



Compass*Data*[®]

CHECKPOINT SURVEY REPORT

June 09, 2023

CHECKPOINT SURVEY REPORT

River West MN 2023

PREPARED BY:

CompassData[®]

7900 East Union Avenue
Suite 550
Denver, CO 80237
Phone: 303.627.4058

CompassData Project Number: 6911
Fieldwork Performed: 2023
Project Delivered: June 6, 2023

PREPARED FOR:



Merrick & Company
5970 Greenwood Plaza Blvd.
Greenwood Village, CO 80111

CONTENTS

Contents.....	3
ABBREVIATIONS	4
1.0 PROJECT INFORMATION	5
1.1 Purpose	5
1.2 Location.....	5
1.3 Dates	5
1.4 Field and Office Personnel	5
2.0 PROCEDURES & METHODS	5
2.1 Methods.....	5
2.2 Equipment.....	6
2.3 Software.....	6
3.0 ACCURACY SPECIFICATIONS.....	6
3.1 Accuracies	6
4.0 CONTROL POINTS.....	6
4.1 Horizontal Datum.....	6
4.2 Vertical Datum	6
4.3 Units.....	6
4.4 Coordinates & Descriptions	6
RTK Solution.....	21
SURVEY REFERENCE MAP.....	22
STATION Pictures	23

ABBREVIATIONS

CO	Colorado
Elev	Elevation
Ellip	Ellipsoid
Err	Error
ft	Feet
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
HAE	Height Above Ellipsoid
Horiz	Horizontal
Ht	Height
job	Trimble Proprietary Job File Format
.kml	Keyhole Markup Language
LIDAR	Light Detection and Ranging/Light Imaging, Detection, and Ranging
m	Meters
MN	Minnesota
NAD83 (2011)	North American Datum of 1983, 2011 realization
NAVD88	North American Vertical Datum of 1988
NGS	National Geodetic Survey
OPUS	Online Positioning User Service
Ortho	Orthometric
PDF	Adobe Portable Document Format
PLS	Professional Licensed Surveyor
PSM	Professional Surveyor and Mapper
RTK	Real Time Kinetic
.shp	Shapefile
SPCS	State Plane Coordinate System
T02	Trimble Proprietary Raw Data Format
USft	United States Survey Feet
UTM	Universal Transvers Mercator
Vert	Vertical
WGS84	World Geodetic System of 1984

1.0 PROJECT INFORMATION

1.1 PURPOSE

Locate and establish coordinates for at least 401 NVA, VVA, and Calibration points for Merrick & Company with the purpose of assessing horizontal and vertical accuracy of imagery and LiDAR datasets and base map preparation.

1.2 LOCATION

The checkpoints are in and around the following counties: *Big Stone, Stevens, Pope, Swift, Kandiyohi, Chippewa, Lac qui Parle, Yellow Medicine, Renville, Redwood, Lyon, Lincoln.*

All point locations were planned and selected by Merrick & Company. In some instances, a checkpoint may have been moved from the planned location, due to conditions and circumstances at the time of survey.

See **SURVEY REFERENCE MAP** page 22.

1.3 DATES

Survey field work took place between the dates of May 14 and June 4, 2023.

The final report including this signed survey report and supporting digital files were submitted on June 09, 2023.

1.4 FIELD AND OFFICE PERSONNEL

Philipp Hummel, PLS, CFedS, CP Project Manager

303.999.3031

Luke Wlodarek, Processing

Brian Beard, Field Surveyor

2.0 PROCEDURES & METHODS

2.1 METHODS

All control points were located using Real Time Kinematic [RTK] positioning, with SmartNet corrections, or a Trimble S6 Robotic Total Station at each point. Static and Real-time GPS observations with RMSE accuracies of 3.33 cm were collected with a survey-grade GPS receiver and differential corrections provided by a GPS base station close to the project area. Network points were measured twice for 90 seconds while static points are measured once for at least 45 minutes. Static points are often surveyed on existing NGS monuments which are quality-reviewed and then used to adjust network points.

At least 30, typically 180 positions (captured at a rate of one per second) were geometrically averaged to calculate a single coordinate for each checkpoint. Digital pictures of each checkpoint were collected in the field, the North pictures (486) are included in this report. Checkpoints were selected with an unobstructed view of the sky to ensure proper GPS operation and avoid potential sources of multipath error such as trees, buildings, and fences that may adversely affect the GPS accuracy.

2.2 EQUIPMENT

Observations were captured by using a Trimble R12 Lite GNSS receiver and Trimble S6 Robotic Total Station.

2.3 SOFTWARE

Trimble Business Center (TBC) Version 5.81.

3.0 ACCURACY SPECIFICATIONS

3.1 ACCURACIES

The positional accuracies of this survey meet or exceed:

Horizontal RMSE \pm 0.033 m

Vertical RMSE \pm 0.033 m for NVA points

Horizontal RMSE \pm 0.033 m

Vertical RMSE \pm 0.033 m for VVA points

4.0 CONTROL POINTS

4.1 HORIZONTAL DATUM

UTM 15 N in NAD83(2011)

4.2 VERTICAL DATUM

Elevations are reported in the NAVD88 (North American Vertical Datum of 1988 based on Geoid 18).

4.3 UNITS

Latitude/Longitude: Decimal Degrees

State Plane Coordinates: Meters

Point/Ground Elevation: Meters

Ellipsoid Elevation: Meters

4.4 COORDINATES & DESCRIPTIONS

Error values are presented as US Survey Feet and calculated within a 95% confidence interval.

Point ID	LATITUDE	LONGITUDE	HAE	NORTHING	EASTING	MSL
CAL4175ACS	45.28232858	-95.15271797	349.569	5016568.569	331168.537	376.263
CAL6000	45.71577048	-95.28006686	387.133	5064996.751	322548.444	413.264
CAL6001	45.43409372	-95.85695559	316.721	5035145.444	276536.230	343.089
CAL6002CS	44.41587337	-95.55306416	311.575	4921235.042	296744.044	338.775
CAL6003	44.42687222	-96.18088789	480.616	4924208.694	246807.928	506.891
CAL6004	44.52642061	-95.75880712	308.577	4934046.359	280778.591	335.646
CAL6005	44.81413090	-95.53912577	249.572	4965439.513	299231.571	276.261
CAL6006	44.82594518	-94.89212815	315.002	4965356.865	350420.339	342.190

CAL6007	45.36996606	-96.33735871	306.410	5029469.842	238665.081	332.620
CAL6008	44.89231398	-96.28867252	312.856	4976250.799	240316.535	338.810
CAL6008A	44.44335694	-95.94317125	375.137	4925331.256	265795.951	401.894
CAL6009	45.39297868	-96.15777191	305.202	5031458.520	252828.004	331.521
CAL6010BS	44.48673861	-95.59444103	308.430	4929210.309	293699.665	335.656
CAL6011BS	44.22969107	-95.26753734	320.644	4899884.948	318903.686	347.959
CAL6012	44.64476209	-95.80829120	306.564	4947325.951	277299.069	333.423
CAL6013CS	44.31466028	-95.69927951	364.434	4910366.193	284732.663	391.356
CAL6014	45.71624080	-96.24443439	297.754	5067641.374	247498.045	324.022
CAL6015	45.05204847	-94.77787608	327.988	4990269.856	360003.098	354.812
CAL6016	45.09523251	-96.06079668	276.229	4998088.082	259162.596	302.443
CAL6016CS	44.73994651	-94.71618656	301.509	4955494.977	364127.573	328.938
CAL6017	44.84862014	-96.09344644	302.479	4970790.449	255547.178	328.629
CAL6017CS	44.80588095	-94.56555081	297.733	4962578.715	376194.593	325.128
CAL6018	44.70332065	-95.91045066	307.182	4954115.144	269430.122	333.782
CAL6019	45.64344446	-95.53076710	368.646	5057548.208	302783.306	394.709
CAL6020	44.64247405	-94.71106399	306.801	4944659.010	364305.660	334.405
CAL6021	45.26759191	-94.97860887	334.225	5014581.473	344783.180	361.074
CAL6022	44.94253555	-95.72435596	256.967	4980177.912	285064.285	283.295
CAL6023	44.34112041	-95.61409048	318.378	4913085.075	291620.368	345.441
CAL6024	45.18255568	-94.93048146	354.870	5005043.157	348332.605	381.732
CAL6025	44.74739088	-96.21785767	330.276	4959927.678	245270.328	356.304
CAL6026	45.01741089	-95.23919690	302.870	4987323.685	323570.452	329.558
CAL6027BS	44.31898057	-95.95280362	437.652	4911543.344	264531.001	464.207
CAL6028	44.59961877	-95.32903288	297.026	4941113.231	315161.891	324.437
CAL6029	44.31389149	-96.20022128	510.038	4911718.957	244778.307	536.145
CAL6030	44.93374985	-96.04293852	294.829	4980096.286	259893.276	320.991
CAL6031	44.21092416	-95.95739344	477.782	4899553.972	263732.178	504.216
CAL6032	44.61444213	-95.01461018	281.286	4942095.353	340156.138	308.824
CAL6033	44.79093394	-96.44835514	422.046	4965512.752	227228.922	447.653
CAL6034	44.22445279	-95.62309001	402.737	4900148.991	290488.446	429.649
CAL6035	45.60002087	-96.04704672	310.666	5054125.326	262368.062	336.913
CAL6036	45.68091142	-96.00597971	317.209	5062991.004	265908.124	343.409
CAL6037	44.45500007	-94.70577233	279.869	4923825.726	364290.262	307.741
CAL6038	44.39845558	-95.22846465	299.026	4918545.196	322533.859	326.570

CAL6039	45.30416938	-96.44998801	269.734	5022532.572	229532.246	295.818
CAL6040	45.16643532	-95.77649449	287.844	5005190.146	281804.610	314.212
CAL6041	44.80437277	-94.67153781	302.460	4962578.080	367809.565	329.782
CAL6042	45.23154849	-96.16503302	273.157	5013547.311	251554.628	299.464
CAL6043	44.70170151	-95.54329159	295.245	4952960.750	298511.578	322.259
CAL6044	45.23880575	-95.31775247	314.228	5012092.529	318086.411	340.793
CAL6045	44.78749249	-95.34996478	297.707	4962030.360	314103.011	324.716
CAL6046	44.97859130	-95.91964142	290.850	4984719.711	269801.716	317.059
CAL6047	45.41835805	-95.25525162	332.613	5031900.432	323550.546	359.068
CAL6048	45.61946583	-95.33565439	394.318	5054422.282	317910.116	420.451
CAL6049A	45.06710664	-96.44300294	315.202	4996173.876	228955.848	341.095
CAL6050	44.53681750	-94.89311941	279.702	4933241.849	349595.523	307.406
CAL6051A	45.48467463	-96.15865536	327.542	5041648.056	253159.394	353.814
CAL6051BS	45.47694983	-96.13787317	328.738	5040726.180	254749.896	355.019
CAL6052	44.54341212	-96.17604516	427.133	4937139.019	247696.758	453.376
CAL6053	44.45907815	-94.99316423	291.375	4924795.792	341436.484	319.090
CAL6054CS	45.48618233	-96.54829504	324.928	5043087.793	222718.086	350.999
CAL6055	44.80509325	-94.52122378	298.623	4962424.655	379698.390	326.055
CAL6056	44.93646850	-95.04423260	313.094	4977925.692	338705.122	339.944
CAL6057	45.28346599	-96.04960696	289.818	5018965.679	260833.405	316.229
CAL6058	44.71742179	-96.06200990	315.855	4956122.152	257482.216	342.180
CAL6059	44.29671538	-94.90673335	289.379	4906597.124	347892.520	317.169
CAL6060	45.28218906	-95.74785654	287.782	5017972.326	284493.287	314.191
CAL6061	45.55312196	-95.55048562	317.580	5047562.414	300927.366	343.763
CAL6062	44.20851607	-95.12133207	296.699	4897220.842	330519.731	324.168
CAL6063	45.31973522	-95.61764673	288.742	5021803.393	294840.763	315.187
CAL6064	45.37622559	-95.42862117	312.839	5027614.891	309844.983	339.286
CAL6065	45.01141324	-96.20046407	304.294	4989202.479	247804.452	330.368
CAL6066	45.76607396	-95.35093464	409.474	5070745.095	317197.390	435.538
CAL6067	45.67996902	-95.73805317	324.207	5062137.406	286769.046	350.280
CAL6068	44.89204388	-94.53903001	306.267	4972110.041	378473.249	333.460
CAL6069	45.19635785	-96.01084998	288.717	5009174.424	263511.500	315.071
CAL6070	45.58503358	-95.14500185	385.420	5050181.361	332671.053	411.761
CAL6071	45.26092797	-95.46752019	295.740	5014898.864	306406.845	322.233
CAL6072	45.59221323	-96.83101213	280.426	5055883.014	201188.638	306.387

CAL6073	45.57927319	-96.42976109	311.604	5053026.931	232423.080	337.745
CAL6074	44.70265961	-94.89416775	307.123	4951665.653	349940.163	334.564
CAL6074A	44.71670787	-94.91503033	306.736	4953264.829	348324.087	334.148
CAL6075CS	44.95602131	-95.36958274	294.043	4980796.500	313097.662	320.680
CAL6076CS	45.41283109	-94.77604567	363.350	5030346.577	361029.573	390.143
CAL6077CS	45.54364859	-95.86296241	313.603	5047333.126	276500.447	339.849
CAL6078	45.41229013	-95.04482004	355.267	5030786.074	339997.339	381.892
CAL6079	45.03600537	-95.59498487	288.048	4990226.293	295603.625	314.444
CAL6080	44.38635811	-96.30258886	518.820	4920092.479	236938.846	544.825
CAL6081	45.41627121	-96.67005603	283.926	5035749.140	212848.248	309.913
CAL6082	44.51079284	-96.45166390	522.027	4934404.920	225648.079	547.554
CAL6083	45.74467897	-95.16024840	395.763	5067949.669	331960.240	422.017
CAL6084	44.77784760	-95.02458343	302.478	4960266.394	339816.142	329.743
CAL6085	44.60861740	-96.10381300	331.268	4944161.325	253710.595	357.602
CAL6086BS	44.73524236	-94.61145254	298.914	4954802.889	372409.160	326.400
CAL6087	45.10901697	-95.43126773	292.804	4997936.587	308742.774	319.326
CAL6089	45.21125796	-94.75741482	331.802	5007921.205	361998.900	358.742
CAL6090	45.74524241	-95.69643569	363.927	5069279.119	290254.515	389.958
CAL6091	44.22559897	-96.42363620	517.592	4902631.901	226550.618	543.376
CAL9013CS	45.10972903	-95.07272643	316.842	4997229.903	336949.648	343.597

POINT ID	LATITUDE	LONGITUDE	HAE	NORTHING	EASTING	MSL
NVA4001CS	44.26434107	-96.30246365	518.537	4906538.587	236402.357	544.399
NVA4002	45.02360042	-94.84935481	314.177	4987235.755	354302.384	340.997
NVA4004ATS	44.41542093	-95.55196448	310.579	4921182.054	296830.026	337.779
NVA4005	44.43038746	-96.18079741	483.128	4924598.886	246830.320	509.405
NVA4006	45.41356759	-96.55436547	312.528	5035041.806	221886.631	338.600
NVA4007	44.52633892	-95.75579579	307.834	4934029.202	281017.575	334.907
NVA4008	44.81305191	-95.53682820	249.675	4965313.979	299409.498	276.370
NVA4009	44.84772422	-94.89459424	313.162	4967780.724	350281.813	340.283
NVA4010	45.37027675	-96.34392095	306.044	5029525.703	238152.661	332.251
NVA4011	44.39810795	-94.92704158	289.460	4917897.283	346537.314	317.247
NVA4012	45.55664678	-95.20480635	375.627	5047154.228	327919.115	401.918
NVA4012BS	45.11029566	-95.07282980	317.491	4997293.057	336943.130	344.246

NVA4013	44.44332771	-95.93795787	364.050	4925313.088	266210.698	390.816
NVA4014	45.38184160	-96.15799304	310.102	5030221.950	252762.101	336.424
NVA4015	44.76001189	-95.46227253	287.331	4959240.702	305126.262	314.287
NVA4016CS	44.48626098	-95.59441859	308.009	4929157.197	293699.765	335.235
NVA4017	44.84903445	-95.66578142	286.730	4969637.596	289344.144	313.209
NVA4018CS	44.22905619	-95.26647912	319.396	4899812.094	318986.255	346.711
NVA4019	44.64717873	-95.80869202	305.219	4947595.492	277276.538	332.073
NVA4020	44.66035137	-96.21009094	347.738	4950234.719	245503.701	373.787
NVA4022	45.71641949	-96.23428304	298.818	5067629.215	248288.869	325.083
NVA4023	45.07096412	-94.78076266	319.598	4992376.165	359822.043	346.430
NVA4024	45.09516787	-96.08340377	286.966	4998148.520	257383.498	313.171
NVA4025	44.84891040	-96.11327204	306.364	4970882.596	253981.731	332.494
NVA4026	44.71750489	-95.91051377	298.712	4955690.954	269481.480	325.282
NVA4027	45.64445909	-95.53141094	361.782	5057662.517	302736.697	387.844
NVA4028	44.65089909	-94.72128086	309.750	4945611.931	363515.181	337.335
NVA4029CS	45.26774953	-94.99817961	335.132	5014636.850	343248.344	361.969
NVA4030	44.94149416	-95.72230856	257.711	4980056.799	285221.927	284.040
NVA4031	44.35563218	-95.61365247	318.132	4914695.890	291706.720	345.210
NVA4032	45.27199204	-94.86870786	328.781	5014864.585	353415.939	355.679
NVA4033	45.16801967	-94.93021367	352.297	5003427.842	348315.044	379.152
NVA4034	44.76169852	-96.19598201	325.224	4961448.724	247064.535	351.279
NVA4035	44.39320890	-96.01903446	443.883	4919980.985	259553.372	470.439
NVA4036	45.75977282	-95.84112036	350.500	5071283.264	279057.658	376.615
NVA4037	45.02010808	-95.24088956	300.081	4987627.001	323445.378	326.766
NVA4038CS	44.31862836	-95.95287528	436.842	4911504.428	264523.876	463.396
NVA4039	44.60542883	-95.33604513	298.017	4941774.535	314623.863	325.419
NVA4040	44.65779026	-95.09582622	293.070	4947072.929	333836.034	320.508
NVA4041	44.31437559	-96.20076453	509.438	4911774.422	244737.081	535.545
NVA4042	44.93185023	-96.05358709	291.443	4979916.866	259045.085	317.598
NVA4043	45.44111650	-95.84845830	317.335	5035902.037	277228.516	343.696
NVA4043A	44.19641289	-95.95722128	486.504	4897941.621	263687.878	512.925
NVA4044	44.61437938	-94.99526665	286.853	4942050.648	341690.737	314.400
NVA4045	44.79065724	-96.44055695	421.993	4965455.856	227844.477	447.614
NVA4047	45.58553543	-96.04692483	312.972	5052515.693	262316.374	339.225
NVA4048	45.74485997	-96.06684340	310.878	5070275.404	261440.927	337.112

NVA4049	44.45566367	-94.64051114	280.065	4923793.219	369483.894	307.957
NVA4050	44.39988779	-95.18816682	297.558	4918617.700	325747.308	325.143
NVA4051	45.26968740	-96.40954266	273.828	5018566.847	232540.806	299.906
NVA4052	45.18097309	-95.77629150	288.551	5006804.599	281876.109	314.934
NVA4053	44.81862735	-94.67123606	305.010	4964161.044	367865.989	332.302
NVA4054	45.06542500	-95.37049022	297.148	4992951.988	313381.902	323.714
NVA4055	45.23061009	-96.15981723	272.531	5013427.003	251959.962	298.843
NVA4056	44.71662404	-95.54467315	281.868	4954621.808	298453.953	308.845
NVA4057	45.25336350	-95.31636800	321.533	5013706.648	318241.530	348.092
NVA4058	45.58643118	-96.57266751	315.375	5054309.333	221309.807	341.476
NVA4059	44.78902664	-95.34082679	294.431	4962179.922	314830.794	321.446
NVA4060	44.96464648	-95.92104039	294.312	4983174.600	269635.550	320.526
NVA4061	45.36921785	-95.14205337	365.914	5026199.065	332261.674	392.529
NVA4062	44.19744185	-96.30792417	514.539	4899125.162	235666.894	540.384
NVA4063	45.41993343	-95.25499662	332.037	5032074.888	323575.406	358.489
NVA4064	45.60257844	-95.31513124	381.710	5052499.700	319455.900	407.864
NVA4065BS	45.06683371	-96.44266319	314.996	4996142.417	228981.303	340.889
NVA4066	44.55621419	-94.89326519	280.899	4935396.692	349633.901	308.577
NVA4067	45.49861034	-96.15824732	328.760	5043194.978	253252.201	355.026
NVA4068	44.61578751	-96.27617199	440.905	4945493.110	240065.617	466.783
NVA4069	44.46917993	-95.00817980	286.939	4925947.107	340269.489	314.638
NVA4070BS2	45.48615359	-96.54938799	324.819	5043088.378	222632.538	350.889
NVA4071	44.78282071	-94.51822788	295.846	4959946.111	379889.111	323.318
NVA4072	44.90612025	-95.04376537	316.645	4974553.494	338657.036	343.543
NVA4073	45.28355450	-96.03491554	294.632	5018931.998	261985.946	321.050
NVA4074	44.71735038	-96.05288821	315.253	4956087.068	258204.383	341.594
NVA4075	44.27585107	-94.87693380	290.308	4904224.783	350216.739	318.116
NVA4076	45.28224504	-95.76057585	289.546	5018012.644	283495.967	315.953
NVA4077	45.54388005	-95.56196790	314.229	5046564.238	299998.358	340.426
NVA4078	44.28183322	-95.12779299	300.066	4905377.875	330214.653	327.623
NVA4078A	44.20973340	-95.62360266	416.144	4898515.337	290395.252	443.032
NVA4079	44.57275433	-96.45079342	522.697	4941284.786	226008.391	548.161
NVA4080	45.32044437	-95.61997812	288.442	5021888.116	294660.604	314.886
NVA4081	45.37040922	-95.42958083	313.834	5026971.000	309750.333	340.290
NVA4082	45.34282879	-94.97410647	348.574	5022931.081	345341.177	375.358

NVA4083	45.00842809	-96.10431217	292.816	4988575.737	255368.475	318.939
NVA4084	45.75906646	-95.35254281	414.224	5069970.243	317049.429	440.287
NVA4085	45.68293180	-95.73777414	326.804	5062465.820	286802.037	352.876
NVA4085A	45.68297733	-95.73787954	327.041	5062471.160	286794.002	353.113
NVA4086	44.89236553	-94.50244873	305.325	4972091.649	381362.489	332.549
NVA4087	45.19660338	-96.01923894	281.421	5009226.323	262853.610	307.773
NVA4088	45.61396003	-95.14477646	386.417	5053394.547	332774.624	412.726
NVA4089	45.25877553	-95.46864650	295.868	5014662.452	306311.156	322.360
NVA4090	45.47012114	-95.76330012	304.190	5038891.708	283999.313	330.519
NVA4091	45.59046966	-96.83400172	272.966	5055700.474	200946.190	298.922
NVA4092	45.58543984	-96.42695409	311.349	5053702.644	232671.368	337.495
NVA4093	44.71685391	-94.89514247	307.391	4953244.186	349899.647	334.808
NVA4094	44.93583490	-96.45192297	331.501	4981621.175	227631.624	357.276
NVA4095BS	44.95546150	-95.36975585	294.818	4980734.711	313082.189	321.456
NVA4096	44.74802000	-95.70641963	295.481	4958522.721	285759.054	322.221
NVA4097BS	45.41291690	-94.77423278	365.884	5030352.979	361171.636	392.677
NVA4098	45.38378895	-95.97374170	312.343	5029888.345	267194.889	338.745
NVA4099ABS2	45.54412461	-95.86298181	313.653	5047386.063	276500.821	339.899
NVA4100	44.58584874	-95.54394189	298.719	4940093.217	298058.278	325.989
NVA4101	45.41225466	-95.00864395	352.644	5030710.793	342827.924	379.298
NVA4102	45.02153599	-95.59538969	287.985	4988619.942	295520.193	314.377
NVA4103	44.30489128	-95.47268552	321.753	4908710.905	302771.079	348.944
NVA4104	45.00901660	-94.98472105	312.286	4985868.181	343598.121	339.112
NVA4105	45.10869968	-95.96070485	279.603	4999290.744	267093.069	305.860
NVA4106	45.15492166	-95.20606030	315.252	5002527.927	326598.063	341.930
NVA4107	44.65972347	-96.45148507	486.778	4950947.877	226362.715	512.318
NVA4108	44.38625874	-96.32358823	522.678	4920149.175	235265.694	548.640
NVA4109	44.89167896	-95.80296633	287.200	4974739.927	278667.071	313.534
NVA4110	45.41839876	-96.67730334	300.198	5036011.423	212292.035	326.178
NVA4111	45.19641601	-96.41488911	292.109	5010444.863	231776.565	318.120
NVA4112	44.50647960	-96.45175540	517.574	4933926.106	225620.548	543.111
NVA4113	44.78971118	-94.77221136	306.870	4961118.072	359812.459	334.182
NVA4114	44.53071806	-95.92885156	327.888	4934994.412	267283.380	354.695
NVA4115	45.58554885	-96.17222301	318.229	5052896.463	252542.402	344.458
NVA4116	45.75892688	-95.16027437	393.738	5069532.667	332000.993	419.998

NVA4117	44.77999821	-95.03165528	302.153	4960519.248	339262.589	329.411
NVA4118	44.61236808	-96.11331409	331.512	4944606.712	252972.582	357.814
NVA4119	45.18223598	-96.28809151	291.461	5008455.784	241671.644	317.608
NVA4120TS	44.73560499	-94.61184249	298.427	4954843.783	372379.083	325.912
NVA4121	44.93507853	-95.14594916	315.546	4977978.662	330675.342	342.366
NVA4122	45.10871969	-95.45185361	293.464	4997952.481	307122.374	319.973
NVA4123TS	45.71635718	-95.28027340	386.094	5065062.391	322534.228	412.225
NVA4124	45.23813848	-95.59526739	289.109	5012681.891	296302.796	315.570
NVA4125	44.54736617	-95.09552504	284.102	4934806.331	333544.762	311.686
NVA4126	44.89240908	-96.26818998	315.842	4976195.975	241934.332	341.819
NVA4127	44.31169824	-95.75519596	395.930	4910185.579	280262.184	422.771
NVA4128	44.66328123	-95.22809734	278.469	4947961.140	323365.760	305.851
NVA4129	45.50639981	-95.30488037	368.926	5041791.547	319948.265	395.188
NVA4130	44.19744784	-95.41154627	342.768	4896631.308	307297.083	369.860
NVA4131	44.47988903	-95.33100982	293.430	4927818.142	314625.270	320.869
NVA4132	44.60077393	-94.62930685	297.638	4939894.090	370696.811	325.343
NVA4133	44.47348833	-96.06010956	403.490	4929019.916	256615.682	430.050
NVA4134	45.00955443	-96.20042929	304.260	4988995.880	247799.027	330.333
NVA4135	44.45107608	-95.78960886	328.214	4925760.269	278045.200	355.192
NVA4136CS	45.10854001	-95.59455877	288.185	4998282.987	295895.702	314.606
NVA4137	44.89071691	-95.48258503	285.039	4973808.905	303962.413	311.602
NVA4138	44.83262071	-95.17919801	302.717	4966667.058	327746.234	329.753
NVA4139	45.42658294	-96.05573167	309.013	5034883.094	260956.944	335.351
NVA4140	45.21105756	-94.74678859	326.960	5007880.827	362832.841	353.904
NVA4141	44.37038498	-95.81661391	371.692	4916870.880	275587.920	398.536
NVA4142	44.94960563	-95.53364237	286.589	4980475.267	300135.051	313.039
NVA4143	44.38347123	-95.34876979	303.590	4917148.663	312905.357	330.995
NVA4144	44.90670712	-94.77856560	316.806	4974125.510	359594.422	343.806
NVA4145	45.49901865	-95.15226005	377.285	5040640.574	331848.521	403.701
NVA4146	44.53259950	-96.18089591	433.668	4935952.952	247264.595	459.915
NVA4147	45.49931643	-95.95318888	319.843	5042663.442	269275.666	346.138
NVA4148	44.35661281	-96.42406593	563.390	4917186.161	227124.333	589.109
NVA4149	44.19613727	-95.77492652	434.507	4897402.586	278254.395	461.173
NVA4150	44.19531450	-95.12932345	298.632	4895771.012	329843.253	326.073
NVA4151	44.89081093	-95.30236845	298.742	4973399.720	318193.571	325.550

NVA4152	45.75972705	-95.69656548	361.778	5070888.688	290298.712	387.811
NVA4153	45.66539342	-95.99299258	314.905	5061229.086	266854.997	341.107
NVA4154	45.38335798	-95.72676091	292.129	5029155.225	286528.444	318.521
NVA4155	44.74544171	-95.21887629	299.062	4957067.783	324345.524	326.297
NVA4156	44.61491573	-95.70735917	303.979	4943739.624	285193.044	330.998
NVA4157	45.69164350	-95.42791277	401.808	5062654.889	310960.803	427.849
NVA4158	44.49953131	-95.22962902	296.115	4929775.041	322747.241	323.632
NVA4160	44.28346157	-96.05928942	489.444	4907909.532	255891.905	515.762
NVA4161	45.47005666	-95.56199091	354.744	5038362.857	299734.785	381.021
NVA4162	45.56405434	-95.38771811	370.214	5048385.873	313667.851	396.384
NVA4163	44.64494741	-95.99239126	322.789	4947866.311	262700.292	349.342
NVA4164	45.18155361	-95.34762166	310.200	5005800.147	315557.024	336.763
NVA4165	45.07957456	-95.77650231	279.098	4995540.866	281472.384	305.396
NVA4166	44.54203332	-95.46218104	299.323	4935027.012	304401.780	326.677
NVA4167	44.19703410	-96.11669508	502.743	4898481.966	250946.559	528.888
NVA4168	44.89249792	-95.92013022	292.297	4975157.285	269418.600	318.567
NVA4169	44.65799989	-95.42175461	292.755	4947812.628	307995.867	320.022
NVA4170	45.29734908	-95.91185645	290.539	5020108.247	271692.208	316.967
NVA4171	45.45587305	-96.26165444	325.755	5038770.288	244980.435	351.991
NVA4172	45.76262370	-95.53082679	402.632	5070788.992	303197.527	428.625
NVA4173	45.09476769	-96.28655415	308.523	4998734.073	241396.920	334.582
NVA4174	44.45638717	-94.71778720	276.569	4923999.809	363337.600	304.435
NVA4175BS	45.28234292	-95.15222167	349.445	5016569.123	331207.504	376.140
NVA4176	45.26918059	-96.26210118	292.376	5018031.616	244104.358	318.600
NVA4177	45.57183205	-95.70691683	317.133	5050041.222	288787.799	343.305
NVA4178	44.21150072	-96.42407218	516.567	4901067.353	226450.450	542.368
NVA4179	45.32564112	-95.37374149	315.884	5021867.062	313976.169	342.401
NVA4180	45.10970219	-94.87962952	341.267	4996855.602	352139.470	368.127
NVA4181	44.79079845	-95.95075993	298.705	4963947.513	266589.353	325.085
NVA4195	45.31228931	-96.47511662	309.149	5023519.358	227601.211	335.221
NVA6007CS	44.90391758	-96.30920737	310.288	4977605.764	238747.642	336.226
NVA6013BS	44.31494836	-95.69953045	364.167	4910398.851	284713.705	391.089
NVA6016TS	44.74035040	-94.71570618	300.781	4955539.041	364166.551	328.209
NVA6024CS	45.31091147	-94.93682272	344.490	5019314.349	348176.842	371.334

POINT ID	LATITUDE	LONGITUDE	HAE	NORTHING	EASTING	MSL
VVA5001	44.26510319	-96.30224674	518.602	4906622.544	236423.080	544.465
VVA5001A	44.26500242	-96.30196440	518.290	4906610.444	236445.166	544.154
VVA5001B	44.26490626	-96.30147690	517.709	4906598.195	236483.648	543.573
VVA5001C	44.26478115	-96.30146579	517.575	4906584.263	236483.975	543.439
VVA5003	45.38114726	-95.80922455	316.446	5029131.809	280064.048	342.835
VVA5004	44.41512635	-95.55159058	310.130	4921148.404	296858.773	337.331
VVA5004A	44.41538706	-95.55159870	310.008	4921177.383	296859.030	337.209
VVA5005	44.42972472	-96.13732566	458.217	4924391.580	250287.621	484.582
VVA5005A	44.42971227	-96.13721230	458.484	4924389.851	250296.591	484.849
VVA5005B	44.42940978	-96.13717301	459.124	4924356.130	250298.429	485.489
VVA5005C	44.42927023	-96.13706245	459.173	4924340.292	250306.634	485.538
VVA5006	45.41340674	-96.55409547	311.413	5035023.001	221906.966	337.485
VVA5006A	45.41347877	-96.55426782	311.640	5035031.599	221893.834	337.712
VVA5007	44.52627512	-95.75833348	307.905	4934028.926	280815.682	334.974
VVA5008	44.81197073	-95.53001823	274.604	4965177.085	299944.234	301.310
VVA5009	44.82548124	-94.89443271	314.372	4965309.574	350236.953	341.560
VVA5010	45.36693209	-96.34523392	306.997	5029158.414	238034.394	333.202
VVA5012	45.53730919	-95.19282013	377.161	5044980.244	328795.888	403.491
VVA5013	44.44329464	-95.94335480	374.654	4925324.863	265781.096	401.411
VVA5013A	44.43843257	-95.93768583	354.474	4924768.561	266212.809	381.235
VVA5014	45.38162993	-96.15743330	308.851	5030196.715	252804.998	335.174
VVA5015	44.48611375	-95.59320413	306.609	4929137.777	293795.817	333.836
VVA5015A	44.48646726	-95.59319259	307.000	4929177.016	293797.981	334.227
VVA5016	44.84787078	-95.62472770	292.132	4969402.625	292584.134	318.639
VVA5017	44.22963873	-95.26625396	319.506	4899876.304	319006.024	346.823
VVA5017A	44.22976682	-95.26615751	319.455	4899890.318	319014.119	346.772
VVA5018	44.64520918	-95.80780791	303.599	4947374.294	277339.106	330.458
VVA5019	44.66045972	-96.19568881	337.886	4950201.843	246645.990	363.967
VVA5020	45.10968384	-95.07379196	318.370	4997227.032	336865.700	345.125
VVA5020A	45.10971861	-95.07392946	318.523	4997231.172	336854.982	345.278
VVA5021	45.71678895	-96.23493364	297.428	5067672.310	248239.897	323.694
VVA5022	45.07101374	-94.77948463	317.530	4992379.464	359922.768	344.362
VVA5022A	45.07105215	-94.77943340	317.776	4992383.642	359926.894	344.609

VVA5023	45.09502692	-96.06081583	275.940	4998065.300	259160.224	302.154
VVA5024	44.61502725	-95.01419469	277.554	4942159.535	340190.710	305.092
VVA5024AB	44.84835008	-96.09324040	300.638	4970759.829	255562.317	326.788
VVA5025	44.71731631	-95.88998900	296.343	4955612.059	271106.353	322.943
VVA5026	45.65837520	-95.55455396	364.685	5059265.833	300982.600	390.728
VVA5026A	45.65863165	-95.55467347	338.264	5059294.621	300974.199	364.307
VVA5026B	45.65868386	-95.55469352	364.289	5059300.472	300972.822	390.331
VVA5026C	45.65847266	-95.55479788	364.476	5059277.267	300963.943	390.519
VVA5028	45.26759348	-94.99752867	334.859	5014618.248	343298.978	361.696
VVA5028A	45.26745423	-94.99755353	334.687	5014602.826	343296.645	361.524
VVA5029	44.93662861	-95.71947241	254.812	4979508.791	285427.553	281.146
VVA5031	45.27217917	-94.86918586	329.097	5014886.242	353378.926	355.995
VVA5032	45.17879551	-94.91001218	338.960	5004587.190	349930.880	365.831
VVA5032A	45.18230856	-94.93035632	353.028	5005015.469	348341.780	379.890
VVA5033	44.70350834	-96.29264272	364.117	4955290.077	239152.837	390.017
VVA5034	44.37105659	-96.01847587	457.566	4917518.694	259507.106	484.085
VVA5035	45.02018534	-95.24284672	297.810	4987639.853	323291.416	324.494
VVA5036	44.31851722	-95.95360700	437.323	4911494.186	264465.079	463.876
VVA5036A	44.31840432	-95.95368190	436.960	4911481.861	264458.654	463.512
VVA5037	44.61257268	-95.32923345	295.915	4942552.619	315187.074	323.315
VVA5038	44.64362246	-95.02307971	281.829	4945353.373	339564.579	309.318
VVA5039	44.31350384	-96.20089222	508.609	4911677.987	244723.114	534.714
VVA5039A	44.31333760	-96.20108490	508.354	4911660.122	244707.026	534.459
VVA5039B	44.31339137	-96.20099752	508.384	4911665.823	244714.228	534.490
VVA5040	44.93056616	-96.04192791	289.993	4979739.626	259959.746	316.156
VVA5040A	44.93094170	-96.04276570	290.531	4979783.826	259895.201	316.694
VVA5041	44.19658296	-95.95779824	482.437	4897962.173	263642.451	508.858
VVA5043	44.79052279	-96.44091228	420.980	4965442.111	227815.736	446.600
VVA5044	44.22437229	-95.62354661	403.051	4900141.215	290451.689	429.962
VVA5045	45.57096533	-96.05635997	310.361	5050925.046	261518.646	336.618
VVA5046	45.68798385	-96.01117308	317.233	5063791.940	265533.269	343.433
VVA5046A	45.74533218	-96.06621755	309.246	5070325.998	261491.622	335.480
VVA5047	44.45405791	-94.73412591	274.499	4923768.512	362032.244	302.362
VVA5048	44.40786710	-95.24836573	297.809	4919633.947	320977.716	325.332
VVA5049	45.31241922	-96.43112070	304.655	5023385.844	231050.426	330.760

VVA5050USE	45.15926835	-95.77314433	287.139	5004384.919	282040.539	313.500
VVA5051	44.80425804	-94.69073477	298.203	4962596.733	366291.140	325.514
VVA5051A	44.81877001	-94.67152868	304.429	4964177.368	367843.179	331.721
VVA5052	45.06484433	-95.41134368	295.151	4992982.547	310163.771	321.688
VVA5053	45.23192164	-96.16116000	272.371	5013576.836	251860.271	298.682
VVA5054	44.70147574	-95.54335246	293.904	4952935.821	298505.972	320.918
VVA5055	45.25183756	-95.29631311	323.092	5013492.116	319810.342	349.667
VVA5055A	45.25179676	-95.29658314	322.599	5013488.187	319789.024	349.174
VVA5056	45.55912880	-96.56095819	310.565	5051235.524	222088.385	336.650
VVA5056A	45.56152052	-96.55976966	311.873	5051497.110	222192.943	337.961
VVA5057	44.78855479	-95.34142132	293.597	4962128.861	314782.255	320.612
VVA5058	45.00770798	-95.91618988	283.750	4987944.403	270190.348	309.959
VVA5059	45.38713534	-95.15124868	351.637	5028208.795	331594.838	378.219
VVA5060	45.42018485	-95.25467111	328.344	5032102.106	323601.656	354.795
VVA5061	45.64746771	-95.37017161	385.353	5057612.252	315311.204	411.455
VVA5062	45.06727179	-96.44301228	315.588	4996192.253	228955.894	341.481
VVA5062A	45.06733968	-96.44295621	315.584	4996199.607	228960.629	341.477
VVA5062B	45.06737528	-96.44295468	315.620	4996203.557	228960.919	341.513
VVA5062C	45.06732622	-96.44285990	315.389	4996197.789	228968.147	341.282
VVA5063	44.53456441	-94.88625306	279.571	4932978.954	350135.263	307.281
VVA5064A	45.47853424	-96.13731621	329.731	5040900.498	254800.305	356.011
VVA5064C	45.47850164	-96.13686094	329.925	5040895.485	254835.745	356.205
VVA5065	44.54278489	-96.23498254	470.633	4937253.280	243011.961	496.713
VVA5066	44.45914935	-94.99270719	290.698	4924802.815	341473.036	318.414
VVA5067	45.48654198	-96.54874003	324.427	5043129.286	222685.080	350.498
VVA5067A	45.48659136	-96.54893417	324.379	5043135.442	222670.152	350.450
VVA5067B	45.48669022	-96.54880780	324.505	5043145.989	222680.512	350.576
VVA5067C	45.48651515	-96.54853593	324.391	5043125.600	222700.897	350.462
VVA5068	44.80635886	-94.56513161	296.917	4962631.164	376228.766	324.311
VVA5068A	44.80639181	-94.56474899	294.708	4962634.242	376259.094	322.102
VVA5069	44.94194040	-95.02007868	317.056	4978485.782	340626.072	343.903
VVA5070	45.28364917	-96.03471246	295.272	5018941.915	262002.269	321.690
VVA5071	44.71767148	-96.06088465	313.874	4956146.535	257572.382	340.201
VVA5073	45.28150509	-95.74712250	287.109	5017894.379	284548.265	313.519
VVA5073A	45.27984443	-95.75525071	286.896	5017731.660	283904.480	313.304

VVA5074	45.58121608	-95.53261645	344.015	5050639.372	302420.669	370.162
VVA5074A	45.58124830	-95.53282745	344.127	5050643.472	302404.321	370.274
VVA5076	45.31920689	-95.61482911	289.107	5021737.524	295059.688	315.553
VVA5077A	45.37593870	-95.42476933	305.572	5027573.923	310145.610	332.021
VVA5078	45.31102447	-94.93638744	345.189	5019326.082	348211.264	372.033
VVA5078A	45.31092415	-94.93596998	346.000	5019314.151	348243.720	372.845
VVA5079	45.01985396	-96.19596412	304.037	4990126.126	248196.080	330.119
VVA5080	45.76781233	-95.33471233	409.563	5070901.251	318464.419	435.640
VVA5080A	45.76791079	-95.33512850	408.924	5070913.136	318432.380	435.001
VVA5080B	45.76797452	-95.33406415	409.552	5070917.799	318515.343	435.630
VVA5080C	45.76778671	-95.33409278	409.046	5070896.999	318512.508	435.124
VVA5081	45.67698722	-95.73842297	322.608	5061807.120	286728.911	348.683
VVA5081A	45.75958542	-95.69678628	361.327	5070873.532	290281.010	387.360
VVA5082A	44.89176706	-94.58738826	302.127	4972152.837	374654.120	329.285
VVA5083	45.19993658	-96.00719097	284.469	5009561.266	263813.716	310.829
VVA5084	45.60374900	-95.21265908	383.666	5052404.023	327450.638	409.897
VVA5085	45.25854390	-95.46917348	295.245	5014637.986	306269.022	321.736
VVA5086	45.49881806	-95.78170817	315.355	5042129.460	282670.873	341.648
VVA5087	45.59256578	-96.82915769	281.881	5055915.263	201335.149	307.844
VVA5088	45.56763690	-96.44990222	310.391	5051801.660	230796.127	336.521
VVA5088A	45.59055306	-96.83406754	272.734	5055709.985	200941.500	298.690
VVA5090	44.92114575	-96.41419067	321.998	4979863.256	230540.087	347.816
VVA5091	44.95611436	-95.37007423	293.580	4980807.970	313059.197	320.217
VVA5091A	44.95606239	-95.37039941	293.304	4980802.946	313033.380	319.940
VVA5092	44.75059999	-95.71105682	293.658	4958821.542	285401.524	320.386
VVA5093	45.41241893	-94.77578231	335.885	5030300.334	361049.169	362.678
VVA5093A	45.41255858	-94.77530657	336.570	5030315.027	361086.737	363.364
VVA5094	45.38349694	-95.97492366	311.031	5029859.327	267101.159	337.433
VVA5095	45.54333973	-95.86398202	314.526	5047301.655	276419.627	340.773
VVA5095A	45.54316612	-95.86394564	315.030	5047282.266	276421.778	341.277
VVA5095B	45.54322356	-95.86416340	315.286	5047289.254	276405.007	341.533
VVA5095C	45.54362132	-95.86466930	315.577	5047334.855	276367.092	341.824
VVA5095D	45.54386672	-95.86507292	315.622	5047363.242	276336.557	341.869
VVA5096	44.61491128	-95.70711816	302.065	4943738.495	285212.150	329.085
VVA5097	45.41242308	-95.00847907	351.858	5030729.182	342841.293	378.511

VVA5098	45.03585778	-95.59537448	286.730	4990210.881	295572.411	313.125
VVA5099	44.30514792	-95.47296330	320.829	4908740.080	302749.781	348.019
VVA5101	45.10704290	-95.96274863	277.094	4999112.587	266925.545	303.349
VVA5102	45.14652327	-95.17807382	314.636	5001535.248	328772.711	341.335
VVA5103	44.65956872	-96.45120347	485.096	4950929.740	226384.312	510.637
VVA5104	44.38617075	-96.30244942	517.282	4920071.220	236949.113	543.288
VVA5104A	44.38586826	-96.32401410	522.540	4920107.179	235230.009	548.500
VVA5105	44.89152572	-95.80361139	286.172	4974724.665	278615.546	312.505
VVA5106	45.41586851	-96.67517447	273.066	5035722.710	212445.733	299.048
VVA5107	44.50623335	-96.44988097	515.525	4933892.454	225768.392	541.066
VVA5107A	44.50628019	-96.45013409	515.914	4933898.507	225748.492	541.455
VVA5107B	44.50632558	-96.45051528	516.785	4933904.831	225718.403	542.325
VVA5108	44.74049879	-94.71543306	300.660	4955555.068	364188.522	328.088
VVA5108A	44.74077375	-94.71548794	300.599	4955585.703	364184.821	328.026
VVA5109	44.51624304	-95.89135573	324.525	4933280.306	270205.771	351.394
VVA5110	45.58584192	-96.17102585	316.504	5052925.325	252637.076	342.733
VVA5111	45.76643200	-95.18897198	390.631	5070427.198	329792.115	416.858
VVA5112	44.77557537	-95.00694457	300.288	4959979.389	341205.494	327.565
VVA5113	44.59164538	-96.06273853	331.259	4942152.748	256899.095	357.736
VVA5114	45.14060863	-96.28376256	289.641	5003817.567	241823.603	315.760
VVA5114A	45.14039334	-96.28379294	289.743	5003793.748	241820.242	315.861
VVA5115	44.73586922	-94.61172446	298.907	4954872.950	372389.009	326.391
VVA5115A	44.73597925	-94.61171006	298.451	4954885.149	372390.391	325.935
VVA5116	44.93992859	-95.19268083	306.211	4978616.092	327002.575	333.009
VVA5117	45.10875846	-95.45205497	292.931	4997957.269	307106.665	319.440
VVA5117A	45.10869750	-95.45166979	292.572	4997949.577	307136.760	319.081
VVA5118	45.71672109	-95.28014650	385.891	5065102.539	322545.257	412.022
VVA5118B	45.71661193	-95.28043547	386.533	5065091.053	322522.421	412.664
VVA5118C	45.71672878	-95.28031359	385.900	5065103.765	322532.277	412.031
VVA5119	45.20508486	-95.66384890	280.781	5009185.468	290798.731	307.211
VVA5119A	45.25043950	-95.65497961	290.320	5014200.999	291661.130	316.769
VVA5120	44.54481890	-95.10216054	283.211	4934536.931	333010.389	310.793
VVA5120A	44.54508547	-95.10199693	283.405	4934566.206	333024.149	310.986
VVA5121	44.90371782	-96.30981409	310.066	4977585.528	238698.837	336.003
VVA5121A	44.90355324	-96.30991256	309.358	4977567.563	238690.316	335.295

VVA5121B	44.90334462	-96.30995250	309.857	4977544.518	238686.217	335.794
VVA5121C	44.90315505	-96.30987680	311.117	4977523.214	238691.334	337.054
VVA5121D	44.90306192	-96.30968262	311.755	4977512.243	238706.241	337.692
VVA5122	44.31470617	-95.69866146	363.998	4910369.667	284782.121	390.920
VVA5122A	44.31478637	-95.69867398	363.853	4910378.609	284781.417	390.776
VVA5123	44.65872545	-95.22532010	236.788	4947449.059	323572.106	264.178
VVA5124	45.50677271	-95.30533958	341.389	5041834.005	319913.582	367.650
VVA5124A	45.50685832	-95.30531318	342.662	5041843.457	319915.917	368.924
VVA5124B	45.50693411	-95.30518846	343.419	5041851.596	319925.902	369.680
VVA5124C	45.50685649	-95.30485917	343.408	5041842.234	319951.377	369.669
VVA5124D	45.50683668	-95.30477726	343.059	5041839.851	319957.712	369.321
VVA5125	45.10905542	-95.59413758	287.655	4998339.179	295930.674	314.076
VVA5125A	45.10921651	-95.59411230	287.774	4998357.011	295933.237	314.195
VVA5126	45.21352906	-94.83052829	330.295	5008301.125	356263.394	357.207
VVA5127	45.75137397	-95.61870152	382.076	5069759.309	296323.370	408.076
VVA5127A	45.75110438	-95.61887227	381.035	5069729.793	296309.108	407.035
VVA5128	45.28278093	-95.15282396	351.480	5016619.043	331161.568	378.173
VVA5128A	45.28300295	-95.15283822	352.674	5016643.738	331161.108	379.367
VVA5129	44.21105360	-96.35842464	510.945	4900800.969	231693.179	536.748
VVA5129A	44.21135738	-96.42421922	515.163	4901051.922	226438.038	540.965
VVA8000	45.58524962	-95.14467481	383.718	5050204.679	332697.206	410.058
VVA8001	45.19623437	-96.41450163	290.636	5010423.395	231806.145	316.646
VVA8004	44.89103540	-95.30238801	297.910	4973424.699	318192.733	324.718
VVA8006	44.33534816	-95.34940841	304.862	4911804.755	312701.155	332.231
VVA8007	44.38392490	-95.08340844	292.782	4916626.908	334044.607	320.465
VVA8010	44.65789820	-95.42162114	291.973	4947801.018	308006.113	319.240
VVA8011	44.75980742	-95.46227330	286.305	4959217.991	305125.514	313.261
VVA8012	44.89258550	-95.92033607	290.690	4975167.599	269402.697	316.960
VVA8013	44.76191856	-96.19561331	323.084	4961472.020	247094.676	349.140

RTK SOLUTION

Inverse Results

Monument: DE6505

From	To	Geodetic Azimuth	Ellipsoid Distance (Meter)	Grid Azimuth	Grid Distance (Meter)	Ground Distance (Meter)	Δ Elevation (Meter)
DE6505 NAD83(2011) Epoch 2010 OPUS	DE6505	63°34'02"	0.009	65°25'10"	0.009	0.009	0.027
DE6505 NAD83(2011) Epoch 2010 OPUS	DE6505 Static	72°58'03"	0.006	74°49'11"	0.006	0.006	0.022

The screenshot shows the Trimble Business Center software interface. The main window displays a plan view with a grid and points. A red circle highlights the monument point DE6505, and a yellow circle highlights the target point DE6505_Static. The distance between them is shown as 0.0020 m. The right-hand panel shows the 'Inverse' settings, with 'From' set to DE6505_Static and 'To' set to DE6505. The 'Reported Points' table shows the calculated distance and elevation change.

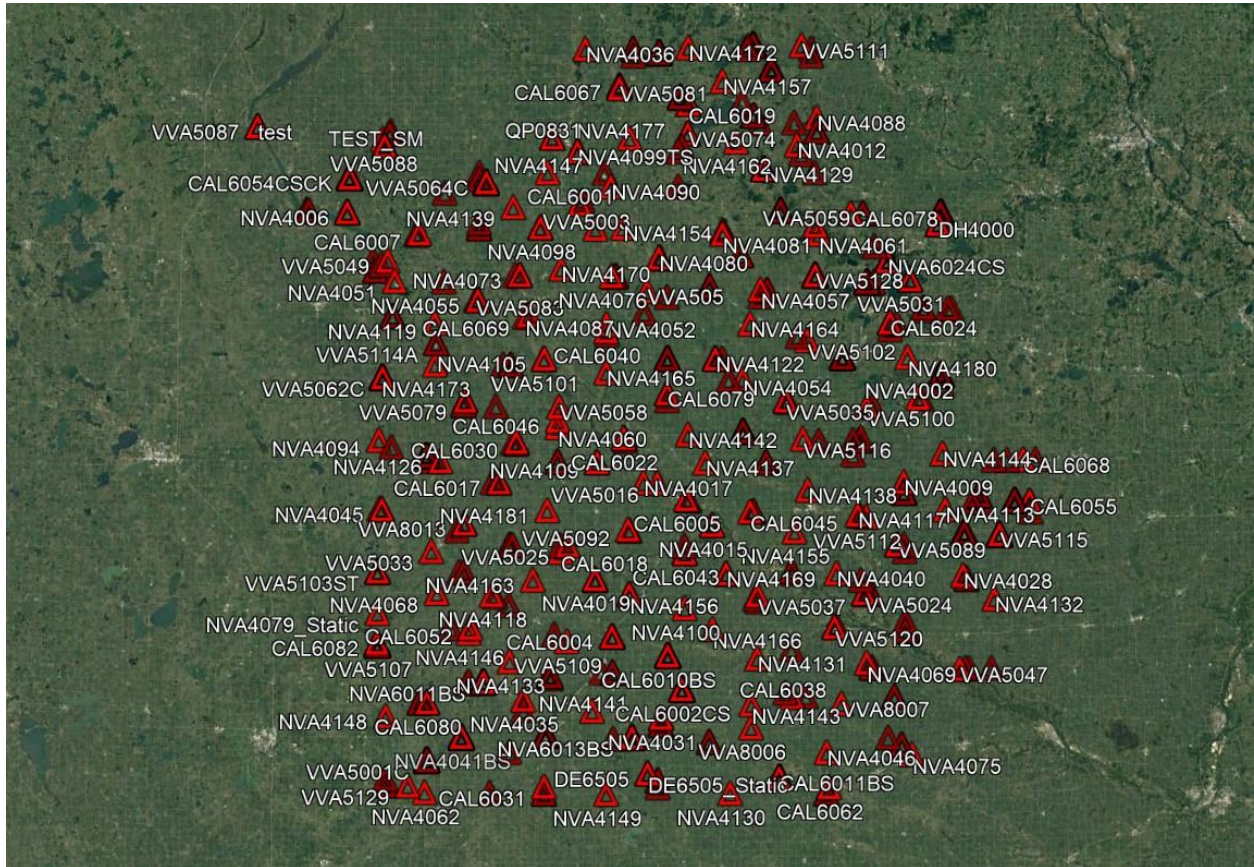
From:	To:
DE6505_NAD83(2011)	DE6505
DE6505_NAD83(2011)	DE6505_Static

Details

Grid azimuth: 74°49'11"
 Grid distance: 0.006 m

Apply Close

SURVEY REFERENCE MAP



STATION PICTURES



CAL6000



CAL6000_N

CAL6001



CAL6001_N



CAL6002CS_N



CAL6003_N



CAL6004_N



CAL6005_N



CAL6006_N



CAL6007_N







CAL6011BS_N



CAL6012_N



CAL6013CS_N



CAL6014_N



CAL6015_N



CAL6016_N





CAL6017CS_N



CAL6018_N



CAL6019_N



CAL6020_N



CAL6021_N



CAL6022_N



CAL6023_N



CAL6024_N



CAL6025_N



CAL6026_N



CAL6027BS_N



CAL6028_N



CAL6029_N



CAL6030_N





CAL6033_N



CAL6034_N





CAL6037_N



CAL6038_N



CAL6039_N



CAL6040_N



CAL6041_N



CAL6042_N



CAL6043_N



CAL6044_N



CAL6045_N



CAL6046_N



CAL6047_N



CAL6048_N





CAL6051A_N



CAL6051BS_N



CAL6052_N



CAL6053_N



CAL6054CS_N



CAL6055_N



CAL6056_N



CAL6057_N



CAL6058_N



CAL6059_N



CAL6060_N



CAL6061_N



CAL6062_N



CAL6063_N



CAL6064_N



CAL6065_N



CAL6066_N



CAL6067_N



CAL6068_N



CAL6069_N



CAL6070_N



CAL6071_N



CAL6072_N



CAL6073_N



CAL6074_N



CAL6074A_N



CAL6075CS_N



CAL6076CS_N



CAL6077CS_N



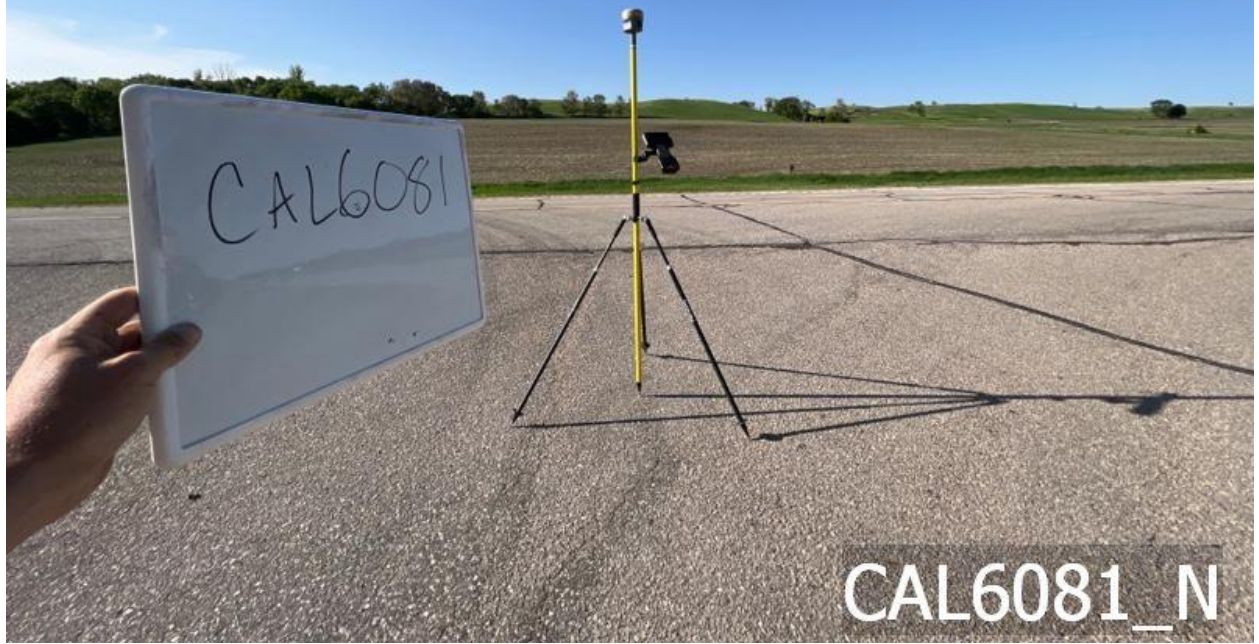
CAL6078_N



CAL6079_N



CAL6080_N



CAL6081_N



CAL6082_N





CAL6085_N



CAL6086BS_N



CAL6087_N



CAL6089_N



CAL6090_N



CAL6091_N





NVA4001CS_N



NVA4002_N



NVA4004ATS_N



NVA4005_N





NVA4008_N



NVA4009_N



NVA4010_N



NVA4011_N



NVA4012_N



NVA4012BS_N



NVA4013_N



NVA4014_N



NVA4015_N



NVA4016CS_N



NVA4017_N



NVA4018CS_N



NVA4019_N



NVA4020_N



NVA4022_N



NVA4023_N



NVA4024_N



NVA4025_N





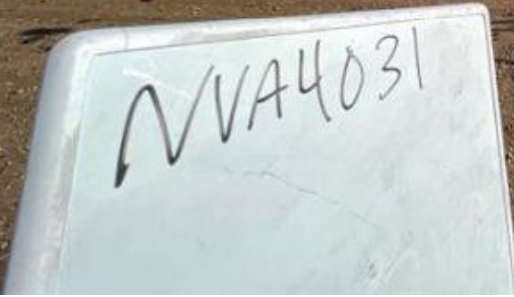
NVA4028_N



NVA4029CS_N



NVA4030_N



NVA4031_N



NVA4032_N



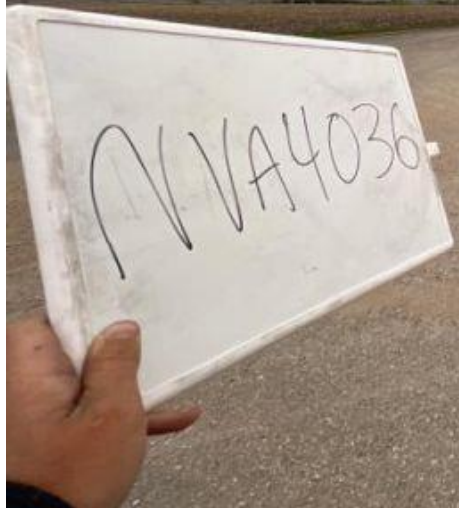
NVA4033_N



NVA4034_N



NVA4035_N



NVA4036_N



NVA4037_N



NVA4038CS_N



NVA4039_N







NVA4043A_N



NVA4044_N

NVA4045



NVA4045_N

NVA4047



NVA4047_N



NVA4048_N



NVA4049_N





NVA4052_N



NVA4053_N



NVA4054_N



NVA4055_N



NVA4056_N



NVA4057_N



NVA4058_N



NVA4059_N



NVA4060_N



NVA4061_N



NVA4062_N



NVA4063_N



NVA4064_N



NVA4065BS_N



NVA4066_N



NVA4067_N



NVA4068_N



NVA4069_N



NVA4070BS2_N



NVA4071_N



NVA4072_N



NVA4073_N



NVA4074_N



NVA4075_N



NVA4076_N



NVA4077_N



NVA4078_N



NVA4078A_N



NVA4079_N



NVA4080_N



NVA4081_N



NVA4082_N





NVA4085_N



NVA4085A_N



NVA4086_N



NVA4087_N



NVA4088_N



NVA4089_N

NVA4090



NVA4090_N

NVA4091



NVA4091_N



NVA4092_N



NVA4093_N

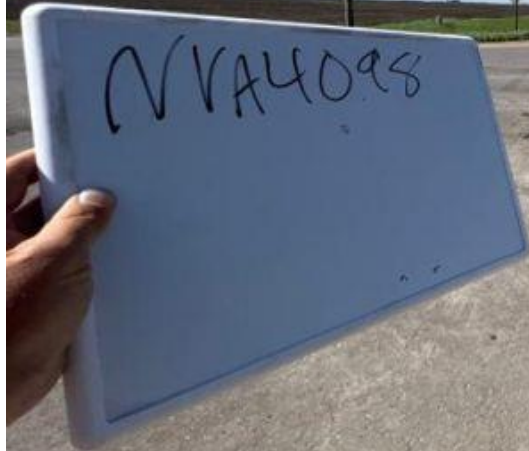


NVA4094_N



NVA4095BS_N





NVA4098_N



NVA4099ABS2_N



NVA4100_N



NVA4101_N

NVA4102



NVA4102_N

NVA4103



NVA4103_N





NVA4106_N



NVA4107_N



NVA4108_N



NVA4109_N



NVA4110_N



NVA4111_N



NVA4112_N



NVA4113_N



NVA4114_N



NVA4115_N



NVA4116_N



NVA4117_N



NVA4118_N



NVA4119_N







NVA4124_N



NVA4125_N



NVA4126_N



NVA4127_N



NVA4128_N



NVA4129_N



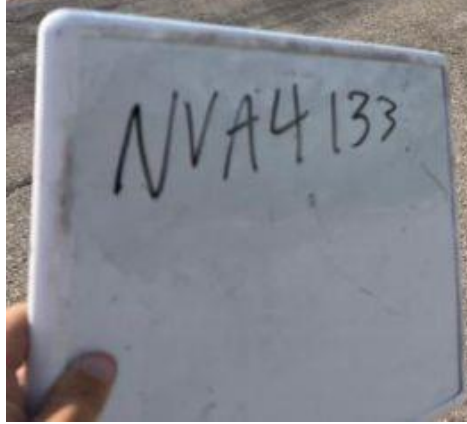
NVA4130_N



NVA4131_N



NVA4132_N



NVA4133_N



NVA4134_N



NVA4135_N



NVA4136CS_N



NVA4137_N



NVA4138_N



NVA4139_N



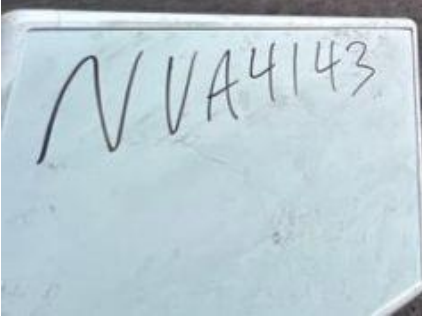
NVA4140_N



NVA4141_N



NVA4142_N



NVA4143_N



NVA4144_N



NVA4145_N



NVA4146_N



NVA4147_N





NVA4150_N



NVA4151_N



NVA4152_N



NVA4153_N



NVA4154_N



NVA4155_N



NVA4156_N



NVA4157_N



NVA4158_N



NVA4160_N



NVA4161_N



NVA4162_N



NVA4163_N



NVA4164_N





NVA4167_N



NVA4168_N



NVA4169_N



NVA4170_N



NVA4171_N



NVA4172_N



NVA4173_N



NVA4174_N



NVA4177



NVA4177_N

NVA4178A



NVA4178_N



NVA4179_N



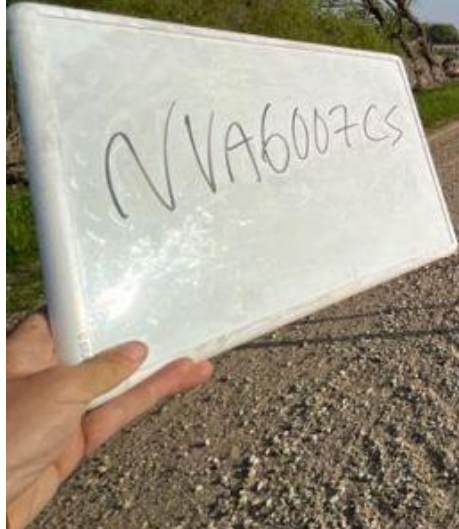
NVA4180_N



NVA4181_N



NVA4195_N



NVA6007CS_N



NVA6013BS_N

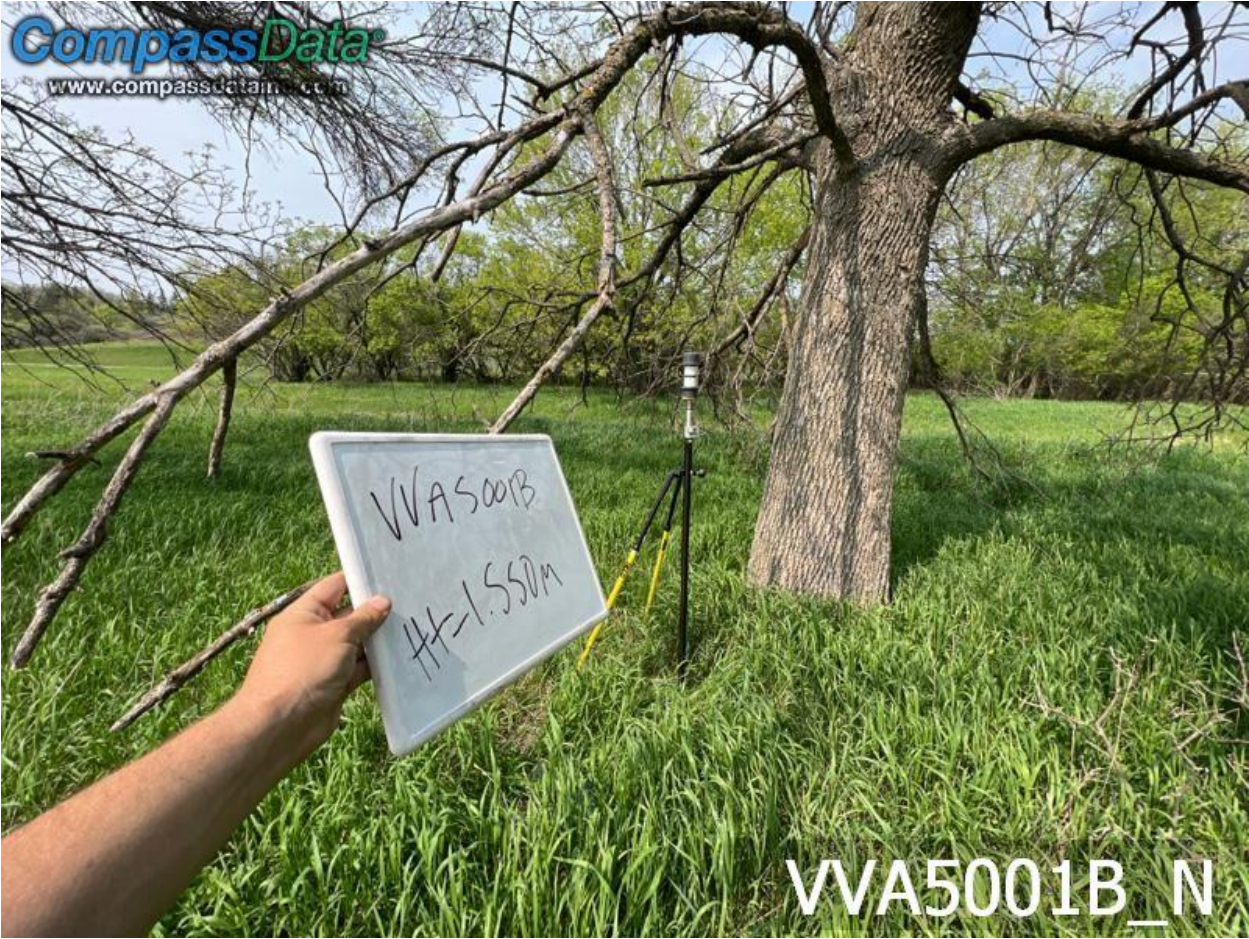




VVA5001_N



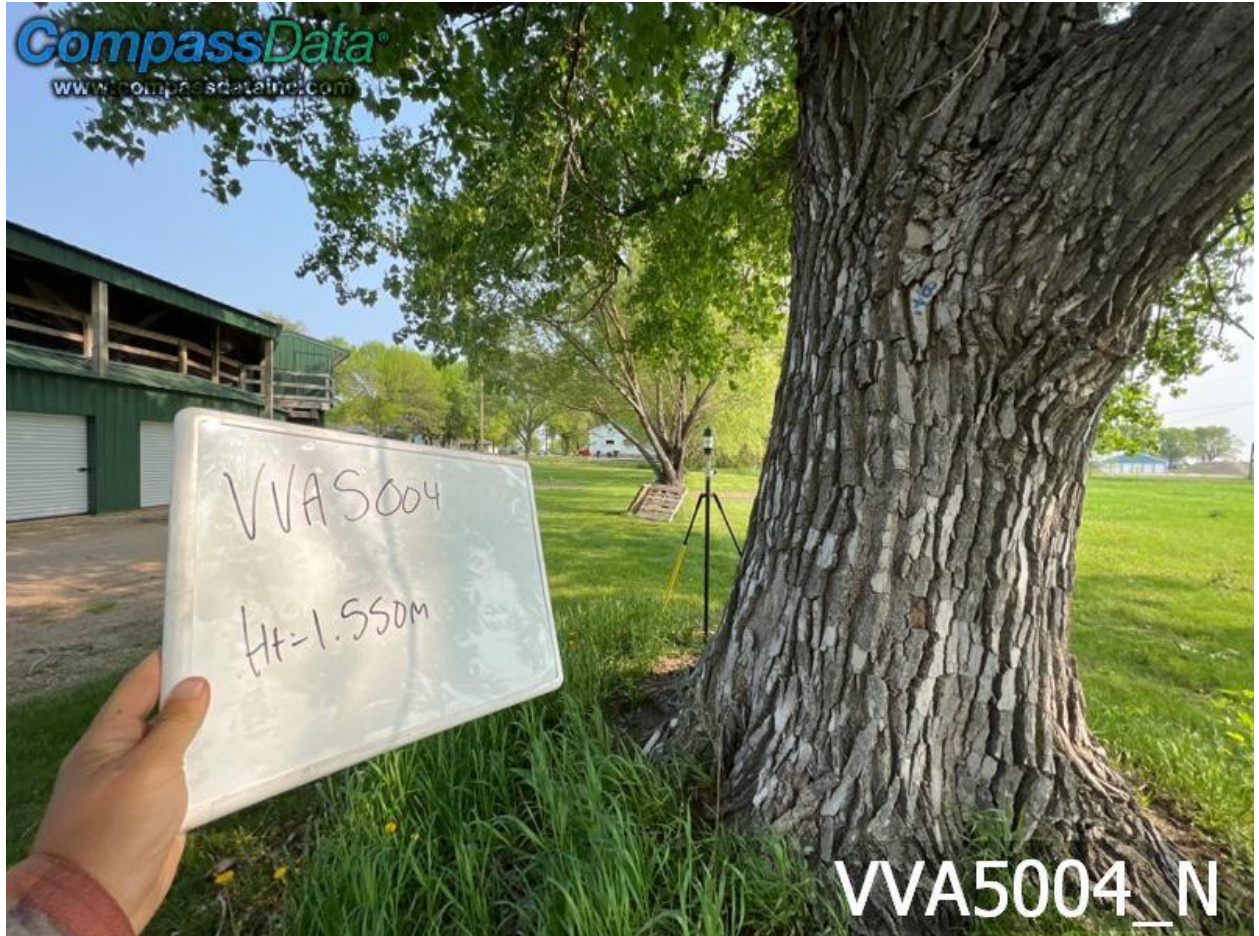
VVA5001A_N

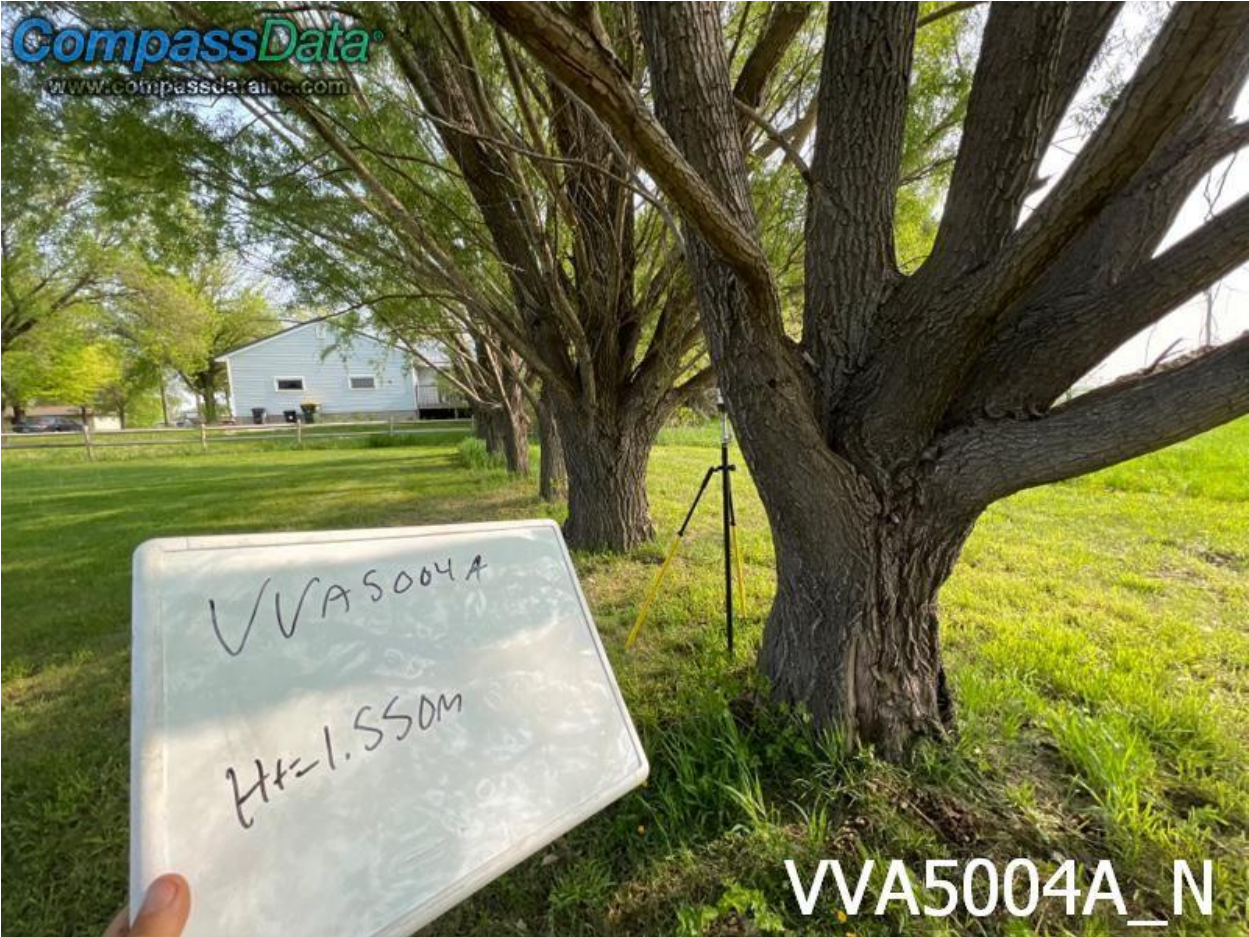


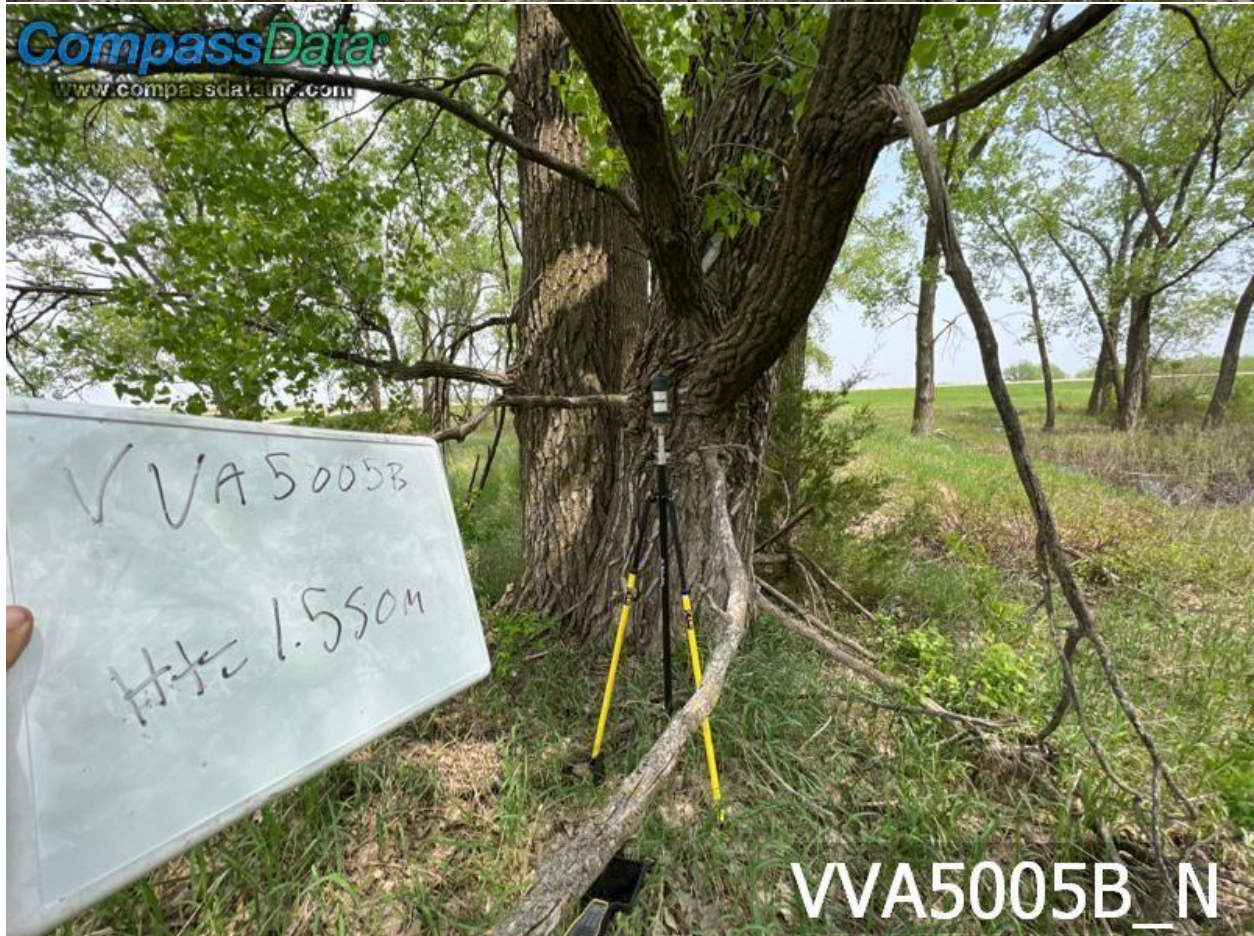
VVA5001B_N

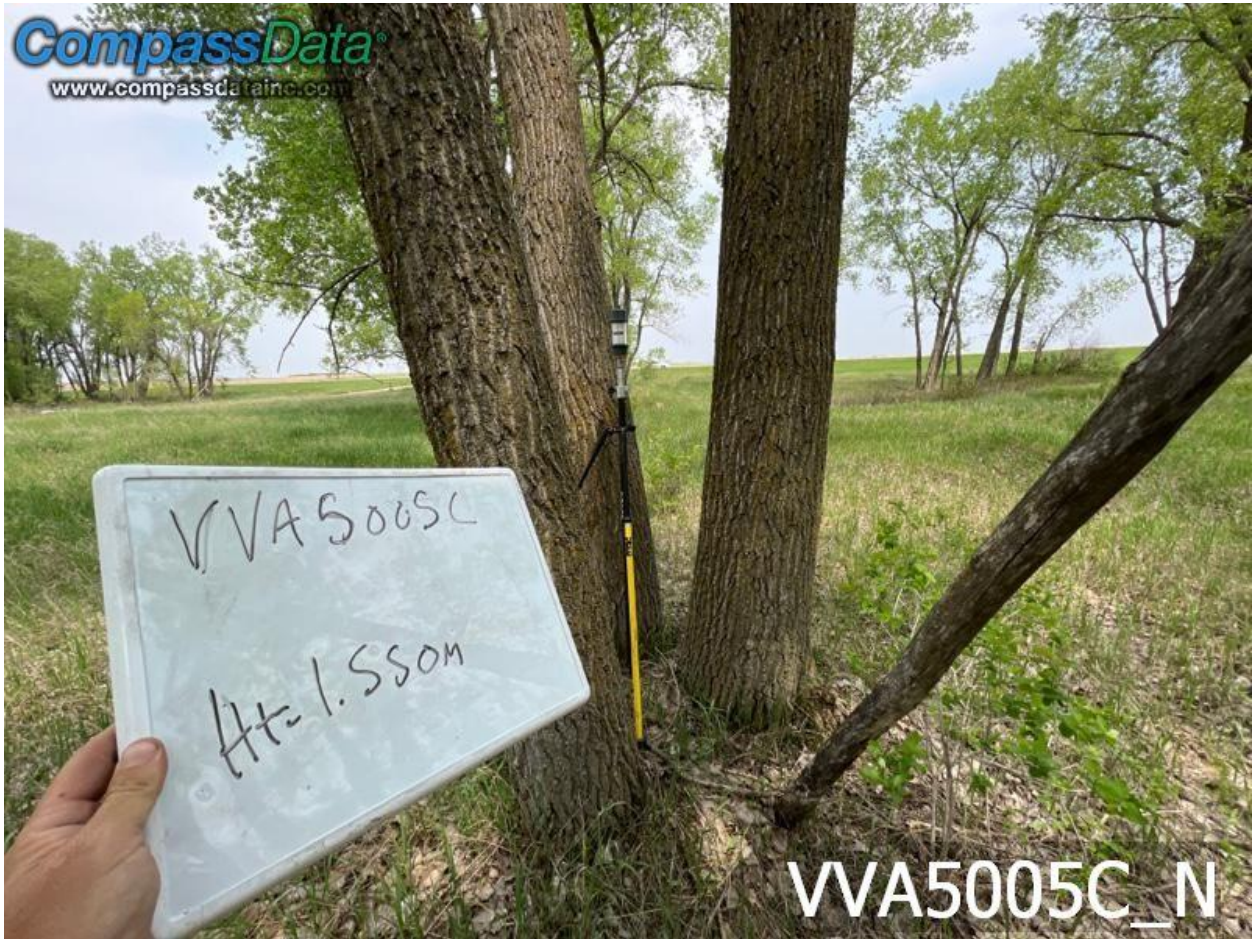


VVA5001C_N









VVA5005C_N



VVA5006A_N





VVA5009_N



VVA5012_N



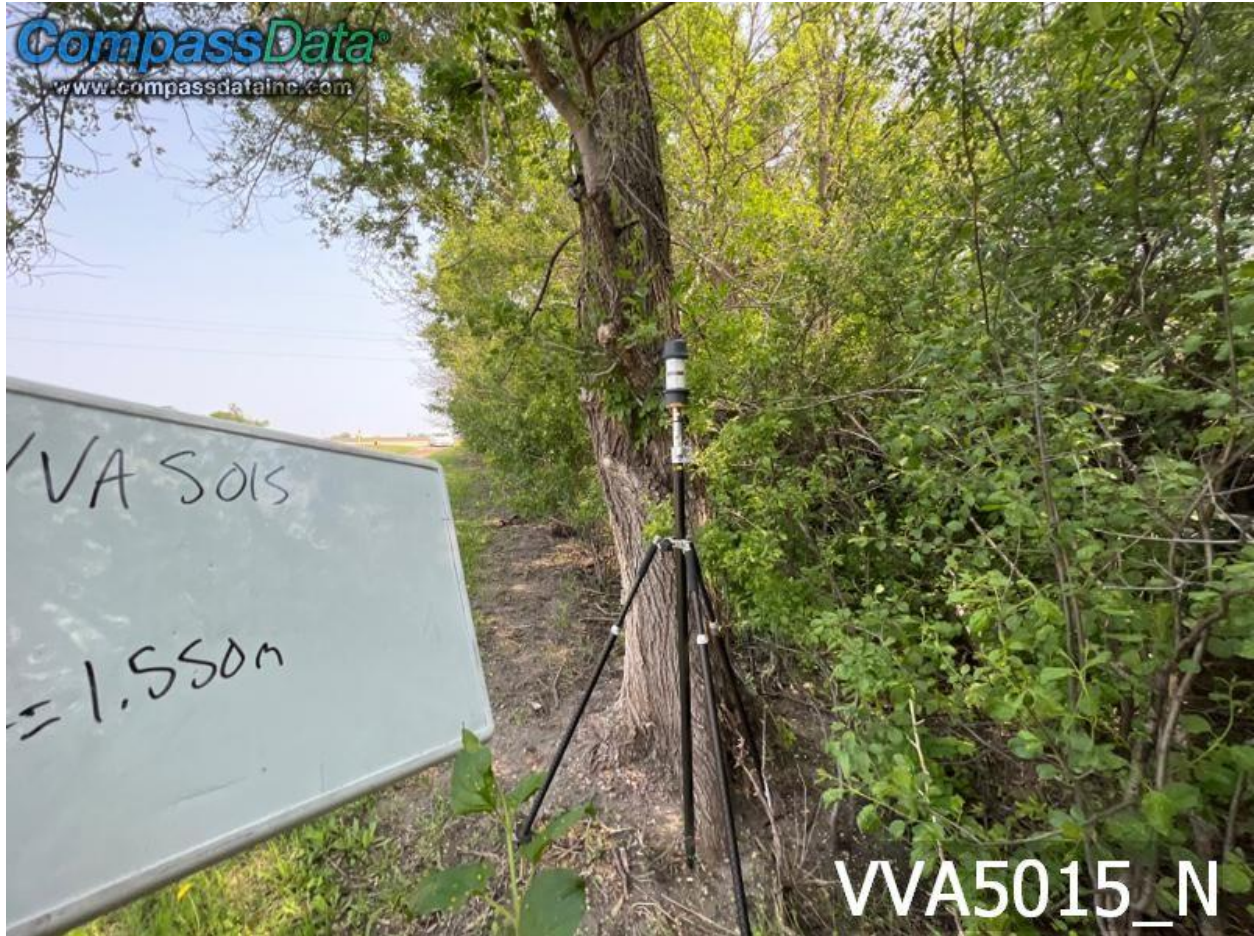
VVA5013_N



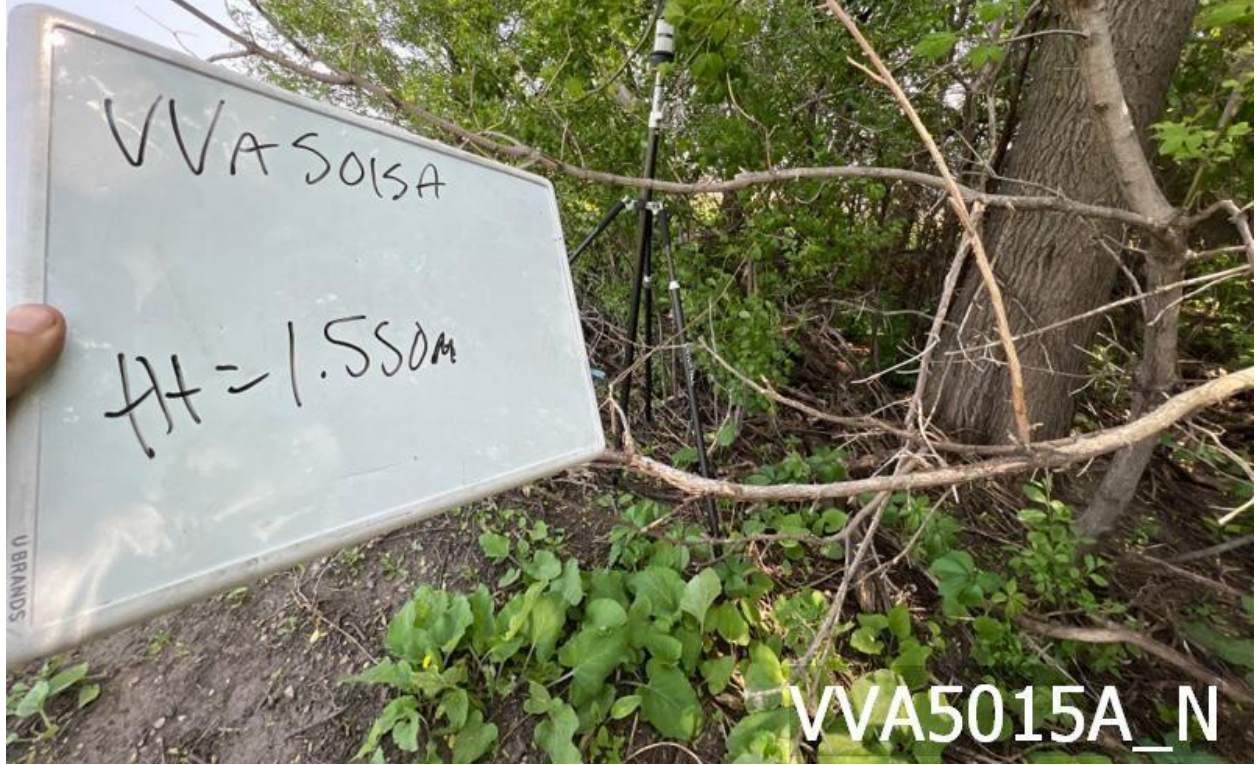
VVA5013A_N

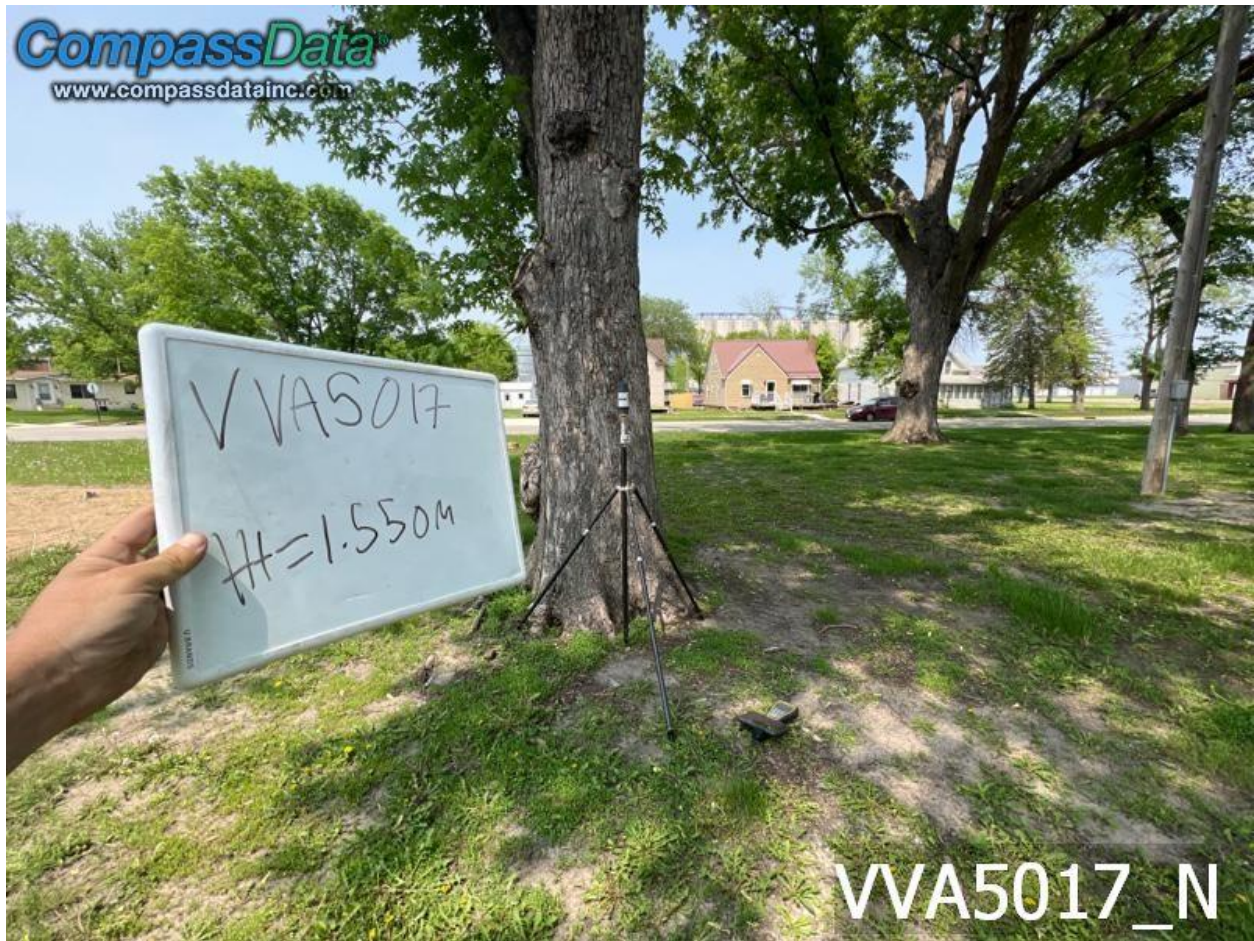


VVA5014_N

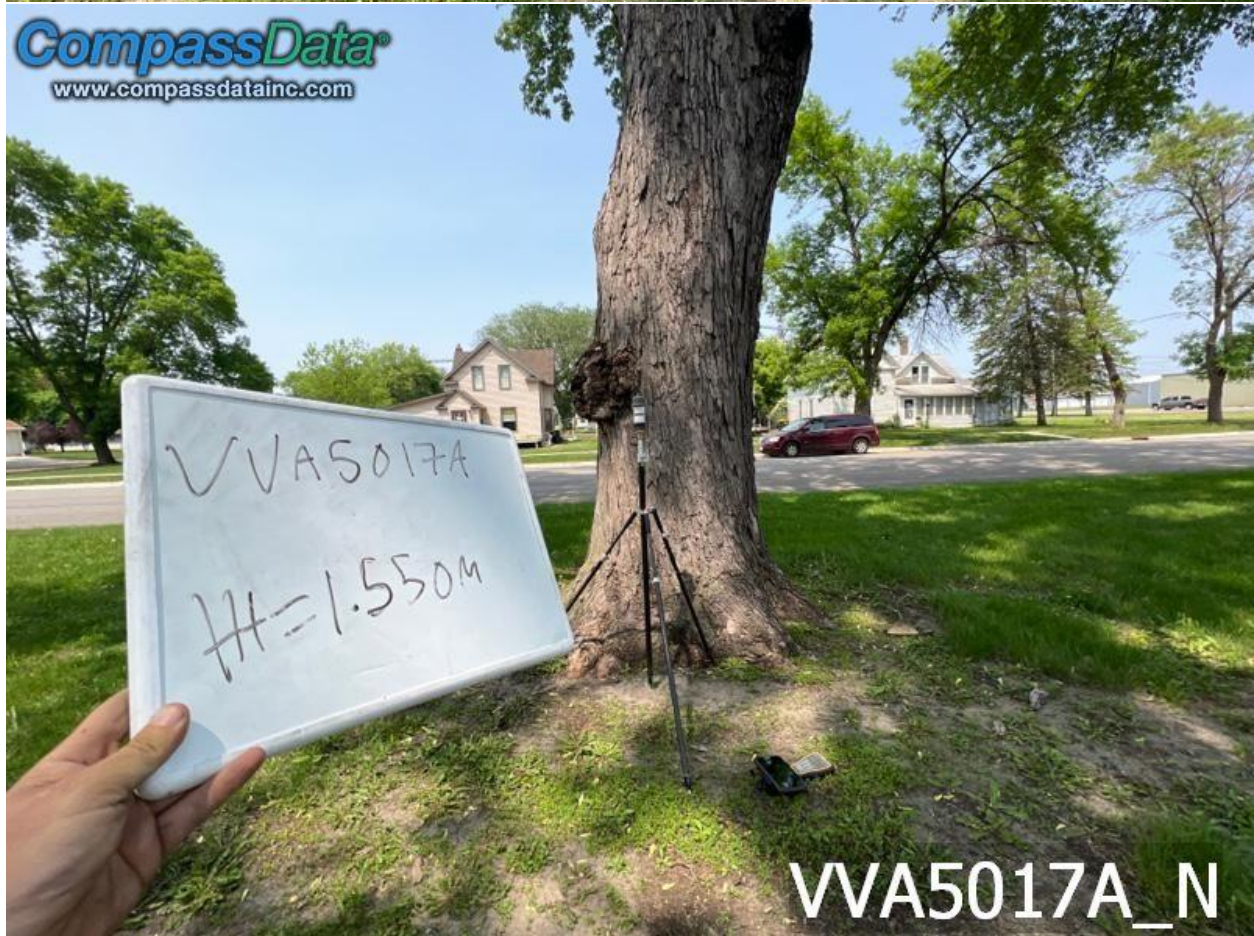


VVA5015_N

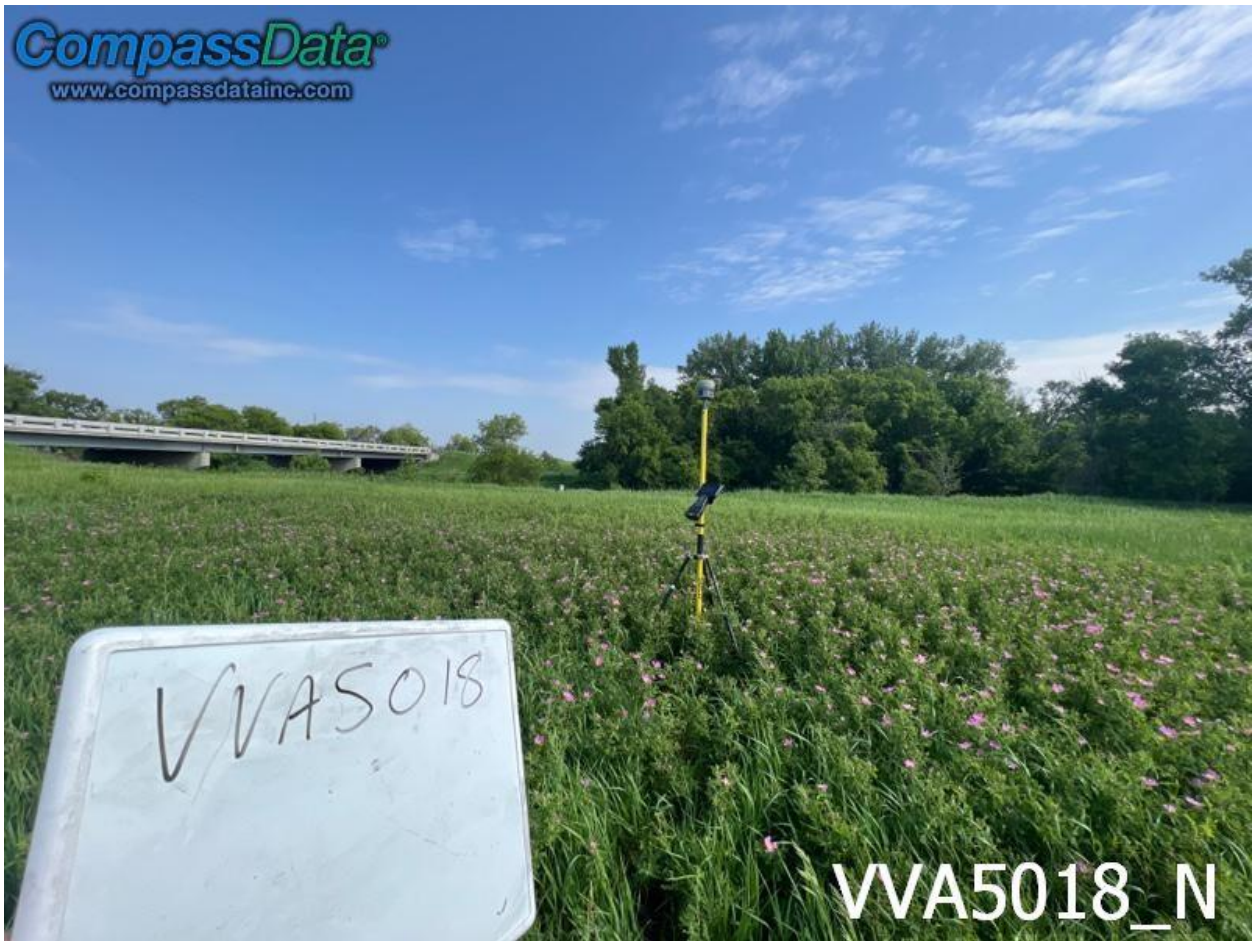




VVA5017_N



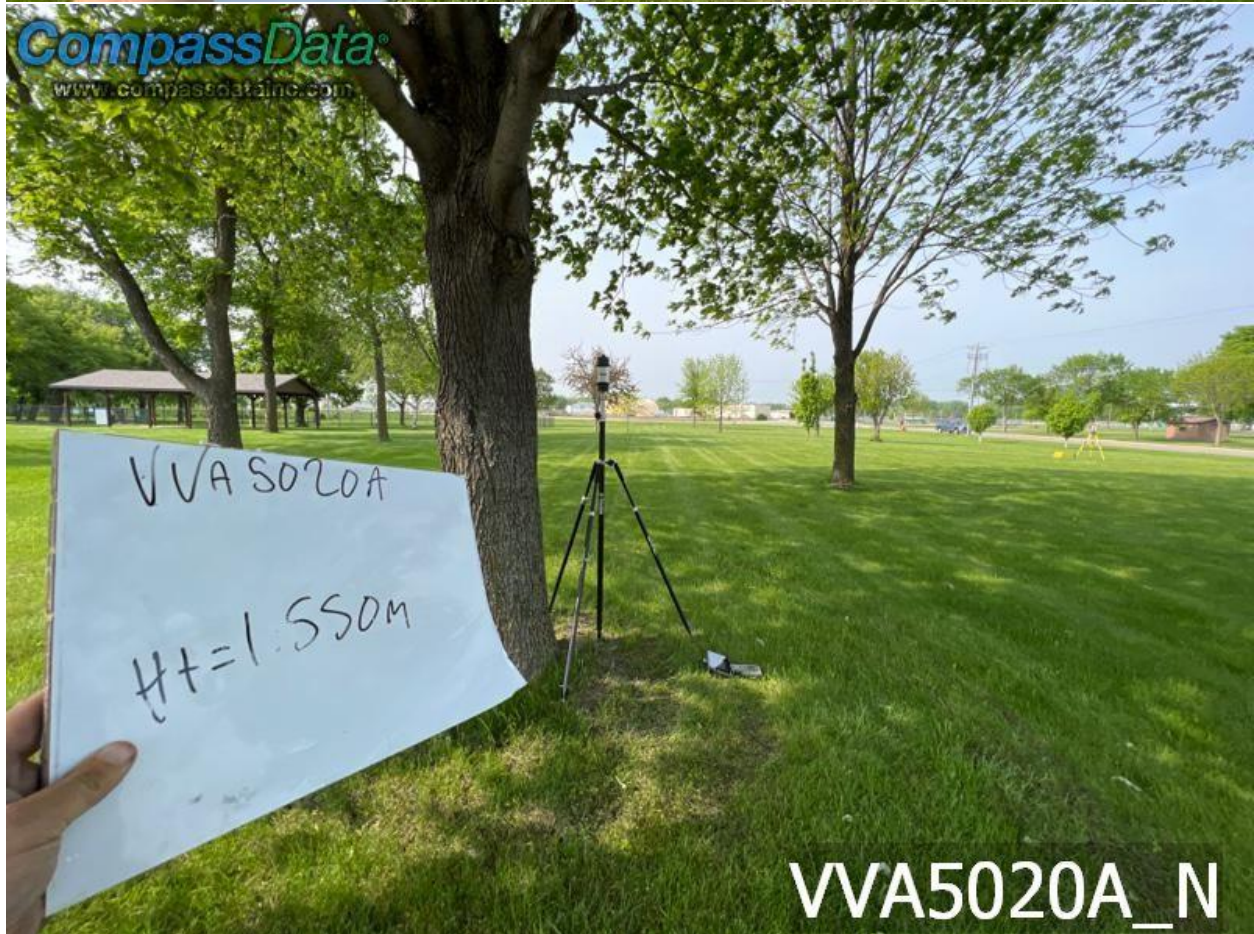
VVA5017A_N



VVA5018_N



VVA5019_N



VVA5021



VVA5021_N

VVA5022
Ht = 1.550m



VVA5022_N



VVA5022A_N



VVA5023_N



VVA5024_N



VVA5024AB_N

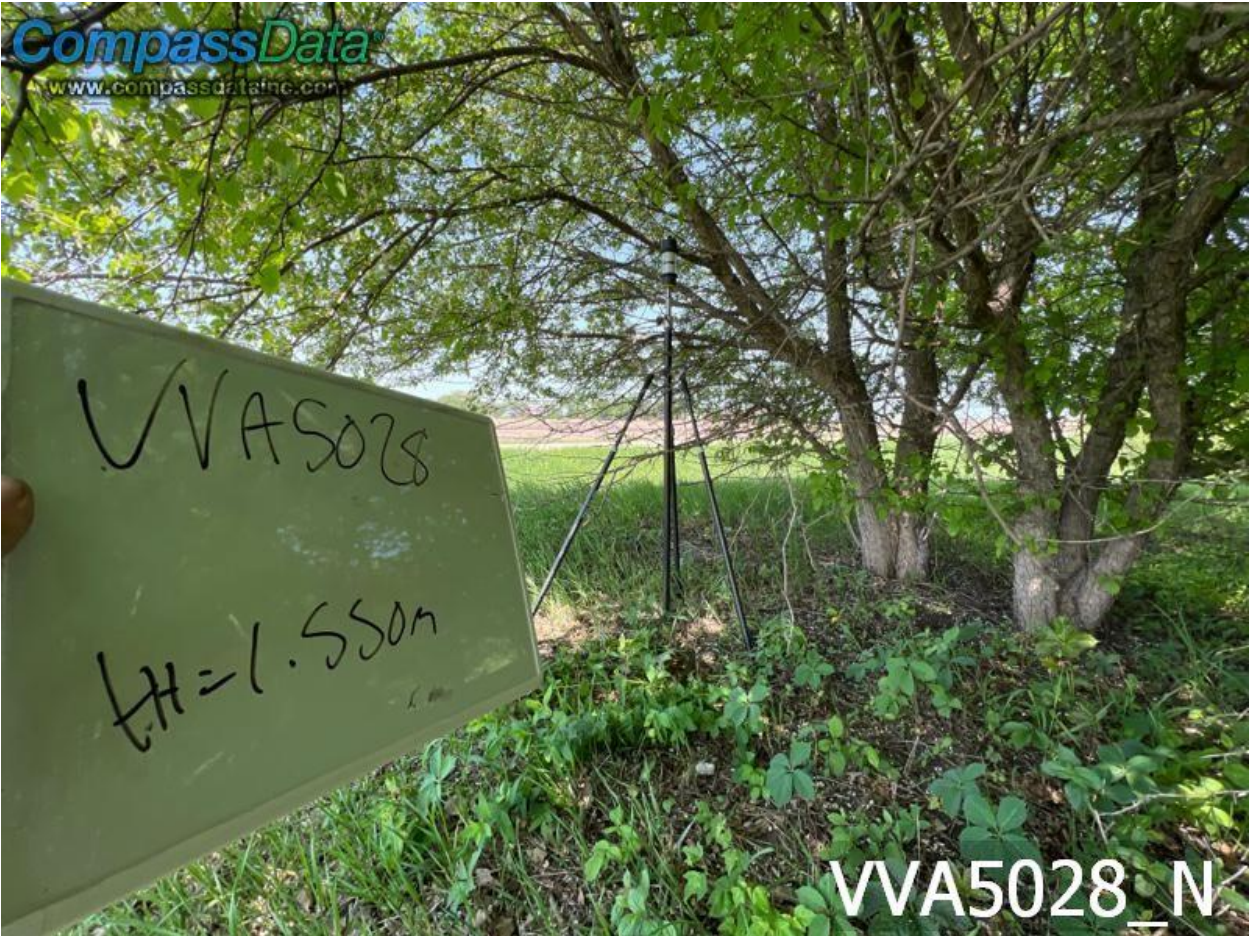


VVA 5026A
H = 1.550M

VVA5026A_N

VVA 5026B
H = 1.550M

VVA5026B_N





VVA5028A_N



VVA5029_N





VVA5032A_N



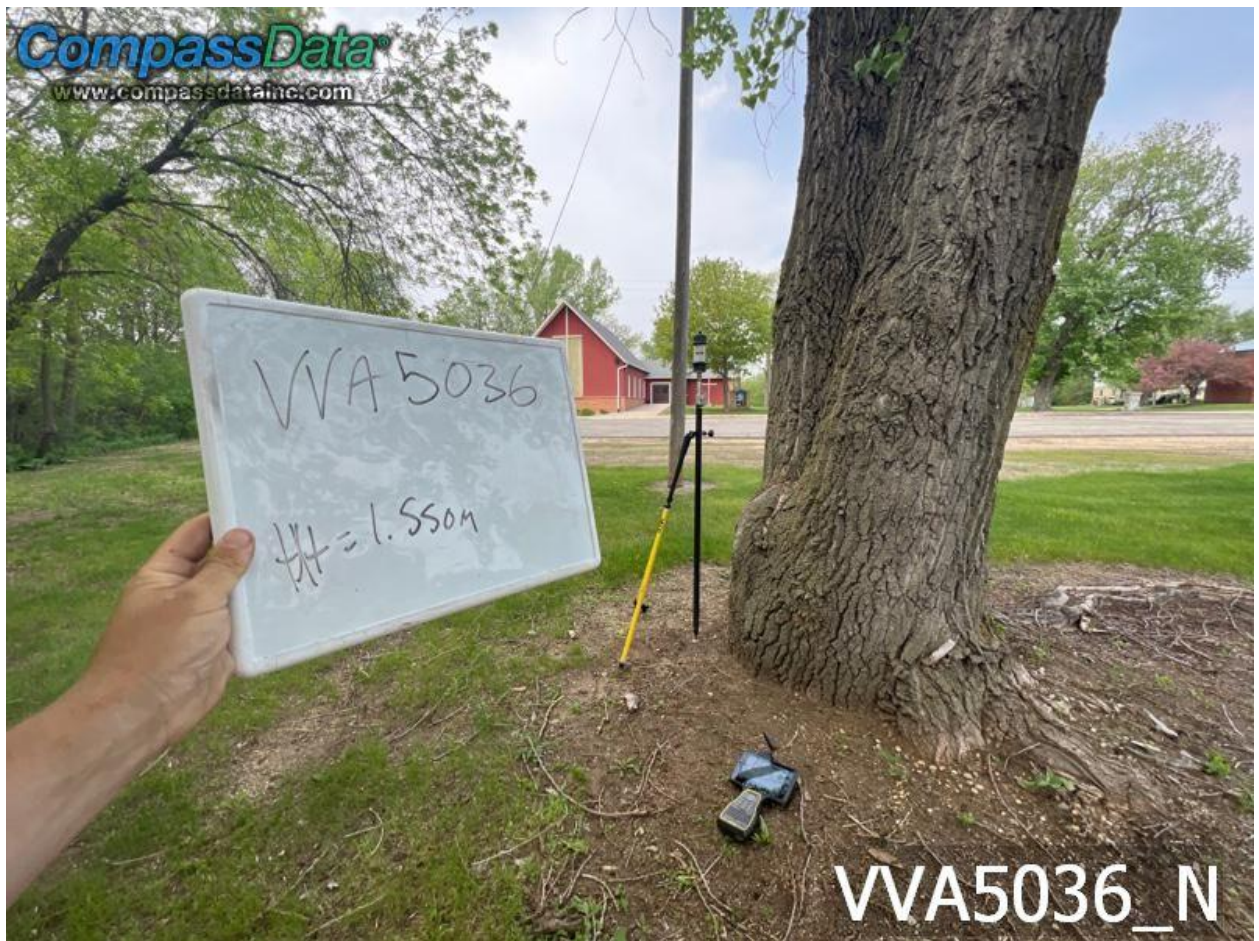
VVA5033_N



VVA5034_N



VVA5035_N



VVA5036_N



VVA5036A_N



VVA5037_N



VVA5038_N



VVA5039_N



VVA5039A_N



VVA5039B_N



VVA5040_N



VVA5040A_N



VVA5041_N



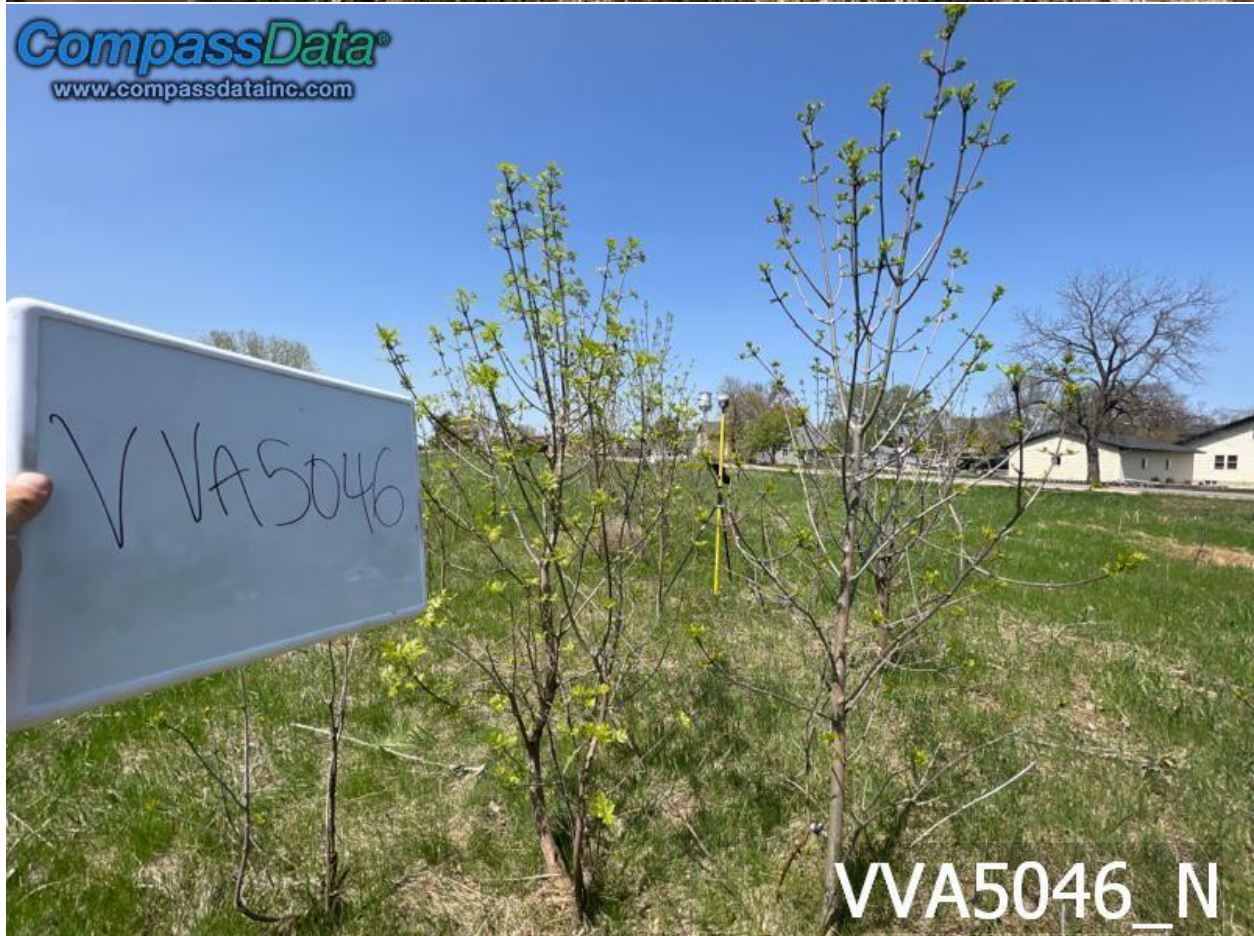
VVA5043_N



VVA5044_N



VVA5045_N



VVA5046_N

VVA5046A

VVA5046A_N

VVA5047

VVA5047_N



VVA5048_N



VVA5049_N



VVA5050USE_N



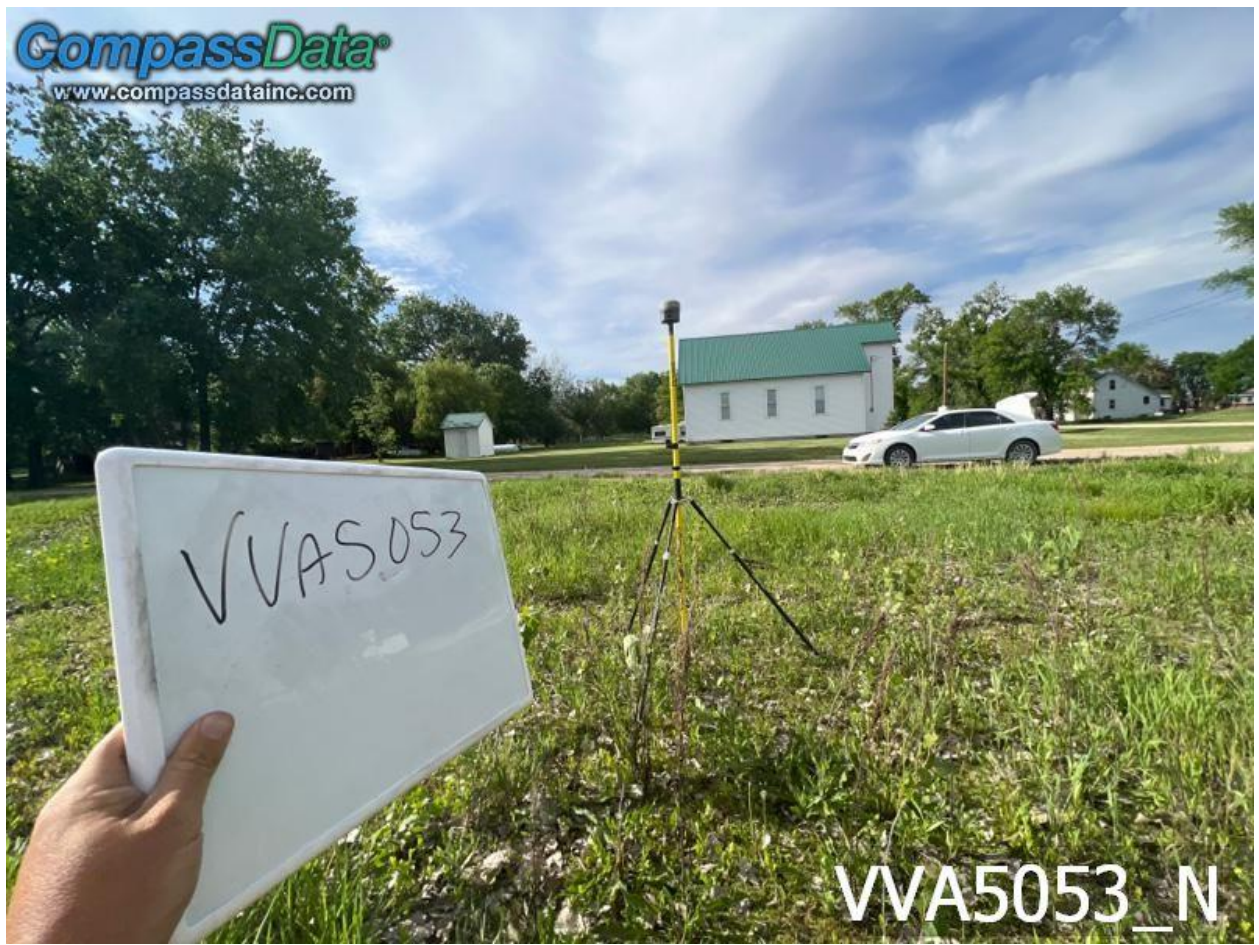
VVA5051_N



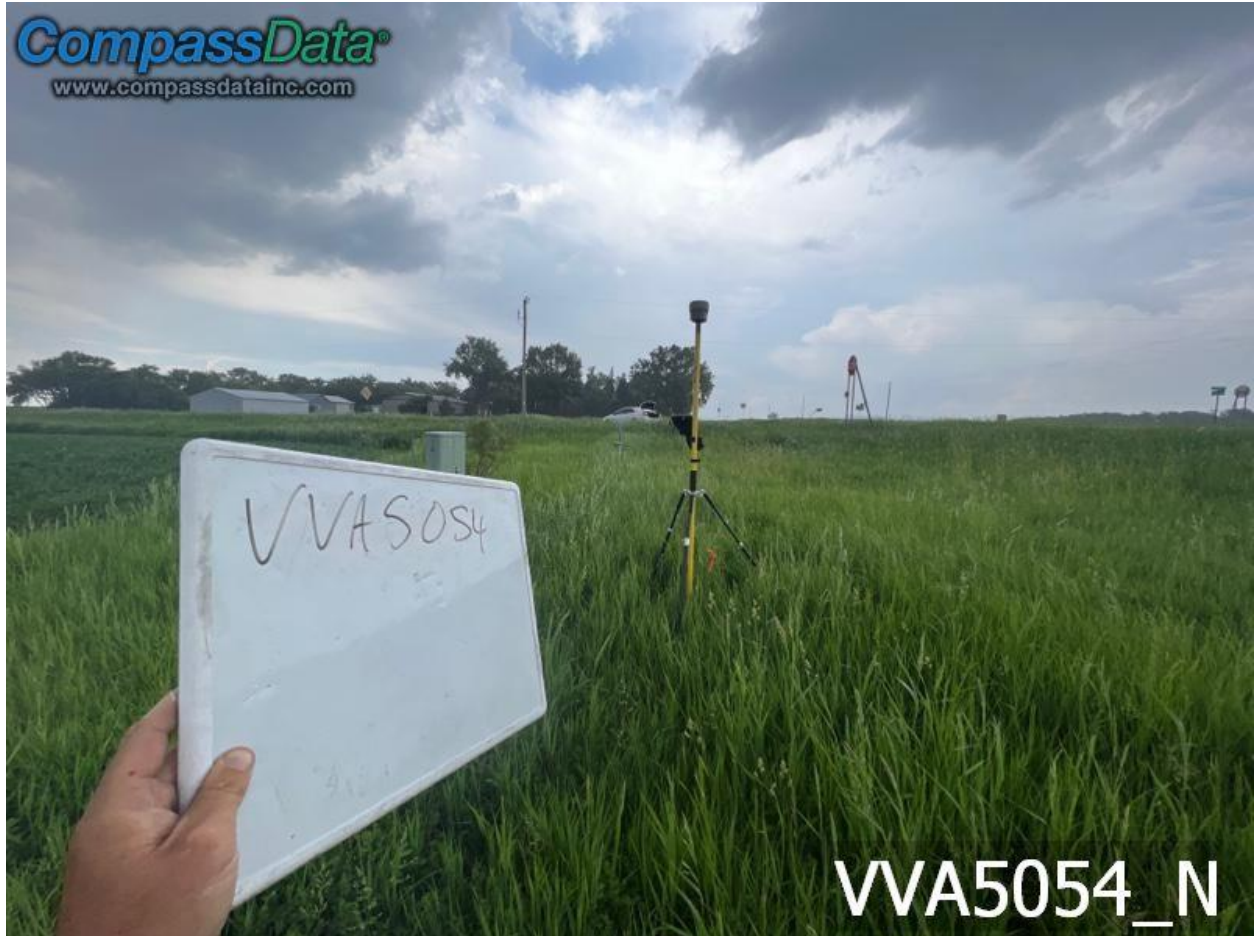
VVA5051A_N



VVA5052_N



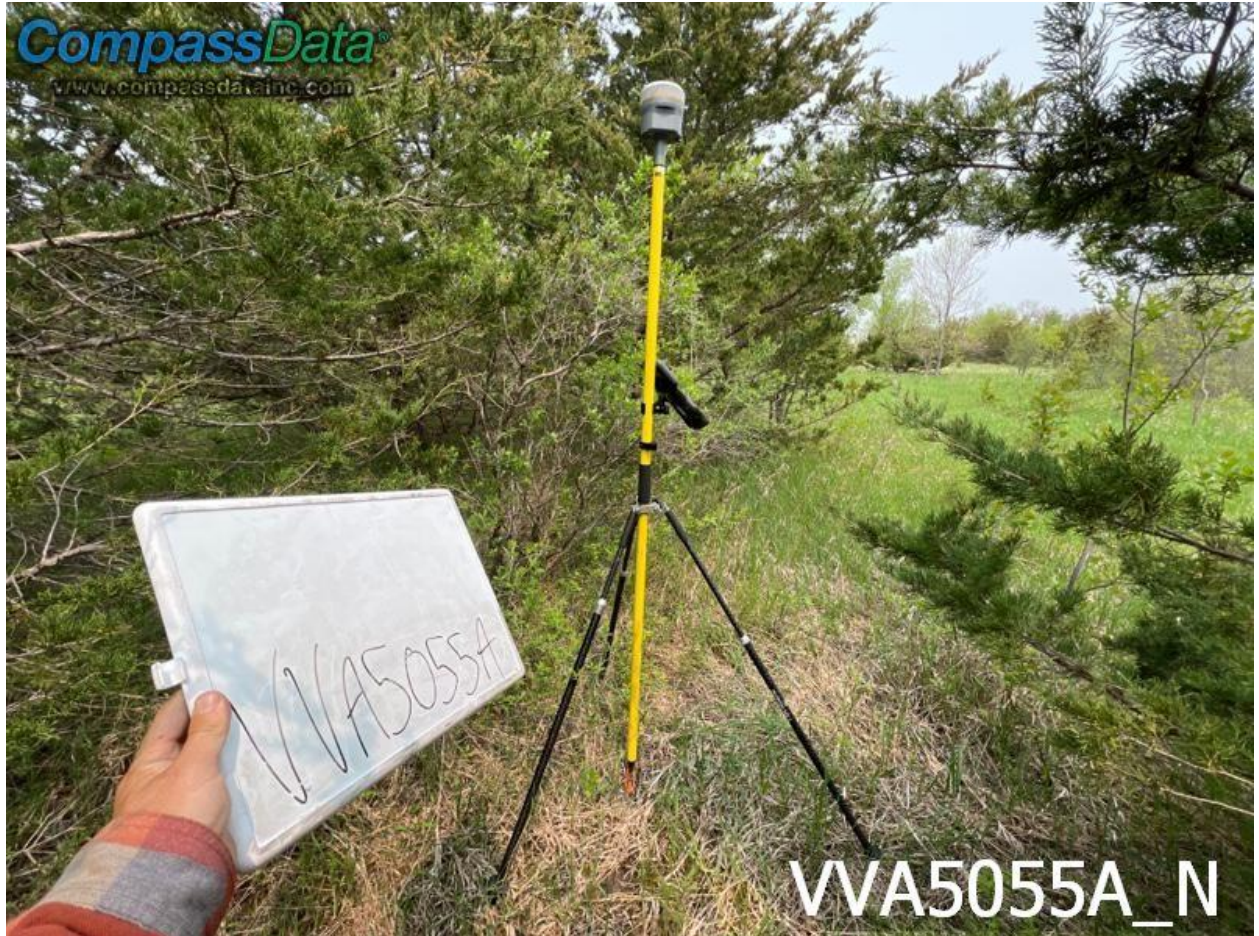
VVA5053_N



VVA5054_N



VVA5055_N



VVA5055A_N



VVA5056_N



VVA5056A_N



VVA5057_N



VVA5058_N



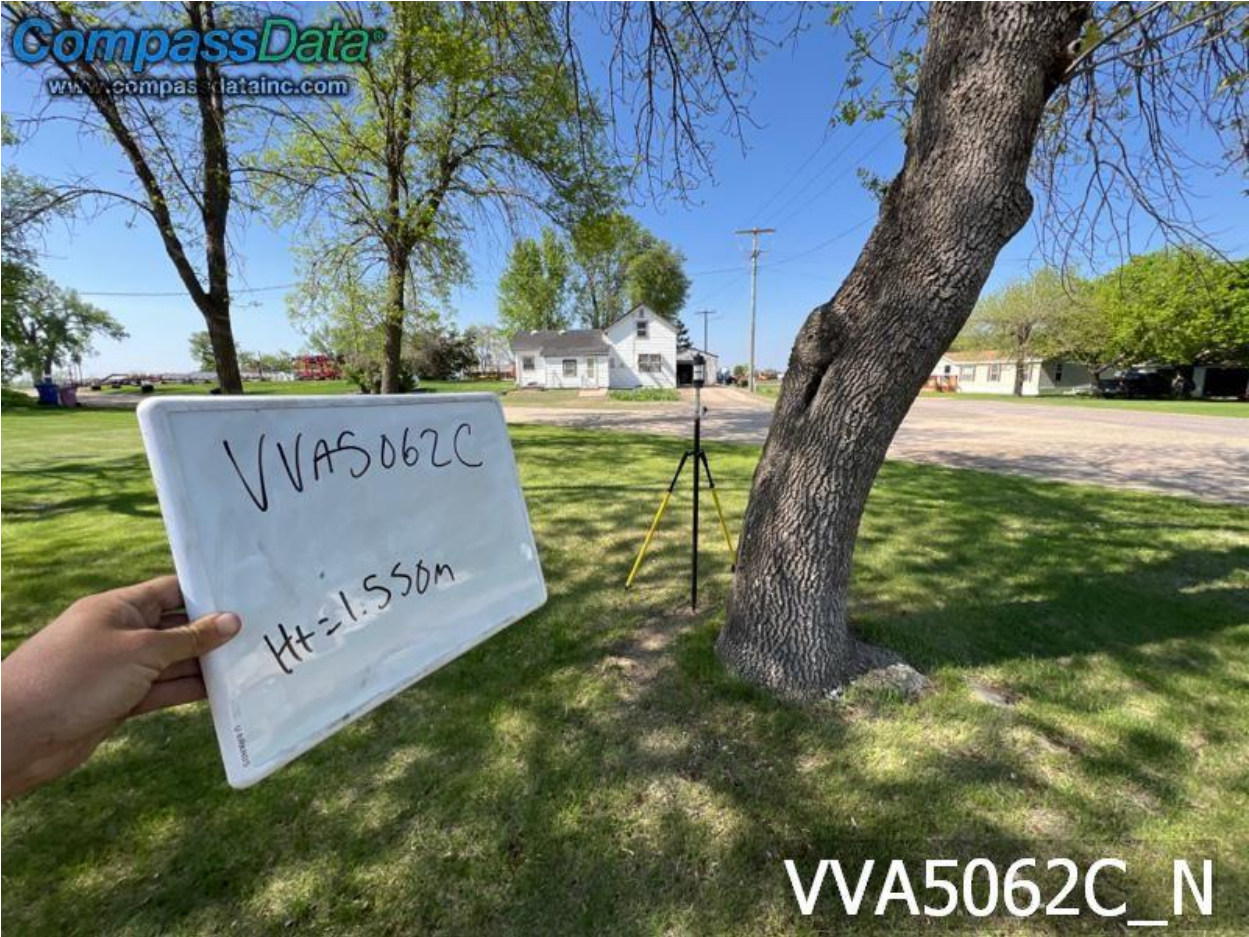


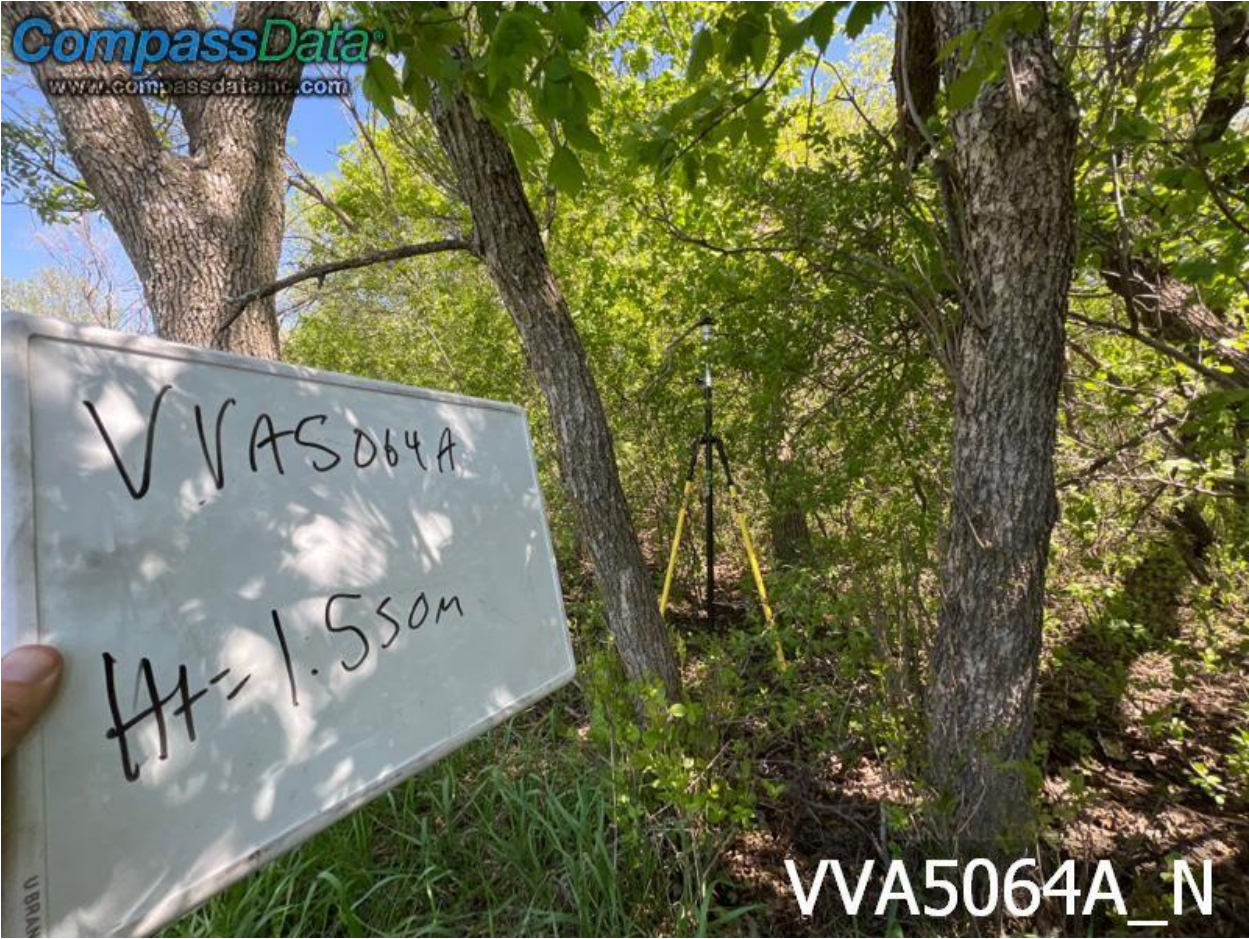
VVA5061_N



VVA5062_N





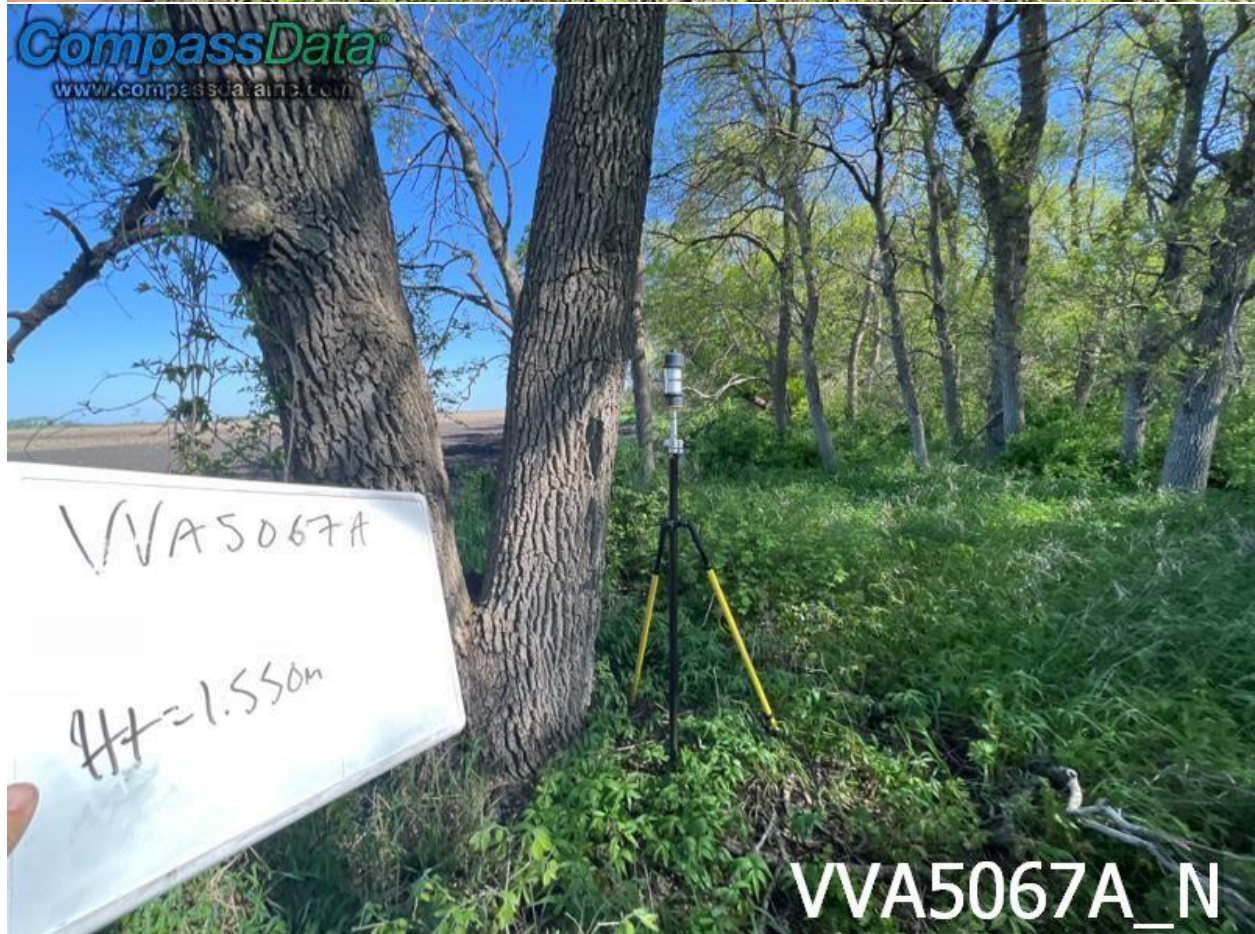


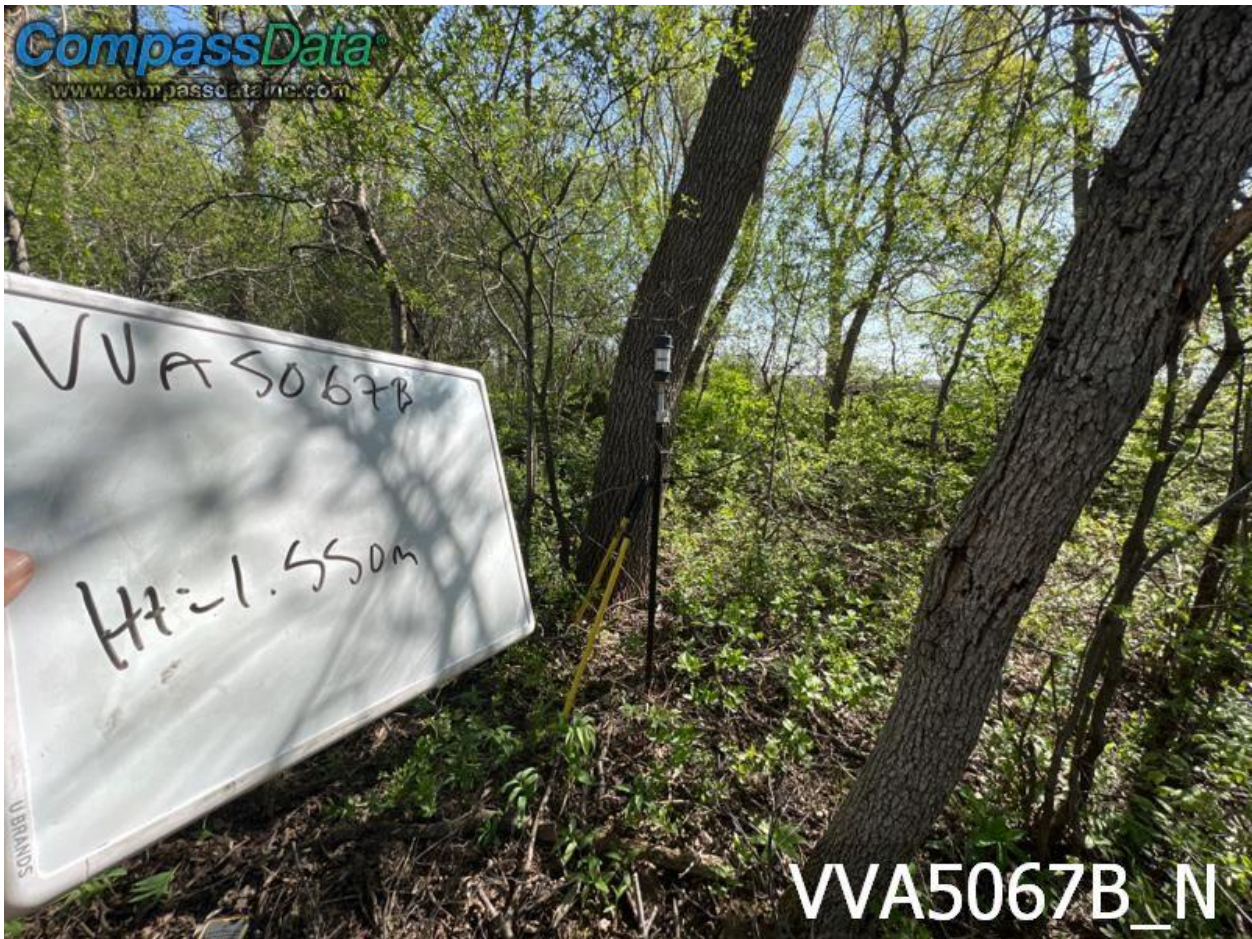


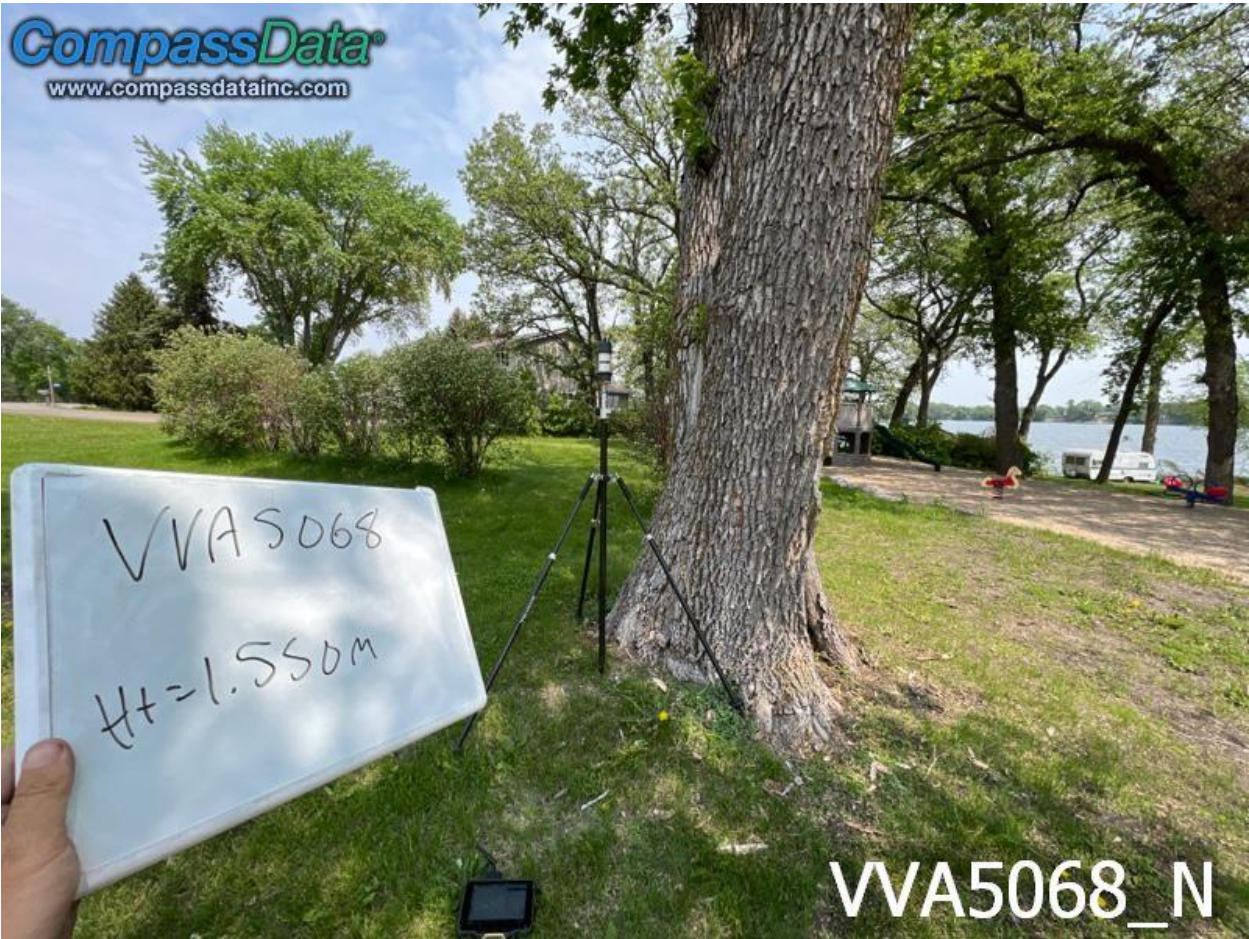
VVA5065_N



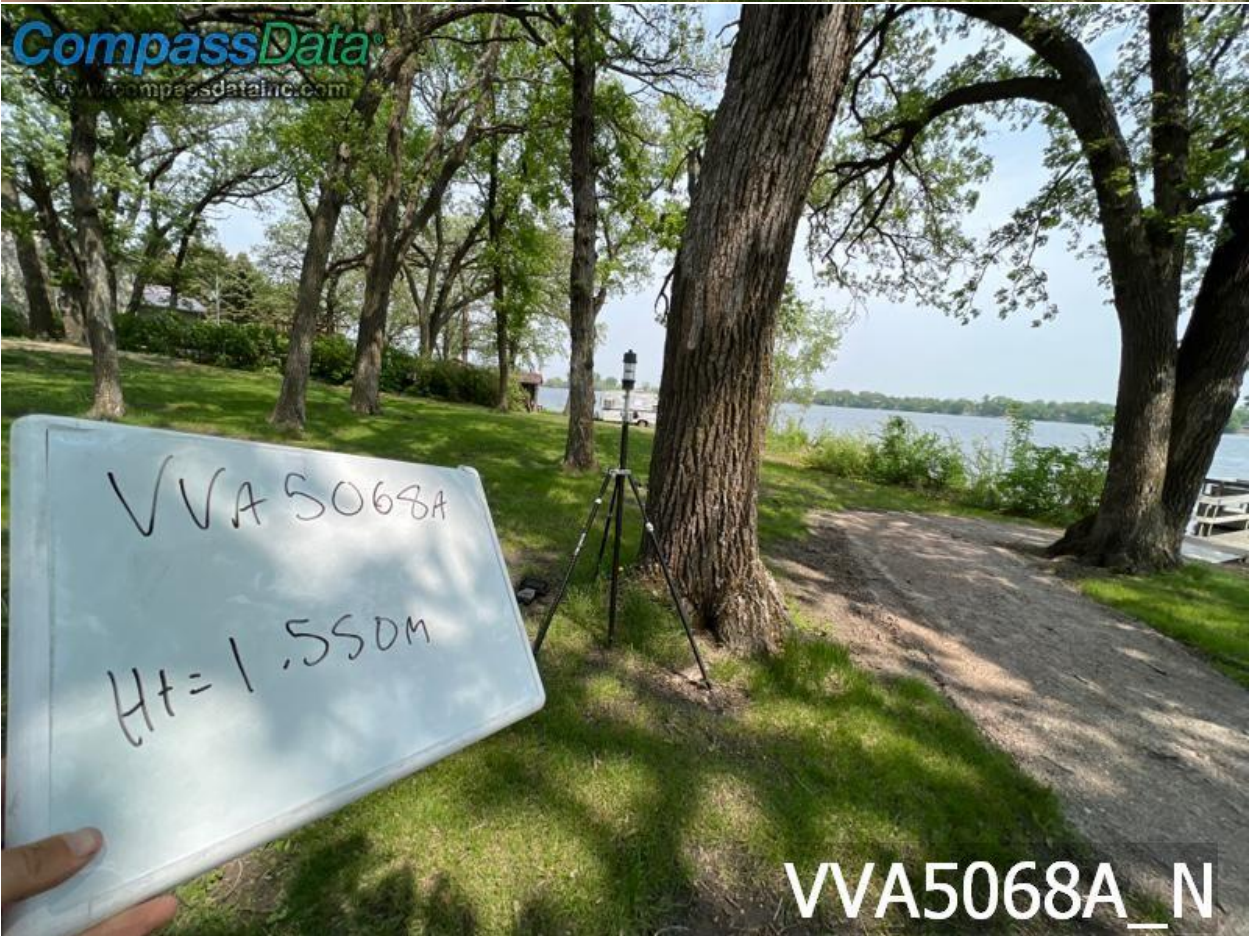
VVA5066_N



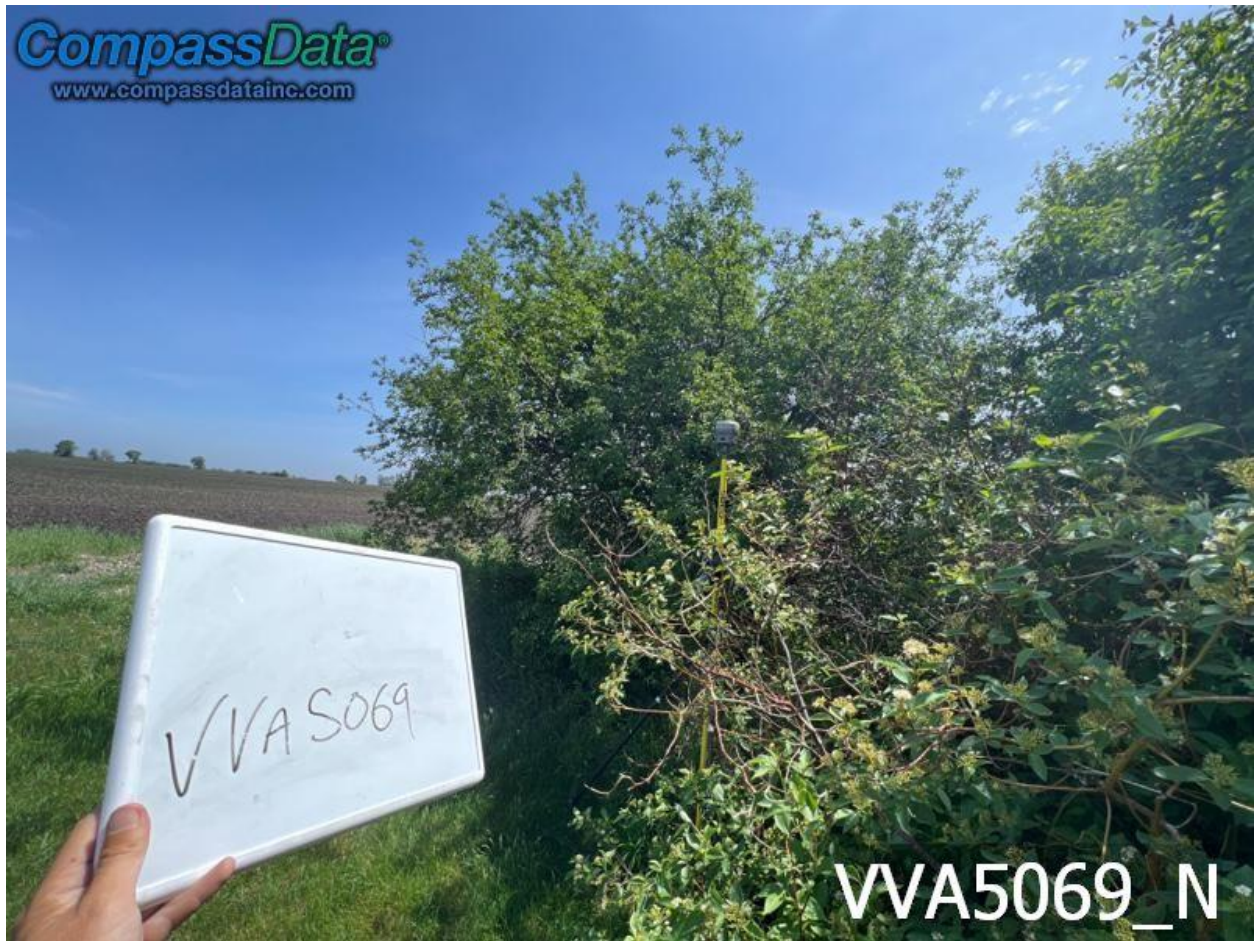




VVA5068_N



VVA5068A_N

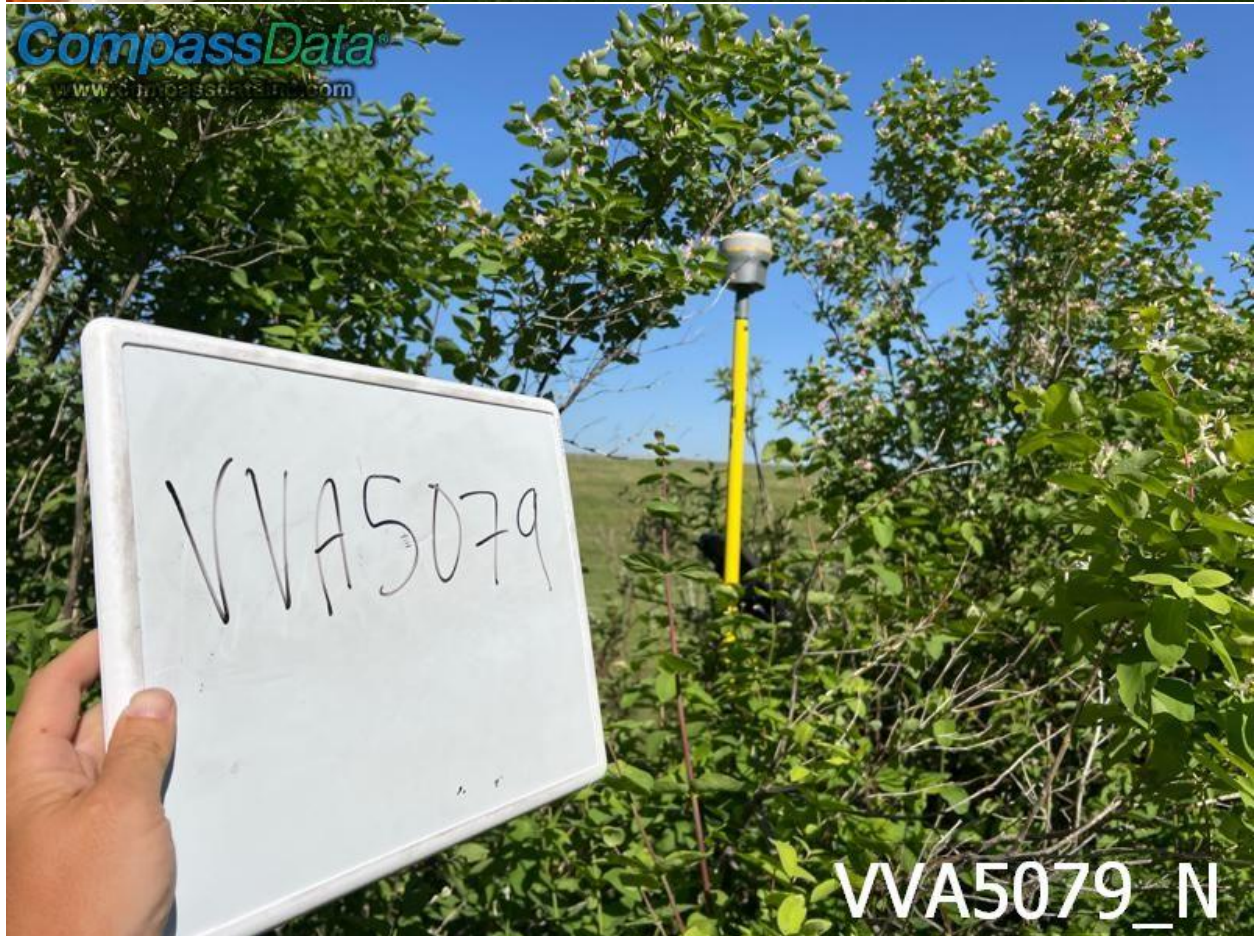
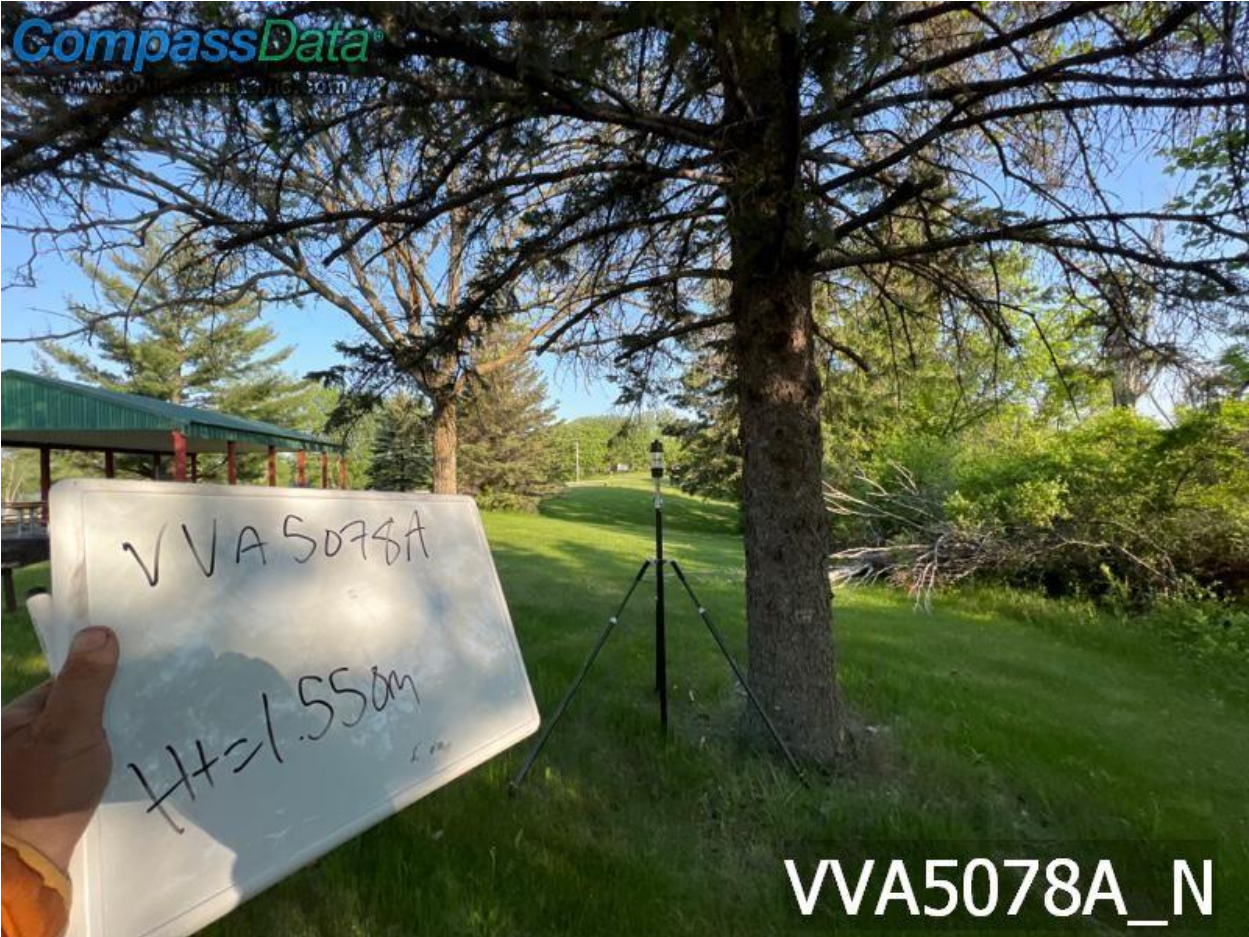












VVA5080
Ht: 1.550 m



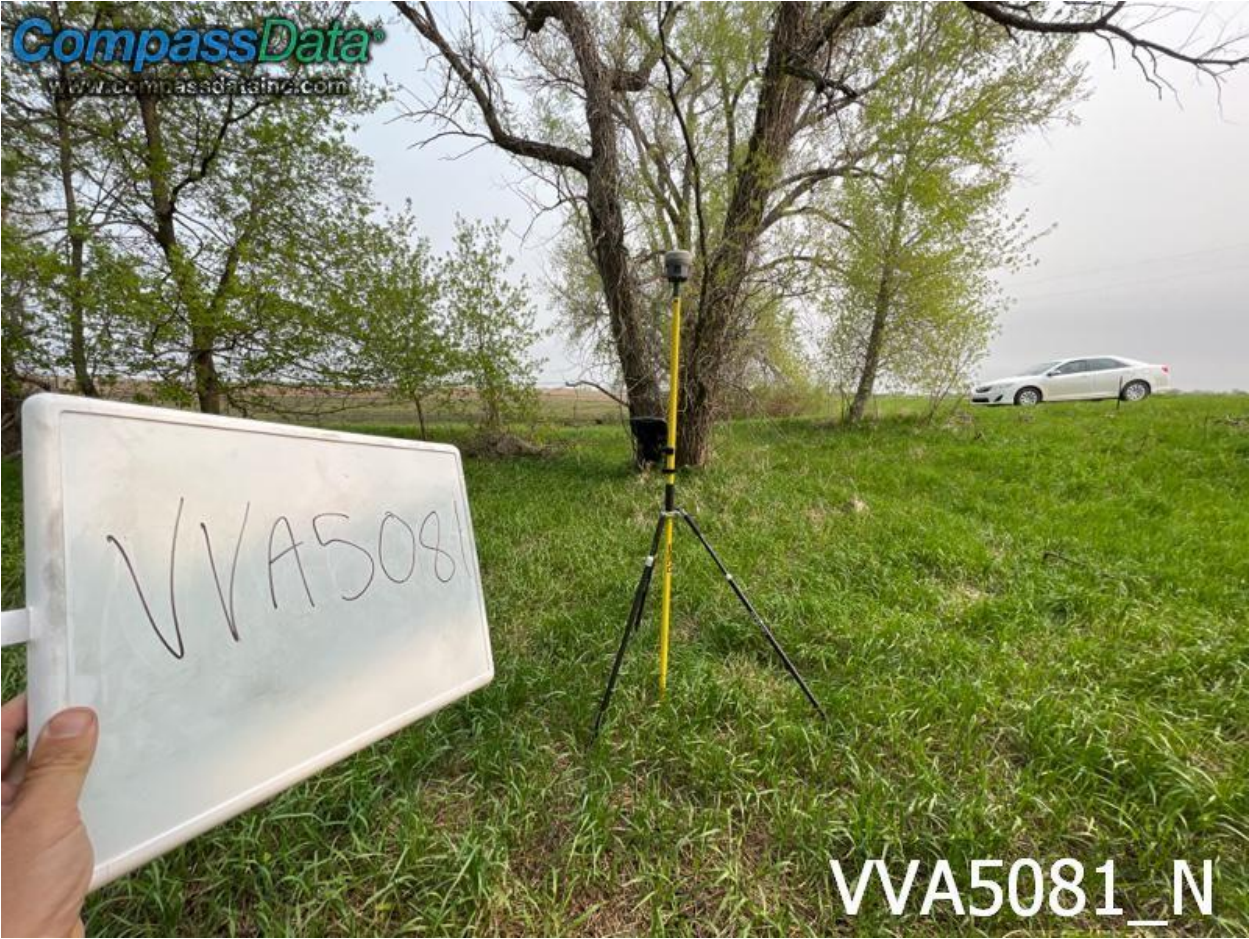
VVA5080_N

VVA5080A
Ht: 1.550 m



VVA5080A_N







VVA5082A_N



VVA5083_N



VVA5084_N



VVA5085_N

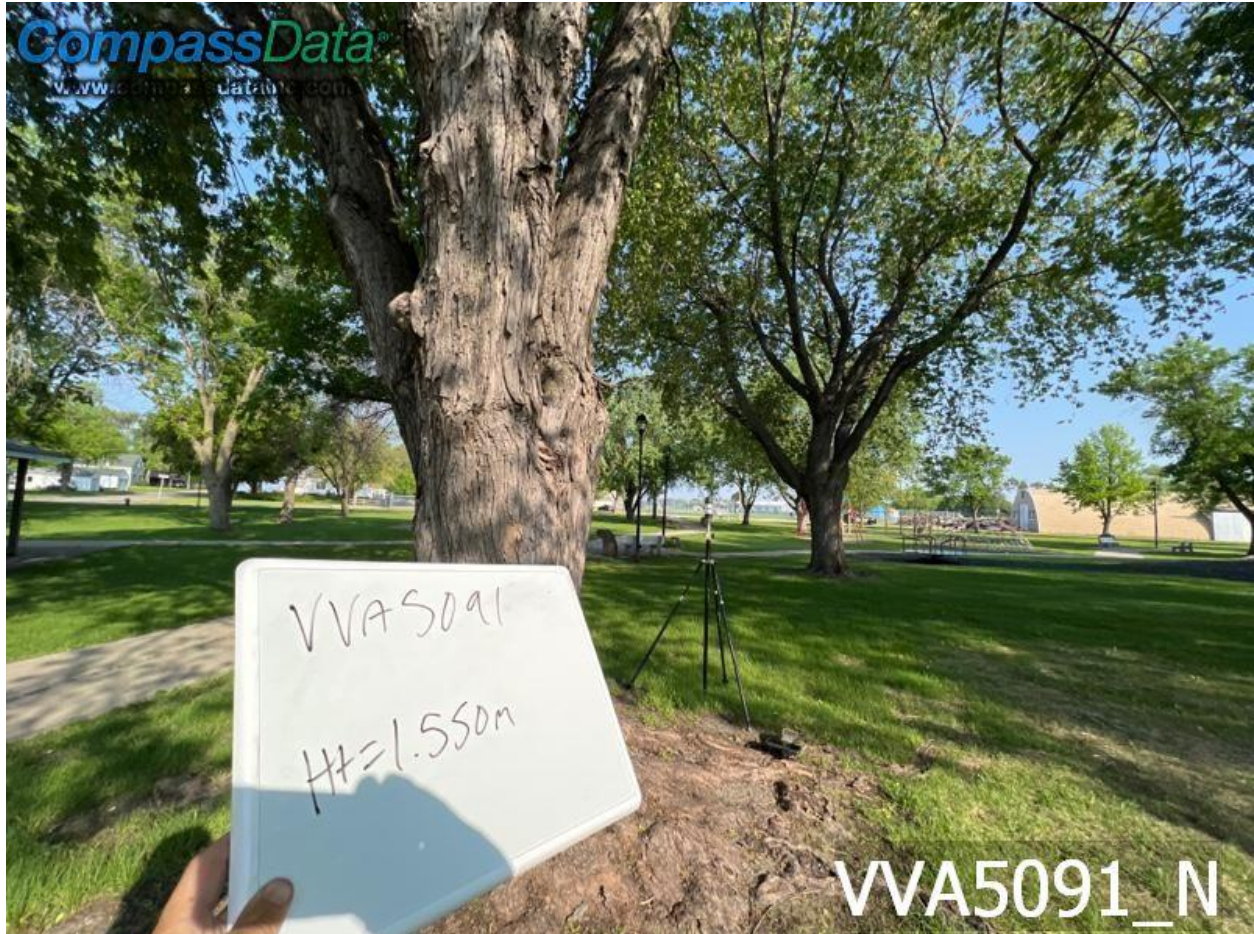
VVA5086

VVA5086_N

VVA5087

VVA5087_N



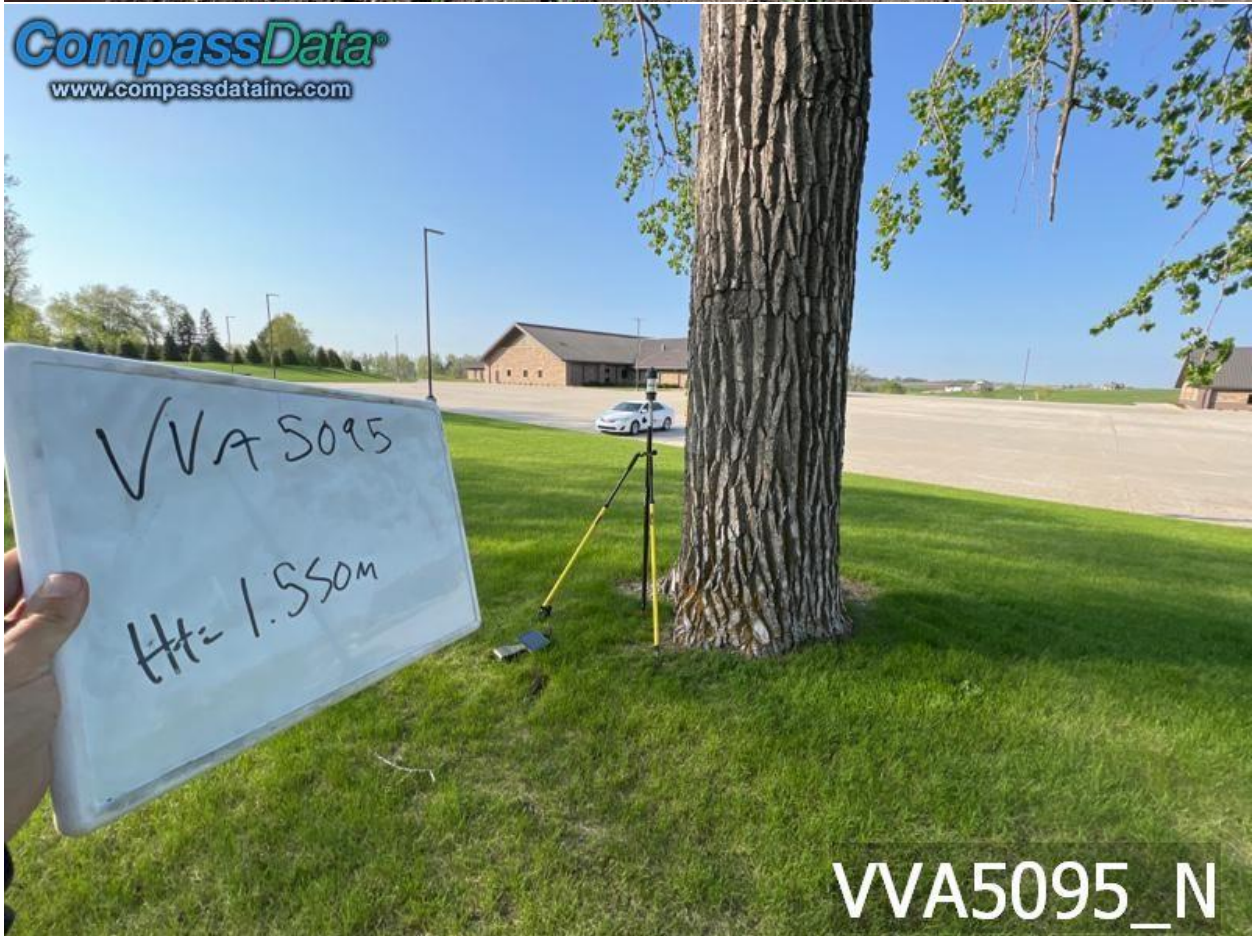








VVA5094_N



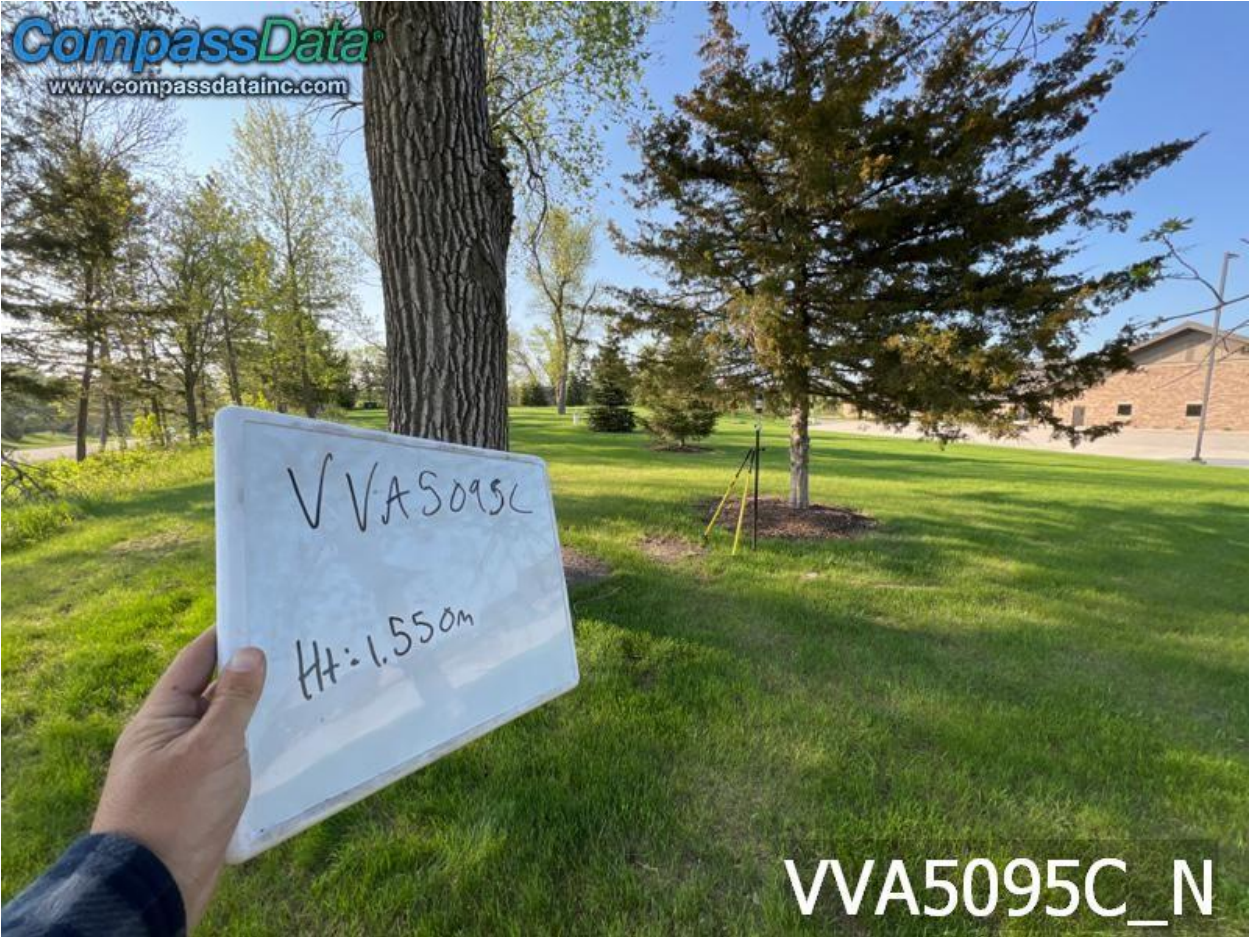
VVA5095_N

✓ VVA 5095A
HT = 1.550m

VVA5095A_N

✓ VVA 5095B
HT = 1.550m

VVA5095B_N



VVA5095C_N



VVA5095D_N



VVA5098

VVA5098_N

VVA5099

VVA5099_N



VWA5101_N



VWA5102_N



VVA5103_N



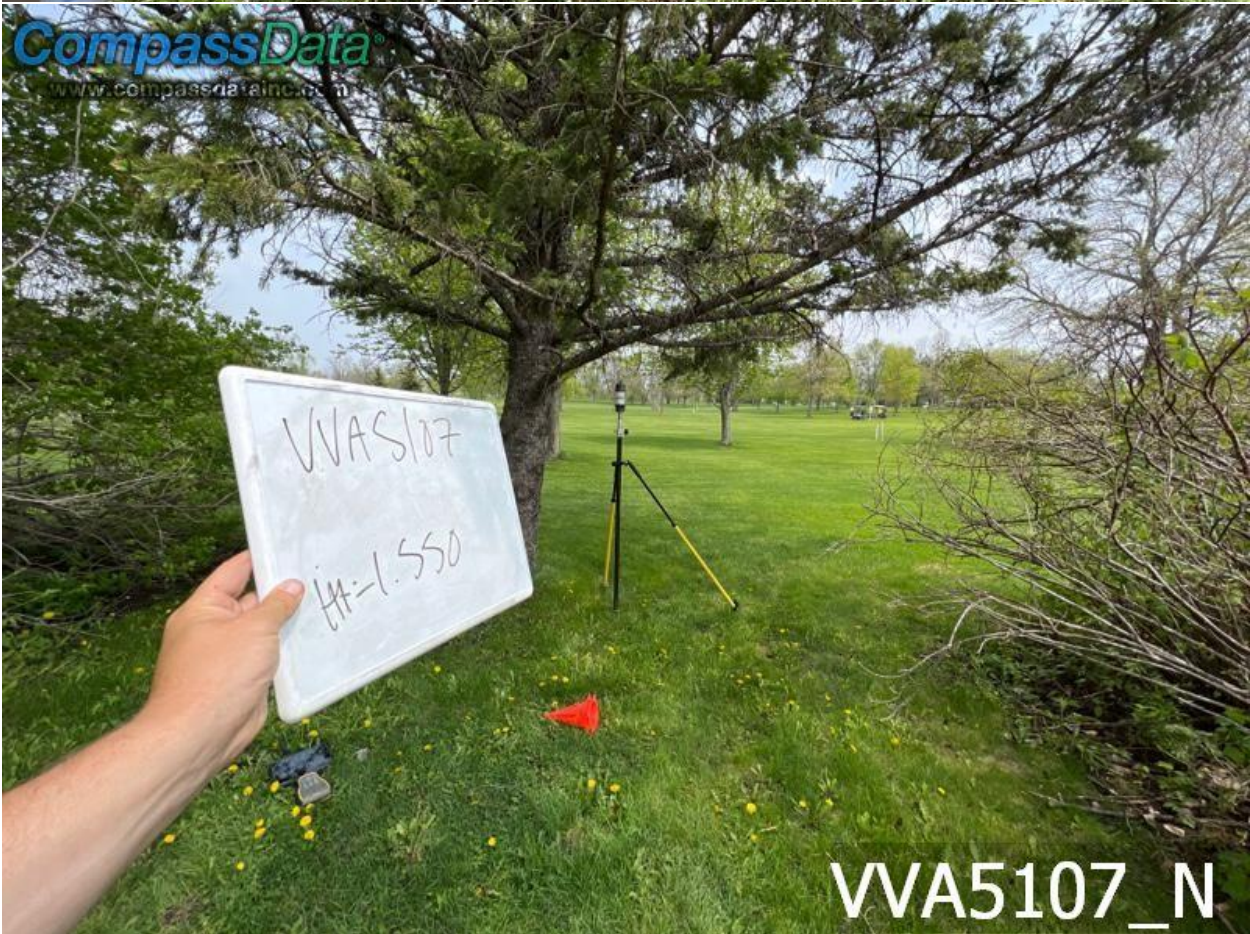
VVA5104_N



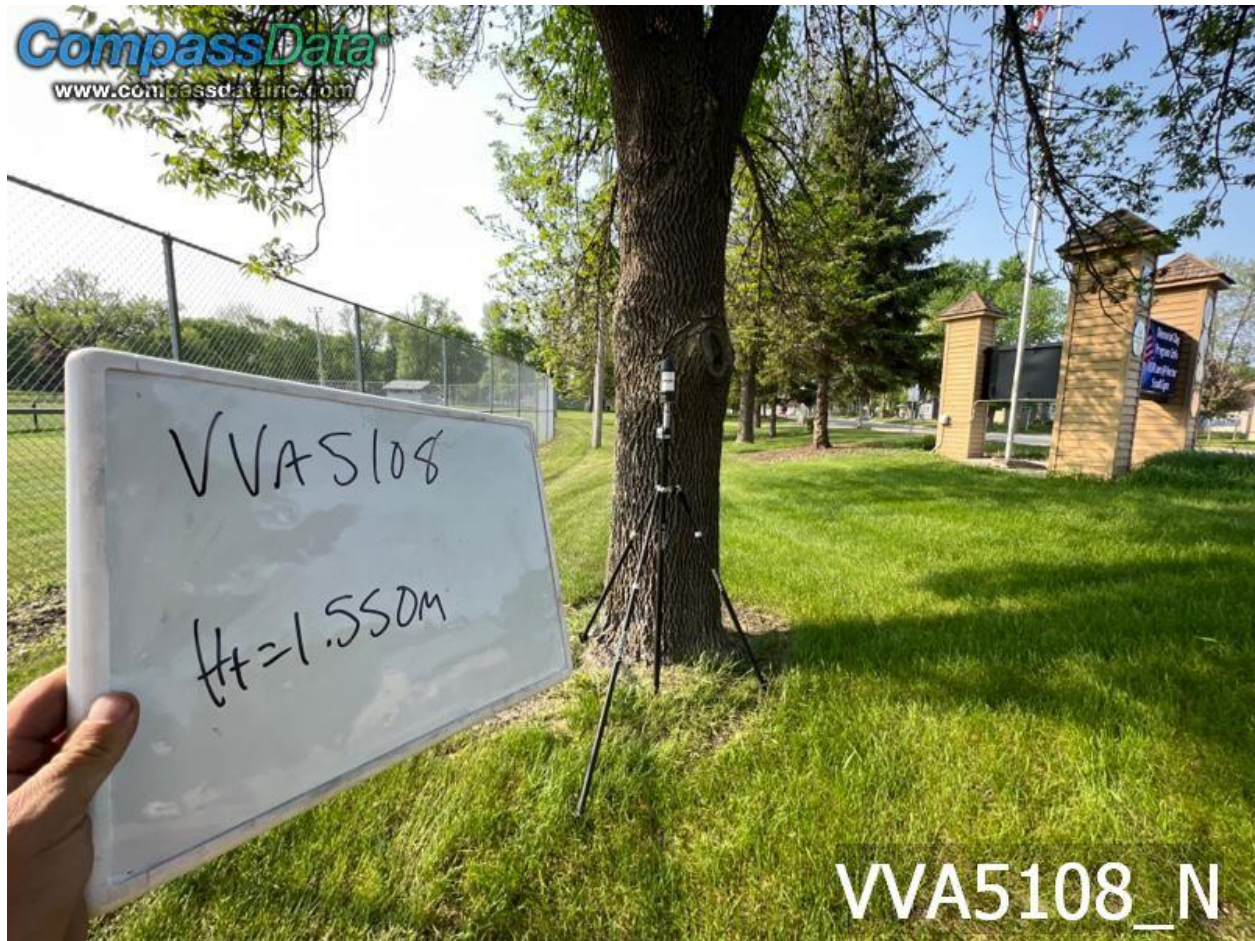
VVA5104A_N



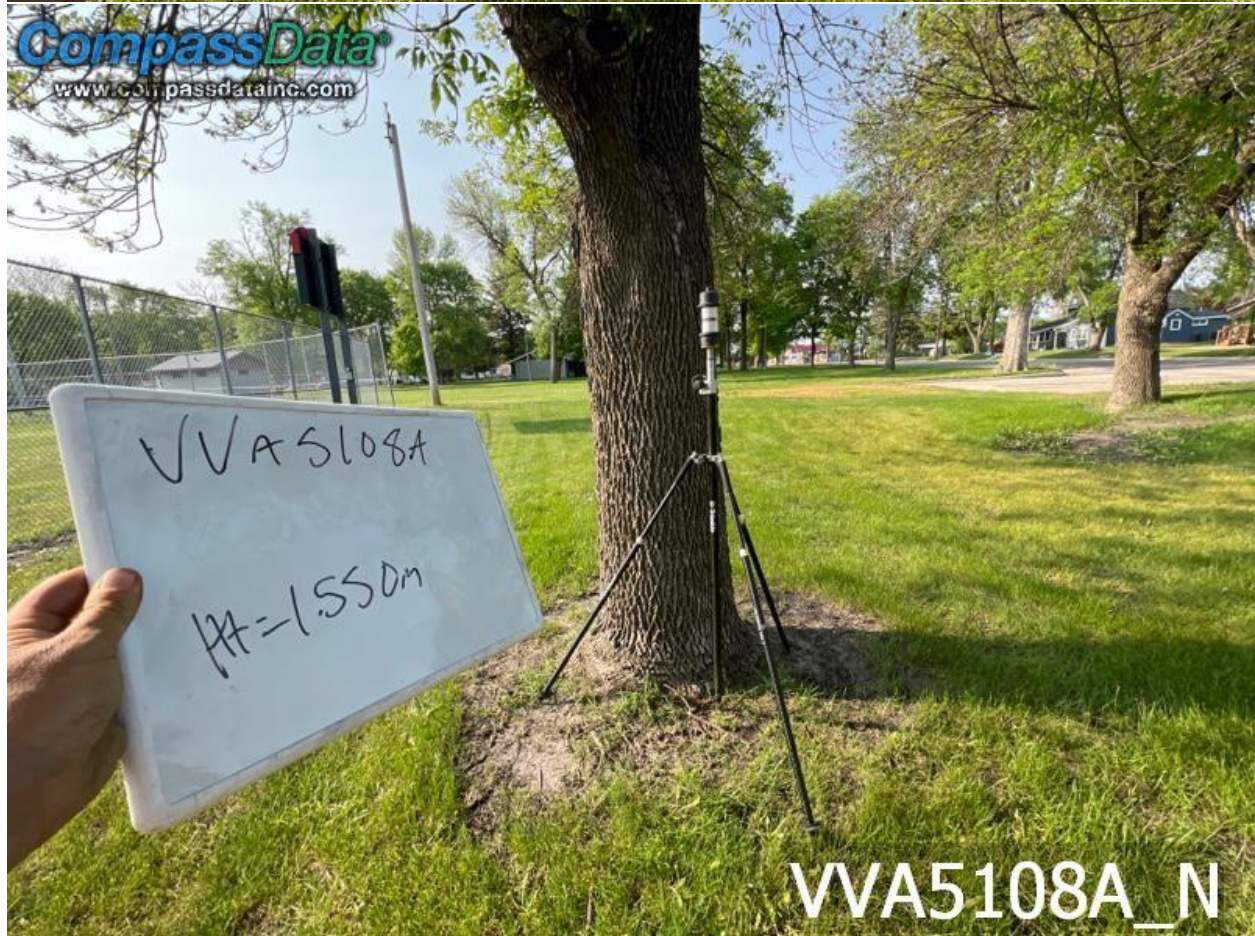
VVA5105_N







VVA5108_N



VVA5108A_N



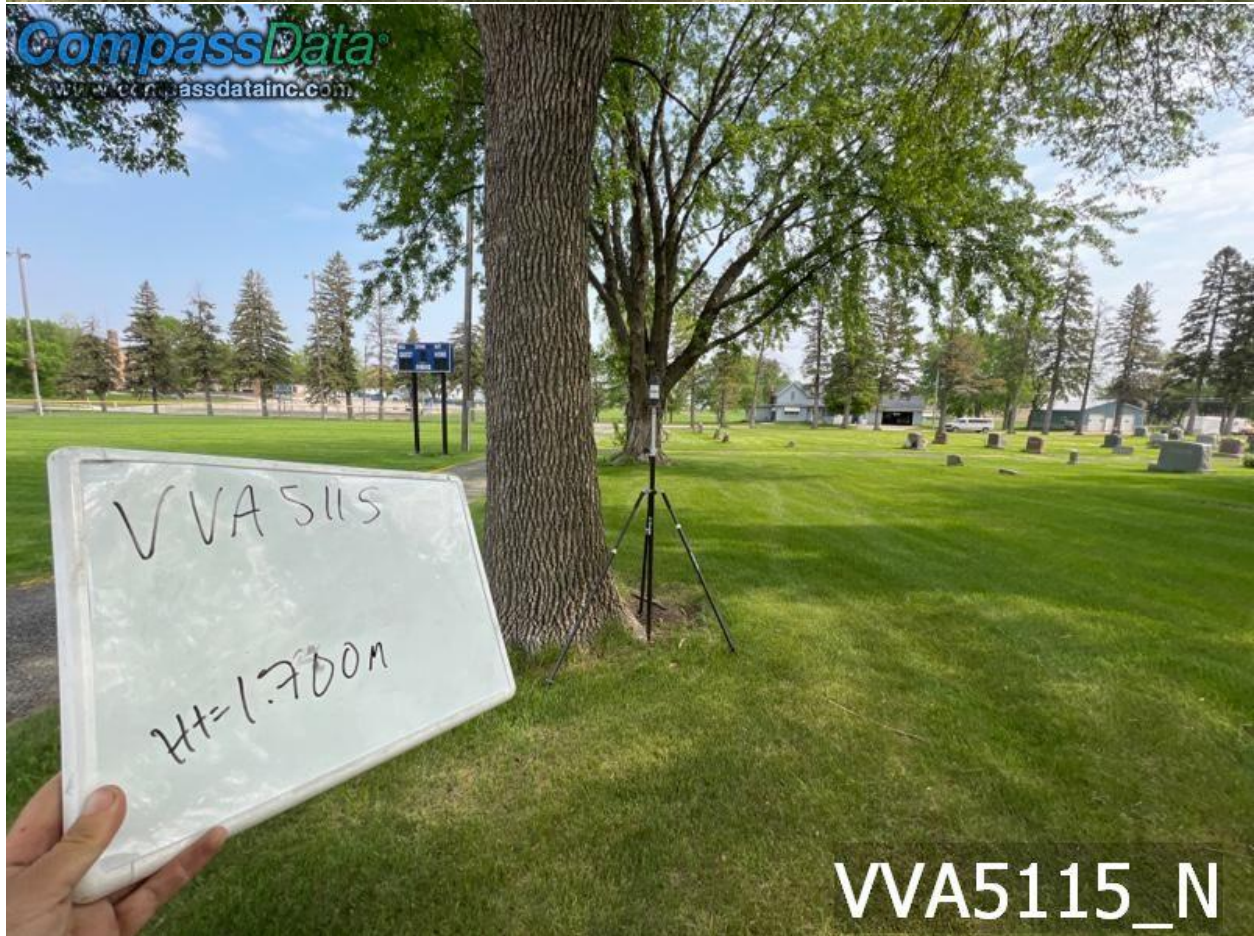


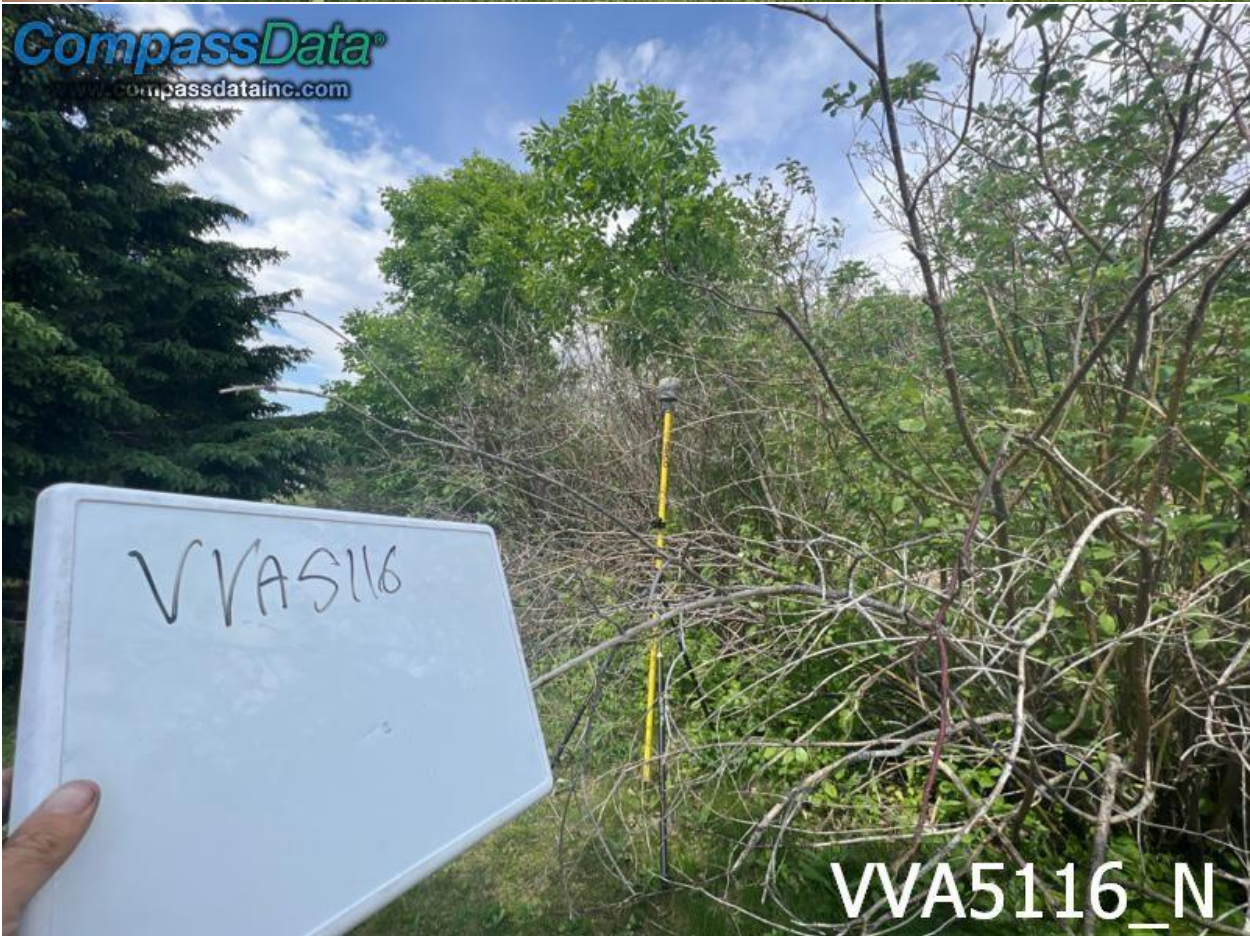
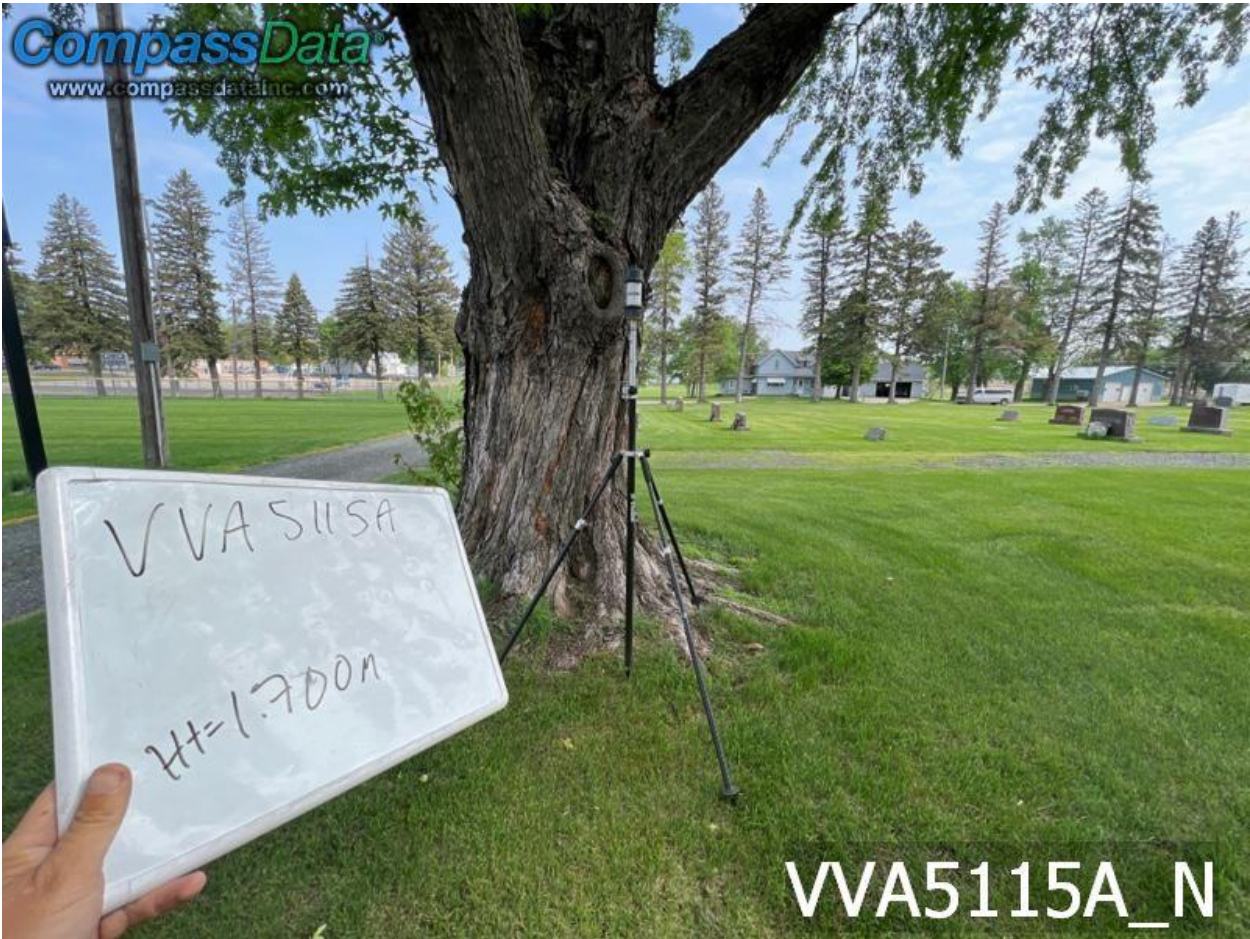
VWA5111_N



VWA5112_N









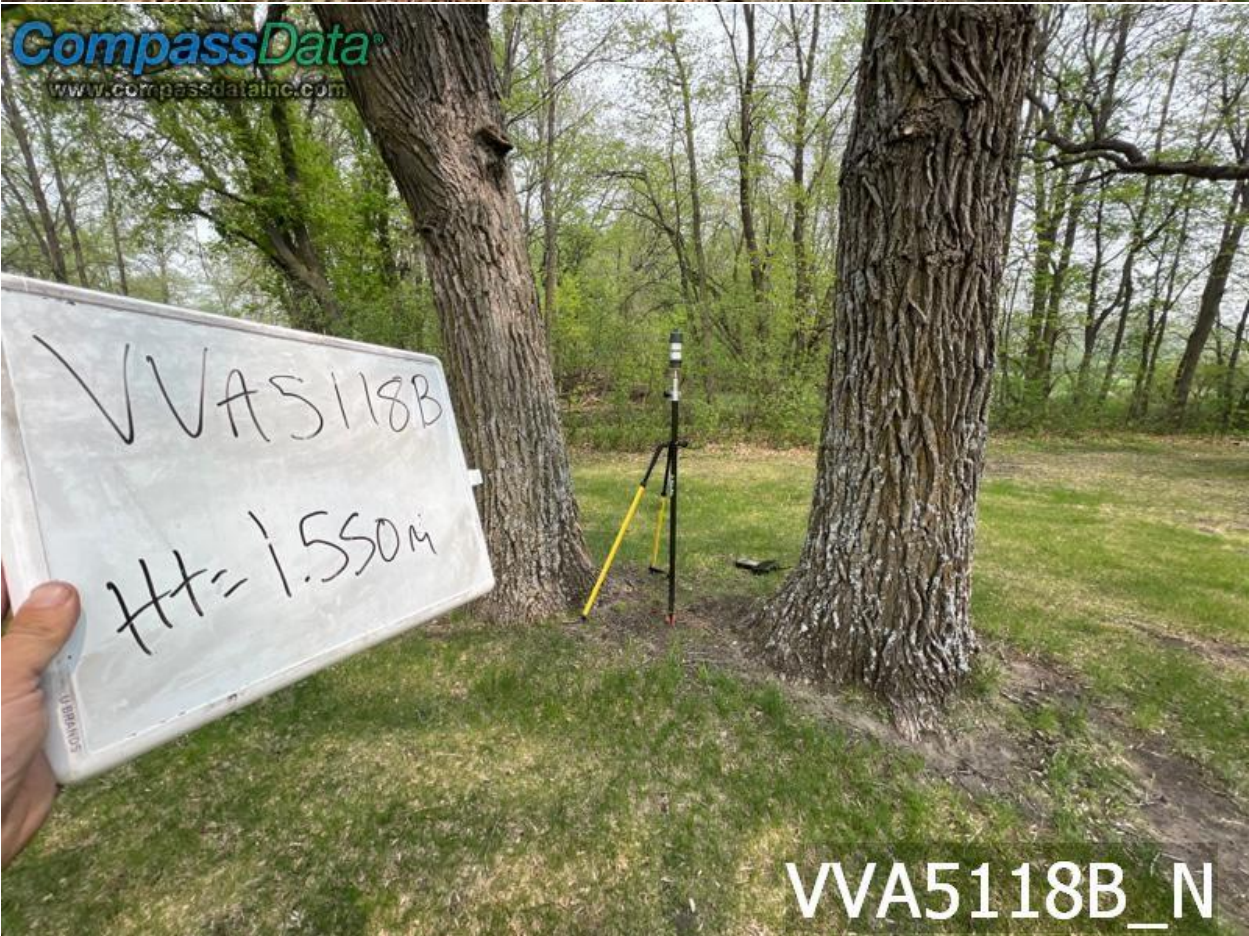
VVA5117_N



VVA5117A_N



VVA5118_N



VVA5118B_N



VVA5119A

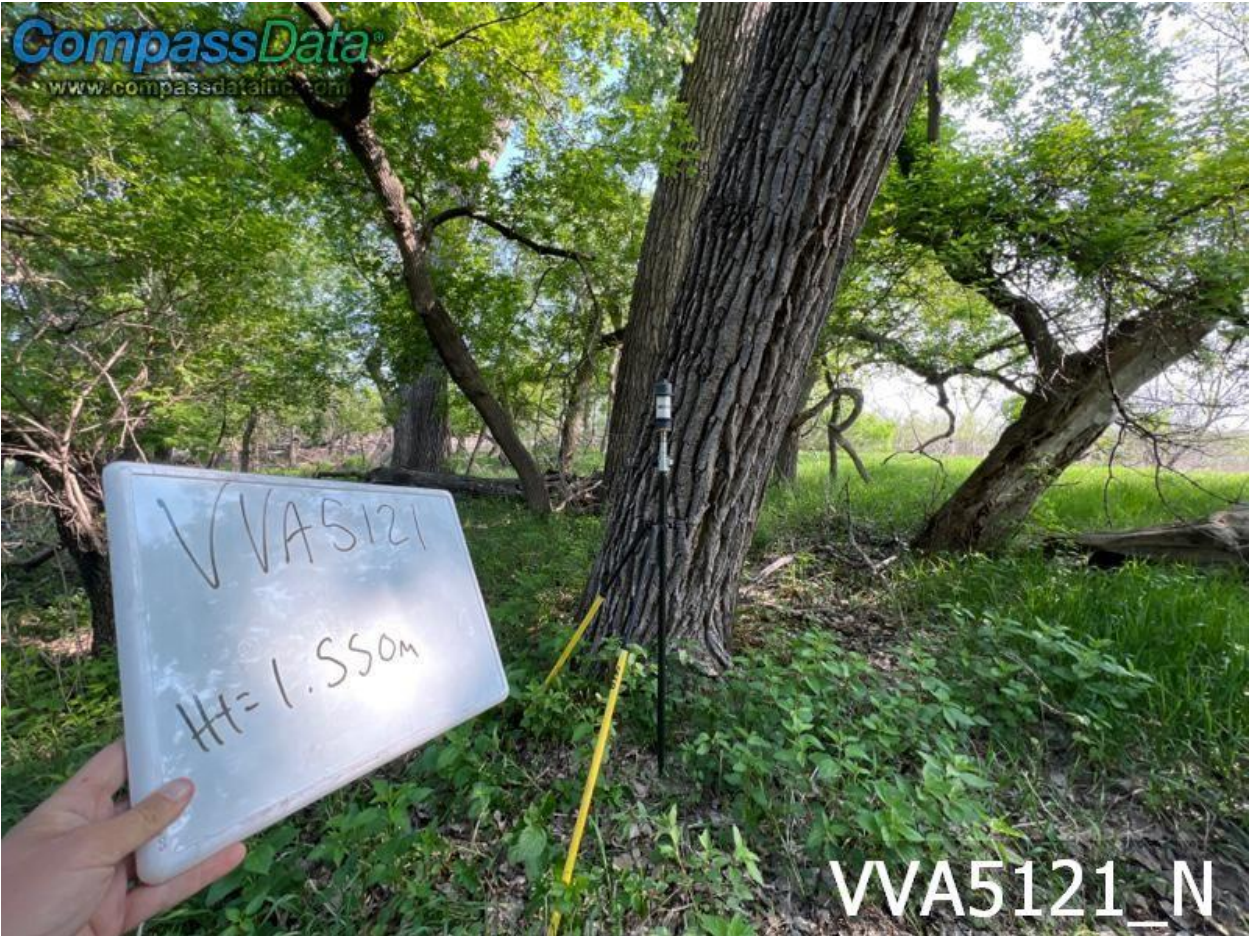


VVA5119A_N

VVA5120



VVA5120_N





VVA5121A_N



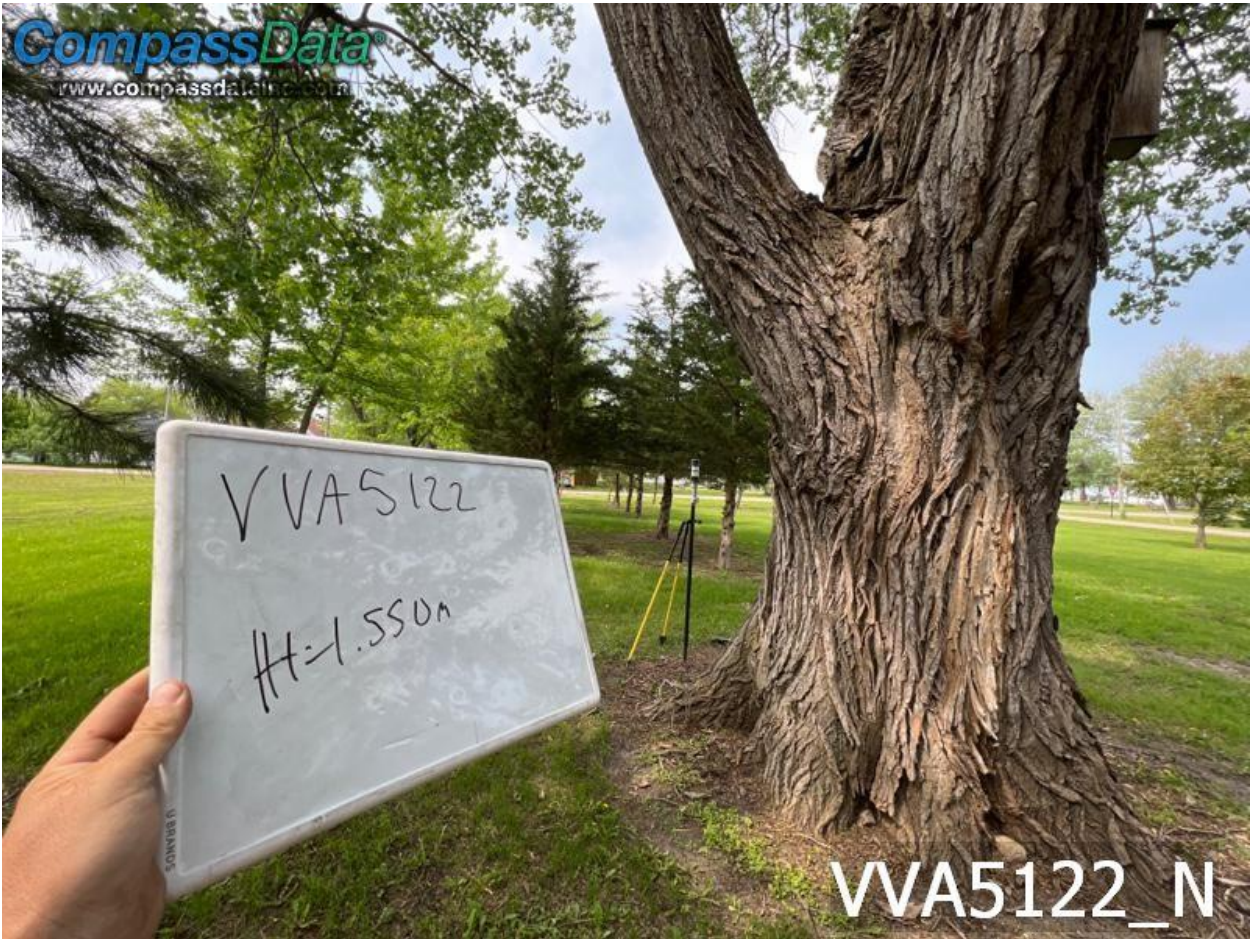
VVA5121B_N



VVA5121C_N



VVA5121D_N



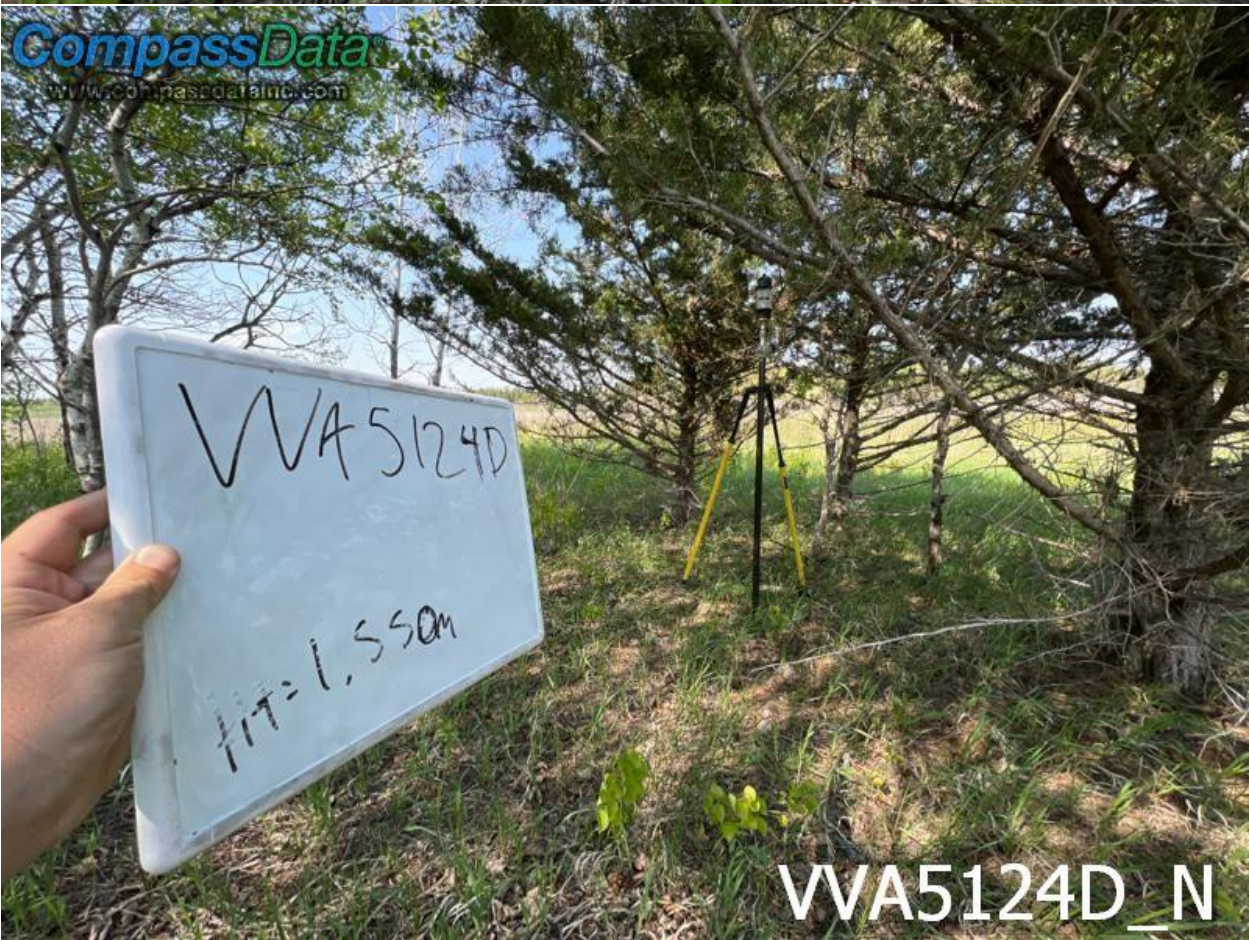
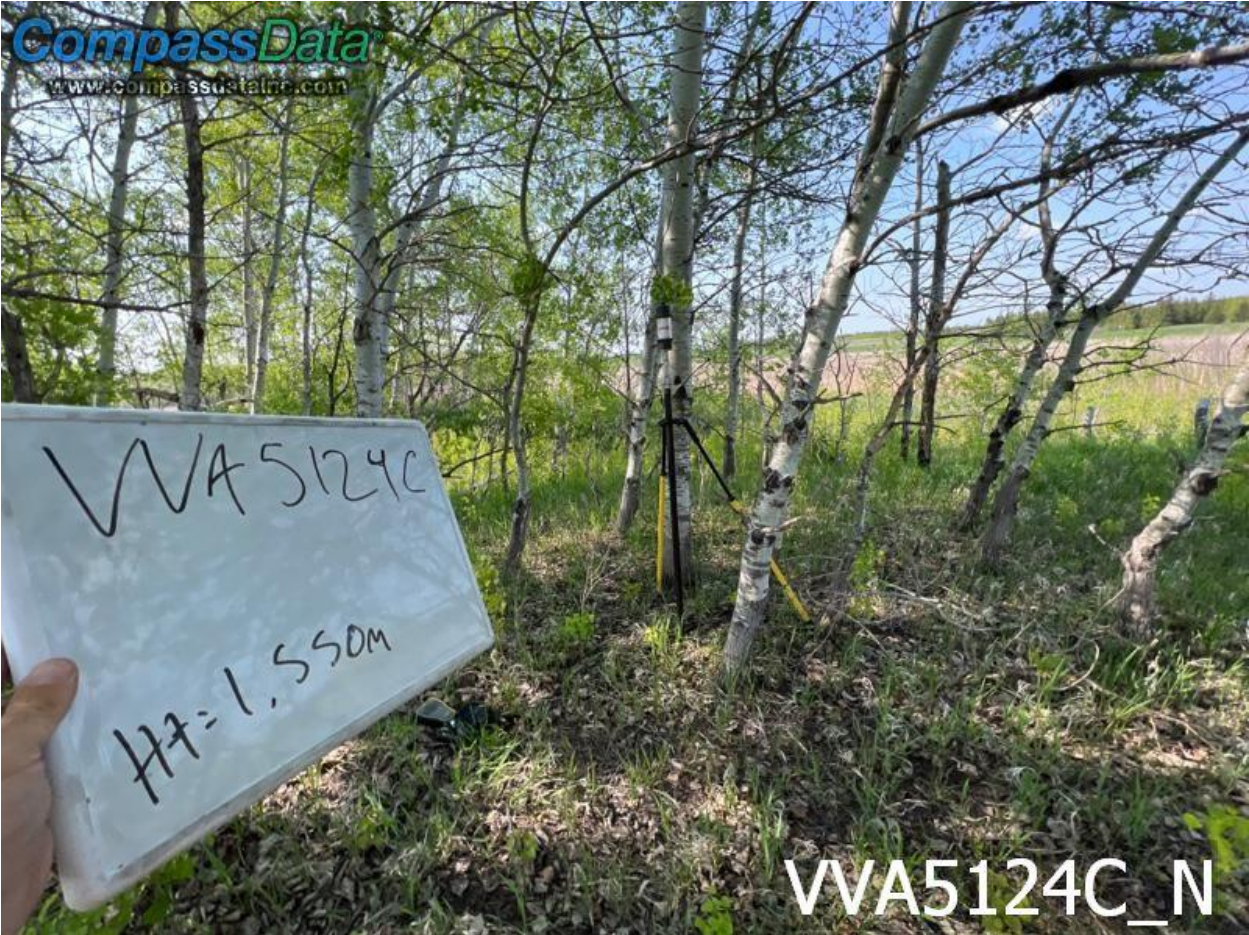


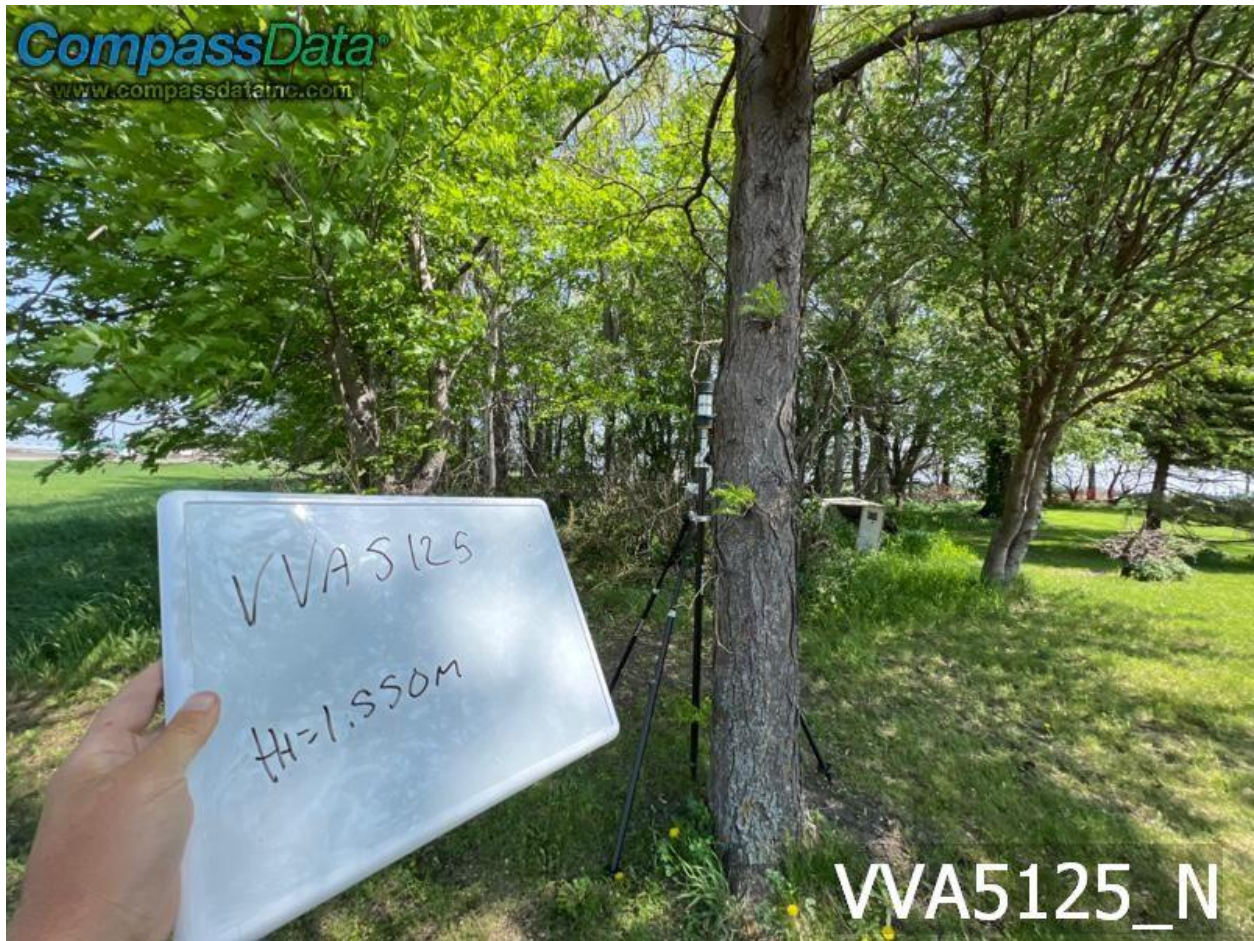
VVA5123_N



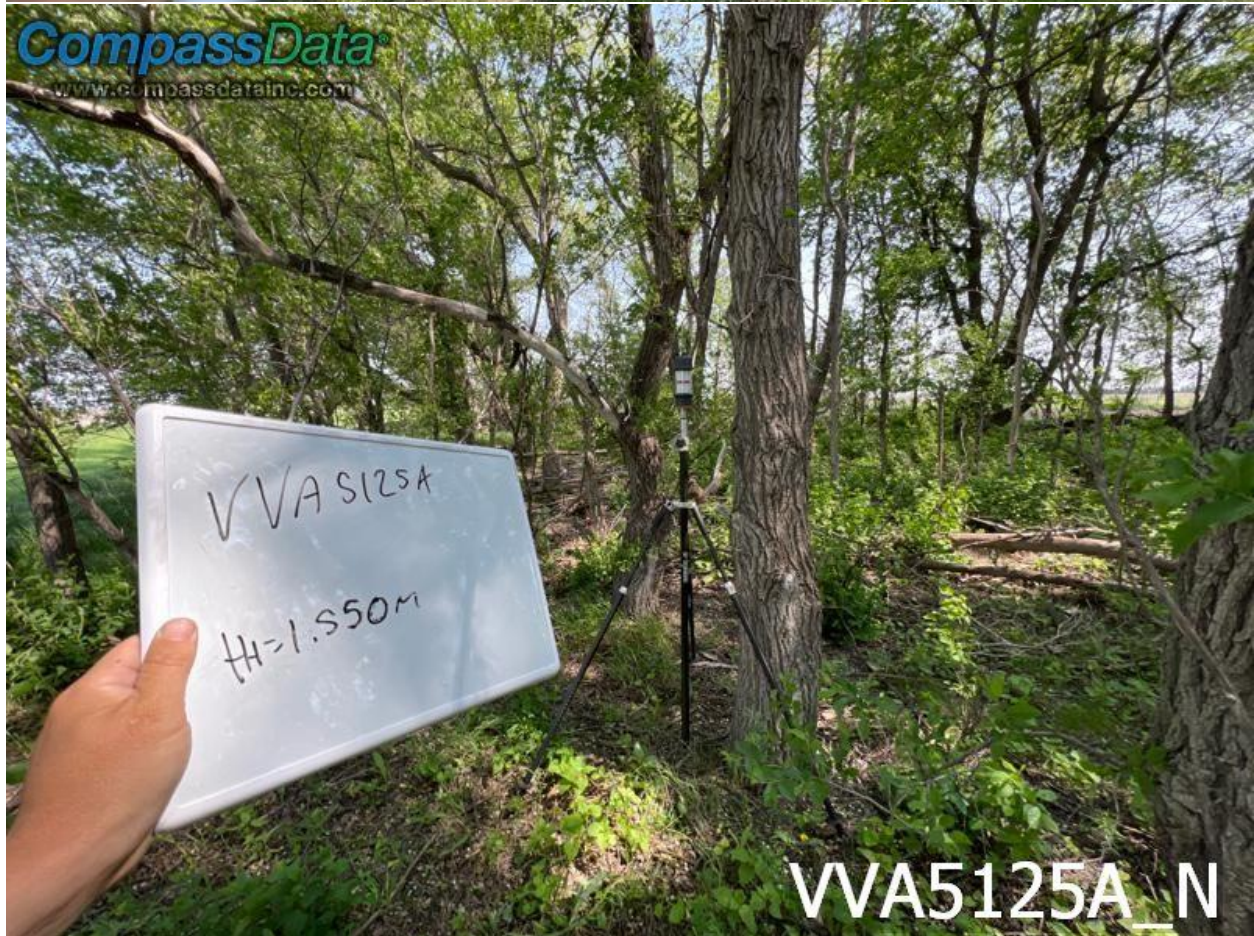
VVA5124_N







VVA5125_N



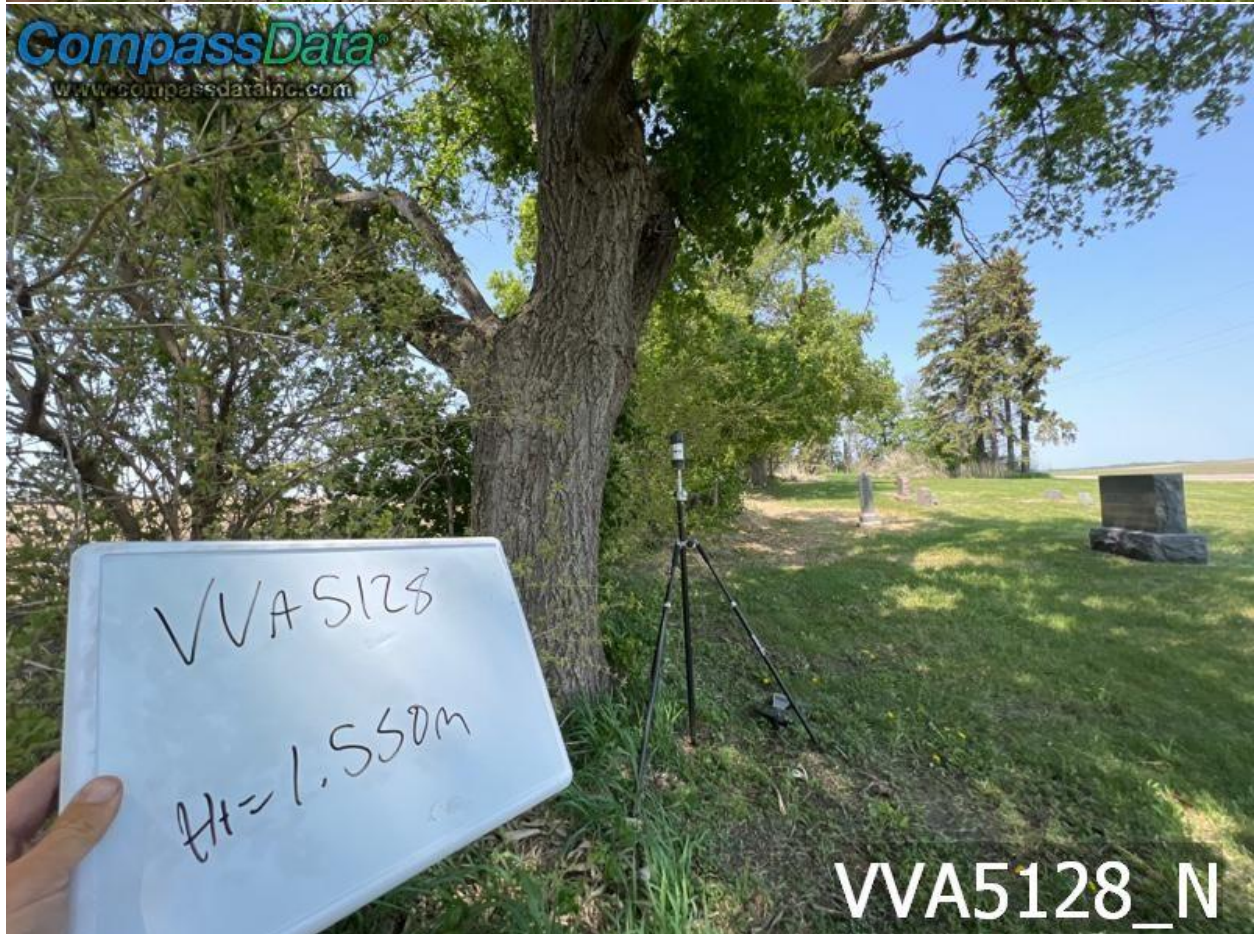
VVA5125A_N



VVA5126_N



VVA5127_N







VVA5129A_N



VVA8000_N



VVA8001_N



VVA8004_N



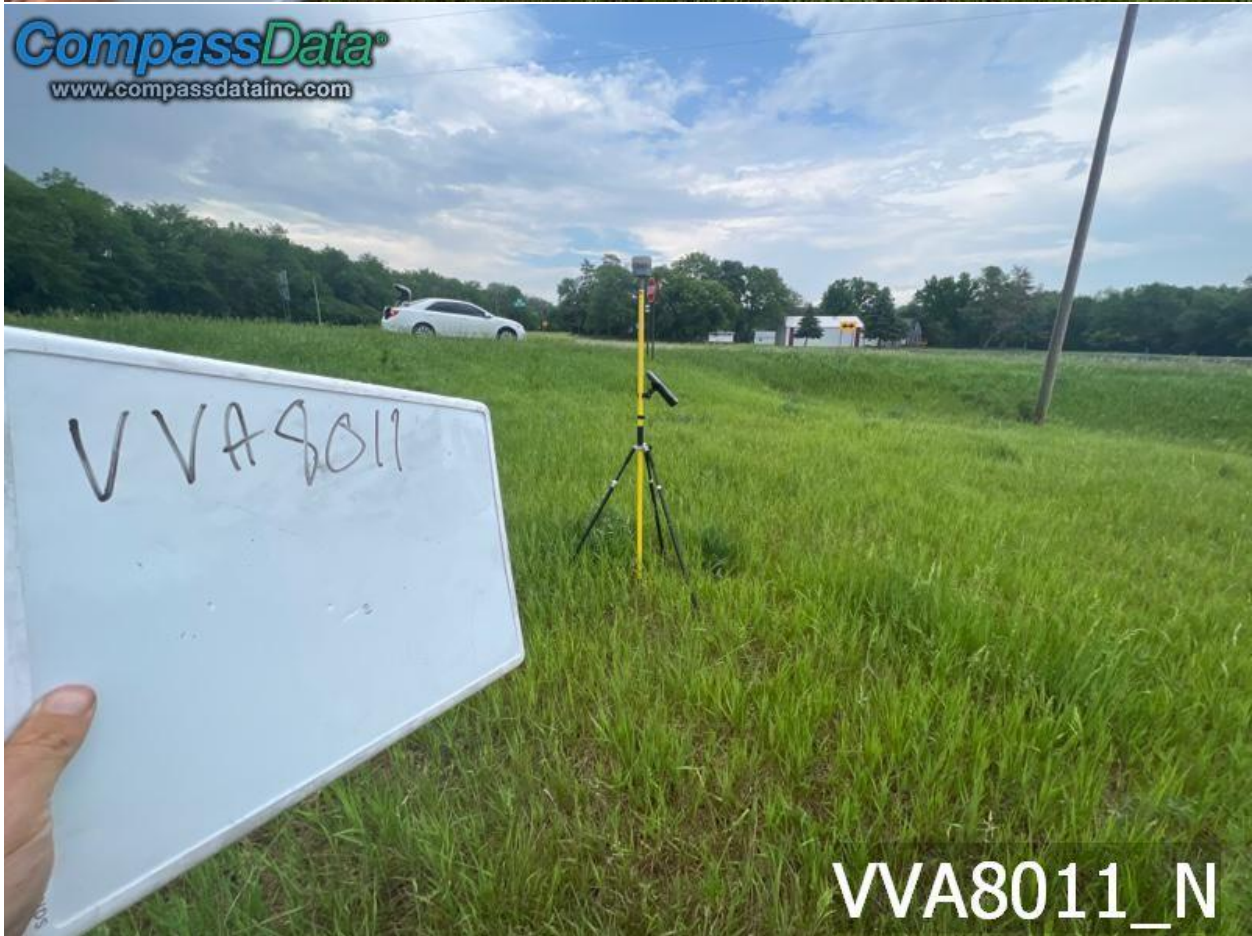
VVA8006_N



VVA8007_N



VVA8010_N



VVA8011_N



VVA8012_N



VVA8013_N