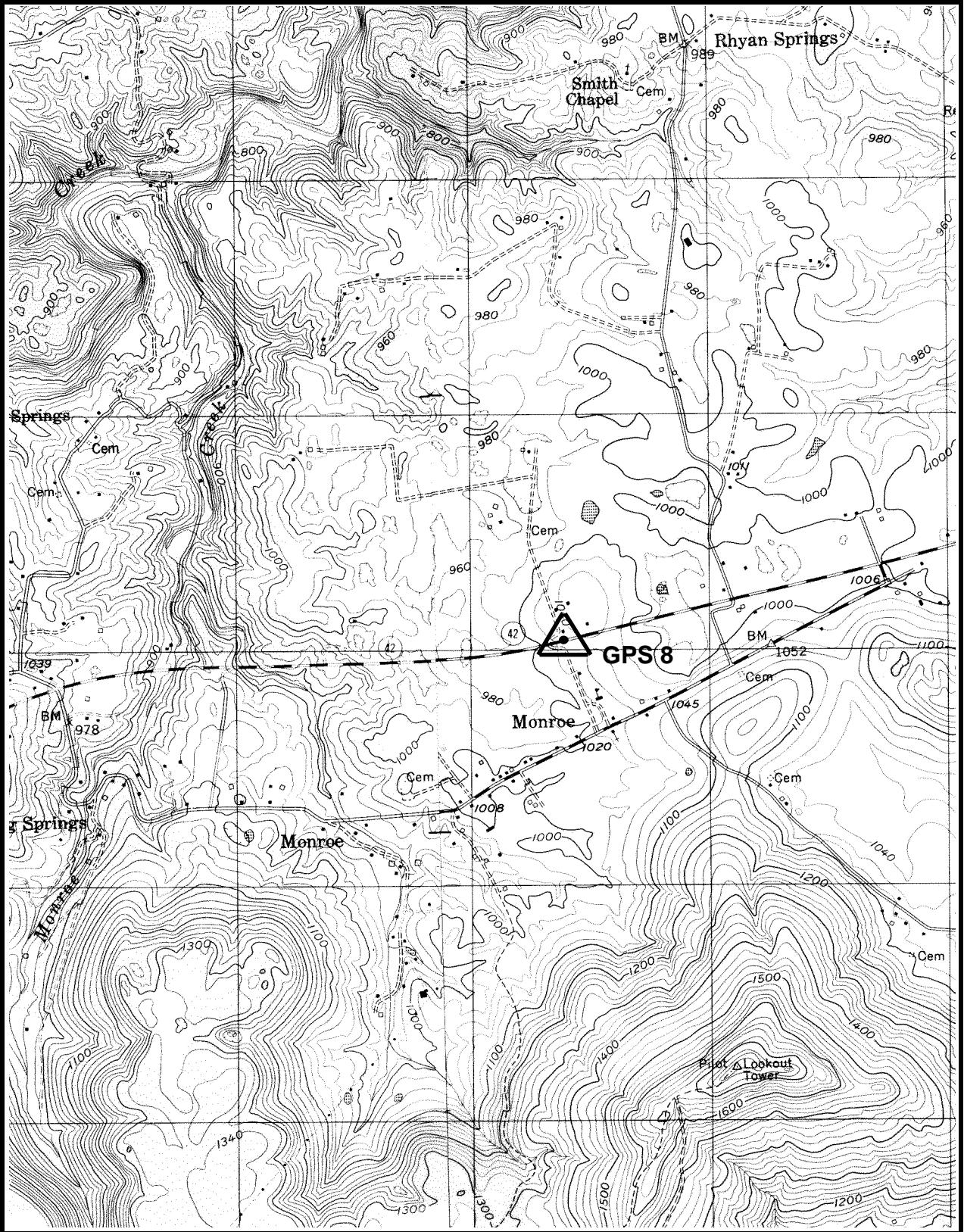
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>314.137 m (1030.63 ft.)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 26' 26"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>85° 14' 39"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 8</u>	MAP SHEET	<u>334-NW, Alpine</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 8**

**334-NW, ALPINE**

**GPS - 9**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 23' 12.08772"</b>	TN Northing:	<b>227882.940 m</b>
Longitude:	<b>85° 38' 11.58508"</b>	TN Easting:	<b>632608.894 m</b>
Elevation:	<b>164.757 m (540.54 ft)</b>		
Convergence:	<b>+0° 12' 46.0"</b>	Scale Factor:	<b>0.99999482</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Jackson</b>	Nearest Town:	<b>Gainesboro</b>
USGS QUAD:	<b>Whitleyville</b>	TVA Designation:	<b>325-NW</b>

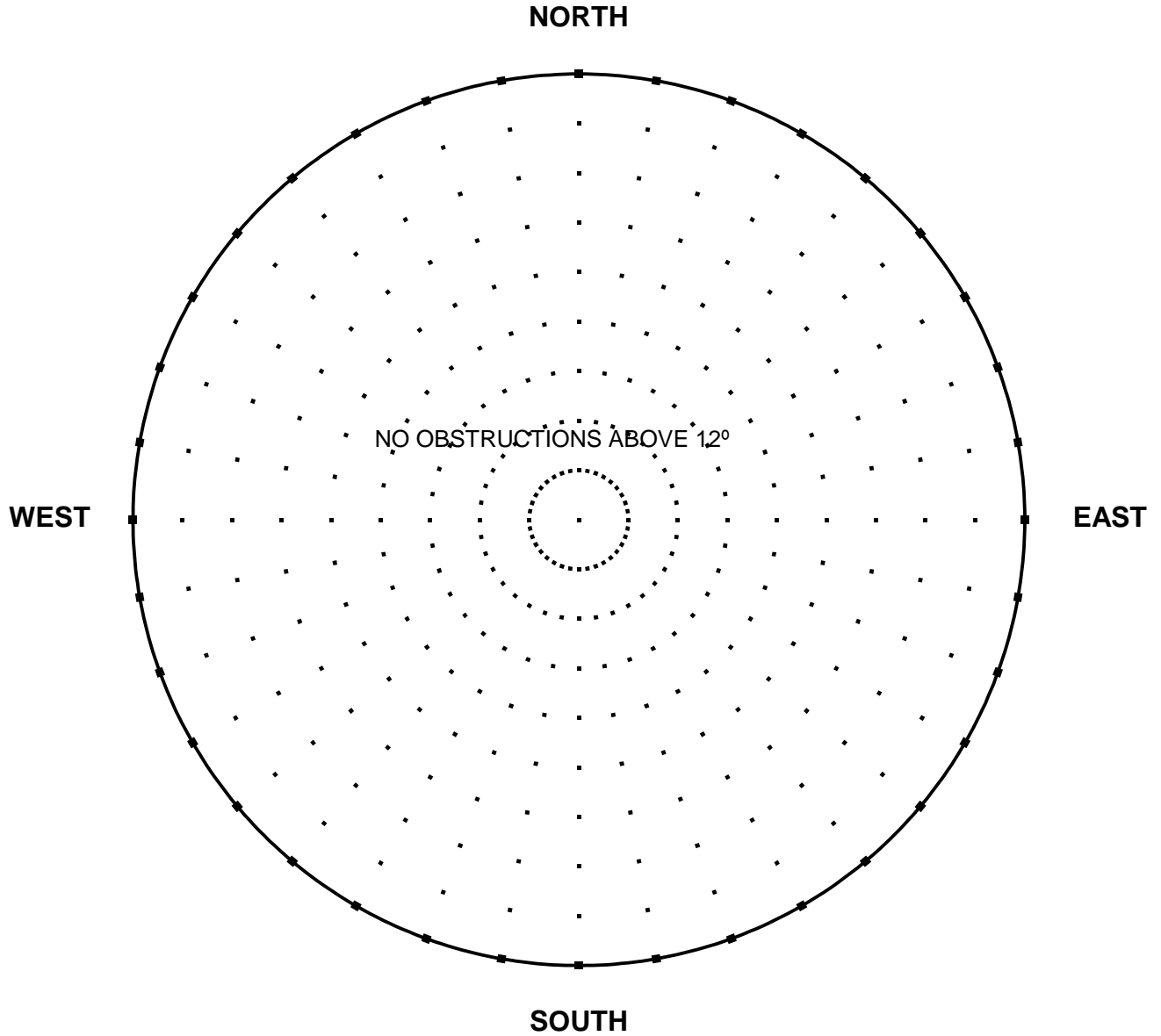
Description:

The station is located about 4.8 km (3 mi.) north of Gainesboro, on the east right-of-way of State Route 53, 0.2 km (0.1 mi.) north of the Theo Spivey Rest Home, at a 3.0 m (10 ft.) cut and set in bedrock. Ownership—State Right-of-Way.

To reach the station from the Courthouse in Gainesboro go east for 0.3 km (0.2 mi.) on State Route 53 to the junction of State Route 56. Turn left and go north for 1.9 km (1.2 mi.) on State Routes 53 and 56 to a road on the left (State Route 56 turns left). Continue straight ahead and go north for 1.4 km (0.9 mi.) on State Route 53 to State Route 85 on the right, then continue on State Route 53 1.0 km (0.6 mi.) to the station on the right, across from a white brick house.

The station is a standard NGS disk stamped---GPS 9 1987---, set into a drill hole in bedrock outcrop measuring 0.3 m (1 ft.) by 0.9 m (3 ft.) projecting 0.1 m (3 ft.). Located 64.9 m (213 ft.) east-southeast from the southeast corner of the white brick house, 15.5 m (51 ft.) east from the road centerline, 59.3 m (194.5 ft.) west-northwest of entrance door on west wall of commercial building, 0.7 m (2.3 ft.) northeast from a fiberglass witness post.

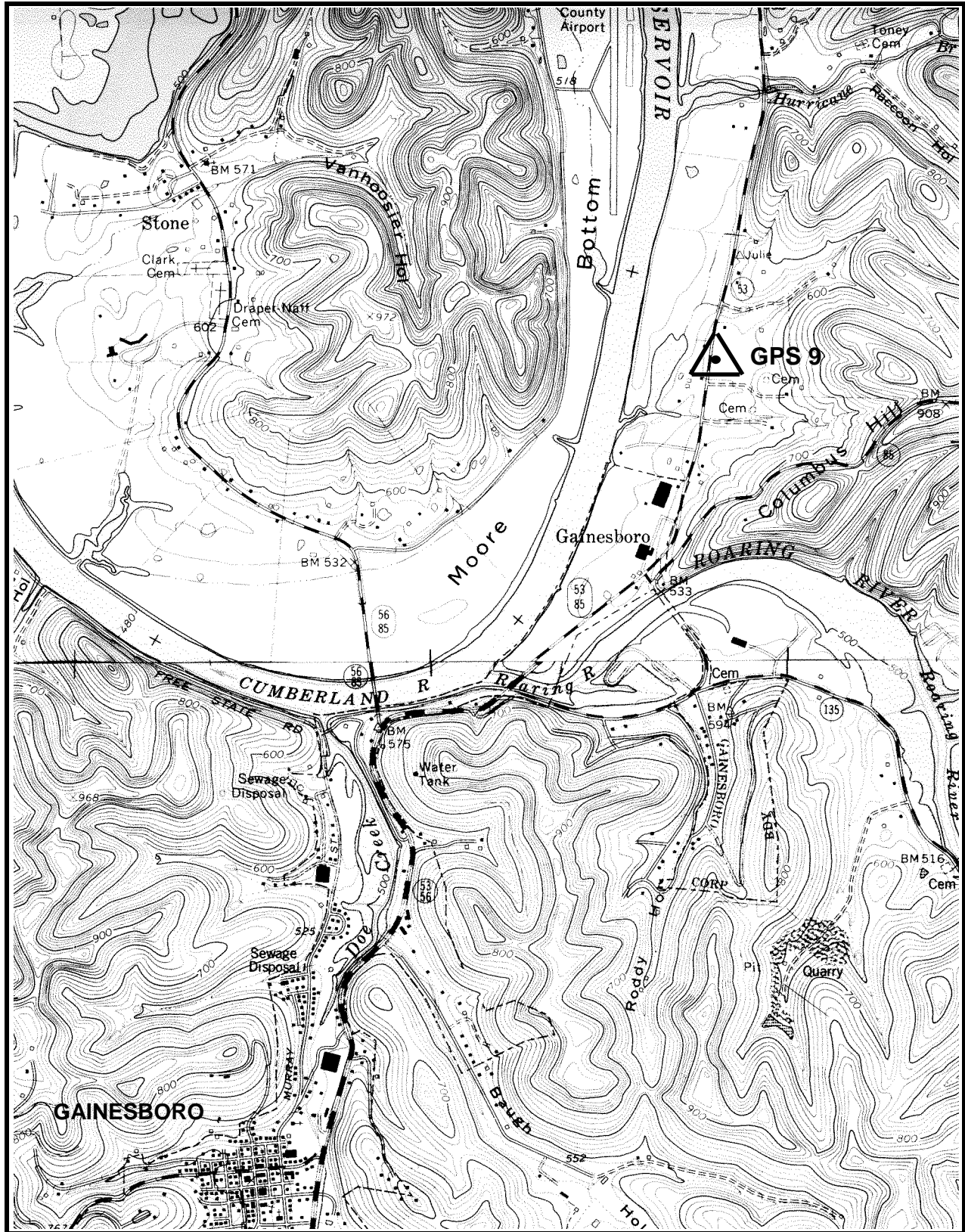
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>164.757 m (540.54 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 23' 12"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>85° 38' 12"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 9</u>	MAP SHEET	<u>325-NW, Whitleyville</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 9

325-NW, WHITLEYVILLE

**GPS - 10**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 25' 20.90063"</b>	TN Northing:	<b>231808.158 m</b>
Longitude:	<b>86° 10' 56.62007"</b>	TN Easting:	<b>583642.796 m</b>
Elevation:	<b>154.109 m (505.60 ft.)</b>		
Convergence:	<b>-0° 6' 24.4"</b>	Scale Factor:	<b>1.00000103</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Trousdale</b>	Nearest Town:	<b>Hartsville</b>
USGS QUAD:	<b>Hartsville</b>	TVA Designation:	<b>317-NW</b>

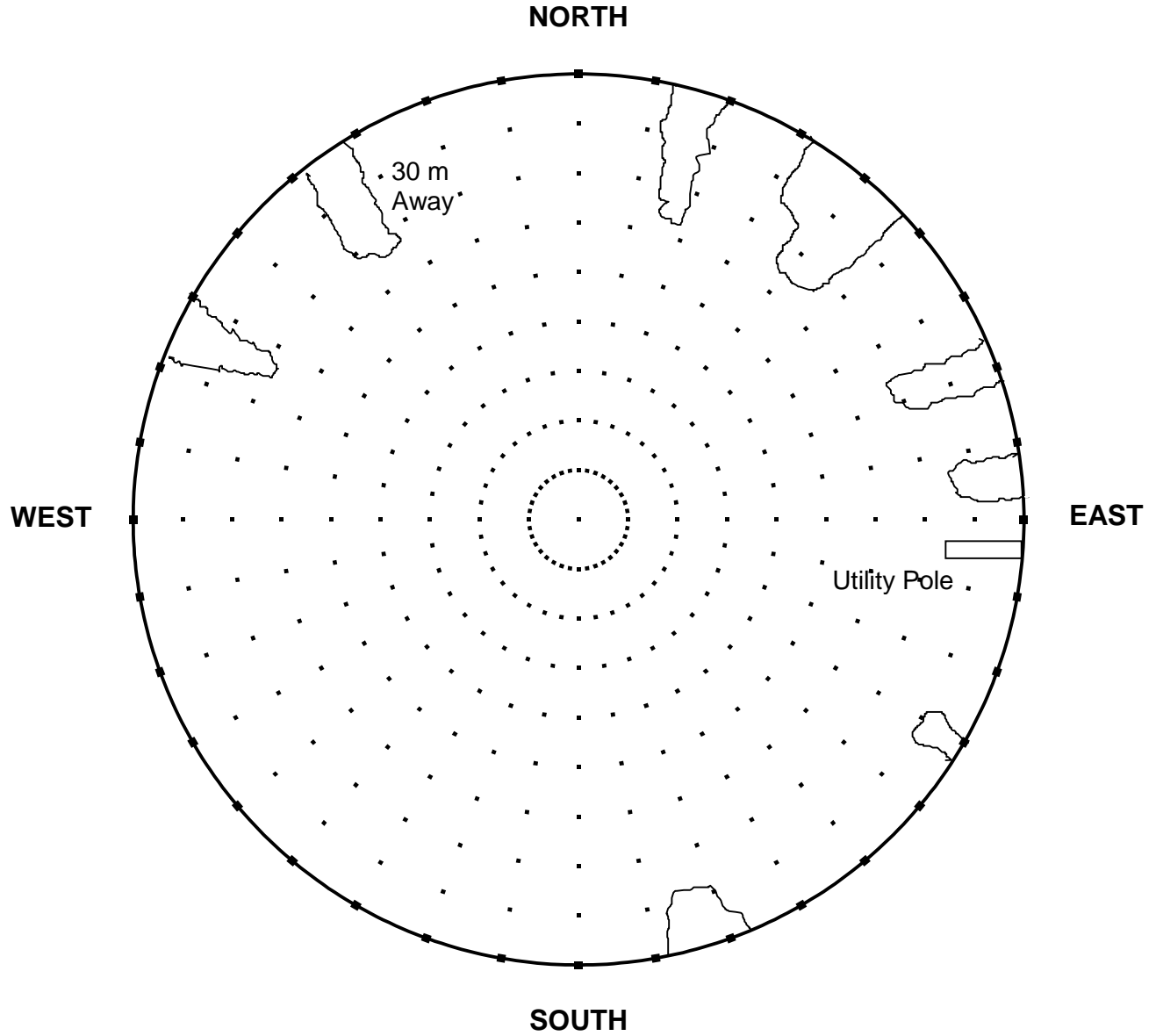
Description:

The station is located about 3.2 km (2 mi.) northwest of Hartsville, just southeast of the junction of State Routes 141 and 260, on the east right-of-way of State Route 141 in a flat rock outcrop between the road and an abandoned railroad bed. Ownership—State Right-of-Way.

To reach the station from the Courthouse in Hartsville go northwest for 0.2 km (0.1 mi.) on State Route 141 to a bend. Turn right and go north for 1.1 km (0.7 mi.) on State Route 141 to the junction of State Route 25. Turn left and go west for 0.3 km (0.2 mi.) on State Routes 141 and 25 to a junction where State Route 25 continues west. Turn right and go north for 2.9 km (1.8 mi.) on State Route 141 to the junction of State Route 260 and the station on the right.

The station is a standard NGS disk stamped---GPS 10 1987---, set into a drill hole in bedrock outcrop flush with ground and level with road. Located 30.8 m (101 ft.) southeast from the southeast corner of the State Route 260 bridge over a creek, 27.4 m (90 ft.) south-southeast from the center of the road junction, 7.06 m (23.2 ft.) west-southwest from a fiberglass witness post in the east right-of-way fence, 7.3 m (24 ft.) east from the center of State Route 141.

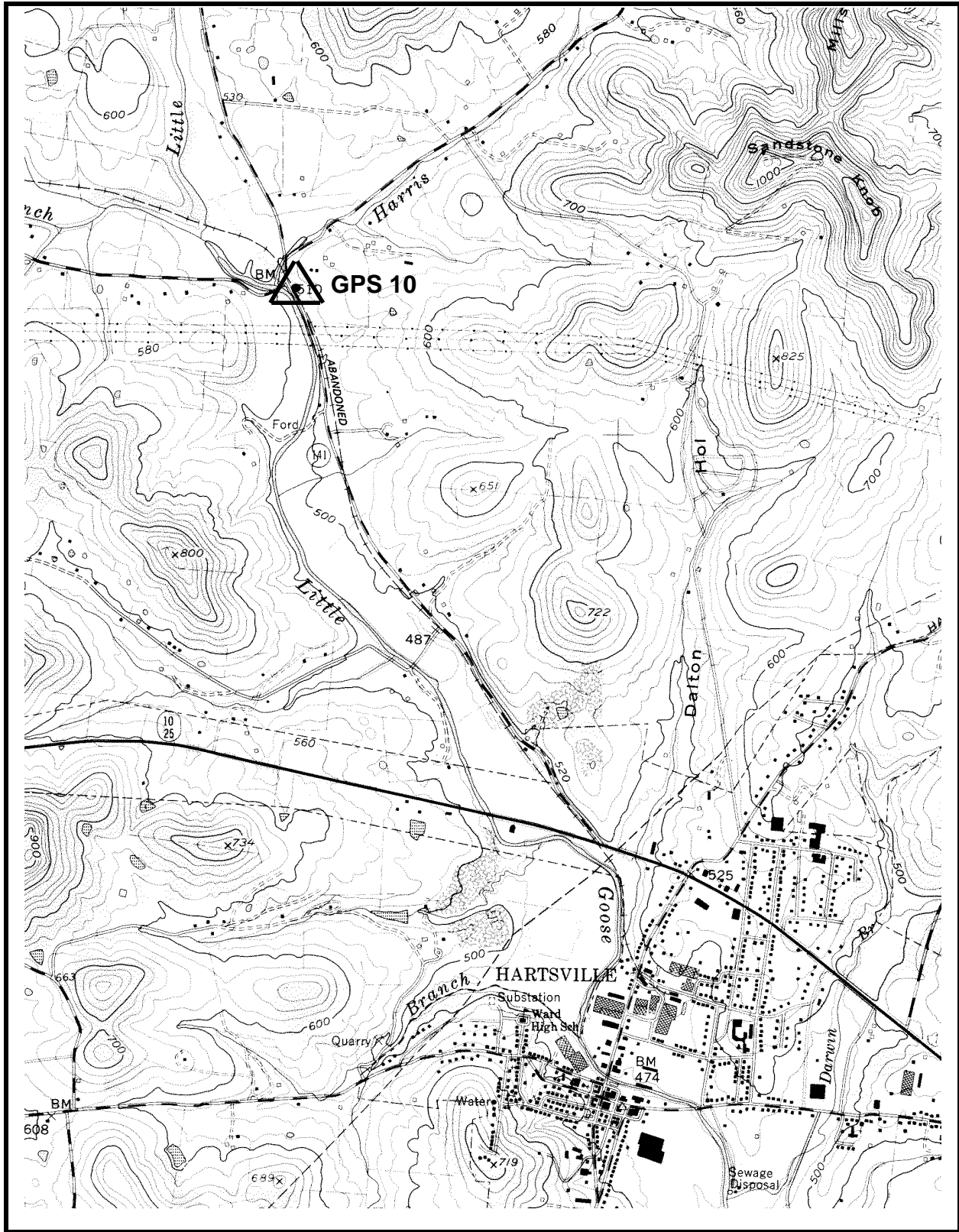
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>154.109 m (505.60 ft.)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 25' 21"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>86° 10' 57"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 10</u>	MAP SHEET	<u>317-NW, Hartsville</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 10**

**317-NW, HARTSVILLE**



**GPS - 11**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 25' 3.03384"</b>	TN Northing:	<b>231477.921 m</b>
Longitude:	<b>86° 43' 2.18380"</b>	TN Easting:	<b>535671.167 m</b>
Elevation:	<b>250.351 m (821.36 ft)</b>		
Convergence:	<b>-0° 25' 11.7"</b>	Scale Factor:	<b>1.00000015</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Robertson</b>	Nearest Town:	<b>Nashville</b>
USGS QUAD:	<b>Whitehouse</b>	TVA Designation:	<b>310-NW</b>

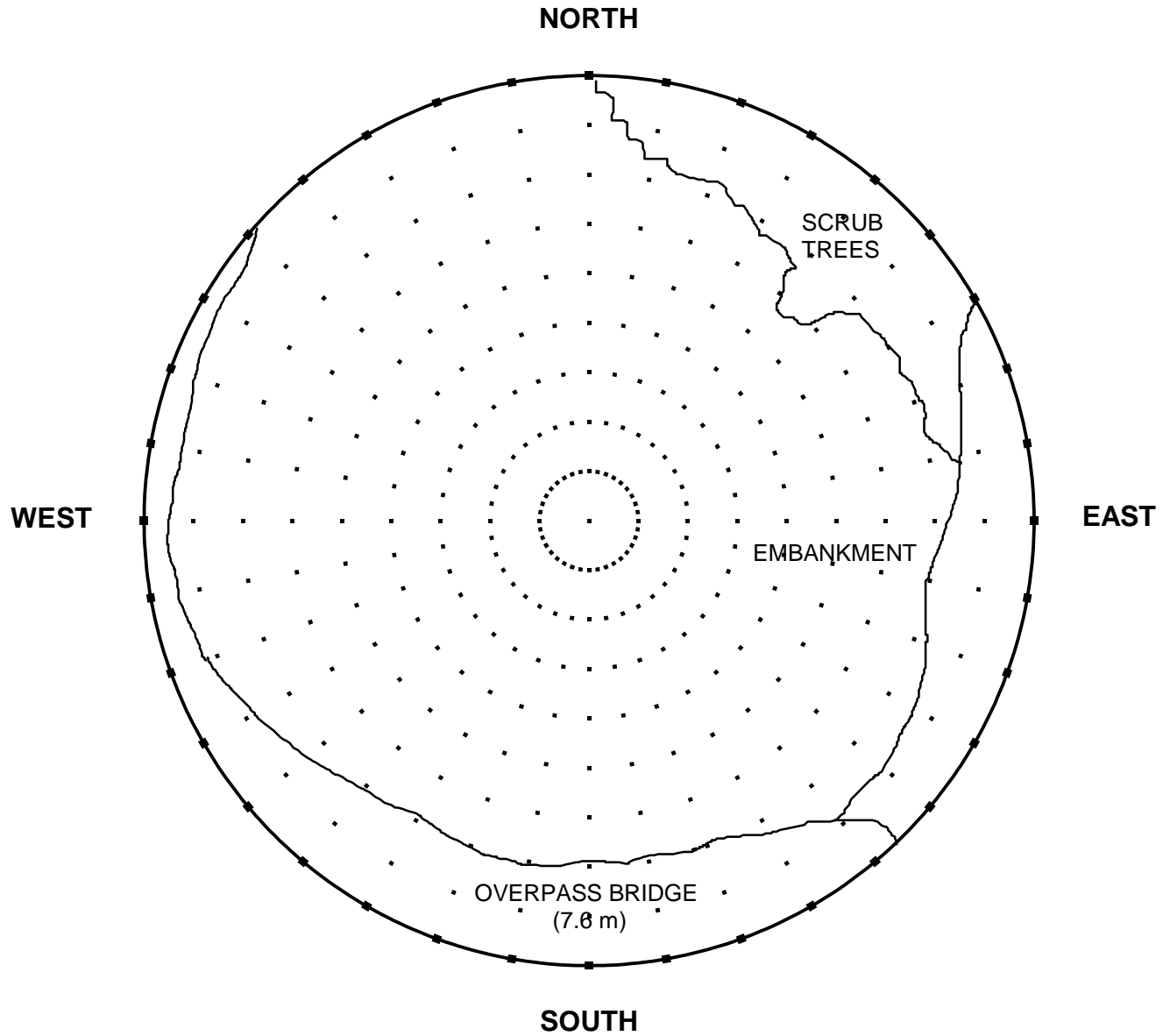
Description:

**The station is located about 29.0 km (18 mi.) north of Nashville, at the junction of Interstate 65 and State Route 257 (Exit 104 Bethel Road). Ownership---Highway Right-of-Way.**

**The station is located at the junction of Interstate 65 and State Route 257 (Exit 104 Bethel Road) in a bedrock outcrop on the east right-of-way of Interstate 65, just north of State Route 257 overpass bridge.**

**The station is a standard NGS disk stamped---GPS 11 1987---, set into a drill hole in bedrock outcrop measuring 2.7 m (9 ft.) by 1.8 m (6 ft.) which is flat on top and projects 0.9 m (3 ft.) on its west side. Located 16.5 m (54 ft.) north from the centerline of the State Route 257 bridge, 9.8 m (32 ft.) east from the east edge of the Interstate 65 pavement, and 1.8 m (6 ft.) above same, 12.2 m (40 ft.) northwest from the northeast corner of the east abutment of the overpass bridge, 1.4 m (4.5 ft.) east from a fiberglass witness post.**

# STATION VISIBILITY DIAGRAM

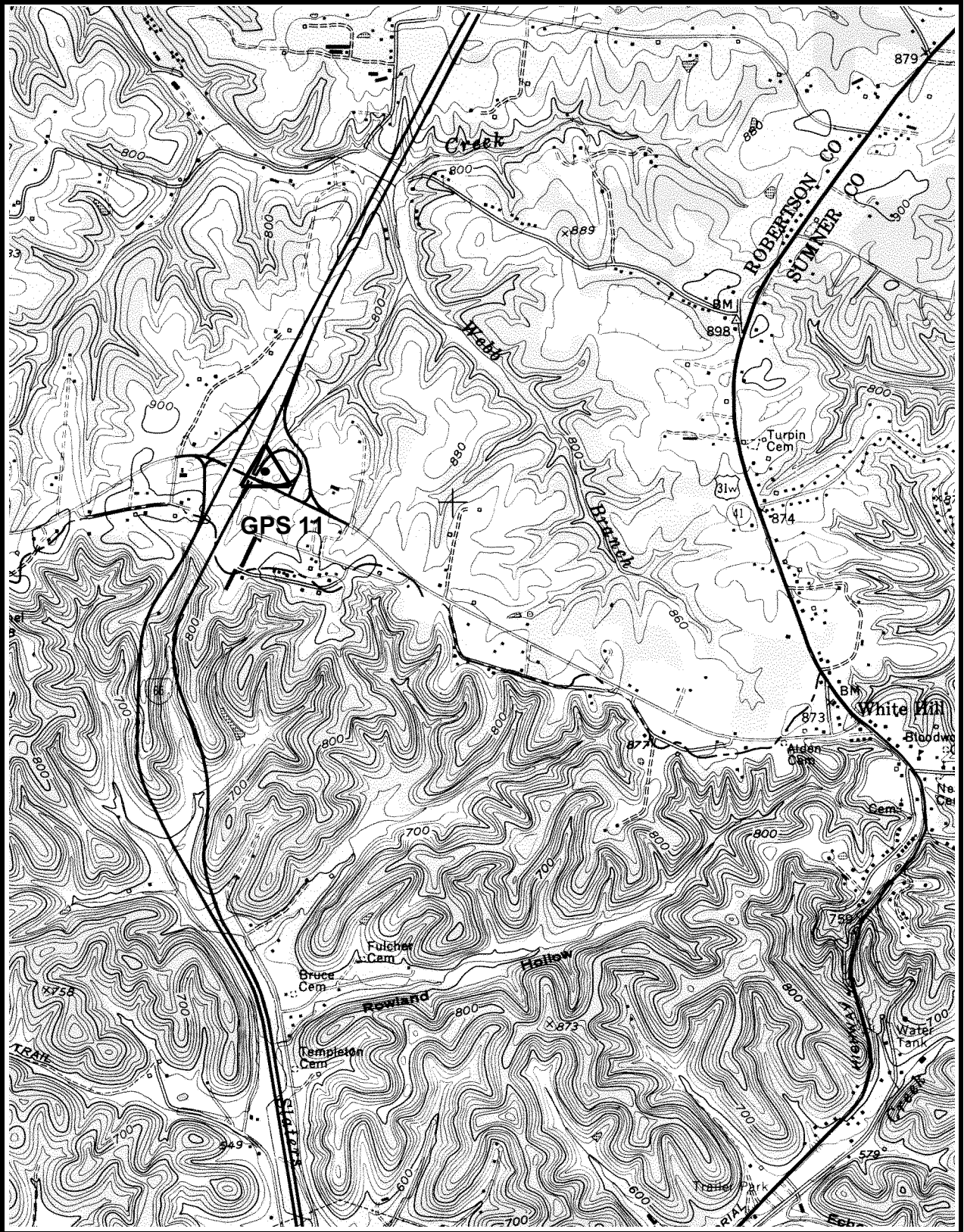


ELEVATION	<u>250.351 m (821.36 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 25' 3"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>86° 43' 2"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 11</u>	MAP SHEET	<u>310-NW, Whitehouse</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

1. For maximum results a 1.8 m (6 ft.) tripod may be required.

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 11

310-NW, WHITEHOUSE

**GPS - 12**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 26' 56.15662"</b>	TN Northing:	<b>235281.953 m</b>
Longitude:	<b>87° 5' 55.14863"</b>	TN Easting:	<b>501507.416 m</b>
Elevation:	<b>212.305 m (696.54 ft)</b>		
Convergence:	<b>-0° 38' 35.5"</b>	Scale Factor:	<b>1.00000588</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Robertson</b>	Nearest Town:	<b>Clarksville</b>
USGS QUAD:	<b>Pleasant View</b>	TVA Designation:	<b>304-NE</b>

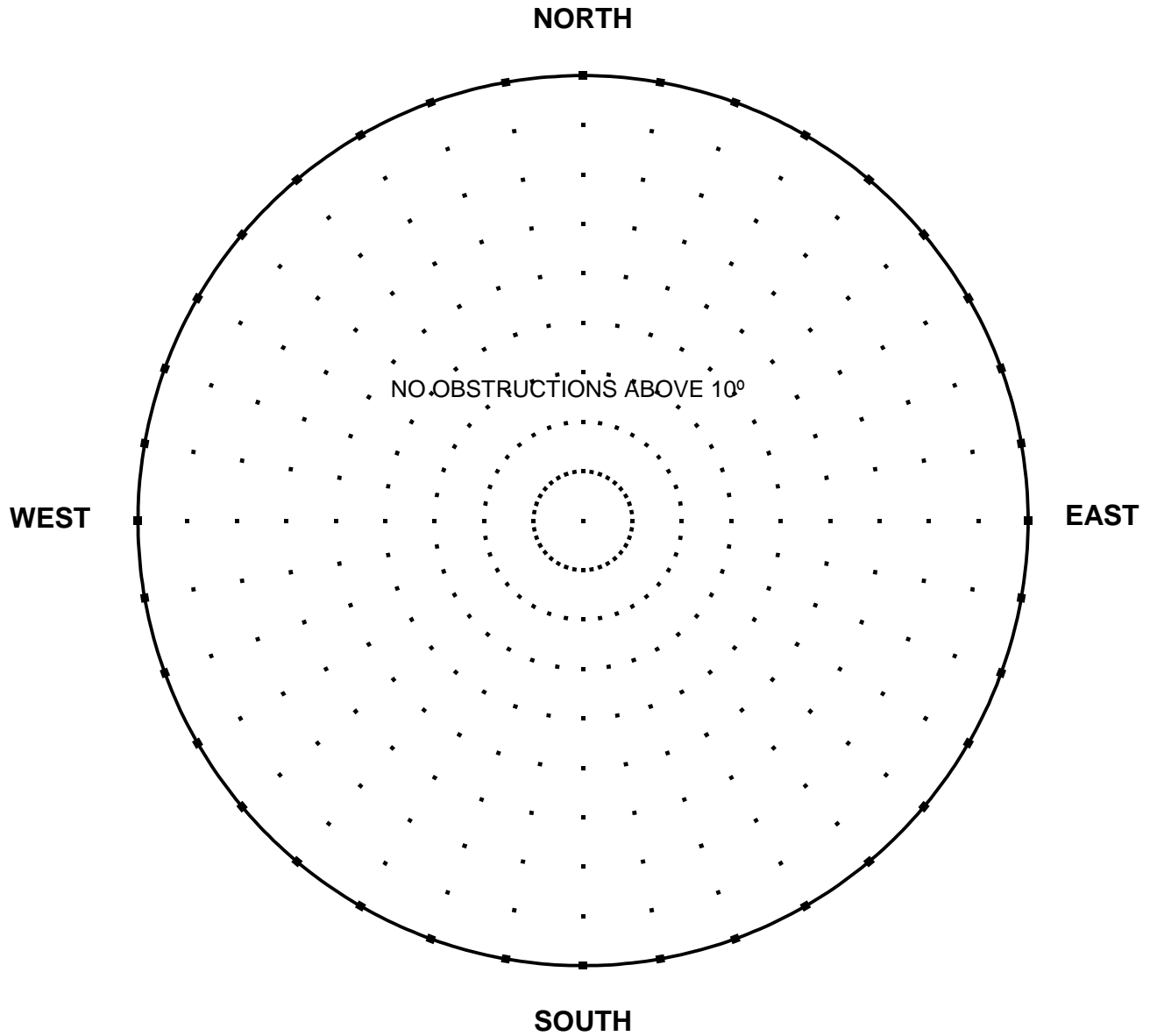
Description:

The station is located about 43.5 km (27 mi.) northwest of Nashville, 24.1 km (15 mi.) east-southeast of Clarksville, at the junction of Interstate 24 and State Route 256 (Exit 19). Ownership—Highway Right-of-Way.

The station is located at the junction of Interstate 24 and State Route 256 (Exit 19), in the southeast quadrant of the interchange.

The station is a 3-D mark with stainless steel rod driven 7.3 m (24 ft.). The logo cap is stamped---GPS 12 1987---, and a railroad spike is set in the concrete. Located 124.3 m (408 ft.) southeast from the southeast corner of the overpass bridge, 20.9 m (68.5 ft.) southwest from the southwest edge of the eastbound Interstate 24 pavement, 88.5 m (290 ft.) northeast from a culvert headwall under the entrance ramp, 30.0 m (98.4 ft.) northeast from the center of a concrete ditch, 0.3 m (1.0 ft.) northwest from a fiberglass witness post.

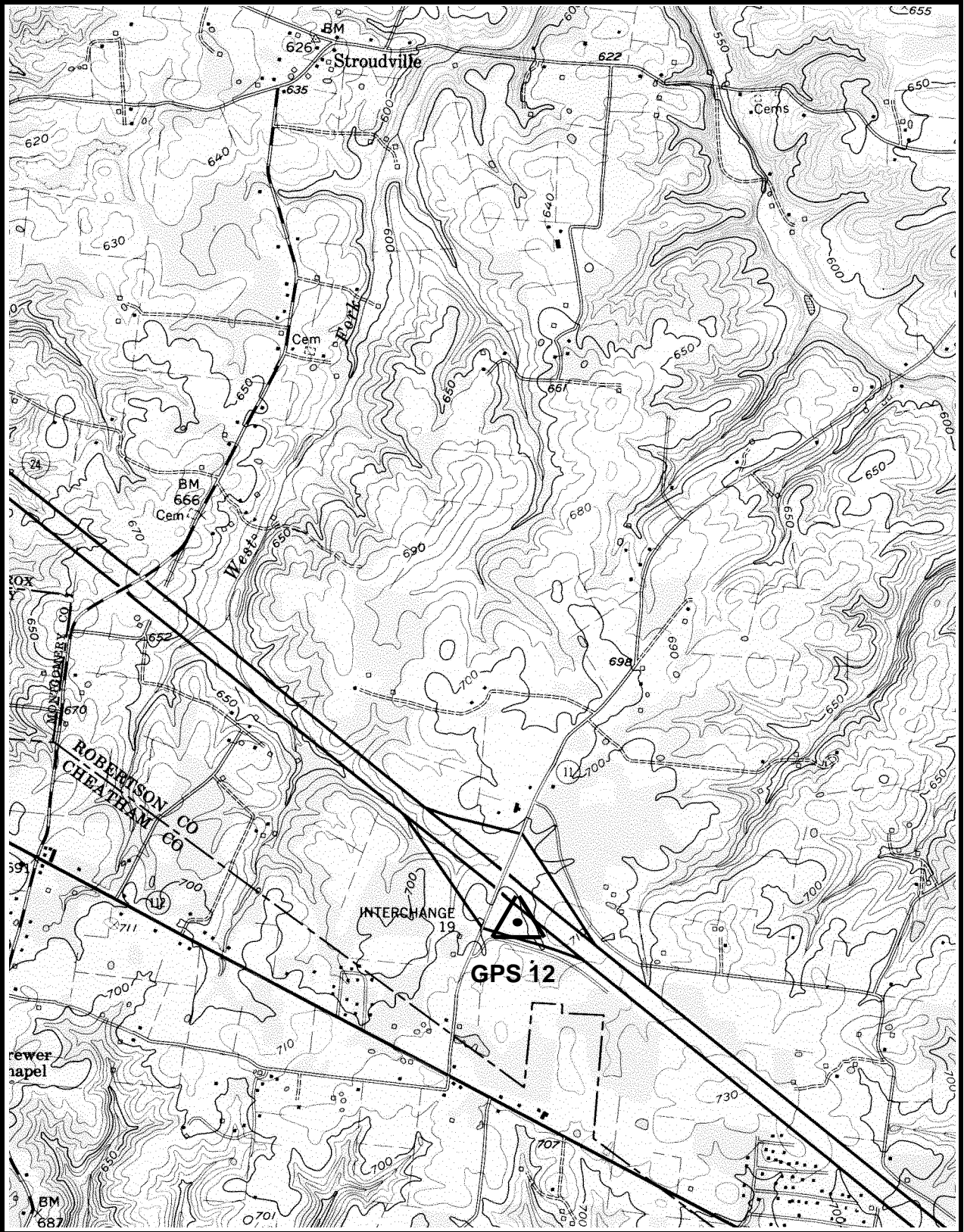
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>212.305 m (696.54 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 26' 56"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>87° 5' 55"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 12</u>	MAP SHEET	<u>304-NE, Pleasant View</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



GPS 12

304-NE, PLEASANT VIEW

**GPS - 13**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 26' 12.08662"</b>	TN Northing:	<b>234370.897 m</b>
Longitude:	<b>87° 28' 39.59121"</b>	TN Easting:	<b>467511.300 m</b>
Elevation:	<b>134.104 m (439.97 ft)</b>		
Convergence:	<b>-0° 51' 54.3"</b>	Scale Factor:	<b>1.00000361</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Montgomery</b>	Nearest Town:	<b>Palmyra</b>
USGS QUAD:	<b>Palmyra</b>	TVA Designation:	<b>302-NW</b>

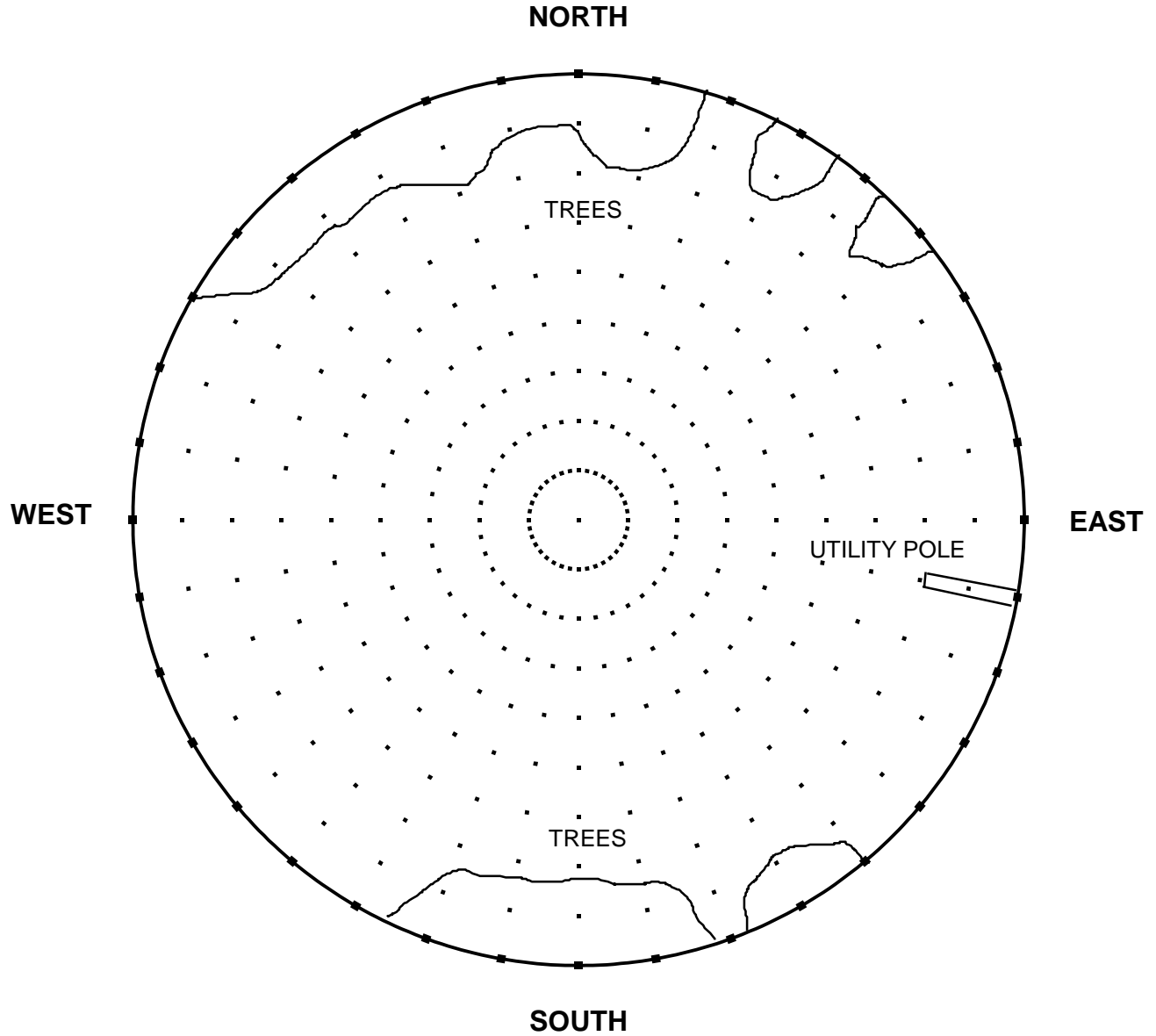
Description:

The station is located about 16.1 km (10 mi.) south of Clarksville, at Palmyra, on the State Route 149 right-of-way, 0.5 km (0.3 mi.) east of the east end of the Walter Jackson Memorial Bridge on State Route 149 over Weaver and Dawson Creeks. Ownership—State Right-of-Way.

The station is located at Palmyra at the top of a rock cut on the south right-of-way of State Route 149 in front of the Palmyra 149 market (a convenience store).

The station is a standard NGS disk stamped---GPS 13 1987---, set into a drill hole in bedrock outcrop 15.3 m (50.3 ft.) south of the road center and 1.2 m (4 ft.), above same. Located 29.6 m (97 ft.) east from the center of the paved market entrance drive, 32.3 m (106 ft.) west from a utility pole with three guy wires and numbered 4, 25.1 m (82.5 ft.) north from a flagpole, 1.5 m (5 ft.) south from the edge of the cut, 0.3 m (1.1 ft.) east from a steel witness post.

# STATION VISIBILITY DIAGRAM

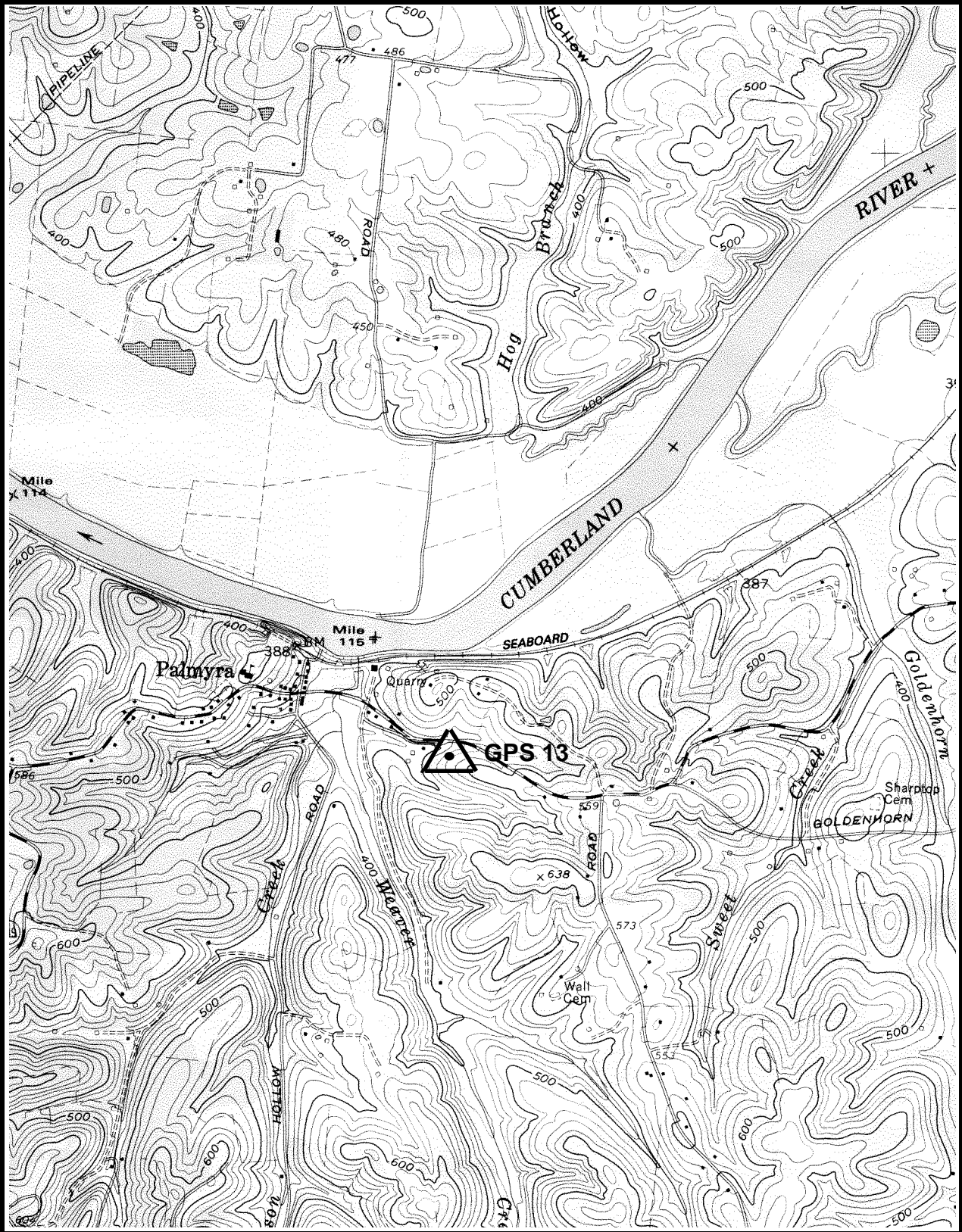


ELEVATION	<u>134.104 m (439.97 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 26' 12"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>87° 28' 40"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 13</u>	MAP SHEET	<u>302-NW, Palmyra</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:



**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 13**

**302-NW, PALMYRA**

**GPS - 14**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 27' 55.87137"</b>	TN Northing:	<b>238379.917 m</b>
Longitude:	<b>87° 59' 17.61954"</b>	TN Easting:	<b>421804.201 m</b>
Elevation:	<b>144.058 m (472.63 ft)</b>		
Convergence:	<b>-1° 9' 50.4"</b>	Scale Factor:	<b>1.00000903</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Stewart</b>	Nearest Town:	<b>Dover</b>
USGS QUAD:	<b>Standing Rock</b>	TVA Designation:	<b>29-NW</b>

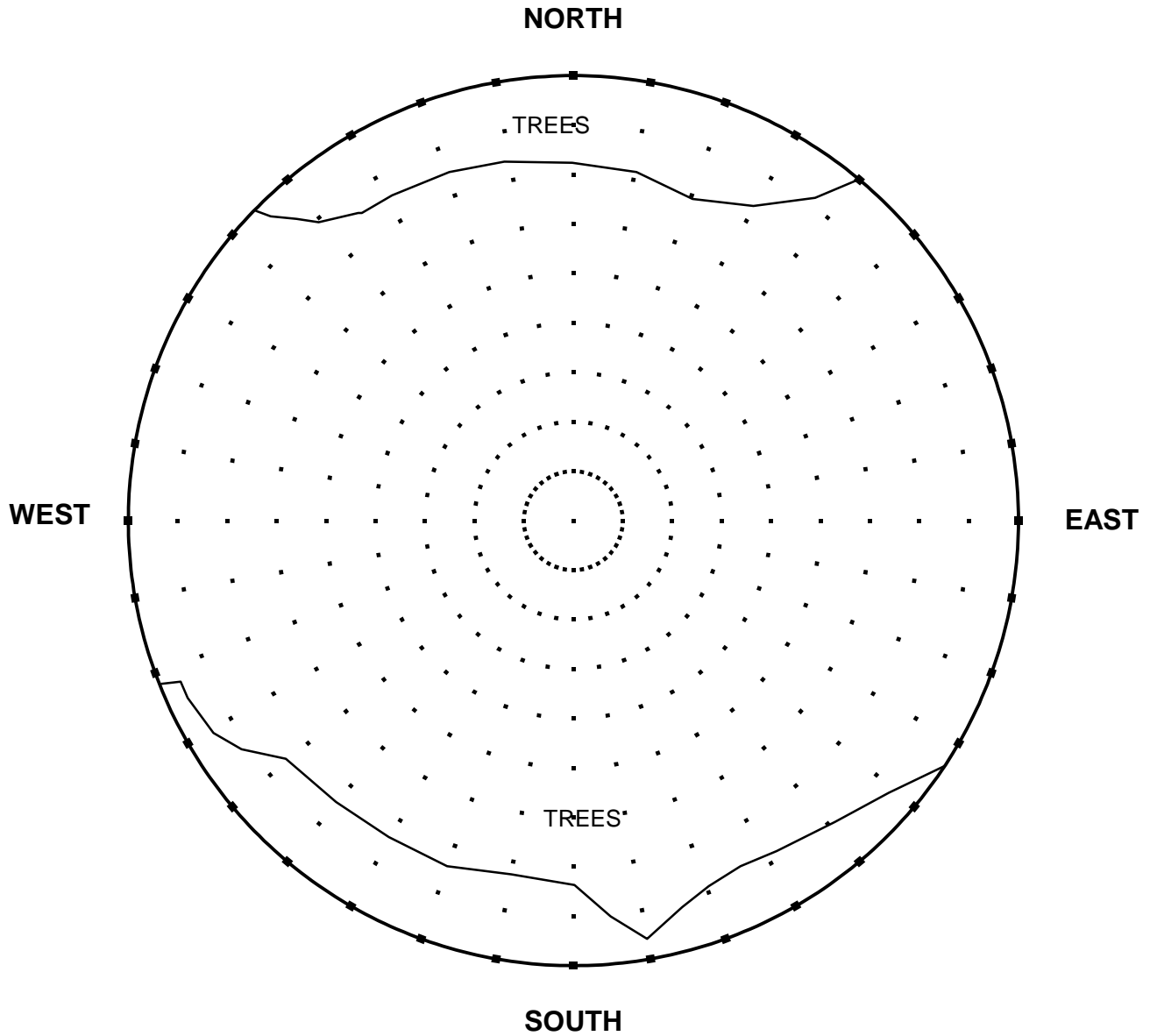
Description:

The station is located about 35.4 km (22 mi.) northeast of Paris, 12.9 km (8 mi.) west of Dover, at the junction of State Route 232 and U.S. Highway 79. Ownership—Highway Right-of-Way.

The station is located at the junction of State Route 232 and U.S. Highway 79, in the grass median of U.S. Highway 79 just west of the junction.

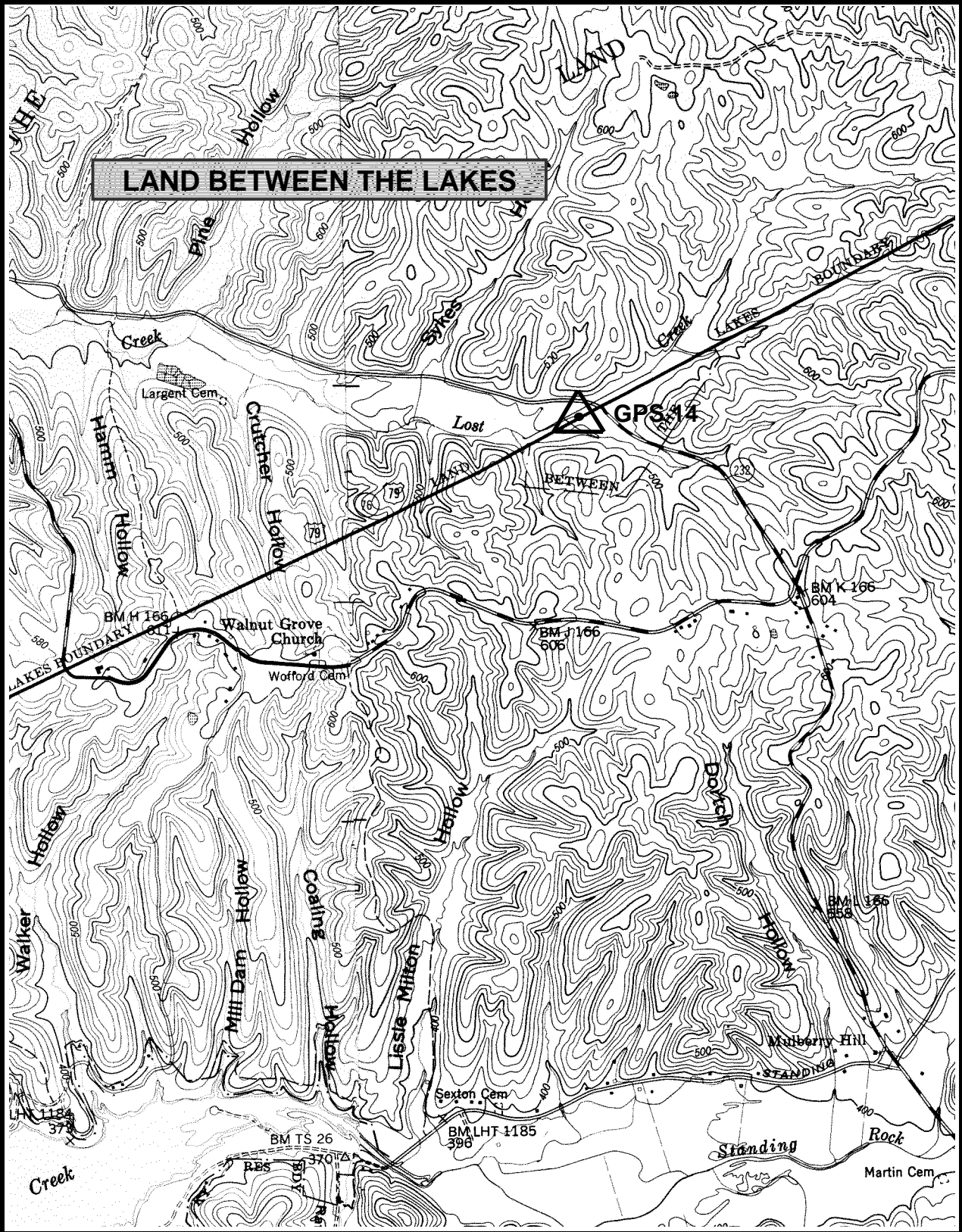
The station is a 3-D mark with stainless steel rod driven 5.8 m (19 ft.). The logo cap is stamped---GPS 14 1987---, and a steel spike is embedded in the concrete. Located 25.0 m (82 ft.) west from the center of the road junction, 16.0 m (52.5 ft.) west from the east end of the grass median, 2.4 m (7.8 ft.) south from the north edge of the median, 0.3 m (1.0 ft.) south from a fiberglass witness post, 0.5 m (1.5 ft.) above the road surface.

# STATION VISIBILITY DIAGRAM



ELEVATION	<u>144.058 m (472.63 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 27' 56"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>87° 59' 18"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 14</u>	MAP SHEET	<u>29-NW, Standing Rock</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:



GPS 14

29-NW, STANDING ROCK

**GPS - 15**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 20' 29.80229"</b>	TN Northing:	<b>225415.400 m</b>
Longitude:	<b>88° 22' 43.77071"</b>	TN Easting:	<b>386468.876 m</b>
Elevation:	<b>173.017 m (567.64 ft)</b>		
Convergence:	<b>-1° 23' 33.6"</b>	Scale Factor:	<b>0.99998755</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Henry</b>	Nearest Town:	<b>Paris</b>
USGS QUAD:	<b>Osage</b>	TVA Designation:	<b>8-SW</b>

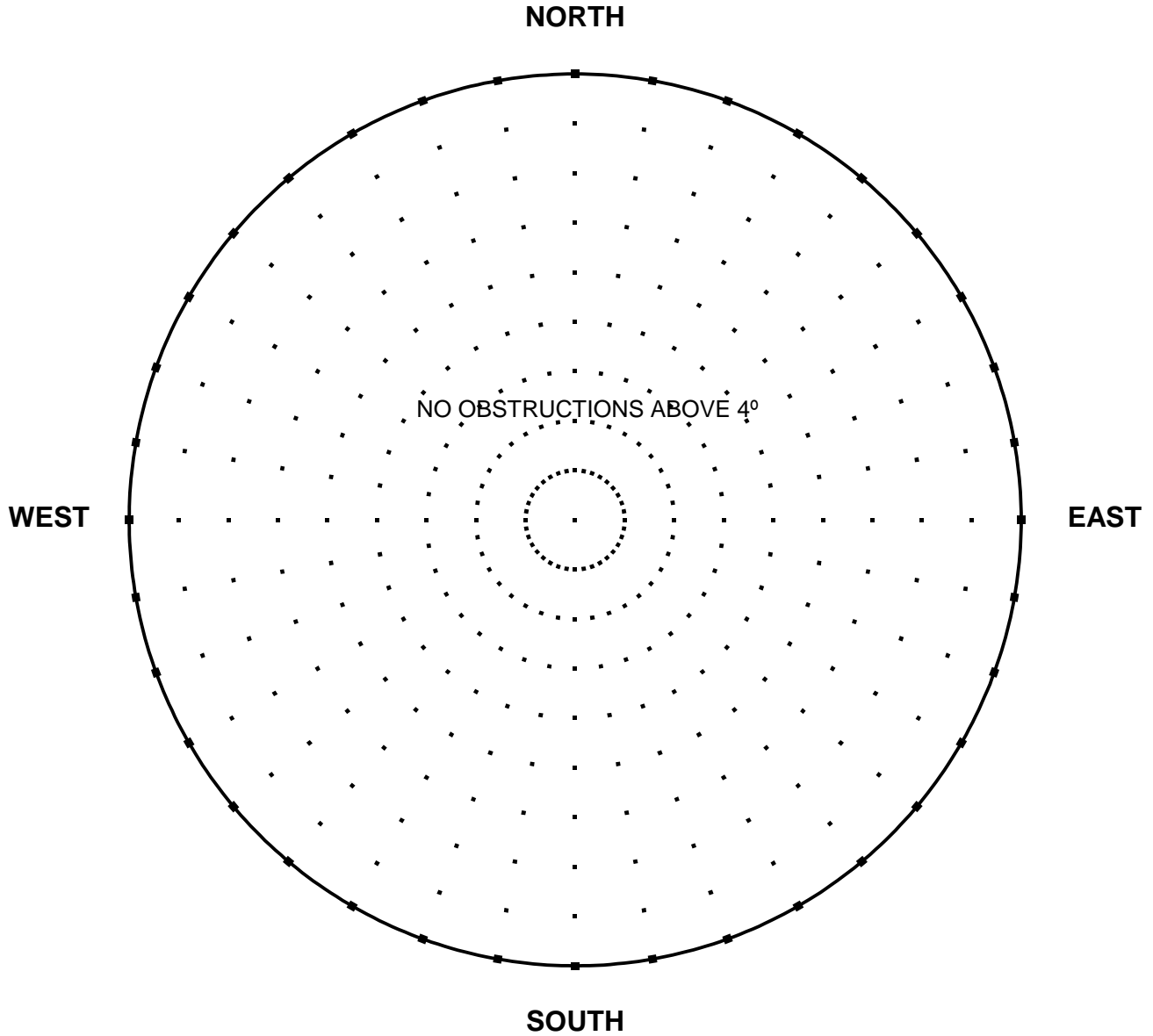
Description:

This station is located about 6.4 km (4 mi.) northwest of Paris, at the Paris/Henry County Airport. Ownership—Airport Manager is Richard Battles, office telephone (901) 642-7676, home telephone (901) 642-7791. Night access should be cleared with Mr. Battles. Property is not usually locked.

To reach the station from the Courthouse in Paris go westerly for 1.3 km (0.8 mi.) on State Route 54 and State Route 69 to a fork where State Route 69 bears right and leaves State Route 54. Bear right and go north and northwest for 5.8 km (3.6 mi.) on State Route 69 to the Paris/Henry County Airport entrance drive on the left. Turn left and go west for 0.3 km (0.2 mi.) on the airport entrance drive to the airport office and the station.

The station is a 3-D mark with stainless steel rod driven 15.2 m (50 ft.). The logo cap is stamped---GPS 15 1987---, and a steel spike is embedded in the concrete. Located 90.0 m (295 ft.) northwest from the northwest corner of the one story brick airport office, 46.6 m (153 ft.) southwest from the center of a northwest-southeast runway (which is no longer used), 10.4 m (34 ft.) east from the north corner of a paved aircraft parking area, 20.1 m (66 ft.) east-southeast from a 0.9 m (3 ft.) by 1.8 m (6 ft.) iron drain grate, 0.3 m (0.9 ft.) east-southeast from a fiberglass witness post.

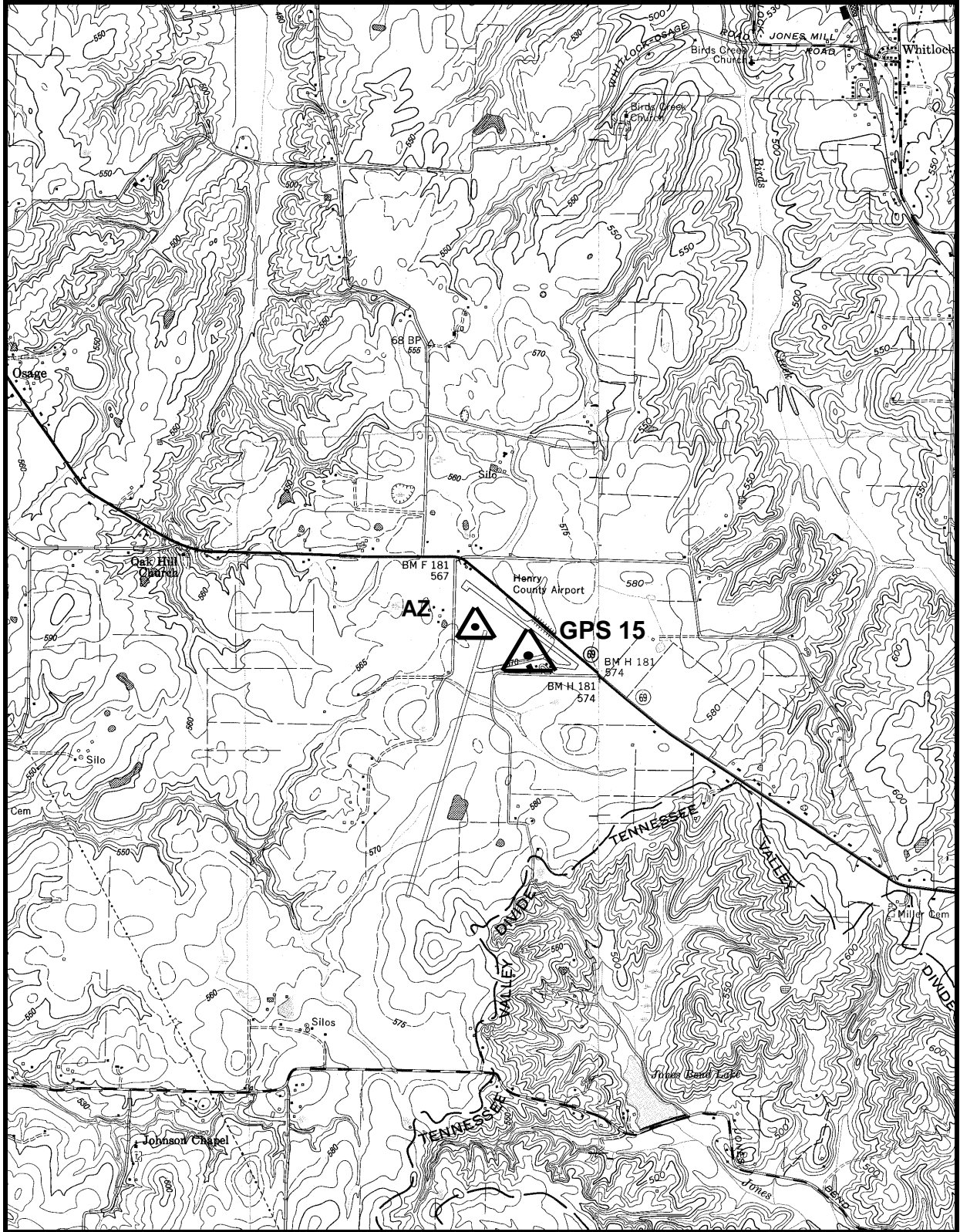
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>173.017 m (567.64 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 20' 30"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>88° 22' 44"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 15</u>	MAP SHEET	<u>8-SW, Osage</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 15**

**8-SW, OSAGE**

**REVISION DATE: --/--/--**

**GPS - 15 AZ MK**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 20' 33.73102"</b>	TN Northing:	<b>225544.049 m</b>
Longitude:	<b>88° 22' 56.28139"</b>	TN Easting:	<b>386159.941 m</b>
Elevation:	<b>172.448 m* (565.68 ft)</b>		
Convergence:	<b>-1° 23' 40.9"</b>	Scale Factor:	<b>0.99998772</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Henry</b>	Nearest Town:	<b>Paris</b>
USGS QUAD:	<b>Osage</b>	TVA Designation:	<b>8-SW</b>

Description:

This azimuth mark is located about 6.4 km (4 mi.) northwest of Paris, at the Paris/Henry County Airport. Ownership—Airport Manager is Richard Battles, office telephone (901) 642-7676, home telephone (901) 642-7791. Night access should be cleared with Mr. Battles. Property is not usually locked.

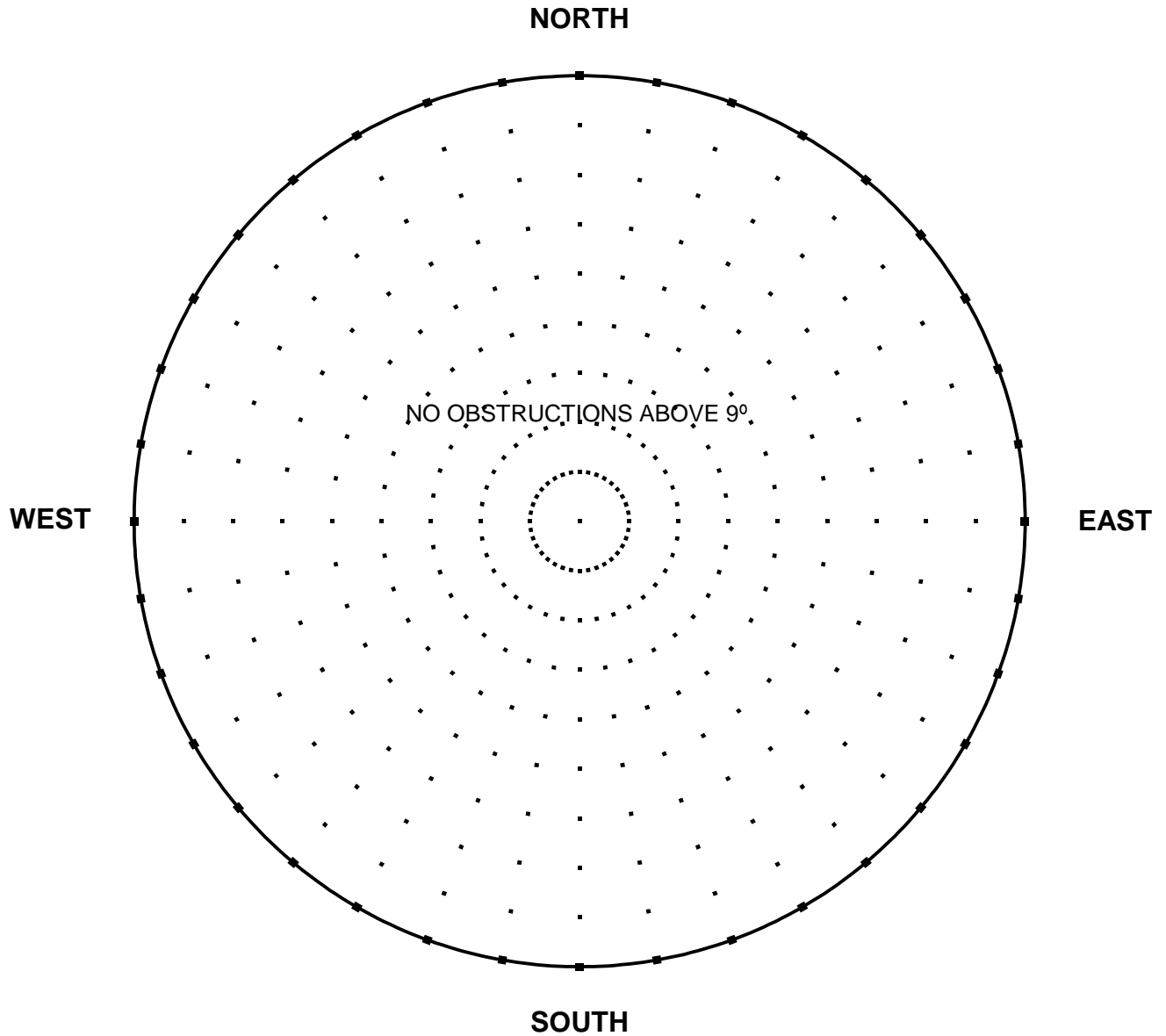
To reach the azimuth mark from the Courthouse in Paris go westerly for 1.3 km (0.8 mi.) on State Route 54 and State Route 69 to a fork where State Route 69 bears right and leaves State Route 54. Bear right and go north and northwest for 5.8 km (3.6 mi.) on State Route 69 to the Paris/Henry County Airport entrance drive on the left. Turn left and go west for 0.3 km (0.2 mi.) on the airport entrance drive to the airport office and a gate. Pass through the gate and go 0.4 km (0.25 mi.) westerly along a taxiway to the junction of the runway. Turn right and go 0.16 km (0.1 mi.) northeast along the runway to its end and the mark on the left.

The azimuth mark is a 3-D mark with stainless steel rod driven 18.3 m (60 ft.). The logo cap is stamped---GPS 15 AZ MK 1987---, and 0.1 m (0.17 ft.) below ground with a railroad spike set in the concrete. Located 15.5 m (51 ft.) northwest of the west edge of the runway extended, or just north of the newer runway that runs north-south, 80.8 m (265 ft.) southwest of the westerly most of six orange approach lights, 12.0 m (39.4 ft.) northwest of the most westerly of eight runway end lights, 8.8 m (28.9 ft.) east of a 75 mm (3 in.) steel pipe in a concrete base, and 0.5 m (1.5 ft.) southwest of a fiberglass witness post.

\* GPS derived elevation using the Geoid 96 Model and the WGS 1984 Reference Ellipsoid.



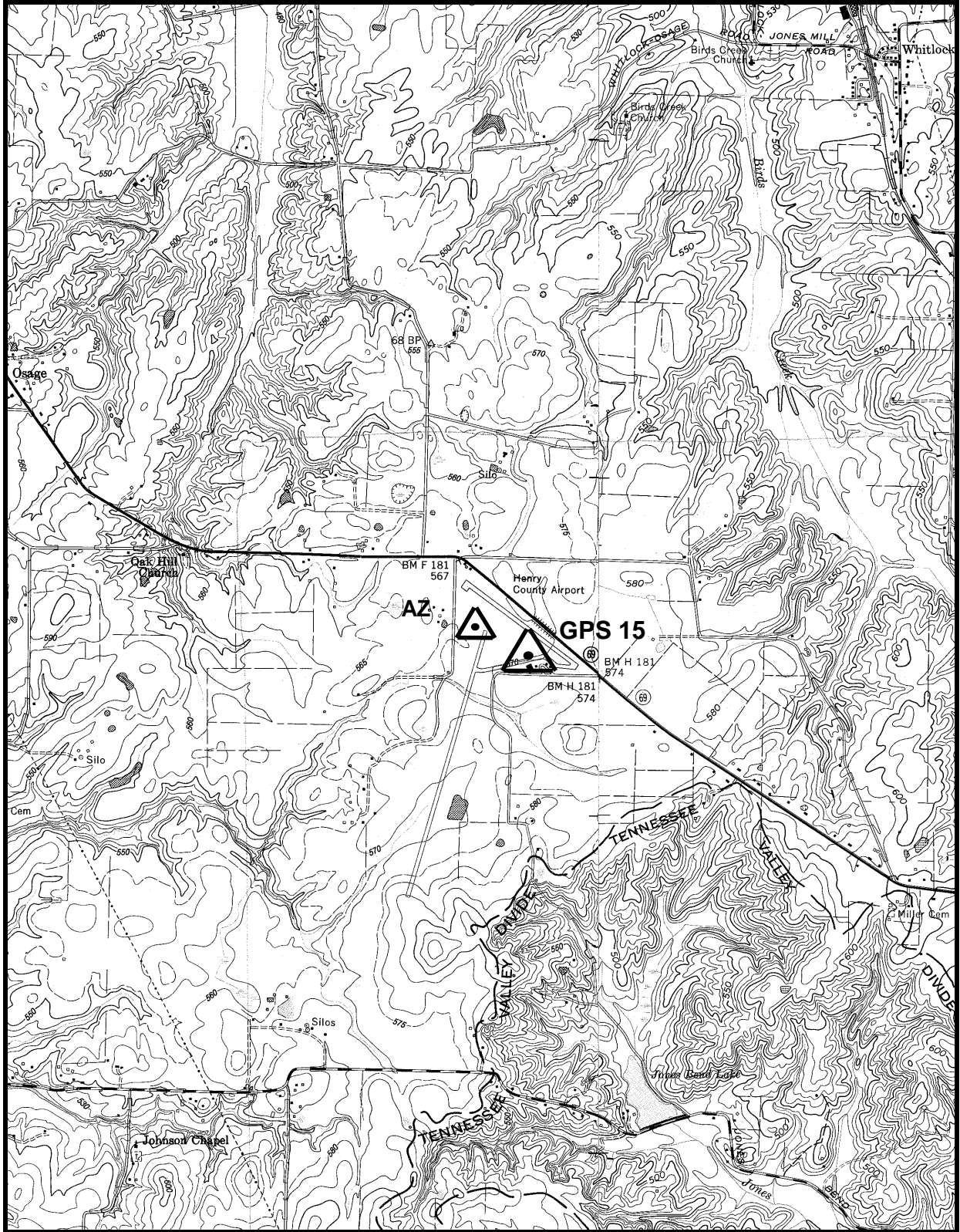
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>172.448 m (565.77 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 20' 34"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>88° 22' 56"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 15 AZ MK</u>	MAP SHEET	<u>8-SW, Osage</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

# TENNESSEE GEODETIC REFERENCE NETWORK



GPS 15

8-SW, OSAGE

**GPS - 16**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 18' 40.14105"</b>	TN Northing:	<b>222961.771 m</b>
Longitude:	<b>88° 46' 14.11174"</b>	TN Easting:	<b>351216.147 m</b>
Elevation:	<b>123.814 m (406.21 ft)</b>		
Convergence:	<b>-1° 37' 19.2"</b>	Scale Factor:	<b>0.99998299</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Weakley</b>	Nearest Town:	<b>Dresden</b>
USGS QUAD:	<b>Martin</b>	TVA Designation:	<b>435-SE</b>

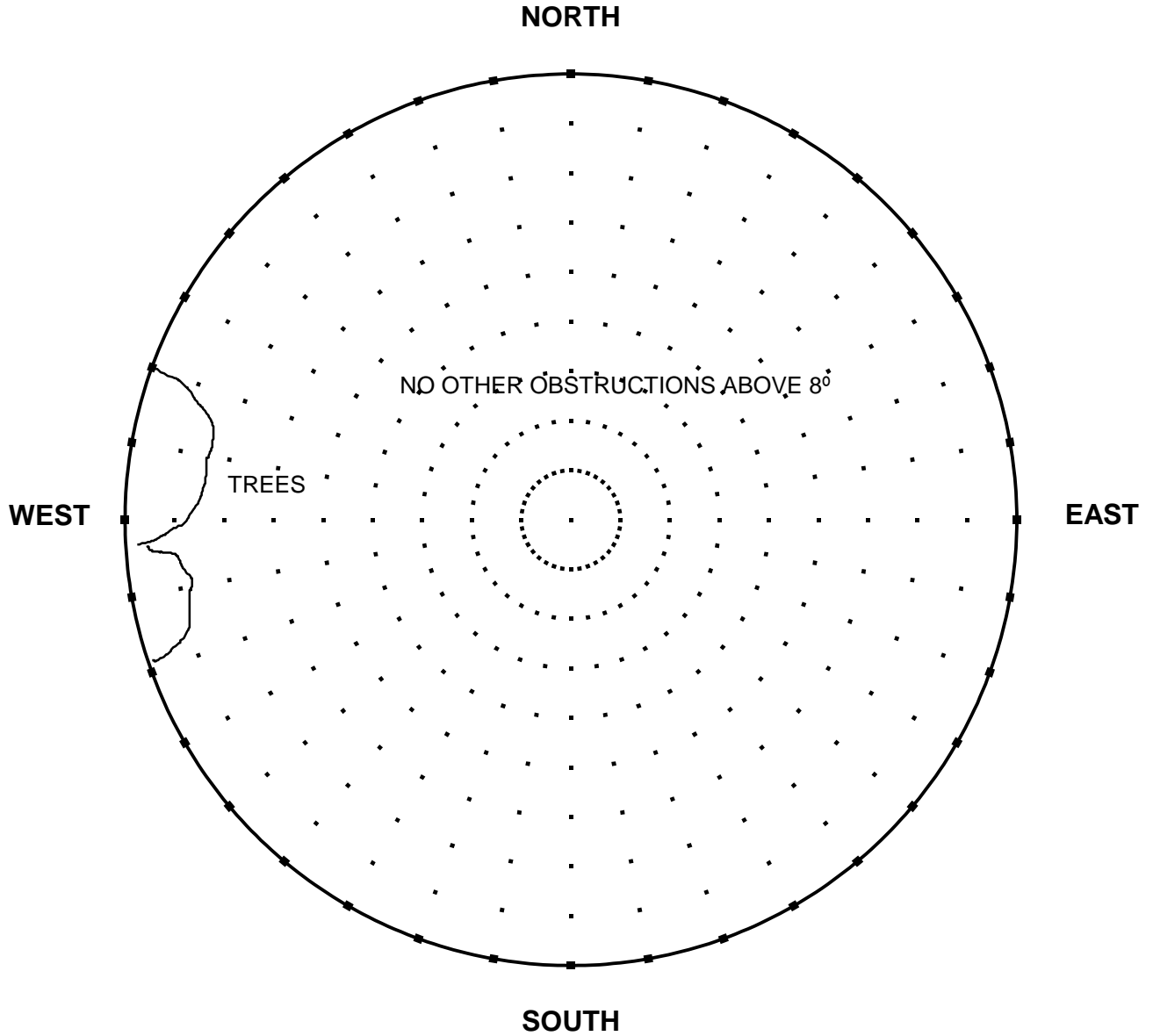
Description:

The station is located about 6.4 km (4 mi.) northwest of Dresden, 8.0 km (5 mi.) southeast of Martin, on the southwest right-of-way of State Route 22. Ownership—State Right-of-Way.

To reach the station from the U.S. Post Office in Martin go northerly for 0.08 km (0.05 mi.) on State Route 431 (Central St.) to the junction of Main St. Turn right across railroad tracks and go easterly 4.6 km (2.85 mi.) still on State Route 431 (Main St.) to an overpass bridge and the junction of State Route 22. Continue straight ahead and go southeast for 3.2 km (2.0 mi.) now on State Route 22 to a crossroad near Adams Chapel and the station 0.2 km (0.1 mi.) southeast of the junction on the right.

The station is a 3-D mark with stainless steel rod driven 5.5 m (18 ft.). The logo cap is stamped---GPS 16 1987---, and a steel spike is embedded in the concrete. Located 12.0 m (39.5 ft.) southwest from the southwest edge of the pavement, 63.9 m (210 ft.) northwest from a mile marker numbered 17, 9.8 m (32 ft.) northwest from the southwest corner of a paved field entrance road, 4.9 m (16 ft.) west from the northwest end of a concrete drain inlet, 8.8 m ( 29 ft.) north-northwest from a underground optical cable warning post, 0.4 m (1.2 ft.) northeast from a fiberglass witness post.

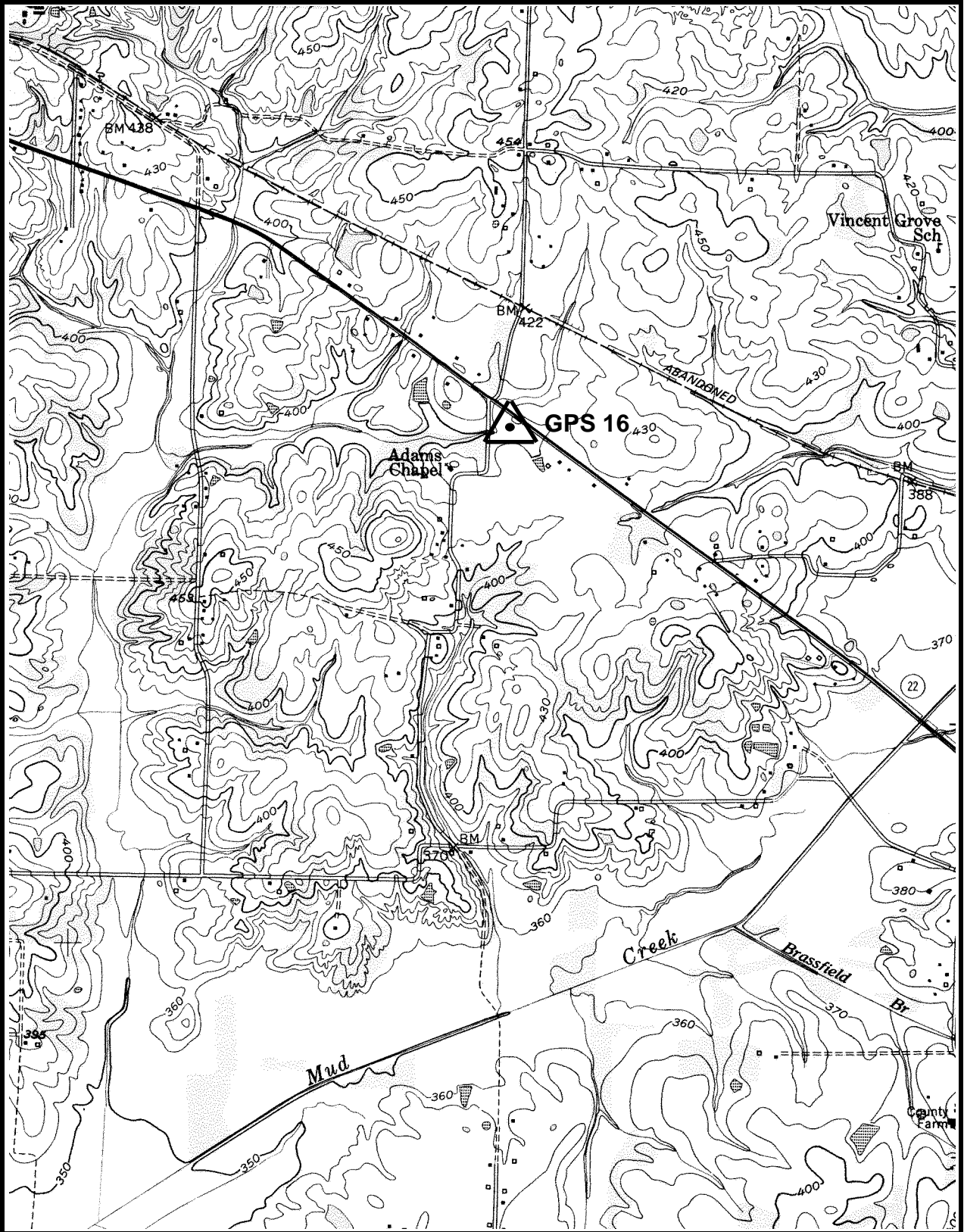
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>123.814 m (406.21 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 18' 40"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>88° 46' 14"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 16</u>	MAP SHEET	<u>435-SE, Martin</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



GPS 16

435-SE, MARTIN

**GPS - 17**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 17' 0.92962"</b>	TN Northing:	<b>221094.024 m</b>
Longitude:	<b>89° 12' 15.25245"</b>	TN Easting:	<b>312189.551 m</b>
Elevation:	<b>94.670 m (310.60 ft)</b>		
Convergence:	<b>-1° 52' 33.2"</b>	Scale Factor:	<b>0.99997910</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Obion</b>	Nearest Town:	<b>Obion</b>
USGS QUAD:	<b>Obion</b>	TVA Designation:	<b>427-SW</b>

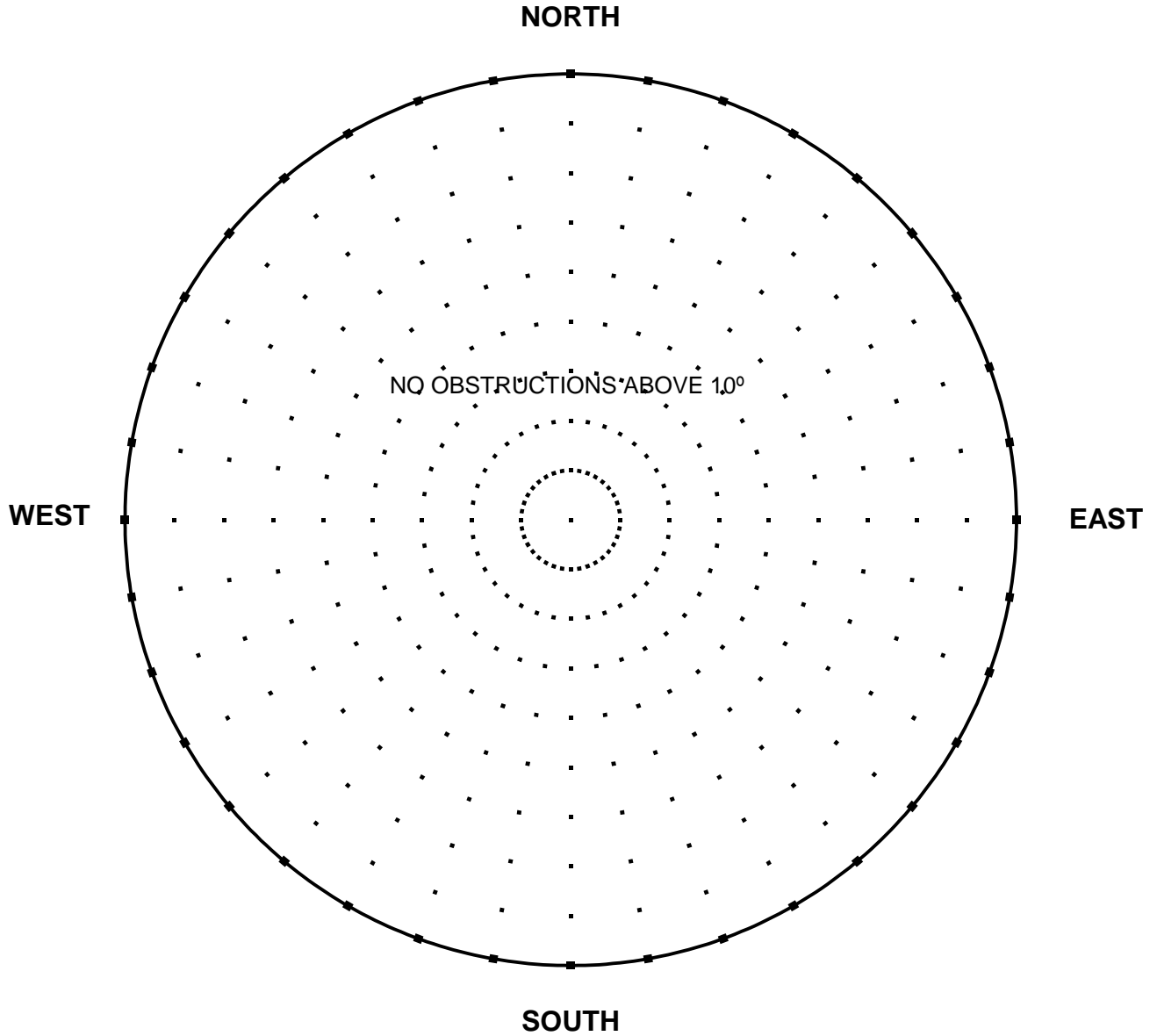
Description:

The station is located about 20.9 km (13 mi.) southwest of Union City, 3.2 km (2 mi.) northwest of Obion, and on the east right-of-way of U.S. Highway 51 (also known as Interstate 155). Ownership—Highway Right-of-Way.

To reach the station from the junction of State Route 183 and U.S. Highway 51 just west of Obion go north for 2.4 km (1.5 mi.) on U.S. Highway 51 to an overpass bridge. Continue straight ahead and go north for 0.3 km (0.2 mi.) on U.S. Highway 51 to the station on the right.

The station is a 3-D mark with stainless steel rod driven 11.6 m (38 ft.). The logo cap is stamped---GPS 17 1987---, and a steel spike is embedded in the concrete. Located 23.3 m (76.5 ft.) east-southeast from the edge of the U.S. Highway 51 pavement, and 0.3 m (1 ft.) above same, 1.8 m (6 ft.) west-northwest from a fiberglass witness post at the east right-of-way fence, 49.5 m (162 ft.) northeast from the center of a concrete culvert headwall.

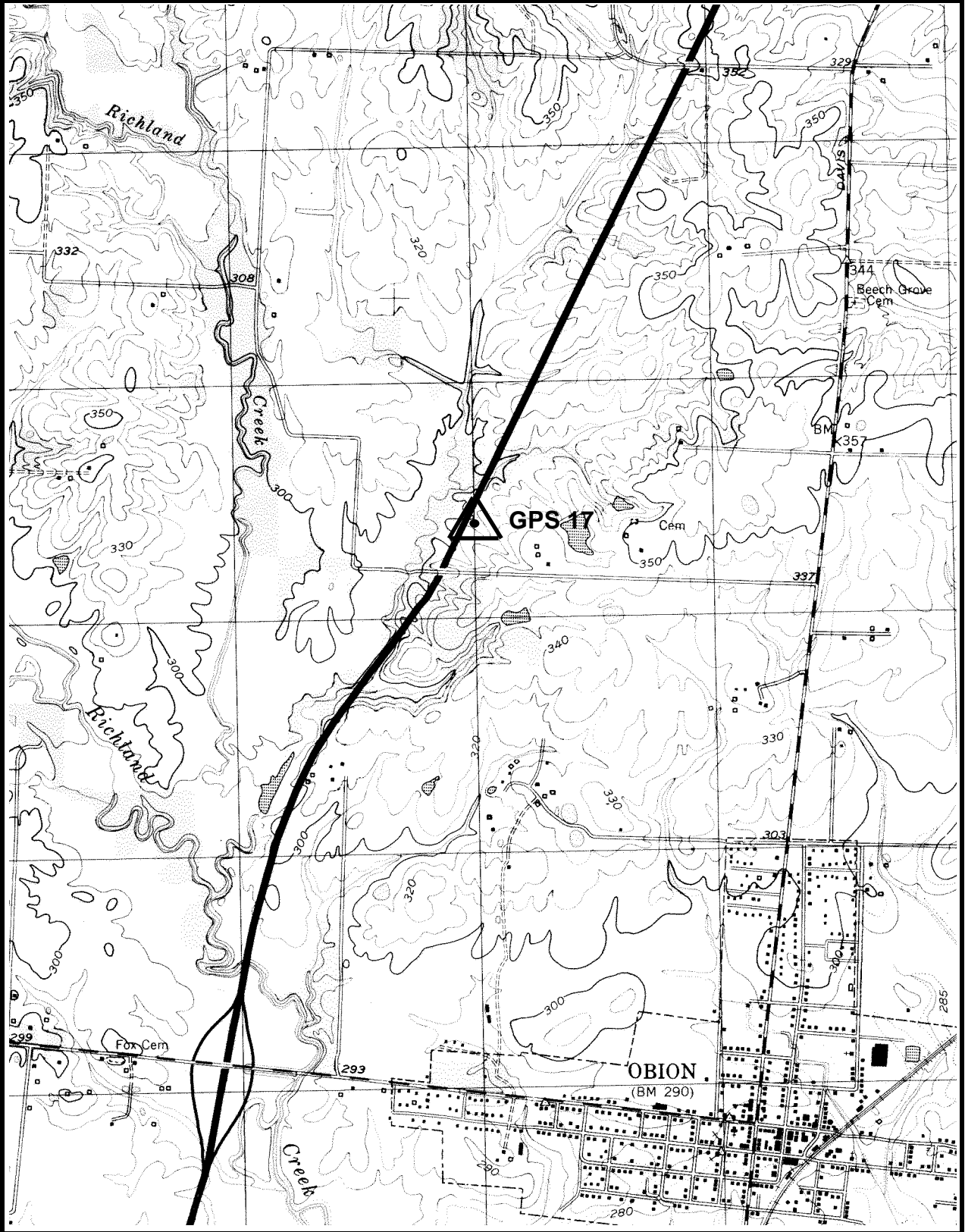
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>94.670 m (310.60 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 17' 1"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>89° 12' 15"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 17</u>	MAP SHEET	<u>427-SW, Obion</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



GPS 17

427-SW, OBION



**GPS - 18**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 11' 36.69841"</b>	TN Northing:	<b>211054.539 m</b>
Longitude:	<b>82° 48' 47.61259"</b>	TN Easting:	<b>886567.843 m</b>
Elevation:	<b>488.499 m (1,602.68 ft)</b>		
Convergence:	<b>+1° 51' 56.4"</b>	Scale Factor:	<b>0.99996802</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Greene</b>	Nearest Town:	<b>Greeneville</b>
USGS QUAD:	<b>Greeneville</b>	TVA Designation:	<b>181-NE</b>

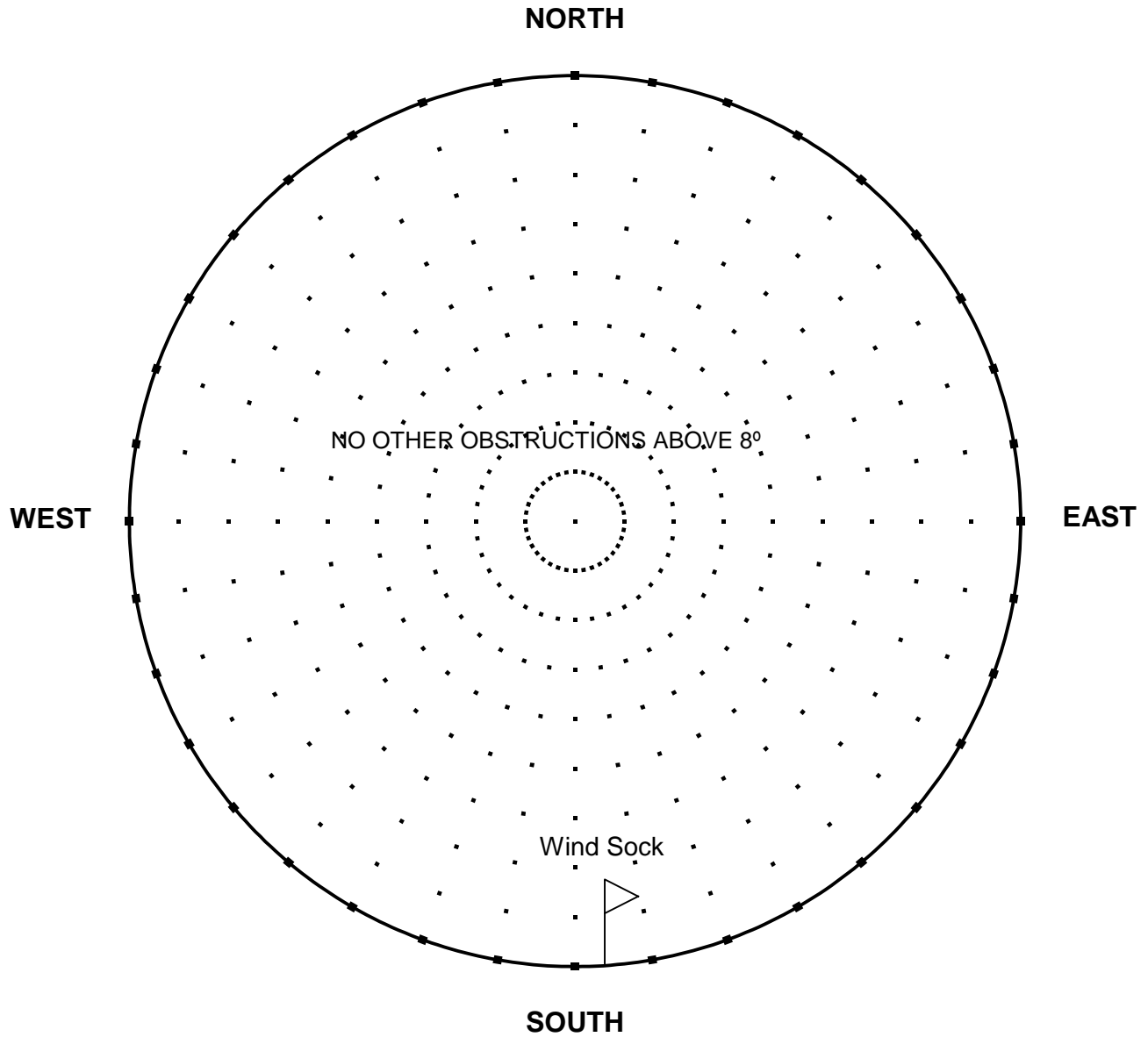
Description:

The station is located about 2.4 km (1.5 mi.) north of Greeneville, at the Greeneville Municipal Airport. To reach the station from the junction of 11E and 172, take 172 south (also called Baileyton Access Road) 0.16 km (0.1 mi.) to fork in road. Veer right onto White House Road. Travel 1.3 km (0.8 mi.) on White House Road to airport entrance drive on right. Travel 1.1 km (0.7 mi.) on airport entrance drive to airport office on left. Ownership--Airport Authority, telephone (615) 639-6275.

The station is located on the Greeneville Municipal Airport, about 0.16 km (0.1 mi.) north-northwest from the Airport Office, between an aircraft parking area and the runway.

The station is a 3-D mark with stainless steel rod driven 9.4 m (31 ft.). The logo cap is stamped---GPS 18 1987---, and a steel spike is set in the concrete. Located 72.2 m (237 ft.) southwest from the taxiway centerline 67.1 m (220 ft.) southeast from the runway centerline, and 0.9 m (3 ft.) below same, 13.8 m (45.3 ft.) north from a round brown steel water guage, 20.0 m (65.5 ft.) north from a wind sock, 20.1 m (66 ft.) northwest from the northwest edge of the paved parking area, 0.3 m (1 ft.) southeast from a fiberglass witness post.

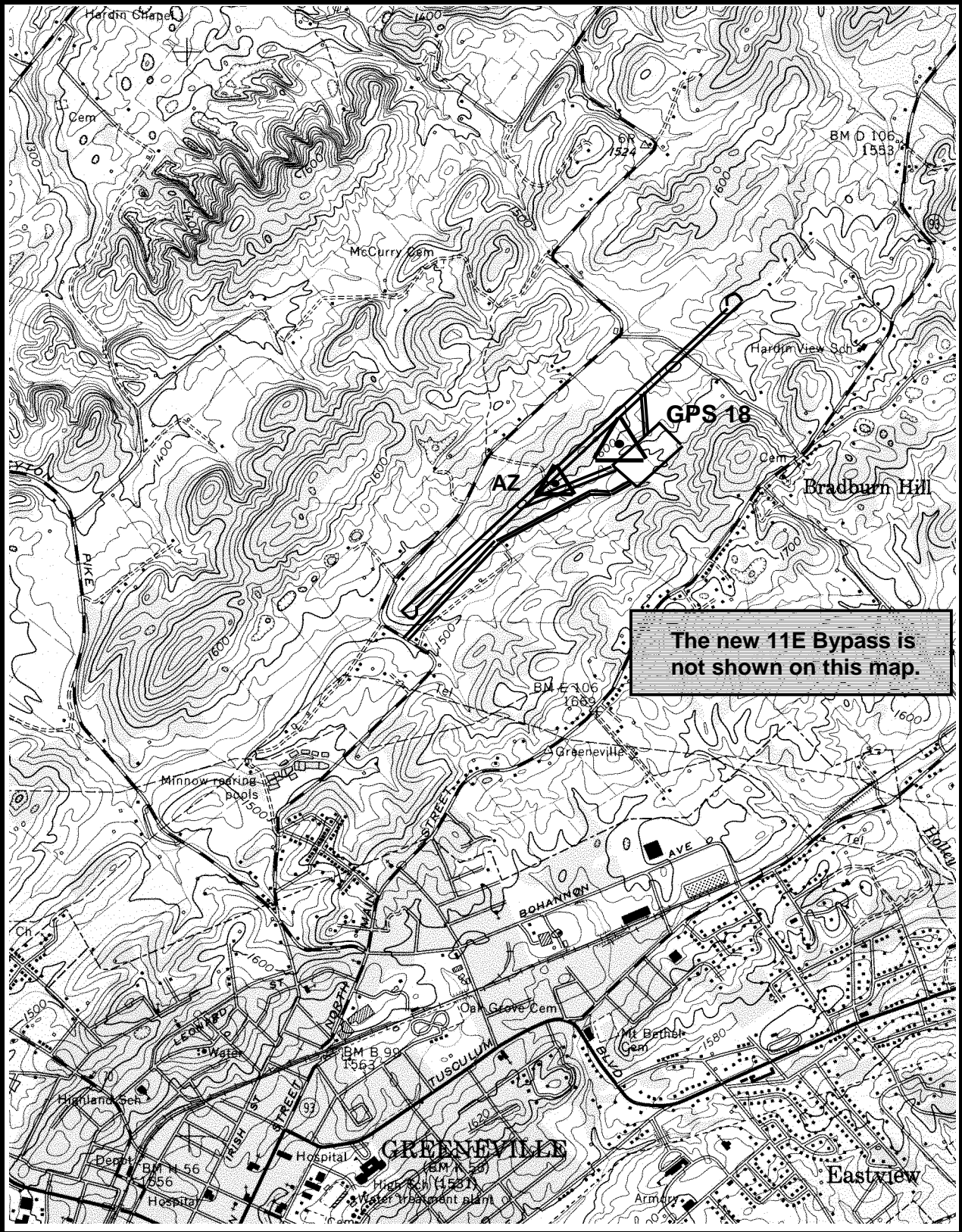
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>488.499 m (1,602.68 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 11' 37"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>82° 48' 48"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 18</u>	MAP SHEET	<u>181-NE, Greeneville</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



GPS 18

181-NE, GREENEVILLE

**GPS - 18 AZ MK**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 11' 29.49606"</b>	TN Northing:	<b>210822.784 m</b>
Longitude:	<b>82° 48' 59.76878"</b>	TN Easting:	<b>886271.522 m</b>
Elevation:	<b>486.619 m* (1,596.52 ft)</b>		
Convergence:	<b>+1° 51' 49.3"</b>	Scale Factor:	<b>0.99996781</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Greene</b>	Nearest Town:	<b>Greeneville</b>
USGS QUAD:	<b>Greeneville</b>	TVA Designation:	<b>181-NE</b>

Description:

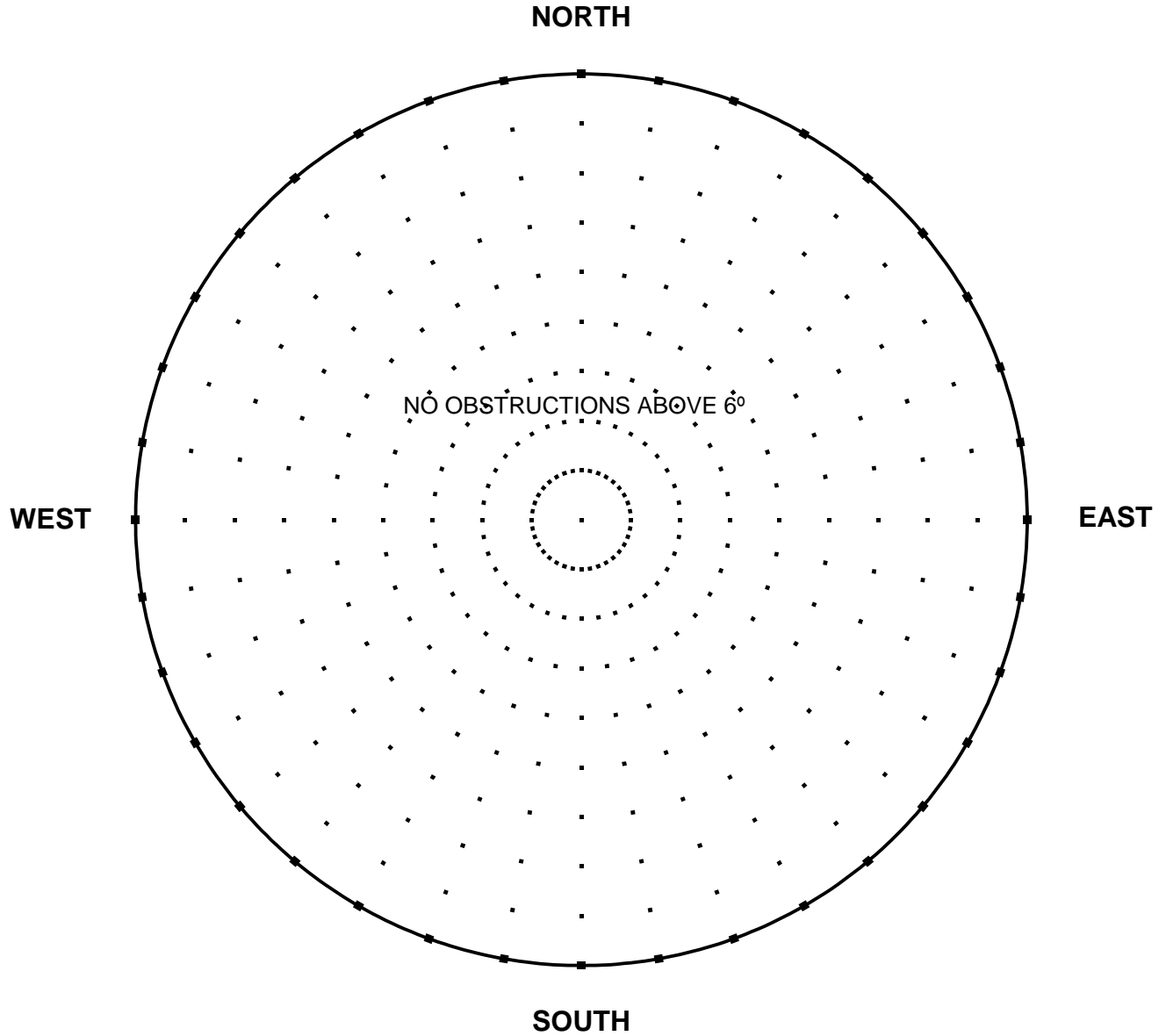
The azimuth mark is located about 2.4 km (1.5 mi.) north of Greeneville, at the Greeneville Municipal Airport. Ownership-- Airport Authority, telephone (615) 639-6275.

The azimuth mark is located on the Greeneville Municipal Airport, about 0.4 km (0.25 mi.) southwest from the airport office, between the taxiway and runway where they form a triangle.

The azimuth mark is a 3-D mark with stainless steel rod driven 1.52 m (5 ft.). The logo cap is stamped---GPS 18 AZ MK 1987---, and a steel rebar is set in the concrete. Located 9.15 m (30 ft.) southeast of the southeast edge of the runway, 6.25 m (20.5 ft.) northwest of the northwest edge of the taxiway, 3.84 m (12.6 ft.) east of a black taxi sign box, 6.07 m (19.9 ft.) northeast of a small concrete duct cover with the word "duct" engraved, and 0.6 m (2.0 ft.) southwest from a fiberglass witness post. The mark is 0.4 km (0.25 mi.) southwest of GPS 18 1987.

\* GPS derived elevation using the Geoid 96 Model and the WGS 1984 Reference Ellipsoid.

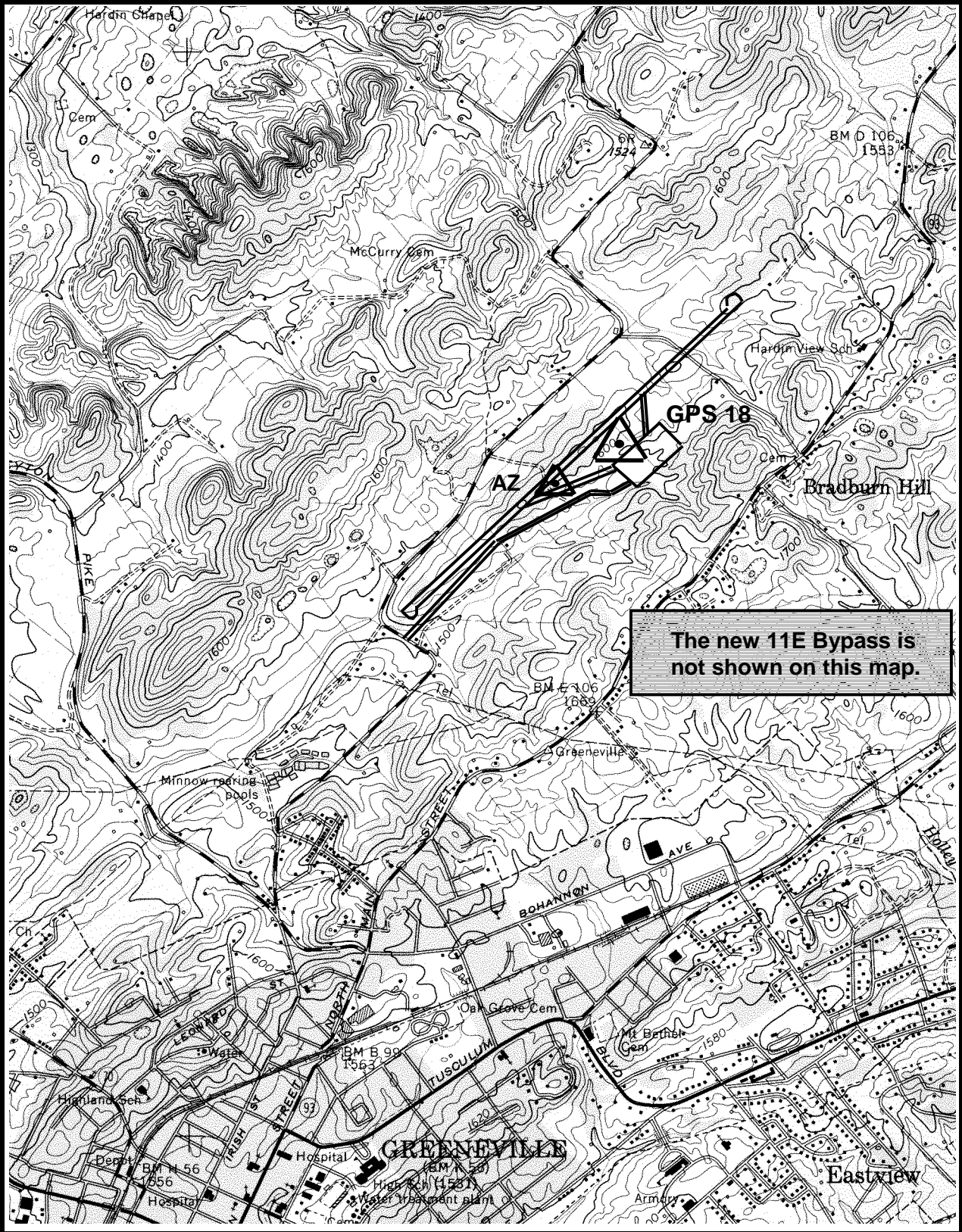
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>486.619 m (1,596.52 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 11' 29"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>82° 48' 60"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 18 AZ MK</u>	MAP SHEET	<u>181-NE, Greeneville</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 18**

**181-NE, GREENEVILLE**

**GPS - 19**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 58' 12.57726"</b>	TN Northing:	<b>185065.499 m</b>
Longitude:	<b>83° 15' 33.63286"</b>	TN Easting:	<b>847156.481 m</b>
Elevation:	<b>399.303 m (1,310.05 ft)</b>		
Convergence:	<b>+1° 36' 16.2"</b>	Scale Factor:	<b>0.99995121</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Cocke</b>	Nearest Town:	<b>Newport</b>
USGS QUAD:	<b>Chestnut Hill</b>	TVA Designation:	<b>164-NE</b>

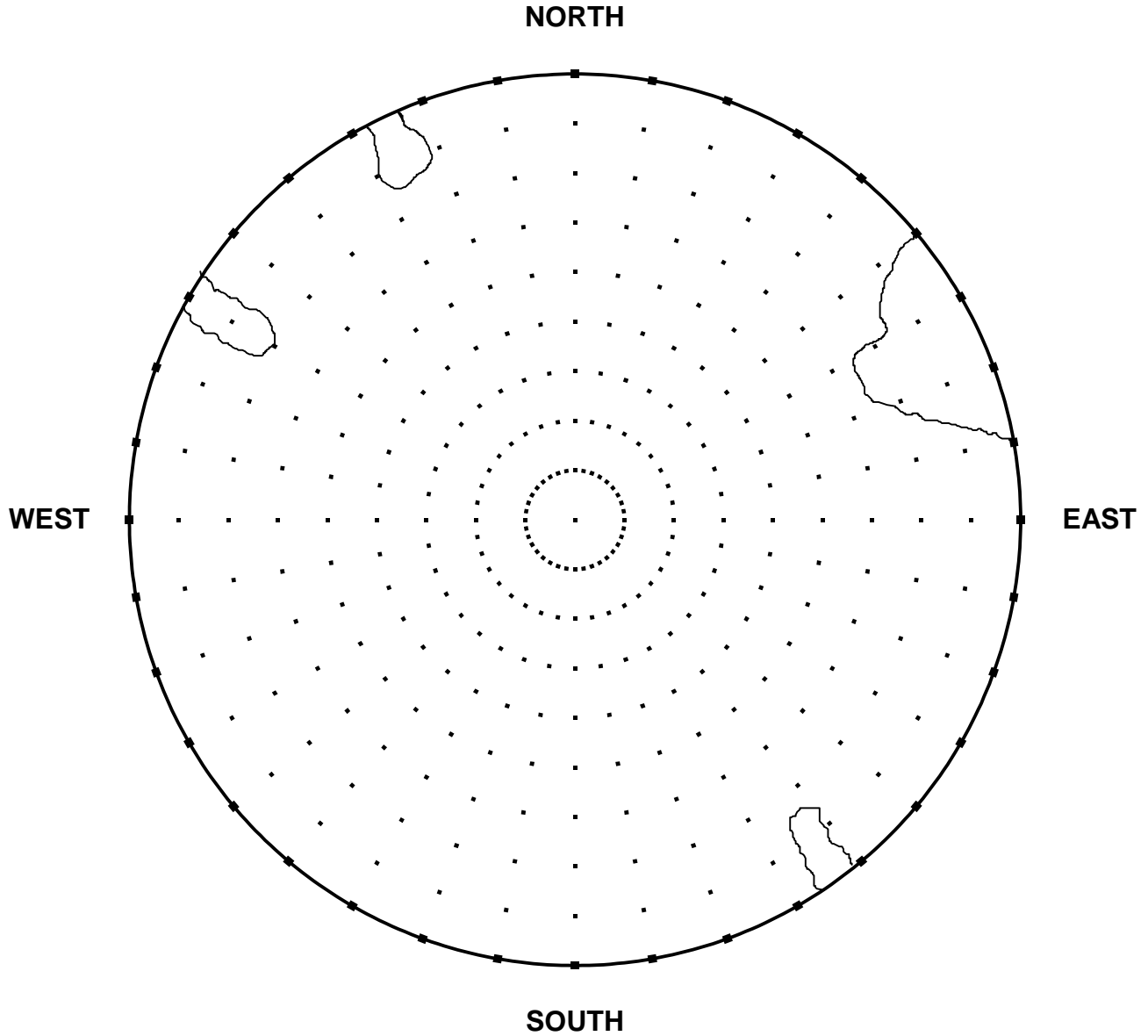
Description:

The station is located about 6.4 km (4 mi.) west of Newport, at the junction of Interstate 40 and U.S. Highways 25 and 70. Ownership--Road Right-of-Way.

To reach the station from the junction of Interstate Routes 81 and 40 go southeast for 16.1 km (10 mi.) on Interstate 40 to Exit 432A and the station atop a 9.1 m (30 ft.) hill in a triangle plot of ground formed by eastbound Interstate 40, U.S. Highways 25 and 70, and the exit ramp to same.

The station is a 3-D mark with stainless steel rod driven 4.0 m (13 ft.). The logo cap is stamped---GPS 19 1987---, and a steel spike is set in the concrete. Located 61.3 m (201 ft.) west-northwest from a utility pole near the west corner of the eastbound bridge, 43.0 m (141 ft.) north from a utility pole 2.1 m (7 ft.) southwest from the top of a slope above eastbound Interstate 40, 0.3 m (1.0 ft.) west from a fiberglass witness post.

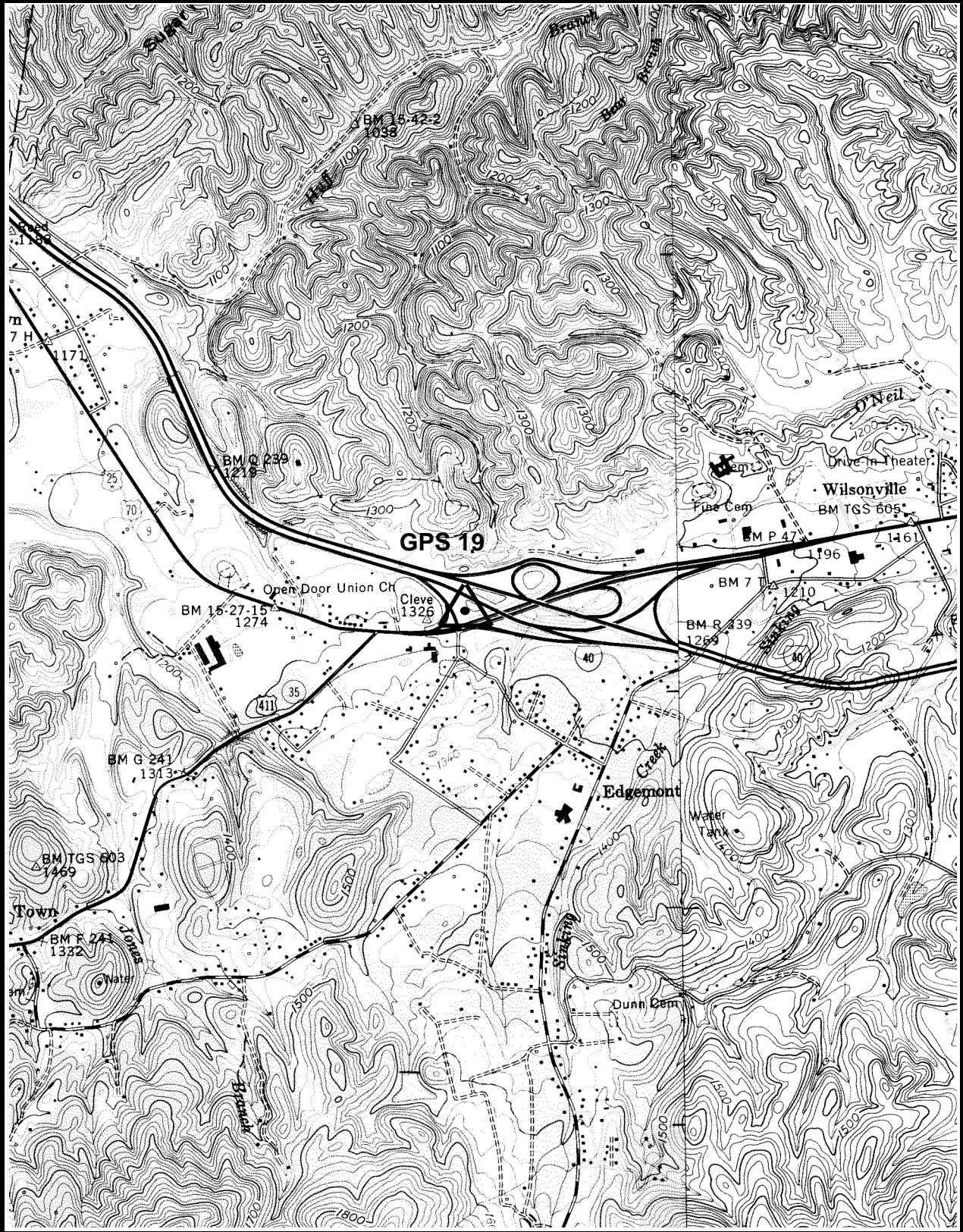
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>399.303 m (1,310.05 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 58' 13"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>83° 15' 34"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 19</u>	MAP SHEET	<u>164-NE, Chestnut Hill</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:





GPS 19

164-NE, CHESTNUT HILL

**GPS - 20**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 59' 46.63703"</b>	TN Northing:	<b>186918.108 m</b>
Longitude:	<b>83° 42' 37.72458"</b>	TN Easting:	<b>806412.669 m</b>
Elevation:	<b>308.663 m (1,012.67 ft)</b>		
Convergence:	<b>+1° 20' 25.4"</b>	Scale Factor:	<b>0.99995239</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Knox</b>	Nearest Town:	<b>Knoxville</b>
USGS QUAD:	<b>Boyd's Creek</b>	TVA Designation:	<b>156-NW</b>

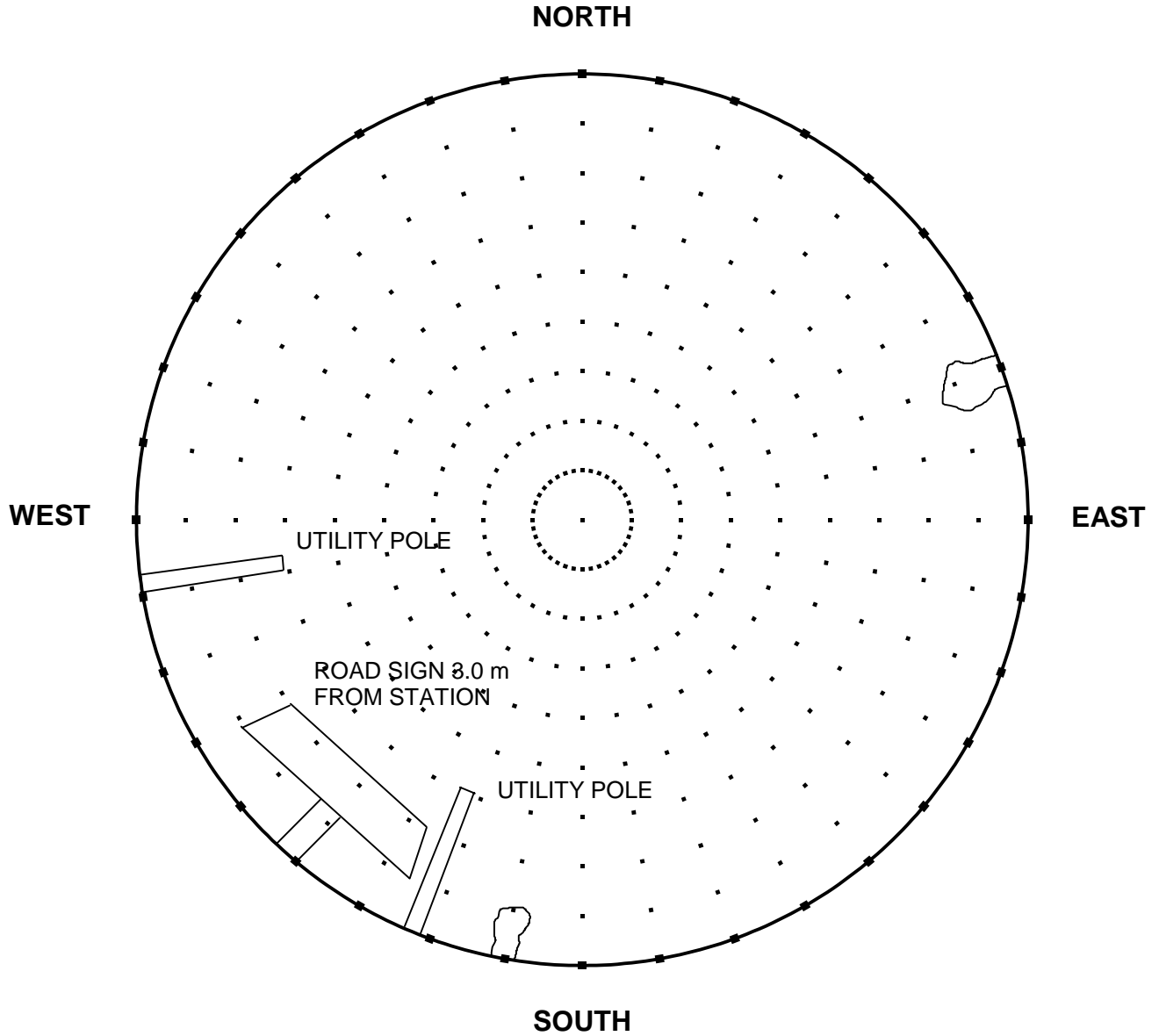
Description:

The station is located about 23 km (14 mi.) east of Knoxville, 0.6 km (0.4 mi.) west of Interstate 40 Exit 402 (Midway Road), at the south corner of the Thorngrove Road Bridge over Interstate 40. Ownership--Road Right-of-Way.

To reach the station from Interstate 40 Exit 402 go north for 0.72 km (0.45 mi.) from interstate centerline on Midway Road to the junction of Thorngrove Road. Turn left and go southwest for 1.1 km (0.7 mi.) on Thorngrove Road to the bridge over Interstate 40 and the station on the left.

The station is a 3-D mark with stainless steel rod driven 9.1 m (30 ft.). The logo cap is stamped ---GPS 20 1987---, located 7.0 m (23 ft.) southeast from the center of Thorngrove Road and 0.5 m (1.5 ft.) below same, 1.77 m (5.8 ft.) south from the south corner of the bridge, 1.16 m (3.8 ft.) southeast from a guardrail, 0.8 m (2.62 ft.) southeast from a fiberglass witness post.

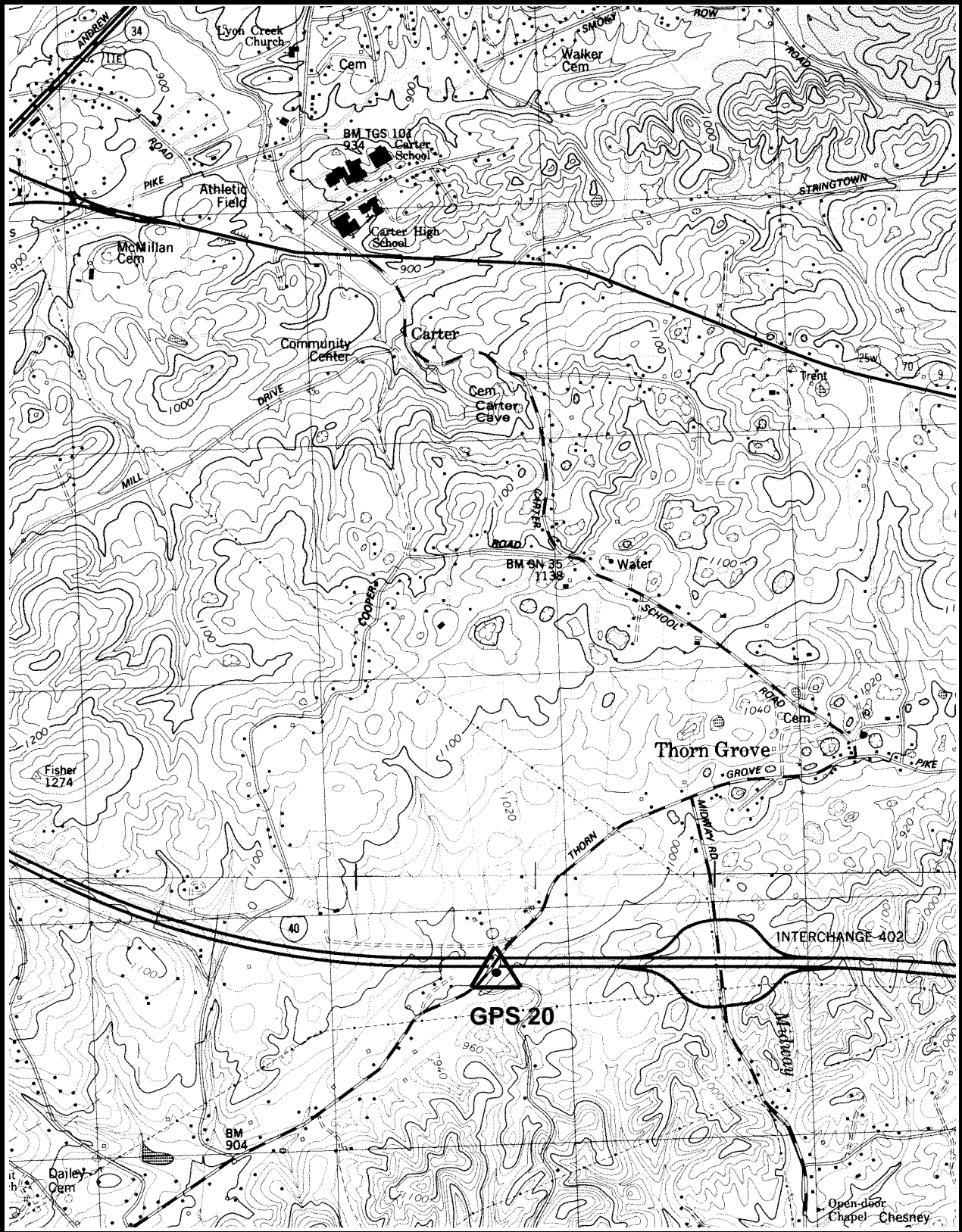
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>308.663 m (1,012.67 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 59' 47"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>83° 42' 38"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 20</u>	MAP SHEET	<u>156-NW, Boyd's Creek</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 20**

**156-NW, BOYD'S CREEK**

**GPS - 21**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 58' 32.57520"</b>	TN Northing:	<b>183749.668 m</b>
Longitude:	<b>84° 10' 42.59261"</b>	TN Easting:	<b>764266.219 m</b>
Elevation:	<b>302.843 m (993.58 ft)</b>		
Convergence:	<b>+1° 3' 59.0"</b>	Scale Factor:	<b>0.99995145</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Knox</b>	Nearest Town:	<b>Oak Ridge</b>
USGS QUAD:	<b>Lovell</b>	TVA Designation:	<b>138-NW</b>

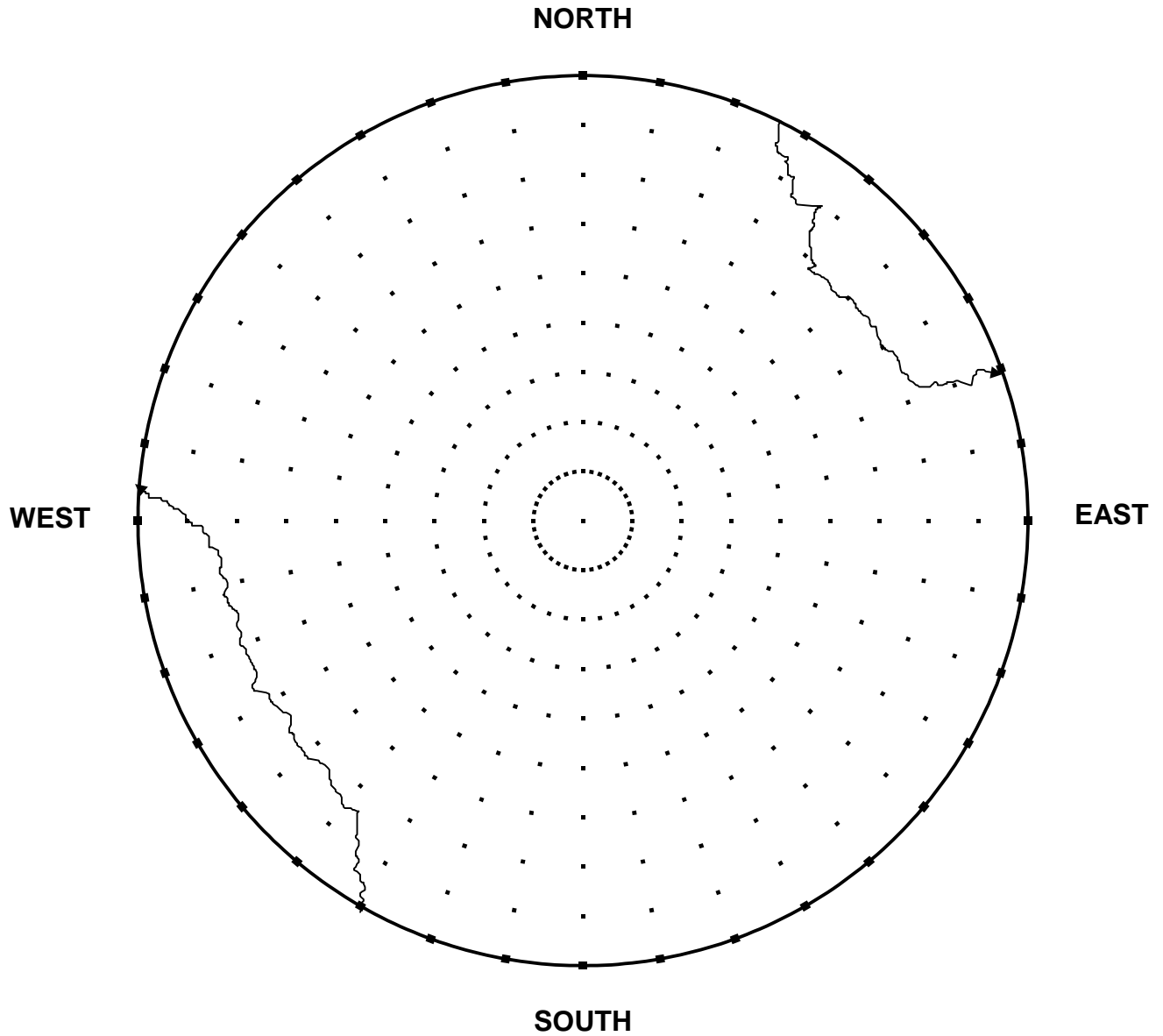
Description:

The station is located about 22.5 km (14 mi.) west of Knoxville, 10.4 km (6.5 mi.) southeast of Oak Ridge, 9.2 km (5.7 mi.) northwest of the junction of Interstates 40, 75 and State Route 162 (The Pellissippi Parkway) along State Route 162, and just south of the junction of State Routes 162 and 62. Ownership--Road Right-of-Way.

The station is located just south of the junction of State Routes 162 and 62 in the grass median strip of State Route 162 about 0.40 km (0.25 mi.) north of a summit.

The station is a 3-D mark with stainless steel rod driven 8.8 m (29 ft.). The logo cap is stamped---GPS 21 1987---, and an iron rod is set in the concrete. Located 72.76 m (238.7 ft.) north from the centerline of a paved crossover, 25.60 m (84.0 ft.) east from the centerline of the southbound lanes, 13.4 m (44.0 ft.) west from the centerline of the northbound lanes and 1.2 m (4 ft.) below same, 4.57 m (15.0 ft.) east from the center of a concrete ditch, 0.3 m (1.0 ft.) southwest from a fiberglass witness post.

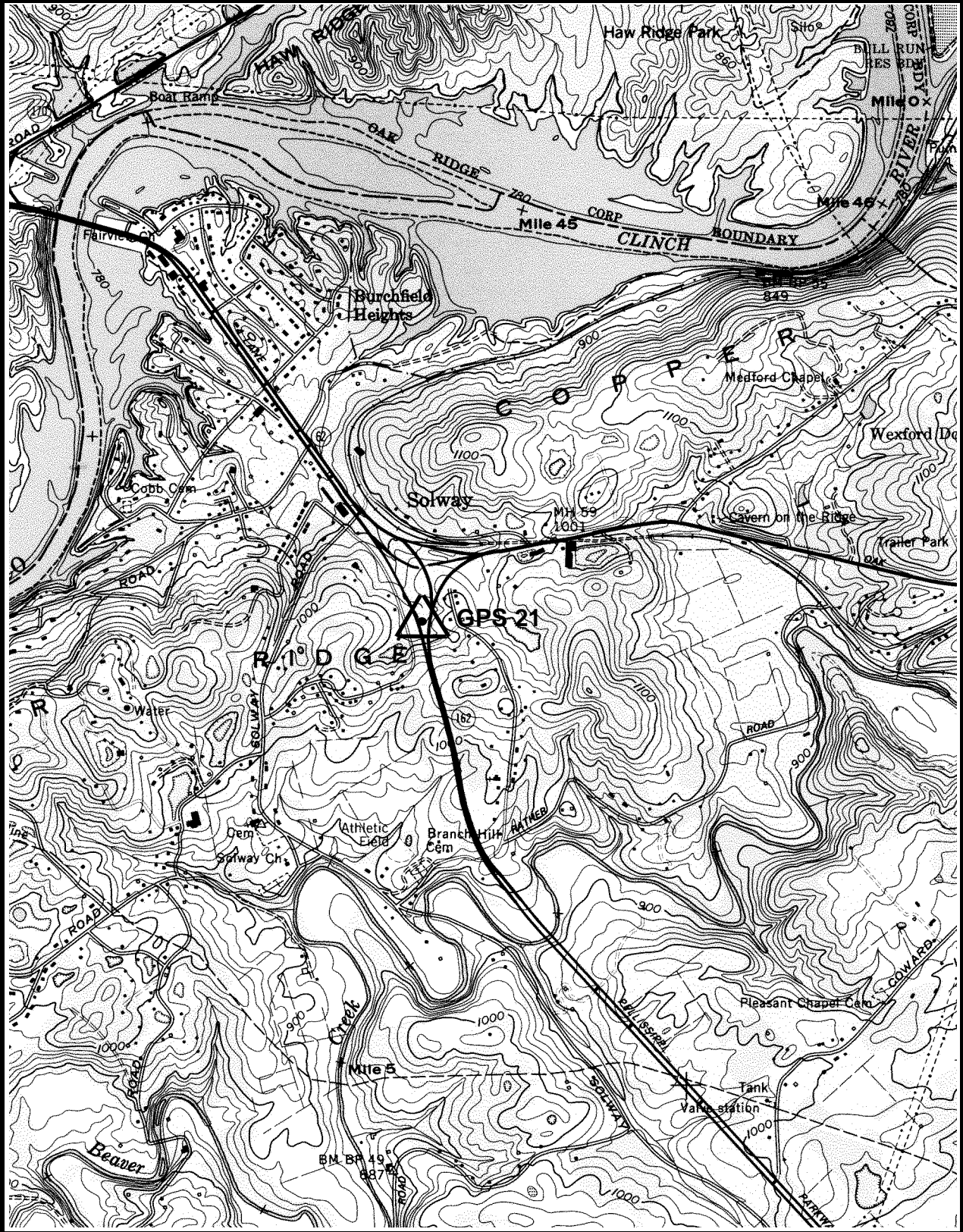
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>302.843 m (993.58 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 58' 33"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>84° 10' 43"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 21</u>	MAP SHEET	<u>138-NW, Lovell</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 21

138-NW, LOVELL

**GPS - 22**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 58' 13.97076"</b>	TN Northing:	<b>182686.679 m</b>
Longitude:	<b>84° 29' 53.89903"</b>	TN Easting:	<b>735436.740 m</b>
Elevation:	<b>248.072 m (813.88 ft)</b>		
Convergence:	<b>+0° 52' 44.9"</b>	Scale Factor:	<b>0.99995123</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Roane</b>	Nearest Town:	<b>Harriman</b>
USGS QUAD:	<b>Elverton</b>	TVA Designation:	<b>130-NW</b>

Description:

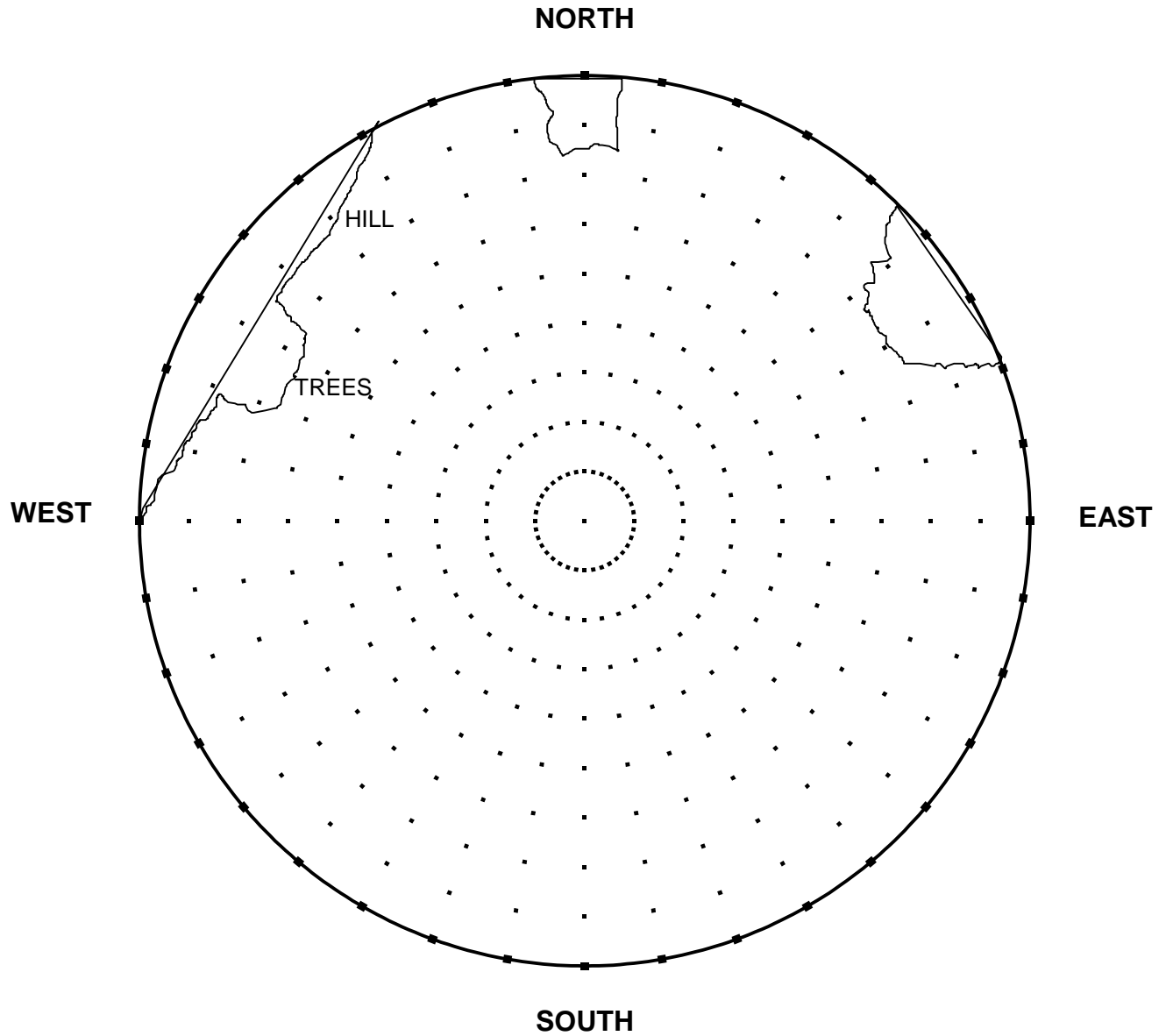
**The station is located about 4.8 km (3 mi.) northeast of Harriman, at the junction of State Route 61 and U.S. Highway 27. Ownership--Road Right-of-Way.**

**The Station is located at the junction of State Route 61 and U.S. Highway 27 near the southwest corner of the bridge over State Route 61.**

**The station is a 3-D mark with stainless steel rod driven 9.1 m (30 ft.). The logo cap is stamped---GPS 22 1987---, and a steel spike is embedded in the concrete. Located 7.9 m (26 ft.) south-southeast from the centerline of U.S. Highway 27 and 0.5 m (1.5 ft.) below same, 6.1 m (20 ft.) southwest from the southwest corner of the bridge, 1.2 m (4.0 ft.) southeast from a fiberglass witness post.**



# STATION VISIBILITY DIAGRAM



ELEVATION	<u>248.072 m (813.88 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 58' 14"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>84° 29' 54"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 22</u>	MAP SHEET	<u>130-NW, Elverton</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:



; DG!'& 'fB 9GHFCM98 '!GCCB'HC '6 9 'F9G9HL

5 ``j Ui Yg'UfYfYZfYbWYX'hc 'h YBcfh '5 a YfjWUb'8 Ui a 'B5 8 ; ' f% - ) L

Latitude:	35° 59' 59.73334"	TN Northing:	185327.762 m
Longitude:	85° 2' 40.17756"	TN Easting:	686146.592 m
Elevation:	533.472 m (1,750.23 ft)		
Convergence:	+0° 33' 33.8"	Scale Factor:	0.99995258
Monument Set by:	NGS	Date:	1987
County:	Cumberland	Nearest Town:	Crossville
USGS QUAD:	Isoline	TVA Designation:	108-SE

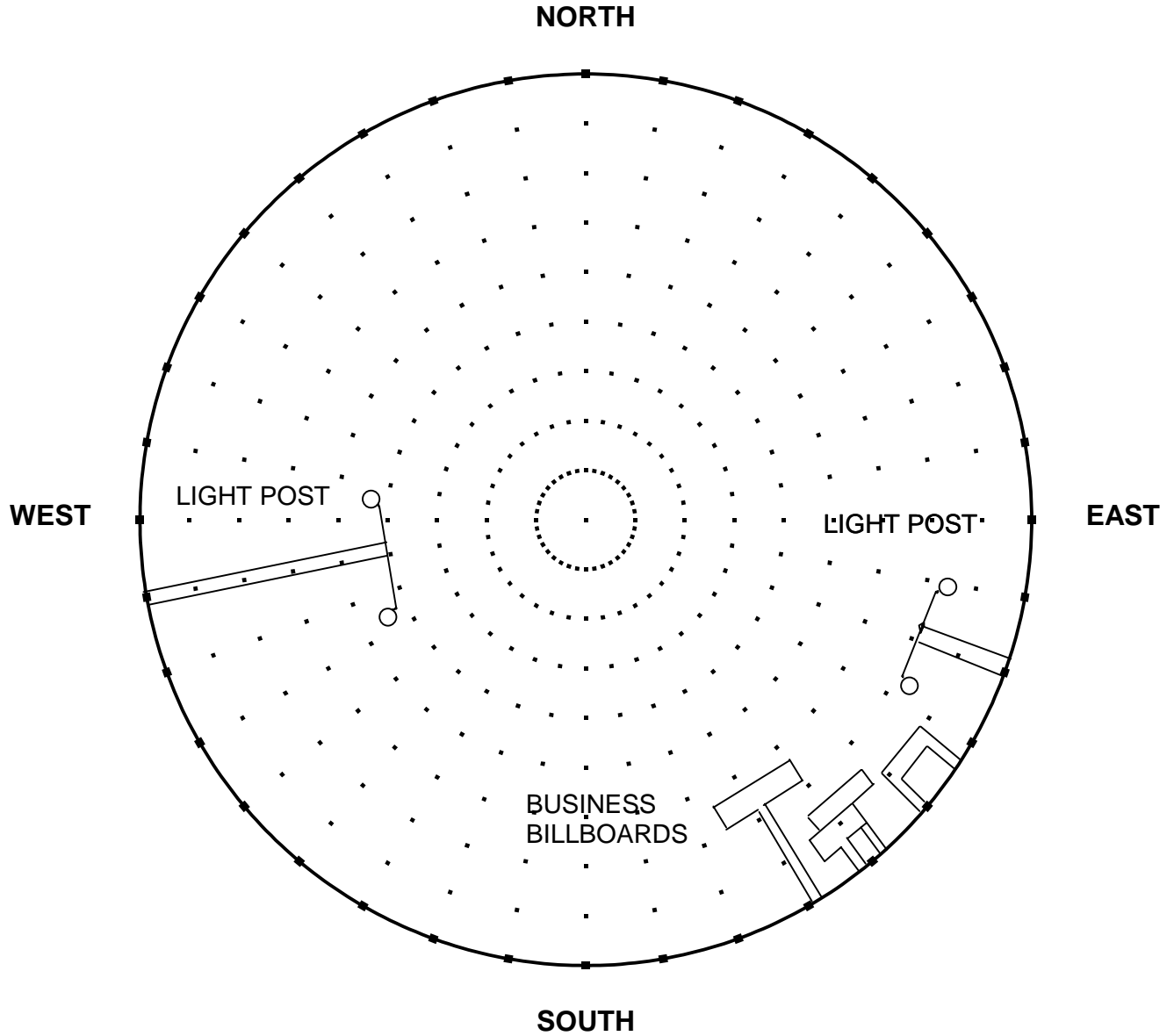
Description:

The station is located about 6.4 km (4 mi.) north of Crossville, at the junction of Interstate 40 and U.S. Highway 127. Ownership--State Right-of-Way.

The station is located at the junction of Interstate 40 and U.S. Highway 127 in a rock outcrop in the triangle plot of ground formed by U. S. Highway 127, eastbound Interstate 40, and the east bound entrance ramp.

The station is a standard NGS disk stamped---GPS 23 1987---, set into a drill hole in bedrock outcrop measuring 3.0 m (10 ft.) by 0.9 m (3 ft.) flush with ground. Located 83.2 m (273 ft.) east from the southeast corner of the overpass bridge, 25.0 m ( 82 ft.) north-northeast from the entrance ramp centerline, 16.8 m (55 ft.) south-southwest from the centerline of the eastbound lanes of Interstate 40 and level with same, 0.7 meters (2.2 ft.) west from a fiberglass witness post cemented in the rock.

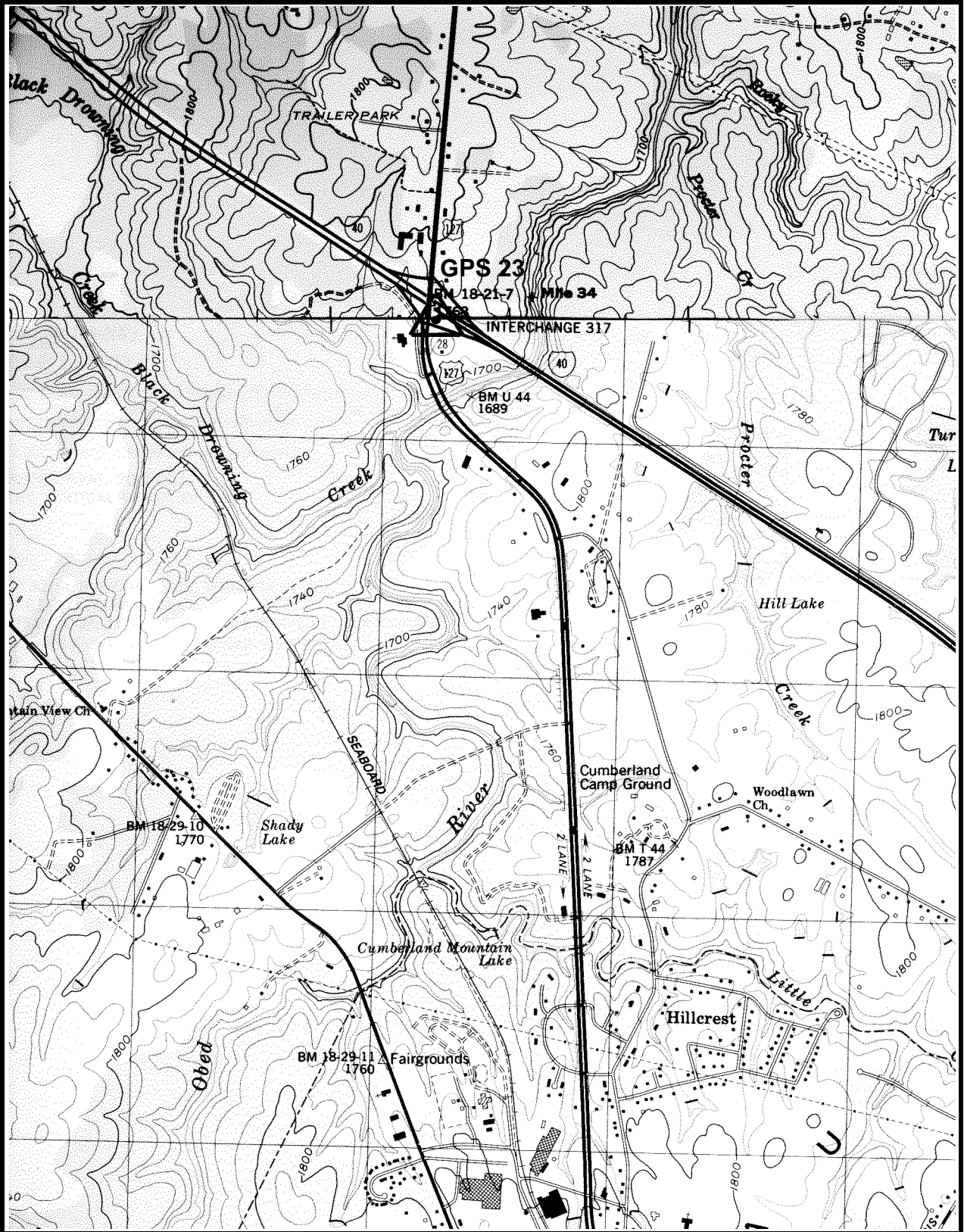
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>533.472 m (1,750.23 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 59' 60"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>85° 2' 40"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 23</u>	MAP SHEET	<u>108-SE, Isoline</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 23

108-SE, ISOLINE

**GPS - 24 (BLOCKAGE - SOON TO BE RESET)**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 0' 18.93229"</b>	TN Northing:	<b>185612.552 m</b>
Longitude:	<b>85° 30' 12.08369"</b>	TN Easting:	<b>644773.926 m</b>
Elevation:	<b>314.526 m (1031.91 ft)</b>		
Convergence:	<b>+0° 17' 26.7"</b>	Scale Factor:	<b>0.99995285</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>White</b>	Nearest Town:	<b>Cookeville</b>
USGS QUAD:	<b>Burgess Falls</b>	TVA Designation:	<b>326-SE</b>

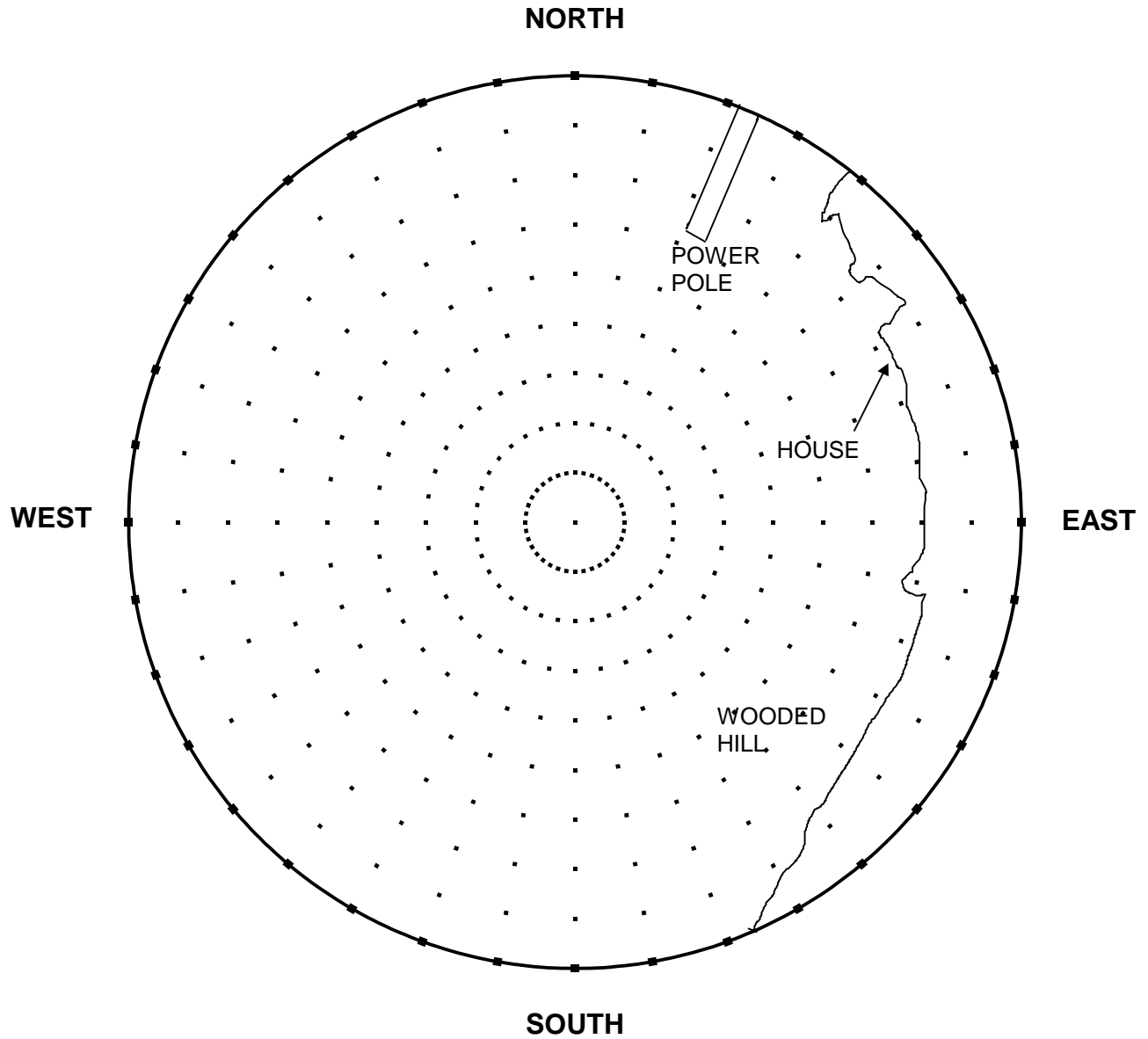
Description:

The station is located about 16.1 km (10 mi.) south of Cookeville, in a bedrock outcrop on the east right-of-way of Old State Route 111 just west-southwest of an elaborate house partly built of stone. Ownership--State Right-of Way.

To reach the station from the junction of Interstate 40 and State Route 111 southeast of Cookeville go south for 6.6 km (4.1 mi.) on State Route 111 to the Putnam/White County Line. Continue straight ahead and go south for 6.8 km (4.2 mi.) on State Route 111 to the O'Connor Rd. Exit. At the intersection of O'Connor Rd. and the State Route 111 exit ramp turn left and go east for 0.4 km (0.25 mi.) to the junction of Old State Route 111 (Roberts-Matthews Highway). Turn right and go south 1.5 km (0.9 mi.) to the station on the left.

The station is a standard NGS disk stamped---GPS 24 1987---, set into a drill hole in bedrock outcrop measuring 0.5 m (1.5 ft.) by 0.9 m (3 ft.) projecting 0.15 m (0.5 ft.). Located 53.6 m (176 ft.) south from the center of the driveway leading to the stone house, 8.5 m (28 ft.) east from the center of Old State Route 111 and 0.3 m (1 ft.) above same, 22.5 m (73.8 ft.) south from the center of the driveway leading to the Tenn. Homes model home (3220 Roberts-Matthews Hwy), 22.2 m (72.8 ft.) south-southwest from utility pole with one guy wire, 0.6 meters (1.9 ft.) east from a fiberglass witness post.

# STATION VISIBILITY DIAGRAM



ELEVATION 314.526 m (1031.91 ft)  
LATITUDE 36° 0' 19"  
LONGITUDE 85° 30' 12"  
STATION NAME GPS 24

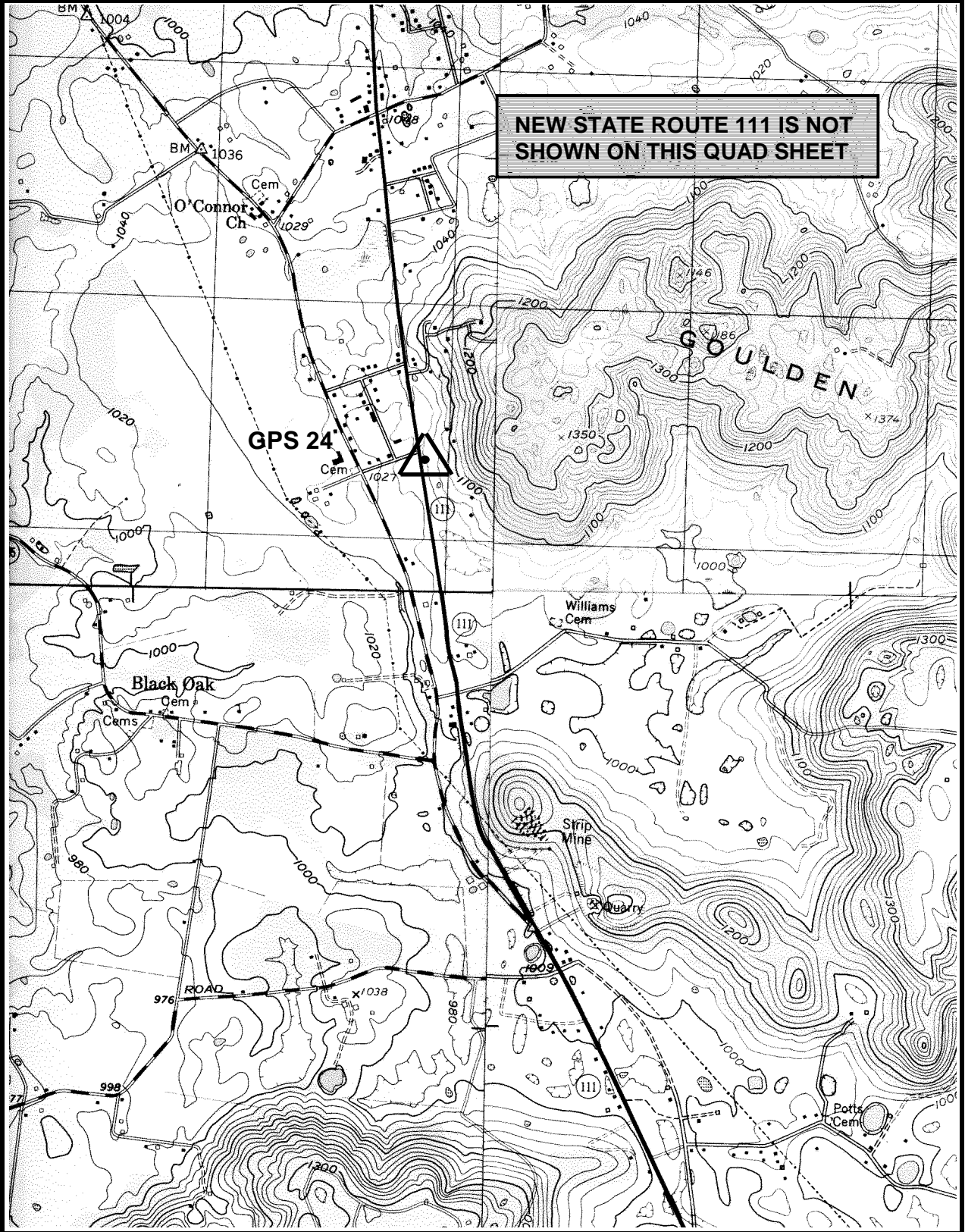
DATE July 1997  
ORGANIZATION TDOT  
MAP SCALE 7 1/2' USGS  
MAP SHEET 326-SE, Burgess Falls  
OBSERVER CLJ

Observer's height 6'

NOTES:

1. A 1.8 m (6 ft.) tripod may be required for maximum results.

**TENNESSEE GEODETIC REFERENCE NETWORK**



GPS 24

326-SE, BURGESS FALLS



**GPS - 25**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 0' 13.92199"</b>	TN Northing:	<b>185344.838 m</b>
Longitude:	<b>85° 58' 26.32378"</b>	TN Easting:	<b>602345.939 m</b>
Elevation:	<b>185.733 m (609.36 ft)</b>		
Convergence:	<b>+0° 0' 54.8"</b>	Scale Factor:	<b>0.99995278</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Dekalb</b>	Nearest Town:	<b>Liberty</b>
USGS QUAD:	<b>Liberty</b>	TVA Designation:	<b>322-SW</b>

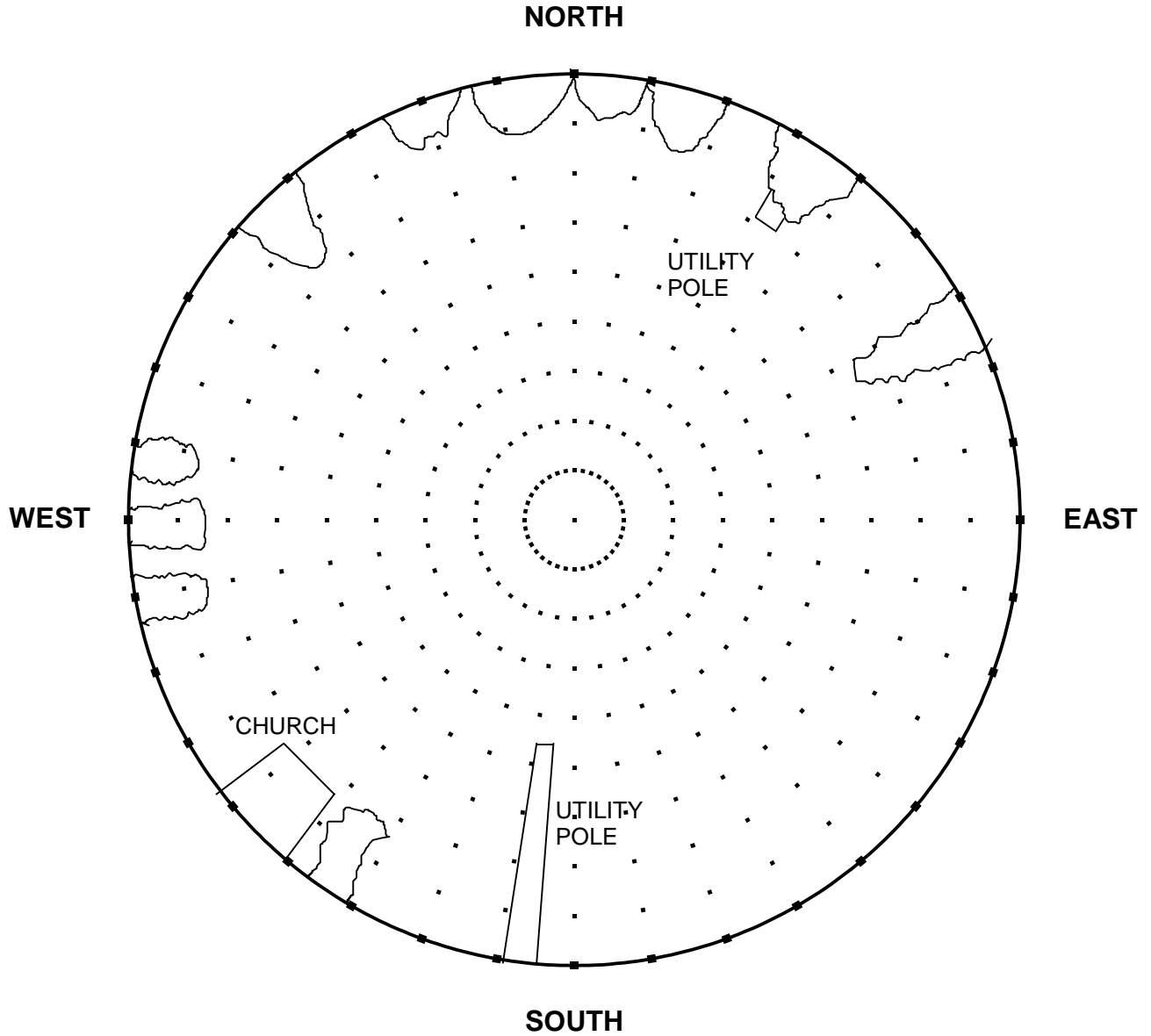
Description:

The station is located about 45 km (28 mi.) west-southwest of Cookeville, 35 km (22 mi.) southeast of Lebanon, in Liberty at the Salem Baptist Church in a bedrock outcrop. Ownership--Salem Baptist Church.

To reach the station from the junction of State Route 53 and U.S. Highway 70 at the west edge of Liberty go south for 0.08 km (0.05 mi.) on State Route 53 to the intersection of Main Street. Turn left and go east for 0.56 km (0.35 mi.) on Main Street to the church on the right and the station.

The station is a standard NGS disk stamped---GPS 25 1987---, set into a drill hole in bedrock outcrop measuring 1.2 m (4 ft.) by 0.3 m (1 ft.) flush with ground. Located 46.48 m (152.5 ft.) northeast from the east corner of the church, 30.8 m (101 ft.) south from a fire hydrant, 25.6 m (84 ft.) south from the center of Main Street, 25.0 m (82 ft.) southwest from the northwest corner of the cemetery wall, 5.2 m (17 ft.) northwest from the McKnight tombstone, 3.50 m (11.5 ft.) northwest from the stone wall at the west edge of the cemetery, 1.68 m (5.5 ft.) northwest from the northwest edge of a sidewalk, 3.4 m (11 ft.) northwest from a fiberglass witness post at the cemetery wall.

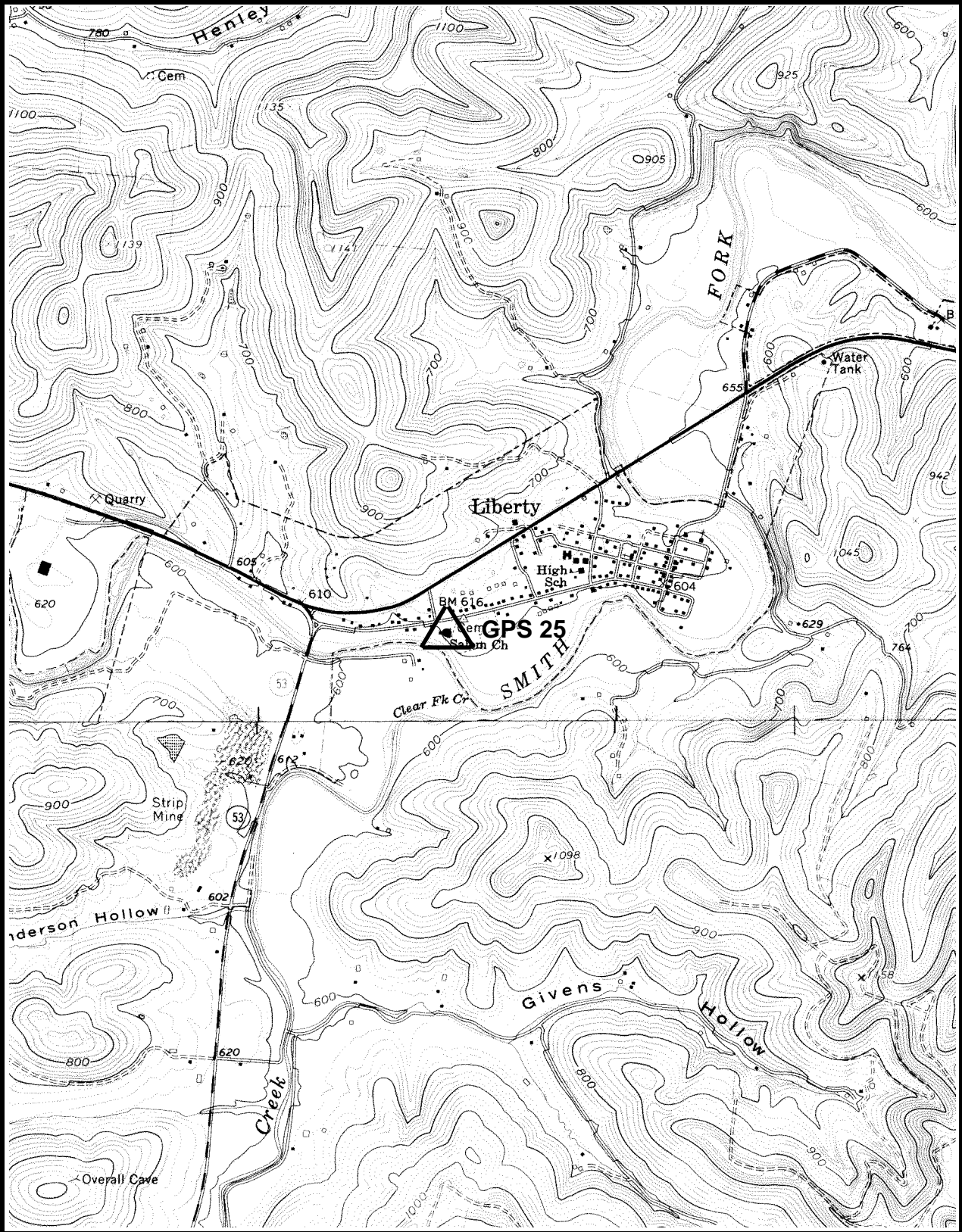
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>185.733 m (609.36 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 0' 14"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>85° 58' 26"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 25</u>	MAP SHEET	<u>322-SW, Liberty</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



GPS 25

322-SW, LIBERTY

**GPS - 26**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 0' 42.03374"</b>	TN Northing:	<b>186271.990 m</b>
Longitude:	<b>86° 21' 50.65409"</b>	TN Easting:	<b>567180.505 m</b>
Elevation:	<b>178.261 m (584.84 ft)</b>		
Convergence:	<b>-0° 12' 47.3"</b>	Scale Factor:	<b>0.99995319</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Wilson</b>	Nearest Town:	<b>Murfreesboro</b>
USGS QUAD:	<b>Vine</b>	TVA Designation:	<b>314-SE</b>

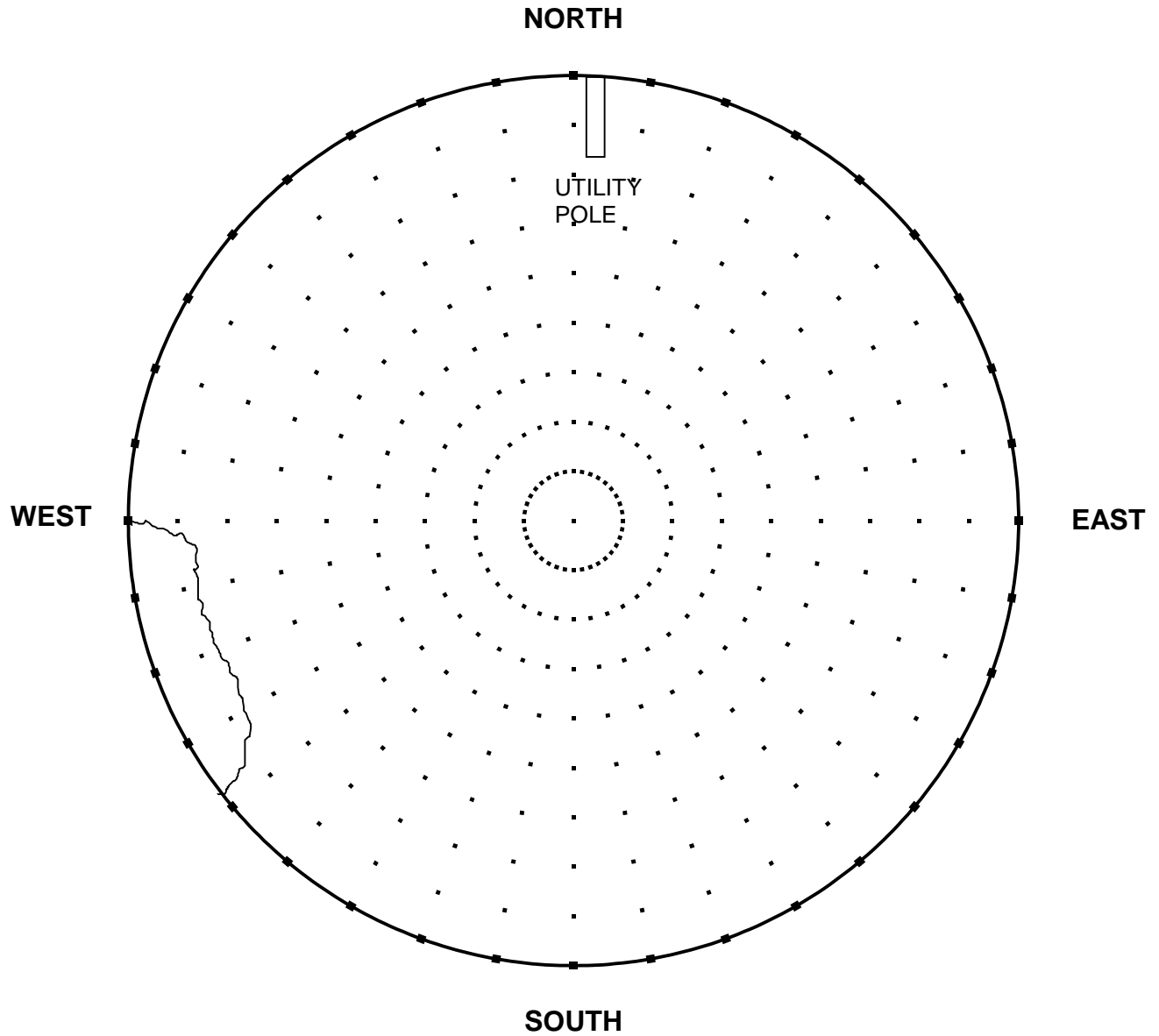
Description:

**The station is located about 40 km (25 mi.) east-southeast of Nashville, 18 km (11 mi.) north of Murfreesboro, on the west edge of U.S. Highway 231, near the Wilson/Rutherford County Line. Ownership--Highway Right-of-Way.**

**To reach the station from the junction of State Route 265 and U.S. Highway 231 in Bairds Mill go south for 10.6 km (6.6 mi.) on U.S. Highway 231 to the station on the right 0.16 km (0.10 mi.) north of the Wilson/Rutherford County Line, just north of Drennan Lane on the right.**

**The station is a standard NGS disk stamped---GPS 26 1987---, set into a drill hole in bedrock outcrop measuring 1.2 m (4 ft.) by 0.6 m (2 ft.) level with ground. Located 12.2 m (40 ft.) west from the center of U.S. Highway 231 and 0.9 m (3 ft.) above same, 12.2 m (40 ft.) north from the center of Drennan Lane, 25.3 m (83 ft.) south from a utility pole, 3.7 m (12 ft.) west from a fiberglass witness post.**

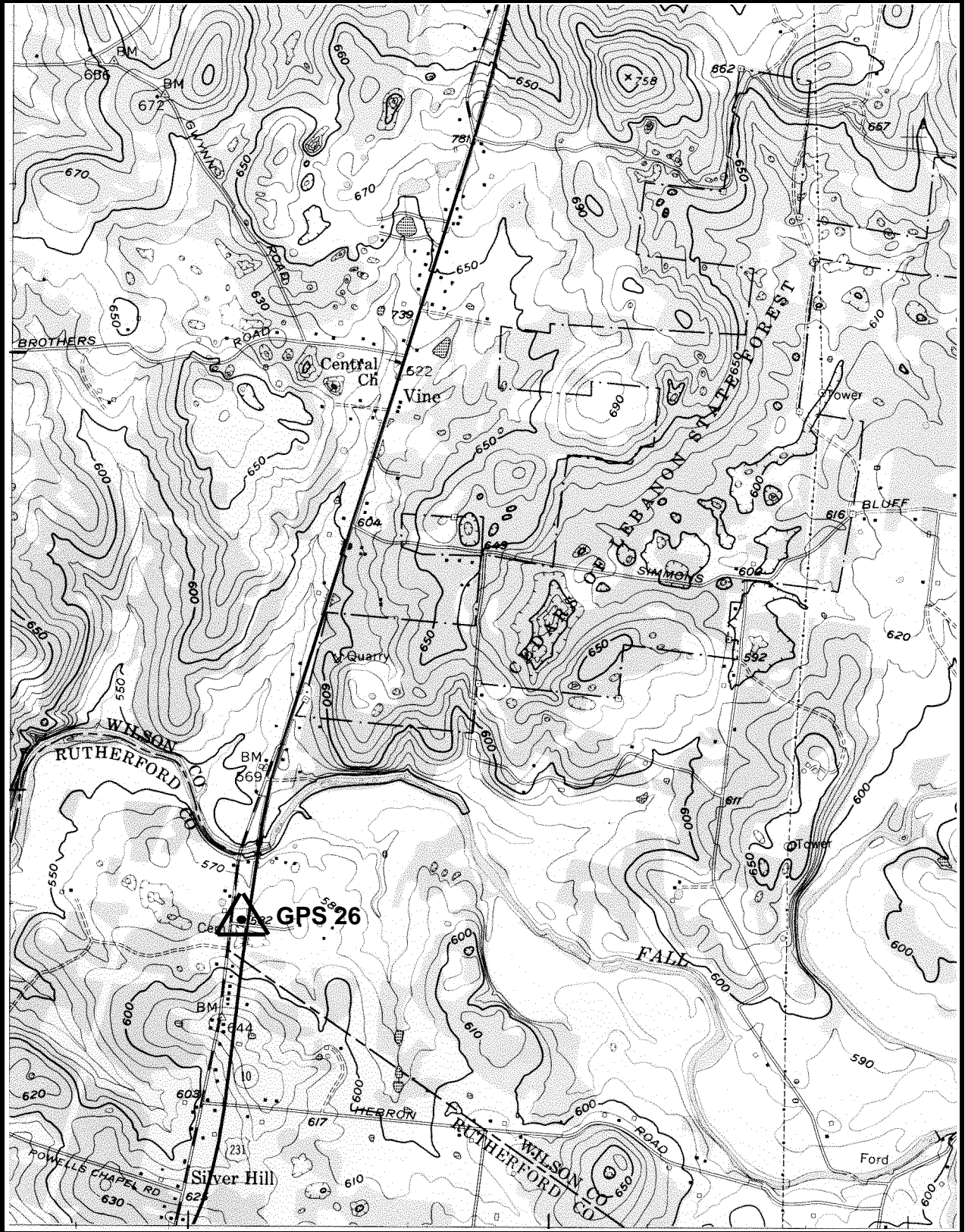
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>178.261 m (584.84 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 0' 42"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>86° 21' 51"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 26</u>	MAP SHEET	<u>314-SE, Vine</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



GPS 26

314-SE, VINE

**GPS - 27**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 57' 56.80756"</b>	TN Northing:	<b>181417.276 m</b>
Longitude:	<b>86° 48' 18.24648"</b>	TN Easting:	<b>527385.086 m</b>
Elevation:	<b>224.232 m (735.67 ft)</b>		
Convergence:	<b>-0° 28' 16.7"</b>	Scale Factor:	<b>0.99995103</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Williamson</b>	Nearest Town:	<b>Nashville</b>
USGS QUAD:	<b>Franklin</b>	TVA Designation:	<b>63-NE</b>

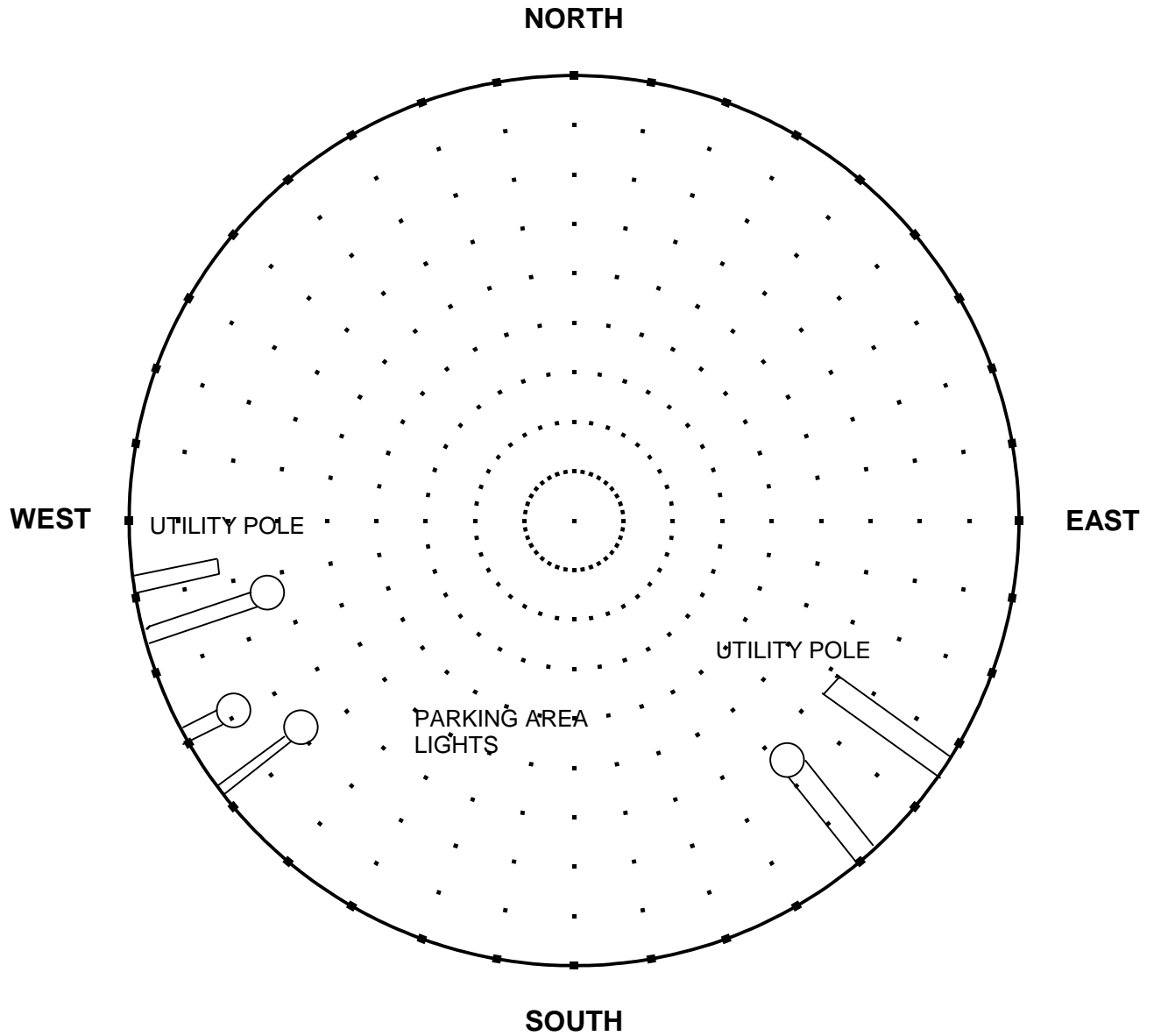
Description:

**The station is located about 23 km (14 mi.) south of Nashville, 0.2 km (0.15 mi.) east of the junction of Interstate 65 and Moores Lane. North of Outback Steakhouse parking area. Ownership--Road Right-of-Way.**

**The station is located 0.2 km (0.15 mi.) east of the junction of Interstate 65 and Moores Lane on the south right-of-way of Moores Lane.**

**The station is a standard NGS disk stamped---GPS 27 1987---, set into a drill hole in bedrock outcrop level with ground. Located 10.6 m (34.8 ft.) south from the edge of eastbound Moores Lane and 0.3 m (1 ft.) above same, 10.5 m (34.6 ft.) north from a fiberglass witness post at the Outback Steakhouse paved parking area, 45.3 m (148.5 ft.) east-southeast from the center of the headwall of a culvert under the exit ramp from north bound I-65, 42.1 m (138 ft.) east from a utility pole numbered 29-3537, with a transformer and 2 guy wires, 19.5 m (64 ft.) west-southwest from the west headwall of a culvert under a side road, 20.7 m (68 ft.) west-northwest from a utility pole numbered 35 with one guy wire.**

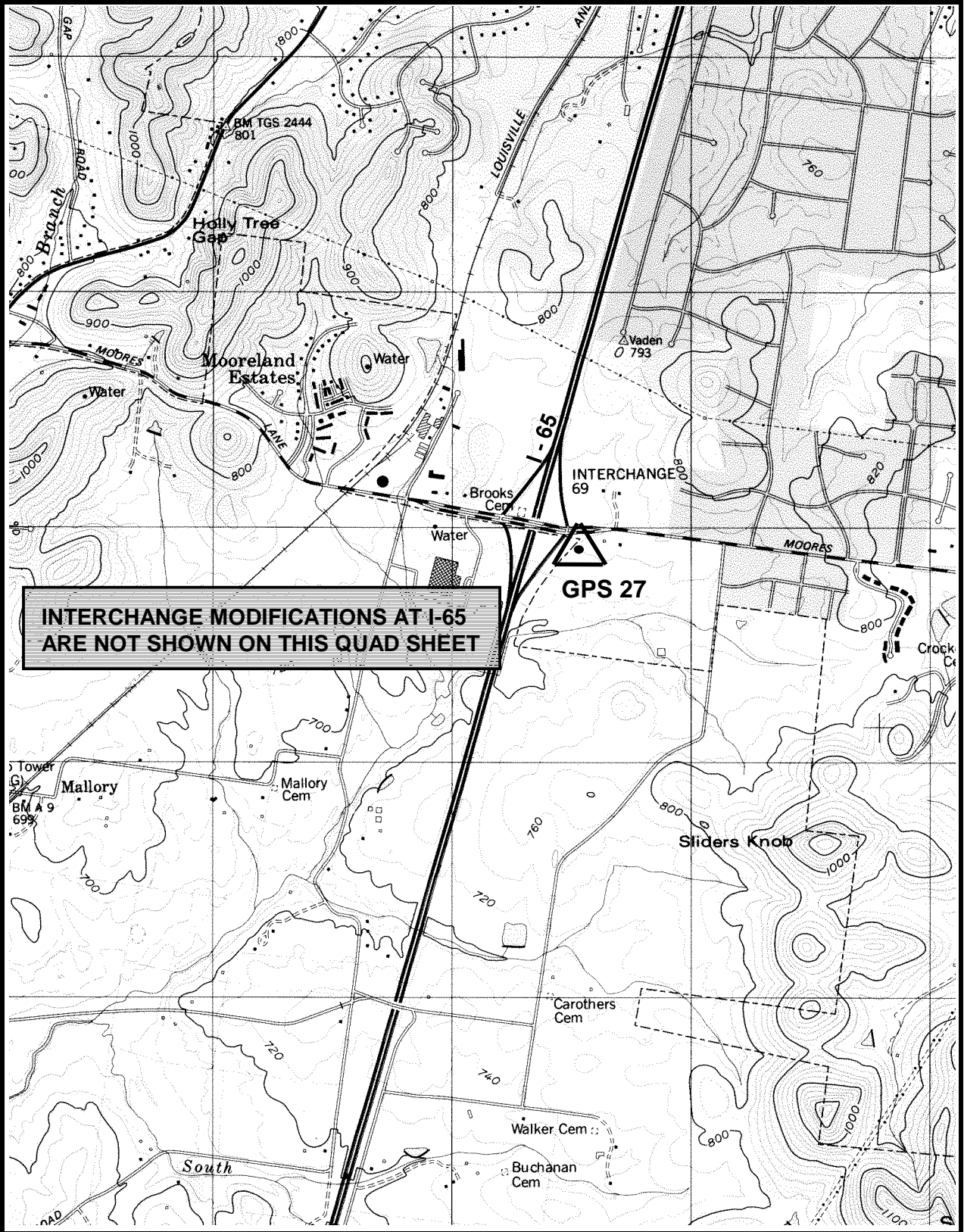
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>224.232 m (735.67 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 57' 57"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>86° 48' 18"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 27</u>	MAP SHEET	<u>63-NE, Franklin</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:





GPS 27

63-NE, FRANKLIN

**GPS - 28**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 1' 9.46654"</b>	TN Northing:	<b>187783.506 m</b>
Longitude:	<b>87° 15' 23.50236"</b>	TN Easting:	<b>486742.735 m</b>
Elevation:	<b>213.258 m (699.66 ft)</b>		
Convergence:	<b>-0° 44' 8.2"</b>	Scale Factor:	<b>0.99995361</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Dickson</b>	Nearest Town:	<b>Dickson</b>
USGS QUAD:	<b>Burns</b>	TVA Designation:	<b>48-SE</b>

Description:

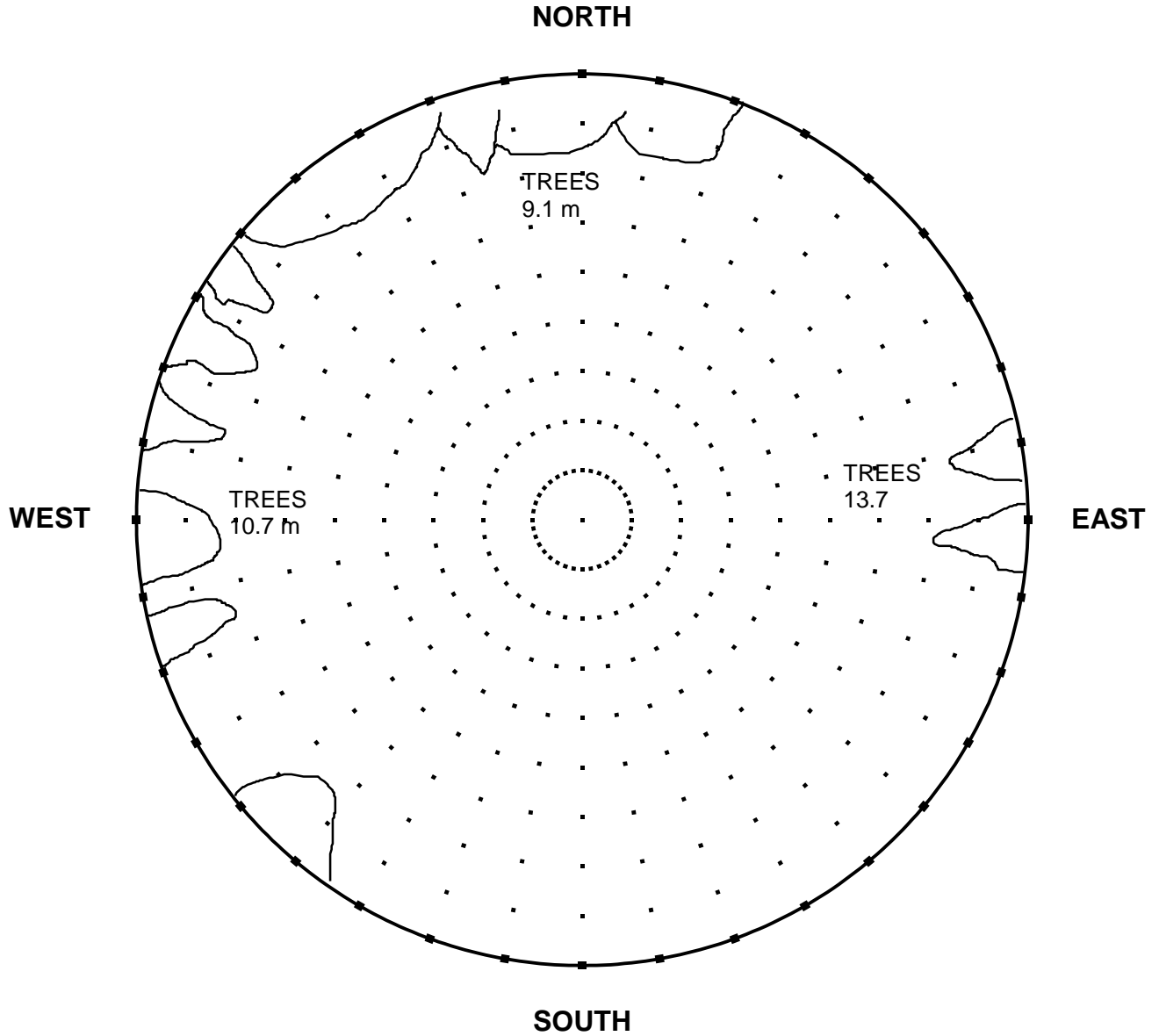
The station is located about 12.9 km (8 mi.) east-southeast of Dickson, in the median of Interstate 40, 7.4 km (4.6 mi.) west of State Route 96 (Exit 182), 7.4 km (4.6 mi.) east of State Route 46 (Exit 172). Ownership--Federal Right-of-Way.

To reach the station from the junction of State Route 96 and Interstate 40 go west for 6.5 km (4.0 mi.) on Interstate 40 to a bridge over a creek. Continue straight ahead and go west and uphill for 1.0 km (0.6 mi.) on Interstate 40 to a low cut and a 0.16 km (0.1 mi.) gap in the guardrail on the left and the station on the left, just short of the 177 mile marker.

To reach the station from the junction of State Route 46 and Interstate 40 go east 3.9 km (2.4 mi.) to a bridge over Interstate 40. Continue straight ahead and go east 3.5 km (2.2 mi.) on Interstate 40 to the station on the left, just past the 177 mile marker.

The station is a 3-D mark with stainless steel rod driven 5.5 m (18 ft.). The logo cap is stamped---GPS 28 1987---, and a steel spike is embedded in the concrete. Located 18.5 m (60.7 ft.) south from the edge of the pavement of the westbound lanes, 48.2 m (158 ft.) north from the edge of the pavement of the eastbound lanes, 75.1 m (246 ft.) west-southwest from the west end of a guardrail, 54.7 m (179 ft.) east-southeast from the east end of a guardrail, 0.34 m (1.1 ft.) northeast from a fiberglass witness post.

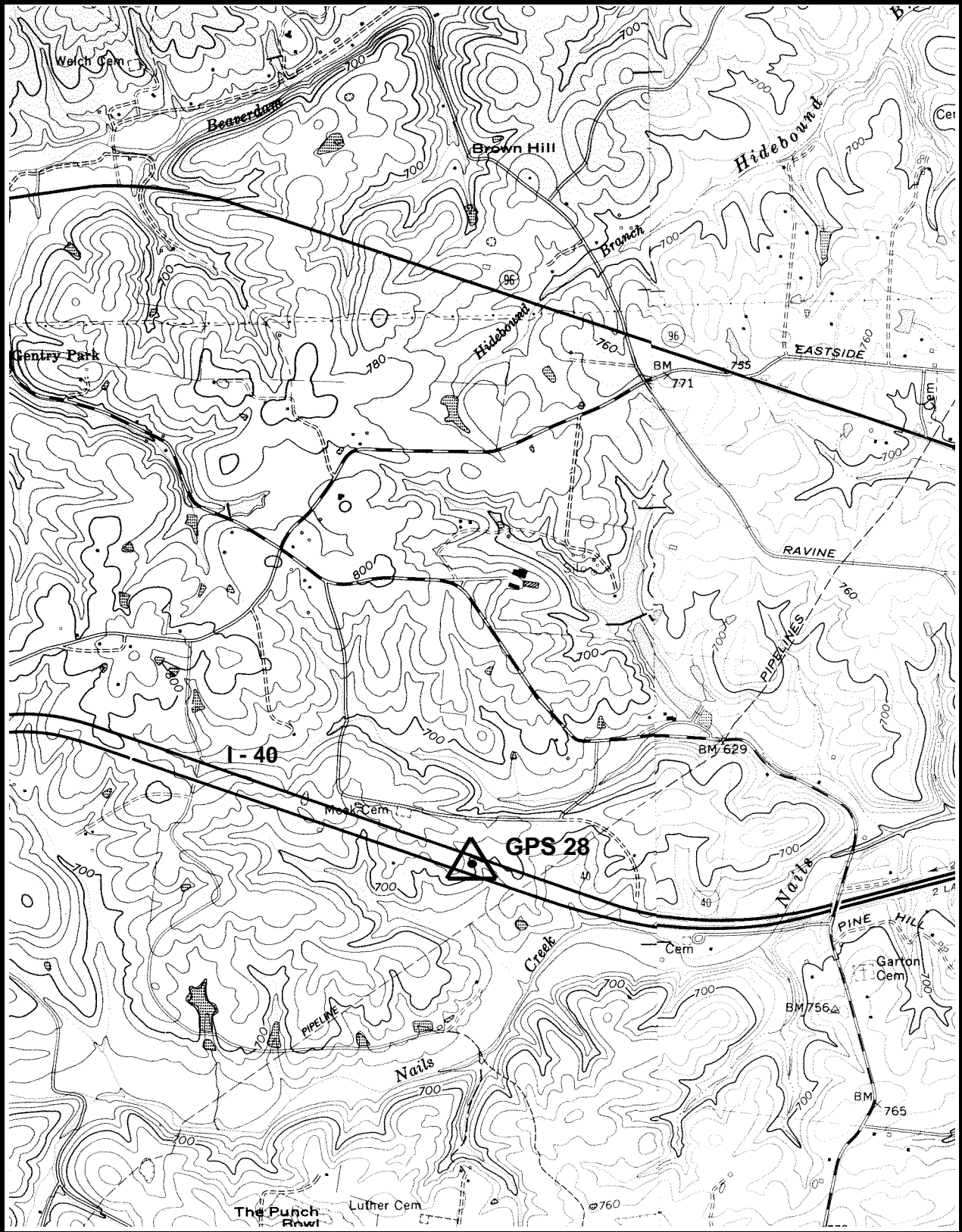
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>213.258 m (699.66 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 1' 9"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>87° 15' 24"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 28</u>	MAP SHEET	<u>48-SE, Burns</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



GPS 28

48-SE, BURNS

**GPS - 29**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 6' 50.74940"</b>	TN Northing:	<b>198970.353 m</b>
Longitude:	<b>87° 44' 30.11690"</b>	TN Easting:	<b>443203.003 m</b>
Elevation:	<b>229.182 m (751.91 ft)</b>		
Convergence:	<b>-1° 1' 10.8"</b>	Scale Factor:	<b>0.99996031</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Humphreys</b>	Nearest Town:	<b>Waverly</b>
USGS QUAD:	<b>McEwen</b>	TVA Designation:	<b>39-SW</b>

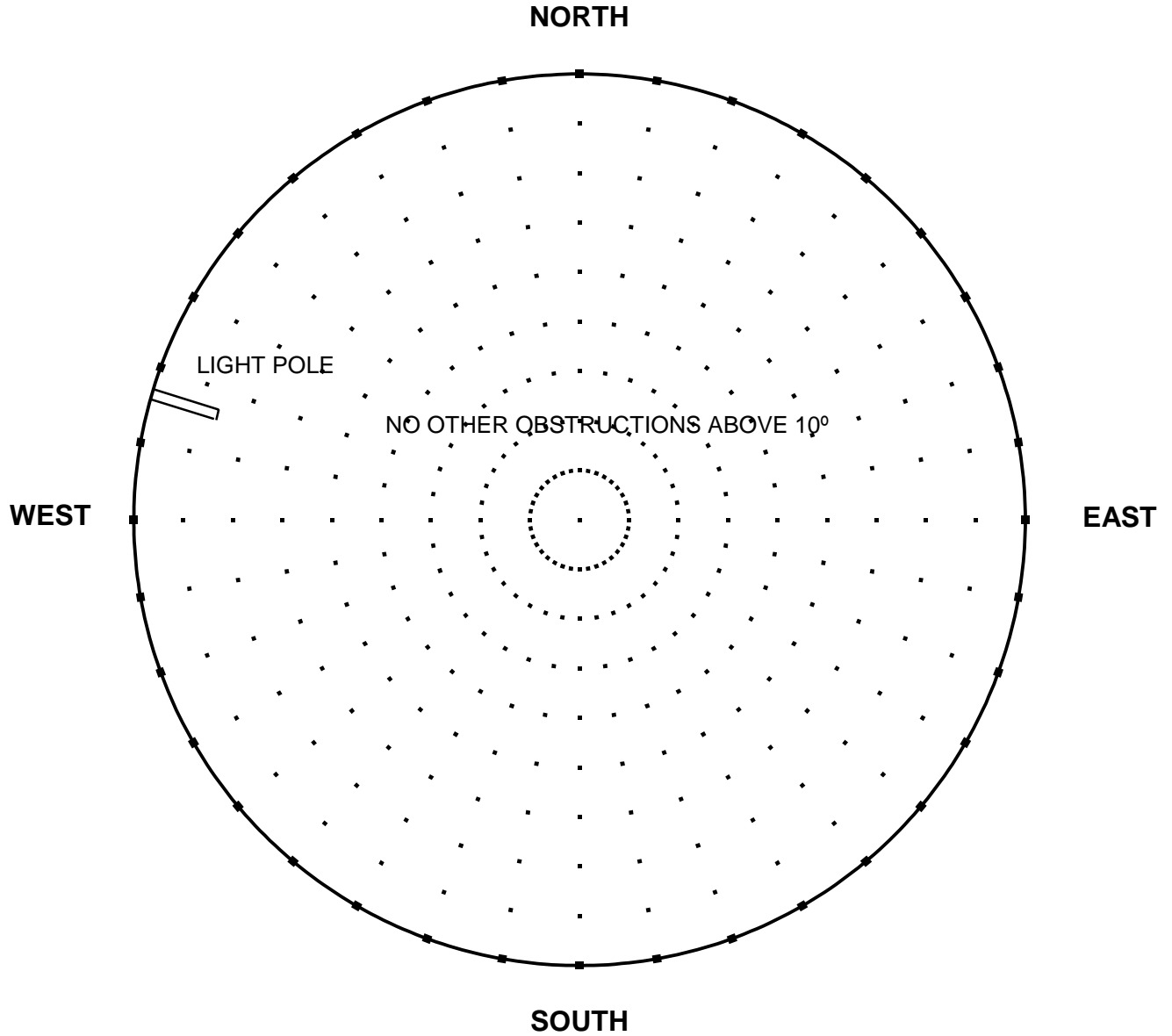
Description:

The station is located about 6.4 km (4 mi.) northeast of Waverly, at the Waverly/Humphreys County Airport. Ownership--Airport Manager is Travis Jenkins, Humphreys Co. Airport, 1005 Airport Rd., Waverly, TN 37185, Telephone (615) 296-2719. The airport manager may require use of the azimuth point 29 instead of the main point.

To reach the station from the junction of E. Main St. and State Route 13 at the city square in Waverly go east for 1.8 km (1.1 mi.) on E. Main St. to the intersection of Powers Boulevard. Turn left and go north for 2.6 km (1.6 mi.) on Powers Boulevard to the intersection of Airport Road. Turn right and go east for 2.9 km (1.8 mi.) on Airport Road to a gravel drive on the right and the airport office.

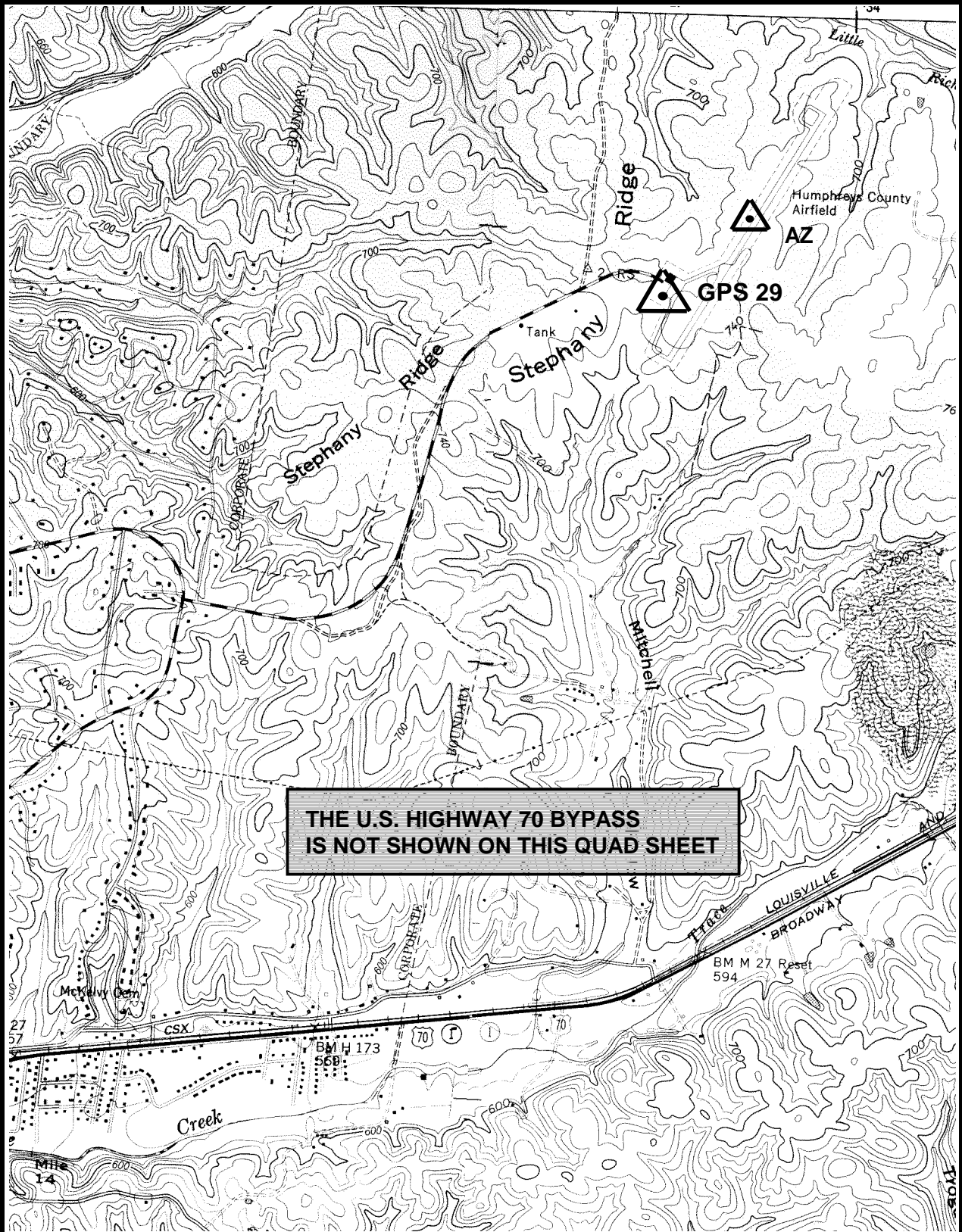
The station is a 3-D mark with stainless steel rod driven 3.1 m (10 ft.). The logo cap is stamped---GPS 29 1987---, and a steel spike is embedded in the concrete. Located 3.4 m (11 ft.) west of fuel tanks, 83.8 m (275 ft.) south-southwest from the southeast corner of the hangar, underneath the concrete taxiway covered by a 0.7 m<sup>2</sup> (2.3 ft<sup>2</sup>) steel plate, 3.0 m (10 ft.) west from a fiberglass witness post.

# STATION VISIBILITY DIAGRAM



ELEVATION	<u>229.182 m (751.91 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 6' 51"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>87° 44' 30"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 29</u>	MAP SHEET	<u>39-SW, McEwen</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:



GPS 29

39-SW, McEWEN

**GPS - 29 AZ MK**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 7' 00.61936"</b>	TN Northing:	<b>199269.083 m</b>
Longitude:	<b>87° 44' 17.90939"</b>	TN Easting:	<b>443513.647 m</b>
Elevation:	<b>227.865 m* (747.59 ft)</b>		
Convergence:	<b>-1° 1' 3.6"</b>	Scale Factor:	<b>0.99996054</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Humphreys</b>	Nearest Town:	<b>Waverly</b>
USGS QUAD:	<b>McEwen</b>	TVA Designation:	<b>39-SW</b>

Description:

The station is located about 6.4 km (4 mi.) northeast of Waverly, at the Waverly/Humphreys County Airport. Ownership--Airport Manager is Travis Jenkins, Humphreys Co. Airport, 1005 Airport Rd., Waverly, TN 37185, Telephone (615) 296-2719. The airport manager may require use of the azimuth point 29 instead of the main point.

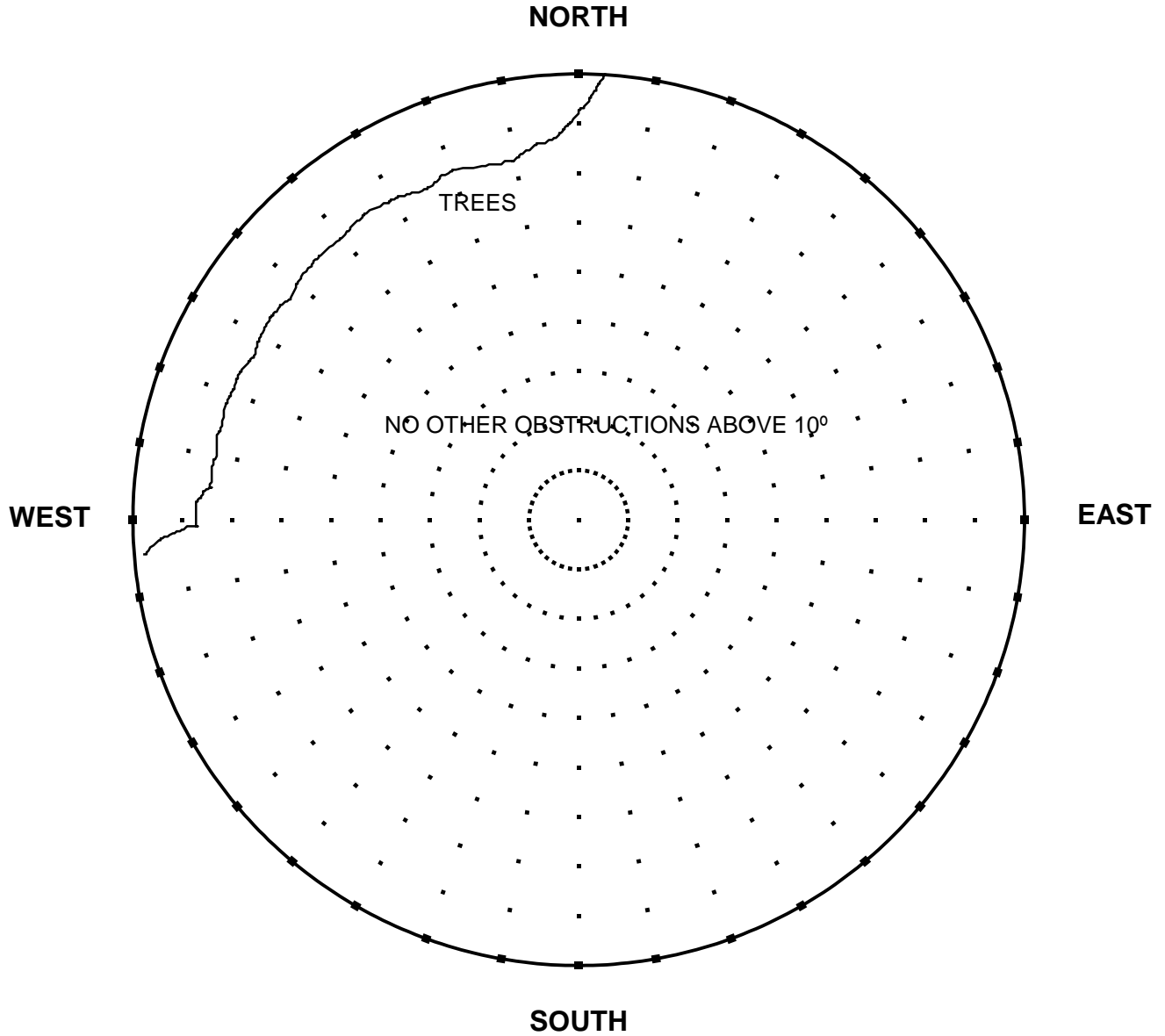
To reach the azimuth mark from the junction of E. Main St. and State Route 13 at the city square in Waverly go east for 1.8 km (1.1 mi.) on E. Main St. to the intersection of Powers Boulevard. Turn left and go north for 2.6 km (1.6 mi.) on Powers Boulevard to the intersection of Airport Road. Turn right and go east for 2.9 km (1.8 mi.) on Airport Road to the airport office in the southeast corner of a steel hangar and a gate. Pass through the gate adjacent to the hangar and go northeast 0.24 km (0.15 mi.) along a taxiway to the junction of the runway. Turn left and go northerly 0.16 km (0.1 mi.) along the west side of the runway to the mark, near the third white run light north of the junction of the taxiway and runway.

The azimuth mark is a 3-D mark with stainless steel rod driven 2.4 m (8 ft.). The logo cap is stamped---GPS 29 AZ MK 1987---, and a steel spike is embedded in the concrete. Located 13.6 m (44.7 ft.) northwest of the northwest edge of the runway, 10.9 m (35.8 ft.) northwest of the third white run light from the junction of the taxiway and runway, and 0.3 m (1 ft.) southwest of a fiberglass witness post. The mark is 25 mm (1 in.) below ground.

\* GPS derived elevation using the Geoid 96 Model and the WGS 1984 Reference Ellipsoid.



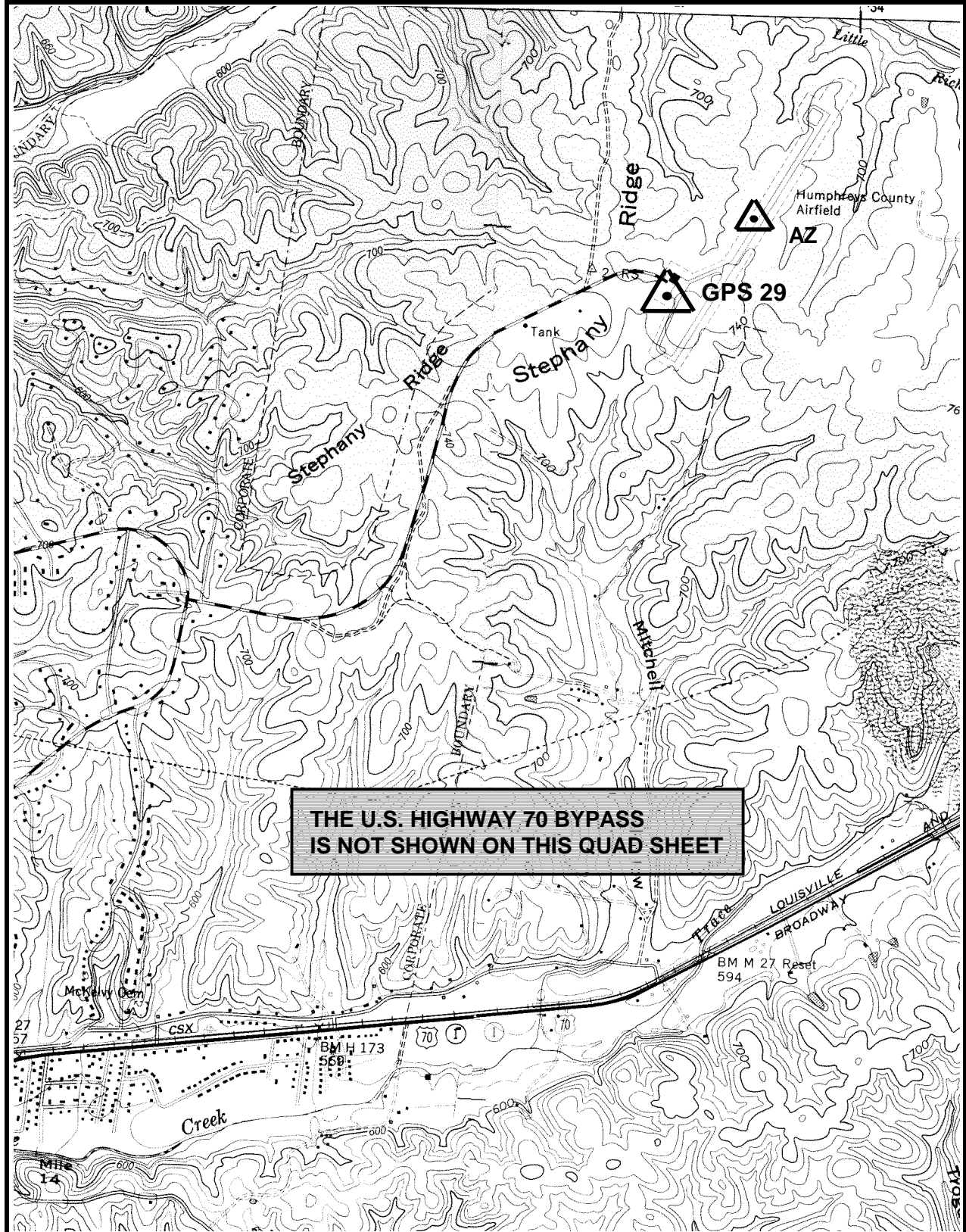
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>227.865 m (747.59 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 7' 0"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>87° 44' 18"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 29 AZ MK</u>	MAP SHEET	<u>39-SW, McEwen</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



GPS 29

39-SW, McEWEN

**GPS - 30**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 0' 43.56473"</b>	TN Northing:	<b>188333.446 m</b>
Longitude:	<b>88° 7' 22.15355"</b>	TN Easting:	<b>408651.887 m</b>
Elevation:	<b>139.319 m (457.08 ft)</b>		
Convergence:	<b>-1° 14' 34.0"</b>	Scale Factor:	<b>0.99995321</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Benton</b>	Nearest Town:	<b>Camden</b>
USGS QUAD:	<b>Camden</b>	TVA Designation:	<b>20-SE</b>

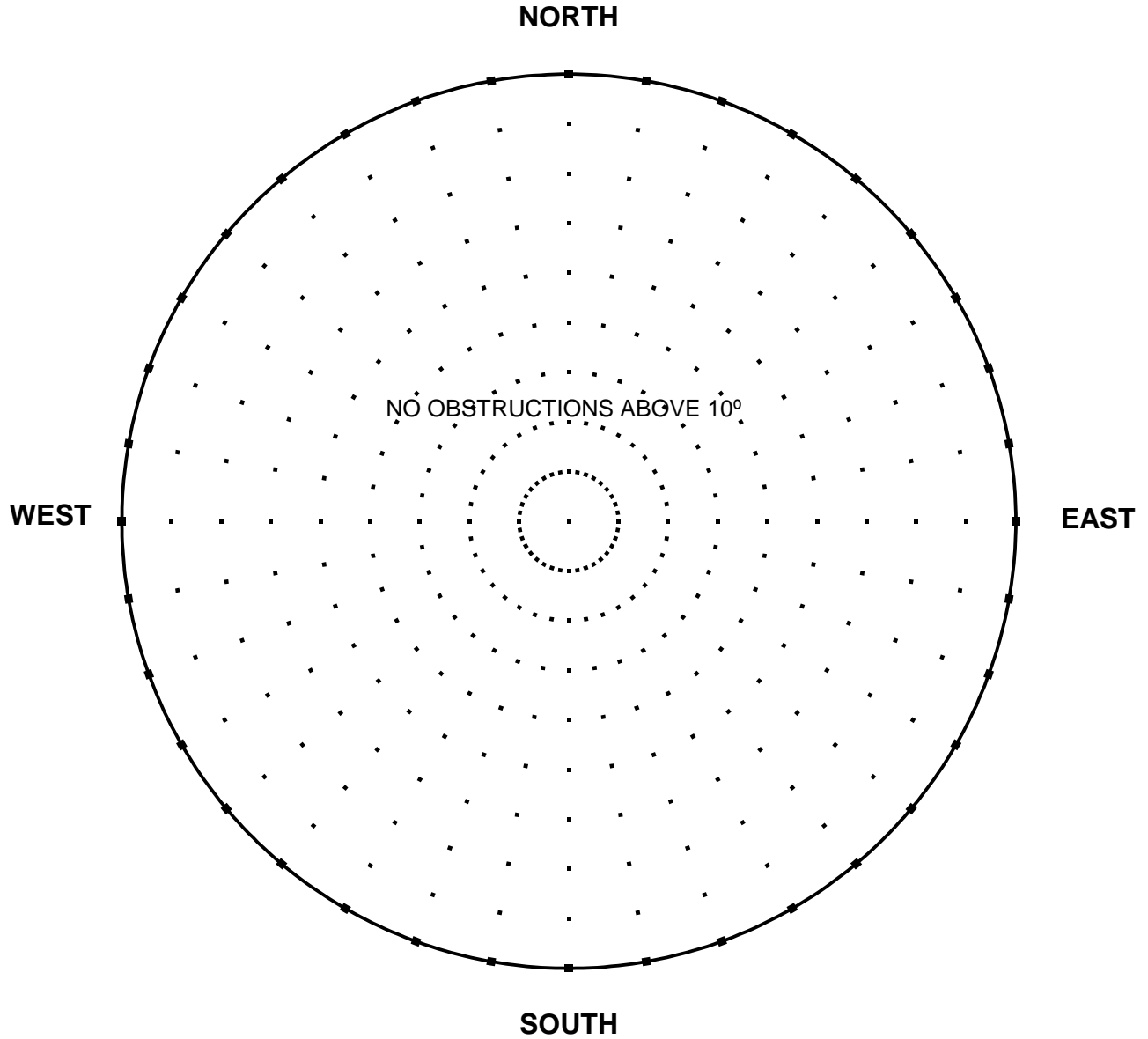
Description:

The station is located about 5 km (3 mi.) south of Camden, at the Camden/Benton County Airport. Ownership--Airport Manager is Bill Hightower, Camden/Benton County Airport, Camden, TN 38320, telephone (615) 584-5343.

To reach the station from the junction of U.S. Highway 70 Bypass and U.S. Highway 641, about 3 km (2 mi.) south of Camden, go west for 0.24 km (0.15 mi.) on U.S. Highway 70 Bypass to the intersection of Natchez Trace Road. Turn left and go south for 2.7 km (1.65 mi.) on Natchez Trace Road to the intersection of the paved entrance drive for the airport. Turn left and go east for 0.3 km (0.2 mi.) on the entrance drive to the airport office and a gate. Pass through the gate and go east for 0.2 km (0.1 mi.) on a taxiway to the station on the right at the junction with the runway.

The station is a 3-D mark with stainless steel rod driven 10.4 m (34 ft.). The logo cap is stamped---GPS 30 1987---, and a steel spike is embedded in the concrete. Located 20.3 m (67 ft.) south from the taxiway center, 21.2 m (70 ft.) northwest from the runway center, 11 m (36 ft.) southwest from a blue taxiway light in the arc of the junction, 0.2 m (0.8 ft.) northwest from a fiberglass witness post.

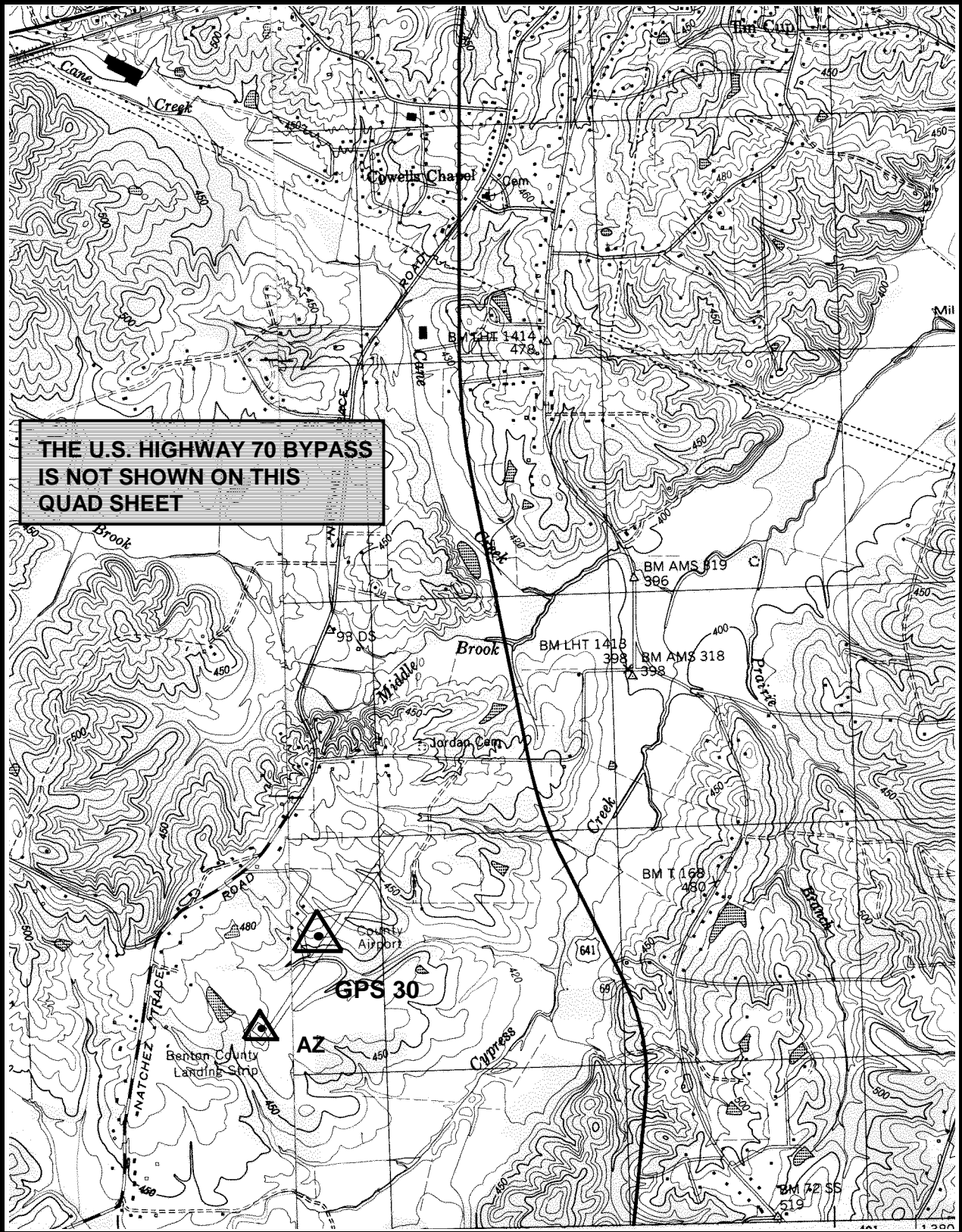
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>139.319 m (457.08 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 0' 44"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>88° 7' 22"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 30</u>	MAP SHEET	<u>20-SE, Camden</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



GPS 30

20-SE, CAMDEN

**GPS - 30 AZ MK**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>36° 0' 27.68575"</b>	TN Northing:	<b>187851.602 m</b>
Longitude:	<b>88° 7' 35.83796"</b>	TN Easting:	<b>408298.670 m</b>
Elevation:	<b>141.809 m* (465.25 ft)</b>		
Convergence:	<b>-1° 14' 42.0"</b>	Scale Factor:	<b>0.99995298</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Benton</b>	Nearest Town:	<b>Camden</b>
USGS QUAD:	<b>Camden</b>	TVA Designation:	<b>20-SE</b>

**Description:**

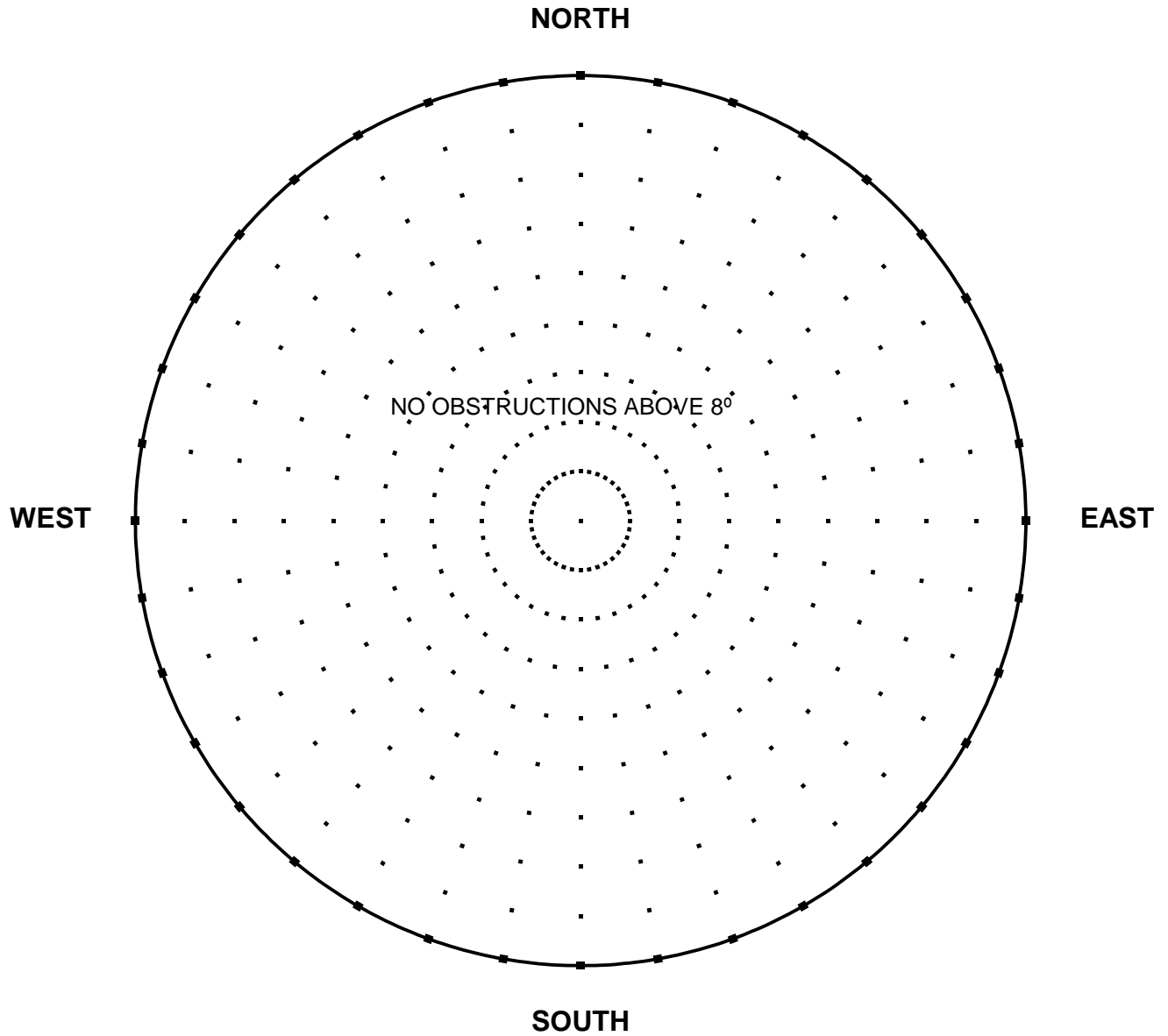
The station is located about 5 km (3 mi.) south of Camden, at the Camden/Benton County Airport. Ownership--Airport Manager is Bill Hightower, Camden/Benton County Airport, Camden, TN 38320, telephone (615) 584-5343.

To reach the station from the junction of U.S. Highway 70 Bypass and U.S. Highway 641, about 3 km (2 mi.) south of Camden, go west for 0.24 km (0.15 mi.) on U.S. Highway 70 Bypass to the intersection of Natchez Trace Road. Turn left and go south for 2.7 km (1.65 mi.) on Natchez Trace Road to the intersection of the paved entrance drive for the airport. Turn left and go east for 0.3 km (0.2 mi.) on the entrance drive to the airport office and a gate. Pass through the gate and go south 0.24 km (0.15 mi.) along a taxiway to a junction of the runway. Turn right and go southwest 0.32 km (0.2 mi.) along the runway to the mark on the right in a grassy area of the taxiway turnaround, also opposite and across the runway from the southern most of two vasi's.

The azimuth mark is a 3-D mark with stainless steel rod driven 6.7 m (22 ft.). The logo cap is stamped---GPS 30 AZ MK 1987---, and a rebar is embedded in the concrete. Located 11.6 m (38 ft.) northwest of the northwest edge of the runway, 38.8 m (127 ft.) east of a metal corrugated pipe culvert, 36.0 m (118 ft.) southwest of the southwest edge of the taxiway turnaround, and 0.3 m (1 ft.) southeast of a fiberglass witness post.

\* GPS derived elevation using the Geoid 96 Model and the WGS 1984 Reference Ellipsoid.

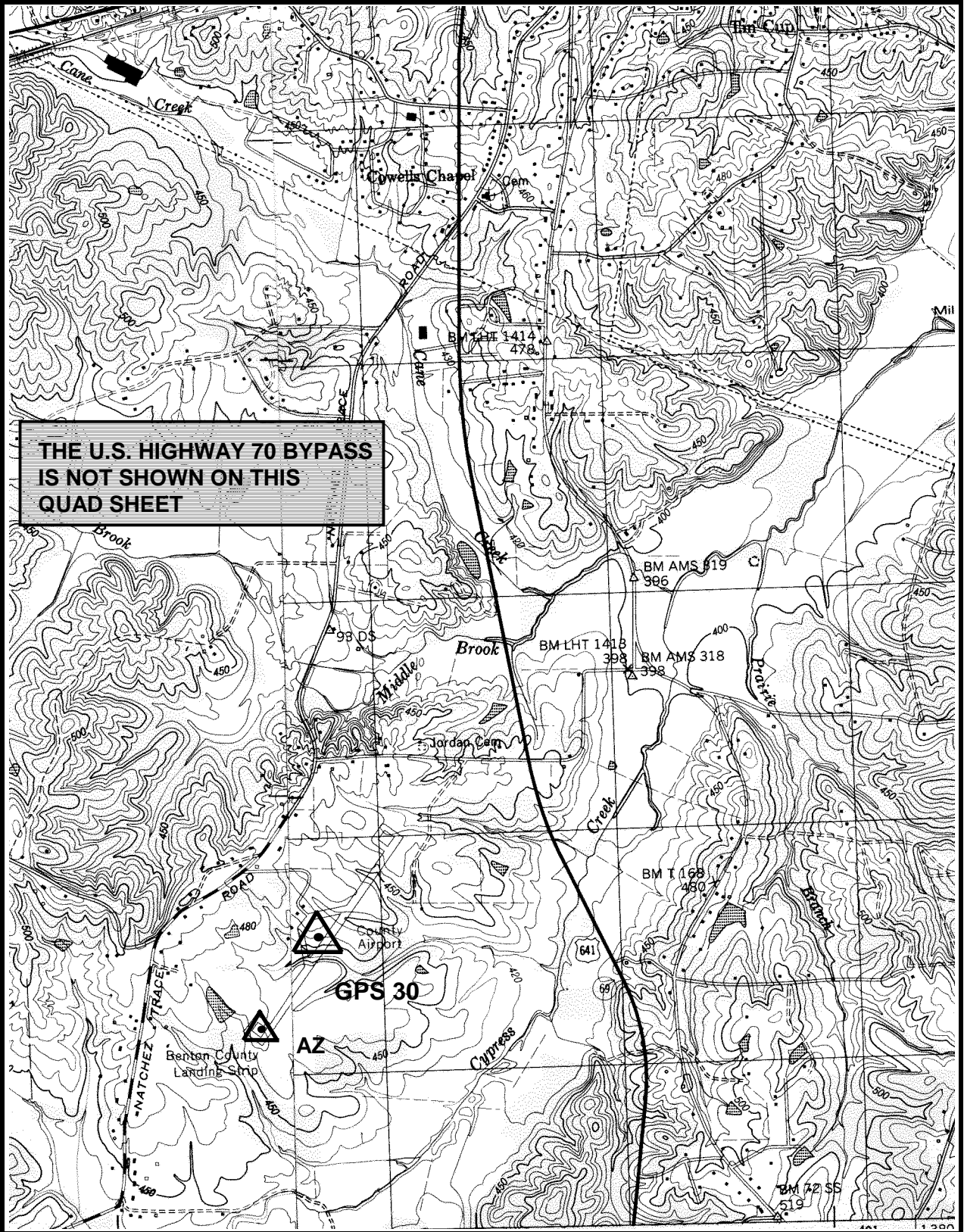
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>141.809 m (465.25 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>36° 0' 28"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>88° 7' 36"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 30 AZ MK</u>	MAP SHEET	<u>20-SE, Camden</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



GPS 30

20-SE, CAMDEN



**GPS - 31**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:            **35° 56' 20.27975"**                      TN Northing:            **181195.087 m**  
Longitude:           **88° 34' 22.61540"**                      TN Easting:            **367873.166 m**

Elevation:            **160.107 m (525.28 ft)**

Convergence:        **-1° 30' 22.7"**                              Scale Factor:            **0.99995007**

Monument Set by:    **NGS**                                      Date:                    **1987**

County:               **Carroll**                                      Nearest Town:  
                          **McLemoresville**

USGS QUAD:           **McLemoresville**                              TVA Designation:        **445-NE**

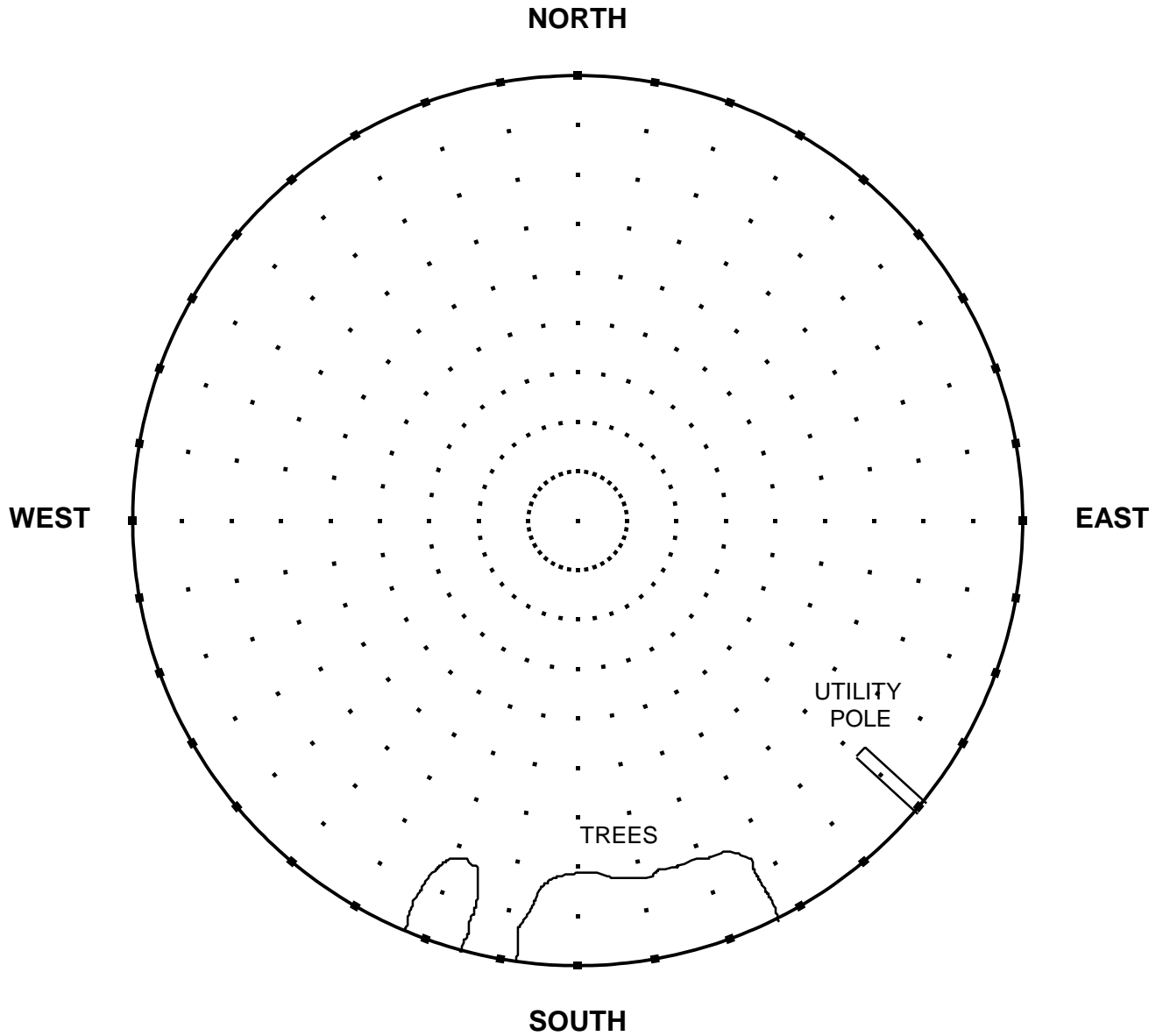
Description:

**The station is located about 42 km (26 mi.) northeast of Jackson, 5 km (3 mi.) south of McLemoresville, on the west right-of-way of County Road 80361 (Terry Road). Ownership--Road Right-of-Way.**

**To reach the station from the City Hall in McLemoresville go south for 0.2 km (0.1 mi.) on U.S. Highway 70A to the junction of County Road 80361 (Terry Road). Turn left and go south on county Road 80361 1.8 km (1.1 mi.) to New Reedy Creek Baptist Church on the left. Continue straight ahead and go south for 3.5 km (2.2 mi.) on County Road 80361 to the station on the right atop a cut.**

**The station is a 3-D mark with stainless steel rod driven 9.1 m (30 ft.). The logo cap is stamped---GPS 31 1987---, and a steel spike is embedded in the concrete. Located 103.6 m (340 ft.) south from the center of a high voltage power line crossing the road, 9.4 m (31 ft.) west from the road center and 0.9 m (3 ft.) above same, 36.0 m (118 ft.) south from a buried cable warning sign, 20.8 m (68 ft.) northwest of a utility pole, 0.3 m (1 ft.) north from a fiberglass witness post.**

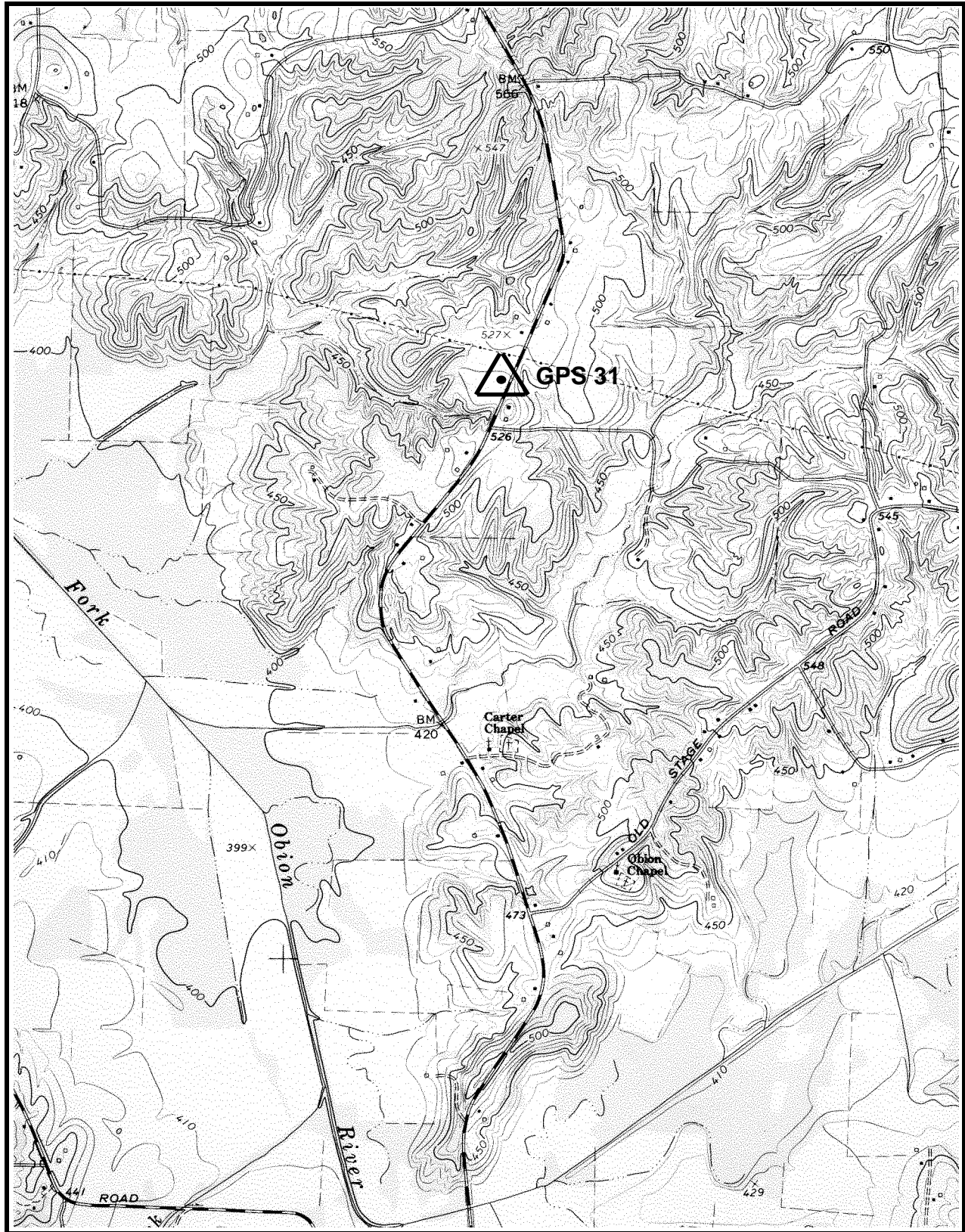
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>160.107 m (525.28 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 56' 20"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>88° 34' 23"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 31</u>	MAP SHEET	<u>445-NE,McLemoesville</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 31**

**445-NE, McLEMORESVILLE**

**GPS - 32**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 55' 40.36036"</b>	TN Northing:	<b>181056.413 m</b>
Longitude:	<b>88° 59' 52.36166"</b>	TN Easting:	<b>329510.244 m</b>
Elevation:	<b>97.590 m (320.18 ft)</b>		
Convergence:	<b>-1° 45' 18.3"</b>	Scale Factor:	<b>0.99994974</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Gibson</b>	Nearest Town:	<b>Trenton</b>
USGS QUAD:	<b>Trenton</b>	TVA Designation:	<b>437-NW</b>

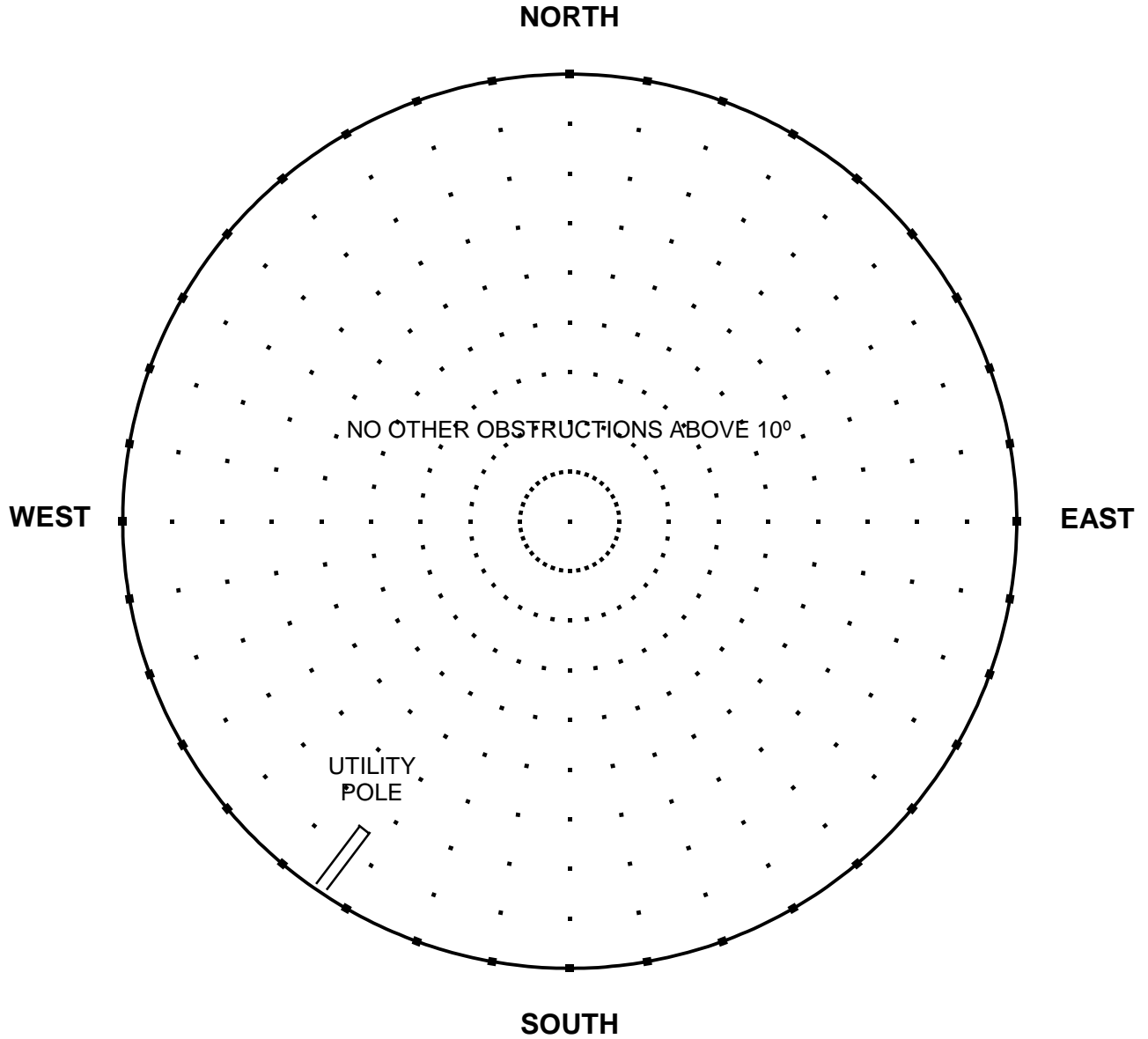
Description:

The station is located about 38.7 km (24 mi.) north-northwest of Jackson, 8 km (5 mi.) southwest of Trenton, on the northwest right-of-way of State Route 54. Ownership--State Right-of-Way.

To reach the station from the Gibson County Courthouse in Trenton go south on U.S. Highway 45W Business Route (College St.) 1.8 km (1.1 mi.) to the junction of U.S. Highway 45W Business Route and State Route 54 at the south edge of Trenton. Then turn right and go west and southwest for 7.2 km (4.5 mi.) on State Route 54 to the station on the right 0.2 km (0.15 mi.) southwest from the Follis Chapel and Cemetery.

The station is a 3-D mark with stainless steel rod driven 12.8 m (42 ft.). The logo cap is stamped---GPS 32 1987---, and a steel spike is embedded in the concrete. Located 100.6 m (330 ft.) northeast from the center of a bridge over a small stream, 17.1 m (56 ft.) northwest from the center of the road and level with same, 1.4 m (4.5 ft.) southeast from the right-of-way fence, 30.2 m (99.0 ft.) northeast from a utility pole, 0.2 m (0.8 ft.) southwest from a fiberglass witness post.

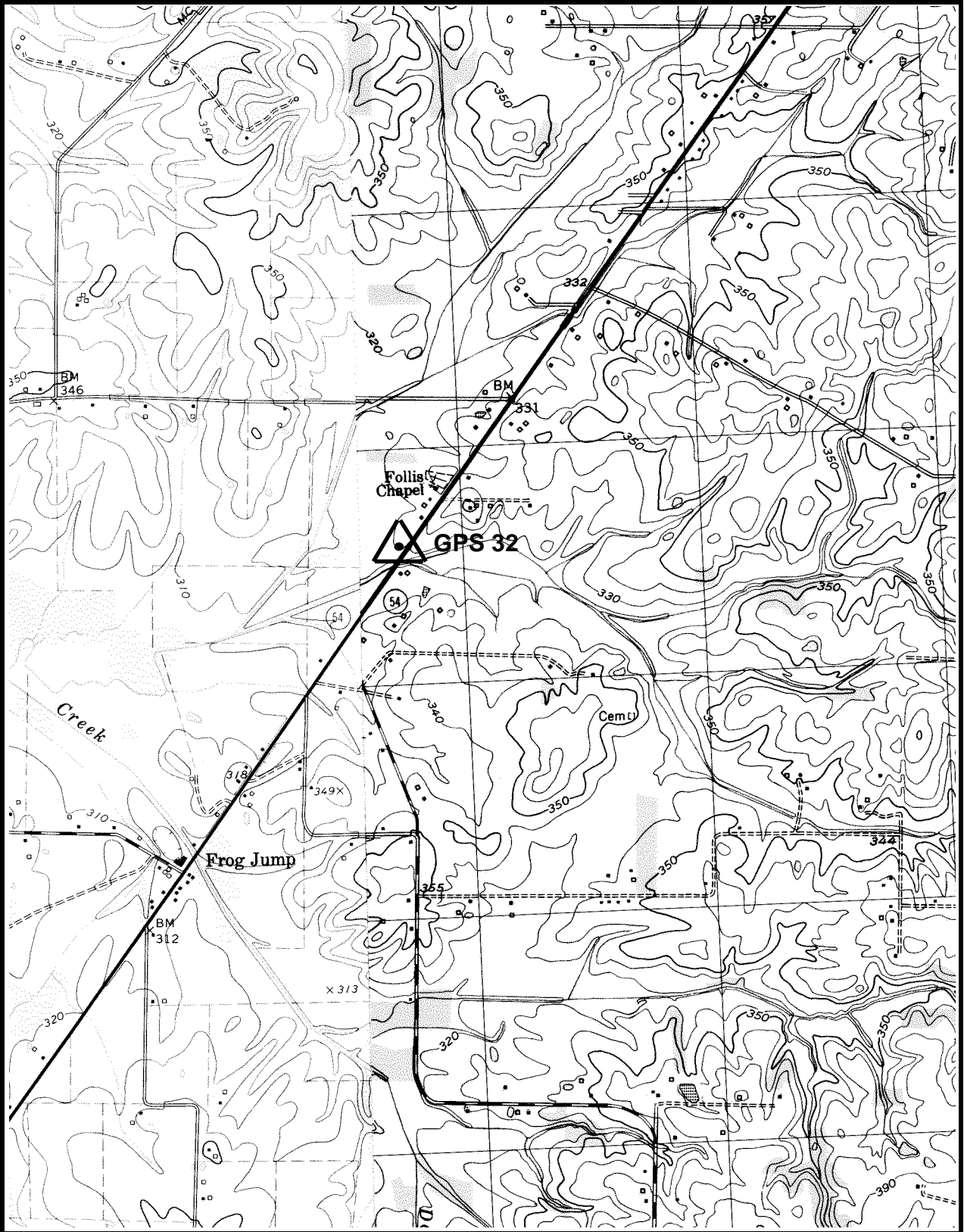
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>97.590 m (320.18 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 55' 40"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>88° 59' 52"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 32</u>	MAP SHEET	<u>437-NW, Trenton</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 32**

**437-NW, TRENTON**

**GPS - 33**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 59' 54.49354"</b>	TN Northing:	<b>190081.966 m</b>
Longitude:	<b>89° 24' 13.70245"</b>	TN Easting:	<b>293170.794 m</b>
Elevation:	<b>99.801 m (327.43 ft)</b>		
Convergence:	<b>-1° 59' 33.8"</b>	Scale Factor:	<b>0.99995250</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Dyer</b>	Nearest Town:	<b>Dyersburg</b>
USGS QUAD:	<b>Fowlkes</b>	TVA Designation:	<b>421-NW</b>

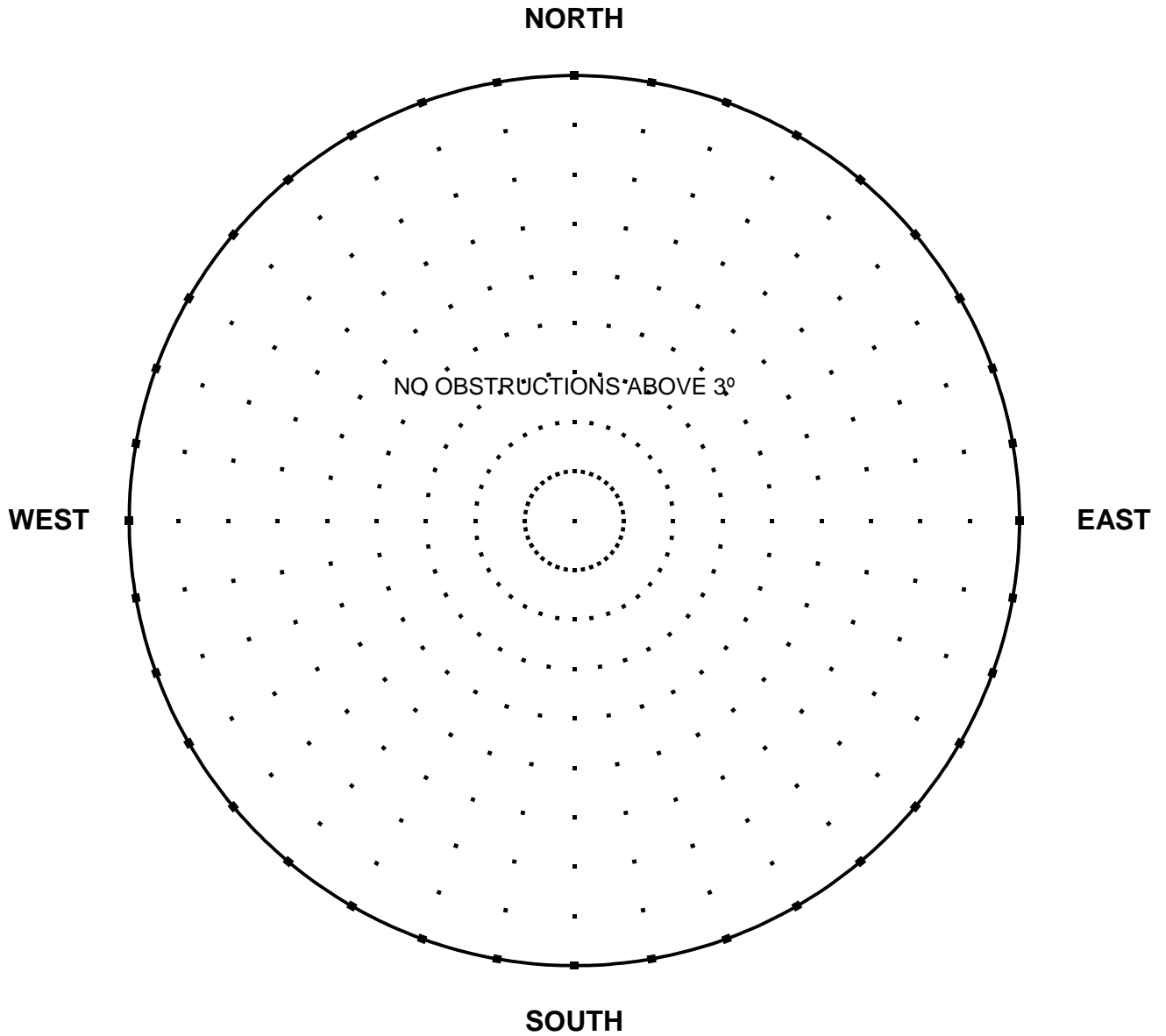
Description:

The station is located about 3.2 km (2 mi.) south of Dyersburg, at the Dyersburg Municipal Airport. Ownership--Airport Manager is Jerrie Davis, telephone (901) 286-2233.

To reach the station from the Courthouse in Dyersburg go south on U.S. Highway 51 Business Route (N. Main Ave.) 3.2 km (2.0 mi.) to the junction of U.S. Highway 51 Bypass and U.S. Highway 51 Business Route just south of Dyersburg. Then bear left and go south for 0.5 km (0.3 mi.) on U.S. Highway 51 to the airport entrance drive on the right. Turn right and go west for 0.56 km (0.35 mi.) on the airport entrance drive to the airport office. Enter the apron area from the drive between the old airport office building and a metal hangar approximately 90 m (300 ft.) north of the new airport office building. Go west-southwest across the apron to a taxiway, bear right and go west on the taxiway 61 m (200 ft.) to the junction of a southwest taxiway. Turn left and go southwest 0.16 km (0.1 mi.) on the taxiway to the station on the left.

The station is a 3-D mark with stainless steel rod driven 11.3 m (37 ft.). The logo cap is stamped---GPS 33 1987---, and a steel spike is embedded in the concrete. Located 63.7 m (209 ft.) west-southwest from a wind vane, 62.6 m (205 ft.) west-northwest from a wind sock, 48.2 m (158 ft.) east-northeast from the center of a runway, 21.0 m (69 ft.) southeast from the center of a taxiway 29.0 m (95 ft.) west from a 0.9 m (3 ft.) square iron drain grate, 0.15 m (0.5 ft.) east from a fiberglass witness post.

# STATION VISIBILITY DIAGRAM

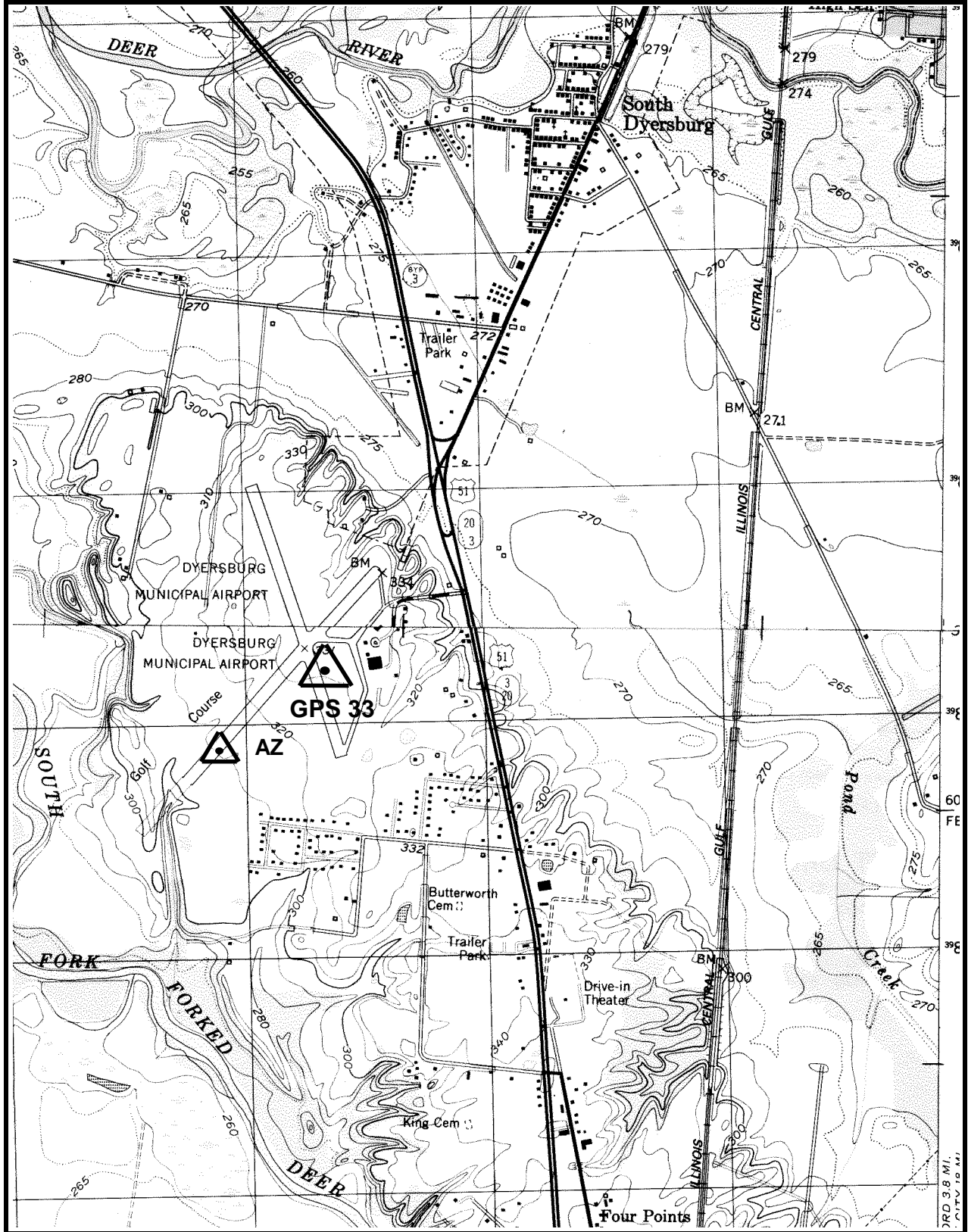


ELEVATION	<u>99.801 m (327.43 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 59' 54"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>89° 24' 14"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 33</u>	MAP SHEET	<u>421-NW, Fowlkes</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:



**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 33**

**421-NW, FOWLKES**

**GPS - 33 AZ MK**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 59' 43.16648"</b>	TN Northing:	<b>189747.048 m</b>
Longitude:	<b>89° 24' 29.74022"</b>	TN Easting:	<b>292757.220 m</b>
Elevation:	<b>94.197 m* (309.04 ft)</b>		
Convergence:	<b>-1° 59' 43.2"</b>	Scale Factor:	<b>0.99995235</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Dyer</b>	Nearest Town:	<b>Dyersburg</b>
USGS QUAD:	<b>Fowlkes</b>	TVA Designation:	<b>421-NW</b>

**Description:**

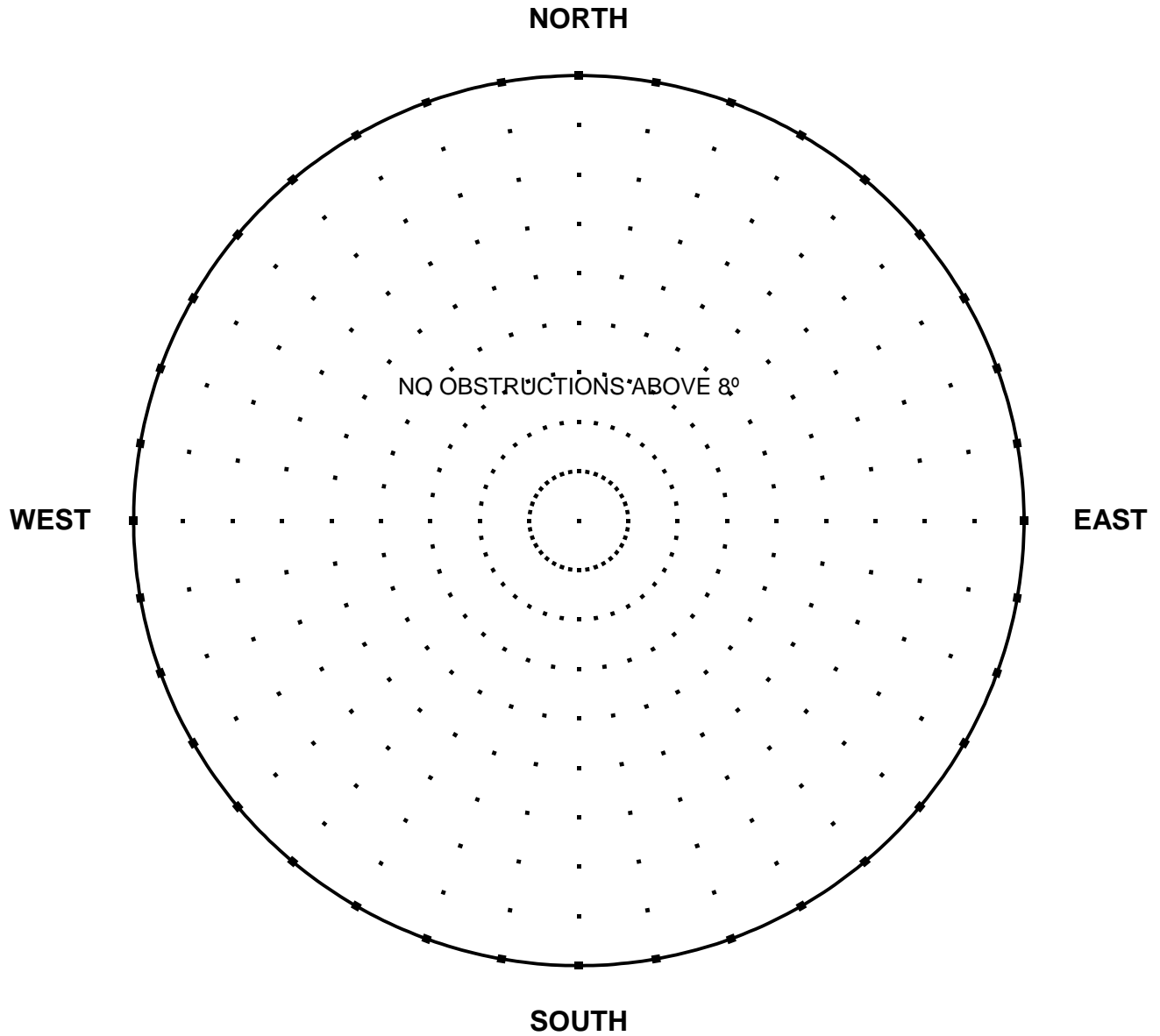
**The station is located about 3.2 km (2 mi.) south of Dyersburg, at the Dyersburg Municipal Airport. Ownership--Airport Manager is Jerrie Davis, telephone (901) 286-2233.**

**To reach the azimuth mark from the Courthouse in Dyersburg go south on U.S. Highway 51 Business Route (N. Main Ave.) 3.2 km (2.0 mi.) to the junction of U.S. Highway 51 Bypass and U.S. Highway 51 Business Route just south of Dyersburg. Then bear left and go south for 0.5 km (0.3 mi.) on U.S. Highway 51 to the airport entrance drive on the right. Turn right and go west for 0.56 km (0.35 mi.) on the airport entrance drive to the airport office. Enter the apron area from the drive between the old airport office building and a metal hangar approximately 90 m (300 ft.) north of the new airport office building. Go west-southwest across the apron to a taxiway, bear right and go west on the taxiway 61 m (200 ft.) to the junction of a southwest taxiway. Turn left and go southwest 0.16 km (0.1 mi.) on the taxiway to station GPS 33 AZ MK on the left. Continue straight ahead and go 0.6 km (0.35 mi.) to the mark on the right.**

**The azimuth mark is a 3-D mark with stainless steel rod driven 18.9 m (62 ft.). The logo cap is stamped---GPS 33 AZ MK 1987---, with a steel spike embedded in the concrete and 0.05 m (0.17 ft.) below the ground. Located 18.3 m (60.2 ft.) southeast of the southeast edge of the runway, 12.6 m (41.5 ft.) southeast of the center of a taxiway guidance sign, 14.3 m (47.0 ft.) northeast of the northeast edge of the taxiway crossover, 14.7 m (48.0 ft.) northwest of the center of a concrete culvert with a headwall, and 0.3 m (1.0 ft.) south of a fiberglass witness post.**

**\* GPS derived elevation using the Geoid 96 Model and the WGS 1984 Reference Ellipsoid.**

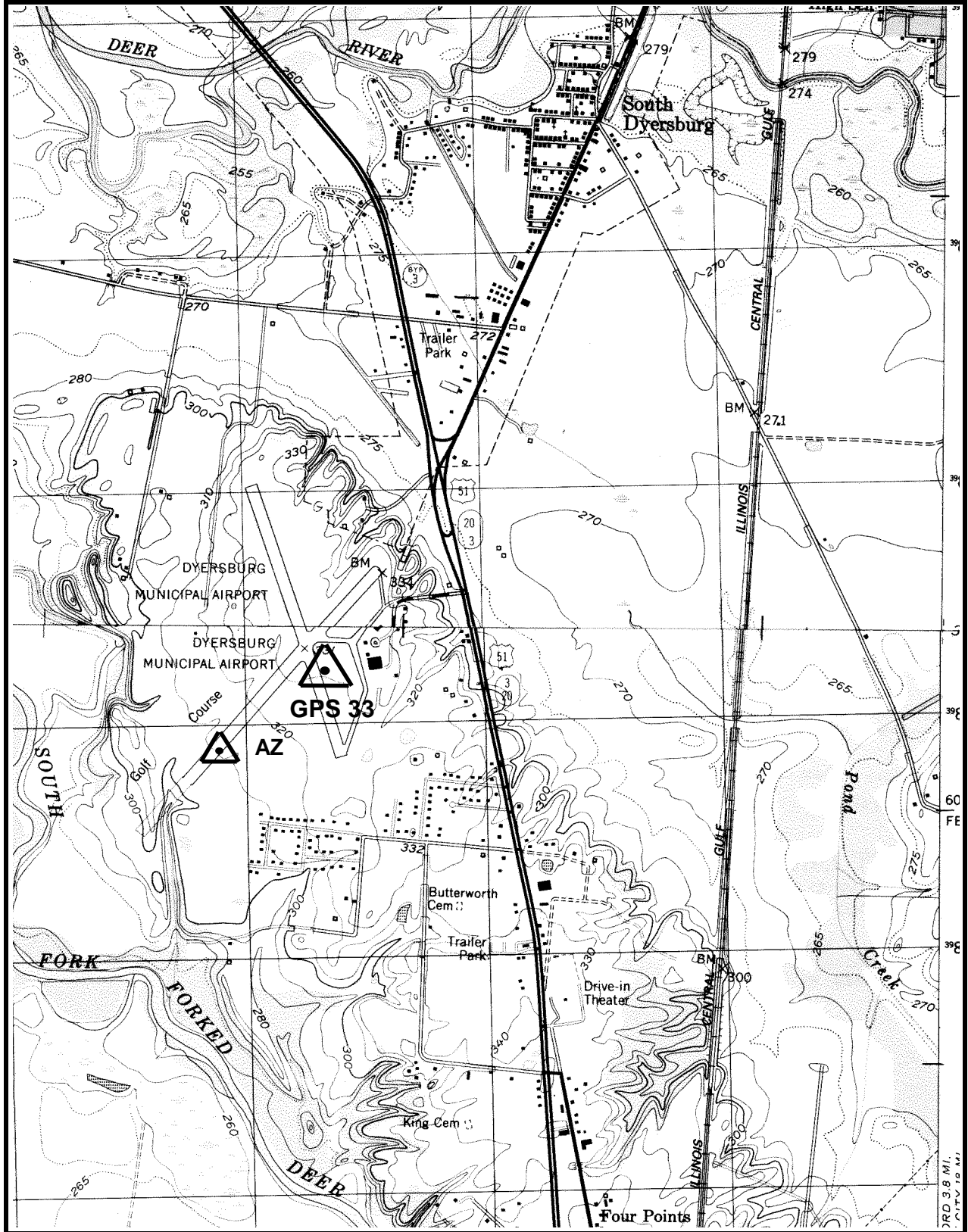
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>94.197 m (309.04 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 59' 43"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>89° 24' 30"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 33 AZ MK</u>	MAP SHEET	<u>421-NW, Fowlkes</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**

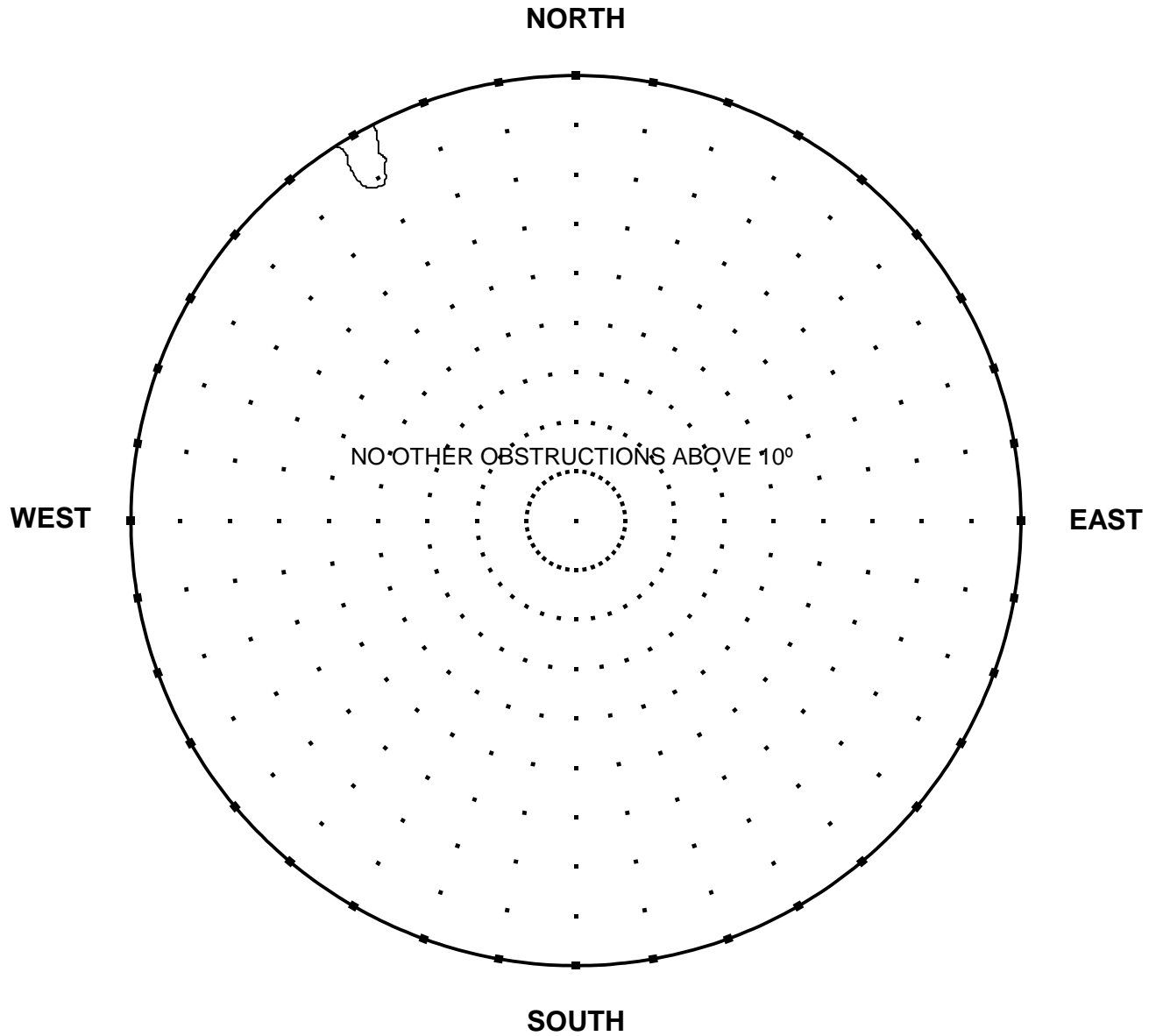


**GPS 33**

**421-NW, FOWLKES**



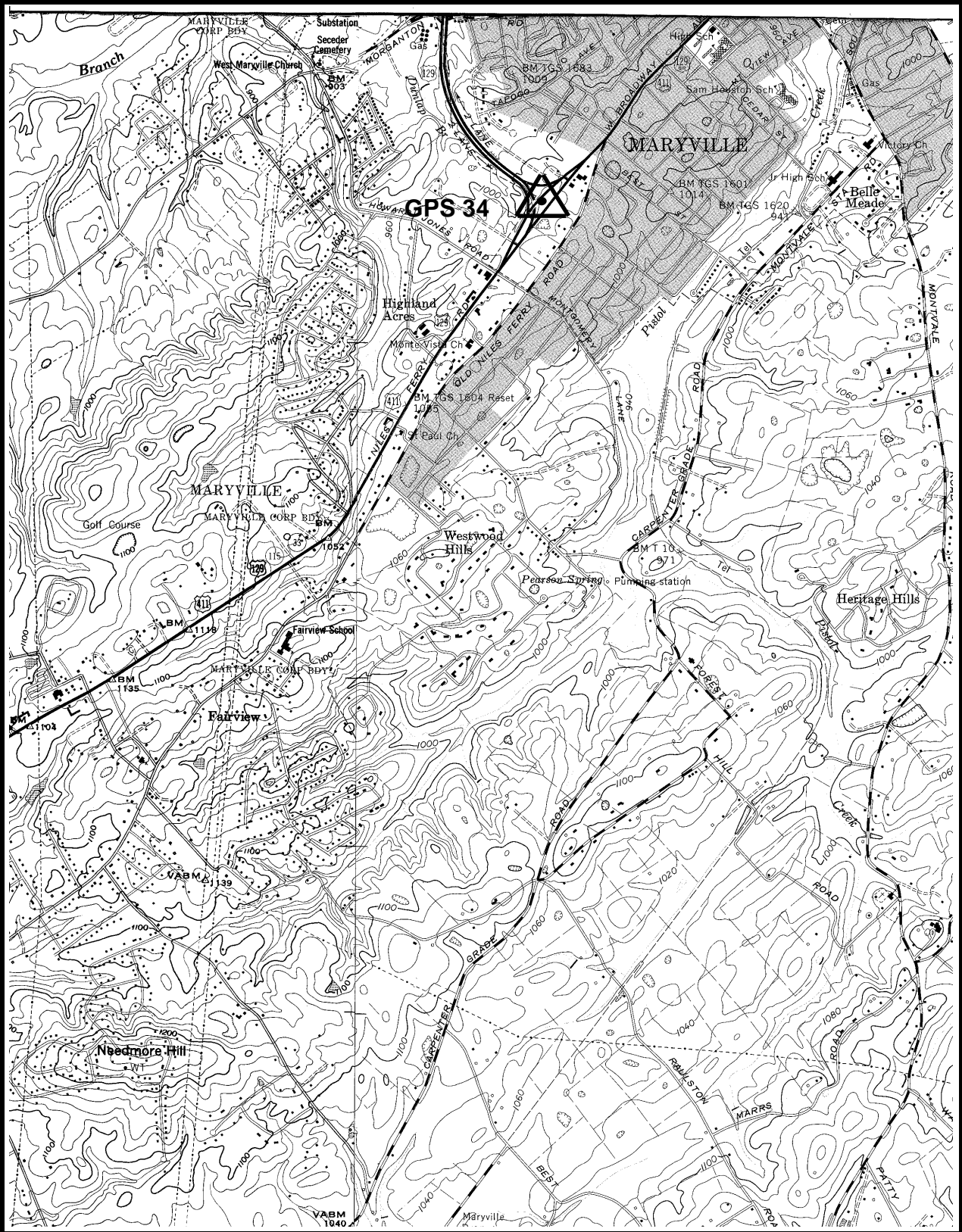
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>314.211 m (1,030.87 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 44' 26"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>83° 59' 20"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 34</u>	MAP SHEET	<u>148-NW, Blockhouse</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 34**

**148-NW, BLOCKHOUSE**

**GPS - 35**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 32' 36.90156"</b>	TN Northing:	<b>135487.098 m</b>
Longitude:	<b>84° 22' 59.97885"</b>	TN Easting:	<b>746588.083 m</b>
Elevation:	<b>317.376 m (1,041.26 ft)</b>		
Convergence:	<b>+0° 56' 47.3"</b>	Scale Factor:	<b>0.99996118</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Monroe</b>	Nearest Town:	<b>Madisonville</b>
USGS QUAD:	<b>Sweetwater</b>	TVA Designation:	<b>131-SW</b>

Description:

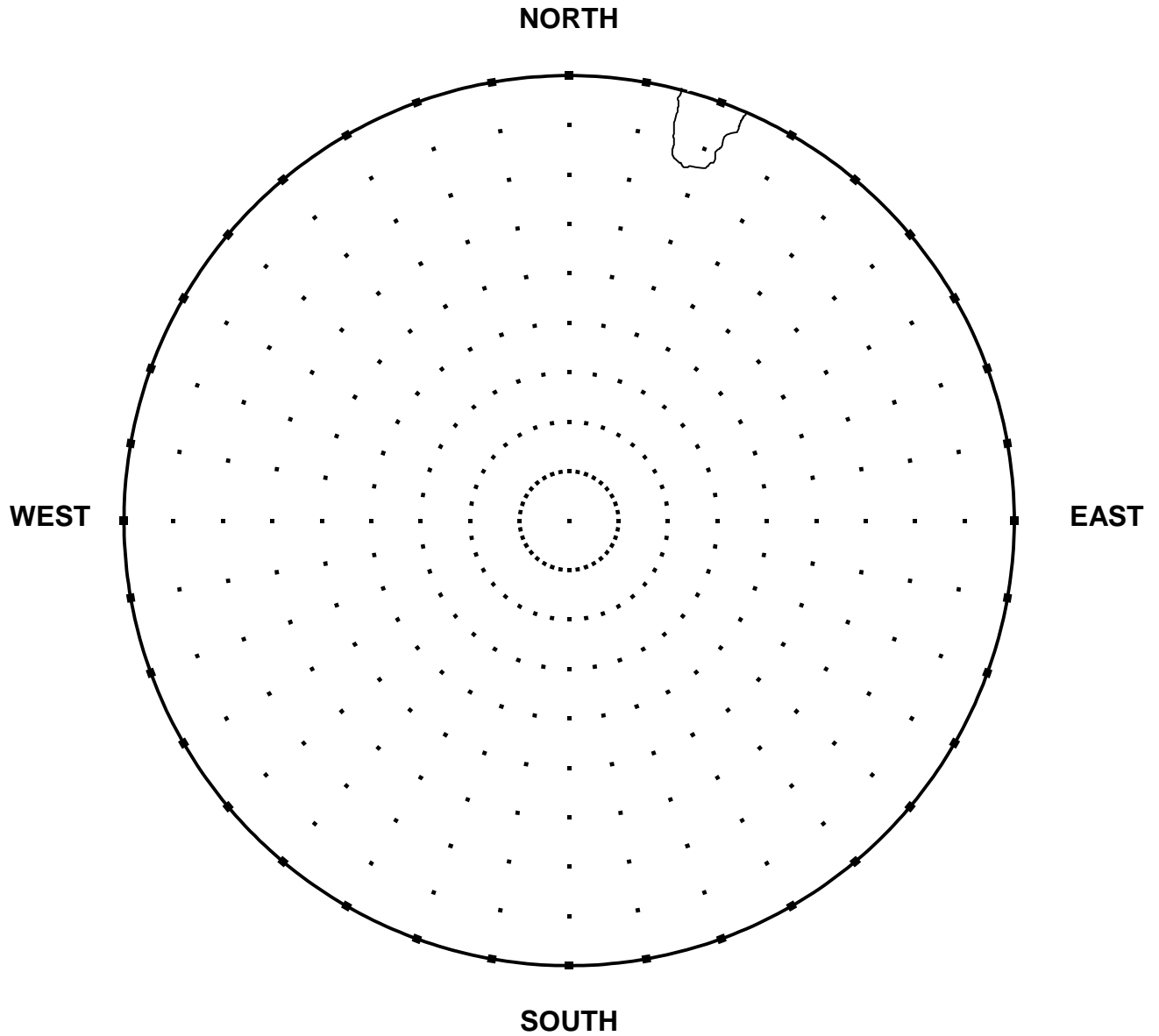
The station is located about 9.7 km (6 mi.) southwest of Sweetwater, 3.2 km (2 mi.) northwest of Madisonville, at the Madisonville/Monroe County Airport, 0.21 km (0.13 mi.) southwest of the airport office and on the highest part of a low ridge between the runway and access road. Ownership--Airport Manager is Larry Hamilton, telephone (615) 442-4506.

To reach the station from the Courthouse in Madisonville go north for 0.8 km (0.5 mi.) on College Street to a fork at Sweetwater Road. Follow the left fork and go north for 3.94 km (2.45 mi.) on Sweetwater Road to the airport entrance drive on the right. Turn right and go northeast for 1.6 km (1.0 mi.) on the airport entrance drive to the airport office and the station about equidistant between the office and the southwest end of the runway.

The station is a 3-D mark with stainless steel rod driven 14.3 m (47 ft.). The logo cap is stamped---GPS 35 1987---, and a steel spike is embedded in the concrete. Located 65.2 m (214 ft.) northwest from the runway center and 2.4 m (8 ft.) above same, 18.0 m (59 ft.) southeast from the road center, 38.7 m (127 ft.) northwest from a vasi navigation light, 33.2 m (109 ft.) southeast from a utility pole, 2.1 m (6.9 ft.) southeast from airport chain link boundary fence. Fence is 1.8 m (6 ft.) tall, 0.4 m (1.2 ft.) southwest from a fiberglass witness post.



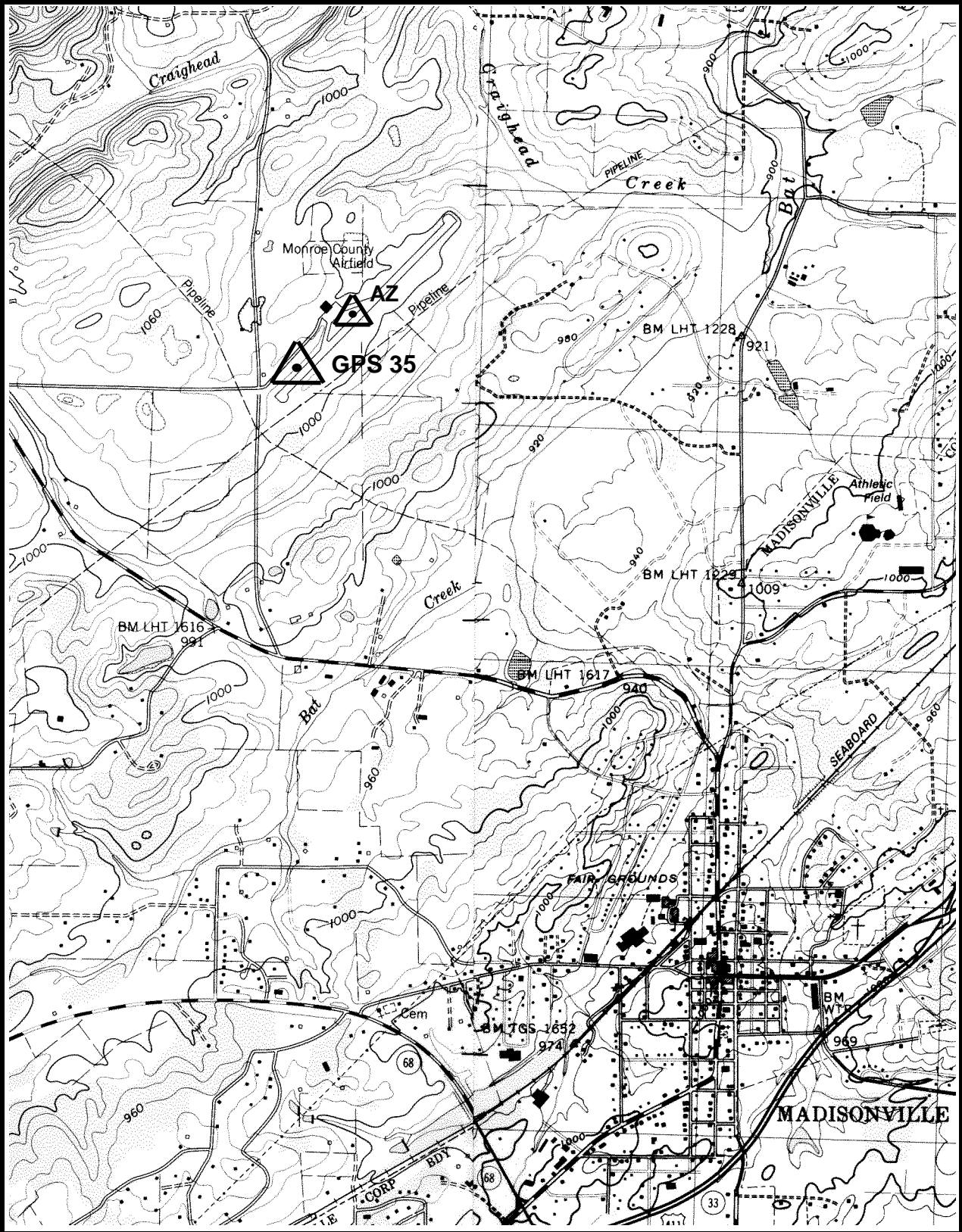
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>317.376 m (1,041.26 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 32' 37"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>84° 23' 00"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 35</u>	MAP SHEET	<u>131-SW, Sweetwater</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



GPS 35 131-SW,

SWEETWATER

**GPS - 35 AZ MK**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 32' 42.93636"</b>	TN Northing:	<b>135676.981 m</b>
Longitude:	<b>84° 22' 50.55166"</b>	TN Easting:	<b>746822.425 m</b>
Elevation:	<b>309.966 m* (1,016.95 ft.)</b>		
Convergence:	<b>+0° 56' 52.8"</b>	Scale Factor:	<b>0.99996103</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Monroe</b>	Nearest Town:	<b>Madisonville</b>
USGS QUAD:	<b>Sweetwater</b>	TVA Designation:	<b>131-SW</b>

Description:

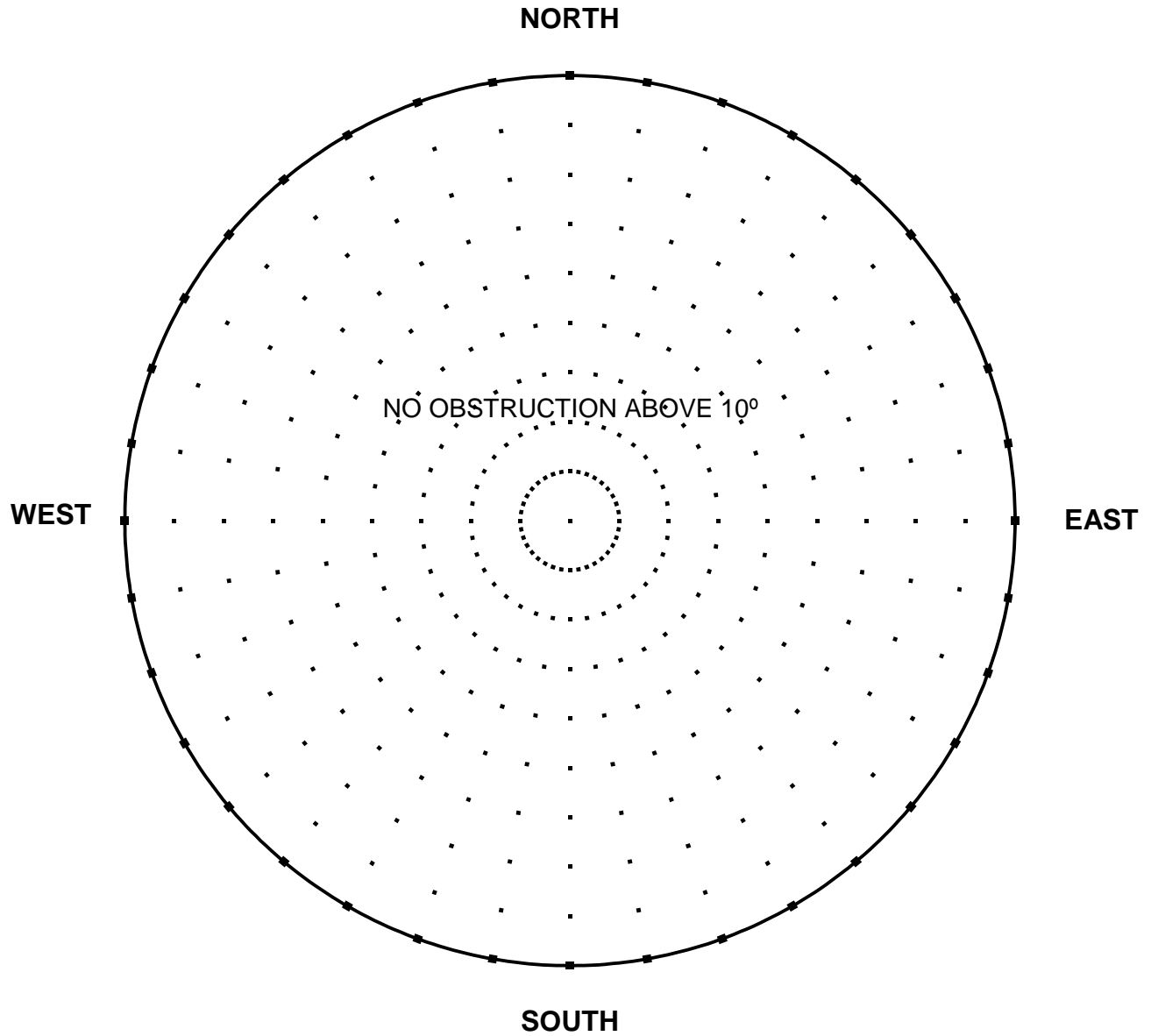
The azimuth mark is located about 9.7 km (6 mi.) southwest of Sweetwater, 3.2 km (2 mi.) northwest of Madisonville, at the Madisonville/Monroe County Airport in a triangular plot of ground formed by the taxiway and runway. Ownership--Airport Manager is Larry Hamilton, telephone (615) 442-4506.

To reach the azimuth mark from the Courthouse in Madisonville go north for 0.8 km (0.5 mi.) on College Street to a fork at Sweetwater Road. Follow the left fork and go north for 3.94 km (2.45 mi.) on Sweetwater Road to the airport entrance drive on the right. Turn right and go northeast for 1.6 km (1.0 mi.) on the airport entrance drive to the airport office, thence easterly 0.16 km (0.1 mi.) to the mark near the center of a grassy triangle formed by the runway and taxiway.

The azimuth is a 3-D mark with stainless steel rod driven 5.8 m (19 ft.) to refusal, 0.08 m (0.25 ft.) below ground, with a logo cap stamped---GPS 35 AZ MK 1987---, and a rebar set in the concrete. Located 20.2 m (66.3 ft.) southeast of the southeast edge of the east-west taxiway, 11.0 m (36 ft.) northwest of the northwest edge of the runway, 12.5 m (41.0 ft.) east of a pipe culvert under the ground and 0.5 m (1.7 ft.) southwest of a fiberglass witness post, also 0.32 km (0.2 mi.) northeast of station GPS 35.

\* GPS derived elevation using the Geoid 96 Model and the WGS 1984 Reference Ellipsoid.

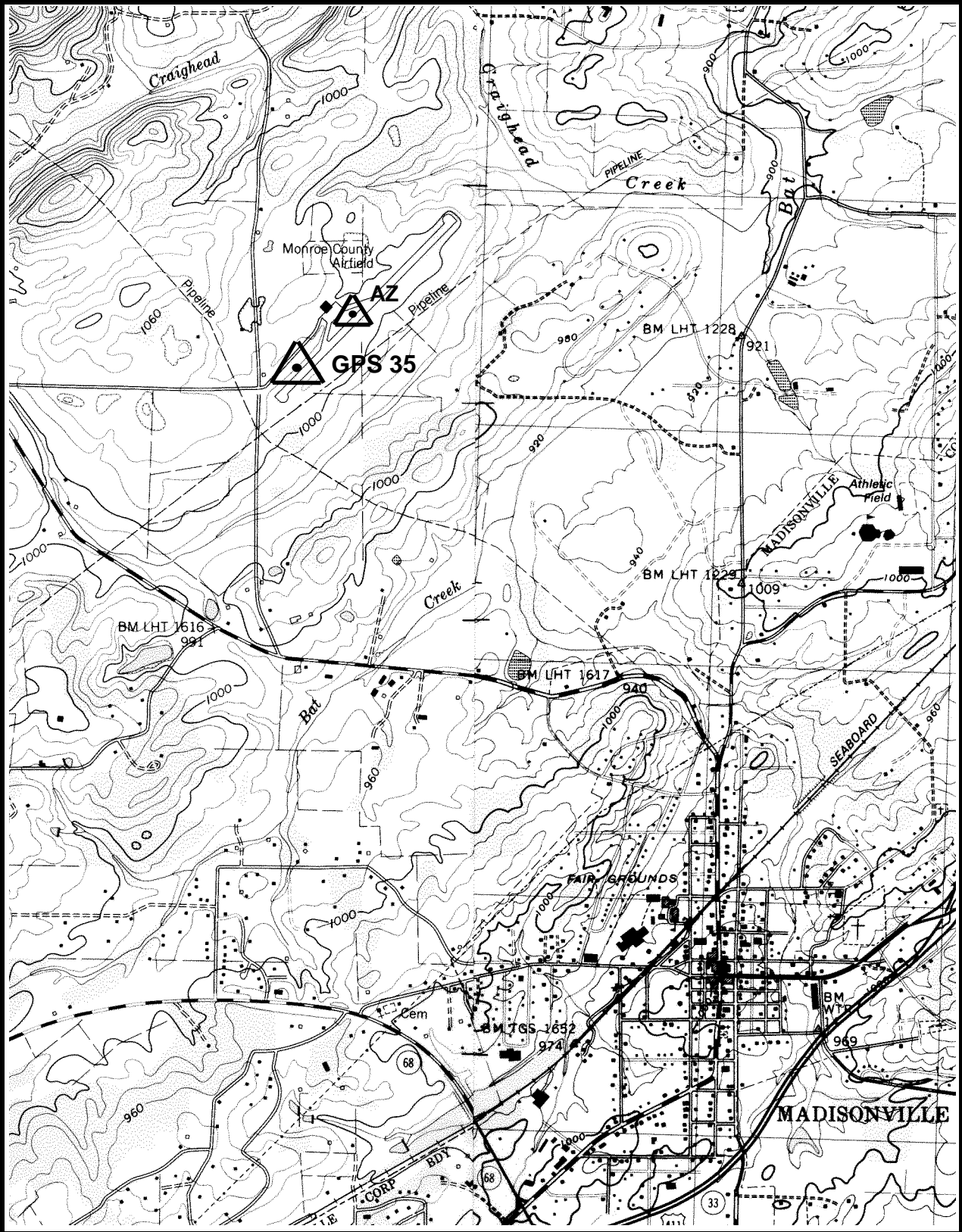
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>309.966 m (1,016.95 ft.)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 32' 43"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>84° 23' 51"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 35 AZ MK</u>	MAP SHEET	<u>131-SW, Sweetwater</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 35**

**131-SW, SWEETWATER**

**GPS - 36**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 37' 25.02507"</b>	TN Northing:	<b>143850.763 m</b>
Longitude:	<b>84° 46' 28.67730"</b>	TN Easting:	<b>710998.362 m</b>
Elevation:	<b>229.139 m (751.77 ft)</b>		
Convergence:	<b>+0° 43' 2.6"</b>	Scale Factor:	<b>0.99995511</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Meigs</b>	Nearest Town:	<b>Watts Bar</b>
	<b>Dam</b>		
USGS QUAD:	<b>Decatur</b>	TVA Designation:	<b>118-SE</b>

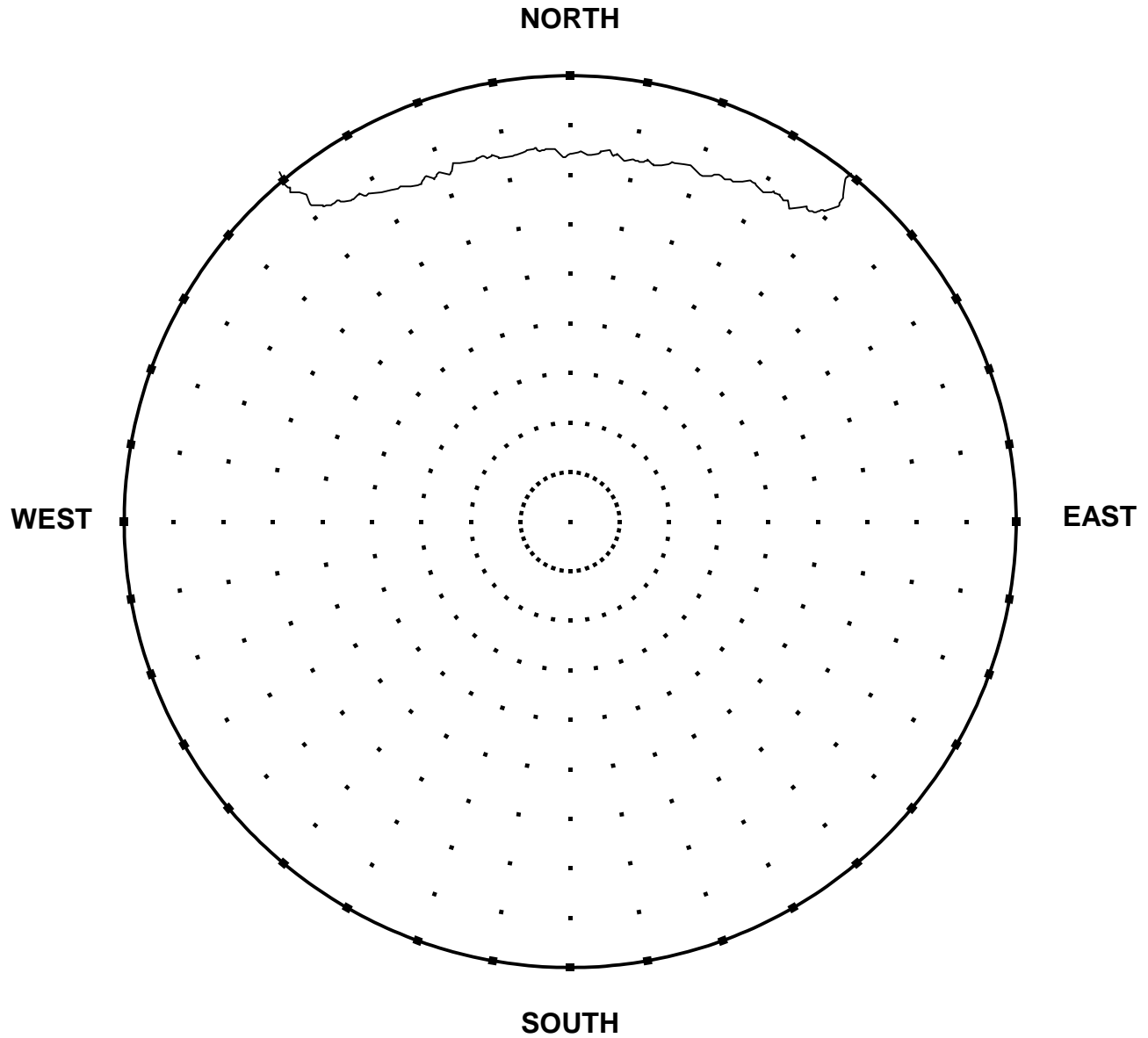
Description:

**The station is located just east of Watts Bar Dam on the Tennessee River and near the south right-of-way fence of State Route 68. Ownership--State Right-of-Way.**

**To reach the station from the east end of the State Route 68 bridge over the dam go east for 0.24 km (0.15 mi.) on State Route 68 to the station on the right just east of an access road leading to the east bank of the river below the dam.**

**The station is a 3-D mark with stainless steel rod driven 8.5 m (28 ft.). The logo cap is stamped---GPS 36 1987---, and a railroad spike is embedded in the concrete. Located 34.7 m (114 ft.) southeast from the junction of state Route 68 and the access road, 25.76 m (84.5 ft.) south from the center of State Route 68, 25.3 m (83 ft.) east from the center of the access road, 16.7 m (54.8 ft.) east from South Central Bell utility box numbered no. 6, 1.0 m (3.3 ft.) north from a fiberglass witness post.**

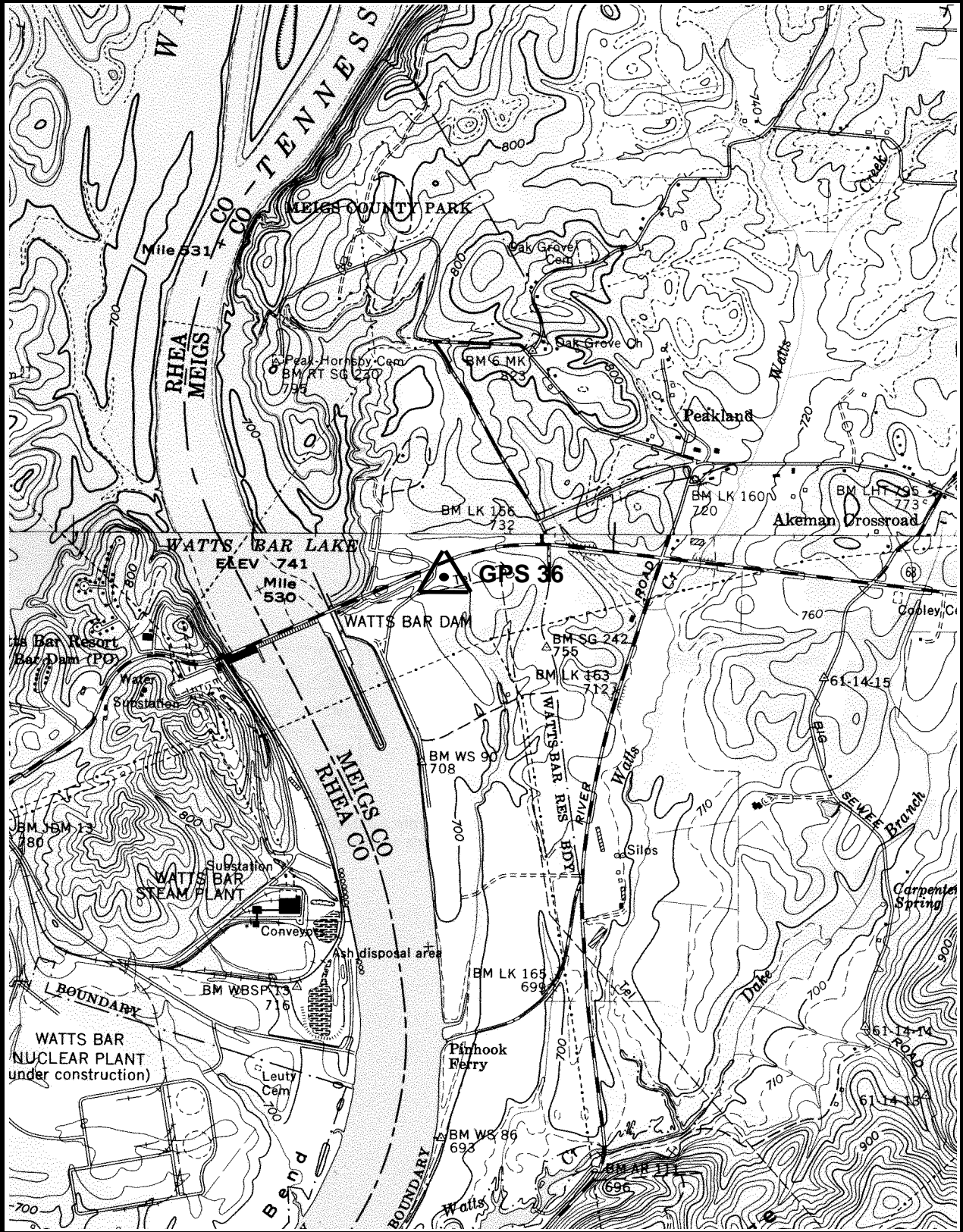
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>229.139 m (751.77 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 37' 25"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>84° 46' 29"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 36</u>	MAP SHEET	<u>118-SE, Decatur</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 36

118-SE, DECATUR



**GPS - 37**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 34' 56.79049"</b>	TN Northing:	<b>138870.791 m</b>
Longitude:	<b>85° 13' 4.09281"</b>	TN Easting:	<b>670891.887 m</b>
Elevation:	<b>251.899 m (826.44 ft)</b>		
Convergence:	<b>+0° 27' 28.5"</b>	Scale Factor:	<b>0.99995799</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Bledsoe</b>	Nearest Town:	<b>Pikeville</b>
USGS QUAD:	<b>Pikeville</b>	TVA Designation:	<b>110-SW</b>

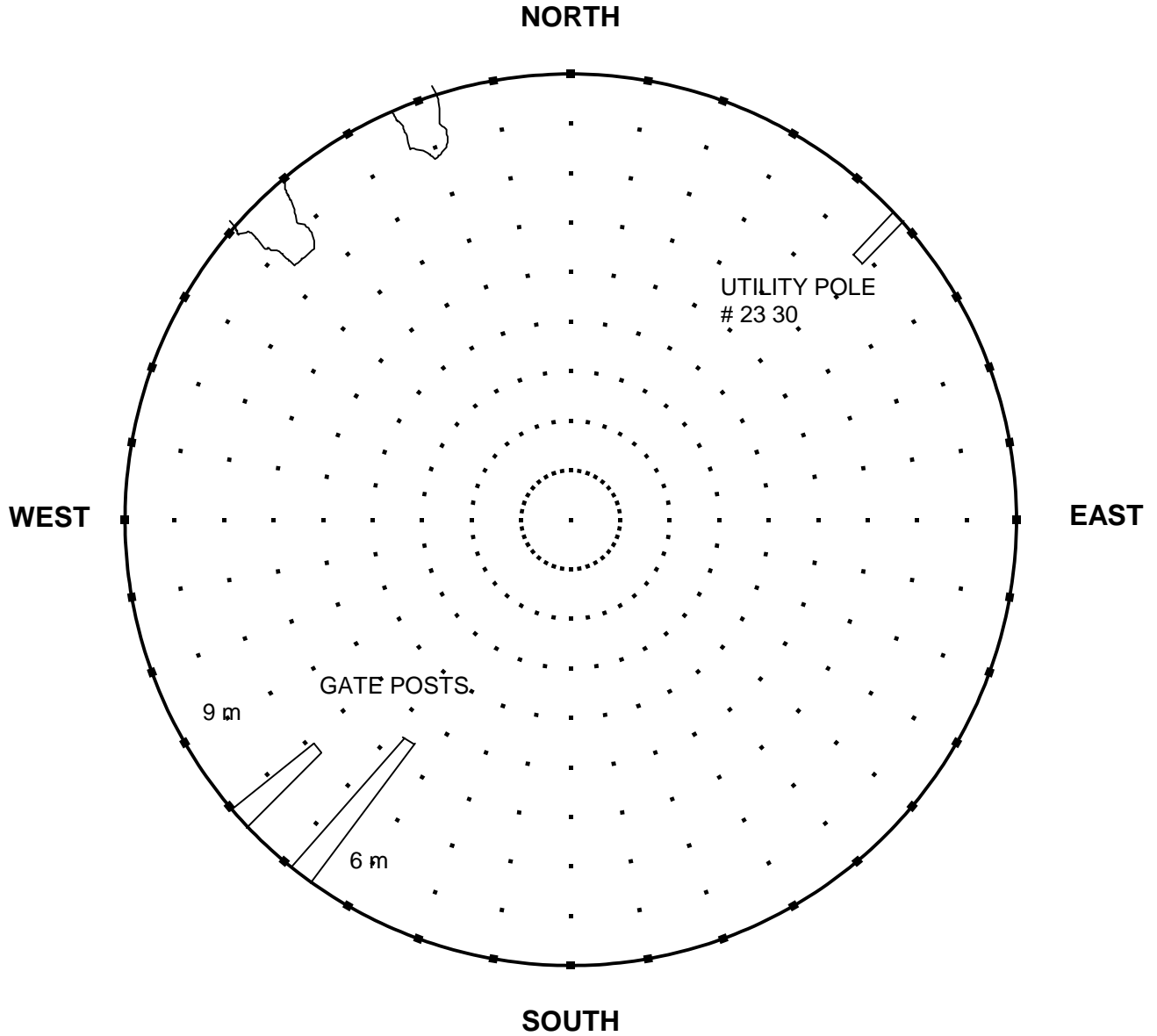
Description:

The station is located about 3.2 km (2 mi.) southwest of Pikeville, in a bedrock outcrop at the east edge of U.S. Highway 127. Ownership--State Right-of-Way.

To reach the station from the junction of State Route 30 and U.S. Highway 127 at the south edge of Pikeville go south for 2.7 km (1.7 mi.) on U.S. Highway 127 to the Bledsoe County High School entrance drive on the right. Continue straight ahead and go south for 0.24 km (0.15 mi.) on U.S. Highway 127 to the station on the left.

The station is a standard NGS disk stamped---GPS 37 1987---, set into a drillhole in bedrock outcrop measuring 1.2 m (4 ft.) by 0.4 m (1.3 ft.) projecting 0.09 m (0.3 ft.) above ground. Located 36.6 m (120 ft.) west-southwest from a utility pole numbered 23 30 with one transformer, 15.09 m (49.5 ft.) southeast from the center of U.S. Highway 127 and 0.3 m (1 ft.) above same, 6.7 m (22 ft.) northeast from the center of a gravel drive leading to a house, 0.6 m (2.1 ft.) northwest from a fiberglass witness post set at a white board right-of-way fence.

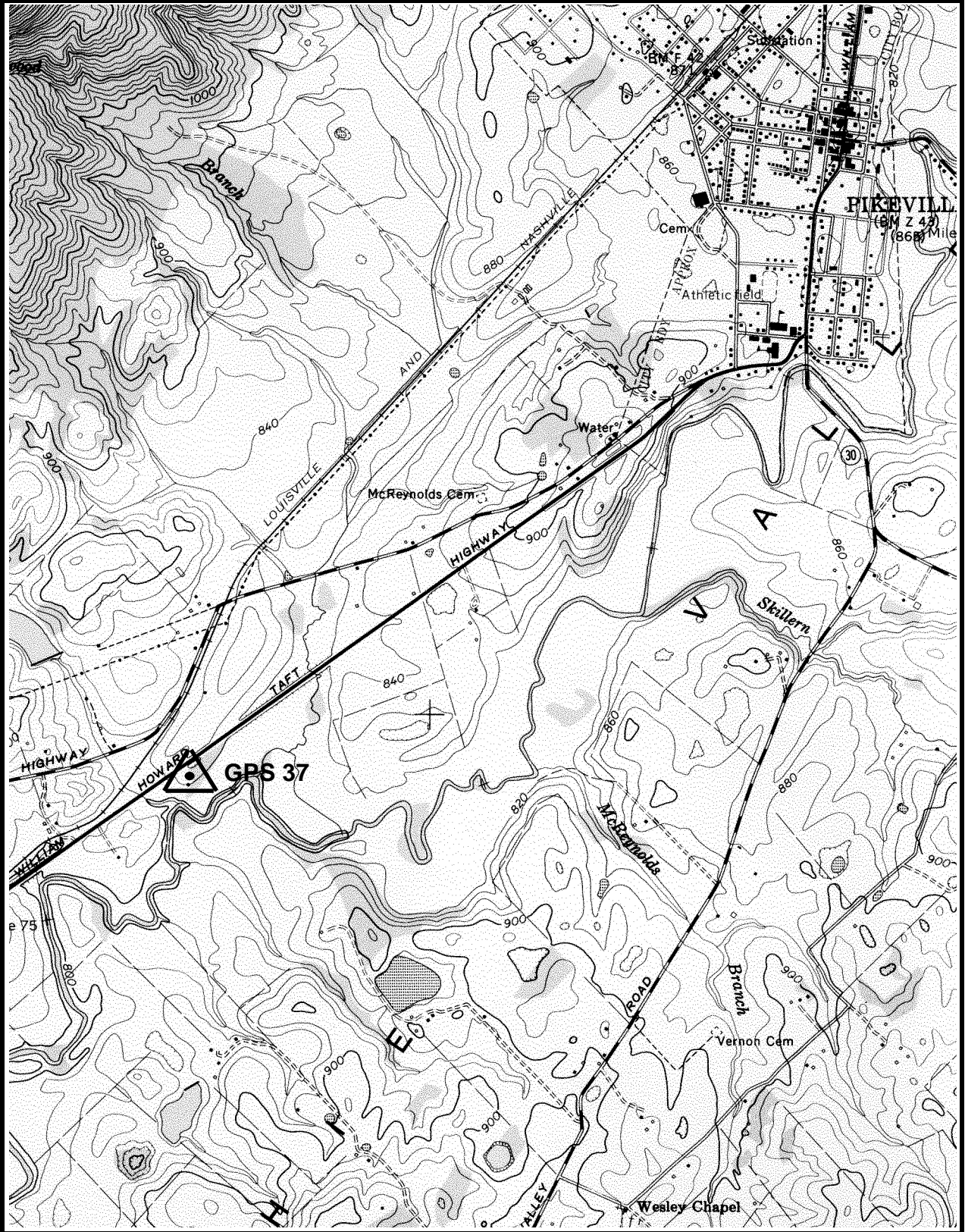
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>251.899 m (826.44 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 34' 57"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>85° 13' 4"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 37</u>	MAP SHEET	<u>110-SW, Pikeville</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



GPS 37

110-SW, PIKEVILLE

**GPS - 38**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 36' 22.02445"</b>	TN Northing:	<b>141254.477 m</b>
Longitude:	<b>85° 42' 19.11789"</b>	TN Easting:	<b>626700.578 m</b>
Elevation:	<b>272.043 m (892.53 ft)</b>		
Convergence:	<b>+0° 10' 21.1"</b>	Scale Factor:	<b>0.99995627</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Warren</b>	Nearest Town:	<b>McMinnville</b>
USGS QUAD:	<b>Irving College</b>	TVA Designation:	<b>328-SW</b>

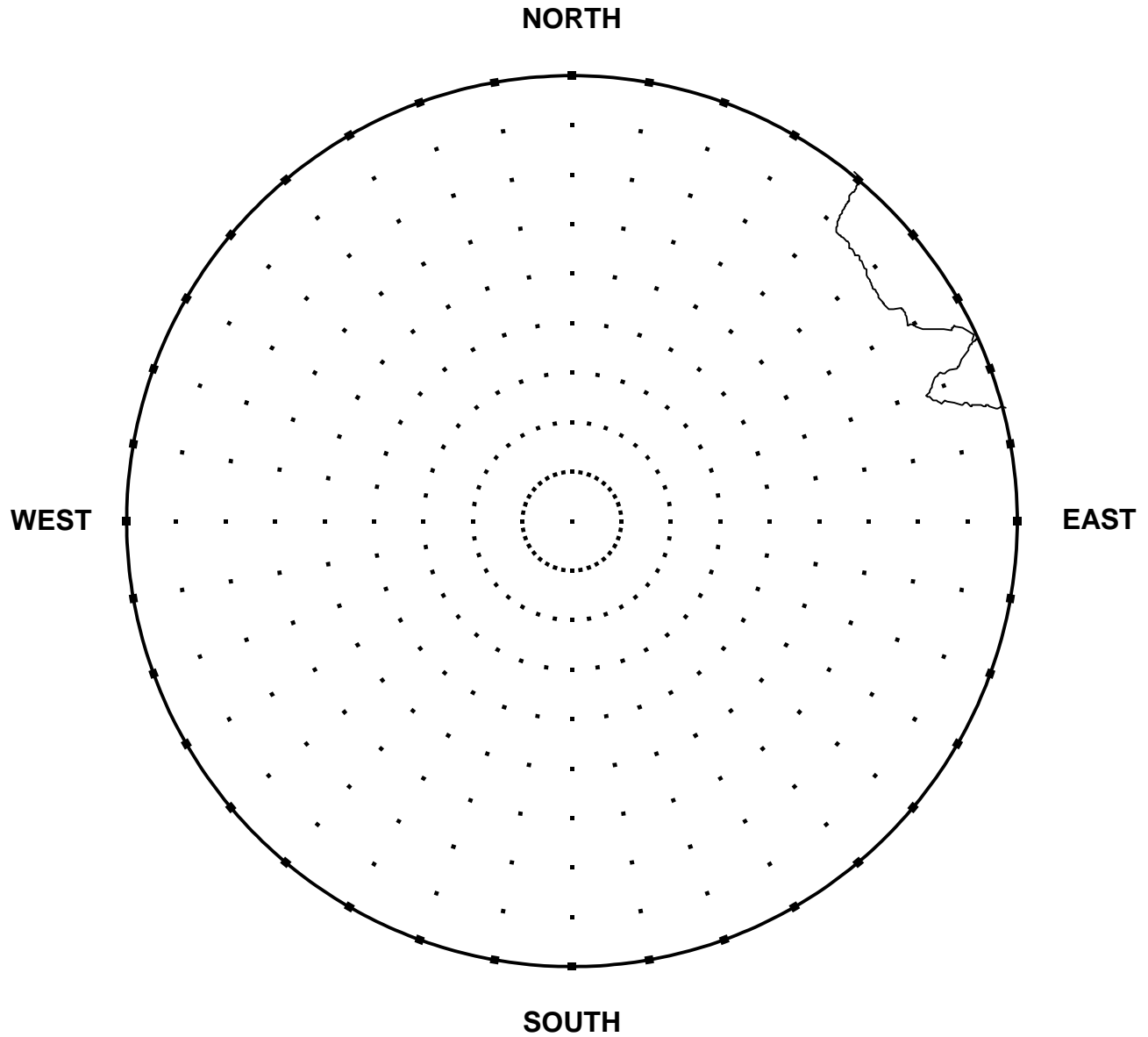
Description:

The station is located about 11.3 km (7 mi.) south of McMinnville, in a fill area on the west side of State Route 56. Ownership--State Right-of-Way.

To reach the station from the front (south side) of the Courthouse in McMinnville go east on E. Main St. 1 block, 0.16 km (0.1 mi.) to an intersection. Turn right and go south 1 block, 0.16 km (0.1 mi.) on E. Spring St. to an intersection. Turn left and go south for 3.5 km (2.2 mi.) on State Route 56 to the junction of State Route 127. Continue straight ahead and go south for 3.4 km (2.1 mi.) on State Route 56 to the Fairview Community Center on the right. Continue straight ahead and go south for 4.0 km (2.5 mi.) on State Route 56 to the station on the right.

The station is a 3-D mark with stainless steel rod driven 12.2 m (40 ft.). The logo cap is stamped---GPS 38 1987---, and a steel spike is embedded in the concrete. Located 81.1 m (266 ft.) south from the north end of a guardrail, 31.8 m (104.3 ft.) north-northwest and across the road from mile marker number 6, 35.1 m (115 ft.) north-northeast from a power pole with one guy wire, 9.30 m (30.5 ft.) west from the road center and 0.6 m (2 ft.) below same, 2.6 m (8.5 ft.) west from a fiberglass witness post set at the guardrail.

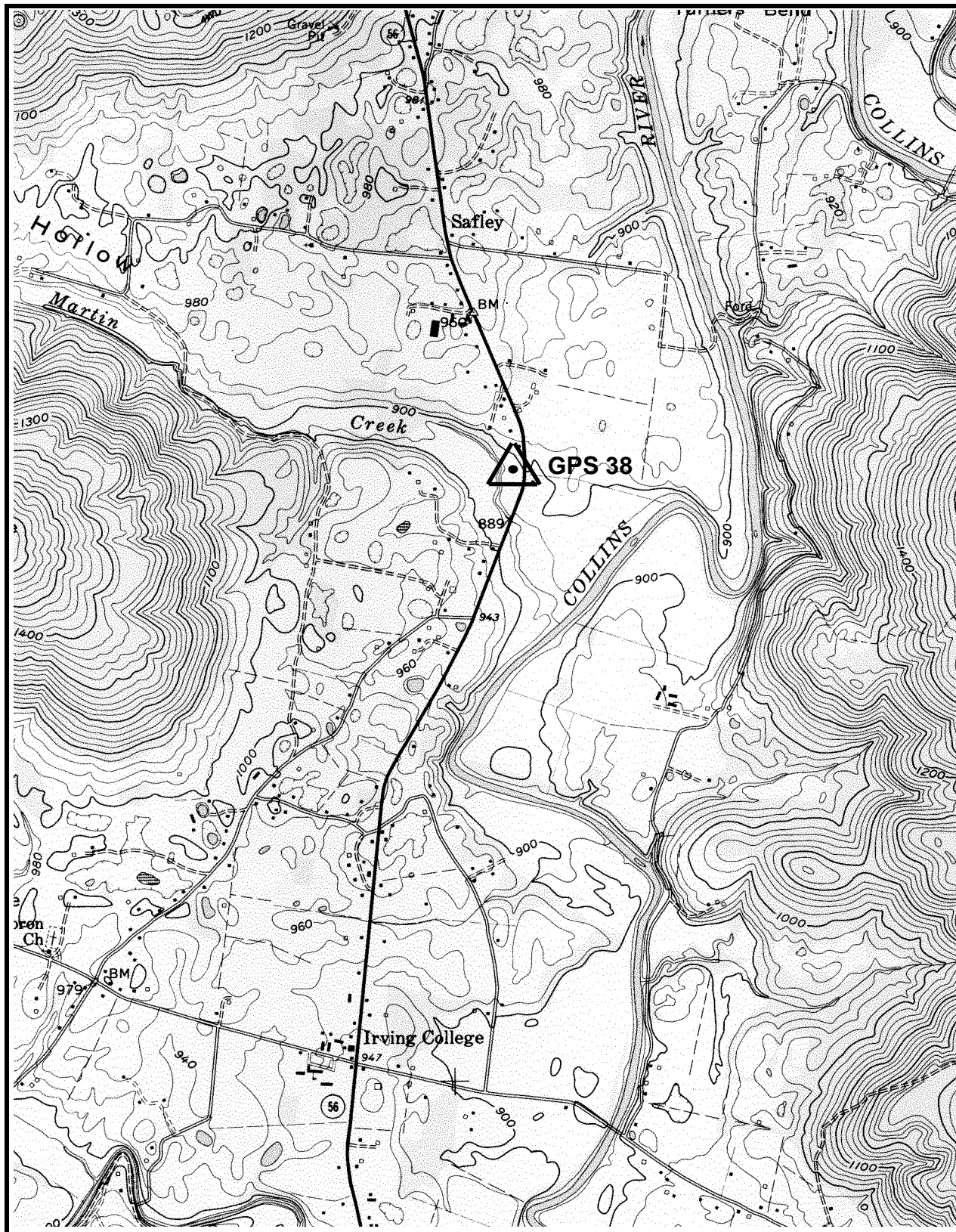
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>272.043 m (892.53 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 36' 22"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>85° 42' 19"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 38</u>	MAP SHEET	<u>328-SW, Irving College</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 38**

**328-SW, IRVING COLLEGE**

**GPS - 39**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 37' 25.18832"</b>	TN Northing:	<b>143170.237 m</b>
Longitude:	<b>86° 8' 31.33914"</b>	TN Easting:	<b>587133.284 m</b>
Elevation:	<b>354.782 m (1,163.98 ft)</b>		
Convergence:	<b>-0° 4' 59.4"</b>	Scale Factor:	<b>0.99995511</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Coffee</b>	Nearest Town:	<b>Beech Grove</b>
USGS QUAD:	<b>Noah</b>	TVA Designation:	<b>85-SW</b>

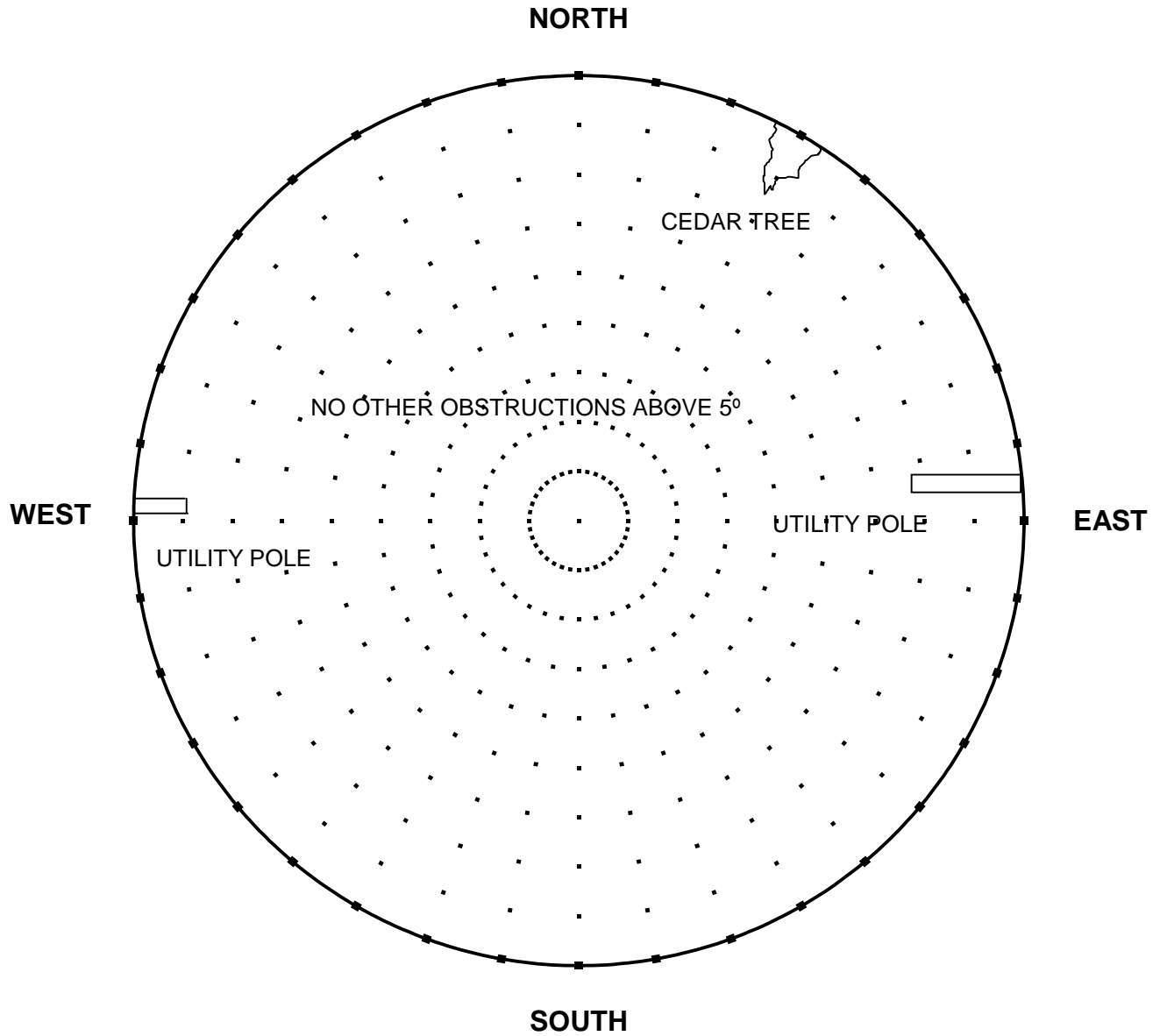
Description:

The station is located about 17.7 km (11 mi.) north-northwest of Manchester, 8.1 km (5 mi.) east of Beech Grove, just east of Gnat Hill Church of Christ, at the south edge of a cemetery. Ownership--Gnat Hill Church of Christ.

To reach the station from the junction of Interstate 24 and State Route 64 (Exit 97) at Beech Grove go east for 0.24 km (0.15 mi.) on State Route 64 to the junction of U.S. Highway 41. Turn right and go south for 7.2 km (4.5 mi.) on U.S. Highway 41 to the junction of County Road 4290 (Noah Rd.). Turn left and go northeast for 7.4 km (4.6 mi.) on County Road 4290 to a junction (Fredonia Rd./State Route 280). Continue straight ahead and go northeast for 0.3 km (0.2 mi.) now on State Route 280 to the church and the station on the left. The station can also be reached from the junction of State Routes 53 and 280 by going west for 6.9 km (4.3 mi.) on State Route 280 to the station on the right.

The station is a 3-D mark with stainless steel rod driven 2.4 m (8 ft.). The logo cap is stamped---GPS 39 1987---, and a railroad spike is embedded in the concrete. Located 67.1 m (220 ft.) east-southeast from the southeast corner of the church, 19.5 m (64 ft.) west from a power pole numbered C 102 L5 at the southeast corner of the cemetery, 6.4 m (21 ft.) north from the road center and 0.6 m (2 ft. ) above same, 7.0 m (23 ft.) southeast from the Ferrell tombstone, 9.1 m (30 ft.) southeast from another Ferrell tombstone.

# STATION VISIBILITY DIAGRAM

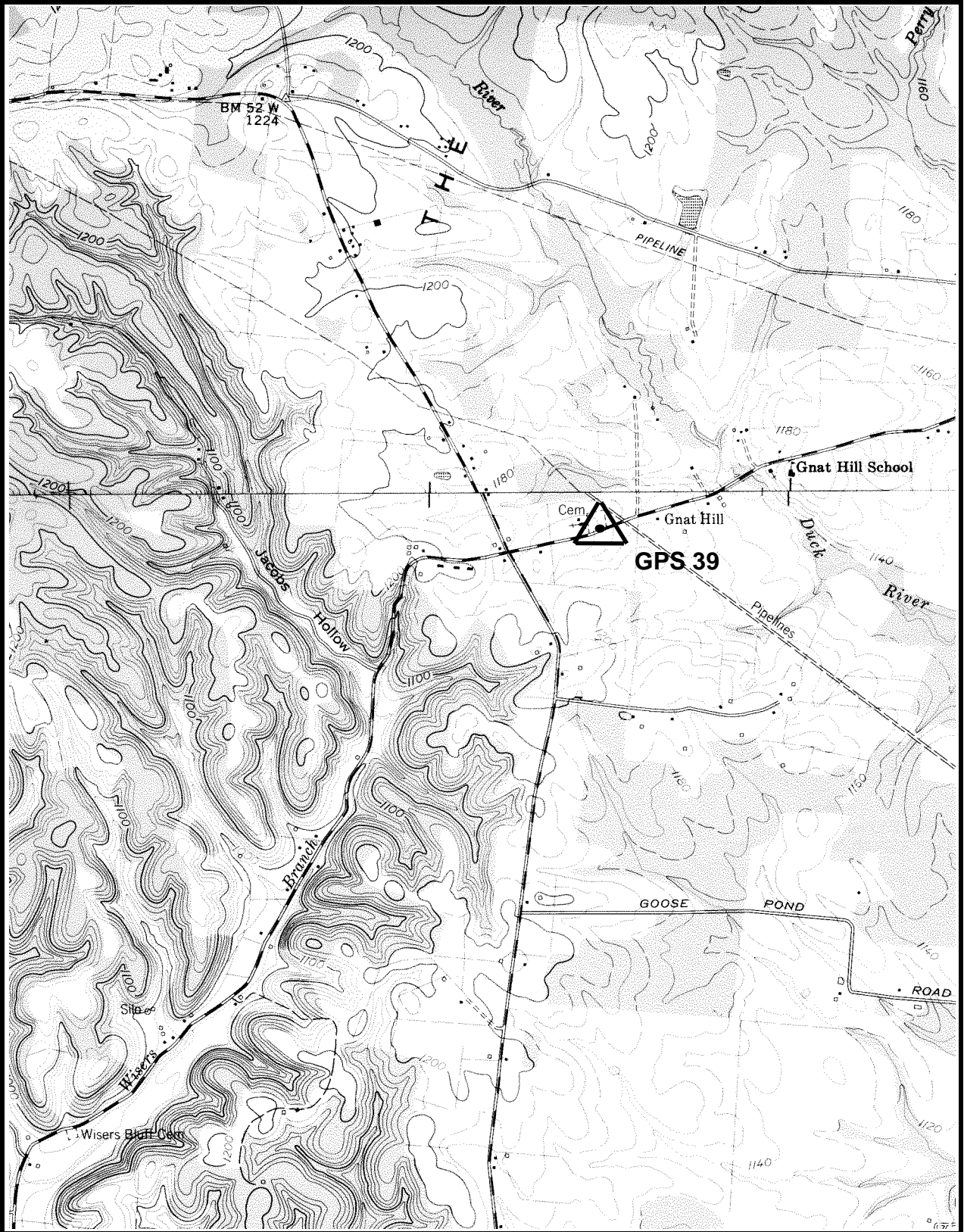


ELEVATION	<u>354.782 m (1,163.98 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 37' 25"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>86° 8' 31"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 39</u>	MAP SHEET	<u>85-SW, Noah</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:



**TENNESSEE GEODETIC REFERENCE NETWORK**



GPS 39

85-SW, NOAH

**GPS - 40**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 36' 39.00001"</b>	TN Northing:	<b>141893.566 m</b>
Longitude:	<b>86° 34' 50.78192"</b>	TN Easting:	<b>547381.950 m</b>
Elevation:	<b>213.024 m (698.90 ft)</b>		
Convergence:	<b>-0° 20' 24.0"</b>	Scale Factor:	<b>0.99995595</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Bedford</b>	Nearest Town:	<b>Unionville</b>
USGS QUAD:	<b>Unionville</b>	TVA Designation:	<b>71-SE</b>

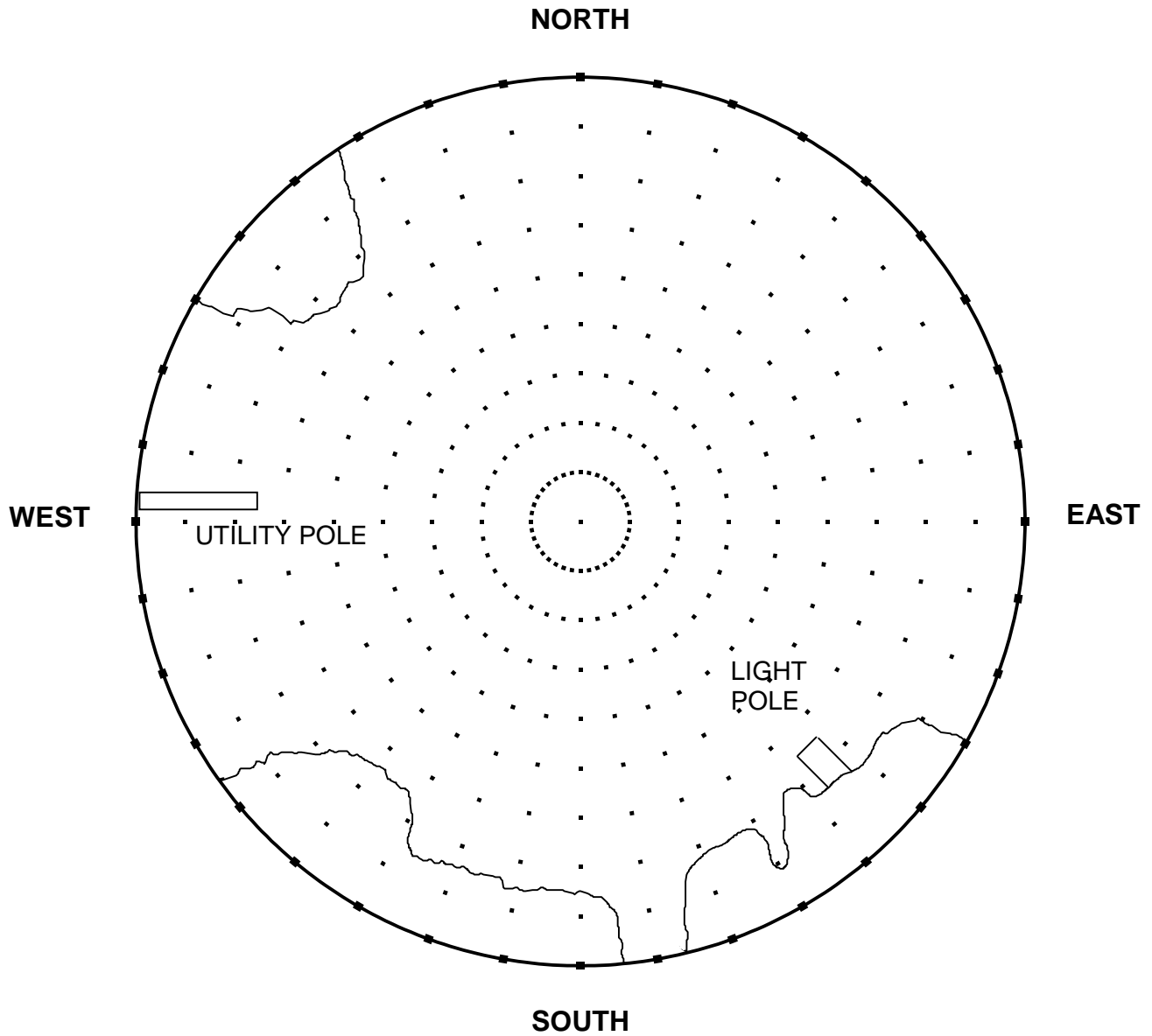
Description:

The station is located about 19.4 km (12 mi.) northwest of Shelbyville, 1.6 km (1 mi.) southeast of Unionville, on the northeast side of U.S. Highway 41A in a bedrock outcrop in the front lawn of the Community School of Unionville. Ownership--State of Tennessee.

To reach the station from the junction of U.S. Highway 41A and the Deason/Unionville Road about 1.6 km (1 mi.) southeast of Unionville go northwest for 0.08 km (0.05 mi.) on U.S. Highway 41A to the station on the right in a bedrock outcrop in the front lawn of the Community School of Unionville. The station is also 5.8 km (3.6 mi.) northwest of the intersection of State Route 270 and U.S. Highway 41A about 7.4 km (4.6 mi.) southeast of Unionville.

The station is a standard NGS disk stamped---GPS 40 1987---, set into a drill hole in bedrock outcrop measuring 0.46 m (1.5 ft.) by 0.30 m (1.0 ft.) projecting 0.06 m (0.2 ft.). Located 20.3 m (66.5 ft.) northwest from the south school entrance drive, 15.9 m (52 ft.) north-northwest from the northwest end of a culvert under the drive, 21.3 m (69.8 ft.) southeast from a power pole with a guy wire and a transformer, 13.7 m (45 ft.) northeast from the center of the highway and 0.46 m (1.5 ft.) above same. The station is found 0.7 m (2.3 ft.) south from the fiberglass witness post.

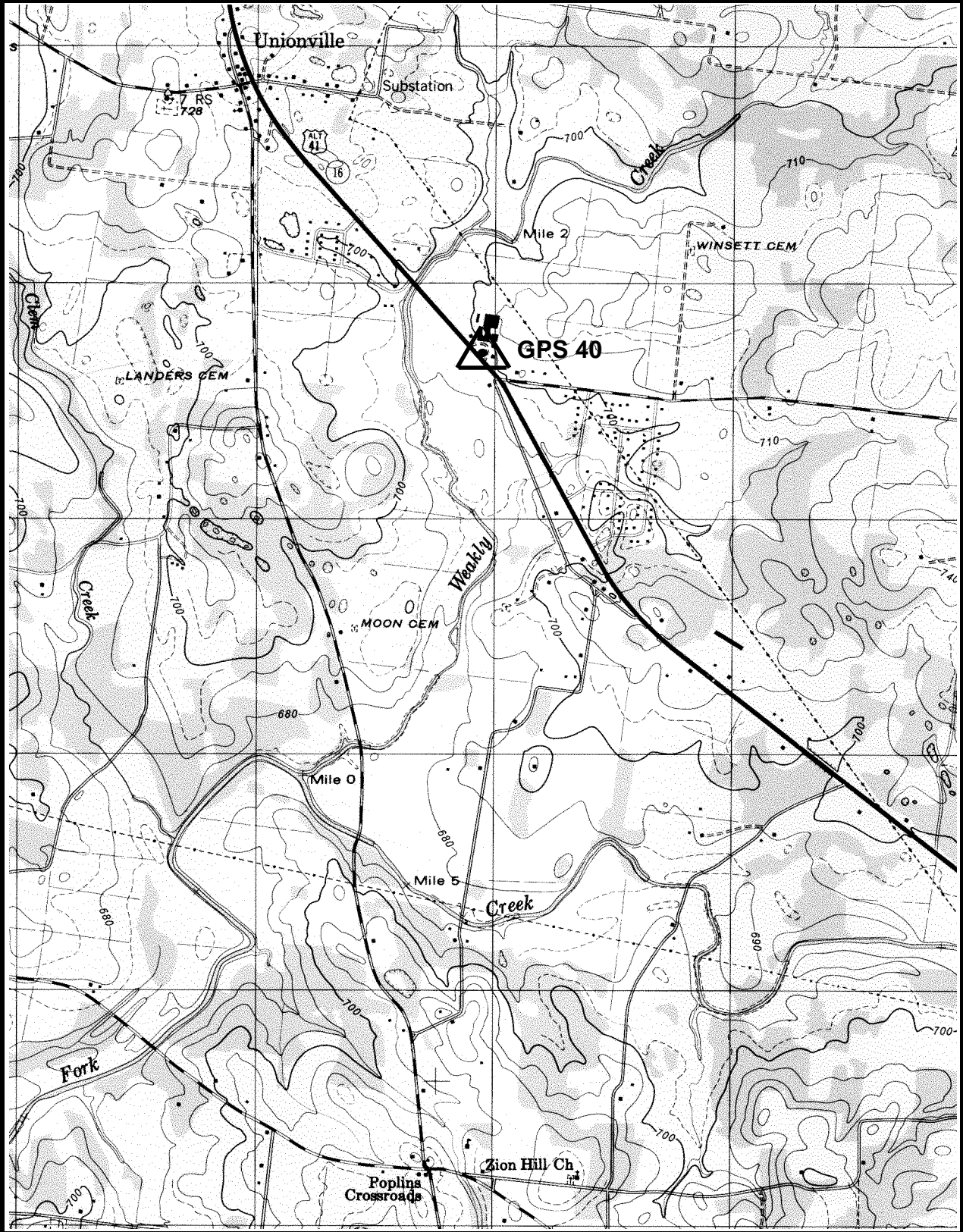
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>213.024 m (698.90 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 36' 39"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>86° 34' 51"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 40</u>	MAP SHEET	<u>71-SE, Unionville</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 40**

**71-SE, UNIONVILLE**

**GPS - 41**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 36' 50.00367"</b>	TN Northing:	<b>142615.670 m</b>
Longitude:	<b>87° 4' 45.27711"</b>	TN Easting:	<b>502225.601 m</b>
Elevation:	<b>196.620 m (645.08 ft)</b>		
Convergence:	<b>-0° 37' 54.6"</b>	Scale Factor:	<b>0.99995574</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Maury</b>	Nearest Town:	<b>Columbia</b>
USGS QUAD:	<b>Columbia</b>	TVA Designation:	<b>57-SE</b>

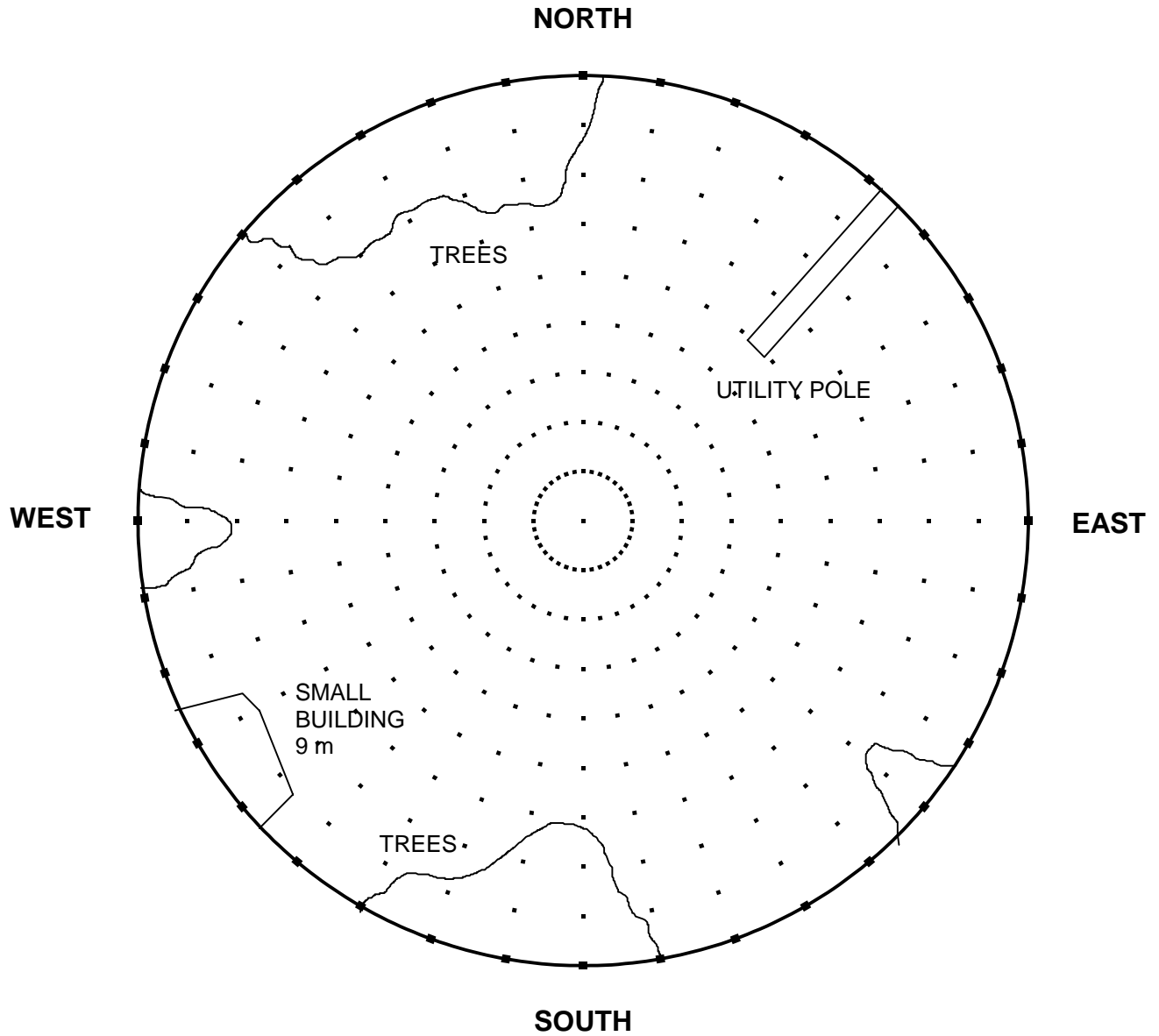
Description:

The station is located at the west edge of Columbia, at Central High School in the lawn at the southeast corner of the school property. Ownership--City of Columbia School District.

To reach the station from the junction of State Route 50 Bypass and U.S. Highway 243 near the county hospital at the southwest edge of Columbia go north for 0.8 km (0.5 mi.) on State Route 50 to the junction of New Experiment Road (Lion Parkway). Turn left and go northwest for 1.13 km (0.7 mi.) on New Experiment Road (Lion Parkway) to the station on the left.

The station is 3-D mark with stainless steel rod driven 11.9 m (39 ft.). The logo cap is stamped--GPS 41 1987---, and a steel spike is embedded in the concrete. Located 30.8 m (101 ft.) west from the center of the road and level with the same, 8.9 m (29.1 ft.) east-northeast from the northeast corner of a small wooden building with brick foundation, 52.1 m (171 ft.) east-southeast from the southeast corner of a one story section of the school, 19.8 m (65 ft.) northeast from the northeast corner of a parking lot, 9.8 m (32 ft.) southwest from a utility pole with a street light, 12.0 m (39.5 ft.) west from the center of a 0.8 m (2.5 ft.) storm drain grate. The station has no witness post.

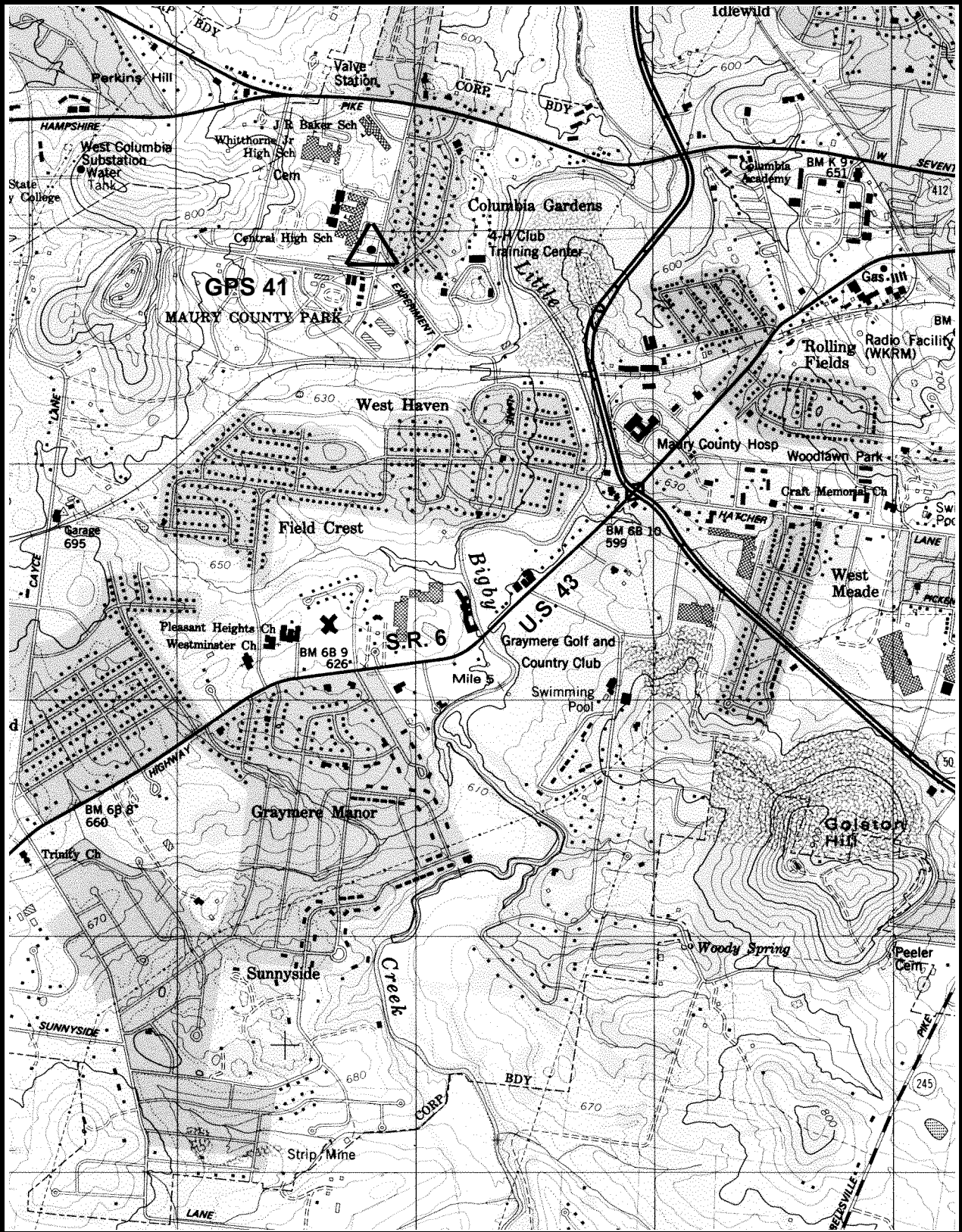
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>196.620 m (645.08 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 36' 50"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>87° 4' 45"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 41</u>	MAP SHEET	<u>57-SE, Columbia</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 41

57-SE, COLUMBIA

**GPS - 42**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 34' 35.65475"</b>	TN Northing:	<b>138882.974 m</b>
Longitude:	<b>87° 25' 47.83248"</b>	TN Easting:	<b>470394.430 m</b>
Elevation:	<b>186.739 m (612.66 ft)</b>		
Convergence:	<b>-0° 50' 13.7"</b>	Scale Factor:	<b>0.99995844</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Lewis</b>	Nearest Town:	<b>Hohenwald</b>
USGS QUAD:	<b>Gordonsburg</b>	TVA Designation:	<b>50-SW</b>

Description:

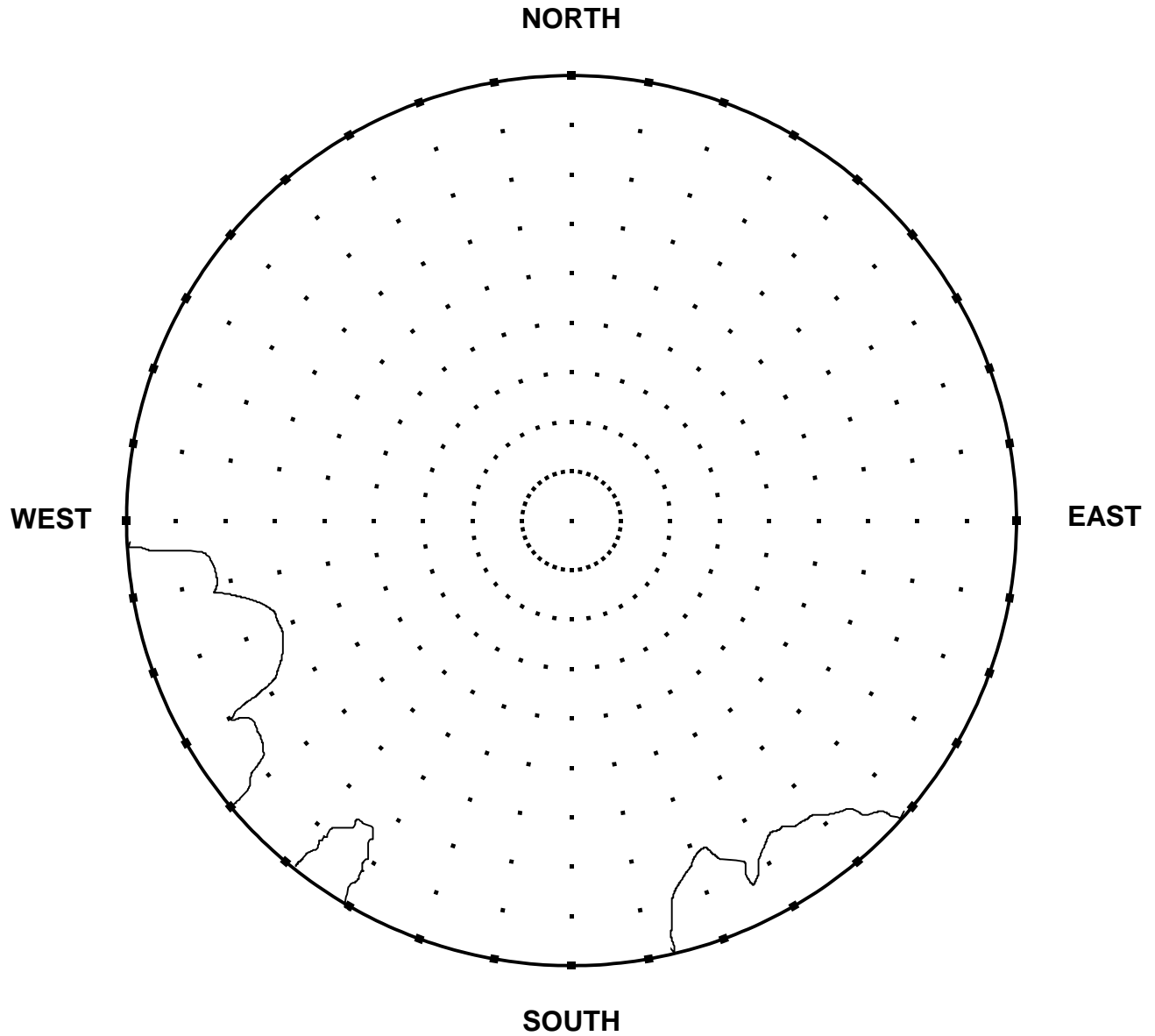
The station is located about 48.4 km (27 mi.) west of Columbia, 12.9 km (8 mi.) east of Hohenwald, at the junction of U.S. Highway 412/State Route 99 and the entrance to the Natchez Trace Parkway. Ownership-- Road Right-of-Way.

The station is located at the junction of U.S. Highway 412/State Route 99 and the entrance to the Natchez Trace Parkway, 0.3 km (0.2 mi.) east of the parkway overpass bridge, in the west angle of the junction.

The station is a 3-D mark with stainless steel rod driven 3.7 m (12 ft.). The logo cap is stamped---GPS 42 1987---, and a steel spike is embedded in the concrete. Located 32.6 m (107 ft.) southwest from the center of State Route 99 (also known as U.S. Highway 421) and 0.9 m (3 ft.) below same, 36.0 m (118 ft.) northwest from the south corner of a triangular grass median, 8.2 m (27 ft. ) south from the northwest end of a culvert headwall, 9.60 m (31.5 ft.) west from the east edge of pavement of the entrance ramp, 5.1 m (16.7 ft.) southwest from witness post.



# STATION VISIBILITY DIAGRAM



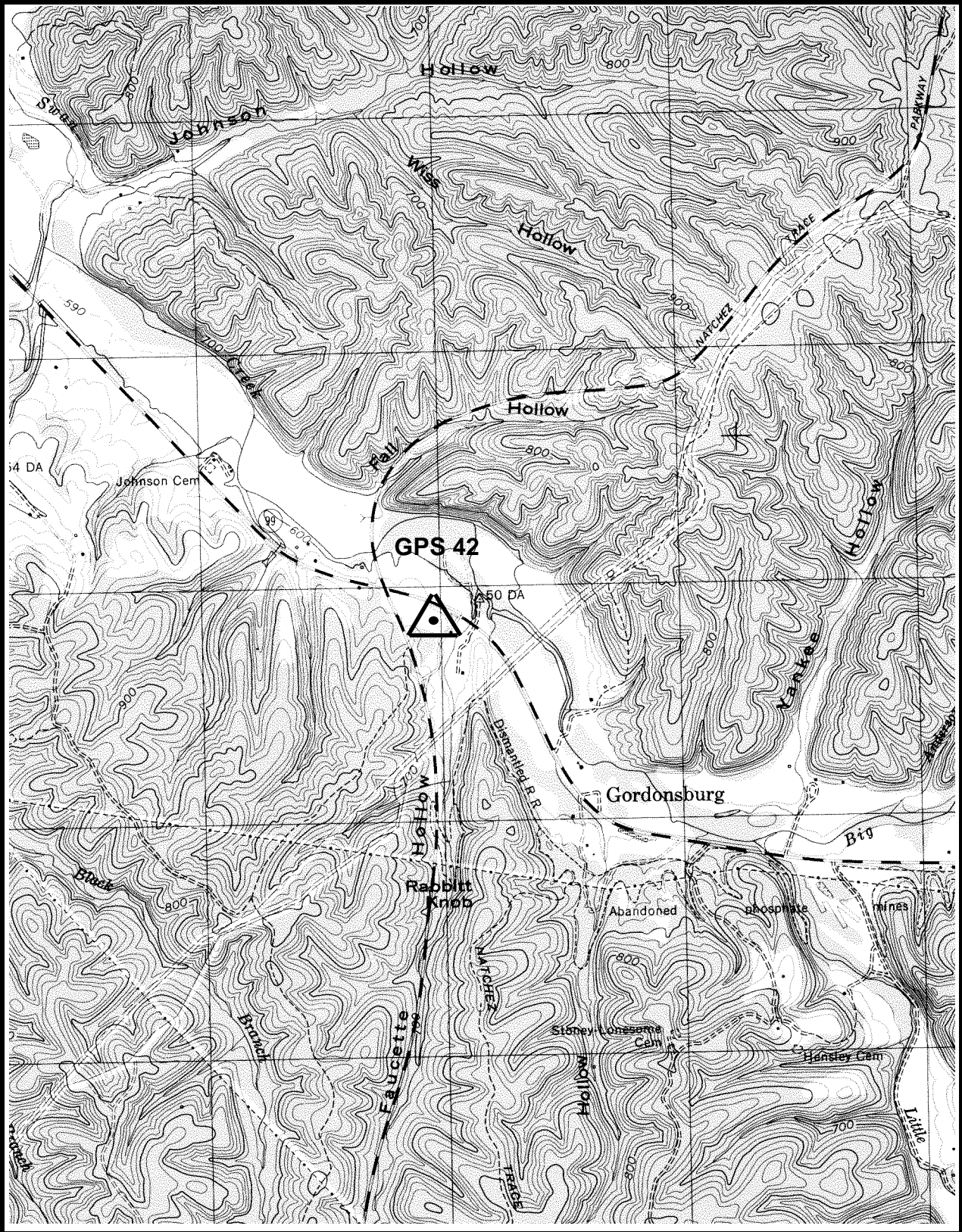
ELEVATION 186.739 m (612.66 ft)  
LATITUDE 35° 34' 36"  
LONGITUDE 87° 25' 48"  
STATION NAME GPS 42

DATE July 1997  
ORGANIZATION TDOT  
MAP SCALE 7 1/2' USGS  
MAP SHEET 50-SW, Gordonsburg  
OBSERVER CLJ

Observer's height 6'

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



GPS 42

50-SW, GORDONSBURG

**GPS - 43**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 37' 0.11024"</b>	TN Northing:	<b>143948.562 m</b>
Longitude:	<b>87° 50' 10.44976"</b>	TN Easting:	<b>433657.882 m</b>
Elevation:	<b>169.531 m (556.20 ft)</b>		
Convergence:	<b>-1° 4' 30.0"</b>	Scale Factor:	<b>0.99995556</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Perry</b>	Nearest Town:	<b>Linden</b>
USGS QUAD:	<b>Linden</b>	TVA Designation:	<b>32-SE</b>

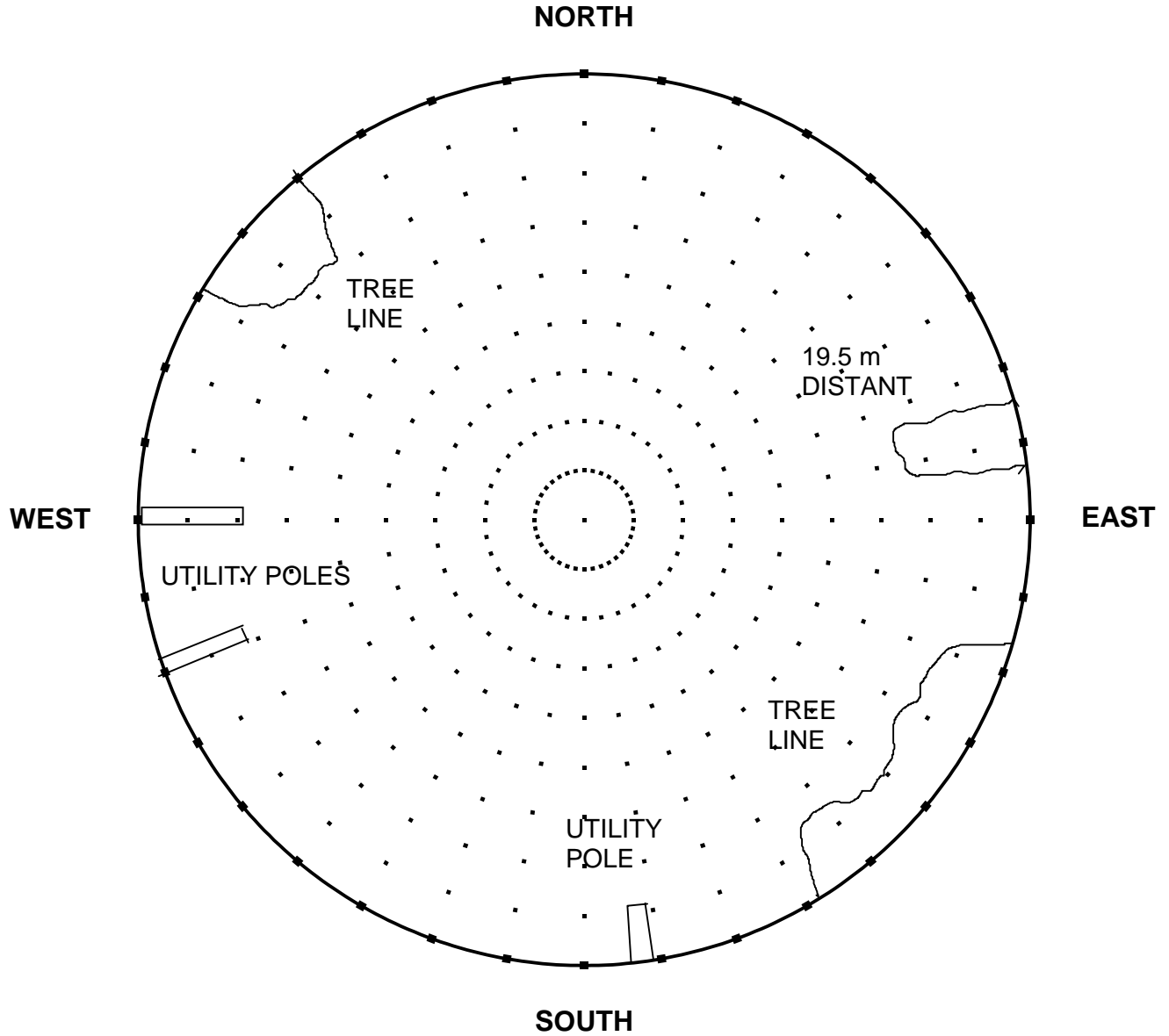
Description:

The station is located in Linden, in front of the Meriwether Lewis Electric Cooperative Office, in a triangular lawn on the south side of Main Street. Ownership--Meriwether Lewis Electric Cooperative.

To reach the station from the Courthouse in Linden go east for 0.16 km (0.1 mi.) on U.S. Highway 412/State Route 20 and State Route 100 (Main St.) to the station on the right.

The station is a 3-D mark with stainless steel rod driven 4.6 m (15 ft.). The logo cap is stamped--GPS 43 1987---, and a steel spike is embedded in the concrete. Located 13.7 m (45 ft.) south-southeast from the center of Main Street and 0.9 m (3 ft.) above same, 21.9 m (72 ft.) west from the center of Polk Street, 21.6 m (71 ft.) east from the center of Oak Street, 19.5 m (64 ft.) west from a 350 mm (14 in.) walnut tree, 22.9 m (75 ft.) north-northwest from the northeast corner of the Linden City Hall, 1.65 m (5.4 ft.) north from a curb at the north edge of the parking lot. The station has no witness post.

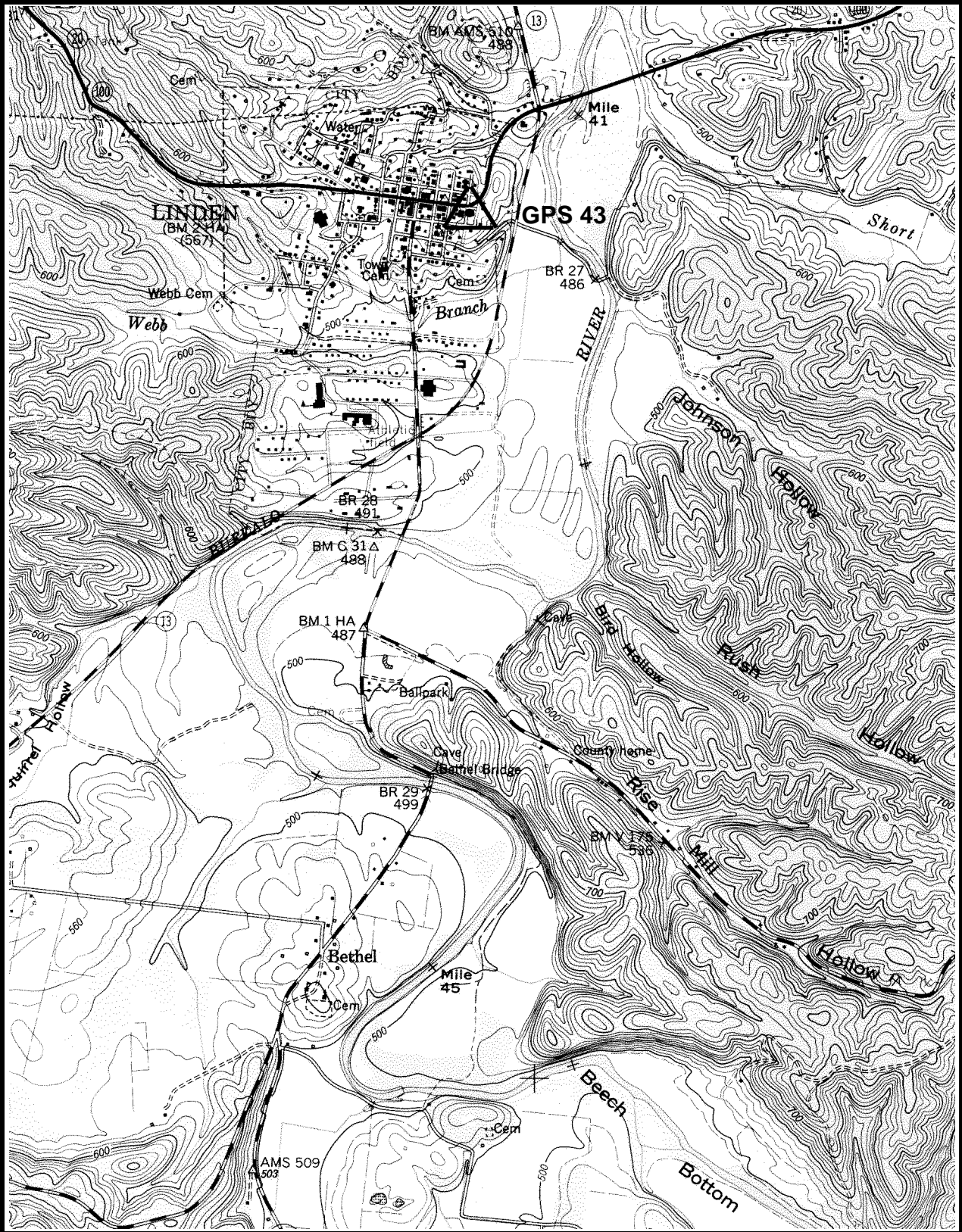
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>169.531 m (556.20 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 37' 0"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>87° 50' 10"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 43</u>	MAP SHEET	<u>32-SE, Linden</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 43

32-SE, LINDEN

**GPS - 44**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 39' 16.41539"</b>	TN Northing:	<b>149210.603 m</b>
Longitude:	<b>88° 22' 50.45988"</b>	TN Easting:	<b>384447.938 m</b>
Elevation:	<b>156.752 m (514.28 ft)</b>		
Convergence:	<b>-1° 23' 37.5"</b>	Scale Factor:	<b>0.99995328</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Henderson</b>	Nearest Town:	<b>Lexington</b>
USGS QUAD:	<b>Lexington</b>	TVA Designation:	<b>11-NW</b>

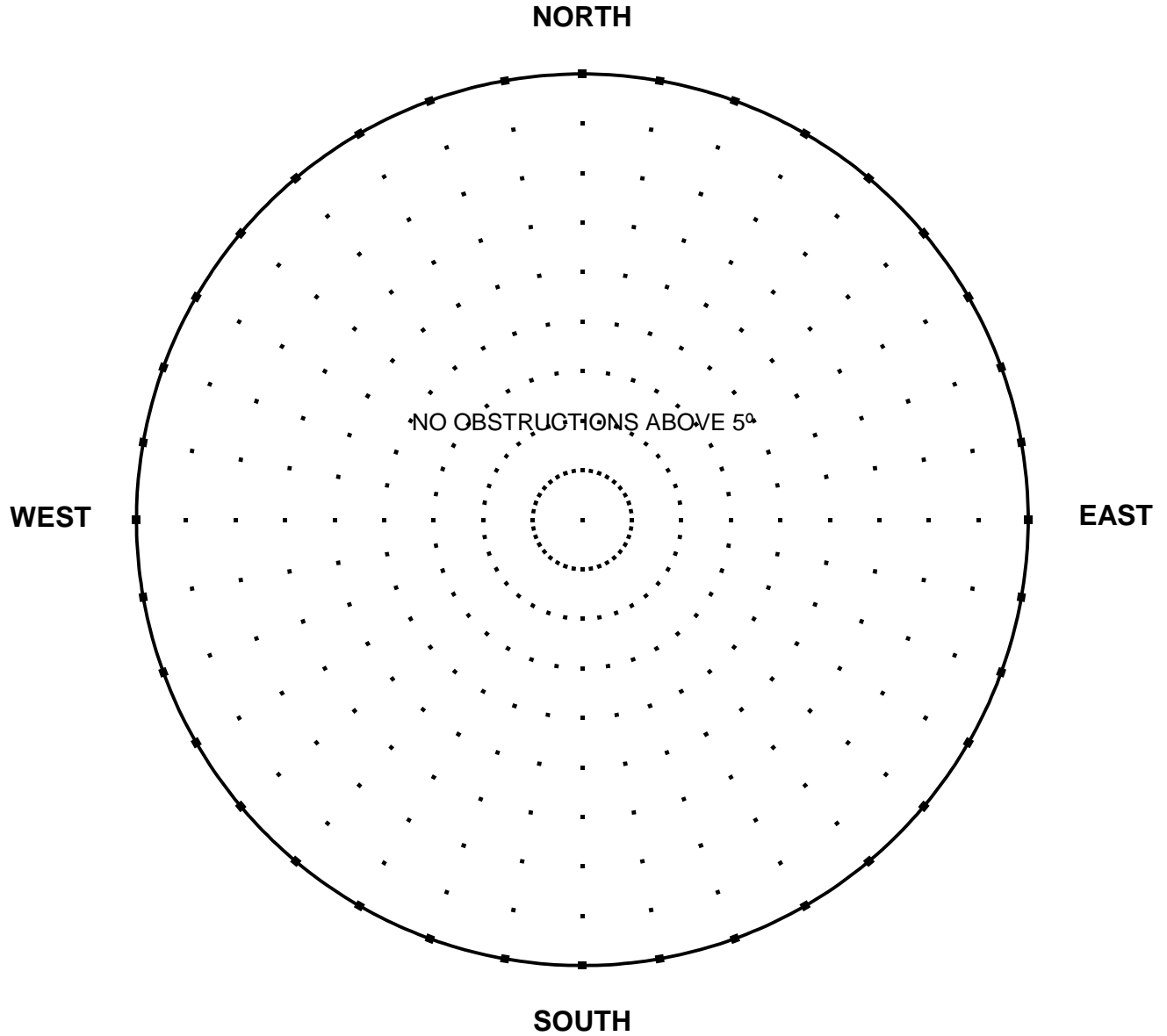
Description:

The station is located about 1.6 km (1 mi.) northeast of Lexington, at the Lexington/Franklin Wilkins Airport, 0.16 km (0.1 mi.) east of the airport office at the junction of the taxiway and the paved runway. Ownership-- Airport Manager is R. V. Woods, office telephone (901) 968-3666/8641, home telephone (901) 968-7730. Assistant Manager is Bill Meal. The airport is locked at night.

To reach the station from the junction of U.S. Highway 412/State Route 20 and State Route 22 in Lexington go east for 0.16 km (0.1 mi.) on U.S. Highway 412/State Route 20 to the junction of State Route 114. Turn left and go north for 1.13 km (0.7 mi.) on State Route 114 to the airport entrance drive on the right. Turn right and go south for 0.32 km (0.2 mi.) on the airport entrance drive to the airport office and the station located 0.16 km (0.1 mi.) east of the airport office at the junction of the taxiway and the paved runway.

The station is a 3-D mark with stainless steel rod driven 5.5 m (18 ft.). The logo cap is stamped---GPS 44 1987---, and a steel spike is embedded in the concrete. Located on the line with the northwest edge of the turf runway, 26.8 m (88 ft.) south-southwest from the center of the paved runway and 0.3 m (1 ft.) below same, 17.4 m (57 ft.) south-southeast from the taxiway center, 42.7 m (140 ft.) southeast from a strobe, 0.5 m (1.5 ft.) northeast from a fiberglass witness post.

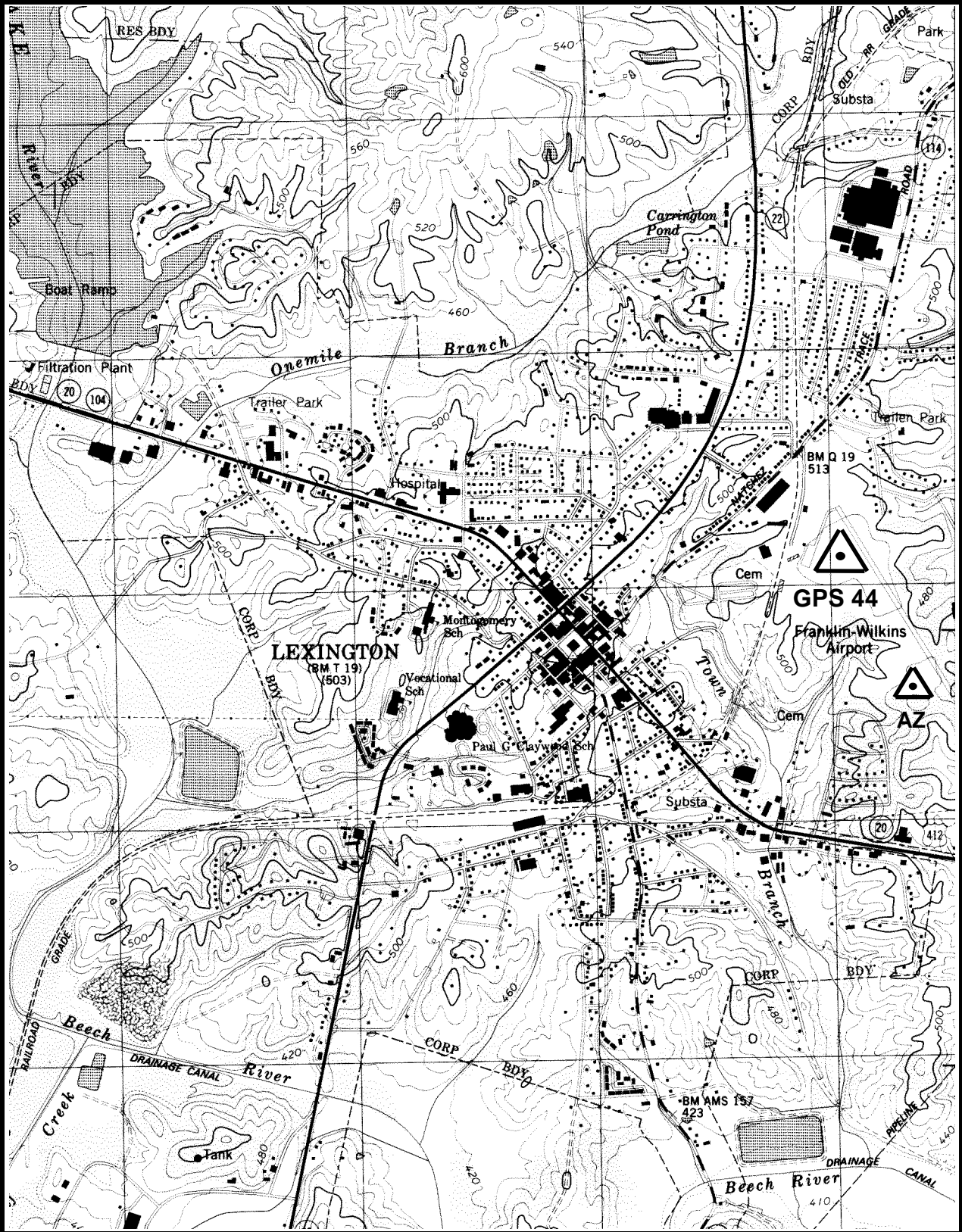
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>156.752 m (514.28 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 39' 16"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>88° 22' 50"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 44</u>	MAP SHEET	<u>11-NW, Lexington</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 44

11-NW, LEXINGTON



**GPS - 44 AZ MK**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 38' 58.17983"</b>	TN Northing:	<b>148640.405 m</b>
Longitude:	<b>88° 22' 36.77236"</b>	TN Easting:	<b>384778.472 m</b>
Elevation:	<b>155.489 m* (510.13 ft)</b>		
Convergence:	<b>-1° 23' 29.5"</b>	Scale Factor:	<b>0.99995356</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Henderson</b>	Nearest Town:	<b>Lexington</b>
USGS QUAD:	<b>Lexington</b>	TVA Designation:	<b>11-NW</b>

Description:

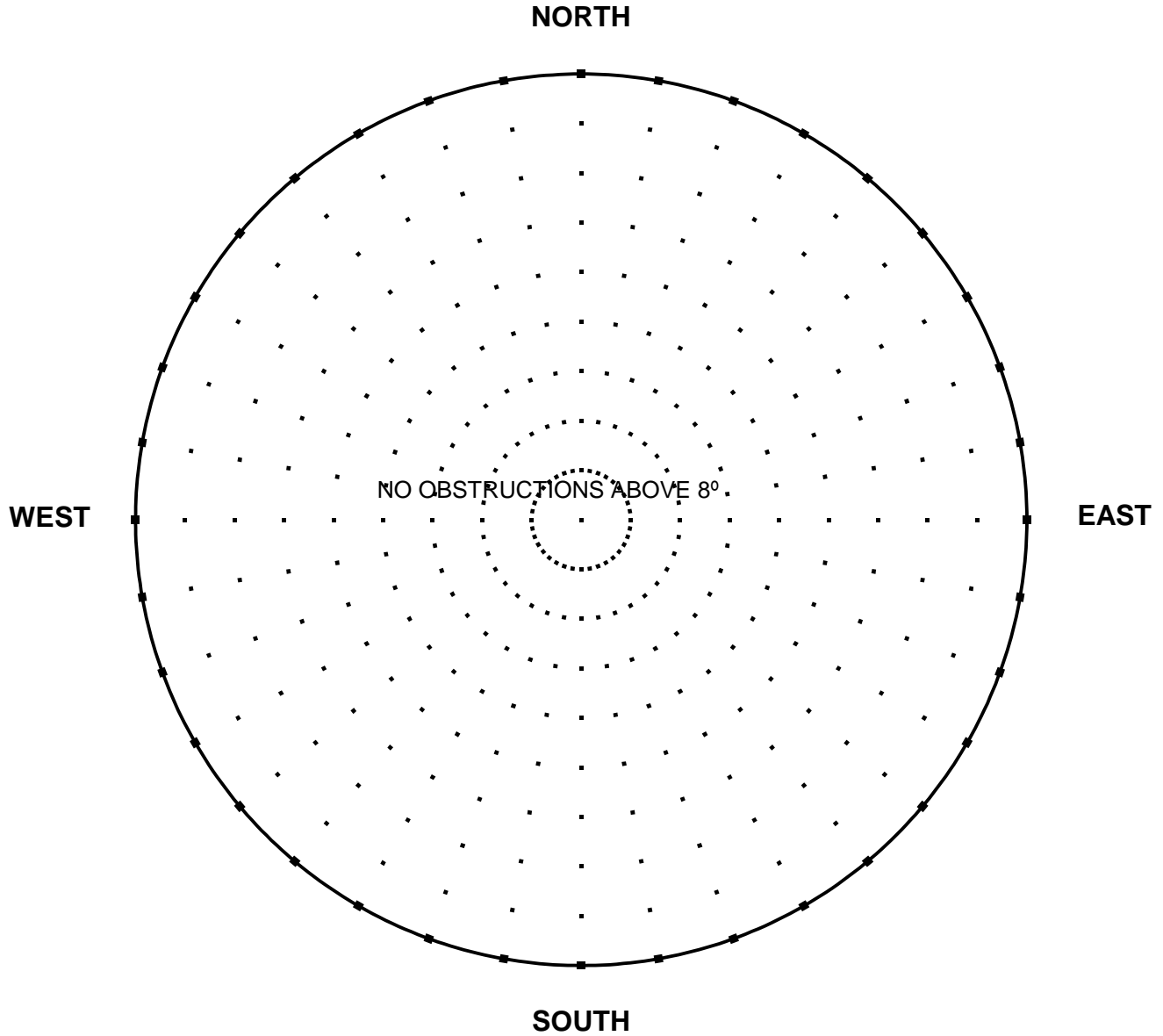
The azimuth mark is located about 1.6 km (1 mi.) northeast of Lexington, at the Lexington/Franklin Wilkins Airport. Ownership-- Airport Manager is R. V. Woods, office telephone (901) 968-3666/8641, home telephone (901) 968-7730. Assistant Manager is Bill Meals, home telephone (901) 968-7759. The airport is locked at night.

To reach the azimuth mark from the junction of U.S. Highway 412/State Route 20 and State Route 22 in Lexington go east for 0.16 km (0.1 mi.) on U.S. Highway 412/State Route 20 to the junction of State Route 114. Turn left and go north for 1.13 km (0.7 mi.) on State Route 114 to the airport entrance drive on the right. Turn right and go south for 0.32 km (0.2 mi.) on the airport entrance drive to the airport office. Then go northeast along the taxiway 0.16 km (0.1 mi.) to the junction of the runway, turn right and go 0.65 km (0.4 mi.) northeast along the southwest side of the runway to the mark on the right.

The azimuth mark is a 3-D mark with stainless steel rod driven 6.4 m (21 ft.). The logo cap is stamped---GPS 44 AZ MK 1987---, and a steel rebar is embedded in the concrete. Located across the runway from a National Guard building (visible only in the fall and winter), 13.4 m (43.8 ft.) southwest of the southwest edge of the runway, 10.1 m (33 ft.) southwest of the 12<sup>th</sup> white run light from the junction of taxiway and runway 0.6 km (0.4 mi.), and 0.3 m (1 ft.) east of a fiberglass witness post.

\* GPS derived elevation using the Geoid 96 Model and the WGS 1984 Reference Ellipsoid.

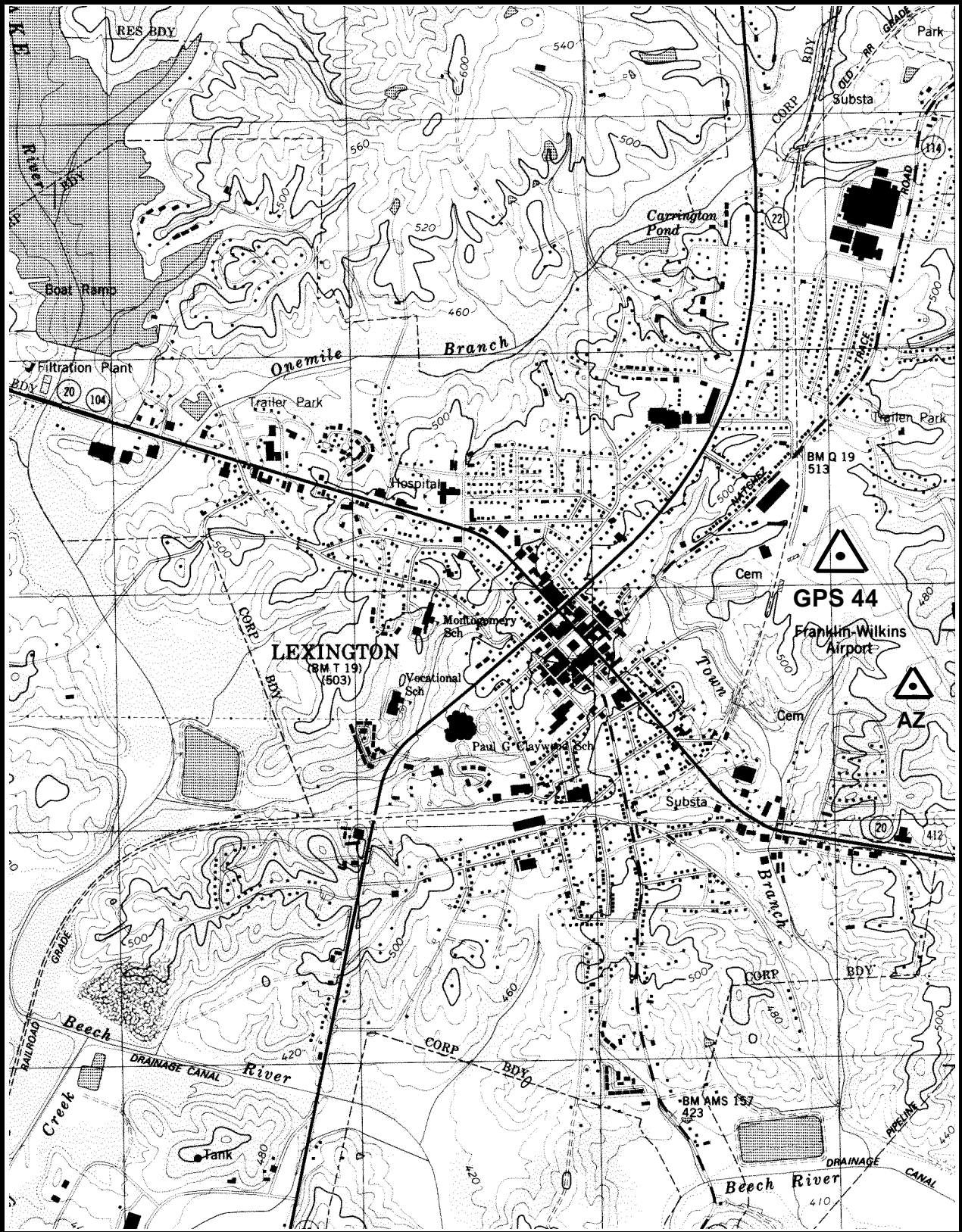
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>155.489 m (510.13 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 38' 58"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>88° 22' 37"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 44 AZ MK</u>	MAP SHEET	<u>11-NW, Lexington</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 44

11-NW, LEXINGTON

**GPS - 45**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 34' 11.15853"</b>	TN Northing:	<b>140838.947 m</b>
Longitude:	<b>88° 48' 37.73490"</b>	TN Easting:	<b>345272.828 m</b>
Elevation:	<b>120.443 m (395.15 ft)</b>		
Convergence:	<b>-1° 38' 43.3"</b>	Scale Factor:	<b>0.99995898</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Madison</b>	Nearest Town:	<b>Jackson</b>
USGS QUAD:	<b>Jackson South</b>	TVA Designation:	<b>438-SE</b>

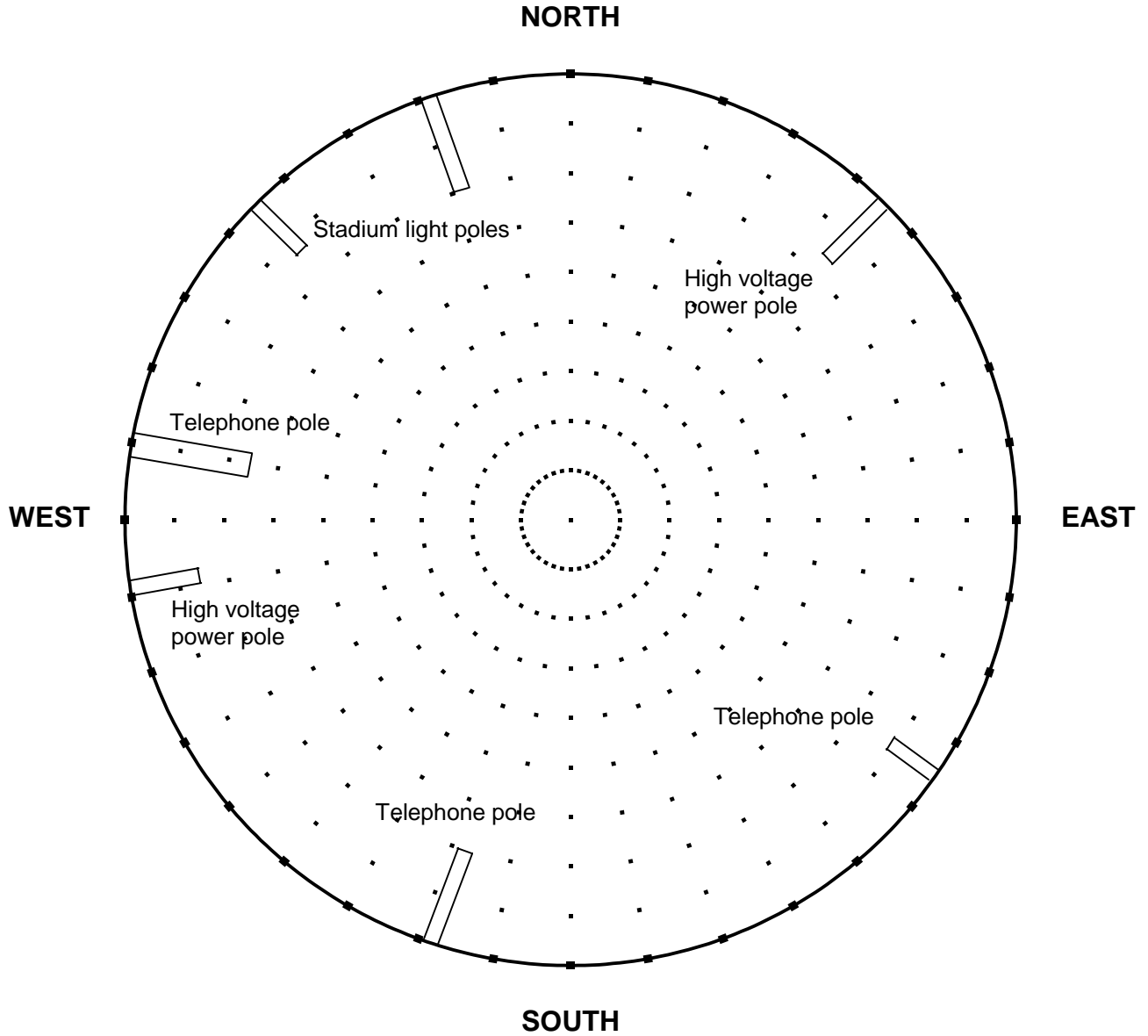
Description:

The station is located about 4.8 km (3 mi.) south of Jackson, on the property of the South Side High School just south of the stadium. Ownership--station is on school property and is accessible at all times with no prior arrangements needed.

To reach the station from the Courthouse in Jackson go south for 5.2 km (3.2 mi.) on U.S. Highway 45/State Route 5 to the junction of Harts Bridge Road. Turn left and go east for 0.48 km (0.3 mi.) on Harts Bridge Road to the station on the left.

The station is a 3-D mark with stainless steel rod driven 25.9 m (85 ft.). The logo cap is stamped---GPS 45 1987---, and a steel spike is embedded in the concrete. Located 67.21 m (220.5 ft.) southeast from the southeast corner of the grandstand, 73.2 m (240 ft.) east from the junction of a high voltage power line and the road, 9.8 m (32 ft.) north from the road center and 0.6 m (2 ft.) below same, 1.65 m (5.4 ft.) northwest of the southwest corner of a 1.8 m (6 ft.) fence, 20.6 m (68 ft.) south of a utility pole across the street, 19.66 m (64.5 ft.) east from a utility pole numbered 88, 1.1 m (3.5 ft.) west from a fiberglass witness post at a 1.8 m (6 ft.) wire mesh fence.

# STATION VISIBILITY DIAGRAM

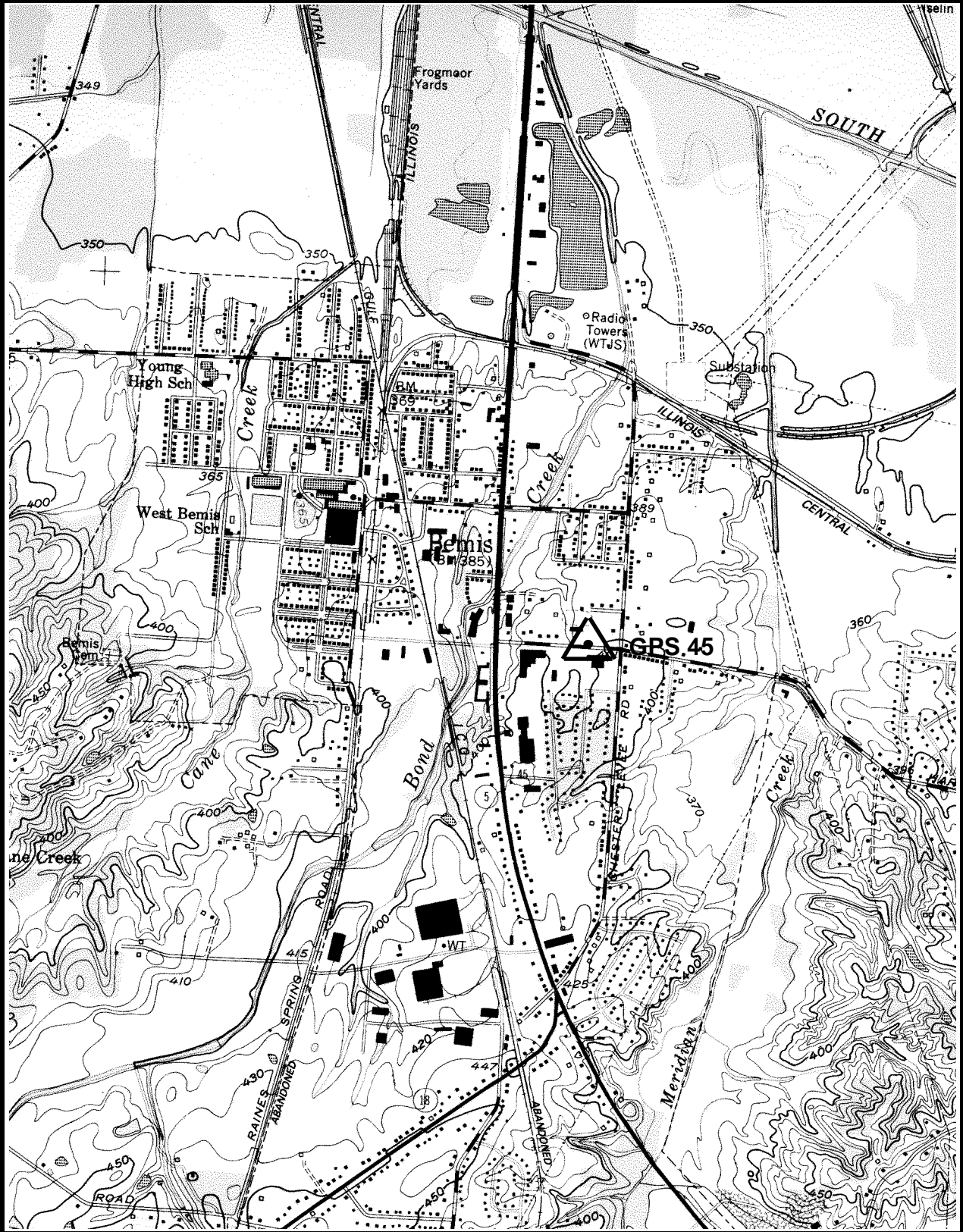


ELEVATION 120.443 m (395.15 ft)  
 LATITUDE 35° 34' 11"  
 LONGITUDE 88° 48' 38"  
 STATION NAME GPS 45

DATE July 1997  
 ORGANIZATION TDOT  
 MAP SCALE 7 1/2' USGS  
 MAP SHEET 438-SE, Jackson South  
 OBSERVER CLJ

Observer's height 6'

NOTES:



GPS 45

438-SE, JACKSON SOUTH

**GPS - 46**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 32' 25.93758"</b>	TN Northing:	<b>138799.476 m</b>
Longitude:	<b>89° 14' 21.79851"</b>	TN Easting:	<b>306304.956 m</b>
Elevation:	<b>116.327 m (381.65 ft)</b>		
Convergence:	<b>-1° 53' 47.3"</b>	Scale Factor:	<b>0.99996145</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Haywood</b>	Nearest Town:	<b>Brownsville</b>
USGS QUAD:	<b>Sunnyhill</b>	TVA Designation:	<b>430-SW</b>

Description:

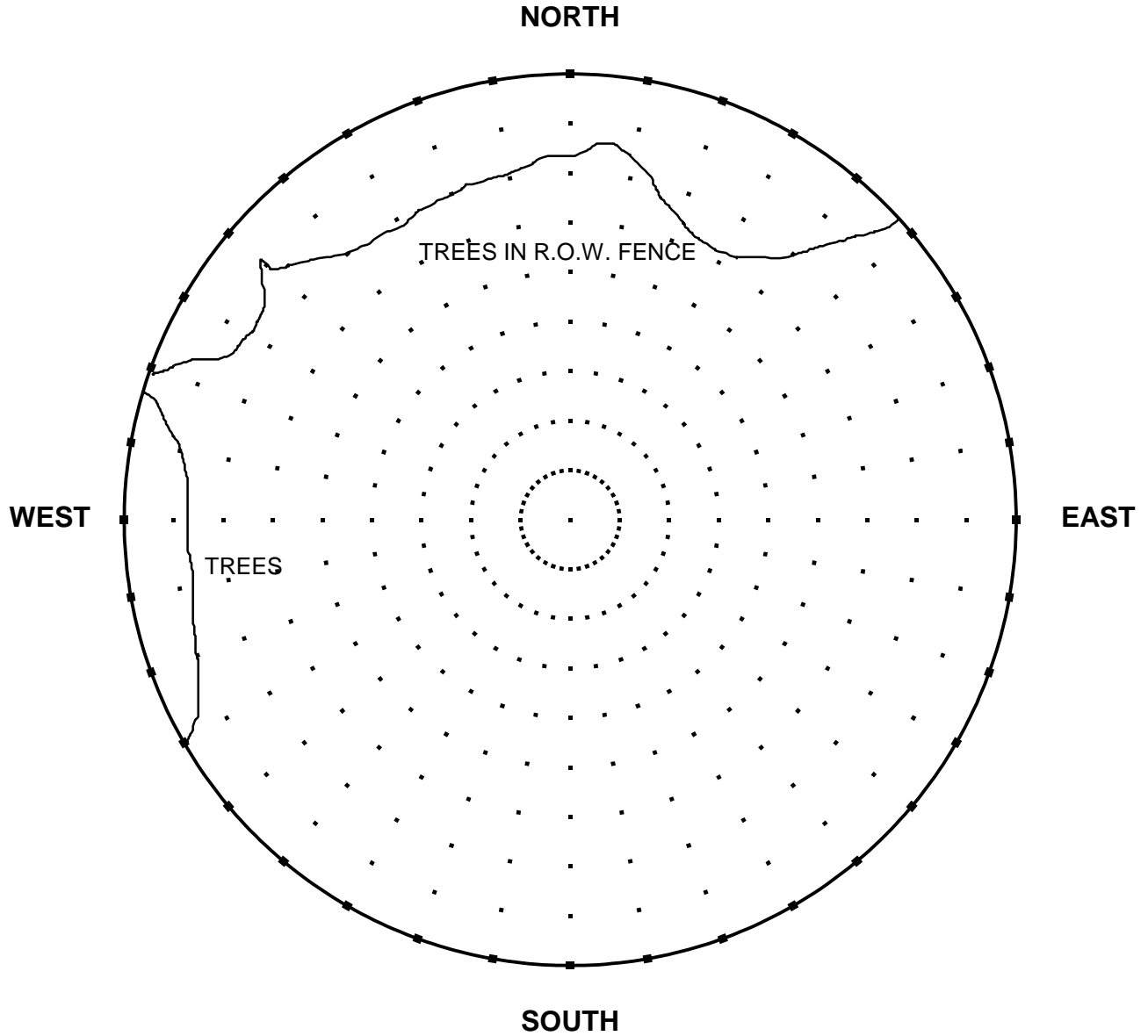
The station is located about 6.4 km (4 mi.) south-southeast of Brownsville on the north right-of-way of Interstate 40, 0.8 km (0.5 mi.) east-northeast of the junction of Interstate 40 and State Route 76 (Exit 56). Ownership--Federal Right-of-Way.

To reach the station from the junction of Interstate 40 and State Route 76 (Exit 56) about 6.4 km (4 mi.) south-southeast of Brownsville go east for 0.8 km (0.5 mi.) on Interstate 40 to the station on the left.

To reach the station from the junction of Interstate 40 and State Route 19 (Exit 60) about 8.1 km (5 mi.) southeast of Brownsville go west 5.0 km (3.1 mi.) on Interstate 40 to the station on the right.

The station is a 3-D mark with stainless steel rod driven 7.3 m (24 ft.). The logo cap is stamped---GPS 46 1987---, and a steel spike is embedded in the concrete. Located 39.8 m (130.5 ft.) northeast from a mile marker numbered 57, 15.6 m (51.1 ft.) north-northwest from the north edge of the concrete pavement of the travel lane and 0.9 m (3 ft.) above same, 10.2 m (33.5 ft.) south-southeast from a fiberglass witness post at the north right-of-way fence.

# STATION VISIBILITY DIAGRAM

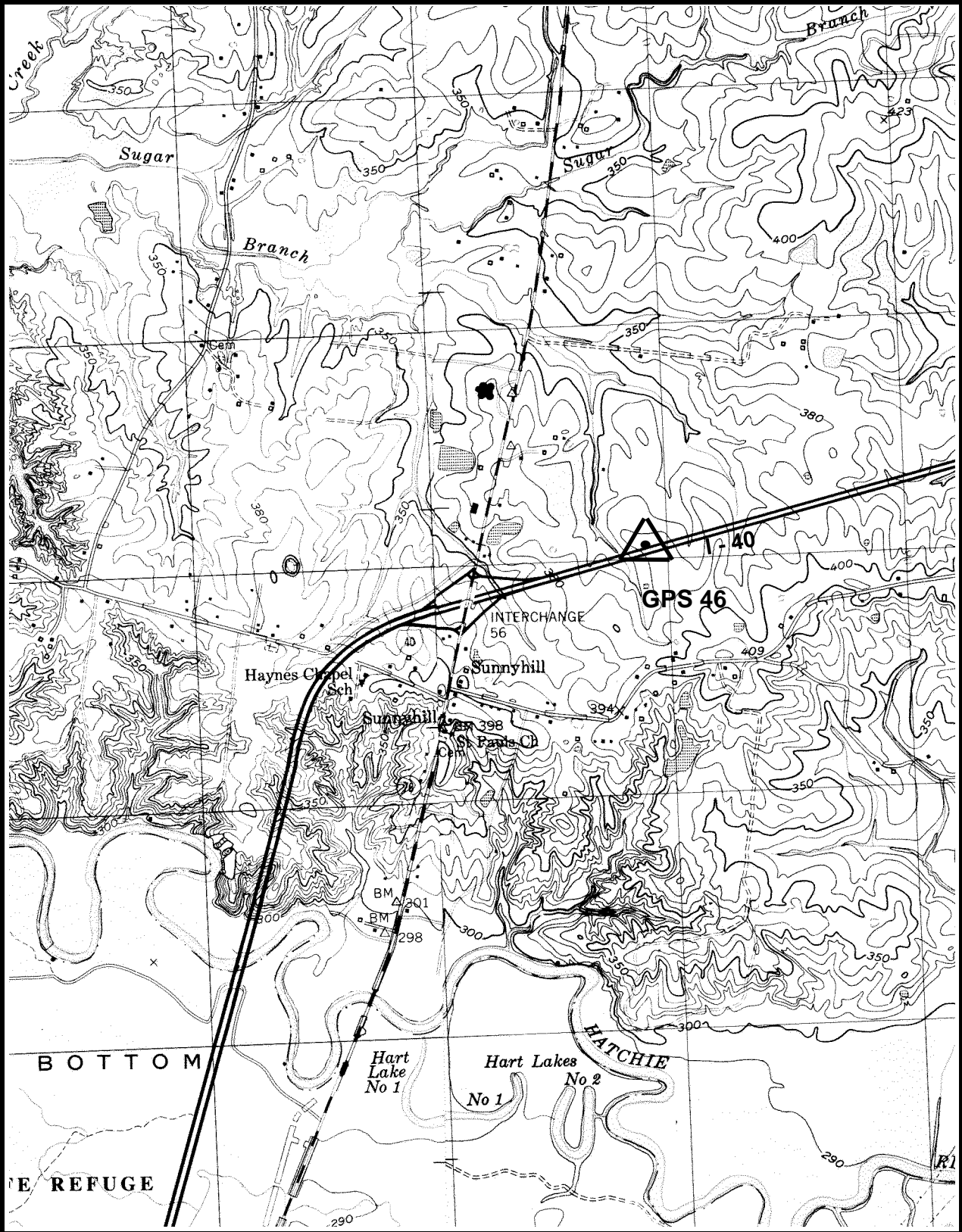


ELEVATION	<u>116.327 m (381.65 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 32' 26"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>89° 14' 22"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 46</u>	MAP SHEET	<u>430-SW, Sunnyhill</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:



TENNESSEE GEODETIC REFERENCE NETWORK



GPS 46

430-SW, SUNNYHILL

**GPS - 47**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 35' 23.72751"</b>	TN Northing:	<b>145369.229 m</b>
Longitude:	<b>89° 35' 7.90381"</b>	TN Easting:	<b>275136.637 m</b>
Elevation:	<b>82.256 m (269.87 ft)</b>		
Convergence:	<b>-2° 5' 56.8"</b>	Scale Factor:	<b>0.99995743</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Tipton</b>	Nearest Town:	<b>Covington</b>
USGS QUAD:	<b>Gift</b>	TVA Designation:	<b>414-SE</b>

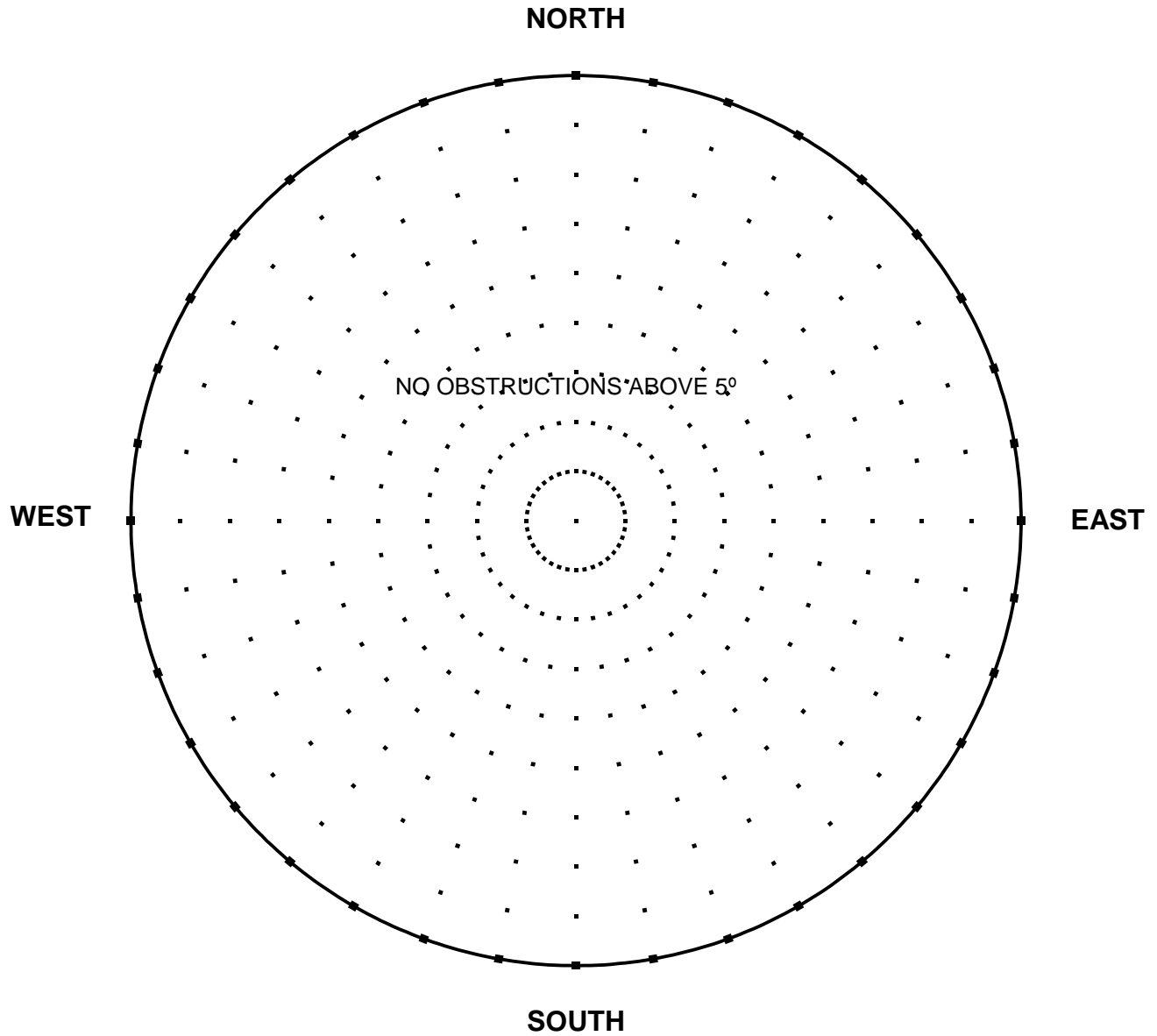
Description:

The station is located about 4.8 km (3 mi.) northeast of Covington, on the Covington Municipal Airport 106.7 m (350 ft.) west of the airport office and at the north end of the runway. Ownership--Airport Manager is Dave Peeler or Wilson Faught, telephone (901) 476-1392. The airport is not locked after dark, however use after working hours should be cleared with the Airport Manager. Access to the field is north of the brick office building between the office and a metal hangar.

To reach the station from the courthouse in Covington go east on State Route 59 (Liberty St.) 0.24 km (0.15 mi.) to the junction of U.S. Highway 51 and State Route 59. Turn right and go north for 1.78 km (1.1 mi.) on U.S. Highway 51 to the junction of State Route 384. Continue straight ahead and go north for 2.25 km (1.4 mi.) on U.S. Highway 51 to the junction of County Road 8391 (Antioch Road). Turn right and go east for 4.51 km (2.8 mi.) on County Road 8391 to the airport. Turn right and go south for 0.16 km (0.1 mi.) on the airport property to the airport office, a one story brick building and the station.

The station is a 3-D mark with stainless steel rod driven 18.0 m (59 ft.). The logo cap is stamped---GPS 47 1987---, and a steel spike is embedded in the concrete. Located 37.2 m (122 ft.) east from the runway center and 0.6 m (2 ft.) below same, 23.5 m (77 ft.) west from the taxiway center, 13.7 m (45 ft.) south from the center of the taxiway crossover, 29.3 m (96 ft.) south from a strobe, 2.2 m (7 ft.) northwest of the center of a culvert headwall, 1.6 m (5.2 ft.) northwest from a fiberglass witness post set at the west end of a culvert headwall.

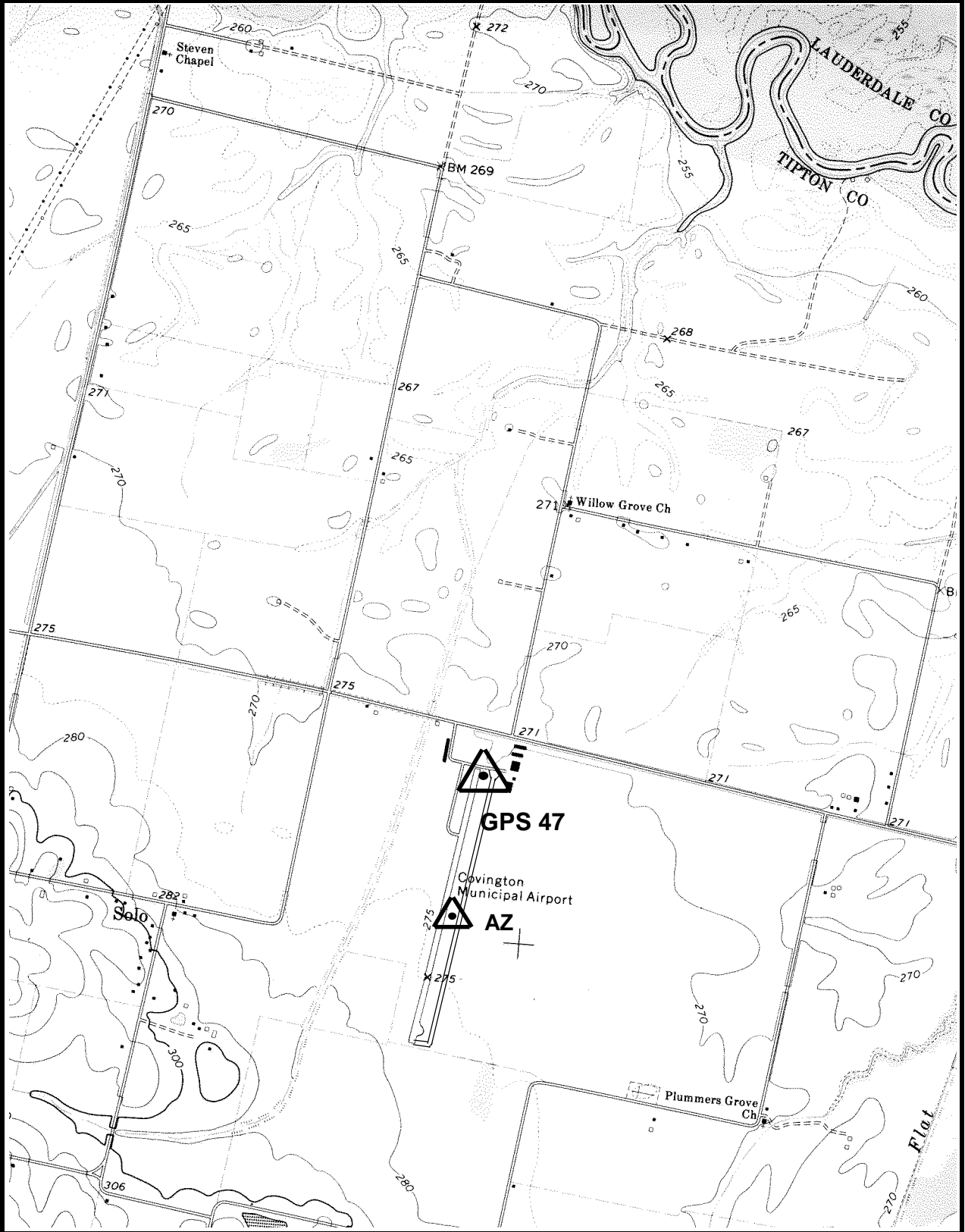
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>82.256 m (269.87 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 35' 24"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>89° 35' 8"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 47</u>	MAP SHEET	<u>414-SE, Gift</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 47**

**414-SE, GIFT**

**GPS - 47 AZ MK**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 35' 06.07289"</b>	TN Northing:	<b>144828.971 m</b>
Longitude:	<b>89° 35' 11.66285"</b>	TN Easting:	<b>275022.138 m</b>
Elevation:	<b>82.618 m* (271.06 ft)</b>		
Convergence:	<b>-2° 5' 59.0"</b>	Scale Factor:	<b>0.99995780</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Tipton</b>	Nearest Town:	<b>Covington</b>
USGS QUAD:	<b>Gift</b>	TVA Designation:	<b>414-SE</b>

Description:

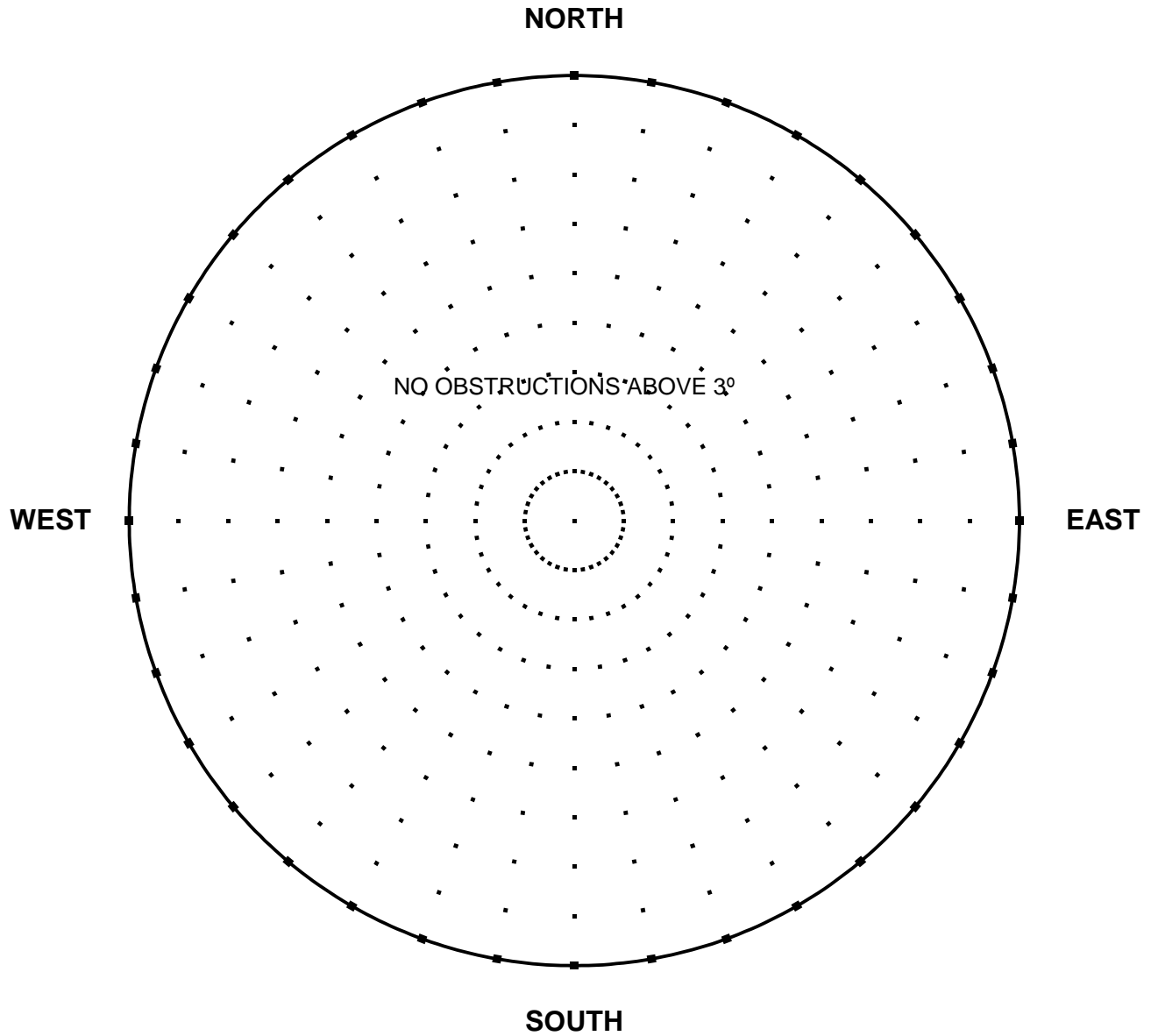
The station is located about 4.8 km (3 mi.) northeast of Covington, on the Covington Municipal Airport 106.7 m (350 ft.) west of the airport office and at the north end of the runway. Ownership-- Airport Manager is Dave Peeler or Wilson Faught, telephone (901) 476-1392. The airport is not locked after dark, however use after working hours should be cleared with the Airport Manager. Access to the field is north of the brick office building between the office and a metal hangar.

To reach the station from the courthouse in Covington go east on State Route 59 (Liberty St.) 0.24 km (0.15 mi.) to the junction of U.S. Highway 51 and State Route 59. Turn right and go north for 1.78 km (1.1 mi.) on U.S. Highway 51 to the junction of State Route 384. Continue straight ahead and go north for 2.25 km (1.4 mi.) on U.S. Highway 51 to the junction of County Road 8391 (Antioch Road). Turn right and go east for 4.51 km (2.8 mi.) on County Road 8391 to the airport. Turn right and go south for 0.16 km (0.1 mi.) on the airport property to the airport office, a one story brick building and the mark.

The azimuth mark is a 3-D mark with stainless steel rod driven 13.1 m (43 ft.). The logo cap is stamped---GPS 47 AZ MK 1987---, with a steel spike embedded in the concrete, and 0.05 m (0.17 ft.) below ground. Located 18.1 m (59 ft.) east of the east edge of the runway, 26.1 m (85.7 ft.) west of the west edge of the taxiway, 15.8 m (52 ft.) north of the north edge of the taxiway crossover, 12.6 m (41.5 ft.) northwest of the center of a concrete culvert with a headwall, 10.5 m (34.4 ft.) east-southeast of a pipe for a taxi guidance box, and 0.3 m (1.0 ft.) south of a fiberglass witness post.

\* GPS derived elevation using the Geoid 96 Model and the WGS 1984 Reference Ellipsoid.

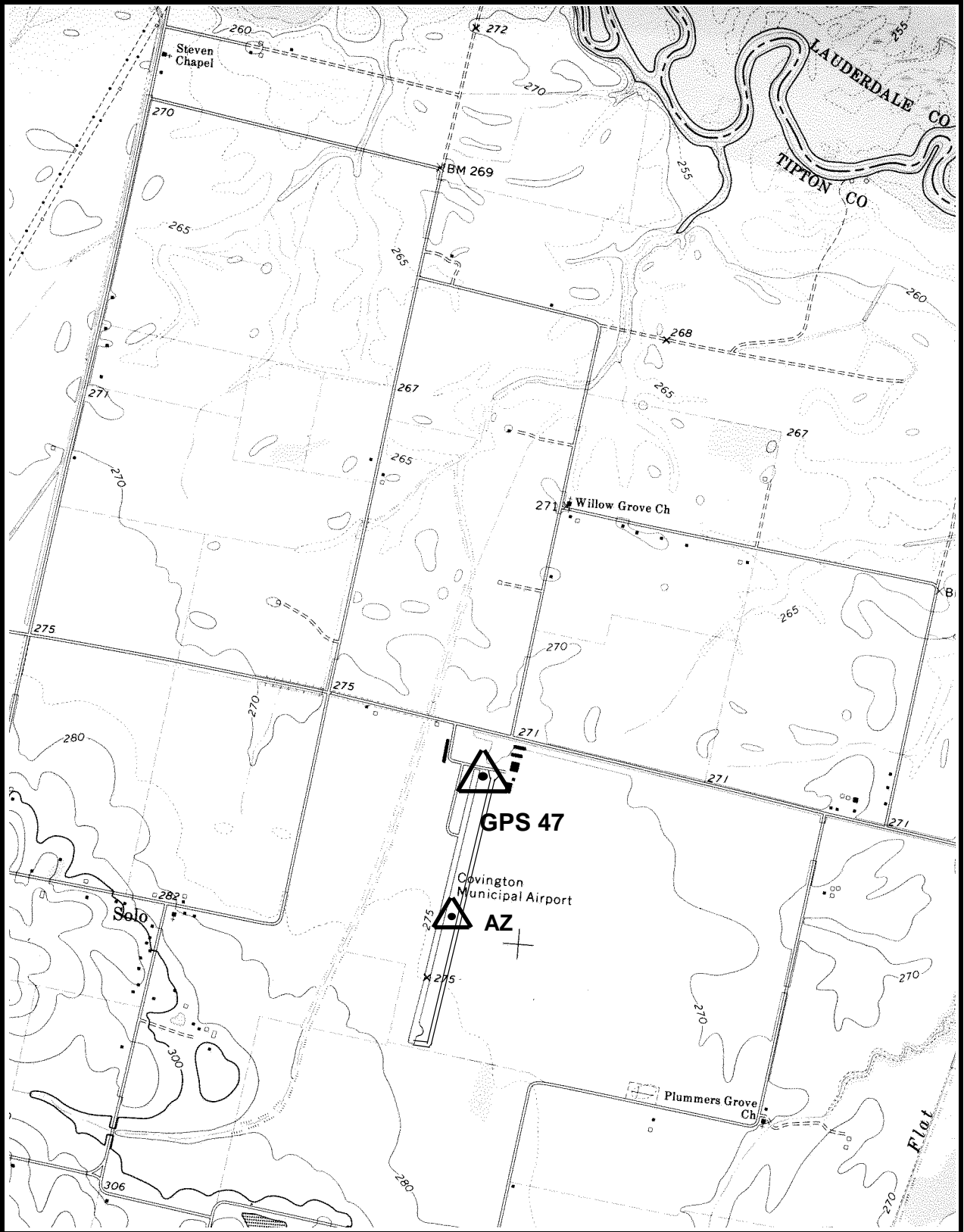
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>82.618 m (271.06 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 35' 6"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>89° 35' 11"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 47 AZ MK</u>	MAP SHEET	<u>414-SE, Gift</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 47**

**414-SE, GIFT**

**GPS - 48**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 13' 30.67645"</b>	TN Northing:	<b>99887.197 m</b>
Longitude:	<b>84° 34' 54.50769"</b>	TN Easting:	<b>729104.556 m</b>
Elevation:	<b>243.645 m (799.36 ft)</b>		
Convergence:	<b>+0° 49' 49.0"</b>	Scale Factor:	<b>1.00000447</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Polk</b>	Nearest Town:	<b>Benton</b>
USGS QUAD:	<b>Oswald Dome</b>	TVA Designation:	<b>126-NE</b>

Description:

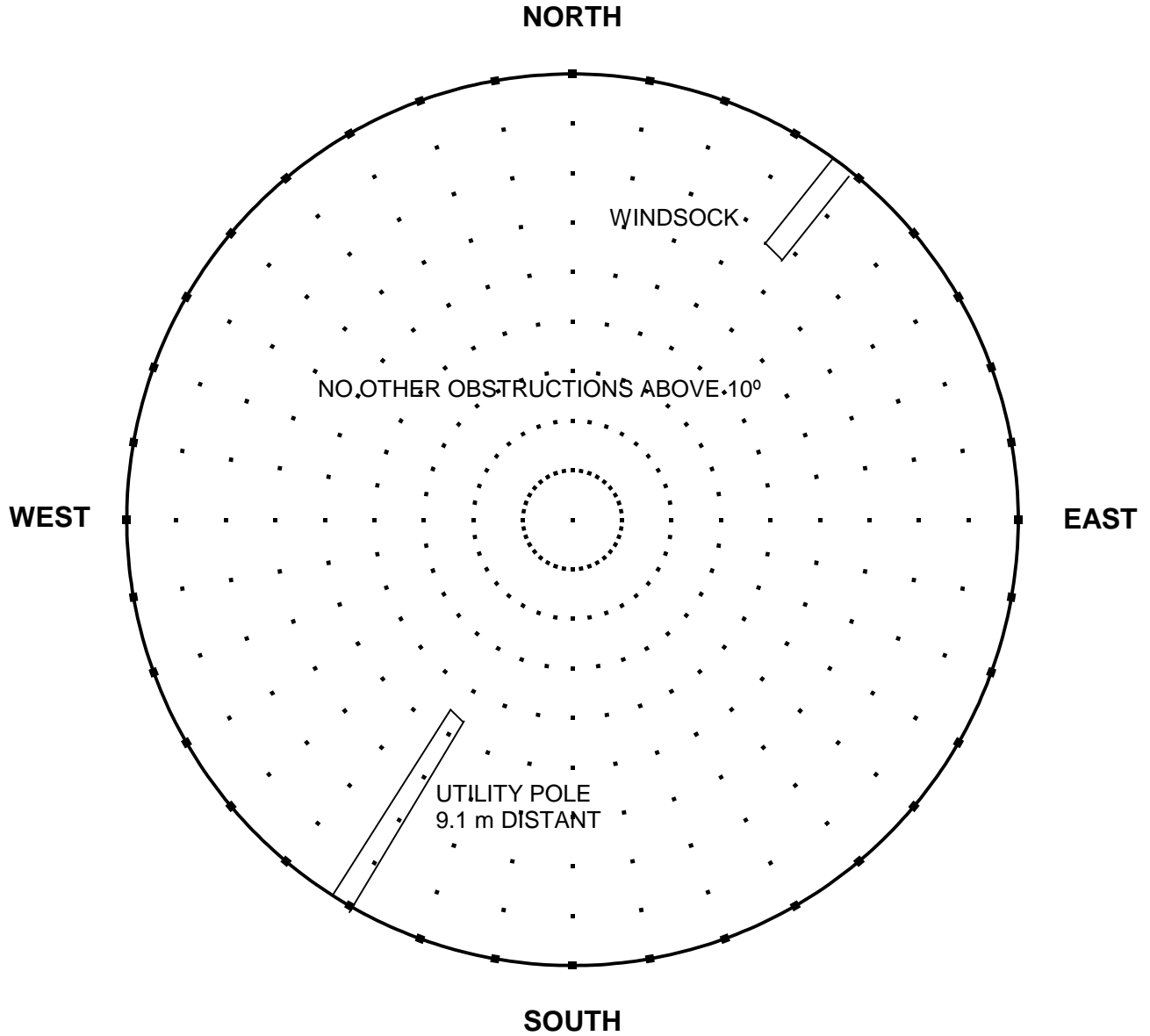
The station is located about 29.0 km (18 mi.) east-northeast of Cleveland, 8.1 km (5 mi.) northeast of Benton, at the northwest edge of U.S. Highway 411, northeast of the Chilhowee Gliderport, at a jog in the right-of-way fence. Ownership--State Right-of-Way.

To reach the station from the Courthouse in Benton go north for 8.05 km (5.0 mi.) on U.S. Highway 411 to the Chilhowee Gliderport entrance. Continue straight ahead and go north for 0.56 km (0.35 mi.) on U.S. Highway 411 to the station on the left, 1.45 km (0.9 mi.) southwest of the junction of U.S. Highway 411 and State Route 30.

The station is a 3-D mark with stainless steel rod driven 4.9 m (16 ft.). The logo cap is stamped---GPS 48 1987---, and a railroad spike is set in the concrete. Located 13.26 m (43.5 ft.) northwest from the center of U.S. Highway 411, 15.09 m (49.5 ft.) southwest from a telephone junction box, 11.0 m (36 ft.) south from a windsock on a utility pole 9.30 m (30.5 ft.) northeast from a utility pole at a jog in the fence, 0.9 m (3.0 ft.) southeast from a fiberglass witness post set in the right-of-way fence.



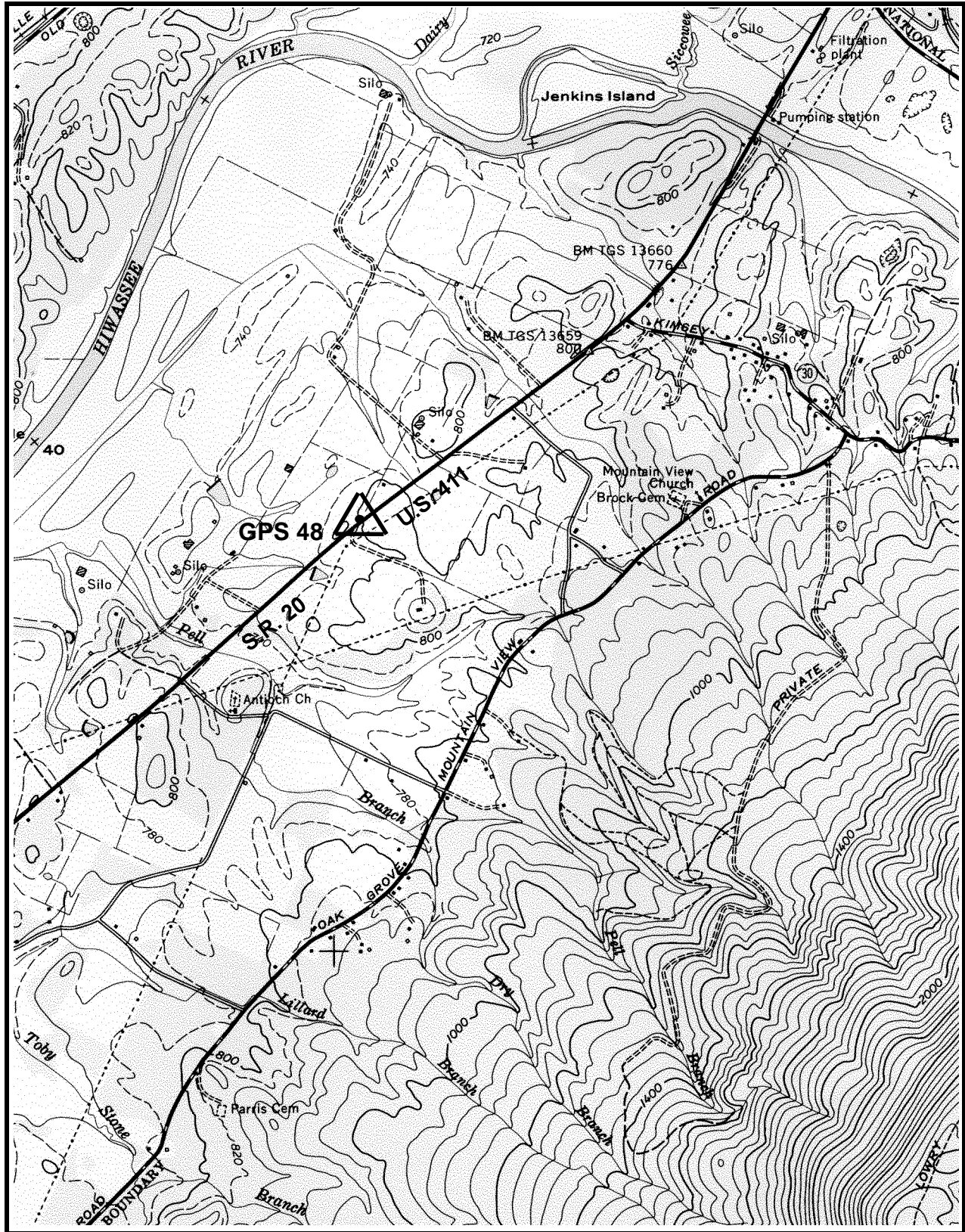
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>243.645 m (799.36 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 13' 31"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>84° 34' 55"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 48</u>	MAP SHEET	<u>126-NE, Oswald Dome</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



GPS 48

126-NE, OSWALD DOME

**GPS – 48 - RESET**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 14' 46.82218"</b>	TN Northing:	<b>102252.571 m</b>
Longitude:	<b>84° 34' 03.03065"</b>	TN Easting:	<b>730371.836 m</b>
Elevation:	<b>225.081 m* (738.45 ft)</b>		
Convergence:	<b>+0° 50' 19.1"</b>	Scale Factor:	<b>1.00000065</b>
Monument Set by:	<b>TDOT</b>	Date:	<b>1999</b>
County:	<b>Bradley</b>	Nearest Town:	<b>Benton</b>
USGS QUAD:	<b>Oswald Dome</b>	TVA Designation:	<b>126-NE</b>

Description:

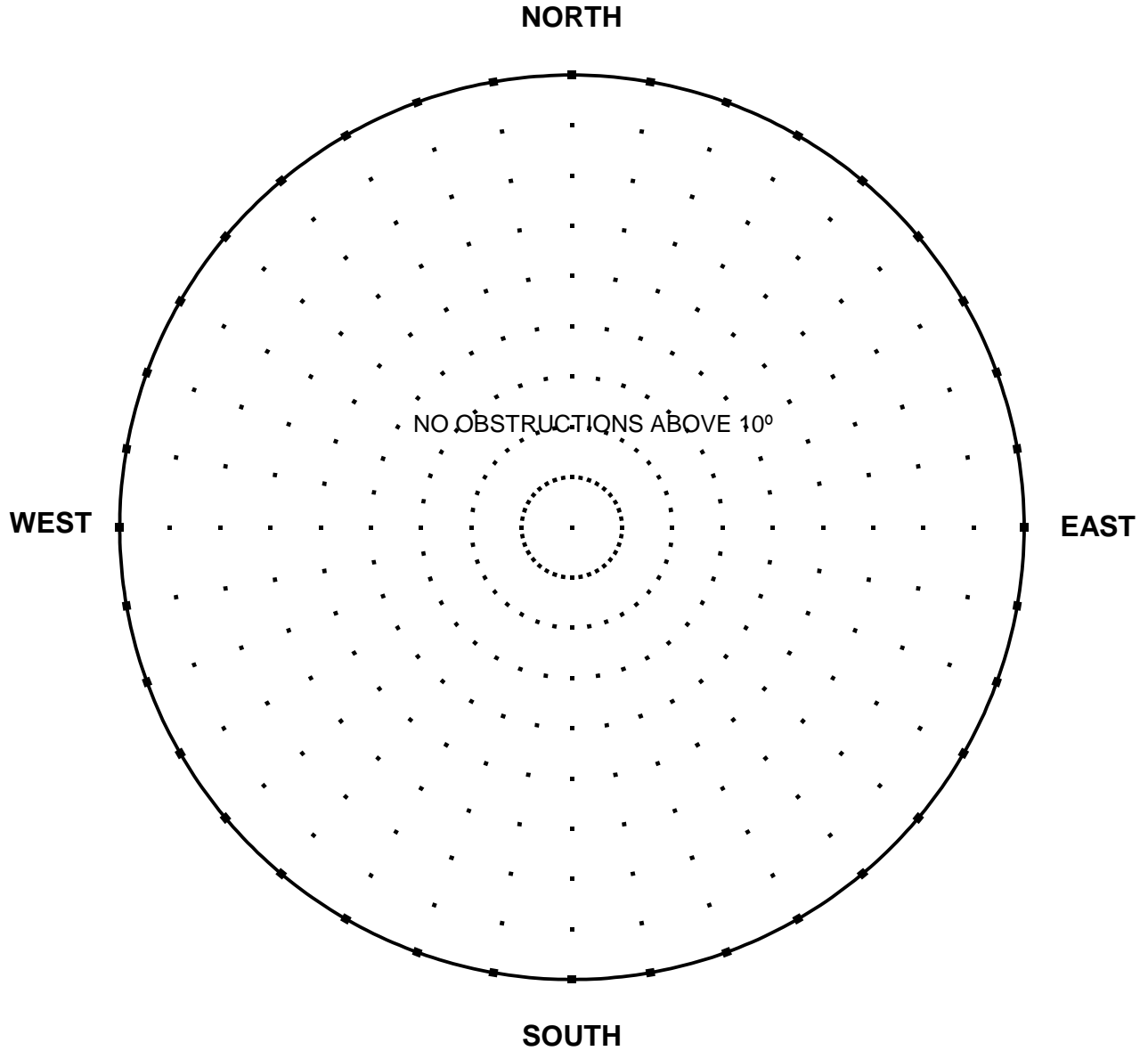
The station is located about 29.0 km (18 mi.) east-northeast of Cleveland, 8.1 km (5 mi.) northeast of Benton.

To reach the station from the courthouse in Benton, go north on US 411 for 10.46 km (6.50 mi.) to the entrance of East Tennessee Nursery. Turn left and go 0.80 km (0.50 mi.) to station on the left.

The station is a 3-D mark with an iron rod with aluminum cap set in concrete. The logo cap is stamped ---GPS 48-RESET 1999---. The station is located 1.48 m (4.85 ft) northwest of the witness post, 1.66 m (5.45 ft) northwest of rail fence, 4.94 m (16.20 ft) southeast of edge of asphalt and 48.01 m (157.50 ft) northeast of flagpole.

\* GPS derived elevation using the Geoid 96 Model and the WGS 1984 Reference Ellipsoid.

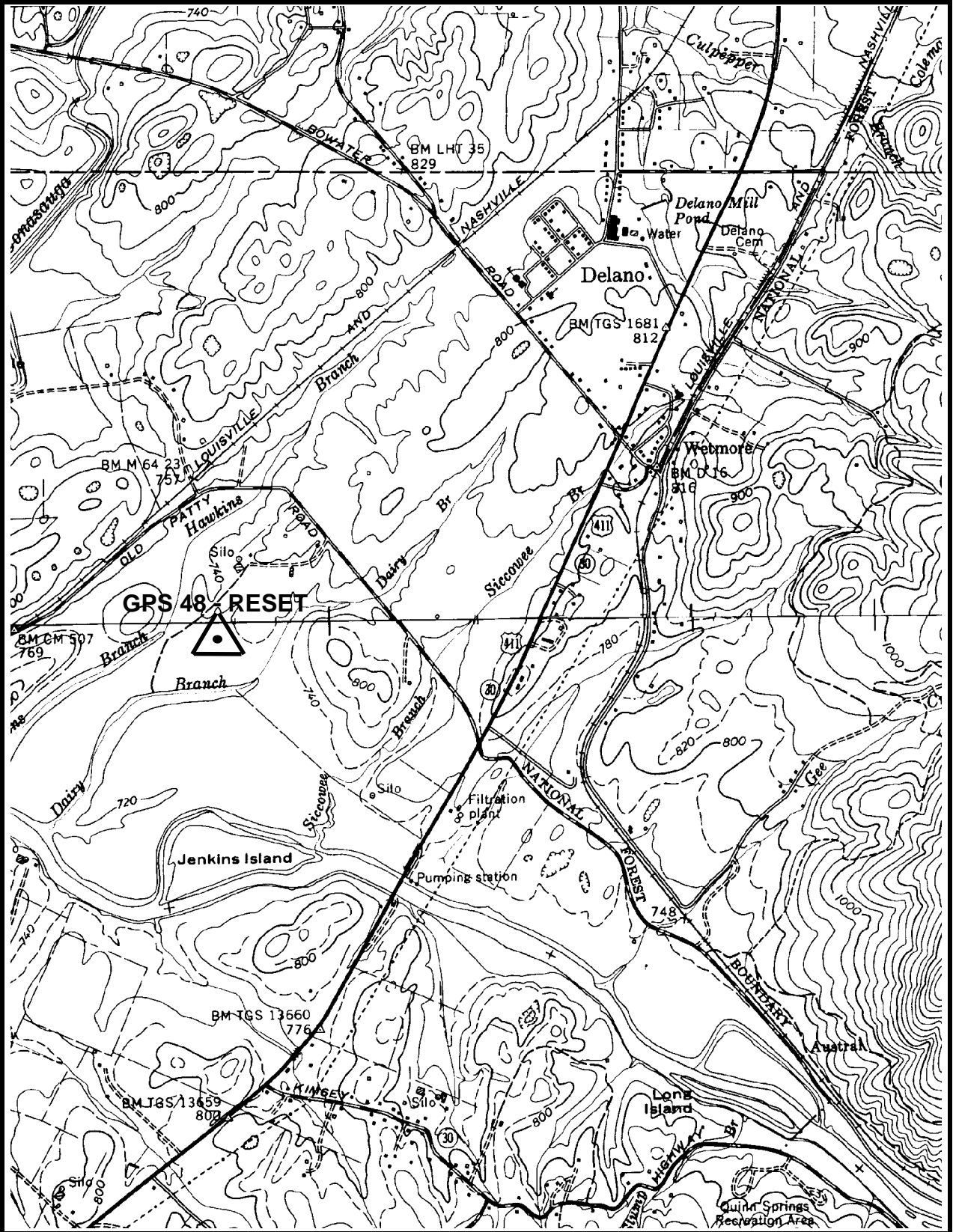
# STATION VISIBILITY DIAGRAM



ELEVATION 225.081 m (738.45 ft)      DATE 3-17-99  
LATITUDE 35° 14' 47"      ORGANIZATION TDOT  
LONGITUDE 84° 34' 03"      MAP SCALE 7 1/2' USGS  
STATION NAME GPS 48 - RESET      MAP SHEET 126-NE, Oswald Dome  
  
OBSERVER SHG  
Observer's height 5'6"

NOTES:

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 48 - RESET

126-NE, Oswald Dome

**GPS - 49**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 11' 0.08451"</b>	TN Northing:	<b>94720.735 m</b>
Longitude:	<b>85° 3' 41.11929"</b>	TN Easting:	<b>685489.249 m</b>
Elevation:	<b>261.396 m (857.60 ft)</b>		
Convergence:	<b>+0° 32' 58.1"</b>	Scale Factor:	<b>1.00001243</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Hamilton</b>	Nearest Town:	<b>Cleveland</b>
USGS QUAD:	<b>Snow Hill</b>	TVA Designation:	<b>112-NE</b>

Description:

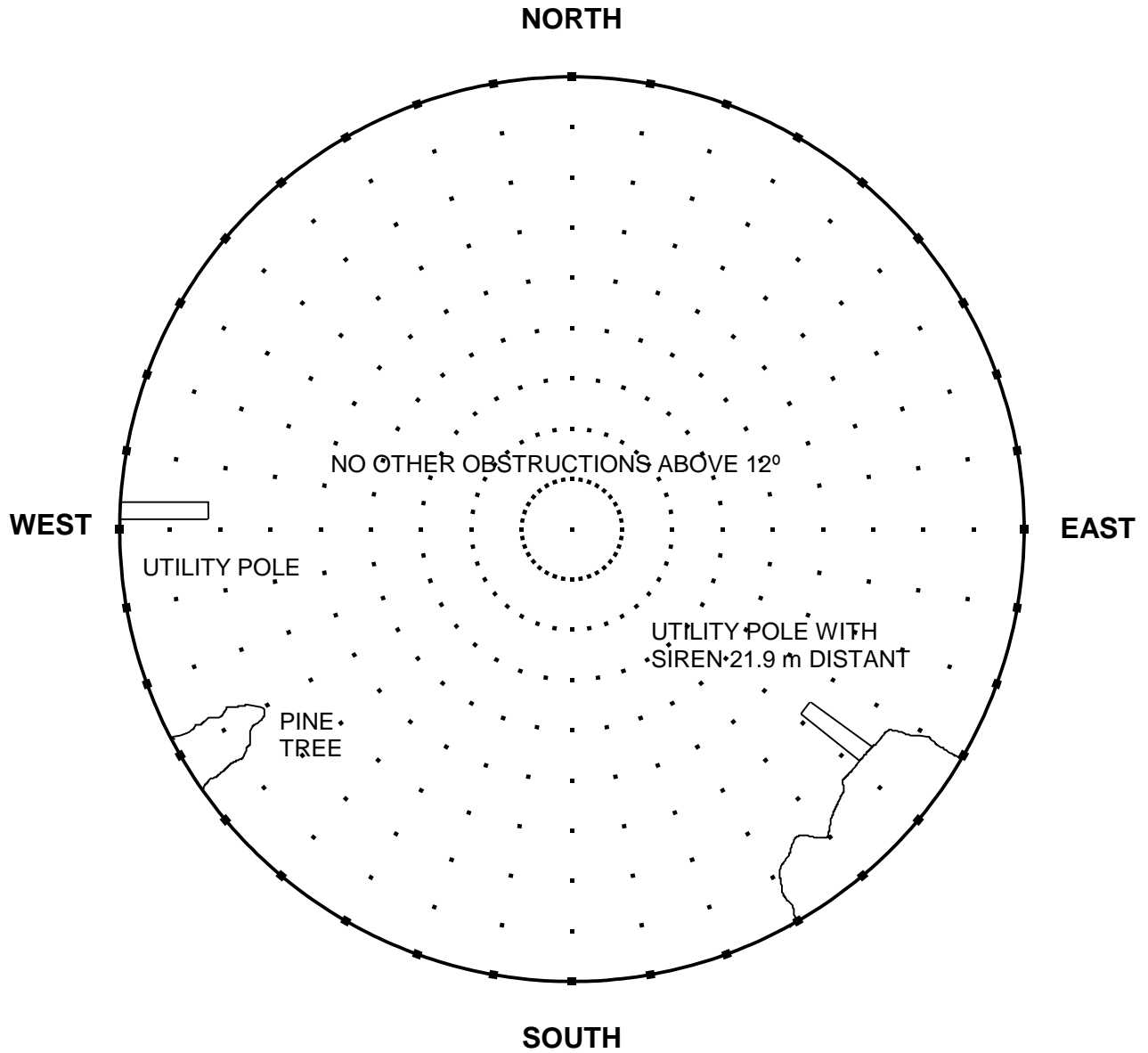
The station is located about 24.1 km (15 mi.) northeast of Chattanooga, 16.1 km (10 mi.) west of Cleveland, in front of a fire station (Highway 58 Fire Department Station 2). Ownership--Hamilton County.

To reach the station from the junction of State Routes 153 and 58 in the northeast part of Chattanooga go north for 10.78 km (6.7 mi.) on State Route 58 to a marina on the left on the Chickamauga Lake. Continue straight ahead and go north for 7.48 km (4.65 mi.) on State Route 58 to the junction of State Route 312 on the left. Continue straight ahead and go north for 0.56 km (0.35 mi.) on State Route 58 to the junction of Career Lane. Turn right and go east for 0.16 km (0.1 mi.) on Career Lane to the fire station and the station on the right.

To reach the station from the south end of the bridge over the Hiwassee River on State Route 58 go south 8.4 km (5.2 mi.) to the junction of State Route 60. Continue straight ahead and go south on State Route 58 15.8 km (9.8 mi.) to the junction on State Route 312 on the left. Continue straight ahead and go south 0.5 km (0.3 mi.) to the junction of Career Lane. Turn left and go east 0.16 km (0.1 mi.) on Career Lane to the fire station and the station on the right.

The station is a 3-D mark with stainless steel rod driven 3.7 m (12 ft.). The logo cap is stamped---GPS 49 1987---, and a railroad spike is set in the concrete. Located 17.1 m (56 ft.) northeast from the northeast corner of the fire station, 7.0 m (23 ft.) south-southwest from the center of Career Lane, 21.9 m (72 ft.) west-northwest from a pole with an emergency siren, 1.0 m (3.3 ft.) west-southwest from a witness post at the north end of a masonry memorial sign.

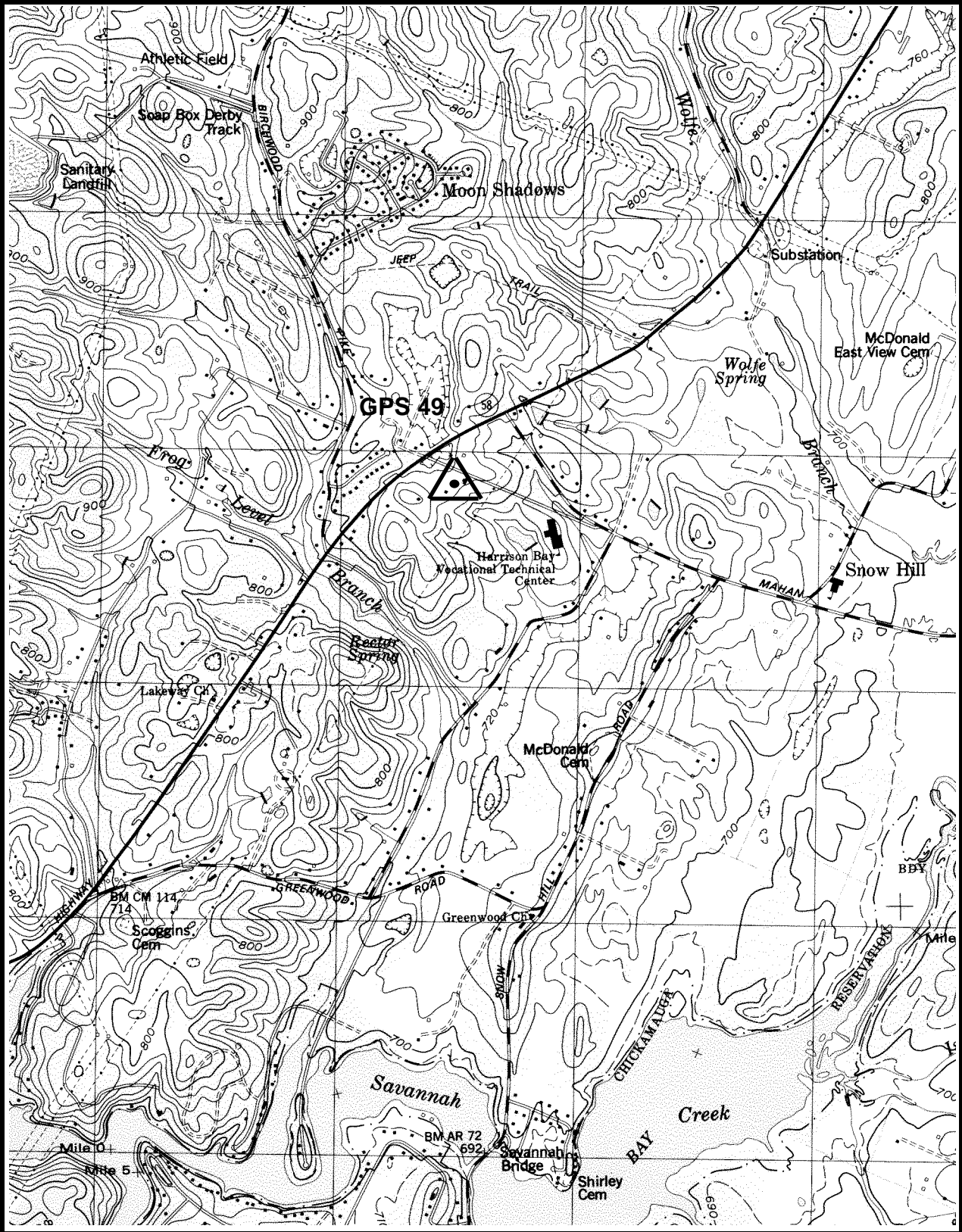
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>261.396 m (857.60 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 11' 0"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>85° 3' 41"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 49</u>	MAP SHEET	<u>112-NE, Snow Hill</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 49

112-NE, SNOW HILL



**GPS - 50**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 11' 23.59597"</b>	TN Northing:	<b>95158.817 m</b>
Longitude:	<b>85° 29' 5.80634"</b>	TN Easting:	<b>646909.746 m</b>
Elevation:	<b>208.276 m (683.32 ft)</b>		
Convergence:	<b>+0° 18' 5.5"</b>	Scale Factor:	<b>1.00001115</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Marion</b>	Nearest Town:	<b>Powells Crossroads</b>
USGS QUAD:	<b>Ketner Gap</b>	TVA Designation:	<b>105-NW</b>

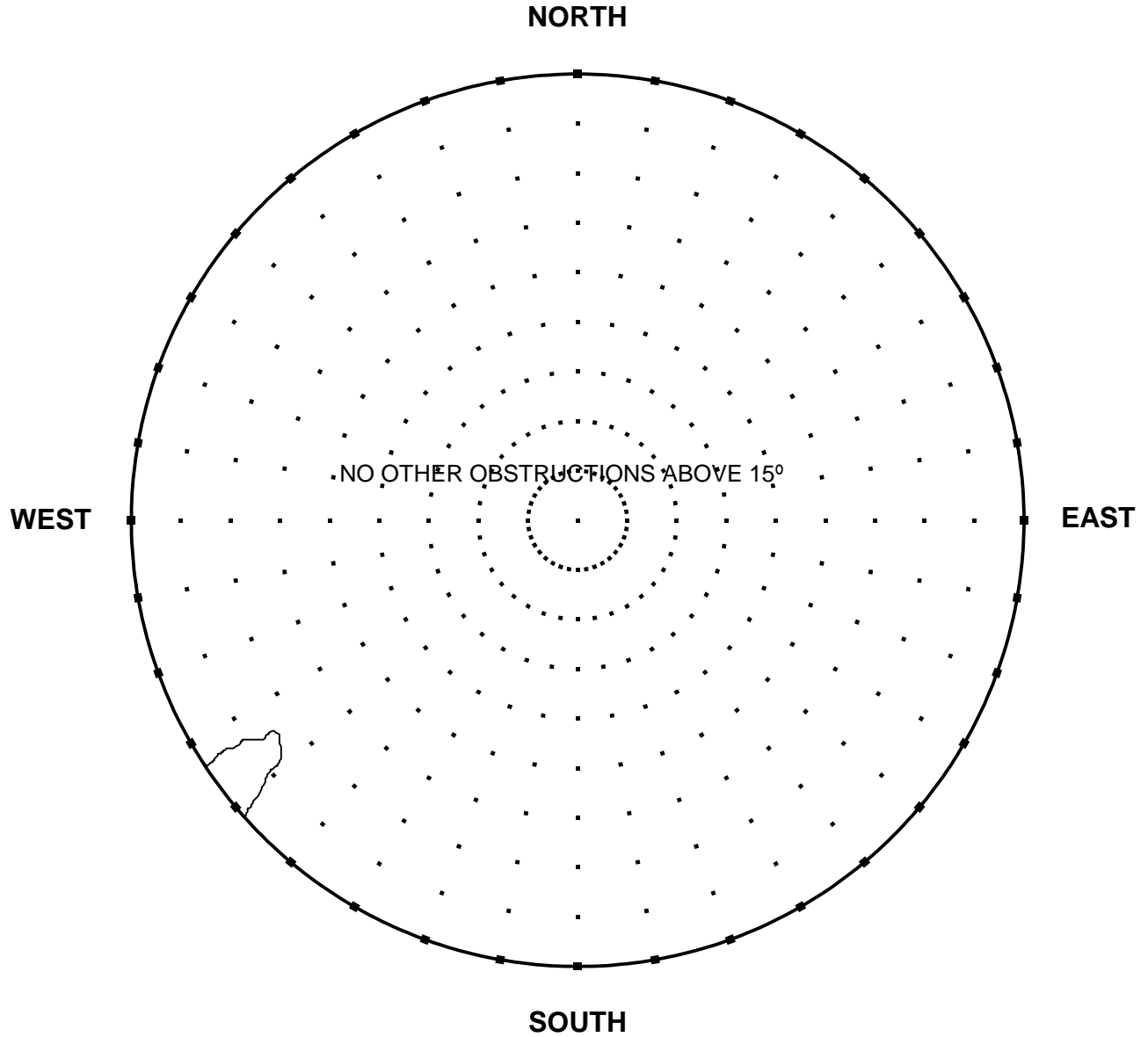
Description:

The station is located about 22.5 km (14 mi.) northwest of Chattanooga, 0.16 km (0.1 mi.) northeast of the junction of State Routes 283 and 27, at Powells Crossroads, in a field behind the volunteer fire department. Ownership--Chief of Volunteer Fire Department, Frank S. Kimsey, telephone (615) 658-5455.

To reach the station from the junction of State Routes 283 and 27 in Powells Crossroads go northeast for 0.16 km (0.1 mi.) on State Route 283 to the fire station and the station on the right.

The station is a 3-D mark with stainless steel rod driven 3.4 m (11 ft.). The logo cap is stamped---GPS 50 1987---, and a railroad spike is set in the concrete. Located 63.1 m (207 ft.) east from the center of State Route 283, 58.5 m (192 ft.) south from the center of Ketner Cove Road, 31.4 m (103 ft.) east from the rear wall of the fire station, 0.37 m (1.2 ft.) west from a fiberglass witness post.

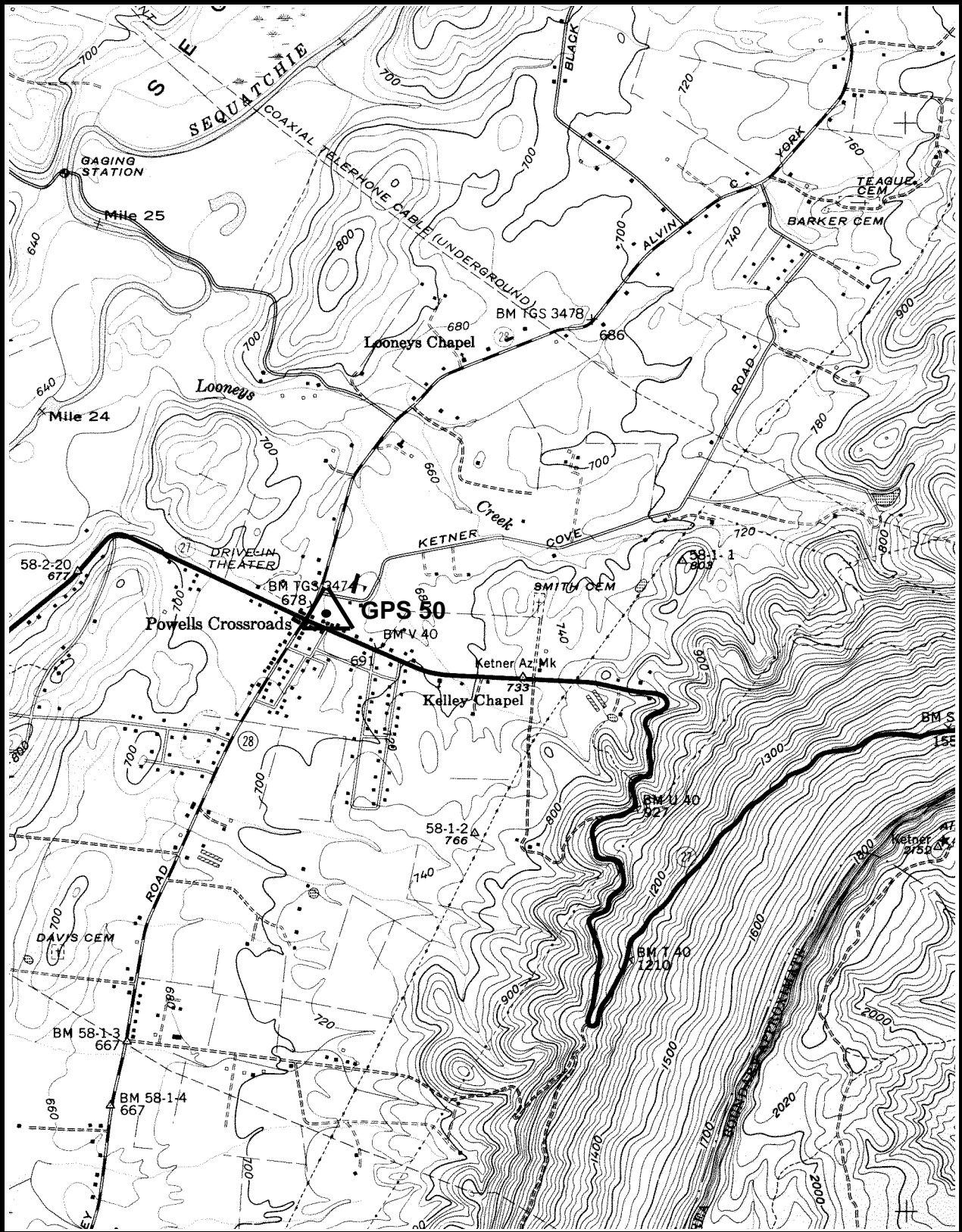
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>208.276 m (683.32 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 11' 24"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>85° 29' 6"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 50</u>	MAP SHEET	<u>105-NW, Ketner Gap</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 50**

**105-NW, KETNER GAP**

**GPS – 51 - RESET**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 12' 18.474800"</b>	TN Northing:	<b>96731.521 m</b>
Longitude:	<b>85° 53' 51.366489"</b>	TN Easting:	<b>609324.431 m</b>
Elevation:	<b>591.969 m (1,942.15 ft)</b>		
Convergence:	<b>+0° 3' 35.1"</b>	Scale Factor:	<b>1.00000822</b>
Monument Set by:	<b>TDOT</b>	Date:	<b>1997</b>
County:	<b>Franklin</b>	Nearest Town:	<b>Sewanee</b>
USGS QUAD:	<b>Sewanee</b>	TVA Designation:	<b>94-NW</b>

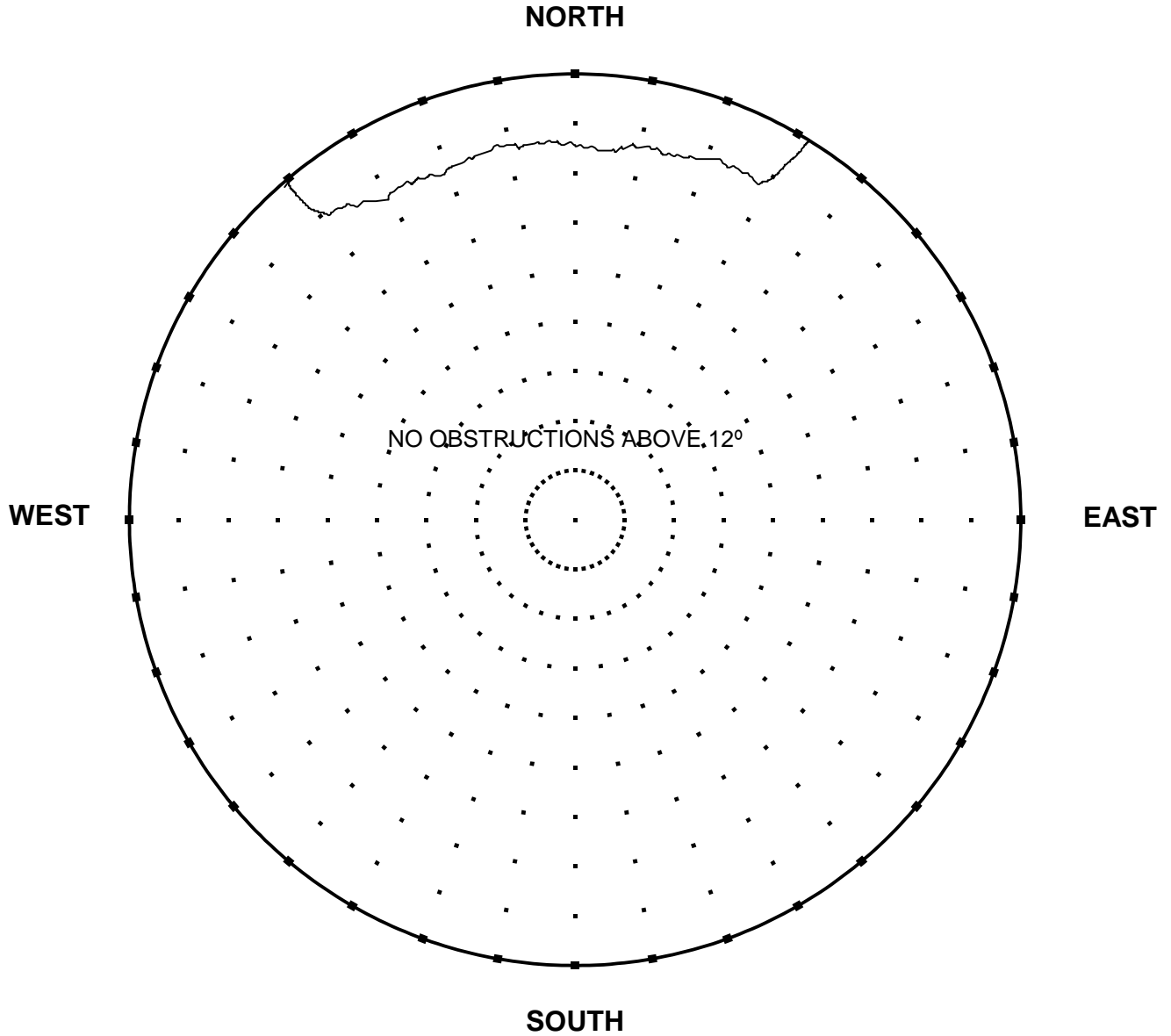
Description:

The station is located about 9.7 km (6 mi.) southwest of Monteagle, 1.6 km (1 mi.) east of Sewanee, on the Sewanee/Franklin County airport, 0.16 km (0.1 mi.) east-southeast of the entrance to the airport. Ownership--airport manager Dan Backlund (615) 598-1910. Contact Police Department if station will be visited after dark, telephone (615) 598-1111.

To reach the station from the junction of Interstate 24 and U.S. Highways 64 and 41A go west for 5.15 km (3.2 mi.) on U.S. Highways 64 and 41A to the junction of State Route 156. Turn left and go south for 0.48 km (0.3 mi.) on State Route 156 to a fork. Follow the right fork and go west for 0.64 km (0.4 mi.) on the road to the airport and the station on left.

The station is a 3-D mark with aluminum disk stamped "GPS-51-RESET" atop 5/8" rebar driven 1.5 meters (5 ft), set in concrete. Located 0.50 meters (1.6 ft) northwest of its carsonite witness post, 15.30 meters (50.2 ft) southeast of the edge of the asphalt runway. 14.00 meters (45.9 ft) southeast of the white light on runway, 140.50 meters (461.0 ft) southeast of the southeast corner of the airport office building.

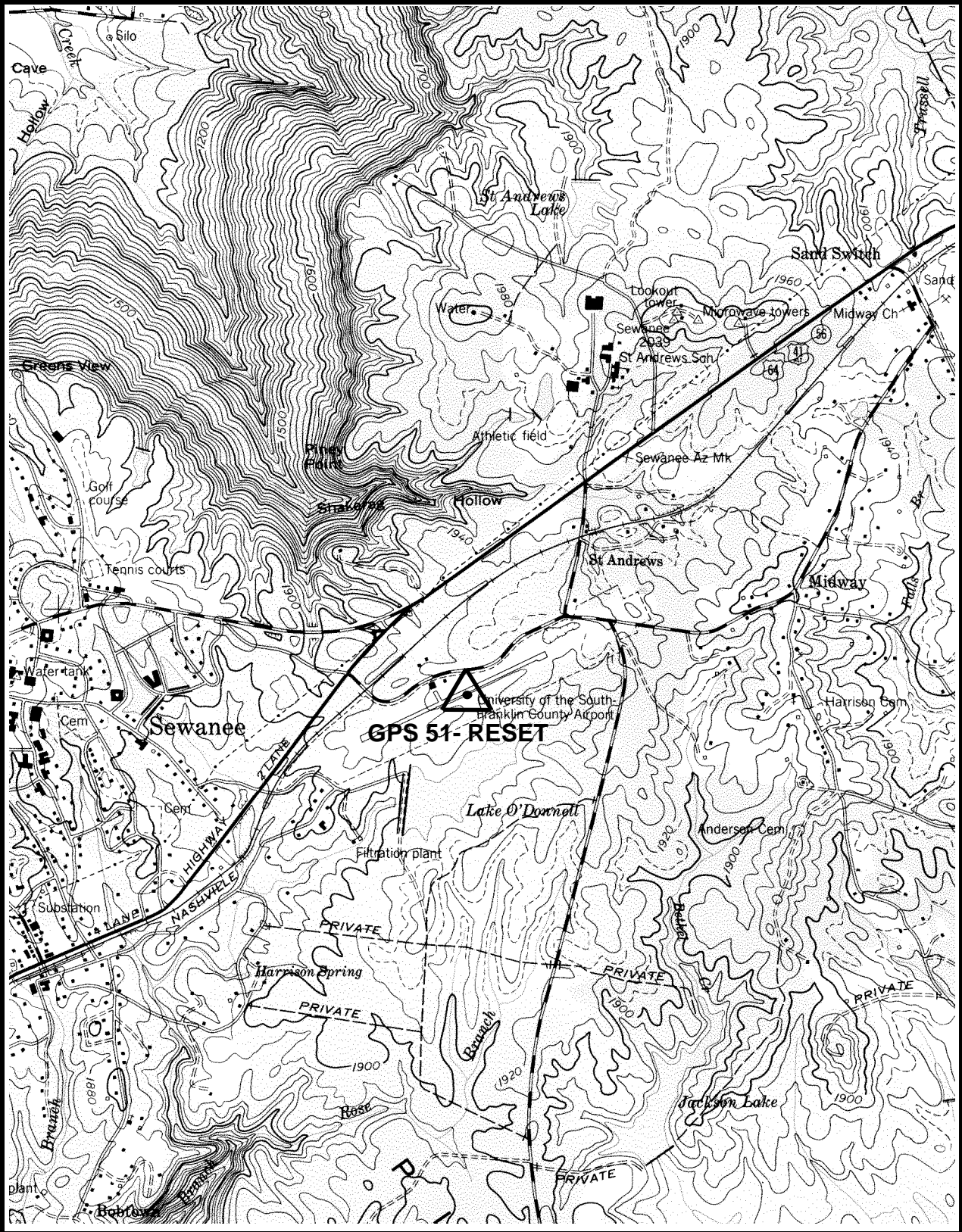
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>591.969 m (1,942.15 ft)</u>	DATE	<u>8/15/97</u>
LATITUDE	<u>35° 12' 18"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>85° 53' 51"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 51 - RESET</u>	MAP SHEET	<u>94-NW, Sewanee</u>
		OBSERVER	<u>SHG</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



GPS 51

94-NW, SEWANEE

**GPS - 52**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 14' 28.42030"</b>	TN Northing:	<b>100809.803 m</b>
Longitude:	<b>86° 24' 38.98606"</b>	TN Easting:	<b>562606.579 m</b>
Elevation:	<b>229.638 m (753.40 ft)</b>		
Convergence:	<b>-0° 14' 25.9"</b>	Scale Factor:	<b>1.00000156</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Moore</b>	Nearest Town:	<b>Lynchburg</b>
USGS QUAD:	<b>Mulberry</b>	TVA Designation:	<b>80-NW</b>

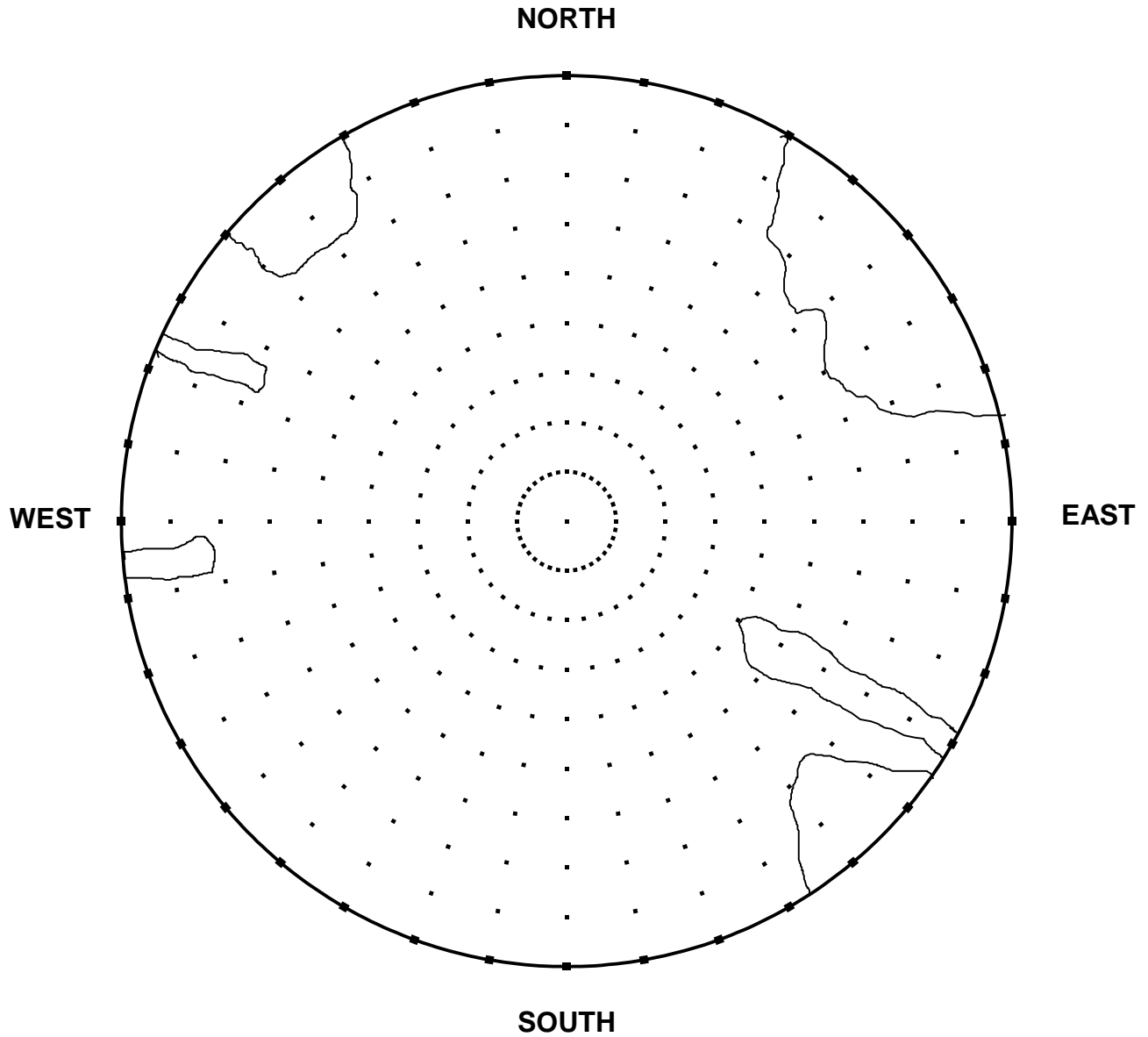
Description:

The station is located about 17.7 km (11 mi.) northeast of Fayetteville, 6.4 km (4 mi.) southwest of Lynchburg, on the southeast side of State Route 50 in a large flat bedrock outcrop on the road right-of-way, Ownership--State Right-of-Way.

To reach the station from the Jack Daniels Distillery (visitors entrance) on State Route 55 in Lynchburg go southwest for 2.7 km (1.7 mi.) on State Route 55 to the junction of State Route 50. Continue straight ahead, now on State Route 50, and go southwest for 2.25 km (1.4 mi.) to a Tennessee Department of Transportation Garage. Continue straight ahead and go southwest for 1.21 km (0.75 mi.) on State Route 50 to the station on the left, 1.1 km (0.7 mi.) northeast of the Moore/Lincoln County Line.

The station is a standard NGS disk stamped---GPS 52 1987---, set into a drill hole in bedrock outcrop measuring 4.6 m (15 ft.) by 2.4 m (8 ft.) flush with ground. Located 46.3 m (152 ft.) south and across the road from a power pole with one guy wire, 7.9 m (26 ft.) west-northwest from the southeast right-of-way fence, 7.53 m (24.7 ft.) east-southeast from the center of State Route 50 and 0.3 m (1 ft.) above the same, 1.2 m (3.9 ft.) east-southeast from a witness post.

# STATION VISIBILITY DIAGRAM



ELEVATION 229.638 m (753.40 ft)  
LATITUDE 35° 14' 28"  
LONGITUDE 86° 24' 39"  
STATION NAME GPS 52

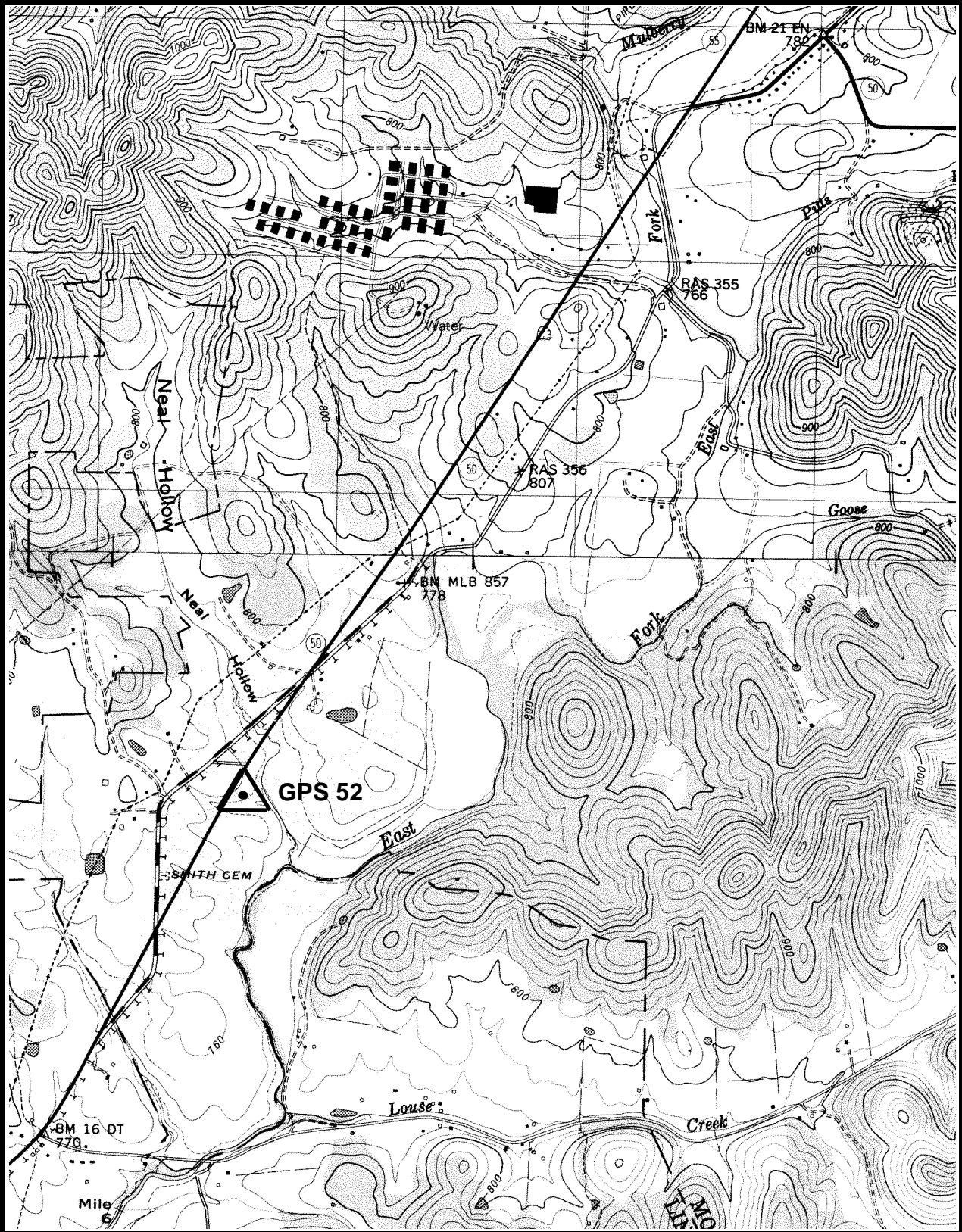
DATE July 1997  
ORGANIZATION TDOT  
MAP SCALE 7 1/2' USGS  
MAP SHEET 80-NW, Mulberry  
OBSERVER CLJ

Observer's height 6'

NOTES:



TENNESSEE GEODETIC REFERENCE NETWORK



GPS 52

80-NW, MULBERRY

**GPS - 53**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 11' 36.35019"</b>	TN Northing:	<b>95780.765 m</b>
Longitude:	<b>86° 52' 12.66117"</b>	TN Easting:	<b>520750.132 m</b>
Elevation:	<b>235.364 m (772.19 ft)</b>		
Convergence:	<b>-0° 30' 34.0"</b>	Scale Factor:	<b>1.00001046</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Giles</b>	Nearest Town:	<b>Pulaski</b>
USGS QUAD:	<b>Frankewing</b>	TVA Designation:	<b>66-NE</b>

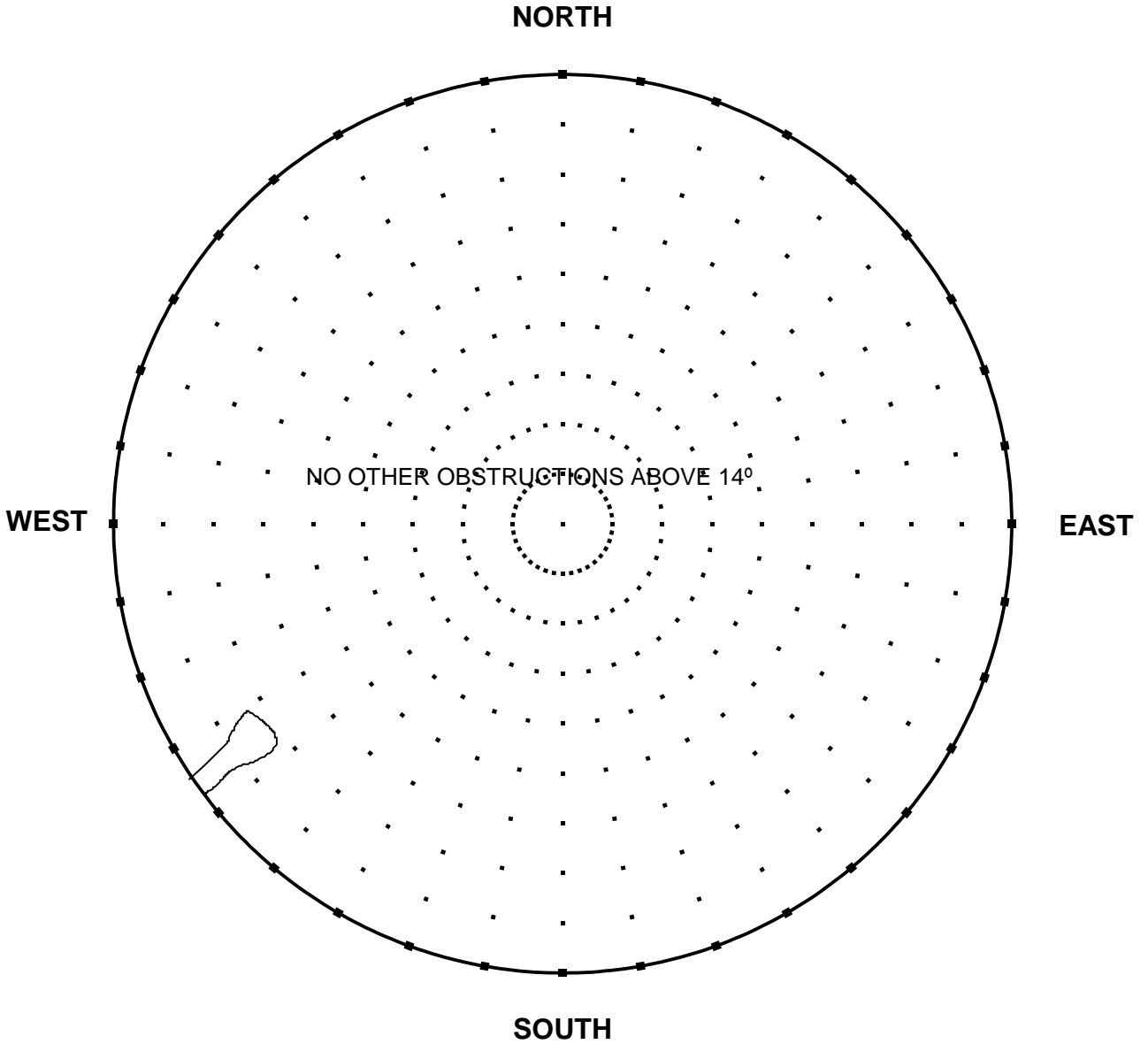
Description:

The station is located about 16.1 km (10 mi.) east of Pulaski, at the junction of Interstate 65 and U.S. Highway 64/State Route 15. Ownership--Highway Right-of-Way.

The station is located at the intersection of Interstate 65 and U.S. Highway 64/State Route 15 about 16.1 km (10 mi.) east of Pulaski.

The station is a standard NGS disk stamped---GPS 53 1987---, set into a drill hole in bedrock outcrop level with ground. Located 46.6 m (153 ft.) east from the center of northbound Interstate 65, 35.6 m (117 ft.) west from the center of the junction of the northbound entrance ramp and U.S. Highway 64, 12.04 m (39.5 ft.) north from the center of U.S. Highway 64 and 0.3 m (1 ft.) above same, 17.0 m (55.8 ft.) northwest of I-65 entrance ramp sign at northbound entrance ramp, 0.5 m (1.6 ft.) northwest from a steel witness post.

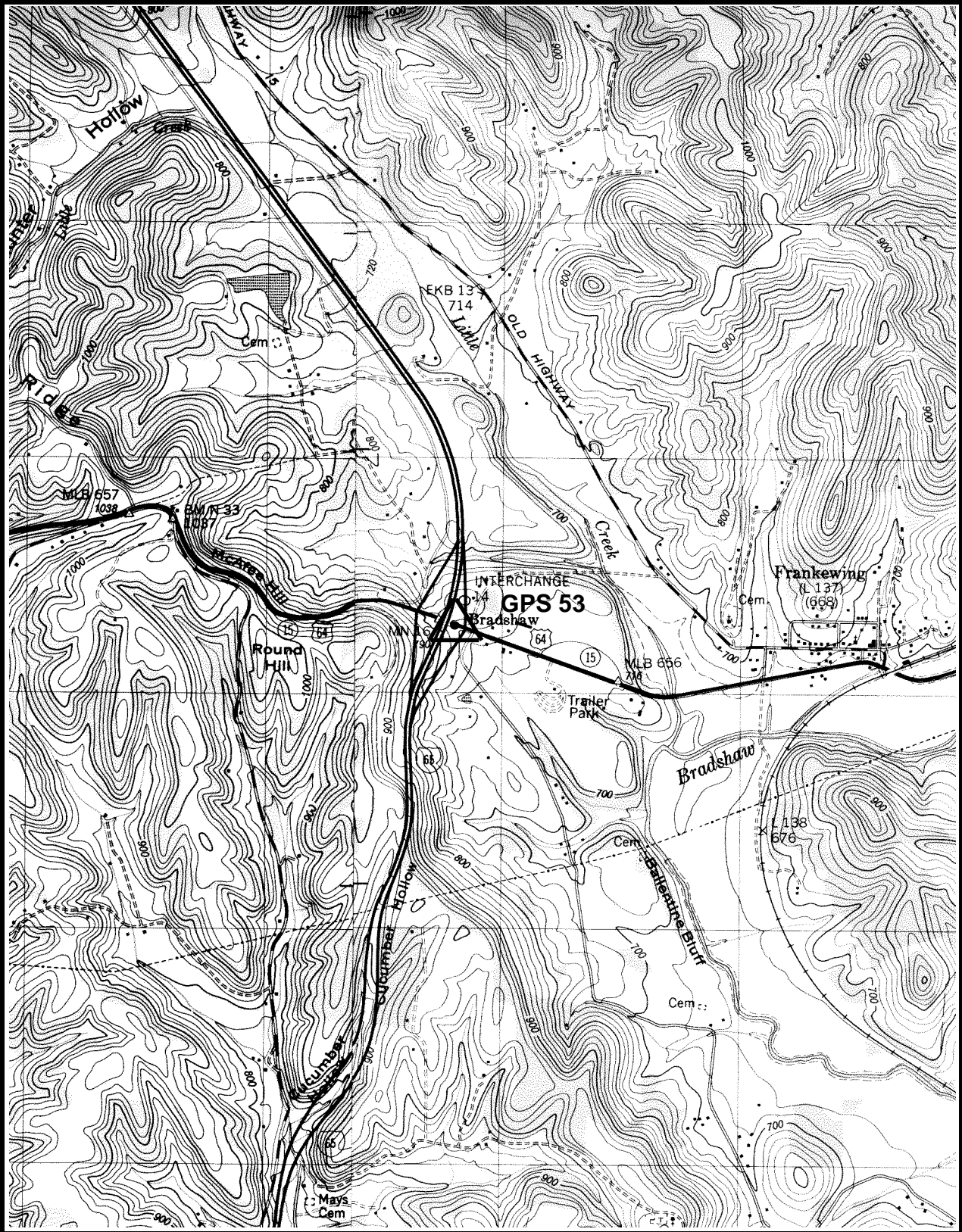
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>235.364 m (772.19 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 11' 36"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>86° 52' 13"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 53</u>	MAP SHEET	<u>66-NE, Frankewing</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 53

66-NE, FRANKEWING

**GPS - 54**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 14' 4.78742"</b>	TN Northing:	<b>100741.095 m</b>
Longitude:	<b>87° 15' 35.36870"</b>	TN Easting:	<b>485325.066 m</b>
Elevation:	<b>285.054 m (935.21 ft)</b>		
Convergence:	<b>-0° 44' 15.2"</b>	Scale Factor:	<b>1.00000274</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Lawrence</b>	Nearest Town:	<b>Lawrenceburg</b>
USGS QUAD:	<b>Lawrenceburg</b>	TVA Designation:	<b>52-NE</b>

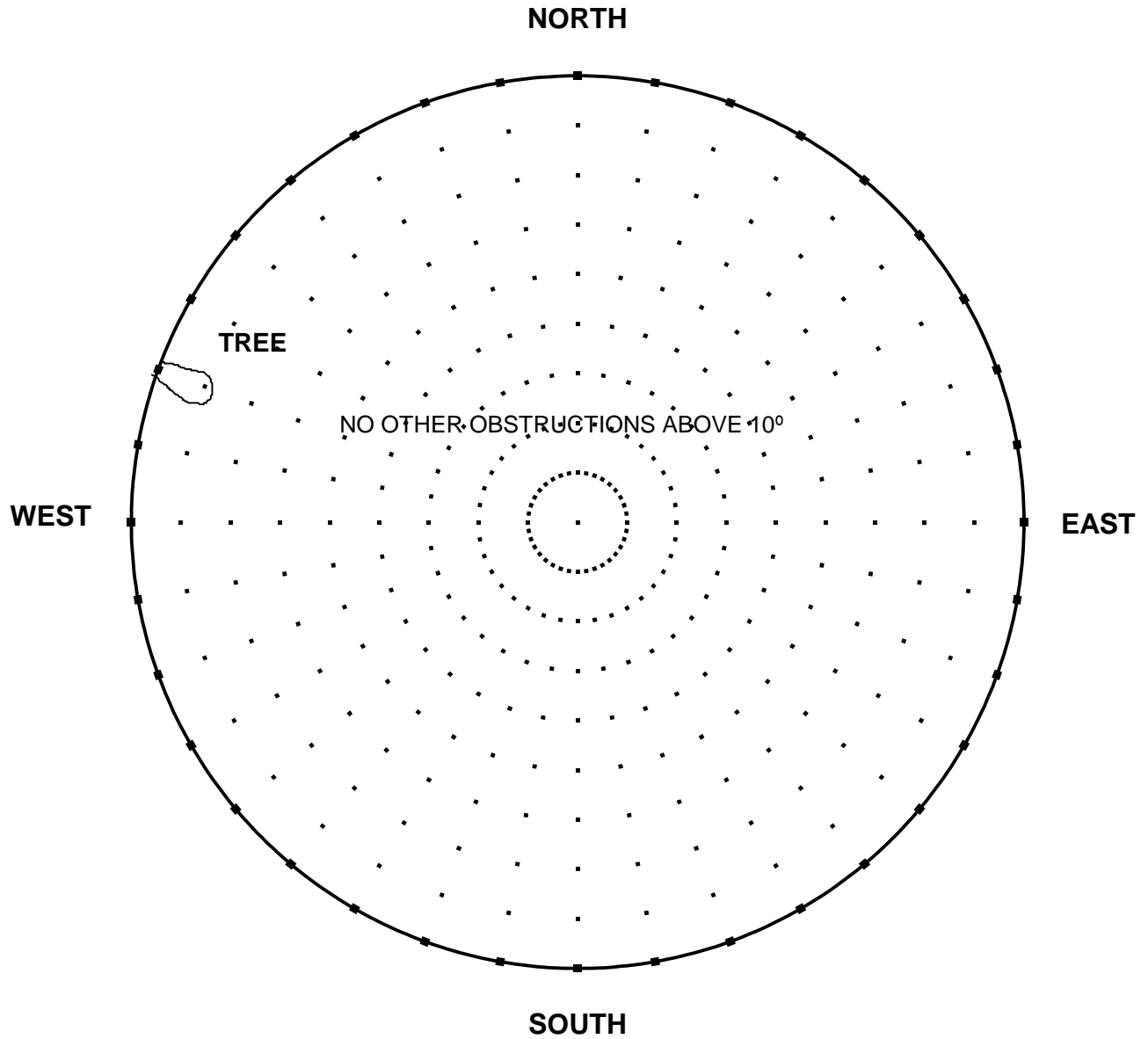
Description:

The station is located about 6.4 km (4 mi.) east of Lawrenceburg, at the Lawrenceburg Municipal Airport. Ownership--Airport Manager is Doris Venable, telephone (615) 762-5133. The station is outside the fenced area and accessible at all times.

To reach the station from the junction of U.S. Highway 43/State Route 6 and U.S. Highway 64/State Route 15 in Lawrenceburg go east for 5.79 km (3.6 mi.) on U.S. Highway 64 to Lone Star Rd. Turn left and go north for 0.8 km (0.5 mi.) on the paved road to the airport entrance drive. Turn right and go east for 0.32 km (0.2 mi.) on the airport entrance drive to the station on the right.

The station is a 3.D mark with stainless steel rod driven 3.0 m (10 ft.). The logo cap is stamped---GPS 54 1987---, and a steel spike is embedded in the concrete. Located 57.6 m (189 ft.) south from the north corner of the airport office (a steel hangar), 33.2 m (109 ft.) north from the north edge of a parking ramp and 0.9 m (3 ft.) above same, 34.8 m (114 ft.) northwest from the dual gas pumps, 21.0 m (69 ft.) west from a fiberglass witness post set at a cyclone fence, 15.2 m (50 ft.) east from the center of the drive.

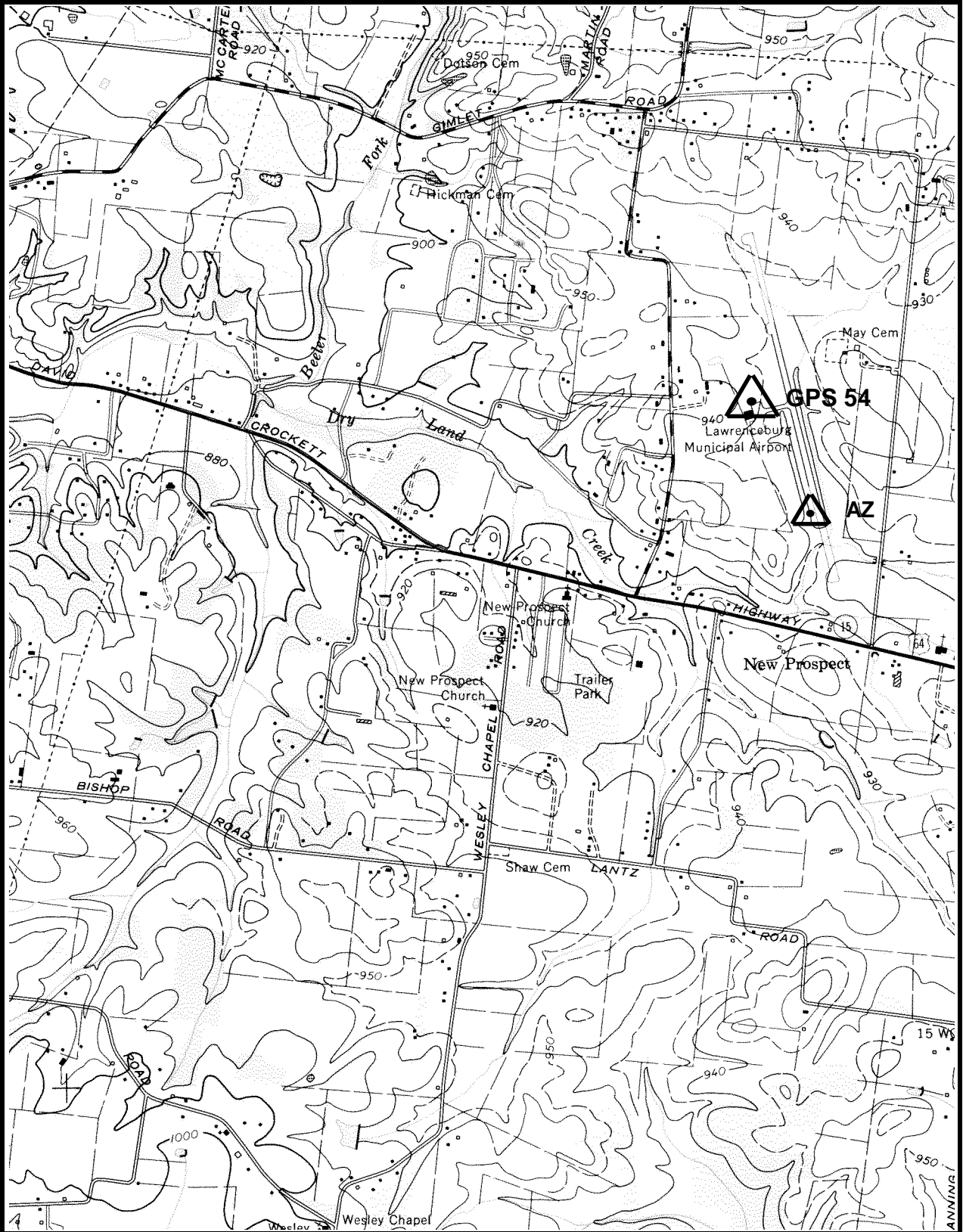
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>285.054 m (935.21 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 14' 5"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>87° 15' 35"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 54</u>	MAP SHEET	<u>52-NE, Lawrenceburg</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 54**

**52-NE, LAWRENCEBURG**

**GPS - 54 AZ MK**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 13' 45.95348"</b>	TN Northing:	<b>100157.162 m</b>
Longitude:	<b>87° 15' 24.43484"</b>	TN Easting:	<b>485594.055 m</b>
Elevation:	<b>280.209 m* (919.32 ft)</b>		
Convergence:	<b>-0° 44' 8.8"</b>	Scale Factor:	<b>1.00000369</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Lawrence</b>	Nearest Town:	<b>Lawrenceburg</b>
USGS QUAD:	<b>Lawrenceburg</b>	TVA Designation:	<b>52-NE</b>

Description:

The azimuth mark is located about 6.4 km (4 mi.) east of Lawrenceburg, at the Lawrenceburg Municipal Airport. Ownership-- Airport Manager is Doris Venable, telephone (615) 762-5133.

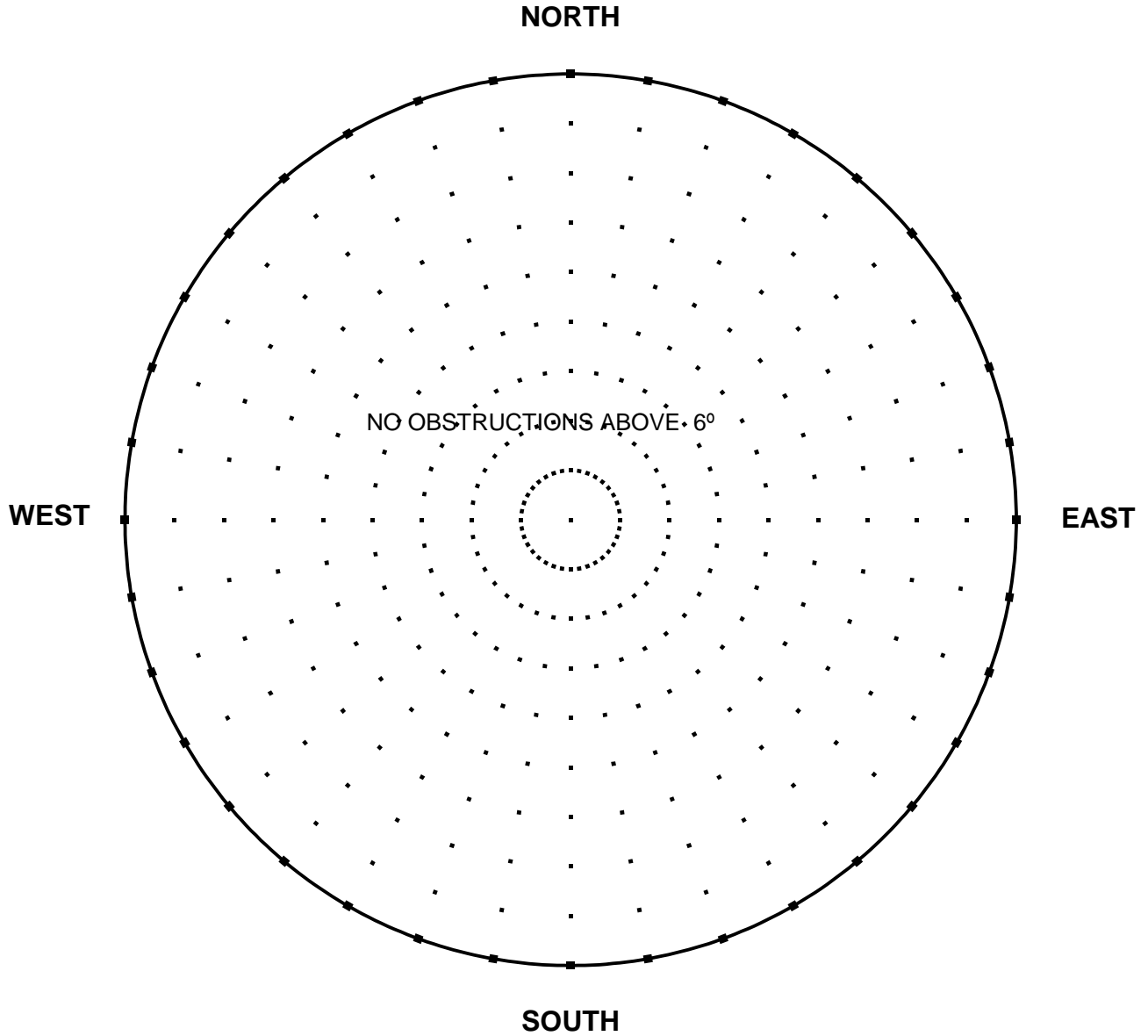
To reach the azimuth mark from the junction of U.S. Highway 43/State Route 6 and U.S. Highway 64/State Route 15 in Lawrenceburg go east for 5.79 km (3.6 mi.) on U.S. Highway 64 to Lone Star Rd. Turn left and go north for 0.8 km (0.5 mi.) on the paved road to the airport entrance drive. Turn right and go east for 0.32 km (0.2 mi.) on the airport entrance drive. Enter the airport gate and travel easterly along the taxiway 0.16 km (0.1 mi.) to the junction of the runway, turn right and go southeast along the southwest side of the runway 0.5 km (0.3 mi.) to the mark on the right, between a vasi and the edge of runway.

The azimuth mark is a 3-D mark with stainless steel rod driven 6.3 m (20.5 ft.). The logo cap is stamped---GPS 54 AZ MK 1987---, and a steel spike is embedded in the concrete. Located 8.1 m (26.5 ft.) west of the southwest runway edge, 42.4 m (139 ft.) northeast of an orange metal electrical box (VASI), and 0.5 m (1.5 ft.) south of a fiberglass witness post.

\* GPS derived elevation using the Geoid 96 Model and the WGS 1984 Reference Ellipsoid.



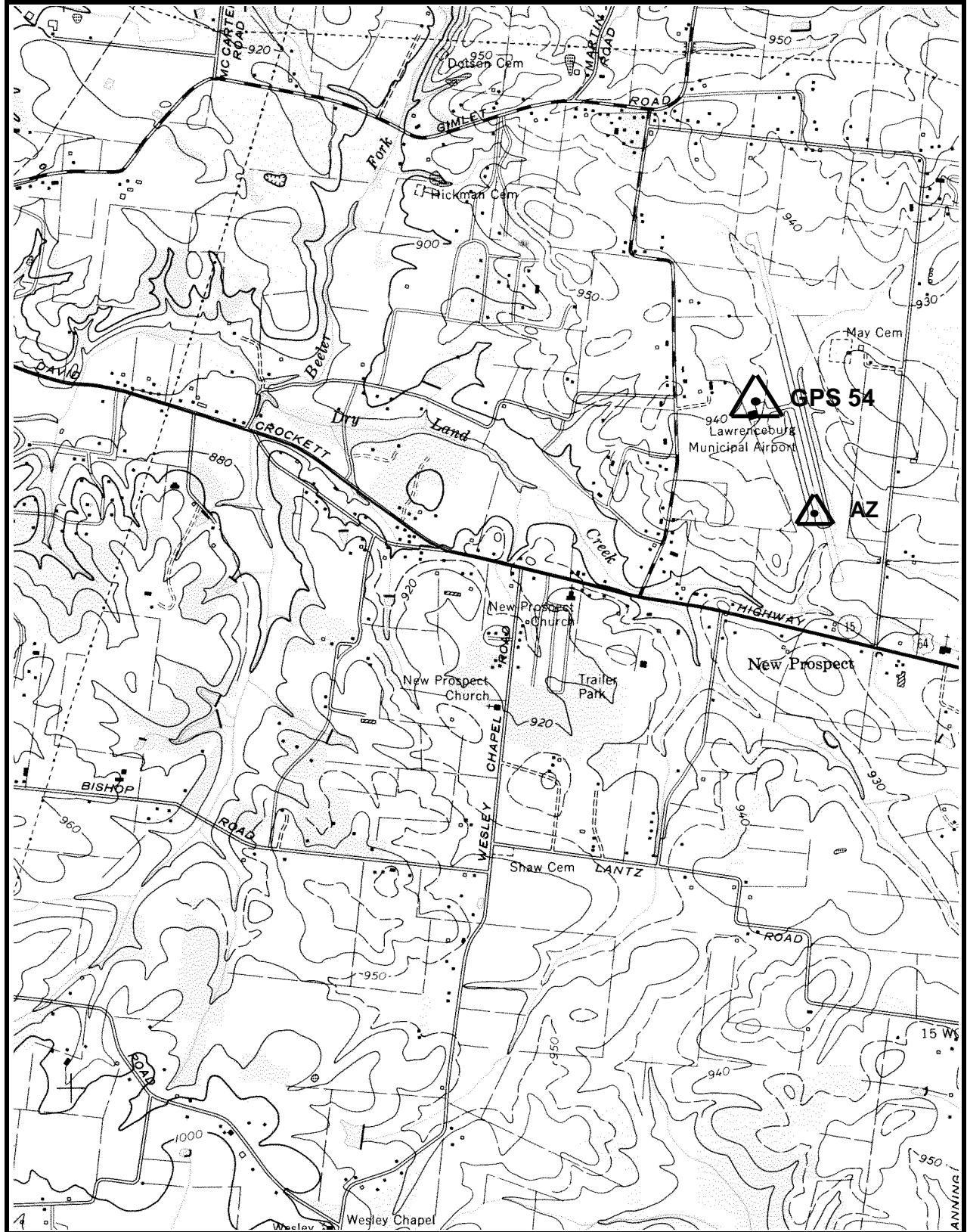
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>280.209 m (919.32 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 13' 46"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>87° 15' 24"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 54 AZ MK</u>	MAP SHEET	<u>52-NE, Lawrenceburg</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 54**

**52-NE, LAWRENCEBURG**

**GPS - 55**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 13' 3.70427"</b>	TN Northing:	<b>99496.050 m</b>
Longitude:	<b>87° 43' 10.78428"</b>	TN Easting:	<b>443439.219 m</b>
Elevation:	<b>329.384 m (1,080.65 ft)</b>		
Convergence:	<b>-1° 0' 24.3"</b>	Scale Factor:	<b>1.00000586</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Wayne</b>	Nearest Town:	<b>Collinwood</b>
USGS QUAD:	<b>Collinwood</b>	TVA Designation:	<b>43-NW</b>

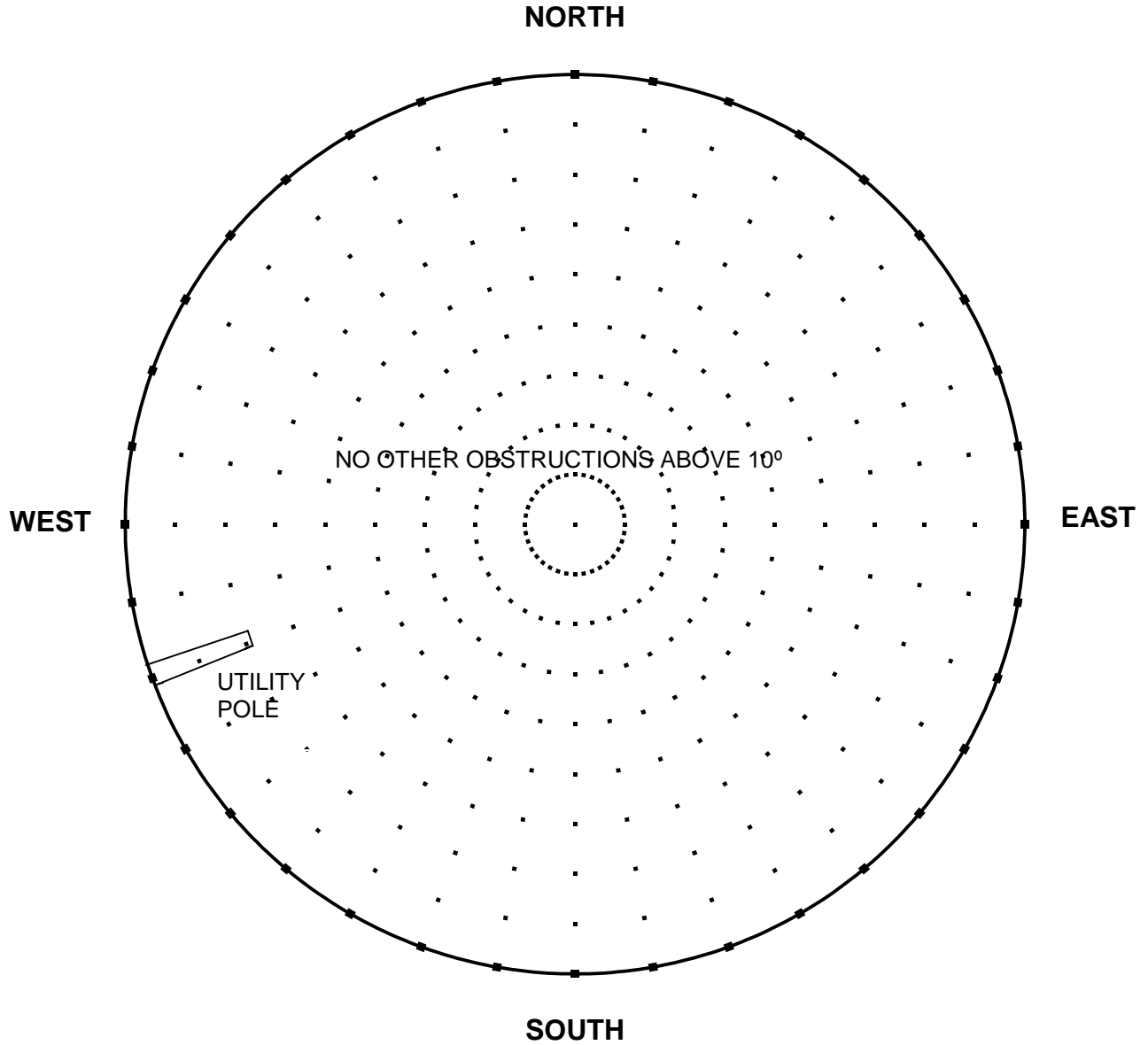
Description:

**The station is located about 14.5 km (9 mi.) south of Waynesboro, 4.8 km (3 mi.) north of Collinwood, on the east right-of-way of State Route 13, atop a low hill. Ownership--State Right-of-Way.**

**To reach the station from Collinwood City Hall go east for 0.16 km (0.1 mi.) on Tennessee Street to the junction of State Route 13. Turn left and go north for 5.23 km (3.25 mi.) on State Route 13 to the station on the right across from a cultivated field.**

**The station is a 3-D mark with stainless steel rod driven 3.1 m (10 ft.). The logo cap is stamped---GPS 5 1987---, and a steel spike is embedded in the concrete. Located 49.4 m (162 ft.) north-northeast from the center of the junction of a gravel road (leading east) and State Route 13, 11.0 m (36 ft.) east from the center of State Route 13 and 0.3 m (1 ft.) above same, 18.3 m (60 ft.) east from a utility pole with one guy wire, 2.7 m (9 ft.) south from a fiberglass witness post, 0.49 m (1.6 ft.) west from the right-of-way fence, 5.43 m (17.8 ft.) south-southeast from the USCGS Station McCall 1934.**

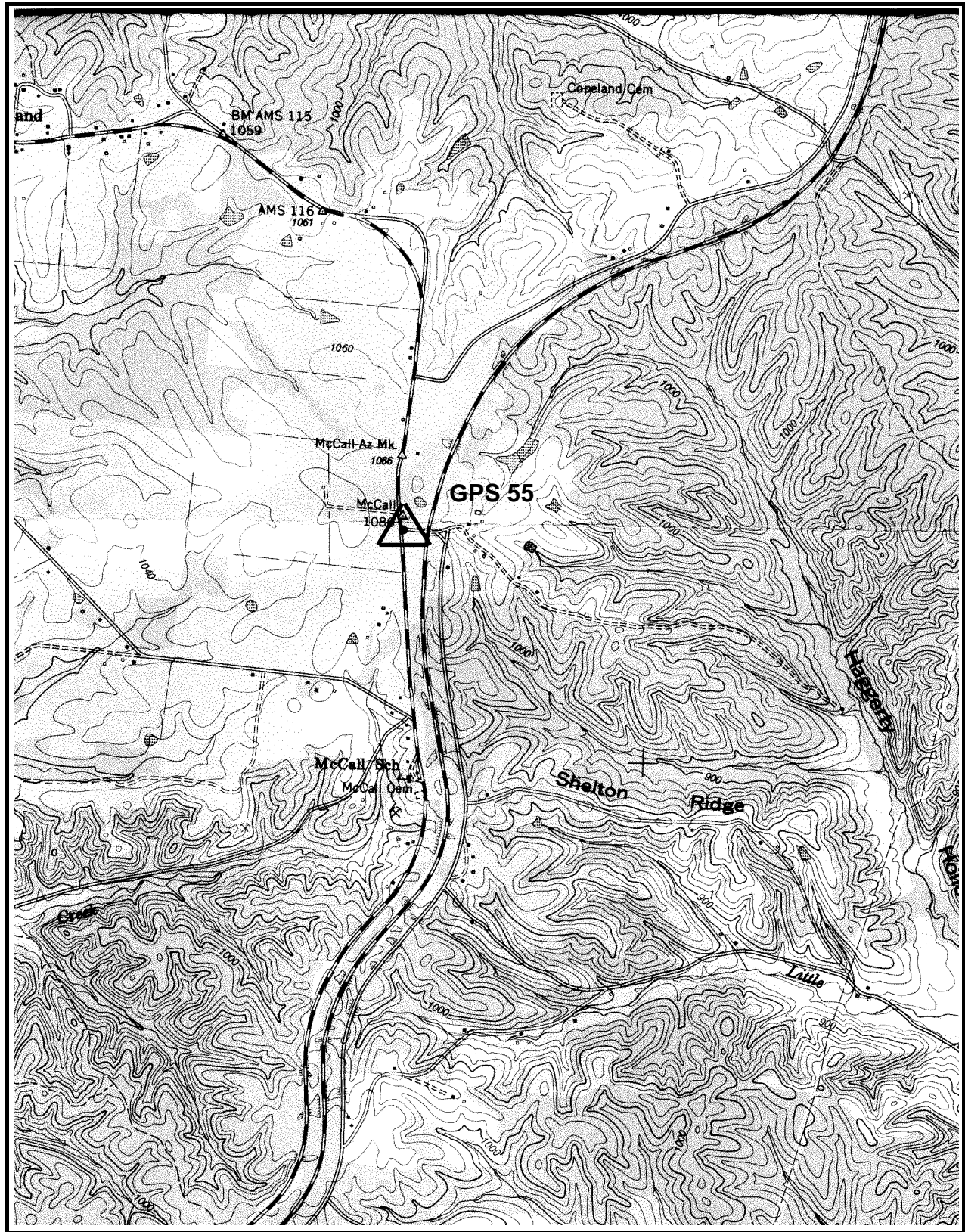
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>329.384 m (1,080.65 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 13' 4"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>87° 43' 11"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 55</u>	MAP SHEET	<u>43-NW, Collinwood</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 55**

**43-NW, COLLINWOOD**

**GPS - 56**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 13' 53.40625"</b>	TN Northing:	<b>101881.560 m</b>
Longitude:	<b>88° 11' 22.03225"</b>	TN Easting:	<b>400709.327 m</b>
Elevation:	<b>124.062 m (407.03 ft)</b>		
Convergence:	<b>-1° 16' 54.5"</b>	Scale Factor:	<b>1.00000332</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Hardin</b>	Nearest Town:	<b>Savannah</b>
USGS QUAD:	<b>Savannah</b>	TVA Designation:	<b>24-NW</b>

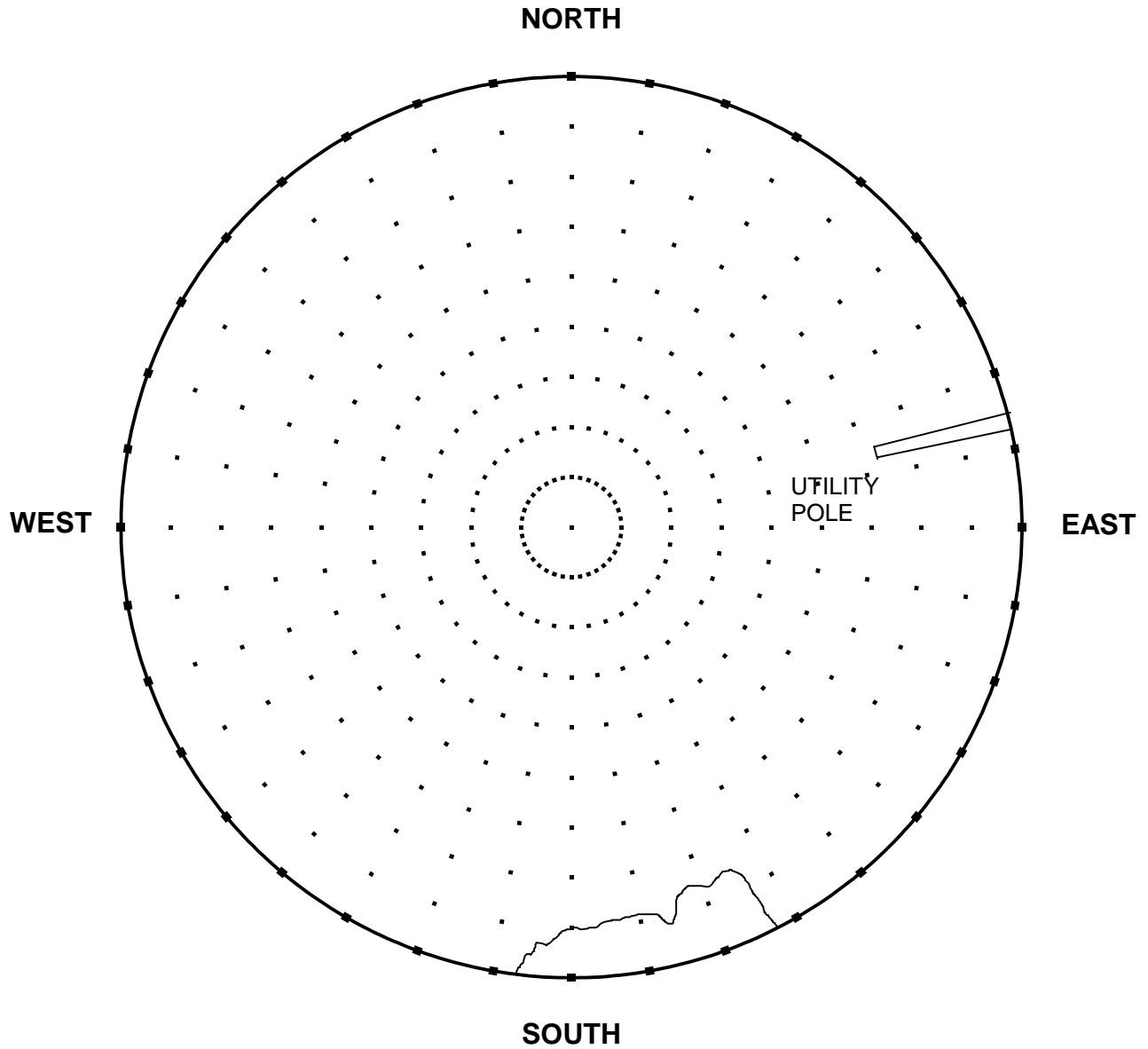
Description:

The station is located about 5.6 km (3.5 mi.) east of Savannah, on the south edge of U.S. Highway 64/State Route 15 atop a low cut. Ownership--State Right-of-Way.

To reach the station from the Courthouse in Savannah go east for 0.6 km (0.4 mi.) on U.S. Highway 64 to a fork. Follow the left fork and go east for 4.2 km (2.6 mi.) on U.S. Highway 64 to the junction of State Route 226. Continue straight ahead and go east for 0.56 km (0.35 mi.) on U.S. Highway 64 to a bridge over a creek. Continue straight ahead and go east for 0.5 km (0.3 mi.) on U.S. Highway 64 to the station on the right.

The station is a 3-D mark with stainless steel rod driven 4.9 m (16 ft.). The logo cap is stamped---GPS 56 1987---, and a steel spike is embedded in the concrete. Located 18.6 m (61 ft.) south from the road center and 0.9 m (3 ft.) above same, 23.32 m (76.5 ft.) south from a dual utility pole numbered 53, 74.7 m (245.1 ft.) north from a utility pole numbered 254, 1.0 m (3.28 ft.) north from a fiberglass witness post at the south right-of-way fence.

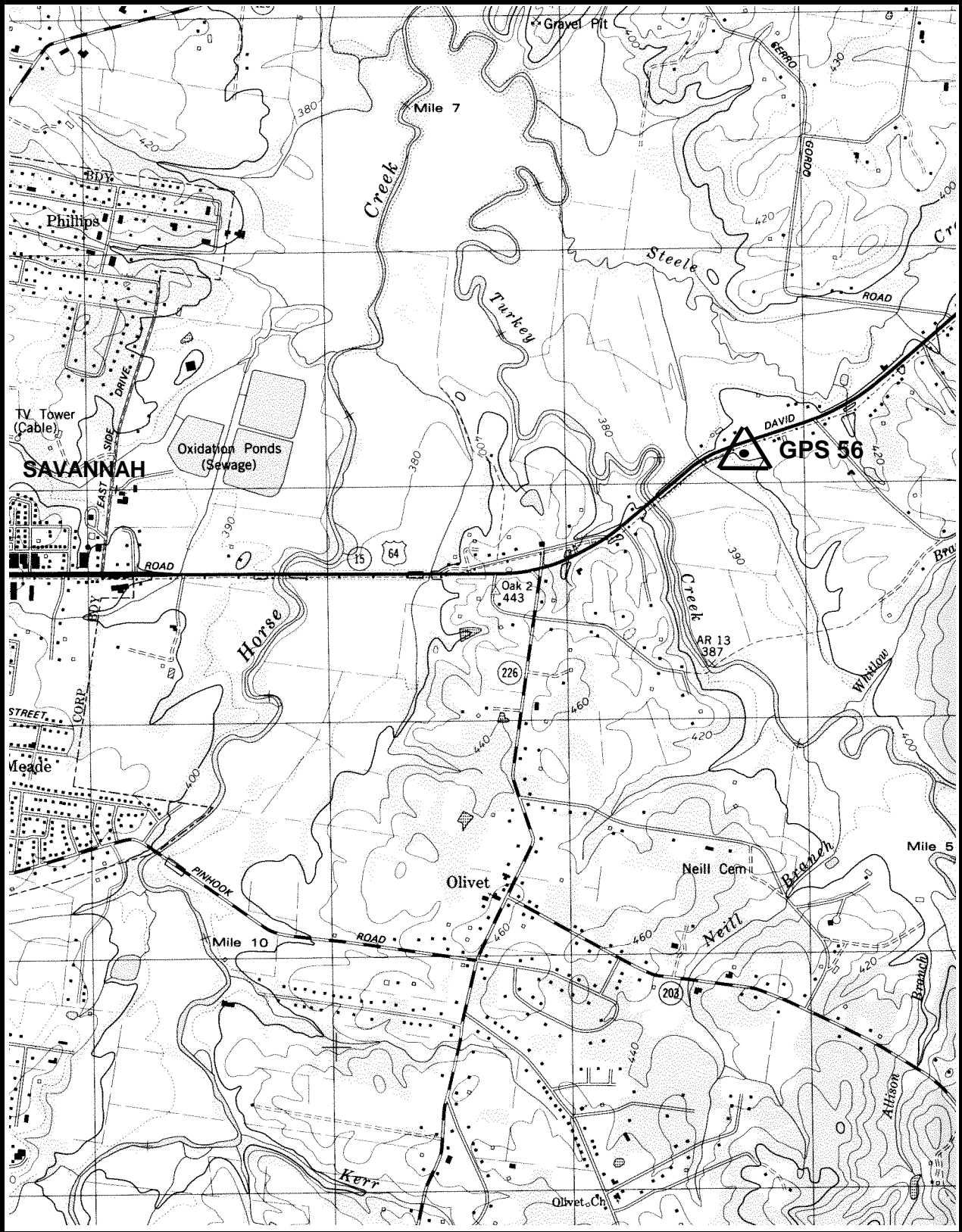
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>124.062 m (407.03 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 13' 53"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>88° 11' 22"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 56</u>	MAP SHEET	<u>24-NW, Savannah</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



GPS 56

24-NW, SAVANNAH



**GPS - 57**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 12' 21.02953"</b>	TN Northing:	<b>99711.687 m</b>
Longitude:	<b>88° 29' 58.23938"</b>	TN Easting:	<b>372420.007 m</b>
Elevation:	<b>184.197 m (604.32 ft)</b>		
Convergence:	<b>-1° 27' 47.9"</b>	Scale Factor:	<b>1.00000809</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>McNairy</b>	Nearest Town:	<b>Selmer</b>
USGS QUAD:	<b>Stantonville</b>	TVA Designation:	<b>13-NW</b>

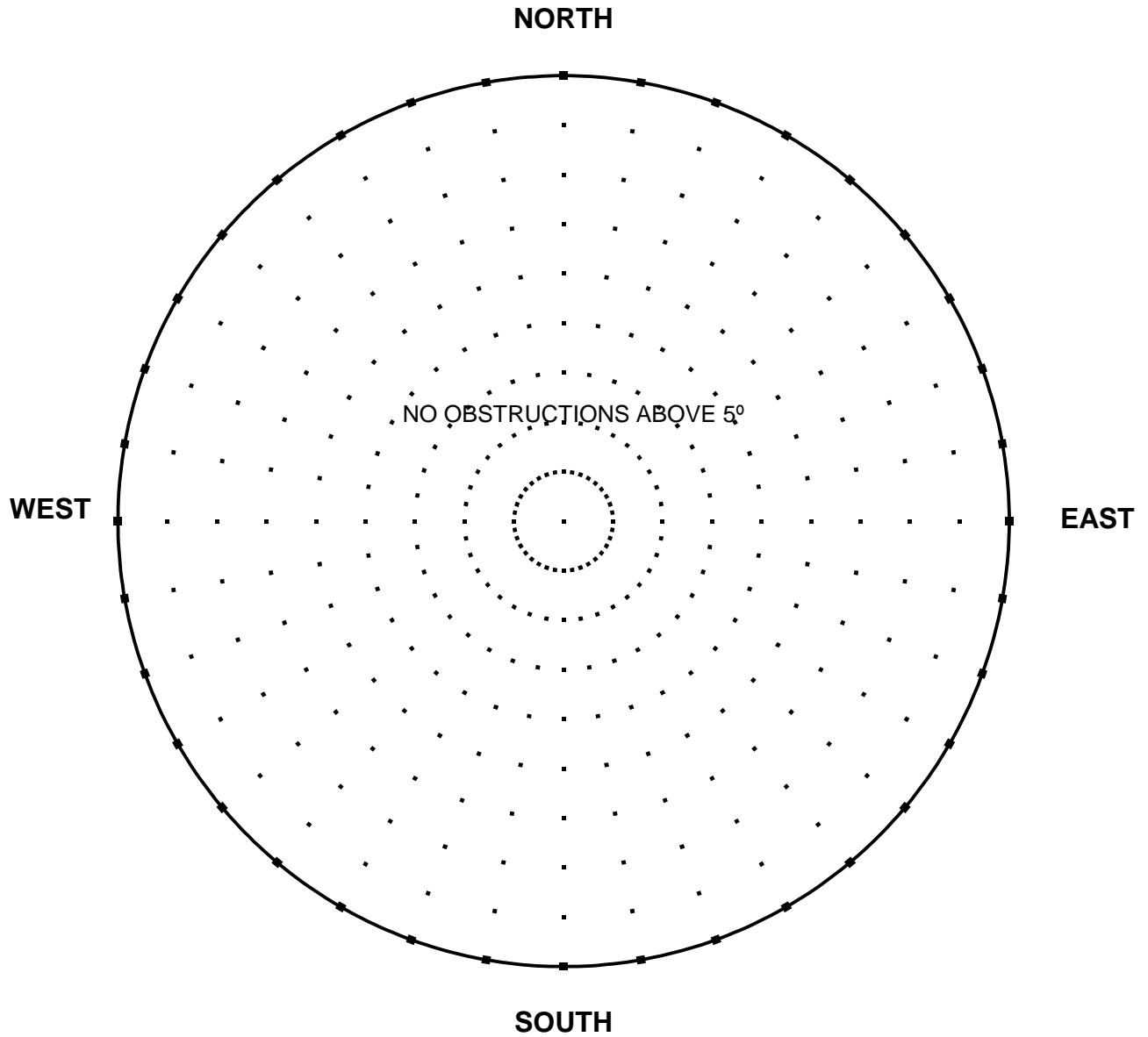
Description:

The station is located about 10.5 km (6.5 mi.) east northeast of Selmer in McNairy County, at the Selmer/Sibley Airport, at the junction of a taxiway and the runway, 0.24 km (0.15 mi.) north-northeast of the airport office (a two story brick building). Ownership--Airport Manager is Joseph Tucker or Hollis Reeves, telephone (901) 645-3014. Call for night access.

To reach the station from the junction of U.S. Highway 64/State Route 15 and U.S. Highway 45/State Route 5 about 1.6 km (1 mi.) southeast of Selmer go east-northeast for 8.4 km (5.2 mi.) on U.S. Highway 64 to the junction of a paved road. Turn left and go north for 1.3 km (0.8 mi.) on the paved road to the airport office and the station located 0.24 km (0.15 mi.) north-northeast from the office.

The station is a 3-D mark with stainless steel rod driven 2.4 m (8 ft.). The logo cap is stamped---GPS 57 1987---, and a steel spike is embedded in the concrete. Located 21.6 m (71 ft.) west from the runway center and 0.3 m (1 ft.) below same, 17.4 m (57 ft.) east from the taxiway center, 0.3 m (1.0 ft.) south from a fiberglass witness post.

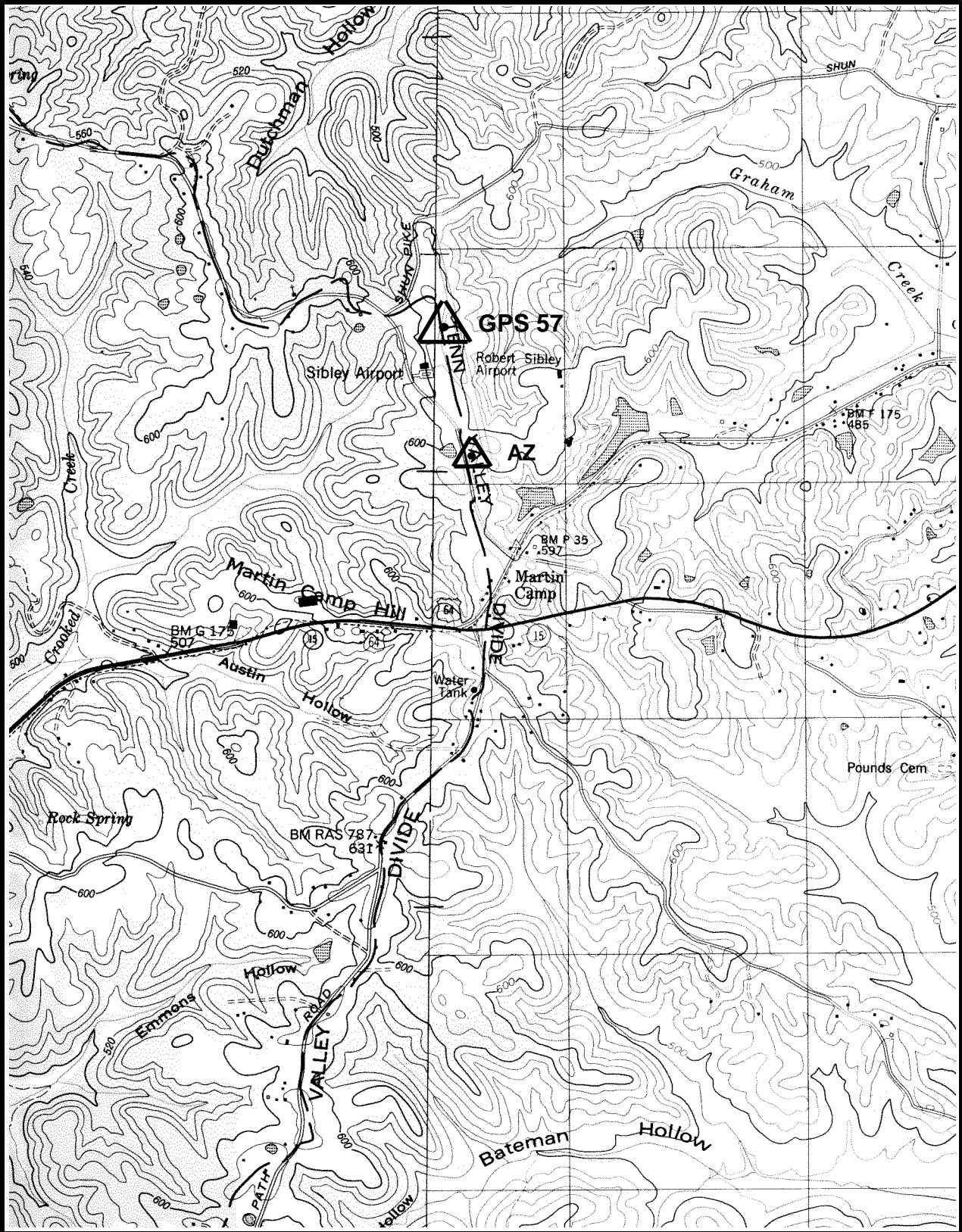
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>184.197 m (604.32 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 12' 21"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>88° 29' 58"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 57</u>	MAP SHEET	<u>13-NW, Stantonville</u>
			<u>4-NE, Purdy</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 57

13-NW, STANTONVILLE  
4-NE, PURDY

**GPS - 57 AZ MK**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 12' 03.63487"</b>	TN Northing:	<b>99172.328 m</b>
Longitude:	<b>88° 29' 52.87718"</b>	TN Easting:	<b>372541.915 m</b>
Elevation:	<b>184.400 m* (604.99 ft)</b>		
Convergence:	<b>-1° 27' 44.8"</b>	Scale Factor:	<b>1.00000901</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>McNairy</b>	Nearest Town:	<b>Selmer</b>
USGS QUAD:	<b>Stantonville</b>	TVA Designation:	<b>13-NW</b>

Description:

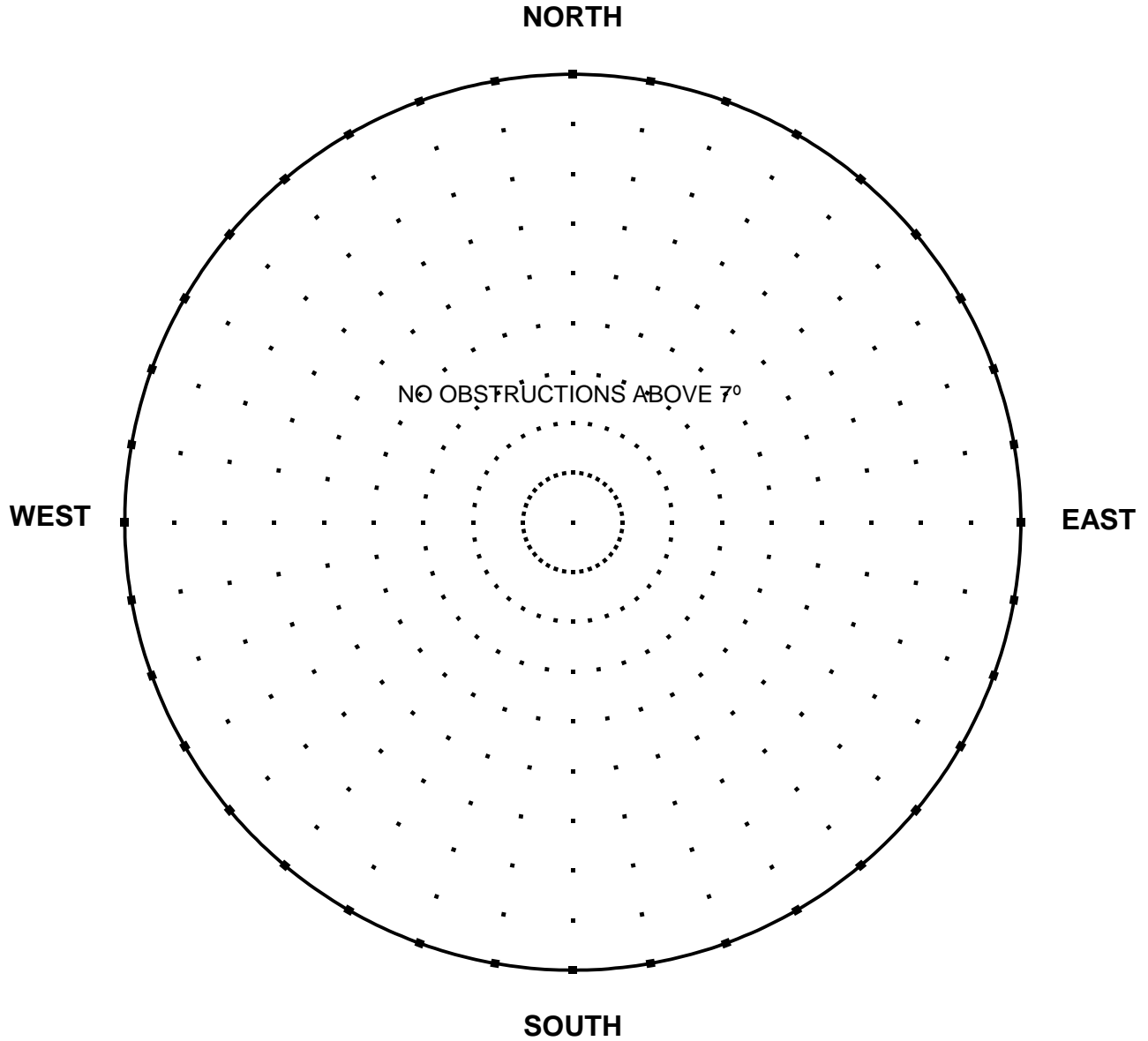
The azimuth mark is located about 10.5 km (6.5 mi.) east northeast of Selmer in McNairy County, at the Selmer/Sibley Airport, at the junction of a taxiway and the runway, 0.24 km (0.15 mi.) north-northeast of the airport office (a two story brick building). Ownership--Airport Manager is Joseph Tucker or Hollis Reeves, telephone (901) 645-3014. Call for night access.

To reach the azimuth mark from the junction of U.S. Highway 64/State Route 15 and U.S. Highway 45/State Route 5 about 1.6 km (1 mi.) southeast of Selmer go east-northeast for 8.4 km (5.2 mi.) on U.S. Highway 64 to the junction of a paved road. Turn left and go north for 1.3 km (0.8 mi.) on the paved road to the airport office. Then go 0.16 km (0.1 mi) southeast along the taxiway to the junction of the runway. Turn right and go 0.24 km (0.15 mi.) south along the west side of the runway to the mark on the right, between a vasi and the runway edge.

The azimuth mark is a 3-D mark with stainless steel rod driven 3.05 m (10 ft.). The logo cap is stamped---GPS 57 AZ MK 1987---, and a steel rebar is embedded in the concrete. Located 3.7 m (12.2 ft.) east of the center of the concrete base for the southern most of the previous location of two vasi's (this previous location is approximately 114.3 m (375 ft.) south of the southern most taxiway light), 11.9 m (39 ft.) west of the west edge of the runway, and 0.3 meters (1.0 ft.) south of a fiberglass witness post.

\* GPS derived elevation using the Geoid 96 Model and the WGS 1984 Reference Ellipsoid.

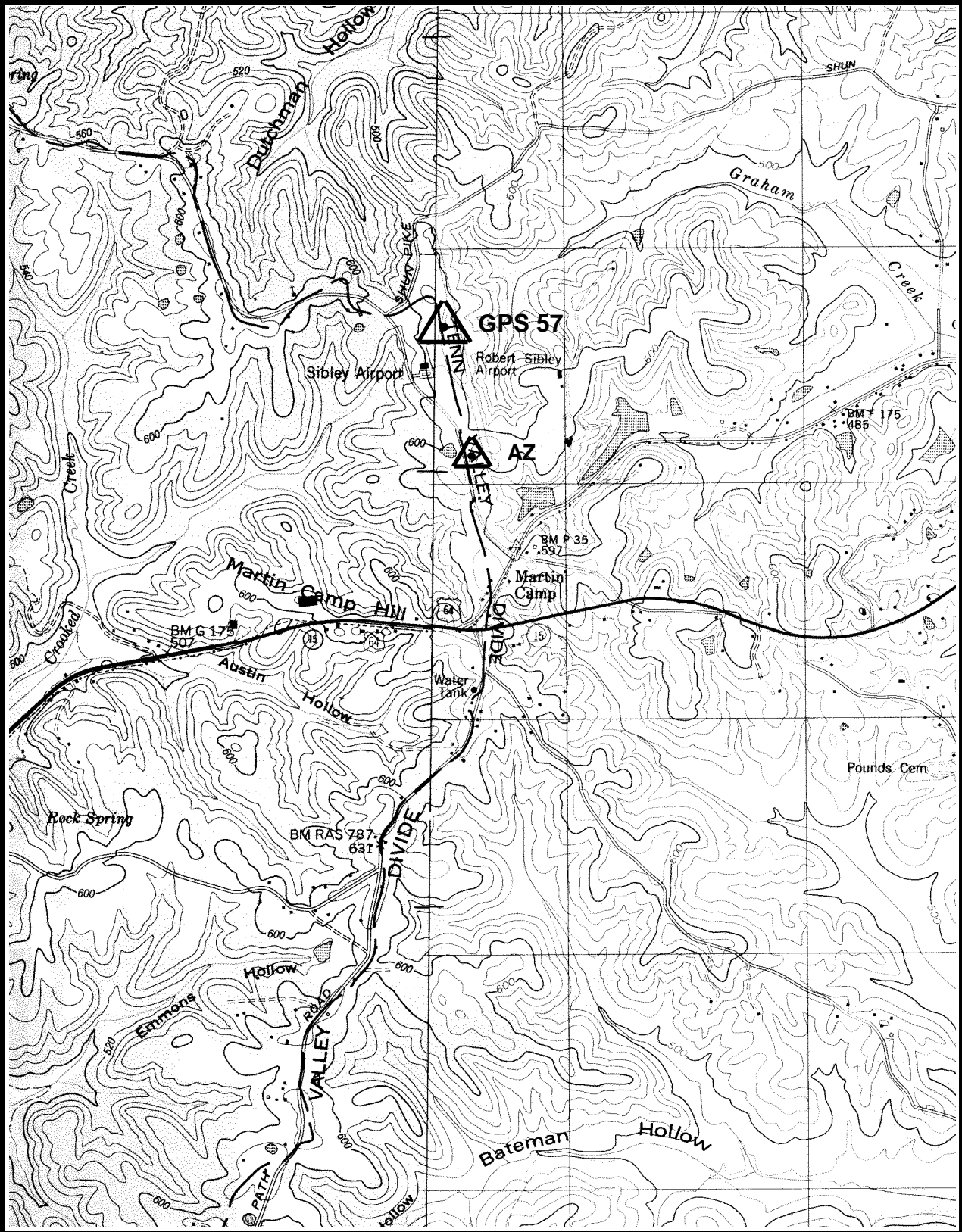
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>184.400 m (604.99 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 12' 4"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>88° 29' 53"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 57 AZ MK</u>	MAP SHEET	<u>13-NW, Stantonville</u> <u>4-NE, Purdy</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 57**

**13-NW, STANTONVILLE  
4-NE, PURDY**

**GPS - 58**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 12' 44.84620"</b>	TN Northing:	<b>101847.588 m</b>
Longitude:	<b>89° 2' 36.18469"</b>	TN Easting:	<b>322937.768 m</b>
Elevation:	<b>151.291 m (496.36 ft)</b>		
Convergence:	<b>-1° 46' 54.2"</b>	Scale Factor:	<b>1.00000684</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Hardeman</b>	Nearest Town:	<b>Bolivar</b>
USGS QUAD:	<b>Middleburg</b>	TVA Designation:	<b>432-NE</b>

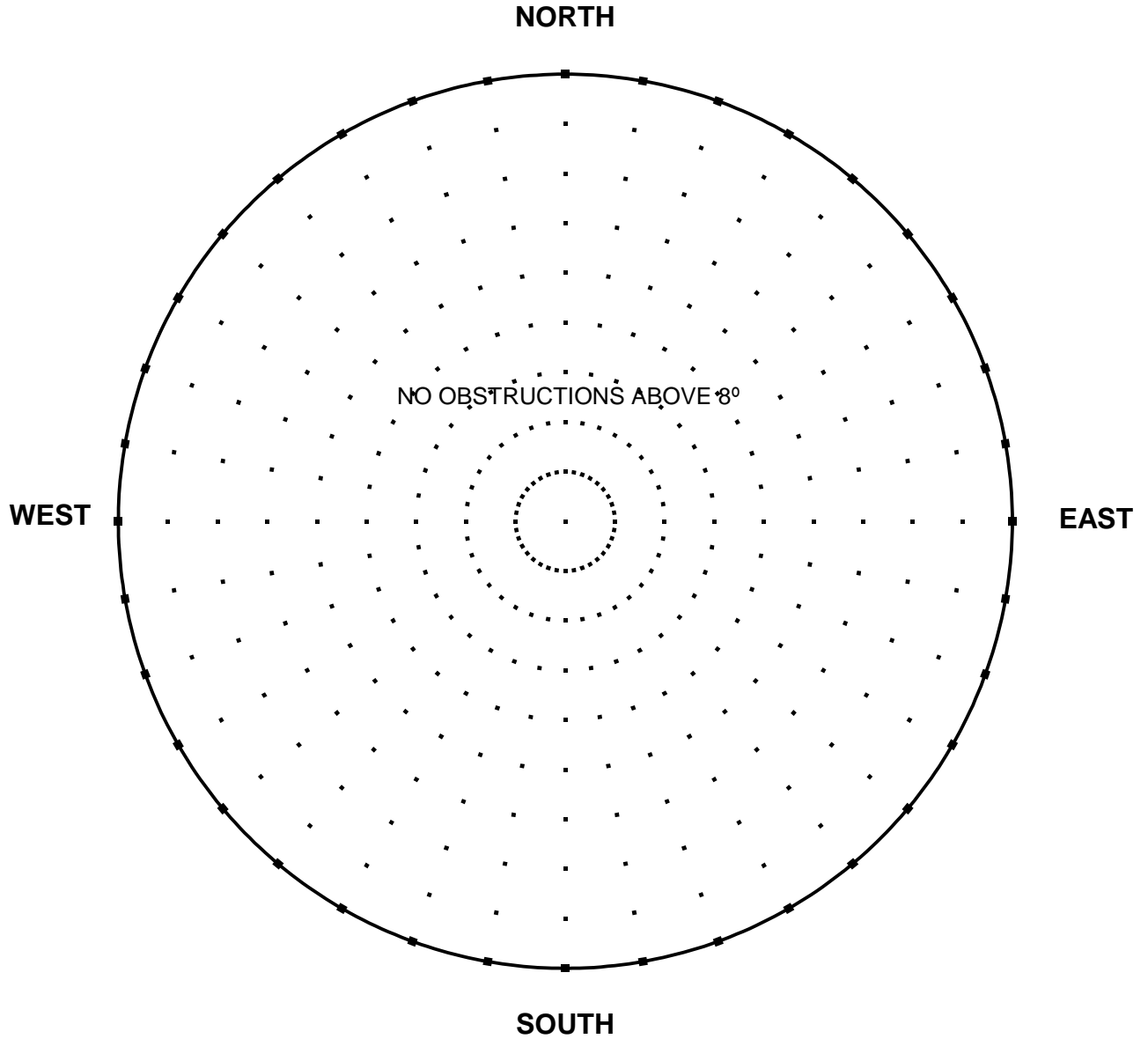
Description:

The station is located about 8.1 km (5 mi.) southwest of Bolivar, at the Bolivar/Hardeman County Airport, 0.16 km (0.1 mi.) south-southwest of the airport office, between the runway and a parking ramp. Ownership--Airport Manager is Dave Perrin (partner is Steve Aldred), telephone (901) 658-7556. Call for night access.

To reach the station from the junction of U.S. Highway 64 and State Route 18 just west of Bolivar go southwest for 5.3 km (3.3 mi.) on State Route 18 to the airport entrance drive. Turn left and go south for 1.3 km (0.8 mi.) on the airport entrance drive to the airport office and the station located 0.16 km (0.1 mi.) south-southwest of the office.

The station is a 3-D mark with stainless steel rod driven to refusal. The logo cap is stamped---GPS 58 1987---, and a steel spike is embedded in the concrete. Located 13.2 m (43 ft.) east from the runway edge and 0.9 m (3 ft.) below same, 30.5 m (100 ft.) west from the west edge of the parking ramp, 22.9 m (75 ft.) north from the center of a taxiway crossover, 10.7 m (35 ft.) northwest from the center of a culvert headwall, 0.3 m (1 ft.) north from a fiberglass witness post.

# STATION VISIBILITY DIAGRAM

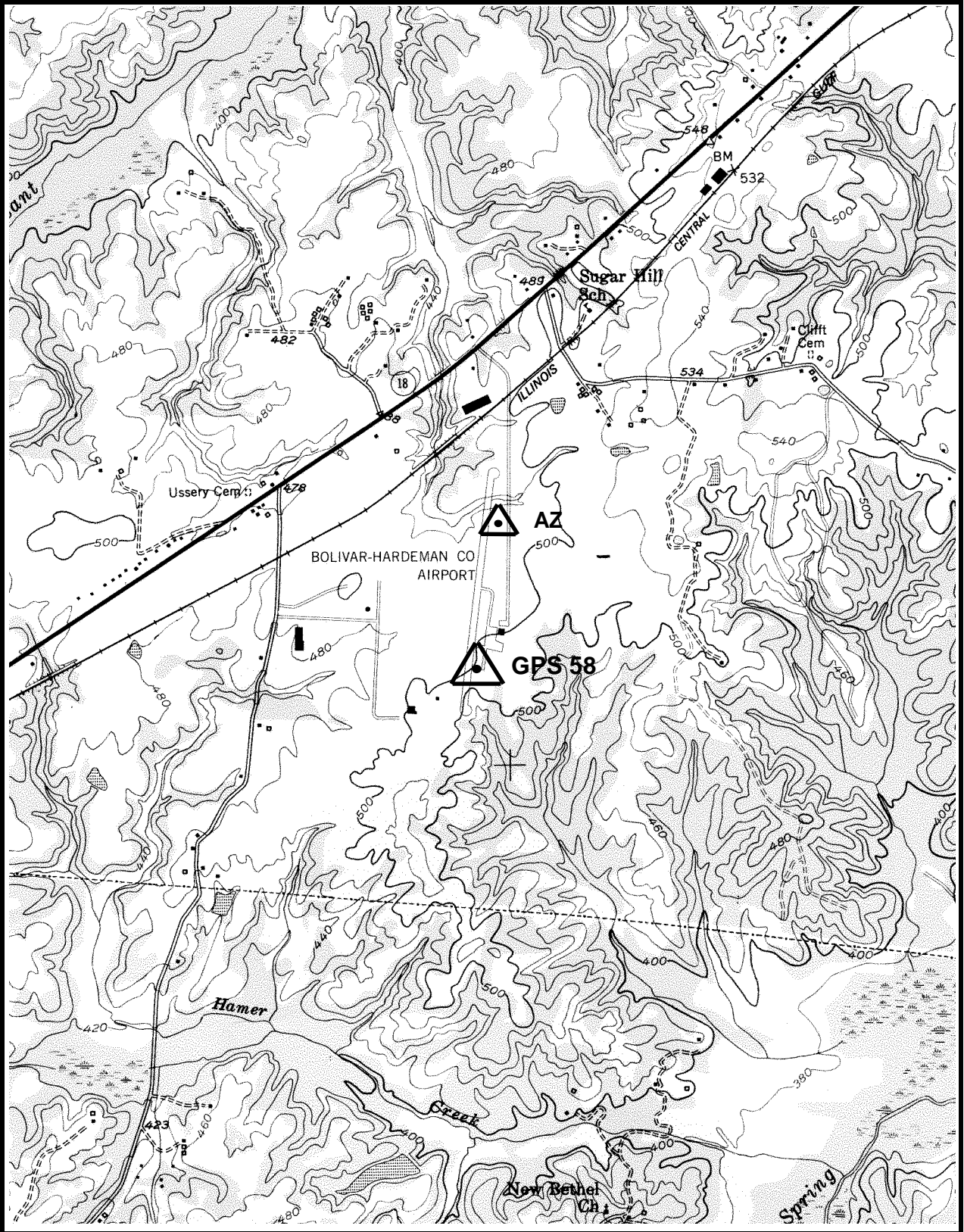


ELEVATION	<u>151.291 m (496.36 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 12' 45"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>89° 2' 36"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 58</u>	MAP SHEET	<u>432-NE, Middleburg</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:



**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 58**

**432-NE, MIDDLEBURG**

**GPS - 58 AZ MK**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 13' 04.77794"</b>	TN Northing:	<b>102459.289 m</b>
Longitude:	<b>89° 2' 33.30885"</b>	TN Easting:	<b>323029.563 m</b>
Elevation:	<b>147.881 m* (485.17 ft)</b>		
Convergence:	<b>-1° 46' 52.5"</b>	Scale Factor:	<b>1.00000580</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Hardeman</b>	Nearest Town:	<b>Bolivar</b>
USGS QUAD:	<b>Middleburg</b>	TVA Designation:	<b>432-NE</b>

Description:

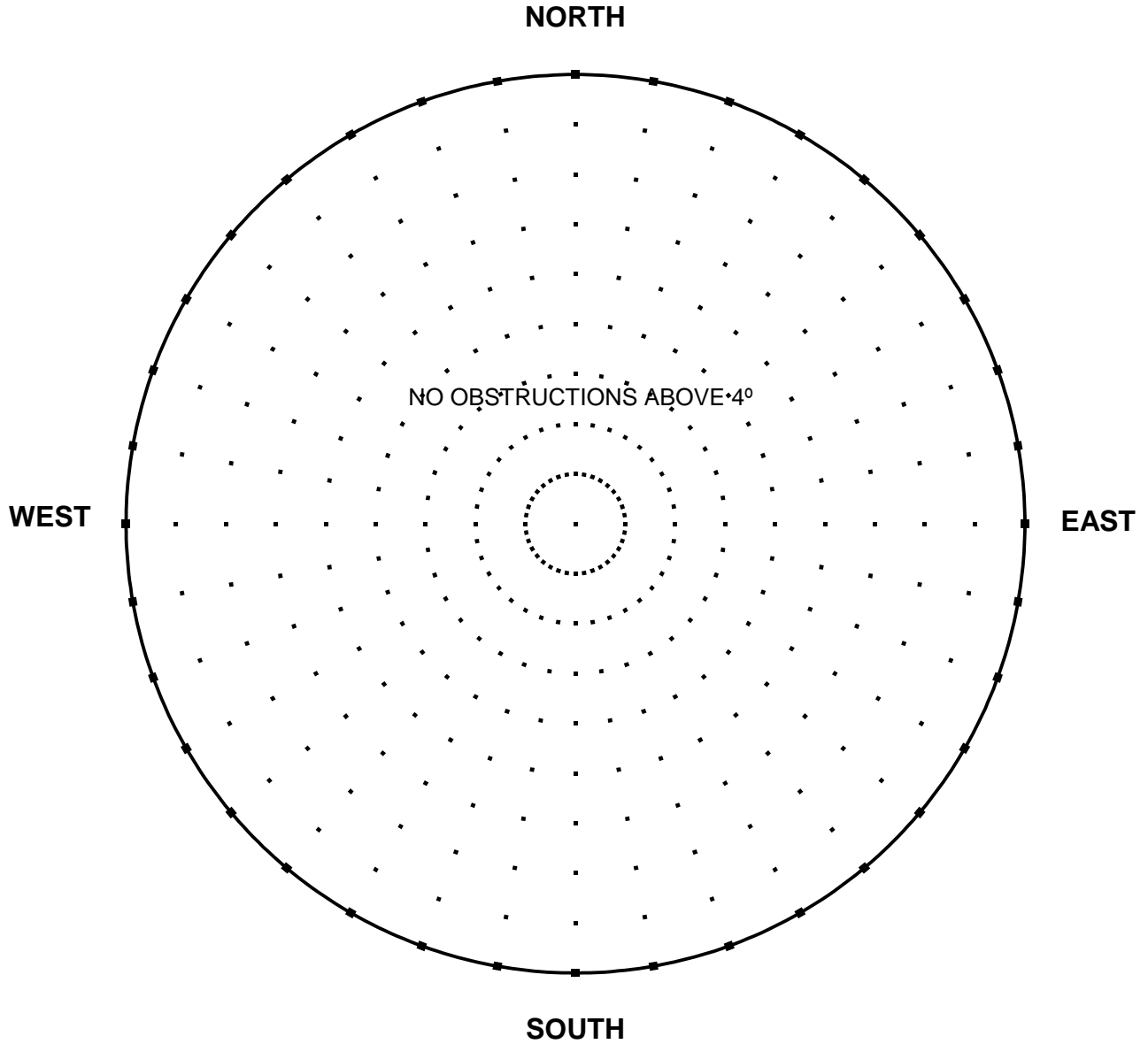
The azimuth mark is located about 8.1 km (5 mi.) southwest of Bolivar, at the Bolivar/Hardeman County Airport, 0.16 km (0.1 mi.) south-southwest of the airport office, between the runway and a parking ramp. Ownership--Airport Manager is Dave Perrin (partner is Steve Aldred), telephone (901) 658-7556. Call for night access.

To reach the mark from the junction of U.S. Highway 64 and State Route 18 just west of Bolivar go southwest for 5.3 km (3.3 mi.) on State Route 18 to the airport entrance drive. Turn left and go south for 1.3 km (0.8 mi.) on the airport entrance drive to the airport office. Then turn right and go north 0.5 km (0.3 mi.) along the taxiway to the mark. The distance is measured from the gate at the northwest corner of the airport office building, however, the gate is often locked and access provided around the back of the office building and hangar.

The azimuth mark is a 3-D mark with stainless steel rod driven 29.3 m (96 ft.) to refusal. The logo cap is stamped---GPS 58 AZ MK 1987-- -, and is 0.08 m (0.25 ft.) below the surface of the ground, with a rebar in the concrete. Located 3.5 m (11.5 ft.) west of the center of the concrete base for a vasi, 11.7 m (38.4 ft.) east of the east edge of the runway, 31.9 m (104.5 ft.) west of the west edge of the taxiway, 30.0 m (98.5 ft.) north of a vasi, and 0.3 m (1.0 ft.) north of a fiberglass witness post. Also 0.16 km (0.1 mi.) south of the north end of the runway.

\* GPS derived elevation using the Geoid 96 Model and the WGS 1984 Reference Ellipsoid.

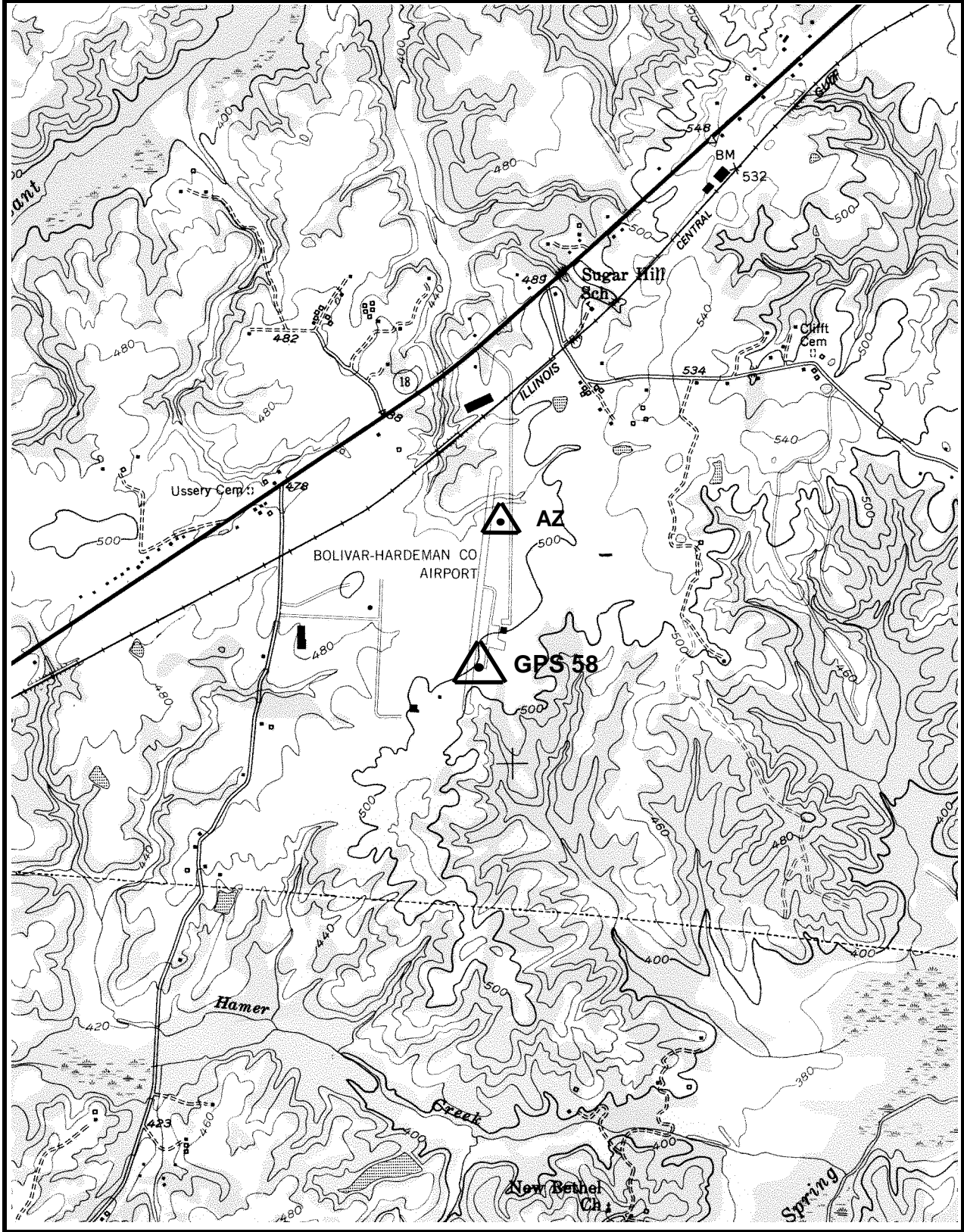
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>147.881 m (485.17 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 13' 05"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>89° 2' 33"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 58 AZ MK</u>	MAP SHEET	<u>432-NE, Middleburg</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 58

432-NE, MIDDLEBURG

**GPS - 59**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 9' 21.84872"</b>	TN Northing:	<b>96812.678 m</b>
Longitude:	<b>89° 26' 47.90713"</b>	TN Easting:	<b>286020.331 m</b>
Elevation:	<b>124.595 m (408.78 ft)</b>		
Convergence:	<b>-2° 1' 4.1"</b>	Scale Factor:	<b>1.00001790</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Fayette</b>	Nearest Town:	<b>Somerville</b>
USGS QUAD:	<b>Macon</b>	TVA Designation:	<b>424-NW</b>

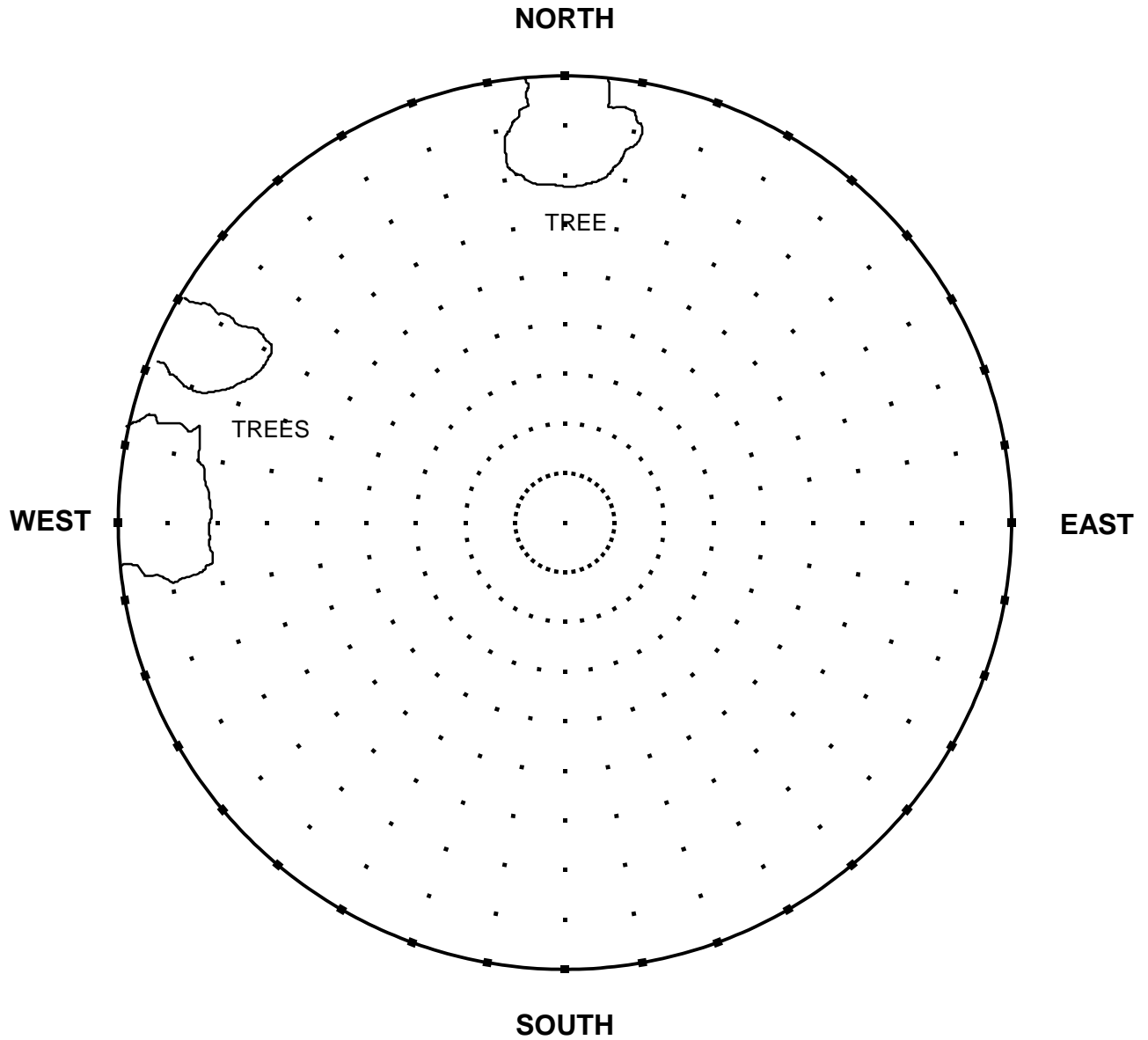
Description:

**The station is located about 14.5 km (9 mi.) southwest of Somerville, in a grass island at the junction of State Routes 195 and 193. Ownership--State Right-of-Way.**

**To reach the station from the Courthouse in Somerville go south for 2.6 km (1.6 mi.) on State Route 76 to the junction of State Route 195. Turn right and go southwest for 12.1 km (7.5 mi.) on State Route 195 to the junction of State Route 193 and the station.**

**The station is a 3-D mark with stainless steel rod driven 7.9 m (26 ft.). The logo cap is stamped---GPS 59 1987---, and a steel spike is embedded in the concrete. Located 8.2 m (27 ft.) south from the center of State Route 195, 7.5 m (25 ft.) north from the center of State Route 193 and level with same, 6.2 m (20.5 ft.) east from a stop sign, 39.6 m (130 ft.) east from a power pole with four guy wires, 25.0 m (82 ft.) northeast from a concrete R.O.W. marker south of State Route 193, 18.7 m (61 ft.) west of the most easterly of the two stop signs and 0.3 m (1 ft.) north of a fiberglass witness post.**

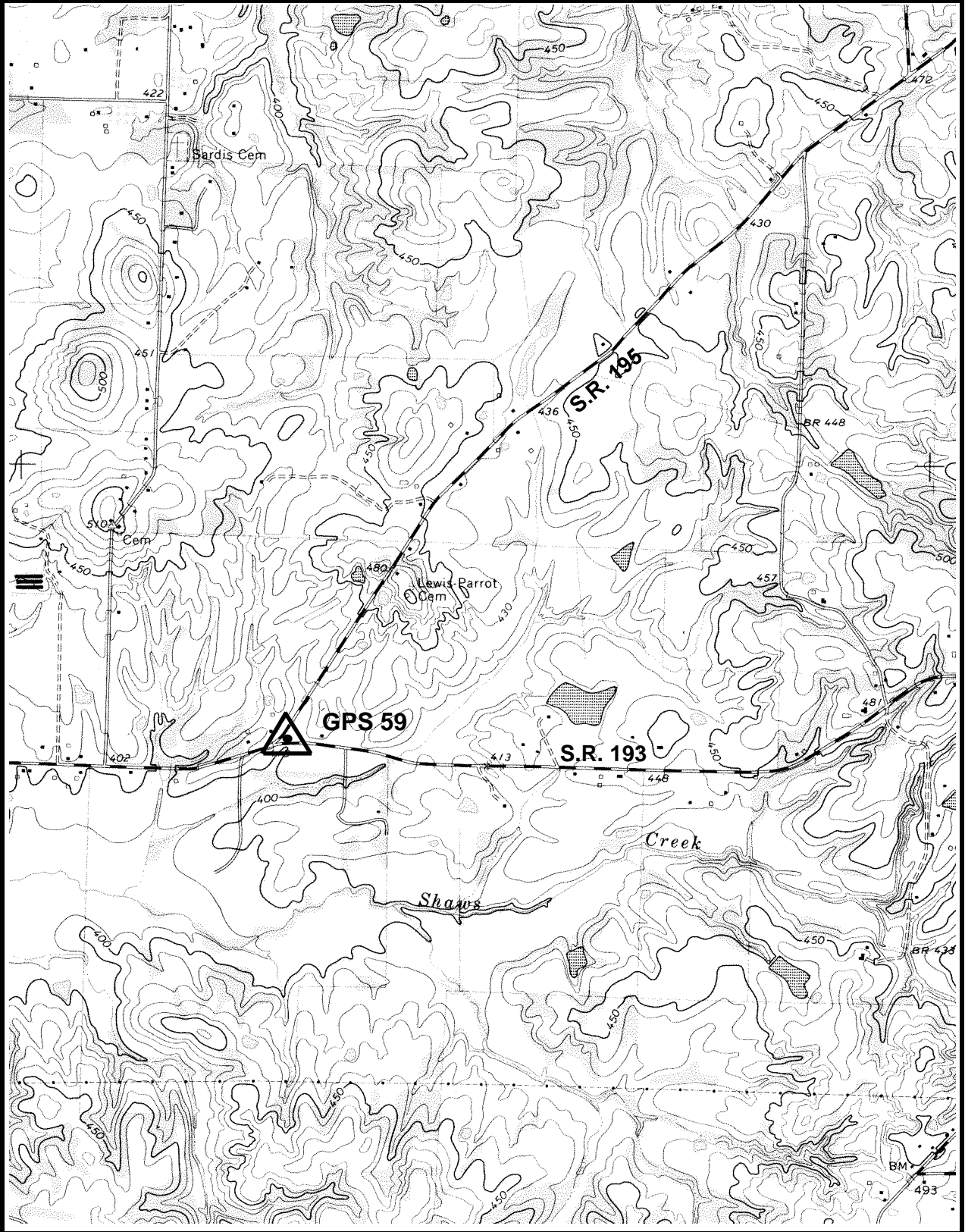
# STATION VISIBILITY DIAGRAM



ELEVATION	<u>124.595 m (408.78 ft)</u>	DATE	<u>July 1997</u>
LATITUDE	<u>35° 9' 22"</u>	ORGANIZATION	<u>TDOT</u>
LONGITUDE	<u>89° 26' 48"</u>	MAP SCALE	<u>7 1/2' USGS</u>
STATION NAME	<u>GPS 59</u>	MAP SHEET	<u>424-NW, Macon</u>
		OBSERVER	<u>CLJ</u>
		Observer's height	<u>6'</u>

NOTES:

**TENNESSEE GEODETIC REFERENCE NETWORK**



**GPS 59**

**424-NW, MACON**

**GPS - 60**

*All values are referenced to the North American Datum NAD 83 (1995)*

Latitude:	<b>35° 8' 46.44496"</b>	TN Northing:	<b>97296.815 m</b>
Longitude:	<b>89° 54' 24.04763"</b>	TN Easting:	<b>244089.427 m</b>
Elevation:	<b>84.091 m (275.89 ft)</b>		
Convergence:	<b>-2° 17' 13.7"</b>	Scale Factor:	<b>1.00001993</b>
Monument Set by:	<b>NGS</b>	Date:	<b>1987</b>
County:	<b>Shelby</b>	Nearest Town:	<b>Memphis</b>
USGS QUAD:	<b>Northeast Memphis</b>	TVA Designation:	<b>409-NW</b>

Description:

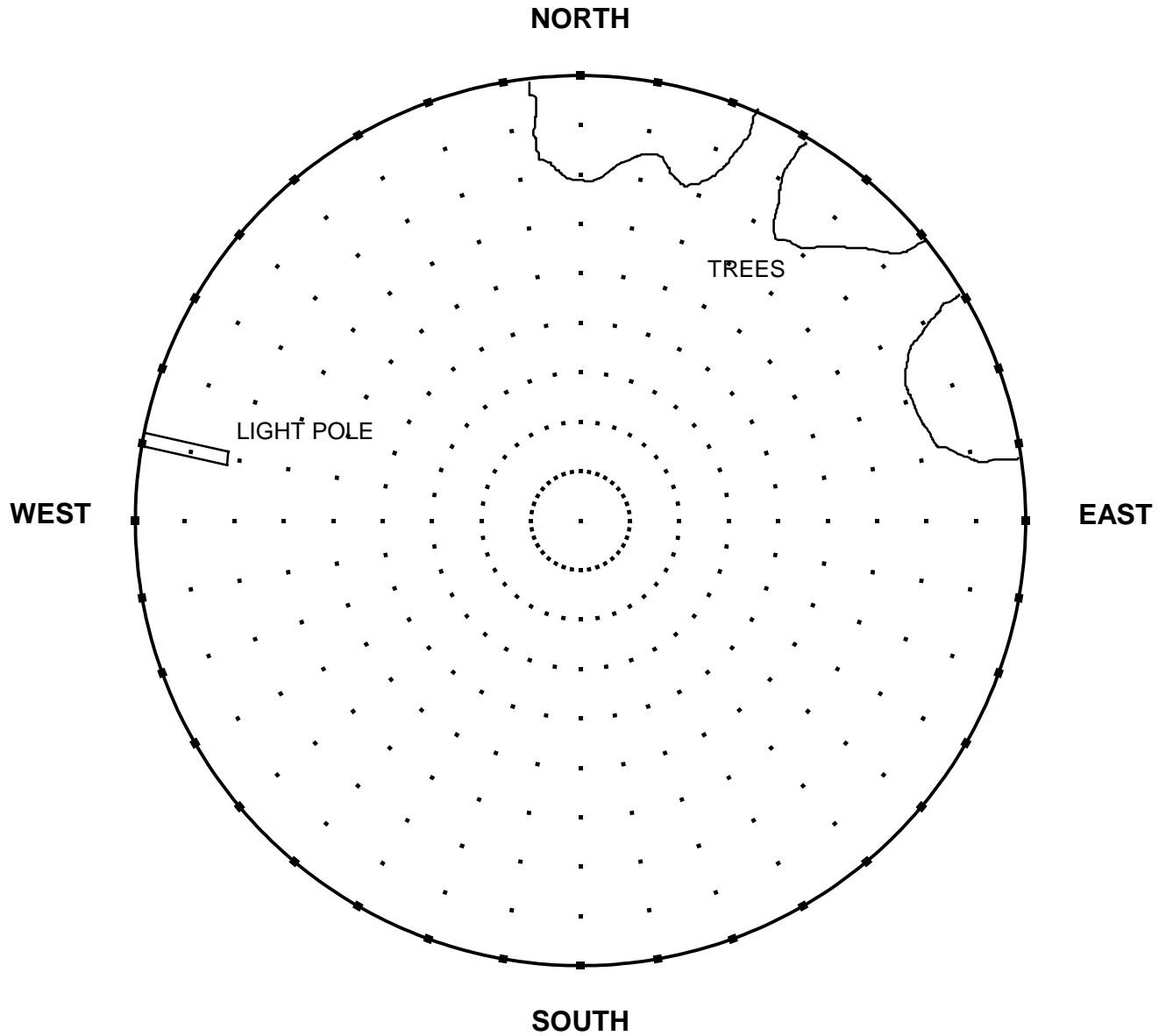
The station is located in East Memphis, at the junction of Sam Cooper Boulevard (Exit 9) and Perkins Road, in the three sided plot of land formed by westbound Sam Cooper Boulevard and the entrance and exit ramps of same. Ownership--Road Right-of-Way.

To reach the station from the junction of Interstates 40 and 240 and Sam Cooper Boulevard, east of Memphis, go west for 2.1 km (1.3 mi.) on Sam Cooper Boulevard to the junction of Perkins Road and the station.

The station is a 3-D mark with stainless steel rod driven 9.1 m (30 ft.). The logo cap is stamped---GPS 60 1987---, and a steel spike is embedded in the concrete. Located 14.0 m (46 ft.) north from the north edge of the pavement of Sam Cooper Boulevard and 0.3 m (1 ft.) below same, 23.8 m (78 ft.) southwest from the edge of the pavement of the exit ramp, 23.2 m (76 ft.) southeast from the edge of the pavement of the entrance ramp, 0.3 m (1.0 ft.) east from a fiberglass witness post.



# STATION VISIBILITY DIAGRAM



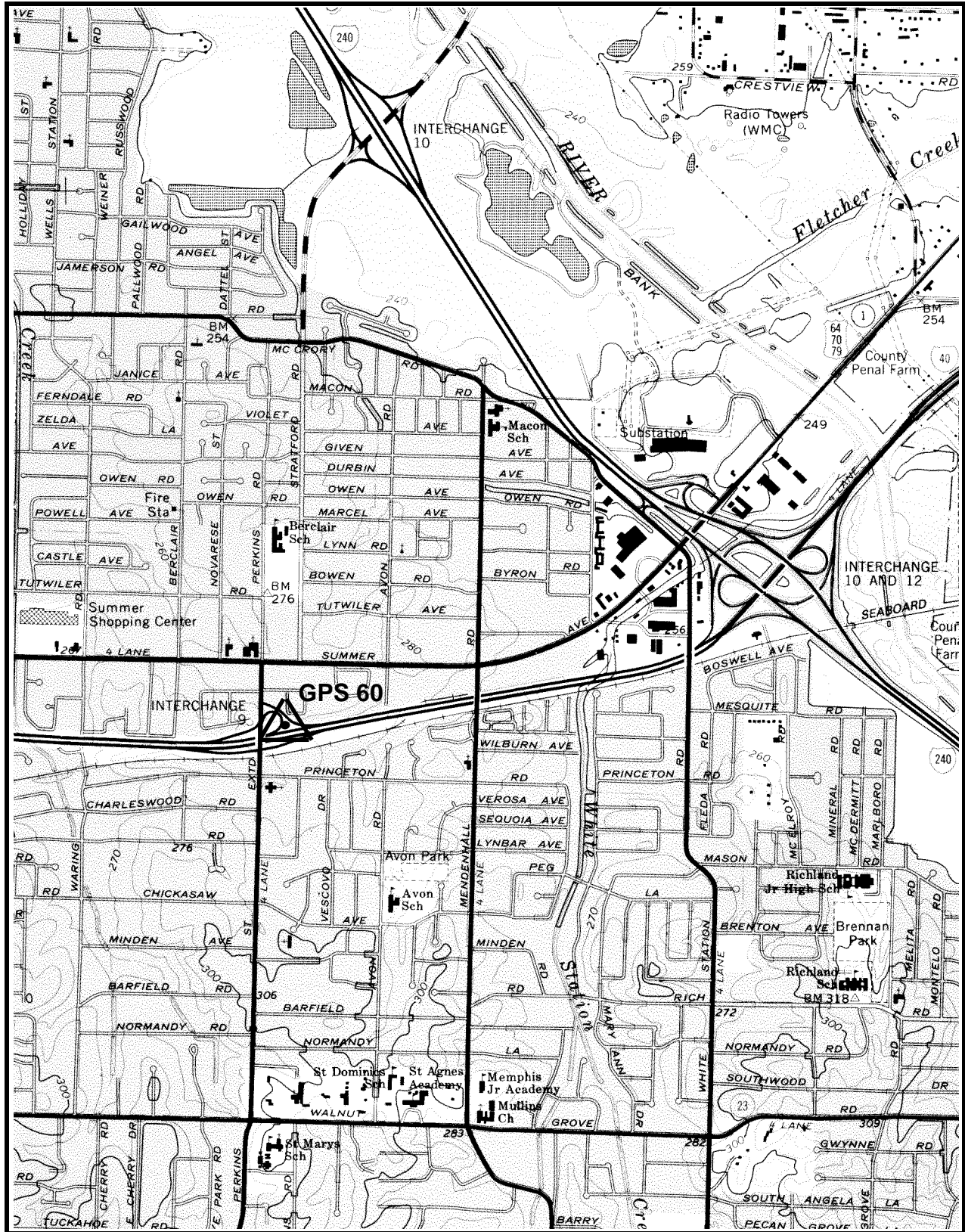
ELEVATION 84.091 m (275.89 ft)  
LATITUDE 35° 8' 46"  
LONGITUDE 89° 54' 24"  
STATION NAME GPS 60

DATE July 1997  
ORGANIZATION TDOT  
MAP SCALE 7 1/2' USGS  
MAP SHEET 409-NW, Northeast Memphis  
OBSERVER CLJ

Observer's height 6'

NOTES:

TENNESSEE GEODETIC REFERENCE NETWORK



GPS 60

409-NW, NORTHEAST MEMPHIS