Lidar Mapping Report

Acquisition, Processing, and Delivery of Airborne Lidar Elevation Data for CWCB – 3DEP Eastern Colorado

CONTRACT: MA PDAA 2018*005

CONTRACTOR: Merrick & Company

TASK ORDER NUMBER: CMS#105275

TASK NAME: CWCB – 3DEP Eastern Colorado

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TOTAL AWARD: $3,423,201.24 (Fixed Price)

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Submitted To

Submitted by:

Table of Contents

Project Summary

Merrick & Company (Merrick) was awarded the CWCB – 3DEP Eastern Colorado project by the Department of Natural Resources Colorado Water Conservation Board (CWCB) to provide high resolution lidar terrain mapping for supporting natural resource and infrastructure projects. The project area covers all or portions of Weld, Morgan, Adams, Arapahoe, Denver, Douglas, Elbert, El Paso, Lincoln, Pueblo, Otero, Las Animas, and Huerfano Counties in Eastern Colorado. The AOI covers a total of approximately 18,348.89 square miles with two different lidar specifications, QL2 approximately 8,282.31 square miles and QL1 approximately 66.58 square miles.

The lidar mapping requirements and deliverables meet Quality Level Two (QL2) and Quality Leve One (QL1) standards as outlined in the USGS-NGP Lidar Base Specifications, Techniques and Methods 11–B4, Version 1.2, November 2014 (TM11-B4) (http://pubs.usgs.gov/tm/11b4/pdf/tm11-B4.pdf). QL2 lidar specifications suggest a point density of greater than or equal to two points per square meter (≥2ppsm) Aggregate Nominal Pulse Density (ANPD), and point spacing of less than or equal to seven-tenths of a meter (≤0.71m) Aggregate Nominal Pulse Spacing (ANPS). QL1 lidar specifications suggest an ANPD of greater than or equal to eight points per square meter (≥8ppsm), or less than or equal to thirty-five hundredths of a meter (≤0.35m) ANPS. QL1 and QL2 specifications differ only in ANPD / ANPS.

The vertical accuracy requirements of the lidar data meets or exceeds the following:

Absolute Vertical Accuracy QL1 and QL2

- ≤10cm RMSEz
- ≤19.6cm Non-vegetated Vertical Accuracy (NVA) at the 95% confidence level
- ≤29.4cm Vegetated Vertical Accuracy (VVA) at the 95% percentile

Relative Vertical Accuracy QL1 and QL2

- ≤6cm Smooth surface repeatability
- ≤8cm Swath overlap difference, RMSDz
- ±16cm Swath overlap difference, maximum

Project Spatial Reference

- Projection – Colorado State Plane Coordinate System (SPCS), North, Central and South Zones
- Horizontal Datum - North American Datum of 1983 (NAD 83), National Adjustment of 2011 (NA2011) (epoch 2010.00)
- Vertical Datum – North American Vertical Datum of 1988 (NAVD 88); GEOID 12B
- Units – U.S. Survey Foot

CONTACT INFORMATION

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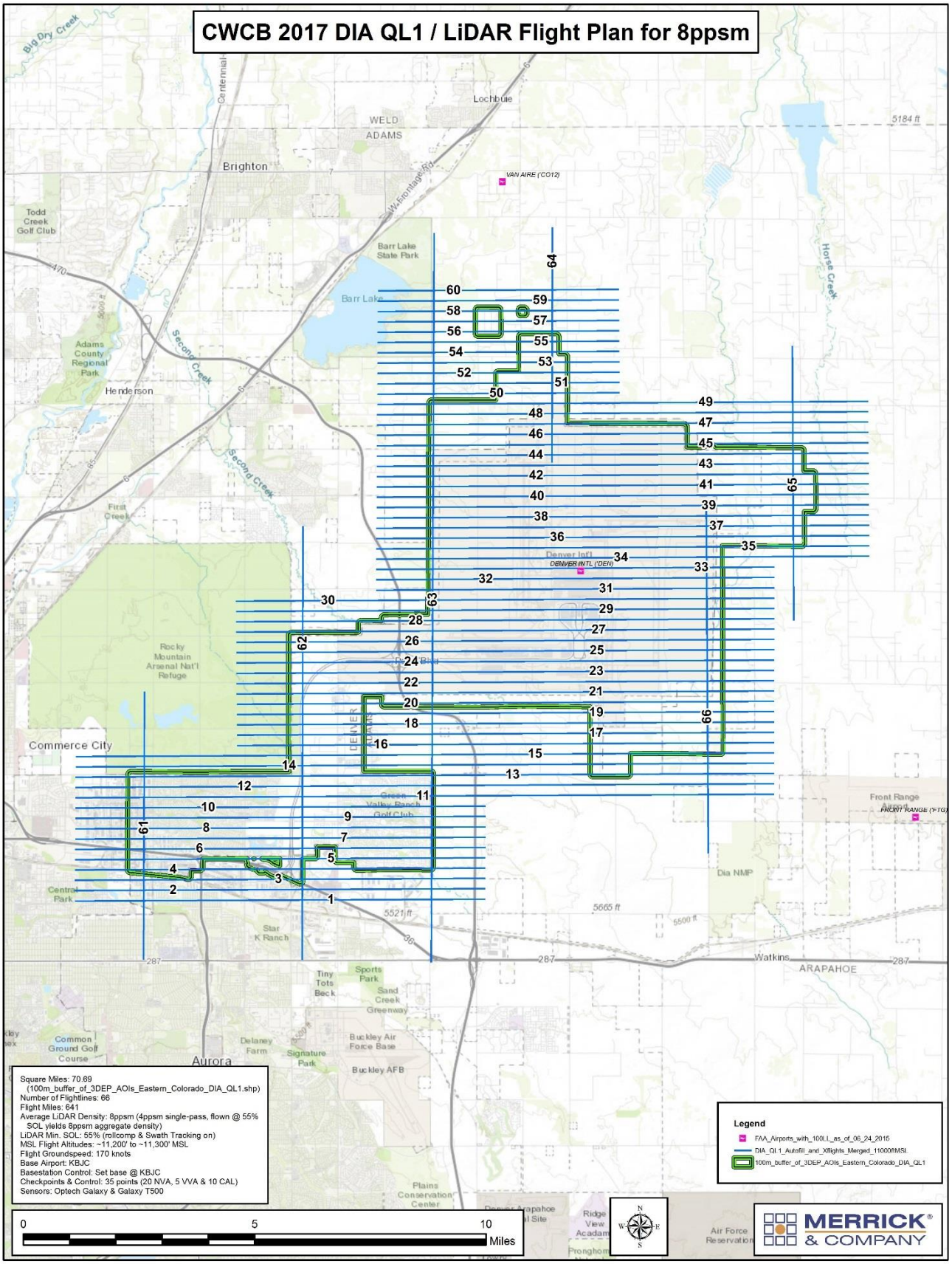
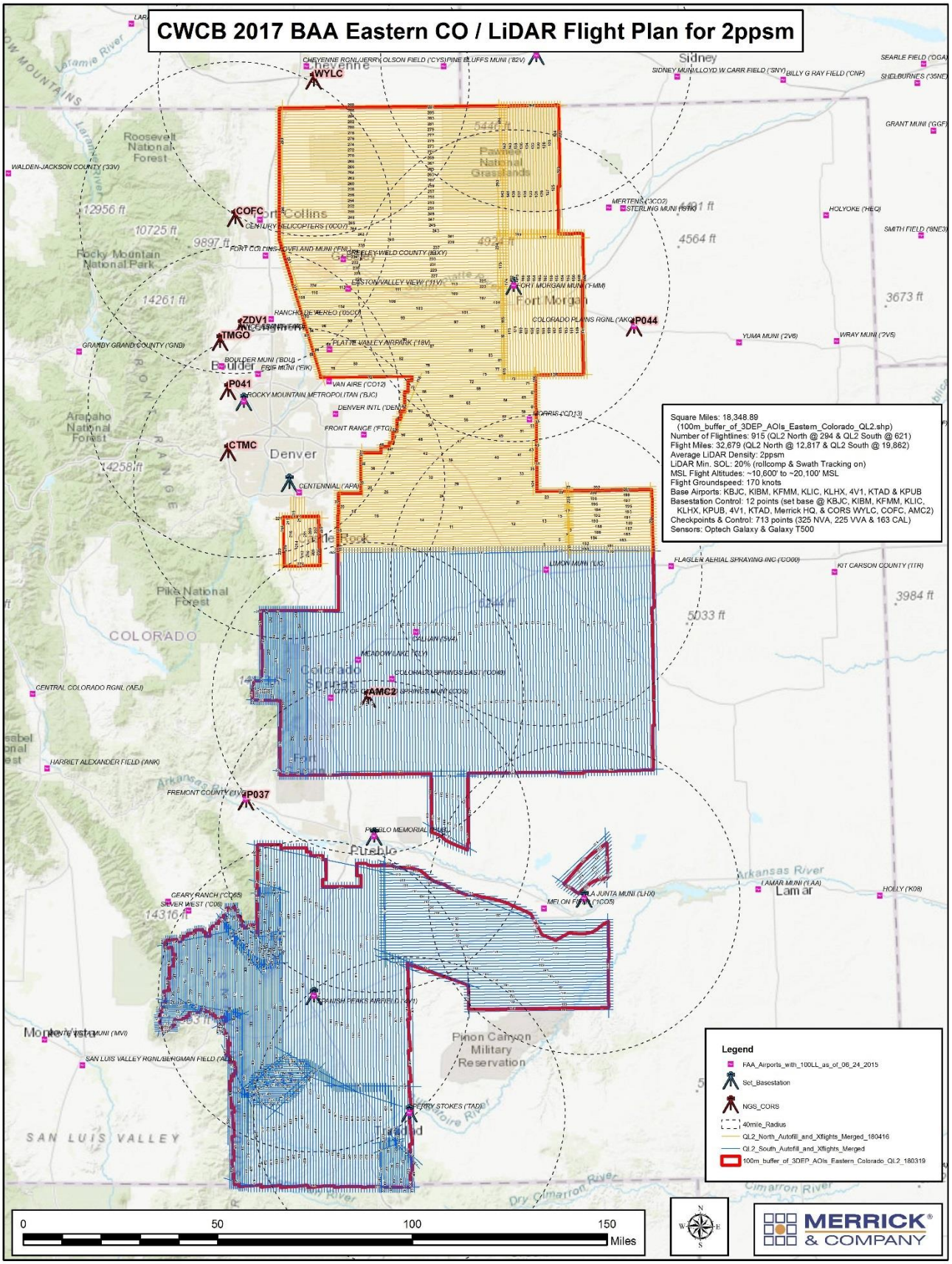
The contents of this report summarize the methods used to calibrate and classify the lidar data as well as the results of these methods for the project CWCB – 3DEP Eastern Colorado (CWCB).

Lidar Flight Information

The acquisition area for the CWCB project is delineated by the fully dissolved extent of the client-provided Esri shapefiles (*3DEP_AOIs_Eastern_Colorado_DIA_QL1, 3DEP_AOIs_Eastern_Colorado_QL2_180319*). Merrick acquired the QL1 and QL2 lidar point clouds utilizing Optech Galaxy lidar sensors. The Galaxy is a high performance lidar sensor capable of collecting large areas efficiently.

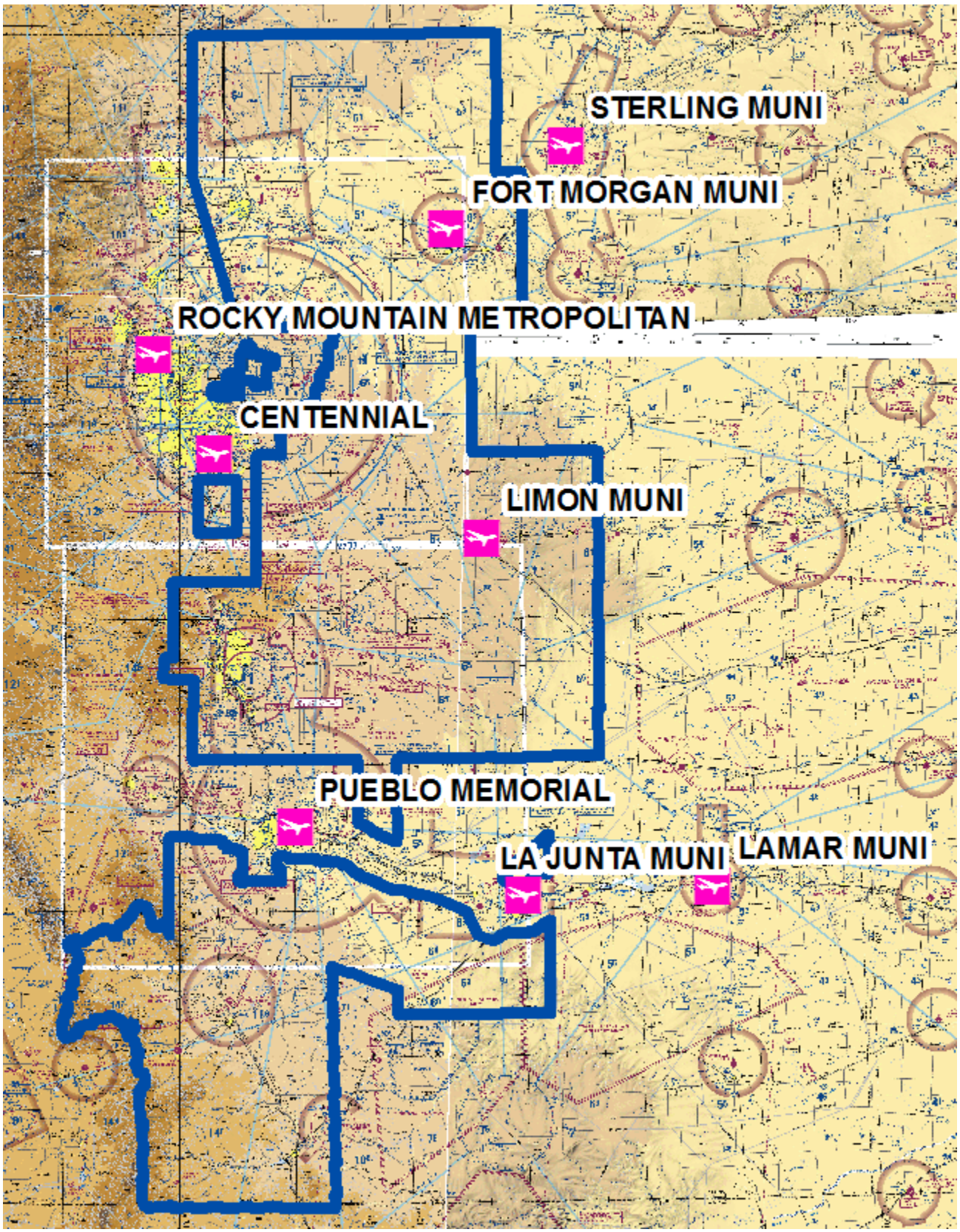
Merrick planned an acquisition area of approximately 18,348.89 square miles, to include a one hundred-meter (100m) buffer per TM11-B4. See below illustrations of the proposed lidar flight plan.


CWCB 2017 DIA QL1 / LiDAR Flight Plan for 8ppsm
Square Miles: 70.69
(100m_buffer_of_3DEP_AOIs_Eastern_Colorado_DIA_QL1.shp)
Number of Flightlines: 66
Flight Miles: 641
Average LiDAR Density: 8ppsm (4ppsm single-pass, flown @ 55% SOL yields 8ppsm aggregate density)
LiDAR Min. SOL: 55% (rollcomp & Swath Tracking on)
MSL Flight Altitudes: ~11,200' to ~11,300' MSL
Flight Groundspeed: 170 knots
Base Airport: KBJC
Basestation Control: Set base @ KBJC
Checkpoints & Control: 35 points (20 NVA, 5 VVA & 10 CAL)
Sensors: Optech Galaxy & Galaxy T500
Legend
FAA_Airports_with_100LL_as_of_06_24_2015
DIA_QL1_Autofill_and_Xflights_Merged_11000fMSL
100m_buffer_of_3DEP_AOIs_Eastern_Colorado_DIA_QL1
0
5
10
Miles
MERRICK & COMPANY


CWCB 2017 BAA Eastern CO / LiDAR Flight Plan for 2ppsm
Square Miles: 18,348.89
(100m_buffer_of_3DEP_AOIs_Eastern_Colorado_QL2.shp)
Number of Flightlines: 915 (QL2 North @ 294 & QL2 South @ 621)
Flight Miles: 32,679 (QL2 North @ 12,817 & QL2 South @ 19,862)
Average LiDAR Density: 2ppsm
LiDAR Min. SOL: 20% (rollcomp & Swath Tracking on)
MSL Flight Altitudes: ~10,600' to ~20,100' MSL
Flight Groundspeed: 170 knots
Base Airports: KBJC, KIBM, KFMM, KLIC, KLHX, 4V1, KTAD & KPUB
Basestation Control: 12 points (set base @ KBJC, KIBM, KFMM, KLIC, KLHX, KPUB, 4V1, KTAD, Merrick HQ, & CORS WYLC, COFC, AMC2)
Checkpoints & Control: 713 points (325 NVA, 225 VVA & 163 CAL)
Sensors: Optech Galaxy & Galaxy T500
Legend
FAA_Airports_with_100LL_as_of_06_24_2015
Set_Basestation
NGS_CORS
40mile_Radius
QL2_North_Autofill_and_Xflights_Merged_180416
QL2_South_Autofill_and_Xflights_Merged
100m_buffer_of_3DEP_AOIs_Eastern_Colorado_QL2_180319
0
50
100
150
Miles
MERRICK & COMPANY

Airports of Operation

Multiple airports were used for the collection of this project.



Aerial Mission(s) Duration / Time

Merrick's lidar acquisition was collected using fixed wing aircraft and two different Optech Galaxy lidar sensors. Lidar data collection for the project was accomplished between April 30, 2018 and August 12, 2018. Each mission represents a lift of the aircraft and system from the ground, collects data, and lands again. Multiple lifts within a day are represented by Mission A, B, C, and D. The table below relates each mission to the date collected, the sensor serial number used, and the actual average MSL in meters.

Mission(s)	Date	Sensor S/N	Actual Avg. MSL (m)
180430_A	April 30, 2018	5060385	3688
180504_A	May 4, 2018	5060385	3463
180505_A	May 5, 2018	5060385	3445
180505_B	May 5, 2018	5060385	3452
180505_C	May 5, 2018	5060385	3293
180505_D	May 5, 2018	5060385	3512
180506_A	May 6, 2018	5060385	3429
180506_B	May 6, 2018	5060385	3400
180507_A	May 7, 2018	5060385	3408
180507_C	May 7, 2018	5060380	3442
180508_A	May 8, 2018	5060380	3560
180508_B	May 8, 2018	5060380	3419
180509_A	May 9, 2018	5060380	3964
180510_A	May 10, 2018	5060380	3409
180515_A	May 15, 2018	5060380	3334
180516_A	May 16, 2018	5060385	3550
180516_B	May 16, 2018	5060385	3569
180516_D	May 16, 2018	5060385	3784
180516_A	May 16, 2018	5060380	3354
180516_B	May 16, 2018	5060380	3560
180517_A	May 17, 2018	5060385	3792
180517_B	May 17, 2018	5060385	3752
180517_C	May 17, 2018	5060385	3600
180521_A	May 21, 2018	5060385	3740
180521_A	May 21, 2018	5060380	3494
180521_C	May 21, 2018	5060380	3417
180522_A	May 22, 2018	5060385	3765
180522_A	May 22, 2018	5060380	3502
180522_B	May 22, 2018	5060380	3374
180523_A	May 23, 2018	5060385	3932
180523_B	May 23, 2018	5060380	3374
180524_A	May 24, 2018	5060380	3781
180605_A	June 5, 2018	5060385	3706
180605_B	June 5, 2018	5060385	3669

180606_A	June 6, 2018	5060385	3658
180606_B	June 6, 2018	5060385	3617
180607_A	June 7, 2018	5060385	3637
180607_B	June 7, 2018	5060385	3432
180607_A	June 7, 2018	5060380	3670
180607_B	June 7, 2018	5060380	3643
180607_C	June 7, 2018	5060380	3798
180608_A	June 8, 2018	5060385	3895
180608_C	June 8, 2018	5060385	3822
180611_A	June 11, 2018	5060380	3835
180612_A	June 12, 2018	5060385	3868
180612_A	June 12, 2018	5060380	3608
180612_B	June 12, 2018	5060380	3938
180612_C	June 12, 2018	5060380	3454
180613_A	June 13, 2018	5060380	3515
180613_B	June 13, 2018	5060380	3785
180613_A	June 13, 2018	5060385	3609
180613_B	June 13, 2018	5060385	3599
180614_A	June 14, 2018	5060385	3832
180614_B	June 14, 2018	5060385	3592
180614_A	June 14, 2018	5060380	3551
180614_B	June 14, 2018	5060380	3744
180615_A	June 15, 2018	5060385	3843
180615_A	June 15, 2018	5060380	3523
180615_B	June 15, 2018	5060380	3913
180616_A	June 16, 2018	5060380	3523
180616_B	June 16, 2018	5060380	3708
180616_A	June 16, 2018	5060385	3853
180620_A	June 20, 2018	5060380	3855
180620_A	June 20, 2018	5060385	3582
180621_A	June 21, 2018	5060380	3506
180621_A	June 21, 2018	5060385	3858
180622_A	June 22, 2018	5060385	4001
180622_A	June 22, 2018	5060380	3921
180623_A	June 23, 2018	5060380	3483
180623_A	June 23, 2018	5060385	4074
180625_A	June 25, 2018	5060380	3553
180625_A	June 25, 2018	5060385	4130
180626_A	June 26, 2018	5060385	4000
180626_A	June 26, 2018	5060380	3409
180627_A	June 27, 2018	5060380	4527
180627_A	June 27, 2018	5060385	4082
180628_A	June 28, 2018	5060385	4082
180629_A	June 29, 2018	5060380	4146
180629_A	June 29, 2018	5060385	3939

180702_A	July 2, 2018	5060385	3970
180703_A	July 3, 2018	5060385	3935
180704_A	July 4, 2018	5060380	3935
180706_A	July 6, 2018	5060380	5029
180706_A	July 6, 2018	5060385	3904
180707_A	July 7, 2018	5060380	3777
180707_A	July 7, 2018	5060385	3923
180708_A	July 8, 2018	5060380	4232
180708_B	July 8, 2018	5060380	4215
180709_A	July 9, 2018	5060380	4456
180710_A	July 10, 2018	5060380	4837
180711_A	July 11, 2018	5060380	5202
180714_A	July 14, 2018	5060380	4537
180715_A	July 15, 2018	5060380	4175
180717_A	July 17, 2018	5060380	3879
180718_A	July 18, 2018	5060380	4942
180719_A	July 19, 2018	5060380	3949
180720_A	July 20, 2018	5060380	5039
180720_B	July 20, 2018	5060380	4401
180722_A	July 22, 2018	5060380	4648
180724_A	July 24, 2018	5060380	4482
180725_A	July 25, 2018	5060380	3618
180725_B	July 25, 2018	5060380	4605
180728_A	July 28, 2018	5060380	4606
180729_A	July 29, 2018	5060380	4836
180731_A	July 31, 2018	5060380	4876
180801_A	August 1, 2018	5060380	4969
180802_A	August 2, 2018	5060380	5300
180810_A	August 10, 2018	5060380	5186
180811_A	August 11, 2018	5060380	5397
180812_A	August 12, 2018	5060380	5216

GNSS / IMU Data

A five-minute INS initialization is conducted on the ground, with the aircraft engines running, prior to flight, to establish fine-alignment of the INS. GPS ambiguities are resolved by flying within ten kilometers of the base stations. During the data collection, the operator recorded information on log sheets which includes weather conditions, lidar operation parameters, and flight line statistics. Near the end of the mission, GPS ambiguities were again resolved by flying within ten kilometers of the base stations to aid in post-processing. Data is sent back to the main office for preliminary processing to check overall quality of GPS / INS data and to ensure adequate overlap between flight lines. Any problematic data may be re-flown immediately as required.

The airborne GPS data was post-processed using Applanix POSPac Mobile Mapping Suite version 8.x. A fixed-bias carrier phase solution was computed in both the forward and reverse chronological directions. Whenever practical, lidar acquisition was limited to periods when the PDOP (Positional Dilution Of Precision) was less than 4.0. PDOP indicates satellite geometry relating to position. Generally, PDOP's of 4.0 or less result in a good

quality solution, however PDOP's between 4.0 and 5.0 can still yield good results most of the time. PDOP's over 6.0 are of questionable results and PDOP's of over 7.0 usually result in a poor solution. Usually as the number of satellites increase the PDOP decreases. Other quality control checks used for the GPS include analyzing the combined separation of the forward and reverse GPS processing from one base station and the results of the combined separation when processed from two different base stations. An analysis of the number of satellites, present during the flight and data collection times, is also performed.

The GPS trajectory was combined with the raw IMU data and post-processed using POSPac Mobile Mapping Suite version 8.x. The Smoothed Best Estimated Trajectory (SBET) and refined attitude data are then utilized in the LMS Post Processor to compute the laser point-positions – the trajectory is combined with the attitude data and laser range measurements to produce the 3-dimensional coordinates of the mass points. Up to four return values are produced within the Optech lidar Mapping Suite (LMS) processor software for each pulse which ensures the greatest chance of ground returns in a heavily forested area.

GPS Controls

Virtual Ground GNSS Base Station(s) were used to control the lidar airborne flight lines. Trimble CenterPoint™ RTX™ correction service is a high-accuracy, satellite-delivered global positioning service. This technology provides high-accuracy GNSS positioning without the use of traditional reference station-based differential RTK infrastructure and delivers very high cm level accuracy. In addition, CORS (Continually Operating Reference Stations) are at times used to further enhance the airborne solution.

Lidar Calibration – see appendix 1 for a more detailed workflow description

Merrick takes great care to ensure all lidar acquisition missions are carried out in a manner conducive to post-processing an accurate data set. This begins in the flight-planning stage with attention to GPS baseline distances and GPS satellite constellation geometry and outages. Proper AGPS surveying techniques are always followed including pre- and post-mission static initializations. In-air IMU alignments (figure-eights) are performed both before and after on-site collection to ensure proper calibration of the IMU accelerometers and gyros.

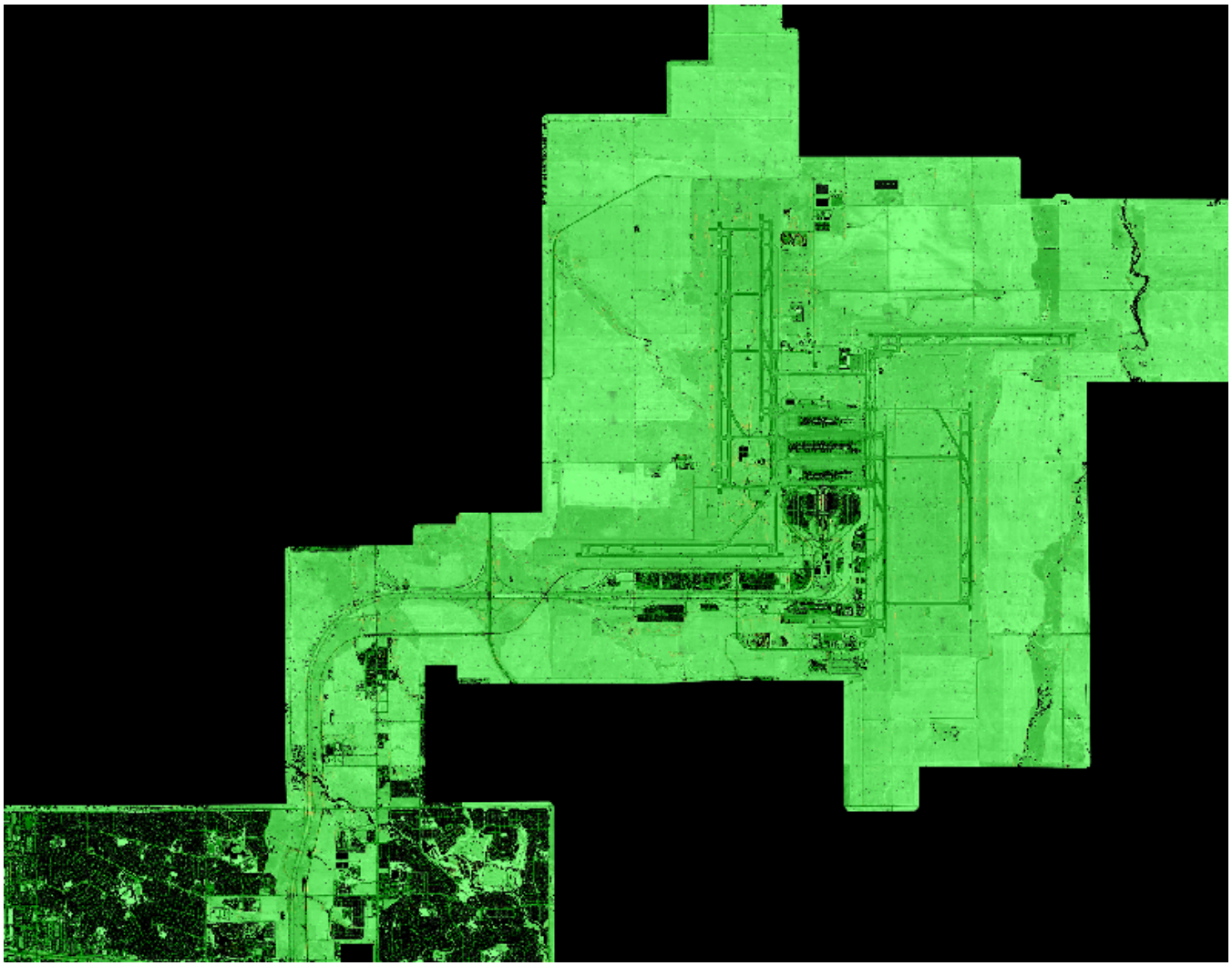
A minimum of one cross-flight is planned throughout the project area across all flightlines and over roadways where possible. The cross-flight provides a common control surface used to remove any vertical discrepancies in the lidar data between flightlines. The cross-flight is critical to ensure flightline ties across the project area. The areas of overlap between flightlines are used to boresight (calibrate) the lidar point cloud to achieve proper flightline to flightline alignment in all three axes. This includes adjustment of both IMU and scanner-related variables such as roll, pitch, heading, timing interval (range), and torsion. Each lidar mission flown is accompanied by a hands-on boresight in the office.

After boresighting is complete a detailed statistical report is generated to check relative and absolute accuracies before filtering of lidar begins.

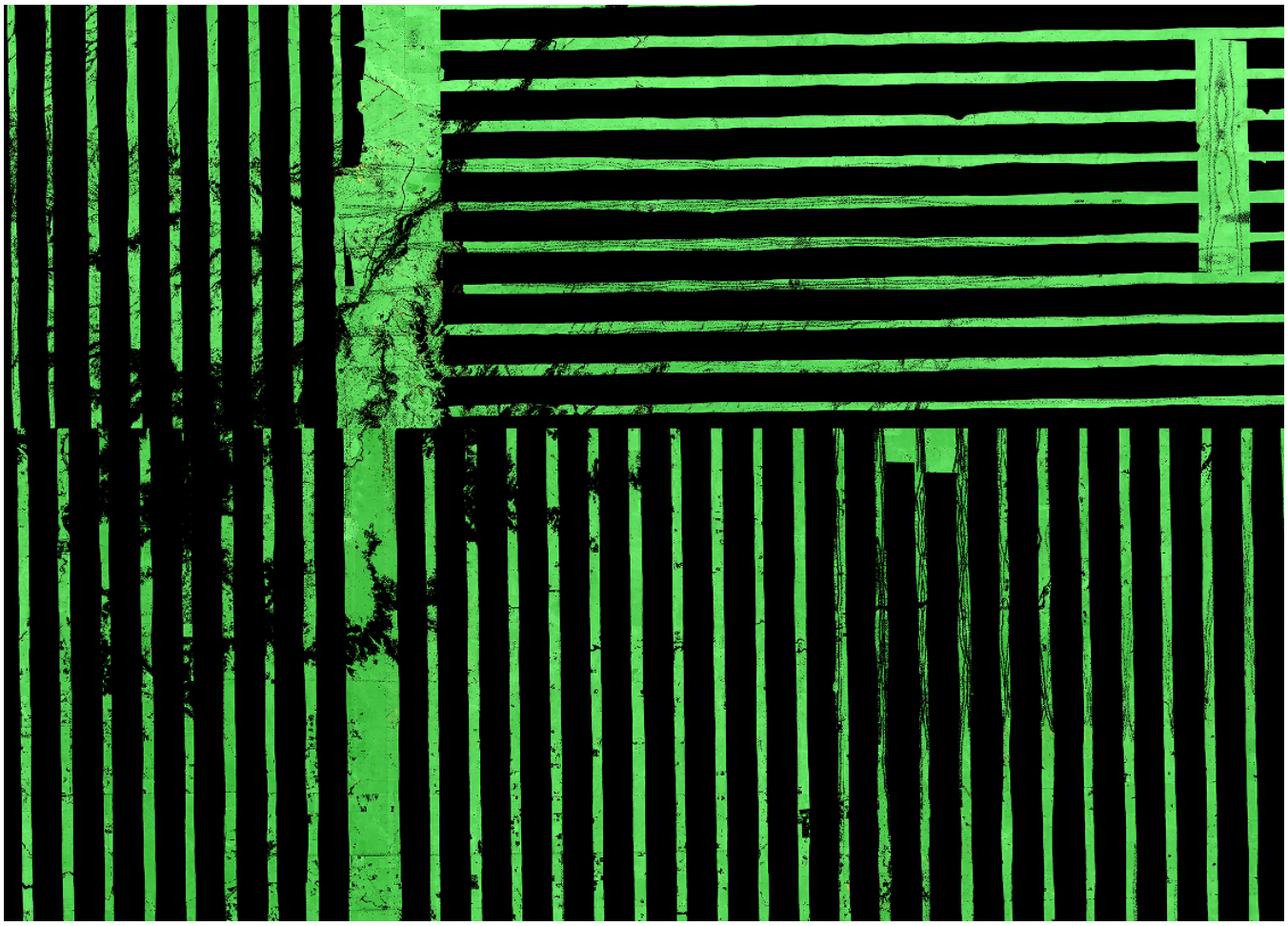
Relative Accuracy – flight line to flight line

The project representative flight line separation raster examples (below) depict the vertical separation of flight lines by thematically coloring the separation magnitude on a color ramp based on relative distance.

QL1



QL2



Unfiltered Lidar Control Point Report

The following tables illustrate the results of the lidar data compared to the lidar control points post-calibration. The listing is sorted by the Z Error column showing, in ascending order, the vertical difference between the lidar points and the one hundred eighty-six (186) surveyed ground points used for lidar calibration. The entire project was boresighted and system calibrated using spatial reference UTM Zone 13 Meters to ensure consistency between data blocks.

Project Data Unit: Meter
Vertical Accuracy Class tested: 10.0-cm
Elevation Calculation Method: Interpolated from TIN
LiDAR Classifications Included: 0-255

Check Points in Report: 186
Check Points with LiDAR Coverage: 186
Check Points (NVA): 186
Check Points (VVA): 0
Average Vertical Error Reported: 0.000 Meter
Maximum (highest) Vertical Error Reported: 0.11 Meter
Median Vertical Error Reported: -0.001 Meter
Minimum (lowest) Vertical Error Reported: -0.126 Meter
Standard deviation of Vertical Error: 0.045 Meter
Skewness of Vertical Error: -0.136
Kurtosis of Vertical Error: -0.305
Non-vegetated Vertical Accuracy (NVA) RMSE(z): 4.457cm PASS
Non-vegetated Vertical Accuracy (NVA) at the 95% Confidence Level +/-: 8.736cm PASS
FGDC/NSSDA Vertical Accuracy at the 95% Confidence Level +/-: 8.736cm
Non-vegetated Vertical Accuracy (NVA) RMSE(z) (DEM): 4.472cm PASS
Non-vegetated Vertical Accuracy (NVA) at the 95% Confidence Level +/- (DEM): 8.765cm PASS

This data set was tested to meet ASPRS Positional Accuracy Standard for Digital Geospatial Data (2014) for a 10.0-cm RMSEz Vertical Accuracy Class. Actual NVA accuracy was found to be RMSEz = 4.457cm, equating to +/- 8.736cm at the 95% confidence level.

Check Point Id	Check Point X	Check Point Y	Coverage	Check Point Z	Z from lidar	Z Error
6146	540199.556	4150326.352	Yes	1898.029	1897.903	-0.126
6150	495526.360	4117213.504	Yes	2639.233	2639.132	-0.101
6150A	495531.928	4117205.809	Yes	2638.907	2638.806	-0.101
6028	503425.020	4309339.555	Yes	2803.460	2803.367	-0.093
6049	614916.055	4193154.861	Yes	1327.321	1327.230	-0.091
6036	514140.360	4353979.450	Yes	1992.861	1992.774	-0.087
6075	652084.878	4377675.594	Yes	1518.282	1518.195	-0.087
6095	504837.536	4298881.650	Yes	2707.093	2707.008	-0.085
6008	532002.363	4368252.294	Yes	1957.701	1957.621	-0.080
6120	625819.439	4221294.717	Yes	1303.769	1303.691	-0.078
6142	529647.352	4180053.647	Yes	1828.403	1828.330	-0.073
6036A	514121.669	4353977.959	Yes	1993.190	1993.118	-0.072
6162	527623.848	4104404.178	Yes	2076.247	2076.176	-0.071
6141	493273.855	4103120.269	Yes	2574.977	2574.908	-0.069
6151	547343.164	4142447.724	Yes	1792.612	1792.545	-0.067
6052	601114.149	4418815.986	Yes	1474.139	1474.076	-0.063
6007	519922.719	4350564.736	Yes	1998.563	1998.502	-0.061
6143	519846.051	4107957.804	Yes	2024.863	2024.802	-0.061
6105	584144.438	4210524.778	Yes	1365.835	1365.775	-0.060
6035	598163.322	4296239.389	Yes	1666.689	1666.630	-0.059
6070	632998.378	4370809.981	Yes	1623.476	1623.417	-0.059
6088	608085.394	4282108.828	Yes	1554.176	1554.122	-0.054
6119	567668.086	4294427.633	Yes	1843.838	1843.785	-0.053
6060	583415.744	4515540.601	Yes	1572.357	1572.306	-0.051
6107	637073.481	4288242.861	Yes	1496.383	1496.334	-0.049

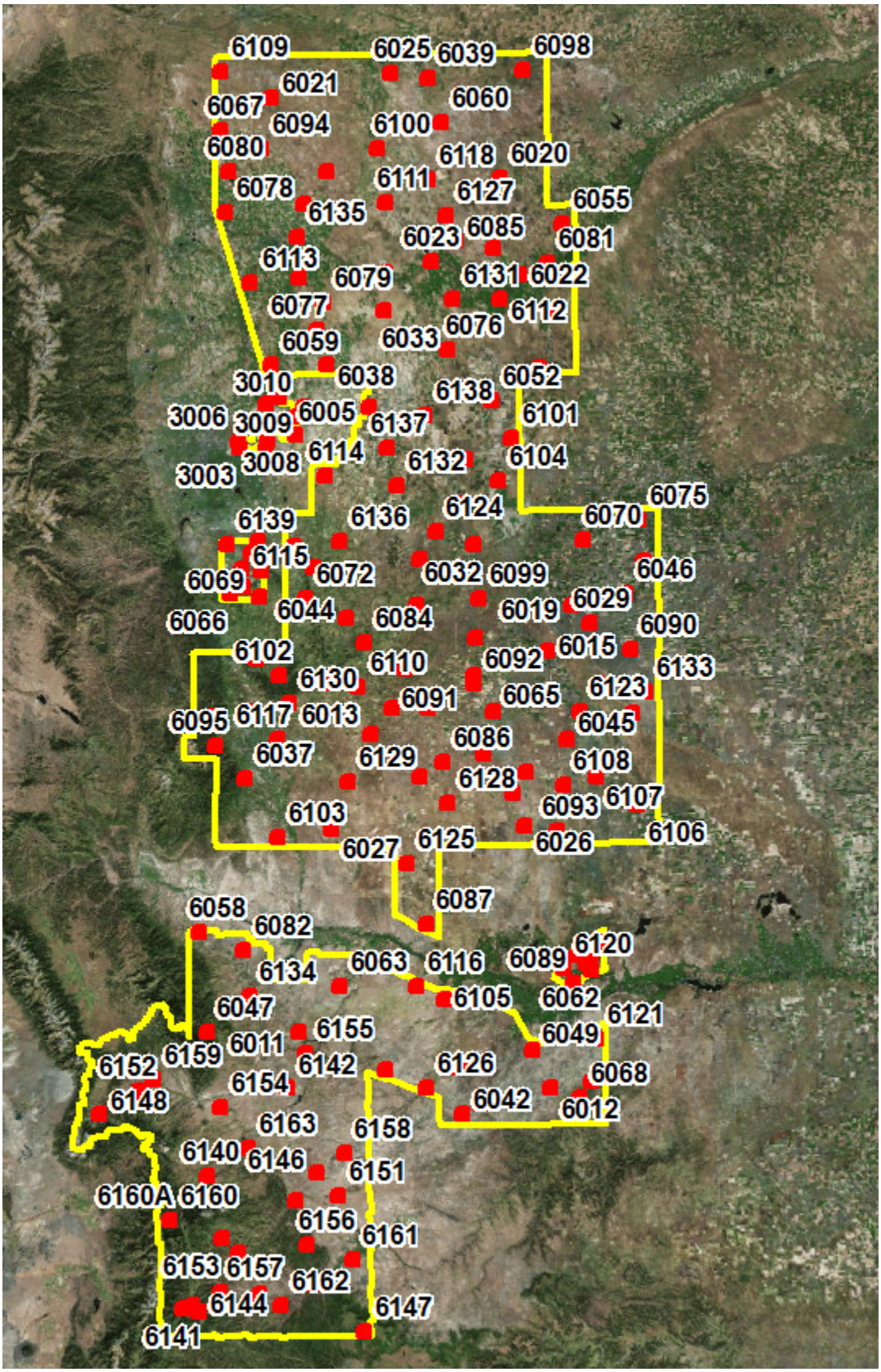
6103	526477.761	4266966.799	Yes	1647.618	1647.570	-0.048
6128	585570.568	4278791.401	Yes	1669.078	1669.030	-0.048
6045	627220.146	4301200.180	Yes	1532.854	1532.807	-0.047
6077	540200.550	4443626.516	Yes	1521.098	1521.051	-0.047
6015	620145.060	4331868.634	Yes	1647.583	1647.537	-0.046
6148	464329.228	4170655.203	Yes	2706.760	2706.715	-0.045
6041	596666.597	4174369.245	Yes	1429.079	1429.038	-0.041
6102	527065.935	4323262.843	Yes	2289.956	2289.916	-0.040
6039	578493.934	4531266.824	Yes	1675.551	1675.515	-0.036
6042	590700.750	4170744.504	Yes	1479.240	1479.204	-0.036
6087	577858.871	4236847.152	Yes	1448.652	1448.616	-0.036
3005	526879.391	4419892.013	Yes	1597.646	1597.611	-0.035
6055	625232.807	4480444.417	Yes	1335.886	1335.851	-0.035
6098	611873.407	4533883.277	Yes	1506.957	1506.922	-0.035
6133	654277.728	4317682.555	Yes	1488.516	1488.483	-0.033
6031	543524.042	4320485.788	Yes	2090.535	2090.503	-0.032
6110	554488.389	4319477.570	Yes	2045.193	2045.161	-0.032
6123	631349.345	4310908.367	Yes	1540.363	1540.331	-0.032
6051	564134.473	4185914.017	Yes	1600.406	1600.375	-0.031
6071	519564.986	4369845.959	Yes	1802.387	1802.356	-0.031
6030	591985.158	4398664.291	Yes	1576.273	1576.243	-0.030
6157	506564.104	4108952.201	Yes	2333.031	2333.002	-0.029
6012	621547.839	4179877.722	Yes	1451.816	1451.788	-0.028
6144	499044.747	4101756.882	Yes	2392.564	2392.536	-0.028
6059	523942.751	4431484.085	Yes	1533.055	1533.028	-0.027
6112	603764.321	4454256.356	Yes	1320.664	1320.637	-0.027
6050A	633936.996	4223390.361	Yes	1256.731	1256.704	-0.027
6054	533945.828	4461694.147	Yes	1477.696	1477.672	-0.024
6073	575860.722	4288075.446	Yes	1782.833	1782.809	-0.024
6116	574450.764	4215343.263	Yes	1374.429	1374.406	-0.023
6152A	477754.480	4175984.353	Yes	2320.418	2320.395	-0.023
3001	517894.126	4410125.464	Yes	1610.956	1610.935	-0.021
6097	515530.837	4310663.102	Yes	1935.108	1935.088	-0.020
6020	603848.917	4496297.384	Yes	1445.514	1445.497	-0.017
6069	517110.834	4366072.783	Yes	1898.261	1898.244	-0.017
6004	594918.718	4336501.270	Yes	1769.313	1769.297	-0.016
6065	601278.012	4310656.674	Yes	1716.989	1716.973	-0.016
6022	610766.832	4462598.411	Yes	1299.157	1299.142	-0.015
6125	571497.984	4257623.085	Yes	1596.556	1596.541	-0.015
6132	567755.454	4389456.721	Yes	1622.842	1622.827	-0.015
6033	563326.225	4450399.432	Yes	1426.286	1426.272	-0.014
6034	649558.193	4310115.220	Yes	1435.496	1435.482	-0.014
6130	530178.008	4313525.088	Yes	2187.750	2187.736	-0.014
6136	548057.700	4369902.090	Yes	1844.240	1844.226	-0.014
6025	565670.858	4533076.013	Yes	1606.541	1606.528	-0.013

6056	575928.816	4363580.981	Yes	1770.957	1770.944	-0.013
6081	620417.460	4466659.977	Yes	1278.333	1278.320	-0.013
6099	596322.766	4350093.595	Yes	1716.663	1716.650	-0.013
6048	601428.661	4472059.839	Yes	1355.103	1355.091	-0.012
6068	631784.924	4176283.297	Yes	1294.606	1294.594	-0.012
6074	580823.225	4266241.302	Yes	1611.418	1611.407	-0.011
6108	625679.410	4285305.505	Yes	1558.050	1558.039	-0.011
3009	522099.160	4402640.801	Yes	1659.978	1659.968	-0.010
6104	603100.792	4391020.701	Yes	1540.430	1540.420	-0.010
6114	542728.398	4392959.491	Yes	1760.046	1760.036	-0.010
6018	574858.910	4347540.376	Yes	1790.643	1790.634	-0.009
6089	629132.274	4216208.404	Yes	1261.437	1261.428	-0.009
6005	558185.556	4416664.215	Yes	1557.004	1556.996	-0.008
6010	617550.156	4430428.584	Yes	1378.917	1378.909	-0.008
6093	623916.777	4269022.347	Yes	1480.489	1480.481	-0.008
6014	563917.268	4463529.276	Yes	1370.919	1370.912	-0.007
6044	550423.502	4343319.078	Yes	2037.754	2037.747	-0.007
6083	518840.527	4329266.458	Yes	2232.040	2232.034	-0.006
3004	522671.269	4405211.323	Yes	1658.564	1658.559	-0.005
3008A	532394.892	4407004.541	Yes	1643.503	1643.499	-0.004
6081A	620295.165	4466657.128	Yes	1277.843	1277.840	-0.003
6062	635517.995	4220822.762	Yes	1257.039	1257.037	-0.002
6067	506325.787	4513127.671	Yes	1708.421	1708.420	-0.001
6101	607633.956	4406092.603	Yes	1458.846	1458.845	-0.001
6155	536003.650	4191795.458	Yes	1792.045	1792.044	-0.001
3004A	522671.494	4405239.234	Yes	1658.284	1658.283	-0.001
3006A	512842.829	4404751.680	Yes	1609.221	1609.220	-0.001
6086	583850.528	4293041.776	Yes	1752.677	1752.677	0.000
6136A	548063.184	4369905.460	Yes	1844.348	1844.348	0.000
6084	556370.858	4334692.520	Yes	1959.243	1959.244	0.001
6091	565921.219	4312068.605	Yes	2050.675	2050.676	0.001
6029	635070.619	4341775.367	Yes	1599.208	1599.210	0.002
6032	594777.446	4368622.683	Yes	1690.204	1690.206	0.002
6156	536799.216	4125306.564	Yes	1973.246	1973.248	0.002
3006	512799.556	4404752.391	Yes	1609.447	1609.450	0.003
6047	501677.011	4199030.901	Yes	2305.114	2305.118	0.004
3008	532406.189	4407003.009	Yes	1643.132	1643.138	0.006
6037	514840.884	4287497.824	Yes	1946.387	1946.394	0.007
6094	520653.167	4506655.212	Yes	1582.279	1582.286	0.007
6109	506366.457	4533226.692	Yes	1805.843	1805.851	0.008
6066	510067.457	4351624.239	Yes	1951.223	1951.233	0.010
3007	522568.374	4417600.711	Yes	1600.859	1600.870	0.011
6021	524007.759	4524377.993	Yes	1682.559	1682.571	0.012
6117	526293.821	4301415.292	Yes	1961.938	1961.950	0.012
3002	532368.077	4413435.708	Yes	1614.968	1614.981	0.013

6046	647812.942	4351873.792	Yes	1597.810	1597.824	0.014
6061	612954.197	4289863.368	Yes	1541.481	1541.500	0.019
6090	649009.738	4332346.443	Yes	1579.291	1579.311	0.020
6106	651598.866	4278372.684	Yes	1454.141	1454.161	0.020
6129	550765.804	4286169.754	Yes	1733.734	1733.754	0.020
6149	538116.603	4111622.661	Yes	1910.497	1910.517	0.020
6160A	488843.818	4133829.729	Yes	2848.110	2848.130	0.020
3003	513061.510	4402380.810	Yes	1622.853	1622.874	0.021
6096	570706.068	4325510.314	Yes	1926.788	1926.809	0.021
6127	585220.742	4483187.698	Yes	1487.704	1487.725	0.021
6137	564530.421	4402270.574	Yes	1577.180	1577.201	0.021
6082	514266.267	4227786.766	Yes	1591.758	1591.780	0.022
6153	507100.960	4127412.974	Yes	2477.785	2477.810	0.025
6092A	594846.896	4323594.818	Yes	1817.143	1817.168	0.025
3010	535610.452	4416675.394	Yes	1606.745	1606.771	0.026
6058	498906.545	4233711.432	Yes	1681.543	1681.570	0.027
6092	594804.909	4320362.946	Yes	1807.917	1807.947	0.030
6100	561011.452	4506874.201	Yes	1513.212	1513.242	0.030
6160	488867.040	4133823.085	Yes	2845.642	2845.672	0.030
6140	502092.946	4149071.284	Yes	2219.595	2219.626	0.031
6050	635884.112	4226309.641	Yes	1259.478	1259.510	0.032
6001	589252.517	4186653.887	Yes	1404.288	1404.321	0.033
6076	585808.328	4436401.981	Yes	1427.752	1427.785	0.033
6053	638545.276	4230554.923	Yes	1265.678	1265.712	0.034
6161	552296.930	4120295.687	Yes	1800.324	1800.358	0.034
6003	507862.449	4356738.564	Yes	1971.998	1972.033	0.035
6019	628607.364	4348101.805	Yes	1704.648	1704.683	0.035
6147	556487.530	4094903.852	Yes	2301.785	2301.820	0.035
6063	548074.023	4215072.622	Yes	1497.956	1497.992	0.036
6124	581346.095	4373300.712	Yes	1681.266	1681.302	0.036
6023	579730.549	4467240.083	Yes	1335.996	1336.033	0.037
6009	520555.311	4359711.599	Yes	1862.205	1862.246	0.041
6085	588642.053	4475006.804	Yes	1432.442	1432.484	0.042
6006	543381.964	4498789.262	Yes	1517.303	1517.346	0.043
6016	623653.150	4449897.553	Yes	1367.035	1367.078	0.043
6135	533078.319	4476126.915	Yes	1414.987	1415.030	0.043
6145	532320.716	4140913.445	Yes	1923.291	1923.334	0.043
6141A	496470.367	4104235.483	Yes	2514.277	2514.322	0.045
6002	612429.402	4317256.055	Yes	1661.136	1661.182	0.046
6158	549396.099	4157131.940	Yes	1844.468	1844.514	0.046
6043	630577.907	4225847.665	Yes	1272.256	1272.304	0.048
6118	578764.249	4496049.495	Yes	1500.499	1500.548	0.049
6131	587505.182	4454086.525	Yes	1358.542	1358.591	0.049
6026	612110.611	4270868.685	Yes	1462.059	1462.109	0.050
6134	516469.111	4211542.411	Yes	1683.279	1683.329	0.050

6154	506355.487	4173042.703	Yes	1973.915	1973.965	0.050
6057	538787.591	4360650.320	Yes	1986.075	1986.126	0.051
6163	515952.881	4158677.683	Yes	1979.397	1979.448	0.051
6122	638084.864	4320619.372	Yes	1511.867	1511.919	0.052
6078	508241.509	4484406.806	Yes	1478.345	1478.398	0.053
6024	588608.800	4383352.317	Yes	1652.102	1652.158	0.056
6040	578837.713	4312209.958	Yes	1878.702	1878.758	0.056
6072	536207.670	4349950.033	Yes	2033.437	2033.494	0.057
6113	516888.445	4459950.477	Yes	1450.506	1450.563	0.057
6152	477760.077	4179022.964	Yes	2270.996	2271.054	0.058
6017	654022.641	4363147.223	Yes	1546.516	1546.576	0.060
6068A	635695.481	4182103.500	Yes	1291.758	1291.819	0.061
6163A	512675.256	4122541.152	Yes	2335.382	2335.444	0.062
6027	545391.551	4270097.722	Yes	1604.222	1604.289	0.067
6079	542547.095	4453035.458	Yes	1444.019	1444.086	0.067
6159	483064.221	4182871.211	Yes	2166.497	2166.565	0.068
6121	637451.700	4196992.537	Yes	1363.180	1363.251	0.071
6038	543547.798	4431730.284	Yes	1502.096	1502.169	0.073
6138	577458.901	4413735.647	Yes	1502.126	1502.200	0.074
6064	535282.551	4487420.022	Yes	1466.654	1466.732	0.078
6080	509465.989	4498787.322	Yes	1584.038	1584.116	0.078
6126	578364.838	4180110.413	Yes	1470.030	1470.114	0.084
6111	564105.168	4487793.430	Yes	1455.935	1456.024	0.089
6139	508557.793	4368655.557	Yes	1964.643	1964.733	0.090
6115	513698.762	4360111.988	Yes	1960.623	1960.718	0.095
6011	533630.993	4199399.124	Yes	1706.951	1707.061	0.110

Lidar Control Point Layout



Lidar Filtering and Classification

The lidar filtering process encompasses a series of automated and manual steps to classify the boresighted point cloud data set. Each project represents unique characteristics in terms of cultural features (urbanized vs. rural areas), terrain type and vegetation coverage. These characteristics are thoroughly evaluated at the onset of the project to ensure that the appropriate automated filters are applied and that subsequent manual filtering yields correctly classified data. Data is most often classified by ground and "unclassified", but specific project applications can include a wide variety of classifications including but not limited to buildings, vegetation, power lines, etc. MARS® software is used for the auto-filtering, manual filtering and QC of the classified data.

Merrick used the American Society for Photogrammetry and Remote Sensing's (ASPRS) LAS Specification Version 1.4 – R13, 15 July 2013, Point Data Record Format 6 for this project and classified the lidar point cloud in accordance with the following classification classes and bitflags.

- Class 1 = Unclassified
- Class 2 = Bare-earth Ground
- Class 7 = Low point (noise)
- Class 8 = Model Key Points
- Class 10 = Ignored ground (breakline proximity)
- Class 17 = Bridge decks
- Class 18 = High noise
- Bitflags
    - Overlap: Any part of a swath that also is covered by any part of any other swath.
    - Withheld: Within the LAS file specification, a single bit flag indicating that the associated lidar point is geometrically anomalous or unreliable and should be ignored for all normal processes.

Merrick has developed several customized automated filters that are applied to the lidar data set based on project specifications, terrain, and vegetation characteristics. A filtering macro, which may contain one or more filtering algorithms, is executed to derive LAS files separated into the different classification groups as defined in the ASPRS classification table. The macros are tested in several portions of the project area to verify the appropriateness of the filters. Often, there is a combination of several filter macros that optimize the filtering based on the unique characteristics of the project. Automatic filtering generally yields a ground surface that is 85-90% valid, so additional editing (hand-filtering) is required to produce a more robust ground surface.

Lidar data is next taken into a graphic environment using MARS® to manually re-classify (or hand-filter) "noise" and other features that may remain in the ground classification after auto filter. A cross-section of the post auto-filtered surface is viewed to assist in the reclassification of non-ground data artifacts. The following is an example of re-classification of the non-ground points (elevated features) that need to be excluded from the true ground surface. Certain features such as berms, hilltops, cliffs and other features may have been aggressively auto-filtered and points will need to be re-classified into the ground classification. Data in the profile view displays non-ground (Unclassified, class 1) in grey and ground in brown/tan (Class 2). In figure 1, a small building was not auto-filtered and needs to be manually re-classified. Note that figure 2 has the building points reclassified to unclassified from the true ground surface.

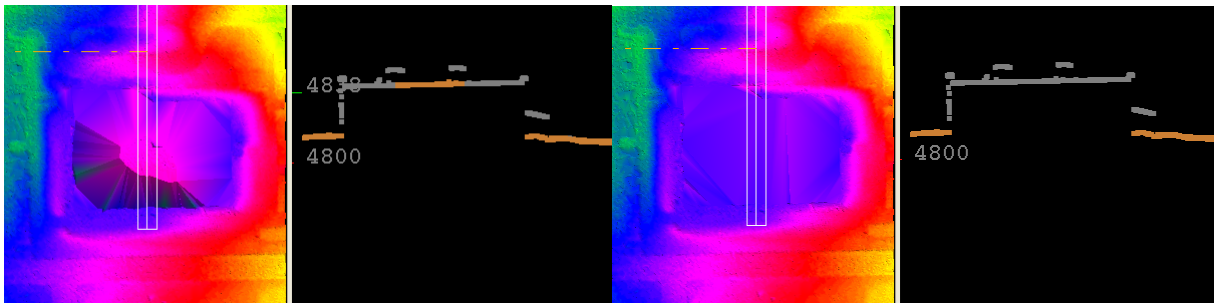


Figure 1 **Figure 2**

A combination of automated and semi-automated routines to classify buildings and vegetation. We expect that the classified buildings will meet a filtering criterion in the range of 90-95%.

At this point, individual lidar points from the original point cloud have now been parsed into separate classifications.

Filtered Lidar Check Point Report

After the hand-filtering has been completed and quality checked, a Check Point Report is generated to validate that the accuracy of the ground surface is within the defined accuracy specifications. Each surveyed ground check point is compared to the lidar surface by interpolating an elevation from a Triangulated Irregular Network (TIN) of the surface. The MARS® derived report provides an in-depth statistical report, including an RMSE of the vertical errors; a primary component in most accuracy standards and a statistically valid assessment of the overall accuracy of the ground surface.

The below lidar check point reports provide statistics for 655 ground survey points used to validate the final filtered lidar surface and are broken out by project wide and each state plane zone.

Project Wide QL1 DPA

Units: Meter (/Feet)

Vertical Accuracy Class tested: 10-cm

Check Points in defined project area (DPA):	655
Check Points with Lidar Coverage	30
Check Points with Lidar Coverage (NVA)	22
Check Points with Lidar Coverage (VVA)	8
Average Z Error (NVA)	0.007/0.023
Maximum Z Error (NVA)	0.041/0.136
Median Z Error (NVA)	0.013/0.041
Minimum Z Error (NVA)	-0.062/-0.204
Standard deviation of Vertical Error (NVA)	0.029/0.096
Skewness of Vertical Error (NVA)	-0.813
Kurtosis of Vertical Error (NVA)	-0.326
Non-vegetated Vertical Accuracy (NVA) RMSE(z) [1]	0.030/0.097 PASS
Non-vegetated Vertical Accuracy (NVA) at the 95% Confidence Level +/- [1]	0.058/0.190 PASS
FGDC/NSSDA Vertical Accuracy at the 95% Confidence Level +/-	0.058/0.190
Non-vegetated Vertical Accuracy (NVA) RMSE(z) (DEM) [2]	0.030/0.100 PASS
Non-vegetated Vertical Accuracy (NVA) at the 95% Confidence Level (DEM) +/- [2]	0.059/0.195 PASS
Vegetated Vertical Accuracy (VVA) at the 95th Percentile (DEM) +/- [2]	0.169/0.554 PASS

This data set was tested to meet ASPRS Positional Accuracy Standard for Digital Geospatial Data (2014) for a 10-cm RMSEz Vertical Accuracy Class. Actual NVA accuracy was found to be RMSEz = 2.956cm, equating to +/- 5.793cm at the 95% confidence level. Actual VVA accuracy was found to be +/- 16.892cm at the 95th percentile.

[1] This value is calculated from TIN-based testing of the lidar point cloud data.

[2] This value is calculated from RAM-based grid testing of the lidar data. The grid cells are sized according to the Quality Level selected, and are defined in the USGS NGP Lidar Base Specification Version 1.3 (page 24, Table 6).

Project Wide QL2 DPA

Units: Meter (/Feet)

Vertical Accuracy Class tested: 10-cm

Check Points in defined project area (DPA):	655
Check Points with Lidar Coverage	625
Check Points with Lidar Coverage (NVA)	376
Check Points with Lidar Coverage (VVA)	249
Average Z Error (NVA)	-0.001/-0.002
Maximum Z Error (NVA)	0.119/0.391
Median Z Error (NVA)	0.001/0.002
Minimum Z Error (NVA)	-0.253/-0.829
Standard deviation of Vertical Error (NVA)	0.049/0.161
Skewness of Vertical Error (NVA)	-0.724
Kurtosis of Vertical Error (NVA)	3.119
Non-vegetated Vertical Accuracy (NVA) RMSE(z) [1]	0.049/0.160 PASS
Non-vegetated Vertical Accuracy (NVA) at the 95% Confidence Level +/- [1]	0.096/0.314 PASS
FGDC/NSSDA Vertical Accuracy at the 95% Confidence Level +/-	0.096/0.314
Non-vegetated Vertical Accuracy (NVA) RMSE(z) (DEM) [2]	0.050/0.165 PASS
Non-vegetated Vertical Accuracy (NVA) at the 95% Confidence Level (DEM) +/- [2]	0.099/0.324 PASS
Vegetated Vertical Accuracy (VVA) at the 95th Percentile (DEM) +/- [2]	0.184/0.605 PASS

This data set was tested to meet ASPRS Positional Accuracy Standard for Digital Geospatial Data (2014) for a 10-cm RMSEz Vertical Accuracy Class. Actual NVA accuracy was found to be RMSEz = 4.889cm, equating to +/- 9.583cm at the 95% confidence level. Actual VVA accuracy was found to be +/- 18.444cm at the 95th percentile.

[1] This value is calculated from TIN-based testing of the lidar point cloud data.

[2] This value is calculated from RAM-based grid testing of the lidar data. The grid cells are sized according to the Quality Level selected, and are defined in the USGS NGP Lidar Base Specification Version 1.3 (page 24, Table 6).

CO Sate Plane North Zone – Counties Weld, Morgan and Adams

Units: Meter (/US Survey Feet)

Vertical Accuracy Class tested: 10-cm

Check Points in defined project area (DPA):	170
Check Points with Lidar Coverage	170
Check Points with Lidar Coverage (NVA)	101
Check Points with Lidar Coverage (VVA)	69
Average Z Error (NVA)	0.013/0.041
Maximum Z Error (NVA)	0.119/0.391
Median Z Error (NVA)	0.013/0.041
Minimum Z Error (NVA)	-0.091/-0.297
Standard deviation of Vertical Error (NVA)	0.040/0.130
Skewness of Vertical Error (NVA)	0.209
Kurtosis of Vertical Error (NVA)	0.137
Non-vegetated Vertical Accuracy (NVA) RMSE(z) [1]	0.042/0.136 PASS
Non-vegetated Vertical Accuracy (NVA) at the 95% Confidence Level +/- [1]	0.081/0.267 PASS
FGDC/NSSDA Vertical Accuracy at the 95% Confidence Level +/-	0.081/0.267
Non-vegetated Vertical Accuracy (NVA) RMSE(z) (DEM) [2]	0.042/0.139 PASS
Non-vegetated Vertical Accuracy (NVA) at the 95% Confidence Level (DEM) +/- [2]	0.083/0.272 PASS
Vegetated Vertical Accuracy (VVA) at the 95th Percentile (DEM) +/- [2]	0.203/0.666 PASS

This data set was tested to meet ASPRS Positional Accuracy Standard for Digital Geospatial Data (2014) for a 10-cm RMSEz Vertical Accuracy Class. Actual NVA accuracy was found to be RMSEz = 4.150cm, equating to +/- 8.135cm at the 95% confidence level. Actual VVA accuracy was found to be +/- 20.293cm at the 95th percentile.

[1] This value is calculated from TIN-based testing of the raw swath lidar point cloud data.

[2] This value is calculated from RAM-based grid testing of the classified tiled lidar data. The grid cells are sized according to the Quality Level selected, and are defined in the USGS NGP Lidar Base Specification Version 1.2 (page 15, Table 7).

Check Point Id	Check Point X	Check Point Y	Check Point Z	Z from Lidar	Z Error	NVA or VVA
4005	3331240.228	1208482.316	5104.740	5104.593	-0.147	NVA
4010	3525801.437	1254107.191	4524.227	4524.184	-0.043	NVA
4015	3349953.669	1362982.730	4497.379	4497.312	-0.067	NVA
4017	3545412.169	1318193.903	4485.913	4486.164	0.251	NVA
4023	3502919.389	1361584.791	4267.314	4267.270	-0.044	NVA
4024	3401012.460	1374111.683	4384.122	4384.250	0.128	NVA
4034	3347519.551	1318657.703	4682.438	4682.319	-0.119	NVA
4039	3282921.370	1257898.422	4927.215	4927.291	0.076	NVA
4050	3472323.948	1390518.976	4453.538	4453.662	0.124	NVA
4054	3471990.674	1220474.086	4804.636	4804.402	-0.234	NVA
4056	3250408.000	1357673.703	4815.460	4815.531	0.071	NVA
4061	3219515.583	1255696.927	5019.304	5019.229	-0.075	NVA
4078	3418518.520	1273164.920	4682.592	4682.716	0.124	NVA
4079	3271725.251	1295912.066	4993.015	4992.949	-0.066	NVA
4081	3279047.695	1327560.595	4736.962	4737.034	0.072	NVA
4083	3533057.668	1375704.594	4198.433	4198.455	0.022	NVA
4104	3493598.029	1179484.926	4778.045	4778.002	-0.043	NVA
4116	3481422.848	1332188.648	4320.329	4320.284	-0.045	NVA
4117	3192191.584	1350302.813	4755.302	4755.649	0.347	NVA
4135	3423639.261	1331315.898	4446.697	4446.964	0.267	NVA
4141	3352458.940	1160796.745	5171.223	5171.272	0.049	NVA

4142	3395861.648	1198694.786	4913.478	4913.524	0.046	NVA
4149	3381897.971	1343698.067	4498.505	4498.477	-0.028	NVA
4154	3466290.953	1247686.294	4833.133	4833.174	0.041	NVA
4162	3423884.873	1359587.833	4437.888	4438.043	0.155	NVA
4163	3234961.019	1302461.865	4855.499	4855.468	-0.031	NVA
4171	3176241.715	1381140.131	5032.920	5033.018	0.098	NVA
4174	3311707.986	1282016.400	4785.666	4785.584	-0.082	NVA
4181	3378195.699	1230070.747	4853.333	4853.225	-0.108	NVA
4185	3289038.046	1379374.488	4563.898	4563.871	-0.027	NVA
4186	3224751.539	1329432.799	4919.285	4919.210	-0.075	NVA
4188	3372099.376	1293305.581	4727.510	4727.429	-0.081	NVA
4191	3440278.945	1310437.686	4490.296	4490.572	0.276	NVA
4201	3346165.413	1271930.897	4844.101	4844.120	0.019	NVA
4202	3444648.091	1199304.138	5092.962	5093.032	0.070	NVA
4212	3494241.103	1152982.124	4927.264	4927.655	0.391	NVA
4215	3498473.636	1299181.303	4505.388	4505.527	0.139	NVA
4216	3313401.620	1307534.766	4709.456	4709.159	-0.297	NVA
4220	3539358.506	1345153.642	4309.854	4309.815	-0.039	NVA
4226	3421595.535	1167166.394	4969.495	4969.472	-0.023	NVA
4227	3557276.470	1255254.518	4470.112	4470.229	0.117	NVA
4229	3426513.184	1236224.569	4842.530	4842.499	-0.031	NVA
4234	3357695.194	1192628.121	5067.378	5067.396	0.018	NVA
4241	3238241.580	1271479.109	4972.139	4972.299	0.160	NVA
4242	3494205.701	1248251.899	4557.491	4557.419	-0.072	NVA
4244	3318203.708	1250416.499	4949.003	4948.920	-0.083	NVA
4251	3477645.381	1280578.709	4476.274	4476.305	0.031	NVA
4260	3351827.378	1229478.050	5062.752	5062.650	-0.102	NVA
4116A	3481490.779	1332139.006	4321.199	4321.212	0.013	NVA
4135A	3423645.620	1331244.467	4449.676	4449.904	0.228	NVA
4186A	3224251.571	1329424.174	4927.779	4927.761	-0.018	NVA
5005	3331305.433	1208482.582	5099.376	5099.382	0.006	VVA
5010	3525763.342	1254108.260	4525.431	4526.123	0.692	VVA
5014	3350047.230	1363000.108	4496.133	4498.044	1.911	VVA
5016	3545431.326	1318214.796	4484.735	4485.113	0.378	VVA
5022	3502818.679	1361669.267	4267.790	4268.013	0.223	VVA
5023	3400914.405	1374195.494	4381.330	4381.501	0.171	VVA
5033	3347314.710	1318497.565	4679.558	4679.799	0.241	VVA
5038	3282845.814	1258078.209	4928.002	4928.165	0.163	VVA
5048	3472169.411	1390618.320	4451.297	4451.631	0.334	VVA
5052	3471904.213	1220521.845	4797.198	4797.005	-0.193	VVA
5054	3250653.524	1357572.956	4812.628	4812.741	0.113	VVA
5059	3219586.735	1255652.769	5014.908	5015.005	0.097	VVA
5076	3418402.866	1273050.510	4681.536	4681.724	0.188	VVA
5077	3271543.280	1296150.906	4987.808	4987.913	0.105	VVA
5079	3278955.219	1327587.189	4736.323	4736.393	0.070	VVA

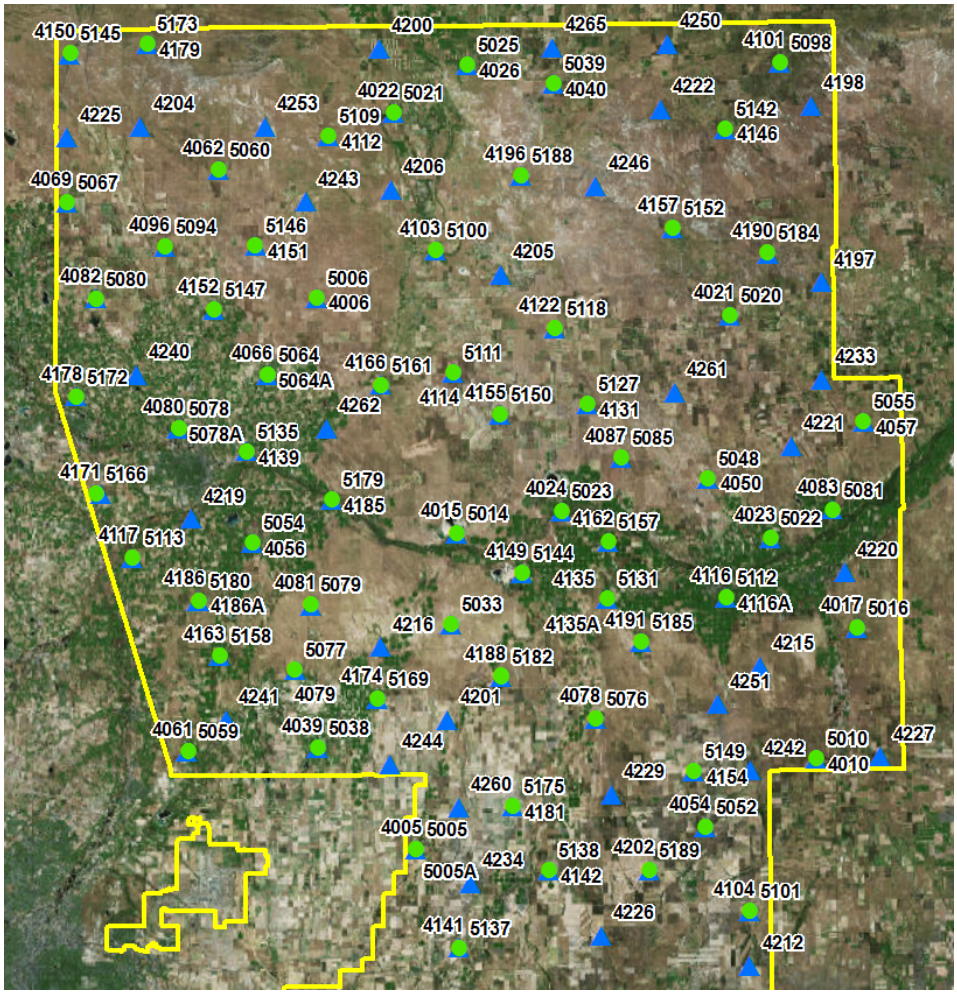
5081	3533307.076	1375633.235	4184.759	4184.946	0.187	VVA
5101	3493708.659	1179361.303	4775.906	4777.178	1.272	VVA
5112	3481401.159	1332182.497	4320.523	4320.619	0.096	VVA
5113	3192255.506	1350312.018	4753.235	4753.589	0.354	VVA
5131	3423735.338	1331375.052	4442.757	4443.696	0.939	VVA
5137	3352481.261	1160727.465	5169.028	5169.118	0.090	VVA
5138	3395688.881	1198843.780	4916.414	4916.694	0.280	VVA
5144	3381966.351	1343809.825	4494.568	4495.144	0.576	VVA
5149	3466224.541	1247610.443	4831.539	4831.786	0.247	VVA
5157	3423829.131	1359657.014	4438.078	4438.507	0.429	VVA
5158	3234854.136	1302508.982	4855.000	4855.273	0.273	VVA
5166	3174006.946	1381211.333	4990.065	4990.871	0.806	VVA
5169	3311756.924	1282087.098	4782.300	4782.756	0.456	VVA
5175	3378136.082	1230156.261	4856.700	4857.099	0.399	VVA
5179	3289171.411	1379312.303	4563.278	4563.511	0.233	VVA
5180	3224733.608	1329498.332	4921.739	4922.811	1.072	VVA
5182	3372073.874	1293363.240	4724.118	4724.371	0.253	VVA
5185	3440197.763	1310374.326	4484.981	4485.308	0.327	VVA
5189	3444547.776	1199359.678	5091.174	5091.536	0.362	VVA
5005A	3331152.849	1208541.498	5105.246	5105.284	0.038	VVA
5182A	3372083.960	1293421.658	4719.659	4719.998	0.339	VVA
4006	3281067.738	1477583.189	4977.920	4977.969	0.049	NVA
4021	3482508.542	1470087.811	4701.644	4701.672	0.028	NVA
4022	3317922.961	1568038.340	5171.584	5171.587	0.003	NVA
4026	3353619.779	1591822.162	5242.086	5242.002	-0.084	NVA
4040	3395804.157	1582950.902	5486.475	5486.341	-0.134	NVA
4057	3547964.788	1418421.970	4417.422	4417.297	-0.125	NVA
4062	3233148.805	1539670.435	5313.296	5313.459	0.163	NVA
4066	3257361.389	1439693.271	4808.950	4809.021	0.071	NVA
4069	3159262.817	1523654.491	5605.684	5605.728	0.044	NVA
4080	3213935.885	1413237.447	4718.622	4718.846	0.224	NVA
4082	3173425.997	1476574.510	5250.780	5251.061	0.281	NVA
4087	3430232.021	1400194.571	4717.477	4717.605	0.128	NVA
4096	3207062.235	1502024.564	5194.721	5194.856	0.135	NVA
4101	3506405.418	1593661.757	4931.460	4931.363	-0.097	NVA
4103	3338920.111	1501010.379	4912.283	4912.138	-0.145	NVA
4112	3286541.096	1556729.174	5225.954	5226.042	0.088	NVA
4114	3347746.685	1441418.466	4791.673	4791.777	0.104	NVA
4122	3397332.268	1463480.128	4940.184	4940.371	0.187	NVA
4131	3413459.716	1426649.321	4874.357	4874.483	0.126	NVA
4139	3247359.896	1402598.679	4641.290	4641.464	0.174	NVA
4146	3479760.647	1561164.271	4846.162	4846.290	0.128	NVA
4150	3160133.271	1595909.463	5982.865	5982.910	0.045	NVA
4151	3251347.055	1502963.569	5161.177	5161.325	0.148	NVA
4152	3231057.697	1471641.452	4943.697	4943.698	0.001	NVA

4155	3370997.457	1420905.568	4671.027	4671.253	0.226	NVA
4157	3454670.047	1512801.956	4793.826	4793.897	0.071	NVA
4166	3312688.812	1435317.853	4840.981	4841.213	0.232	NVA
4178	3164484.917	1428824.193	4853.770	4854.137	0.367	NVA
4179	3197841.586	1601077.516	6082.714	6082.647	-0.067	NVA
4190	3500951.891	1500570.782	4428.505	4428.636	0.131	NVA
4196	3380493.286	1537461.125	5204.947	5205.094	0.147	NVA
4197	3527140.011	1486598.587	4601.707	4601.457	-0.250	NVA
4198	3521695.937	1572908.329	4525.004	4524.903	-0.101	NVA
4200	3311214.612	1599422.355	5391.781	5391.642	-0.139	NVA
4204	3195079.807	1560634.726	5549.897	5549.995	0.098	NVA
4205	3370950.777	1489462.527	4989.298	4989.254	-0.044	NVA
4206	3317274.611	1530782.018	5056.883	5057.008	0.125	NVA
4221	3513120.102	1406692.121	4584.876	4584.894	0.018	NVA
4222	3448436.699	1570783.260	5291.758	5291.661	-0.097	NVA
4225	3159206.782	1555053.664	5758.834	5758.875	0.041	NVA
4233	3527881.986	1439092.124	4573.629	4573.549	-0.080	NVA
4240	3193760.147	1439711.379	4894.416	4894.548	0.132	NVA
4243	3275617.903	1524549.325	5311.259	5311.292	0.033	NVA
4246	3417046.545	1533013.367	5113.507	5113.456	-0.051	NVA
4250	3451565.672	1602641.149	5165.731	5165.766	0.035	NVA
4253	3255569.393	1561133.178	5343.605	5343.747	0.142	NVA
4261	3455864.717	1432607.621	4785.010	4785.120	0.110	NVA
4262	3286523.068	1413813.338	4657.848	4657.914	0.066	NVA
4265	3395642.341	1600626.105	5459.481	5459.584	0.103	NVA
5006	3281075.568	1477716.560	4973.543	4973.738	0.195	VVA
5020	3482425.095	1470244.942	4700.834	4701.095	0.261	VVA
5021	3317931.843	1568095.682	5170.889	5171.061	0.172	VVA
5025	3353736.997	1591755.518	5241.246	5241.323	0.077	VVA
5039	3395898.539	1582884.437	5483.463	5483.523	0.060	VVA
5055	3547920.082	1418484.951	4419.407	4419.558	0.151	VVA
5060	3232957.867	1539785.005	5306.453	5306.908	0.455	VVA
5064	3257354.385	1439743.739	4808.704	4809.069	0.365	VVA
5067	3159180.968	1523619.646	5606.632	5606.823	0.191	VVA
5078	3214153.043	1413175.472	4721.519	4721.614	0.095	VVA
5080	3173423.793	1476402.862	5246.751	5247.239	0.488	VVA
5085	3430156.016	1400141.070	4707.911	4708.293	0.382	VVA
5094	3207040.031	1501915.387	5194.002	5194.423	0.421	VVA
5098	3506345.604	1593749.437	4924.551	4925.007	0.456	VVA
5100	3339002.082	1500875.298	4906.837	4906.975	0.138	VVA
5109	3286588.075	1556662.821	5225.255	5225.524	0.269	VVA
5111	3347751.082	1441345.228	4789.193	4789.493	0.300	VVA
5118	3397367.796	1463398.919	4940.577	4940.948	0.371	VVA
5127	3413540.882	1426530.028	4874.537	4874.914	0.377	VVA
5135	3247358.692	1402393.831	4636.723	4638.698	1.975	VVA

5142	3479687.388	1561295.635	4846.185	4846.349	0.164	VVA
5145	3160219.867	1596350.893	5997.039	5997.351	0.312	VVA
5146	3251115.308	1503001.159	5158.028	5158.364	0.336	VVA
5147	3231003.410	1471563.257	4941.368	4942.038	0.670	VVA
5150	3370958.634	1421024.950	4671.247	4671.644	0.397	VVA
5152	3454714.908	1512732.600	4790.617	4791.364	0.747	VVA
5161	3312594.072	1435258.010	4849.085	4849.358	0.273	VVA
5172	3164440.914	1428717.694	4848.898	4849.393	0.495	VVA
5173	3197821.816	1601012.573	6082.662	6082.839	0.177	VVA
5184	3500802.904	1500699.607	4429.850	4430.105	0.255	VVA
5188	3380412.361	1537576.463	5200.108	5200.378	0.270	VVA
5064A	3257494.547	1439849.160	4809.374	4809.723	0.349	VVA
5078A	3214171.131	1413303.742	4718.957	4718.955	-0.002	VVA
4219	3220673.561	1369573.712	4689.279	4689.314	0.035	NVA

Lidar Check Point Layout

NVA
VVA



CO Sate Plane Central Zone – Counties Arapahoe, Denver (includes DIA), Douglas, Elbert, El Paso and Lincoln

Units: Meter (/US Survey Feet)

Vertical Accuracy Class tested: 10-cm

Check Points in defined project area (DPA):	292
Check Points with Lidar Coverage	292
Check Points with Lidar Coverage (NVA)	177
Check Points with Lidar Coverage (VVA)	115
Average Z Error (NVA)	0.000/0.001
Maximum Z Error (NVA)	0.119/0.391
Median Z Error (NVA)	0.001/0.005
Minimum Z Error (NVA)	-0.253/-0.829
Standard deviation of Vertical Error (NVA)	0.051/0.168
Skewness of Vertical Error (NVA)	-1.378
Kurtosis of Vertical Error (NVA)	5.938
Non-vegetated Vertical Accuracy (NVA) RMSE(z) [1]	0.051/0.167 PASS
Non-vegetated Vertical Accuracy (NVA) at the 95% Confidence Level +/- [1]	0.100/0.328 PASS
FGDC/NSSDA Vertical Accuracy at the 95% Confidence Level +/-	0.100/0.328
Non-vegetated Vertical Accuracy (NVA) RMSE(z) (DEM) [2]	0.052/0.169 PASS
Non-vegetated Vertical Accuracy (NVA) at the 95% Confidence Level (DEM) +/- [2]	0.101/0.332 PASS
Vegetated Vertical Accuracy (VVA) at the 95th Percentile (DEM) +/- [2]	0.149/0.490 PASS

This data set was tested to meet ASPRS Positional Accuracy Standard for Digital Geospatial Data (2014) for a 10-cm RMSEz Vertical Accuracy Class. Actual NVA accuracy was found to be RMSEz = 5.101cm, equating to +/- 9.998cm at the 95% confidence level. Actual VVA accuracy was found to be +/- 14.925cm at the 95th percentile.

[1] This value is calculated from TIN-based testing of the raw swath lidar point cloud data.

[2] This value is calculated from RAM-based grid testing of the classified tiled lidar data. The grid cells are sized according to the Quality Level selected, and are defined in the USGS NGP Lidar Base Specification Version 1.2 (page 15, Table 7).

Check Point Id	Check Point X	Check Point Y	Check Point Z	Z from Lidar	Z Error	NVA or VVA
4002	3510893.971	1434134.553	5464.536	5464.613	0.077	NVA
4027	3510367.946	1276682.139	4796.067	4796.178	0.111	NVA
4035	3633281.682	1399075.179	4697.966	4697.826	-0.140	NVA
4036	3463077.202	1359686.742	5480.773	5480.509	-0.264	NVA
4047	3560172.233	1360711.994	4977.201	4977.188	-0.013	NVA
4063	3513212.242	1339021.116	5056.174	5056.183	0.009	NVA
4067	3479822.315	1407092.463	5599.251	5599.300	0.049	NVA
4088	3421064.222	1348939.525	5709.615	5709.593	-0.022	NVA
4090	3496349.020	1313443.763	5060.699	5060.615	-0.084	NVA
4094	3453161.953	1438680.364	5929.211	5929.338	0.127	NVA
4095	3549640.407	1265570.748	4799.338	4799.331	-0.007	NVA
4109	3638180.860	1301937.781	4778.511	4778.335	-0.176	NVA
4110	3592277.977	1334662.682	4905.049	4905.029	-0.020	NVA
4111	3555061.732	1323631.182	5121.830	5121.931	0.101	NVA
4126	3595244.822	1437595.914	4948.343	4948.672	0.329	NVA
4127	3569703.374	1408347.684	5088.494	5088.499	0.005	NVA
4132	3423615.236	1302010.329	5474.382	5474.289	-0.093	NVA
4137	3648398.394	1428401.021	4856.086	4855.956	-0.130	NVA
4168	3575394.375	1297419.745	4722.310	4722.283	-0.027	NVA
4172	3547948.476	1429227.096	5244.681	5244.815	0.134	NVA
4173	3429956.078	1396508.516	5860.287	5860.366	0.079	NVA

4187	3542948.338	1297795.236	5092.135	5092.080	-0.055	NVA
4195	3533182.293	1392078.900	5207.519	5207.491	-0.028	NVA
4209	3634543.545	1346060.195	4626.651	4626.193	-0.458	NVA
4232	3654305.985	1291872.977	4708.892	4709.174	0.282	NVA
4235	3512365.100	1376039.669	5364.454	5364.634	0.180	NVA
4252	3656294.053	1346758.030	4720.299	4720.313	0.014	NVA
4269	3596949.081	1377253.327	4924.062	4924.014	-0.048	NVA
4274	3654677.595	1378439.087	4638.672	4638.605	-0.067	NVA
4276	3638840.513	1272817.829	4724.672	4724.552	-0.120	NVA
4002A	3511009.188	1428894.401	5450.878	5450.992	0.114	NVA
4172A	3574465.784	1424224.377	5137.739	5137.789	0.050	NVA
4235A	3512218.059	1376080.281	5365.248	5365.342	0.094	NVA
5002	3510843.181	1434126.150	5465.045	5465.242	0.197	VVA
5026	3510394.450	1276740.466	4796.509	4796.618	0.109	VVA
5034	3633282.426	1399050.621	4697.799	4697.819	0.020	VVA
5035	3463096.050	1359745.225	5481.206	5481.154	-0.052	VVA
5045	3560173.653	1360742.519	4977.552	4977.673	0.121	VVA
5061	3513302.665	1338967.704	5055.449	5055.819	0.370	VVA
5065	3479811.011	1407060.907	5598.184	5598.487	0.303	VVA
5086	3421049.560	1349032.878	5707.984	5707.992	0.008	VVA
5088	3496341.066	1313499.764	5059.514	5059.321	-0.193	VVA
5093	3549595.691	1265579.081	4799.091	4799.148	0.057	VVA
5106	3638225.004	1301950.590	4777.661	4777.698	0.037	VVA
5107	3592304.999	1334593.874	4903.497	4903.607	0.110	VVA
5108	3555017.695	1323541.646	5121.738	5121.712	-0.026	VVA
5122	3595194.417	1440339.065	4959.803	4960.195	0.392	VVA
5123	3569637.112	1408346.374	5088.595	5088.564	-0.031	VVA
5128	3423649.732	1302054.485	5473.529	5473.598	0.069	VVA
5133	3648391.595	1428373.977	4855.446	4855.554	0.108	VVA
5163	3575427.033	1297417.148	4721.962	4721.935	-0.027	VVA
5167	3547931.095	1429231.676	5244.704	5245.629	0.925	VVA
5168	3429954.485	1396481.105	5860.726	5865.527	4.801	VVA
5181	3542960.879	1297753.025	5091.138	5091.150	0.012	VVA
5190	3634600.740	1346022.725	4626.592	4626.877	0.285	VVA
5002A	3533201.119	1392041.013	5205.367	5205.454	0.087	VVA
5092A	3453194.465	1438728.413	5928.613	5928.939	0.326	VVA
5106A	3654271.310	1291919.545	4707.294	4707.667	0.373	VVA
5122A	3595275.964	1437591.302	4947.113	4947.448	0.335	VVA
4004	3454088.868	1491737.369	5807.475	5807.416	-0.059	NVA
4008	3246223.021	1595234.469	6407.382	6407.374	-0.008	NVA
4016	3537980.290	1477125.628	5395.632	5395.399	-0.233	NVA
4018	3646737.569	1580227.934	5073.094	5073.260	0.166	NVA
4019	3387940.581	1527455.394	5918.843	5918.821	-0.022	NVA
4020	3563556.321	1531452.476	5619.641	5619.586	-0.055	NVA
4025	3438012.949	1645431.408	5389.530	5389.674	0.144	NVA

4030	3584892.786	1509894.357	5247.309	5247.309	0.000	NVA
4031	3442469.747	1693144.068	5229.235	5229.183	-0.052	NVA
4033	3452531.064	1597108.249	5554.953	5554.977	0.024	NVA
4037	3323625.999	1678446.172	5483.273	5483.300	0.027	NVA
4046	3308357.377	1513377.124	6644.265	6644.254	-0.011	NVA
4048	3626540.113	1544335.029	5242.555	5242.599	0.044	NVA
4052	3334591.182	1526781.146	6015.713	6015.747	0.034	NVA
4058	3393588.919	1580308.953	5740.641	5740.760	0.119	NVA
4059	3268602.546	1570022.545	6517.418	6517.502	0.084	NVA
4071	3402438.040	1682767.054	5140.593	5140.870	0.277	NVA
4072	3576029.892	1604935.805	5344.281	5344.311	0.030	NVA
4074	3260286.923	1537483.987	6614.823	6614.903	0.080	NVA
4077	3645425.066	1627918.903	4939.820	4939.890	0.070	NVA
4086	3326748.053	1486431.774	6404.098	6403.963	-0.135	NVA
4092	3631252.663	1467833.294	5118.464	5118.405	-0.059	NVA
4102	3490309.709	1482584.162	5687.636	5687.864	0.228	NVA
4107	3603704.362	1621845.747	5176.541	5176.492	-0.049	NVA
4118	3282851.652	1675492.165	5810.759	5810.830	0.071	NVA
4128	3409816.638	1612208.596	5537.210	5537.317	0.107	NVA
4136	3363154.090	1664255.910	5332.283	5332.265	-0.018	NVA
4140	3298818.291	1599193.108	6060.959	6060.849	-0.110	NVA
4144	3589360.748	1536291.271	5448.910	5449.021	0.111	NVA
4145	3648494.196	1506058.339	5159.635	5159.684	0.049	NVA
4153	3351301.263	1629741.175	5623.437	5623.397	-0.040	NVA
4156	3255841.761	1495045.394	7113.874	7113.843	-0.031	NVA
4160	3468734.337	1656600.584	5146.148	5146.498	0.350	NVA
4169	3465246.283	1520825.708	5614.169	5614.139	-0.030	NVA
4170	3478307.152	1670071.537	5093.369	5093.355	-0.014	NVA
4180	3307882.276	1632071.840	5834.011	5834.077	0.066	NVA
4189	3277535.020	1617398.805	6159.309	6159.463	0.154	NVA
4193	3436560.388	1575443.696	5563.529	5563.453	-0.076	NVA
4212	3494243.458	1699153.330	4927.264	4927.655	0.391	NVA
4214	3405965.380	1488263.679	6033.695	6033.716	0.021	NVA
4230	3515638.809	1540040.470	5435.550	5435.907	0.357	NVA
4254	3546143.882	1502366.542	5229.766	5229.680	-0.086	NVA
4255	3584014.058	1461453.350	5039.842	5039.755	-0.087	NVA
4263	3451528.133	1536022.263	5637.489	5637.502	0.013	NVA
4266	3511114.771	1497791.420	5555.445	5555.784	0.339	NVA
4267	3588628.900	1579155.658	5346.252	5346.346	0.094	NVA
4268	3536487.643	1582812.110	5583.263	5583.101	-0.162	NVA
4272	3318577.992	1556306.985	6261.182	6261.218	0.036	NVA
4273	3418889.612	1634836.342	5261.817	5261.861	0.044	NVA
4275	3510008.269	1460869.155	5525.173	5525.263	0.090	NVA
4025A	3453424.084	1656383.069	5322.381	5322.526	0.145	NVA
4033A	3464338.634	1602594.642	5535.662	5535.490	-0.172	NVA

4086A	3342555.993	1479357.558	6441.647	6441.837	0.190	NVA
4094A	3453213.548	1449323.583	5963.896	5963.969	0.073	NVA
4156A	3255616.793	1495048.079	7112.473	7112.445	-0.028	NVA
4255A	3593154.686	1478303.538	5075.692	5075.694	0.002	NVA
4268A	3515533.353	1582459.857	5713.338	5713.124	-0.214	NVA
4273A	3426442.538	1655781.666	5379.018	5379.101	0.083	NVA
5004	3454031.013	1491712.334	5806.652	5806.684	0.032	VVA
5008	3246194.395	1595219.494	6406.529	6419.212	12.683	VVA
5015	3537999.754	1477147.264	5394.136	5394.049	-0.087	VVA
5017	3646686.176	1580172.179	5073.632	5074.202	0.570	VVA
5018	3387906.900	1527460.336	5917.341	5917.484	0.143	VVA
5019	3563578.702	1531388.664	5617.764	5618.044	0.280	VVA
5024	3437980.570	1645459.092	5388.956	5389.118	0.162	VVA
5029	3584922.387	1509826.295	5246.997	5246.994	-0.003	VVA
5030	3442524.914	1693220.393	5224.816	5225.162	0.346	VVA
5032	3452486.849	1597085.429	5552.653	5552.751	0.098	VVA
5036	3323594.125	1678482.962	5479.710	5479.877	0.167	VVA
5044	3308359.854	1513506.051	6642.513	6642.731	0.218	VVA
5046	3626593.849	1544352.907	5240.268	5240.578	0.310	VVA
5050	3334560.696	1526715.368	6019.135	6019.520	0.385	VVA
5056	3393614.178	1580316.310	5738.991	5739.833	0.842	VVA
5057	3268527.234	1570110.992	6527.743	6527.914	0.171	VVA
5069	3402425.558	1682701.831	5140.895	5141.430	0.535	VVA
5070	3576037.225	1604906.119	5343.057	5343.204	0.147	VVA
5072	3260385.076	1534719.211	6676.794	6676.959	0.165	VVA
5075	3645442.751	1627944.882	4939.984	4940.293	0.309	VVA
5084	3326829.025	1486446.384	6405.761	6405.751	-0.010	VVA
5090	3631197.462	1467729.528	5111.791	5112.074	0.283	VVA
5092	3453247.011	1449410.353	5961.419	5961.664	0.245	VVA
5099	3490348.461	1482563.176	5686.823	5687.093	0.270	VVA
5104	3603652.908	1621890.642	5174.242	5174.203	-0.039	VVA
5114	3282882.873	1675496.532	5811.373	5811.564	0.191	VVA
5124	3409796.129	1612186.848	5535.855	5536.213	0.358	VVA
5132	3363127.186	1664276.306	5330.436	5330.460	0.024	VVA
5136	3298834.225	1599170.241	6062.468	6062.473	0.005	VVA
5140	3589335.518	1536314.927	5447.614	5447.727	0.113	VVA
5141	3648260.951	1506066.174	5160.157	5160.490	0.333	VVA
5148	3351329.137	1629927.477	5620.481	5620.548	0.067	VVA
5151	3255657.323	1495011.272	7110.458	7110.608	0.150	VVA
5155	3468797.143	1656601.823	5150.246	5150.611	0.365	VVA
5164	3465318.225	1520777.084	5614.815	5615.213	0.398	VVA
5165	3478301.130	1670128.472	5093.612	5093.944	0.332	VVA
5174	3307934.402	1632065.500	5832.419	5832.512	0.093	VVA
5183	3277537.863	1617461.894	6160.047	6160.161	0.114	VVA
5187	3436554.228	1575461.833	5563.073	5563.351	0.278	VVA

5193	3515578.298	1540133.515	5435.058	5435.507	0.449	VVA
5024A	3426394.932	1655828.619	5380.153	5380.282	0.129	VVA
5090A	3593121.449	1478336.057	5074.832	5074.875	0.043	VVA
5074	3408204.027	1259124.923	5287.434	5287.491	0.057	VVA
4076	3408158.588	1259134.648	5288.464	5288.349	-0.115	NVA
4106	3230748.609	1262186.635	5448.710	5448.663	-0.047	NVA
5103	3229843.589	1262321.839	5404.848	5404.786	-0.062	VVA
4247A	3160016.327	1268624.819	6355.141	6354.878	-0.263	NVA
5115	3247489.815	1272345.509	5290.022	5290.557	0.535	VVA
4119	3247432.029	1272448.229	5293.041	5293.400	0.359	NVA
4119A	3272328.045	1272585.912	5313.392	5313.637	0.245	NVA
4028	3291928.810	1272896.719	5263.805	5264.044	0.239	NVA
5027	3291995.622	1272927.450	5263.710	5264.059	0.349	VVA
4194	3173254.820	1284683.399	6462.471	6462.561	0.090	NVA
5037A	3173287.027	1284721.547	6465.784	6473.104	7.320	VVA
4258	3365654.512	1287700.485	5665.825	5665.752	-0.073	NVA
4073	3286274.378	1297807.531	5507.404	5507.481	0.077	NVA
5071	3286304.242	1297829.277	5507.505	5507.571	0.066	VVA
4245	3226719.722	1307035.517	5522.118	5522.211	0.093	NVA
4177	3355327.571	1316144.288	5810.992	5810.832	-0.160	NVA
5171	3355300.168	1316190.187	5810.474	5810.438	-0.036	VVA
5129	3309206.519	1325699.962	5686.783	5686.837	0.054	VVA
4133	3309774.584	1325801.295	5685.159	5685.072	-0.087	NVA
5037	3191223.706	1329059.098	6357.658	6357.838	0.180	VVA
4038	3191228.757	1329101.277	6359.075	6359.093	0.018	NVA
4075	3390579.616	1332484.726	5871.009	5870.870	-0.139	NVA
5073	3390580.456	1332512.370	5871.028	5871.278	0.250	VVA
5176	3226679.310	1334887.509	5802.009	5802.082	0.073	VVA
4182	3226765.003	1334901.859	5801.622	5801.659	0.037	NVA
4271	3340819.105	1352708.907	6022.442	6022.214	-0.228	NVA
4123A	3364539.388	1353164.422	6049.296	6049.018	-0.278	NVA
5119	3364570.769	1353196.847	6049.000	6048.868	-0.132	VVA
4123	3365166.565	1353203.917	6049.686	6049.503	-0.183	NVA
4097	3158367.801	1366603.271	8878.273	8878.083	-0.190	NVA
5095	3158347.001	1366748.337	8878.667	8878.634	-0.033	VVA
4097A	3168281.385	1367808.085	6911.239	6911.160	-0.079	NVA
5178A	3292039.383	1367854.108	6208.793	6207.570	-1.223	VVA
4203	3292014.664	1367888.979	6209.397	6208.568	-0.829	NVA
4121	3229032.815	1375162.084	6428.777	6428.765	-0.012	NVA
5117	3229057.619	1375197.410	6430.870	6431.109	0.239	VVA
5120	3374341.040	1376270.339	6325.434	6325.312	-0.122	VVA
4124	3374342.077	1376295.182	6325.483	6325.303	-0.180	NVA
4014	3336153.274	1381193.365	6118.328	6117.722	-0.606	NVA
5013	3336151.062	1381256.197	6119.230	6118.643	-0.587	VVA
4231	3252335.398	1395118.313	6900.534	6900.597	0.063	NVA

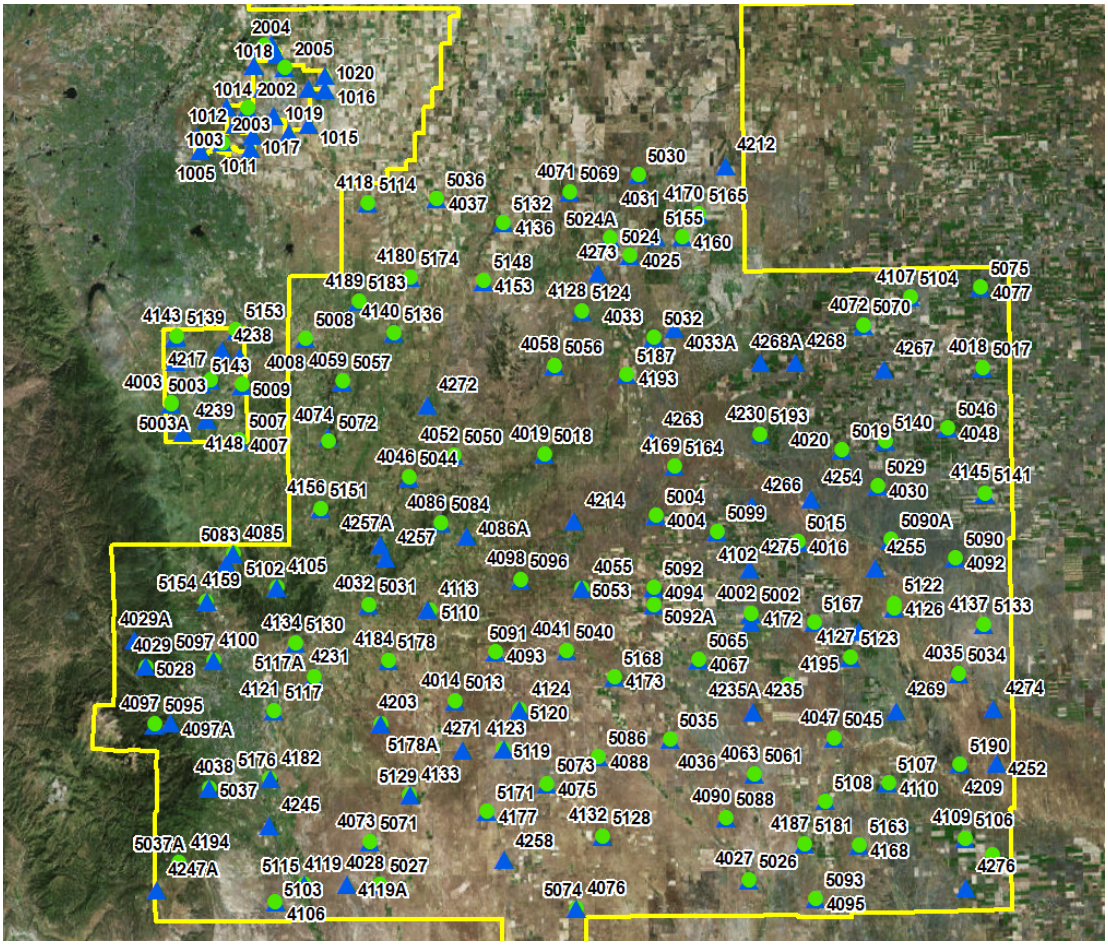
5117A	3252357.721	1395186.787	6898.264	6898.504	0.240	VVA
5028	3153373.311	1400831.965	9204.860	9204.877	0.017	VVA
4029	3153264.748	1400862.536	9214.457	9214.238	-0.219	NVA
5097	3193317.943	1404484.378	6317.238	6317.039	-0.199	VVA
4100	3193367.916	1404556.634	6318.504	6318.466	-0.038	NVA
4184	3296239.433	1405324.292	6480.332	6479.538	-0.794	NVA
5178	3296163.334	1405347.732	6479.318	6479.308	-0.010	VVA
4093	3359575.534	1410937.377	6713.008	6712.981	-0.027	NVA
5091	3359623.435	1410951.061	6712.250	6712.375	0.125	VVA
4041	3401437.696	1411810.845	6163.305	6163.303	-0.002	NVA
5040	3401452.637	1411837.680	6161.418	6161.610	0.192	VVA
4134	3241765.218	1415160.366	7177.630	7177.608	-0.022	NVA
5130	3241758.407	1415225.958	7179.854	7182.334	2.480	VVA
4029A	3146588.799	1416328.305	9213.299	9213.303	0.004	NVA
5110	3320942.862	1435143.301	6704.419	6706.868	2.449	VVA
4113	3319695.201	1435503.667	6699.744	6699.523	-0.221	NVA
4032	3284826.696	1438071.208	6856.561	6856.427	-0.134	NVA
5031	3284763.575	1438096.767	6856.738	6856.887	0.149	VVA
5154	3188671.859	1439740.003	6771.929	6772.081	0.152	VVA
4159	3188930.138	1439744.166	6782.467	6782.604	0.137	NVA
5102	3230300.818	1448354.279	7490.375	7490.415	0.040	VVA
4105	3230253.654	1448392.383	7490.021	7489.909	-0.112	NVA
5053	3410798.762	1448443.214	6357.881	6358.181	0.300	VVA
4055	3410822.898	1448461.190	6358.485	6358.514	0.029	NVA
4098	3373996.751	1453445.878	6396.926	6396.953	0.027	NVA
5096	3374044.992	1453496.680	6394.702	6394.846	0.144	VVA
4085A	3200243.035	1462226.747	7440.087	7440.137	0.050	NVA
4257	3294698.900	1465592.395	6637.454	6637.416	-0.038	NVA
5083	3204082.305	1467710.831	7261.823	7262.064	0.241	VVA
4085	3204103.764	1467813.625	7259.080	7259.030	-0.050	NVA
4257A	3291566.747	1473779.735	6635.482	6635.547	0.065	NVA
4003	3167266.172	1556437.360	6476.759	6476.882	0.123	NVA
4007	3207106.512	1535308.437	6579.459	6579.443	-0.016	NVA
4009	3208847.604	1567369.545	6096.891	6097.092	0.201	NVA
4012	3169432.265	1581304.704	6039.332	6039.523	0.191	NVA
4143	3169543.916	1595868.771	6434.981	6435.218	0.237	NVA
4147	3185005.431	1567791.631	6334.456	6334.562	0.106	NVA
4148	3188266.951	1547229.560	6525.190	6525.009	-0.181	NVA
4158	3205361.957	1599940.251	5915.083	5915.024	-0.059	NVA
4175	3207638.720	1584320.043	6014.808	6014.718	-0.090	NVA
4217	3190367.167	1570498.378	6477.359	6477.621	0.262	NVA
4238	3197264.020	1587904.543	6239.207	6239.303	0.096	NVA
4239	3174502.493	1539761.233	6399.249	6399.190	-0.059	NVA
4143A	3169899.074	1596052.062	6428.560	6428.758	0.198	NVA
4148A	3188318.215	1547227.961	6524.774	6524.512	-0.262	NVA

4175A	3207602.880	1584309.219	6015.661	6015.598	-0.063	NVA
4238A	3197242.801	1587935.235	6240.516	6240.517	0.001	NVA
5003	3167246.745	1556442.314	6475.729	6475.826	0.097	VVA
5007	3207076.095	1535342.993	6584.298	6584.459	0.161	VVA
5009	3208883.728	1568008.435	6089.371	6090.833	1.462	VVA
5139	3169931.517	1596043.110	6429.098	6429.295	0.197	VVA
5143	3185014.199	1567743.555	6335.991	6336.231	0.240	VVA
5153	3204940.234	1600091.853	5934.470	5934.579	0.109	VVA
5003A	3167197.943	1556602.619	6467.717	6467.873	0.156	VVA
5143A	3190425.609	1570521.214	6476.129	6480.914	4.785	VVA
1001	3199129.101	1732198.001	5281.827	5281.835	0.008	NVA
1002	3247201.477	1743093.240	5283.871	5283.667	-0.204	NVA
1003	3204410.880	1721751.781	5348.480	5348.576	0.096	NVA
1004	3236242.141	1716704.541	5470.081	5470.214	0.133	NVA
1005	3183895.331	1706462.665	5326.256	5326.367	0.111	NVA
1006	3214325.512	1715514.745	5435.954	5436.023	0.069	NVA
1007	3228467.772	1763462.022	5257.335	5257.257	-0.078	NVA
1008	3220351.576	1742990.980	5244.681	5244.532	-0.149	NVA
1009	3211260.669	1731628.009	5288.808	5288.924	0.116	NVA
1010	3225126.685	1769477.590	5170.807	5170.812	0.005	NVA
1011	3196775.426	1711190.384	5355.665	5355.787	0.122	NVA
1012	3182064.652	1714237.510	5279.255	5279.235	-0.020	NVA
1013	3221004.425	1768143.813	5171.089	5171.089	0.000	NVA
1014	3214889.780	1756591.030	5251.344	5251.331	-0.013	NVA
1015	3247317.596	1721838.636	5388.277	5388.324	0.047	NVA
1016	3257299.901	1743060.345	5342.765	5342.753	-0.012	NVA
1017	3213150.732	1707821.630	5443.890	5443.790	-0.100	NVA
1018	3233252.706	1755331.452	5311.049	5310.961	-0.088	NVA
1019	3226673.462	1727263.687	5405.373	5405.444	0.071	NVA
1020	3257201.417	1750982.034	5312.942	5312.977	0.035	NVA
1003A	3204483.365	1721744.484	5349.097	5349.197	0.100	NVA
1004A	3236268.898	1716649.145	5471.321	5471.498	0.177	NVA
1005A	3183900.233	1706406.628	5325.491	5325.579	0.088	NVA
1006A	3214367.105	1715514.568	5436.039	5436.070	0.031	NVA
1012A	3182008.646	1714415.155	5277.542	5277.514	-0.028	NVA
1013A	3221003.632	1768206.363	5170.104	5170.120	0.016	NVA
1014A	3215006.699	1756589.764	5252.056	5252.128	0.072	NVA
1019A	3226826.232	1727248.263	5404.231	5404.367	0.136	NVA
2001	3221990.984	1742940.994	5226.089	5226.414	0.325	VVA
2002	3211229.943	1731489.298	5292.516	5292.487	-0.029	VVA
2003	3196695.481	1711090.259	5354.530	5354.600	0.070	VVA
2004	3220908.592	1768225.762	5168.018	5168.840	0.822	VVA
2005	3233454.104	1755267.198	5305.954	5305.898	-0.056	VVA
2001A	3221927.423	1743019.317	5227.073	5227.349	0.276	VVA
2002A	3211217.234	1731443.717	5293.293	5293.591	0.298	VVA

2003A	3196865.951	1711107.196	5356.072	5356.219	0.147	VVA

Lidar Check Point Layout

▲ NVA
● VVA



CO Sate Plane South Zone – Counties Pueblo, Otero, Las Animas and Huerfano

Units: Meter (/US Survey Feet)

Vertical Accuracy Class tested: 10-cm

Check Points in defined project area (DPA):	201
Check Points with Lidar Coverage	201
Check Points with Lidar Coverage (NVA)	127
Check Points with Lidar Coverage (VVA)	74
Average Z Error (NVA)	-0.010/-0.031
Maximum Z Error (NVA)	0.117/0.383
Median Z Error (NVA)	-0.008/-0.026
Minimum Z Error (NVA)	-0.120/-0.394
Standard deviation of Vertical Error (NVA)	0.048/0.157
Skewness of Vertical Error (NVA)	0.084
Kurtosis of Vertical Error (NVA)	-0.406
Non-vegetated Vertical Accuracy (NVA) RMSE(z) [1]	0.049/0.160 PASS
Non-vegetated Vertical Accuracy (NVA) at the 95% Confidence Level +/- [1]	0.095/0.313 PASS
FGDC/NSSDA Vertical Accuracy at the 95% Confidence Level +/-	0.095/0.313
Non-vegetated Vertical Accuracy (NVA) RMSE(z) (DEM) [2]	0.049/0.160 PASS
Non-vegetated Vertical Accuracy (NVA) at the 95% Confidence Level (DEM) +/- [2]	0.096/0.314 PASS
Vegetated Vertical Accuracy (VVA) at the 95th Percentile (DEM) +/- [2]	0.194/0.636 PASS

This data set was tested to meet ASPRS Positional Accuracy Standard for Digital Geospatial Data (2014) for a 10-cm RMSEz Vertical Accuracy Class. Actual NVA accuracy was found to be RMSEz = 4.870cm, equating to +/- 9.544cm at the 95% confidence level. Actual VVA accuracy was found to be +/- 19.376cm at the 95th percentile.

[1] This value is calculated from TIN-based testing of the raw swath lidar point cloud data.

[2] This value is calculated from RAM-based grid testing of the classified tiled lidar data. The grid cells are sized according to the Quality Level selected, and are defined in the USGS NGP Lidar Base Specification Version 1.2 (page 15, Table 7).

Check Point Id	Check Point X	Check Point Y	Check Point Z	Z from Lidar	Z Error	NVA or VVA
4279	3123840.195	1148691.470	8446.286	8446.033	-0.253	NVA
4281	3210866.738	1164893.012	6638.343	6638.066	-0.277	NVA
4282	3142715.018	1144289.897	7851.559	7851.367	-0.192	NVA
4283	3251520.468	1273205.839	6304.259	6304.329	0.070	NVA
4284	3276960.876	1304449.921	6226.454	6226.088	-0.366	NVA
4285	3331563.477	1122927.846	7557.885	7557.978	0.093	NVA
4286	3027564.634	1369788.264	8883.135	8882.829	-0.306	NVA
4287	3270873.501	1177430.922	6266.713	6266.902	0.189	NVA
4288	3131094.672	1195101.150	8667.981	8667.667	-0.314	NVA
4289	3300607.545	1278009.744	5880.480	5880.086	-0.394	NVA
4290	3071582.862	1397524.929	7447.708	7447.682	-0.026	NVA
4291	3187112.413	1212767.317	7663.079	7663.214	0.135	NVA
4294	3266293.763	1222312.657	6472.569	6472.505	-0.064	NVA
4295	3167325.994	1168049.350	7654.420	7654.224	-0.196	NVA
4296	3307077.314	1327050.775	6049.742	6049.948	0.206	NVA
4297	3088809.021	1410140.916	7098.444	7098.596	0.152	NVA
4299	3317259.910	1206266.747	5901.504	5901.736	0.232	NVA
4300	3236471.842	1153502.543	6812.985	6812.769	-0.216	NVA
4301	3197097.751	1331517.245	6501.155	6501.100	-0.055	NVA
4302	3321817.489	1239118.885	5746.360	5746.698	0.338	NVA

4304	3047952.762	1442584.555	8056.555	8056.537	-0.018	NVA
4308	3319601.116	1359063.118	5818.564	5818.568	0.004	NVA
4309	3230242.394	1363625.584	5986.569	5986.621	0.052	NVA
4310	3216742.255	1200172.113	7181.633	7181.633	0.000	NVA
4312	3236481.641	1307468.260	6380.410	6380.645	0.235	NVA
4313	3062239.732	1420560.331	7527.242	7527.331	0.089	NVA
4314	3318482.716	1177015.212	6478.662	6478.673	0.011	NVA
4315	3178899.600	1240801.810	7890.161	7890.126	-0.035	NVA
4316	3284772.170	1144705.511	6738.084	6738.204	0.120	NVA
4317	3111177.141	1447970.821	9060.215	9060.089	-0.126	NVA
4319	3179280.503	1299400.581	7141.557	7141.747	0.190	NVA
4321	3306160.510	1347284.096	5869.188	5869.256	0.068	NVA
4322	3076159.886	1452921.564	8666.941	8666.936	-0.005	NVA
4323	3255448.941	1154605.236	6512.323	6512.334	0.011	NVA
4325	3219168.133	1338390.904	6205.345	6205.329	-0.016	NVA
4279A	3134274.629	1152481.087	8249.511	8249.320	-0.191	NVA
4285A	3331378.472	1122863.475	7550.402	7550.557	0.155	NVA
4287A	3285559.997	1174338.759	6334.771	6335.154	0.383	NVA
4291A	3168725.745	1228727.851	8131.119	8131.012	-0.107	NVA
4295A	3167120.919	1146251.630	7372.489	7372.512	0.023	NVA
4302A	3321847.850	1256568.742	5926.579	5926.627	0.048	NVA
4317A	3054902.677	1431003.718	7733.692	7733.774	0.082	NVA
4322A	3049181.105	1454037.533	8343.071	8343.014	-0.057	NVA
4323A	3294339.601	1130147.178	7181.688	7181.741	0.053	NVA
5195	3123735.963	1148662.495	8445.255	8445.034	-0.221	VVA
5197	3210939.921	1164863.931	6632.106	6632.123	0.017	VVA
5198	3142723.113	1144343.760	7852.635	7852.571	-0.064	VVA
5199	3251269.128	1273515.275	6310.299	6310.733	0.434	VVA
5200	3276975.086	1304433.689	6225.703	6225.812	0.109	VVA
5201	3331457.766	1122854.221	7551.901	7552.559	0.658	VVA
5202	3027635.877	1369877.104	8880.468	8880.550	0.082	VVA
5203	3270986.861	1177398.252	6263.035	6270.303	7.268	VVA
5204	3131020.086	1195069.426	8662.227	8662.335	0.108	VVA
5205	3300464.750	1278767.756	5882.934	5882.795	-0.139	VVA
5206	3071529.453	1397617.764	7454.194	7454.717	0.523	VVA
5207	3187130.002	1212829.704	7662.242	7662.547	0.305	VVA
5210	3266326.337	1222329.266	6470.893	6471.133	0.240	VVA
5211	3167267.817	1168036.864	7653.131	7653.247	0.116	VVA
5212	3307049.796	1327069.475	6050.601	6051.227	0.626	VVA
5213	3088854.622	1410306.977	7107.187	7107.410	0.223	VVA
5215	3317269.709	1206038.304	5903.666	5903.965	0.299	VVA
5216	3236548.894	1153481.757	6814.041	6813.852	-0.189	VVA
5217	3197090.089	1331482.635	6500.961	6503.831	2.870	VVA
5218	3321877.322	1239066.549	5749.723	5750.048	0.325	VVA
5220	3047963.946	1442559.038	8056.441	8056.495	0.054	VVA

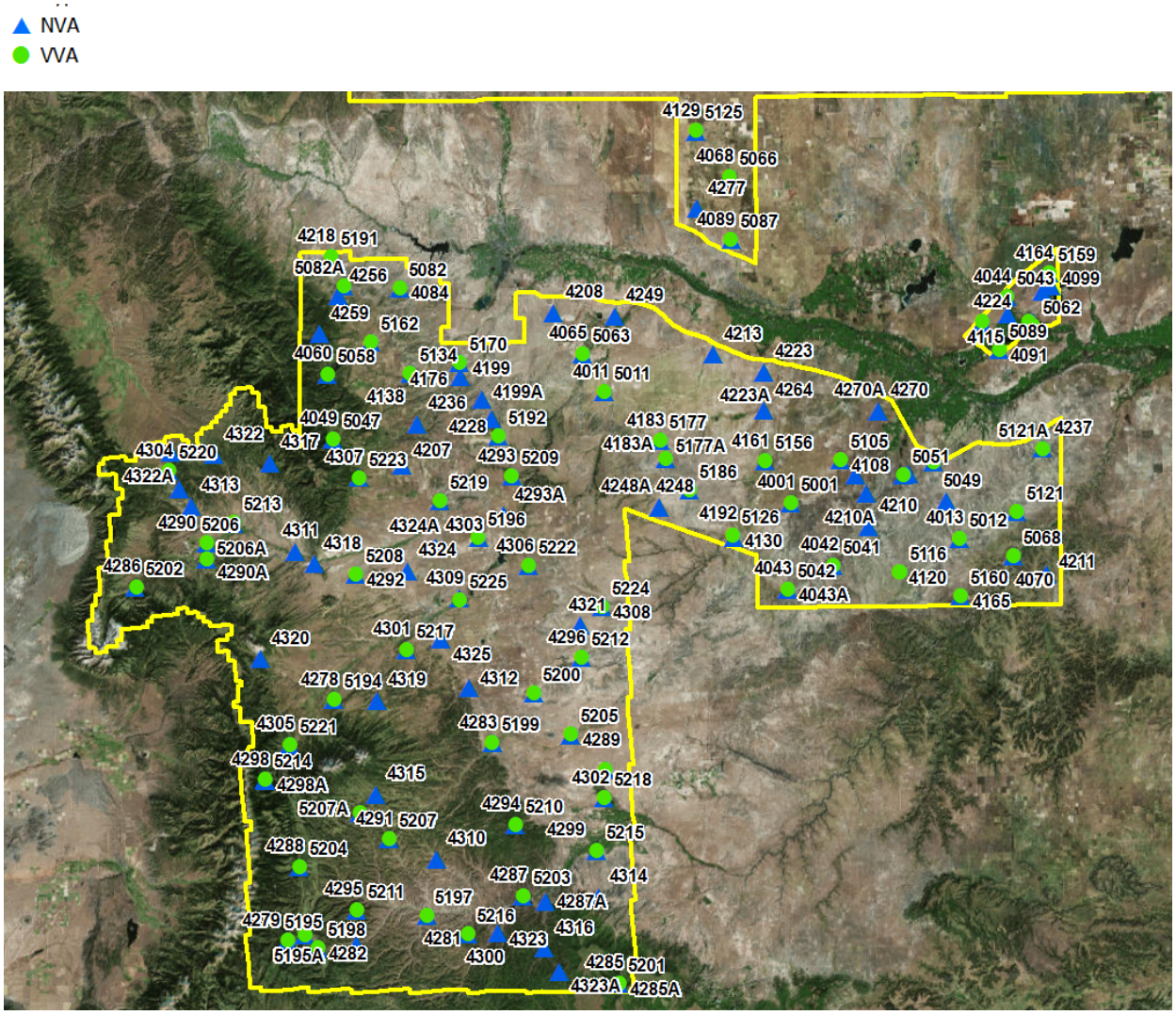
5224	3319575.012	1359164.996	5818.578	5818.741	0.163	VVA
5225	3230320.590	1362496.545	5955.746	5956.023	0.277	VVA
5195A	3134299.895	1152403.875	8246.916	8246.961	0.045	VVA
5207A	3168723.567	1228755.754	8131.923	8132.922	0.999	VVA
5218A	3321839.094	1256613.523	5928.102	5928.302	0.200	VVA
4001	3437445.632	1424580.774	4607.232	4607.291	0.059	NVA
4011	3320239.325	1493523.864	4920.302	4920.195	-0.107	NVA
4013	3543270.399	1402854.359	4759.659	4759.529	-0.130	NVA
4042	3464463.760	1385486.937	4686.221	4686.038	-0.183	NVA
4043	3435720.341	1370629.295	4914.475	4914.259	-0.216	NVA
4044	3572211.080	1554405.443	4176.940	4177.084	0.144	NVA
4045	3588500.890	1538804.518	4114.224	4114.088	-0.136	NVA
4049	3150579.755	1463055.024	7511.182	7511.242	0.060	NVA
4051	3526544.372	1450829.378	4322.600	4322.363	-0.237	NVA
4053	3507569.464	1442457.582	4340.129	4340.027	-0.102	NVA
4060	3146981.247	1503691.706	6652.693	6652.709	0.016	NVA
4064	3588579.151	1536162.180	4131.658	4131.635	-0.023	NVA
4065	3306547.964	1517228.324	4854.196	4854.220	0.024	NVA
4068	3397963.240	1628871.579	4954.885	4954.772	-0.113	NVA
4070	3577068.658	1391917.671	4247.245	4247.117	-0.128	NVA
4084	3191708.333	1558153.878	5206.079	5206.215	0.136	NVA
4089	3399636.200	1589090.654	4748.987	4748.832	-0.155	NVA
4091	3567552.183	1521245.289	4149.391	4149.290	-0.101	NVA
4099	3599689.171	1561563.793	4117.357	4117.406	0.049	NVA
4108	3468468.883	1451449.296	4444.702	4444.561	-0.141	NVA
4115	3572852.714	1543838.243	4174.378	4174.389	0.011	NVA
4125	3578829.207	1420085.790	4385.385	4385.036	-0.349	NVA
4129	3376545.523	1657128.684	5230.764	5230.864	0.100	NVA
4130	3401921.070	1402528.677	4826.650	4826.914	0.264	NVA
4138	3198714.620	1504436.997	5507.482	5507.688	0.206	NVA
4161	3420988.349	1450566.674	4612.937	4612.902	-0.035	NVA
4164	3598341.201	1569433.607	4152.374	4152.319	-0.055	NVA
4165	3544269.031	1366814.789	4648.019	4647.864	-0.155	NVA
4167	3174014.624	1523754.892	5880.503	5880.636	0.133	NVA
4176	3229351.015	1511343.545	5414.340	5414.258	-0.082	NVA
4183	3355291.633	1463196.313	4932.379	4932.347	-0.032	NVA
4192	3373675.558	1432530.836	4988.044	4987.826	-0.218	NVA
4199	3230327.943	1502720.720	5231.443	5231.516	0.073	NVA
4207	3193660.194	1446799.026	6100.985	6101.067	0.082	NVA
4208	3288299.465	1542822.454	4871.076	4871.262	0.186	NVA
4210	3486491.377	1410238.226	4573.839	4573.620	-0.219	NVA
4211	3598338.673	1380654.361	4331.054	4330.928	-0.126	NVA
4213	3388249.471	1517478.972	4514.295	4514.195	-0.100	NVA
4218	3148370.176	1577473.504	5417.962	5418.051	0.089	NVA
4223	3420054.956	1506471.415	4477.183	4477.019	-0.164	NVA

4224	3556729.260	1538434.982	4272.462	4272.356	-0.106	NVA
4228	3254271.958	1465517.060	5606.787	5607.083	0.296	NVA
4236	3202962.090	1472886.567	5800.713	5800.879	0.166	NVA
4237	3595292.223	1459539.540	4470.463	4470.448	-0.015	NVA
4248	3354939.477	1421635.416	5249.133	5249.002	-0.131	NVA
4249	3326771.491	1541165.509	4671.500	4671.356	-0.144	NVA
4256	3153249.397	1552614.586	5897.485	5897.675	0.190	NVA
4259	3141796.164	1528953.702	6656.926	6656.596	-0.330	NVA
4264	3420361.565	1482288.714	4486.763	4486.512	-0.251	NVA
4270	3492400.839	1482611.121	4412.209	4412.175	-0.034	NVA
4277	3377457.632	1608612.113	4897.208	4897.025	-0.183	NVA
4280	3241861.901	1401857.267	6000.191	6000.043	-0.148	NVA
4293	3263131.937	1440262.522	5892.721	5892.691	-0.030	NVA
4303	3217595.728	1424487.911	5689.385	5689.462	0.077	NVA
4306	3273617.411	1384211.431	6003.190	6003.231	0.041	NVA
4307	3167084.056	1439024.580	7000.652	7000.468	-0.184	NVA
4324	3197617.581	1380817.763	6146.887	6146.766	-0.121	NVA
4013A	3535141.889	1426325.299	4511.766	4511.666	-0.100	NVA
4043A	3435737.212	1370572.077	4913.104	4912.986	-0.118	NVA
4044A	3572178.794	1554383.627	4174.418	4174.557	0.139	NVA
4045A	3585843.778	1538755.626	4127.082	4126.865	-0.217	NVA
4053A	3510905.263	1442938.318	4380.595	4380.397	-0.198	NVA
4099A	3594194.616	1558252.448	4119.956	4119.994	0.038	NVA
4108A	3478351.620	1442508.216	4395.834	4395.653	-0.181	NVA
4183A	3359050.005	1452021.594	4869.964	4869.997	0.033	NVA
4199A	3243790.328	1488532.436	5549.822	5549.875	0.053	NVA
4210A	3484580.943	1430549.159	4446.448	4446.187	-0.261	NVA
4223A	3420008.183	1506468.059	4475.119	4474.968	-0.151	NVA
4228A	3249752.578	1476211.047	5743.476	5743.548	0.072	NVA
4248A	3354950.810	1421615.001	5249.793	5249.768	-0.025	NVA
4256A	3156458.084	1558716.131	5935.155	5935.164	0.009	NVA
4270A	3492406.322	1482636.077	4412.636	4412.556	-0.080	NVA
4293A	3257563.979	1415966.968	5871.310	5871.464	0.154	NVA
4324A	3215161.143	1395835.190	5957.472	5957.602	0.130	NVA
4120	3505715.758	1381727.445	4875.564	4875.299	-0.265	VVA
5001	3437389.916	1424532.107	4607.091	4607.197	0.106	VVA
5011	3320280.136	1493512.758	4919.669	4919.791	0.122	VVA
5012	3543176.063	1402863.726	4757.116	4757.140	0.024	VVA
5041	3464471.700	1385419.001	4685.027	4685.089	0.062	VVA
5042	3435704.335	1370578.906	4910.505	4910.894	0.389	VVA
5043	3572180.396	1554348.892	4172.547	4173.356	0.809	VVA
5047	3150540.021	1463038.322	7511.543	7512.225	0.682	VVA
5049	3526615.669	1450852.702	4320.608	4320.793	0.185	VVA
5051	3507575.455	1442430.653	4340.116	4340.053	-0.063	VVA
5058	3146930.933	1503687.465	6647.270	6647.880	0.610	VVA

5062	3588509.132	1536148.215	4131.813	4131.867	0.054	VVA
5063	3306588.520	1517220.663	4852.736	4852.942	0.206	VVA
5066	3397901.024	1628883.672	4954.806	4954.930	0.124	VVA
5068	3577046.732	1391929.845	4246.881	4246.987	0.106	VVA
5082	3191765.324	1558161.675	5205.377	5205.514	0.137	VVA
5087	3398990.998	1589109.496	4752.336	4752.421	0.085	VVA
5089	3567482.712	1521253.553	4148.765	4148.844	0.079	VVA
5105	3468404.306	1451435.343	4447.987	4447.880	-0.107	VVA
5116	3505813.048	1381700.837	4876.742	4877.086	0.344	VVA
5121	3578818.995	1420114.628	4384.440	4384.183	-0.257	VVA
5125	3376506.798	1657275.758	5227.545	5227.642	0.097	VVA
5126	3400957.053	1403716.754	4818.626	4825.309	6.683	VVA
5134	3198678.308	1504480.014	5507.643	5511.505	3.862	VVA
5156	3421113.224	1450690.606	4608.272	4608.511	0.239	VVA
5159	3598286.720	1569440.844	4152.328	4152.477	0.149	VVA
5160	3544025.839	1366918.749	4647.399	4647.782	0.383	VVA
5162	3174066.704	1523684.337	5876.189	5876.440	0.251	VVA
5170	3229419.001	1511341.755	5412.525	5412.700	0.175	VVA
5177	3355200.259	1463139.197	4934.236	4934.218	-0.018	VVA
5186	3373788.644	1432615.994	4982.034	4982.067	0.033	VVA
5191	3148377.646	1577436.807	5416.623	5416.910	0.287	VVA
5192	3254265.697	1465621.351	5603.637	5604.059	0.422	VVA
5196	3241791.443	1401926.635	5995.815	5995.807	-0.008	VVA
5209	3262479.840	1440459.680	5879.204	5879.235	0.031	VVA
5219	3217554.675	1424507.344	5689.221	5689.280	0.059	VVA
5222	3273687.731	1384262.738	6001.766	6001.934	0.168	VVA
5223	3167096.949	1438952.018	7002.059	7004.108	2.049	VVA
5050A	3585855.335	1538794.357	4125.881	4125.906	0.025	VVA
5082A	3156489.054	1558727.817	5933.758	5933.565	-0.193	VVA
5121A	3595252.381	1459305.417	4470.923	4471.303	0.380	VVA
5177A	3359007.430	1452048.491	4871.519	4871.752	0.233	VVA
5189A	3556736.554	1538857.791	4276.757	4276.872	0.115	VVA
4278	3152063.275	1299595.476	7294.743	7294.673	-0.070	NVA
4292	3164904.249	1378364.905	6495.105	6495.307	0.202	NVA
4298	3108830.786	1249452.855	9336.697	9336.450	-0.247	NVA
4305	3124629.295	1271346.325	8006.477	8006.464	-0.013	NVA
4311	3126940.475	1392601.393	6678.254	6678.258	0.004	NVA
4318	3139387.983	1384803.939	6574.163	6574.289	0.126	NVA
4320	3105609.502	1325294.364	8124.475	8124.316	-0.159	NVA
4290A	3071799.449	1387606.334	7610.985	7610.802	-0.183	NVA
4298A	3109529.896	1248891.796	9235.543	9235.450	-0.093	NVA
5194	3152029.701	1299668.654	7290.523	7290.690	0.167	VVA
5208	3165512.023	1378521.217	6474.111	6474.382	0.271	VVA
5214	3108820.892	1249484.455	9339.811	9340.087	0.276	VVA
5221	3124605.490	1271217.300	8006.398	8006.683	0.285	VVA

5206A	3071785.166	1387571.935	7611.002	7610.986	-0.016	VVA

Lidar Check Point Layout



Hydro-flattening Breakline Collection

Hydro- flattening breaklines are captured per the USGS National Geospatial Program Lidar Base Specification Version 1.2. Final hydro-flattened breaklines features are appropriately turned into polygons (flat elevations) and polylines (decreasing by elevation) and are used to reclassify ground points in water to Water (Class 9). The lidar points around the breaklines are reclassified to Ignored Ground (Class 10) based on predetermined buffer.

Linear hydrographic features

To collect hydrographic features, Merrick uses a methodology that directly interacts with the lidar bare-earth data to collect drainage breaklines. To determine the alignment of a drainageway, the technician first views the area as a TIN of bare-earth points using a color ramp to depict varying elevations. In areas of extremely flat terrain, the technician may need to determine the direction of flow based on measuring lidar bare-earth points at each end of the drain. The operator will then use the color ramped TIN to digitize the drainage in 2D with the

elevation being attributed directly from the bare-earth LAS data. MARS® software has the capability of "flipping" views between the elevation TIN, Intensity and imagery, as necessary, to further assist in the determination of the drainage. All drainage breaklines are collected in a downhill direction. For each point collected, the software uses a five-foot (5') search radius to identify the lowest point within that proximity. Within each radius, if a bare-earth point is not found that is lower than the previous point, the elevation for subsequent point remains the same as the previous point. This forces the drain to always flow in a downhill direction. Waterbodies that are embedded along a drainageway are validated to ensure consistency with the downhill direction of flow.

This methodology may differ from those of other vendors in that Merrick relies on the bare-earth data to attribute breakline elevations. As a result of our methodology, there is no mismatch between lidar bare-earth data and breaklines that might otherwise be collected in stereo 3D as a separate process. This is particularly important in densely vegetated areas where breaklines collected in 3D from imagery will most likely not match (either horizontally or vertically), the more reliable lidar bare-earth data.

Merrick has the capability of "draping" 2D breaklines to a bare-earth elevation model to attribute the "z" as opposed to the forced downhill attribution methodology described above. However, the problem with this process is the "pooling "effect or depressions along the drainageway caused by a lack of consistent penetration in densely vegetated areas.

Criteria of linear hydrographic breaklines are as follows:

- Linear hydrographic features (e.g., visible streams, rivers, shorelines, canals, etc.) greater than one hundred feet (100') wide will be captured as a double-lined polygon
    - linear hydrographic features must be flat and level bank-to-bank (perpendicular to the apparent flow centerline) with gradient following the immediately surrounding terrain
    - water surface edge must be at or just below the immediately surrounding terrain
    - streams should break at road crossings (e.g., culverts), and streams and rivers should not break at bridges

Waterbodies

Waterbodies are digitized from the color ramped TIN, similar to the process described above. The elevation attribute is determined as the technician collects the hydro feature by using the lowest bare-earth point within the polygon.

Criteria of waterbody breaklines are as follows:

- Waterbodies (e.g., lakes, ponds, reservoirs) greater than two (2) acres in size are surrounded by a water breakline (i.e., closed polygon)
    - waterbodies must be flat and level with a single elevation for every bank vertex
    - water surface edge must be at or just below the immediately surrounding terrain
    - long impoundments, such as reservoirs or inlets, whose water surface elevations drop when moving downstream should be treated as rivers

Color cycles provide a clear indication of where breaklines are to be collected, especially hydrographic breaklines. Figure 3 demonstrates no breaklines, where Figure 4 is breakline enforced displayed using color cycles within the MARS® software environment.

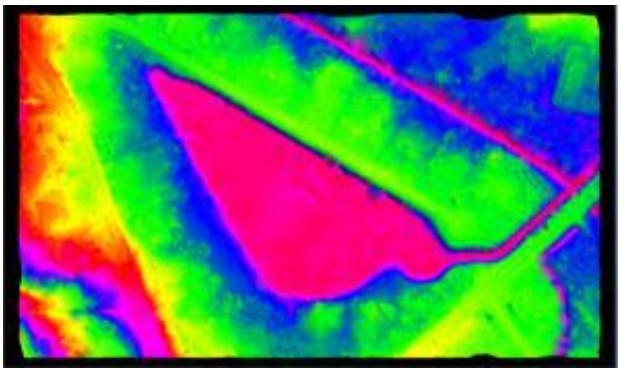


Figure 3

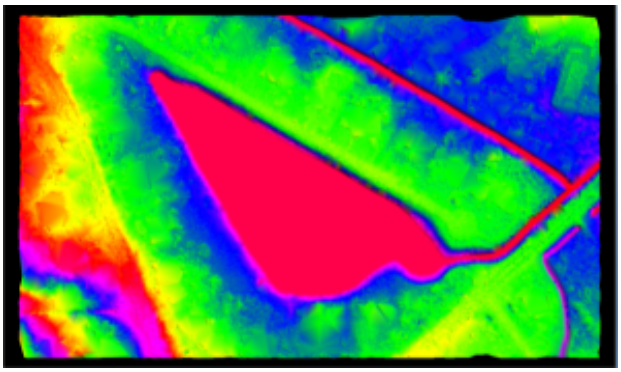


Figure 4

Bare-Earth Surface (DEM)

Merrick exports the hydro-flattening breakline enforced Class 2 (ground) lidar points to a one-meter (1m) cell size, 32-bit format using MARS®, the DEMs are exported to the project tiling scheme. Projection information is applied that reflects the project requirements.

Intensity Images

Merrick exports all lidar points to a one-meter (1m) cell size 16-bit client desired format using MARS®, the intensity images are exported to the project tiling scheme and / or project-wide boundary. Projection information is applied that reflects the project requirements.

List of Deliverables

Classified LiDAR point cloud

- Fully compliant ASPRS LAS 1.4, point record format 6
- By tile
- Intensity values normalized to 16-bit
- FGDC-compliant metadata

Hydro-flattened breaklines

- Project-wide Esri feature class(es) or shapefile(s) for insertion into file geodatabase
- FGDC-compliant metadata

Bare-earth Digital Elevation Model (DEM)

- QL2 - Two-foot (2') cell size 32-bit DEM in GeoTIFF format
- QL1 - One-foot (1') cell size 32-bit DEM in GeoTIFF format
- Bare-earth (hydro-flattened)
- By tile
- FGDC-compliant metadata

Intensity Images

- QL2 - 2' cell size 8-bit 256-color gray scale in GeoTIFF format
- QL1 - 1' cell size 8-bit 256-color gray scale in GeoTIFF format

- By tile
- FGDC-compliant metadata

Control

- Survey report
- Esri shapefile format
- FGDC-compliant metadata

FGDC-compliant metadata (project level)

Detailed Lidar Mapping / Project Report

Appendix 1

Following is a more detailed lidar calibration workflow description.

LIDAR CALIBRATION AND BLOCK LAS OUTPUT

Note: All figures represented on the following pages are for general illustration purposes, and are not examples derived from the project.

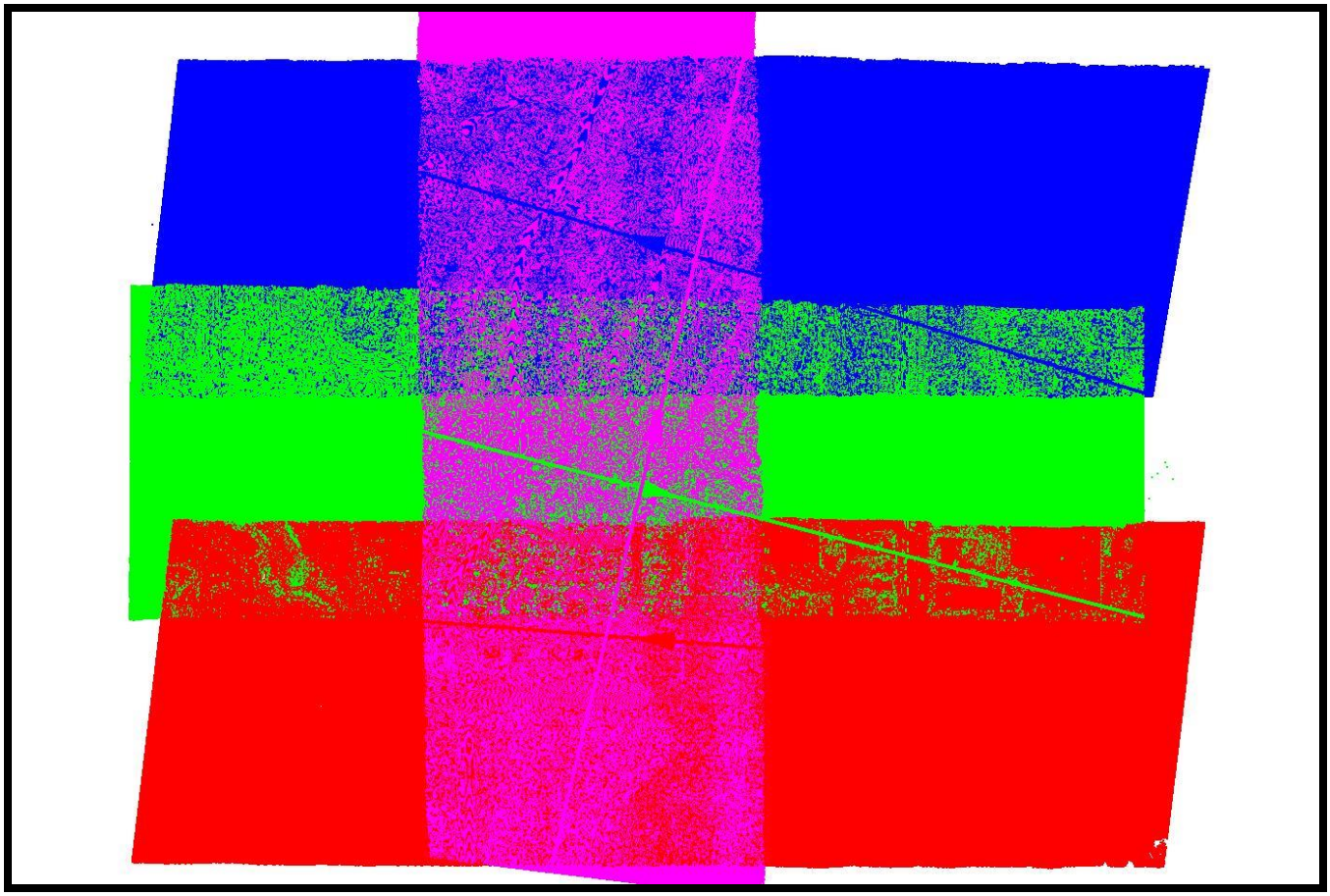
Initial Processing

Lidar data is output as LAS point data using Optech's Lidar Mapping Suite (LMS). LMS matches ground and roof planes plus roof lines to self-calibrate and correct system biases. These biases occur within the hardware of the laser scanning systems, within the Inertial Measurement Unit (IMU) and because of environmental conditions which affect the refraction of light. The systemic biases that are corrected for include scale, roll, pitch, and heading.

In addition to the self-calibration mode LMS runs a "production" mode which applies the self-calibration parameters and then analyzes each individual flight line and applies small adjustments to each line to tie overlapping lidar points even more tightly together.

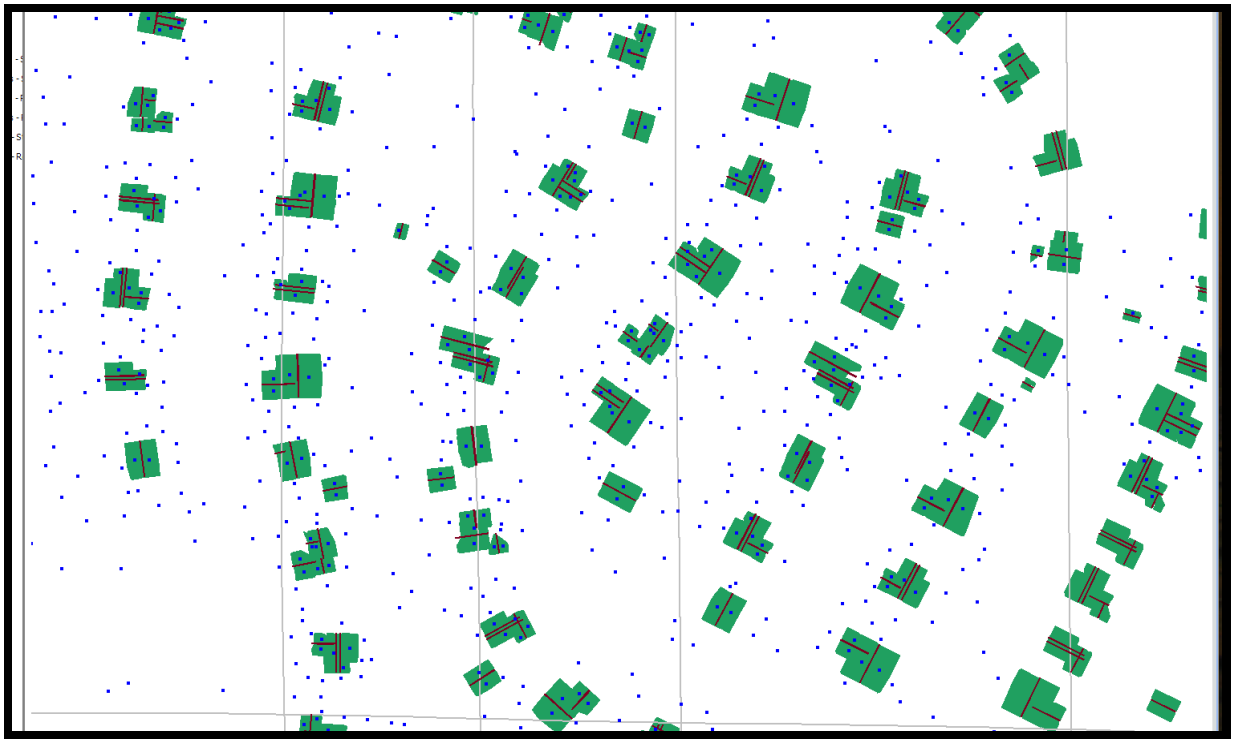
Boresight Self-Calibration Processing Procedures

An LMS boresight calibration is performed on an as-needed basis to correct scale, roll, pitch and heading biases. A minimum of three overlapping flights are flown in opposing directions with one cross flight.



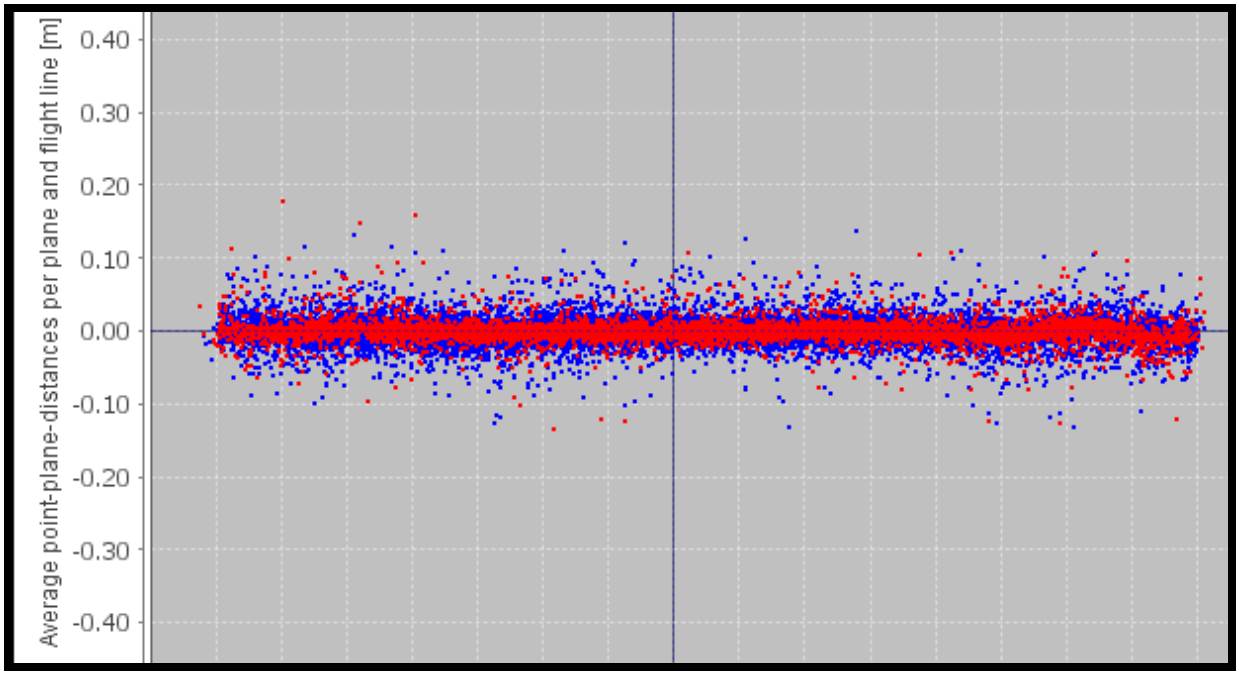
The Boresighting module frees scan angle scale, scan angle lag, XYZ boresight corrections and elevation position corrections while locking scan angle offset and XY position corrections.

The picked calibration site will have a good distribution of buildings for the self-calibration software to match ground planes, roof planes and roof lines.

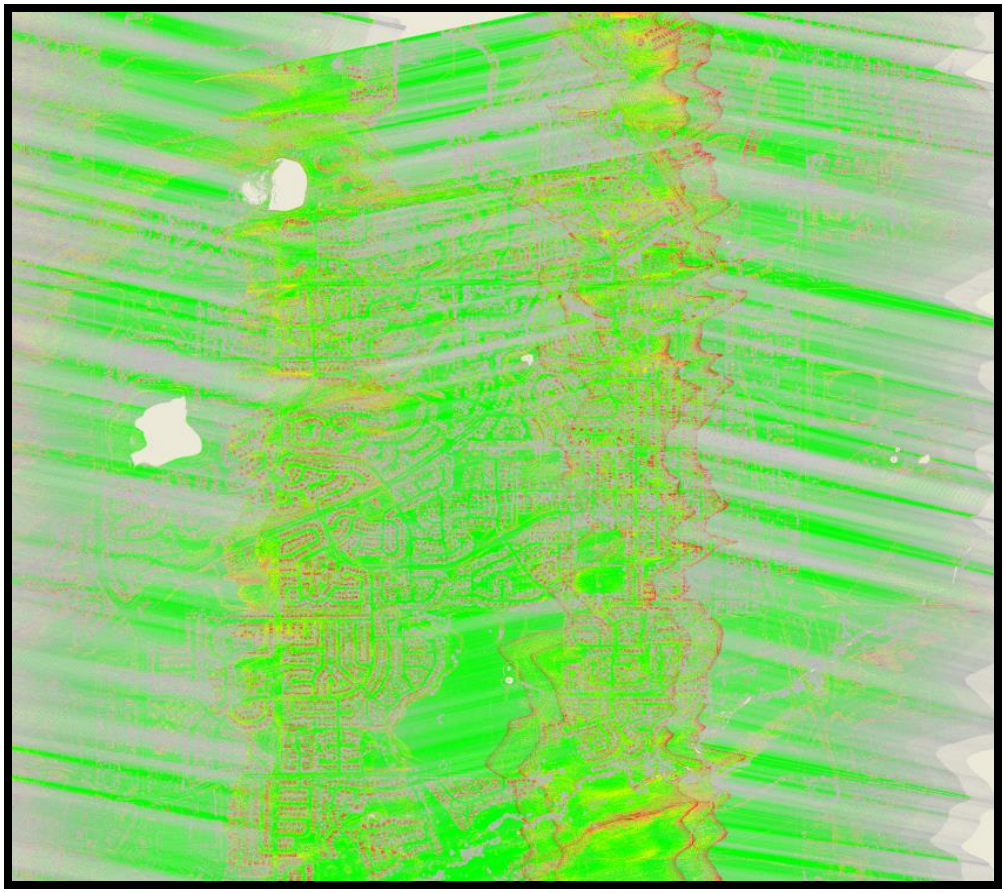


At the conclusion of the self-calibration run the data is quality checked with LMS plots

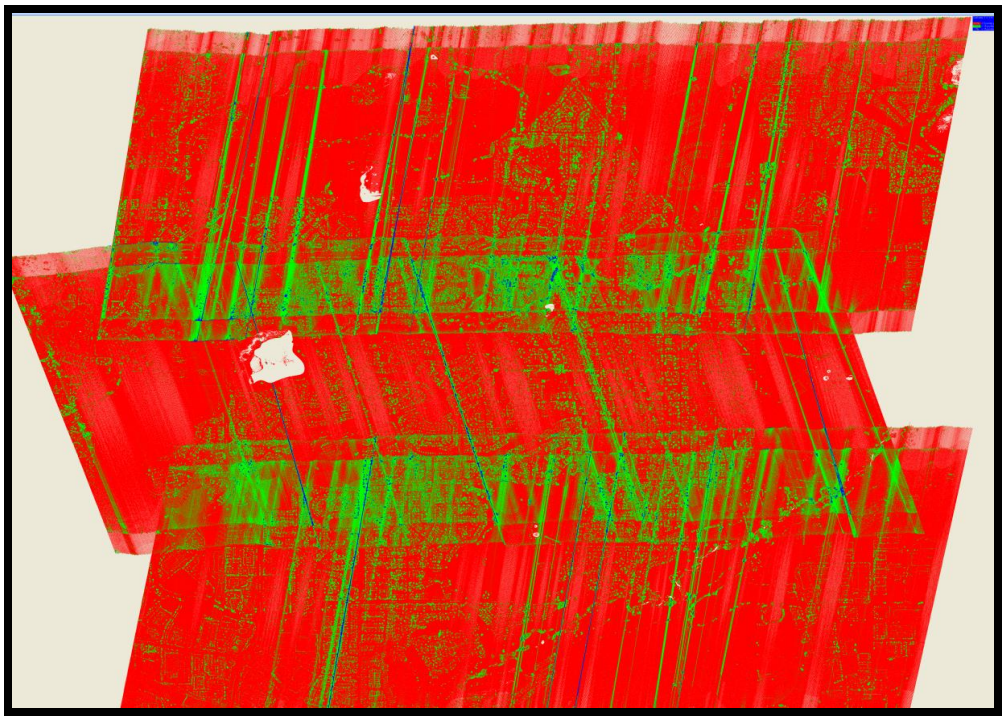
Plot of plane vertical distances from datum plane.



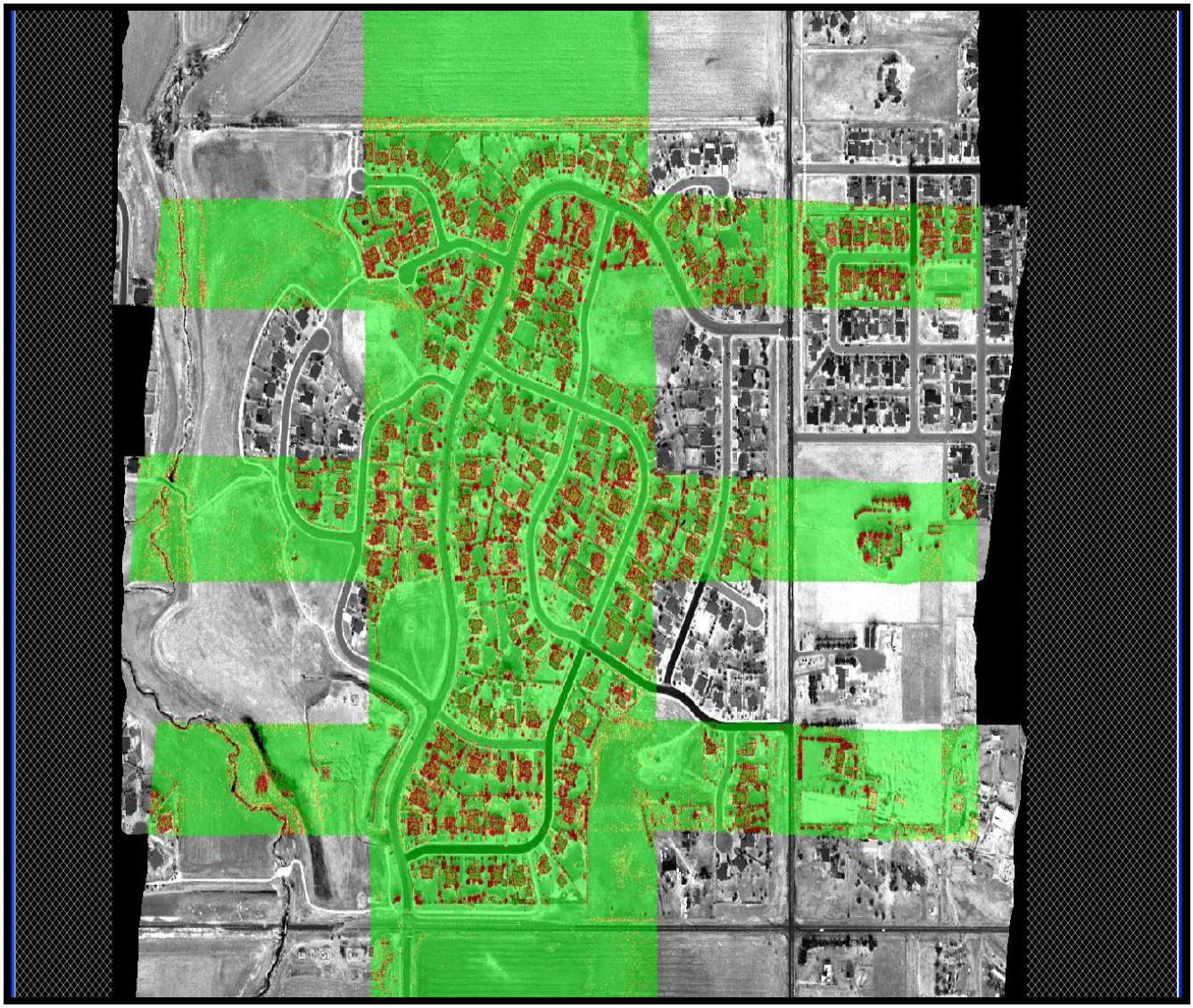
Plot of height differenced between flight lines. (Green=less than 5cm).



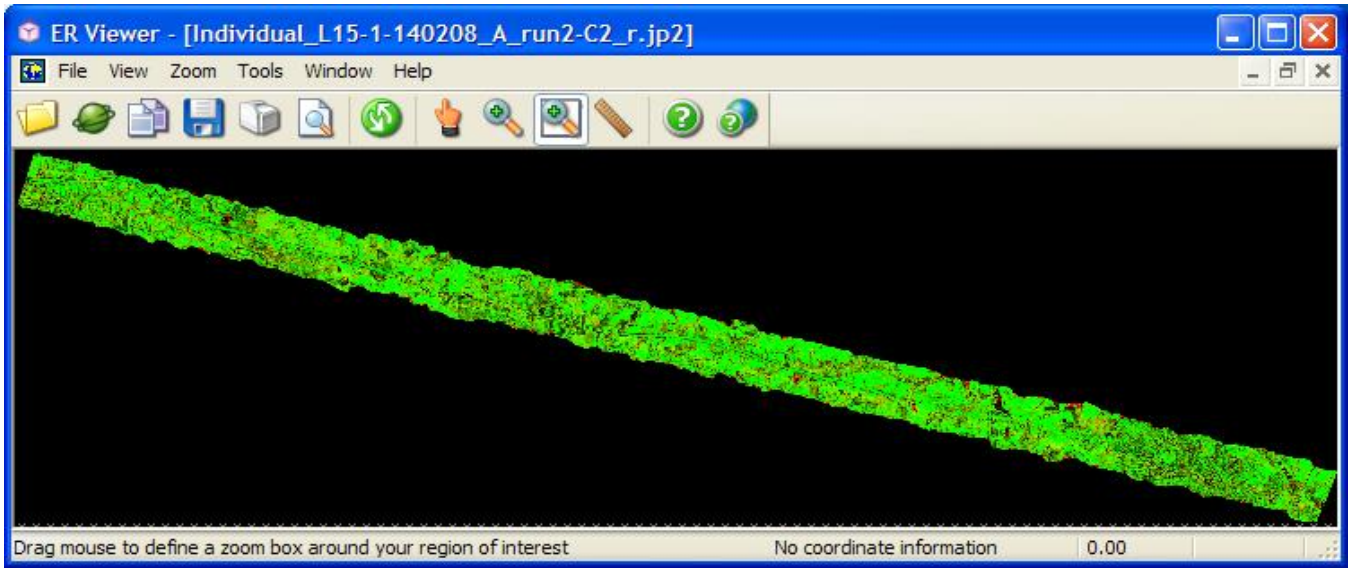
Plot of point densities. (Red=5-9 points per cell, green 10+ points per cell).



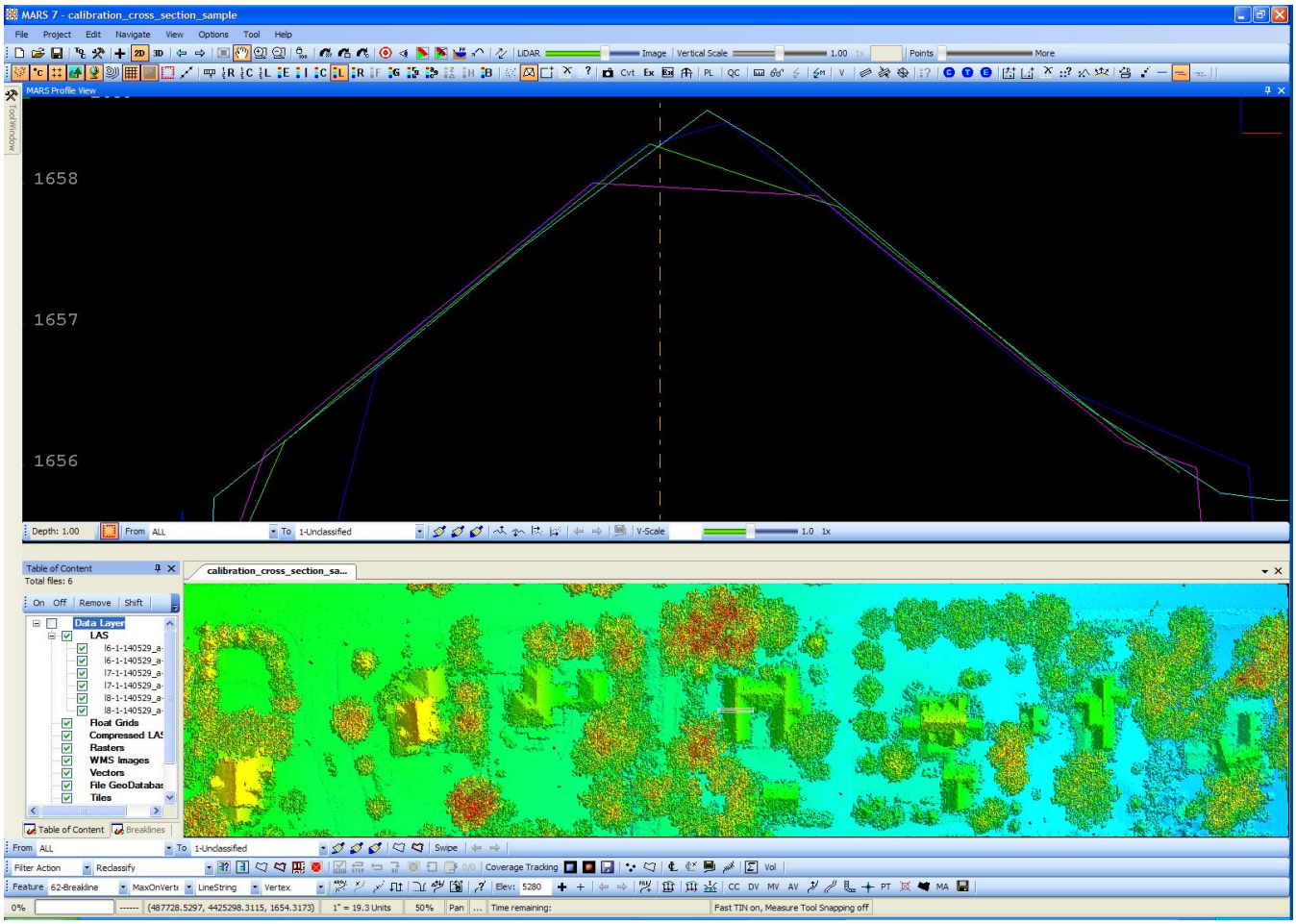
A Flight Line Separation Raster image is generated in Merrick Advanced Remote Sensing Software (MARS®), in this example ground returns from multiple flight lines that are fitting within 3 centimeters are colored green.



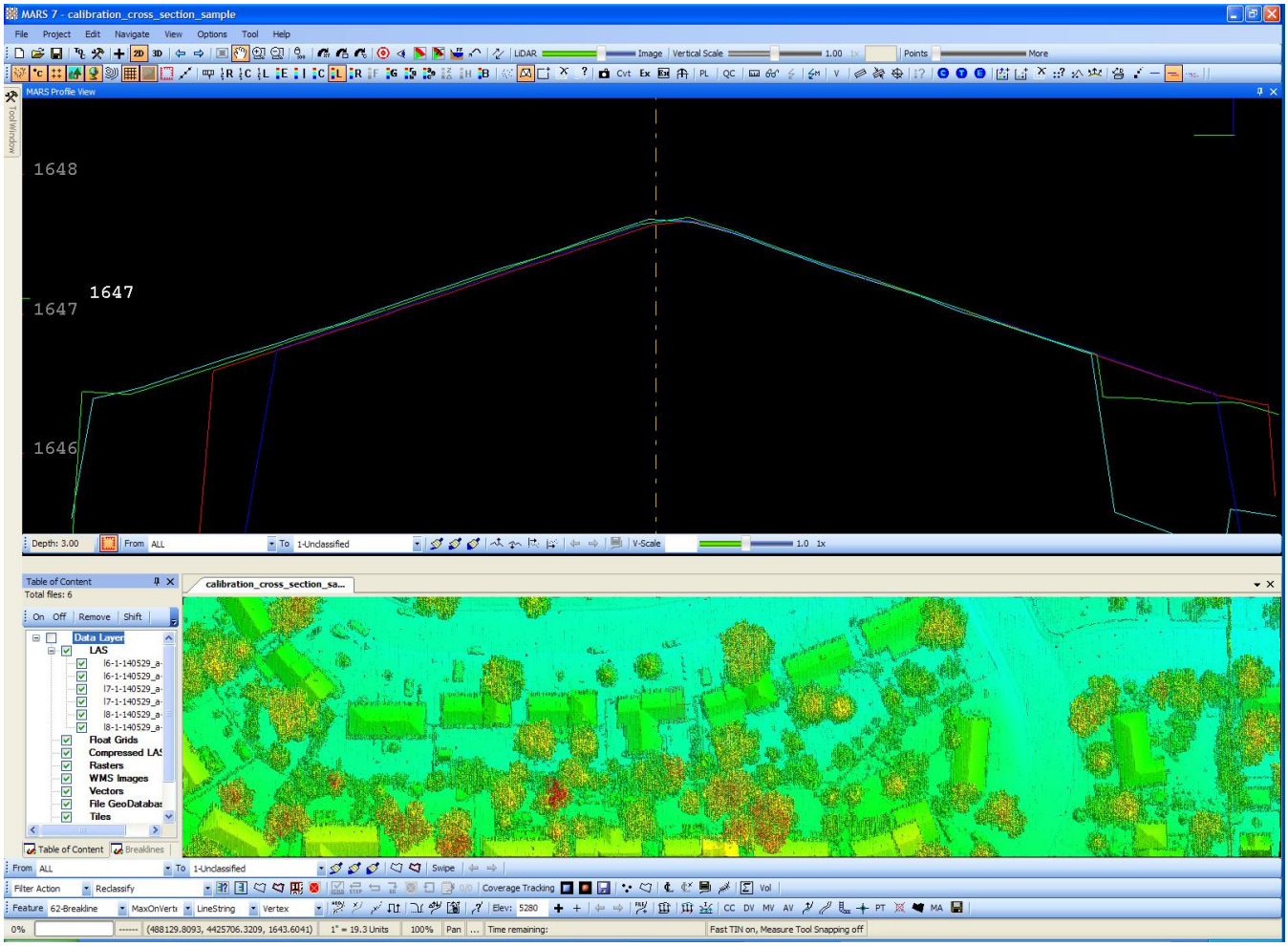
MARS® tests for internal relative vertical accuracy using inbound and outbound scan values. Again, Green is showing inbound and outbound scan data fitting to 3 centimeters.



Building cross sections are checked for good alignment. Pitch and heading are checked on roof planes parallel to the flight direction.



Roll and scale are checked on roof planes perpendicular to the flight direction.

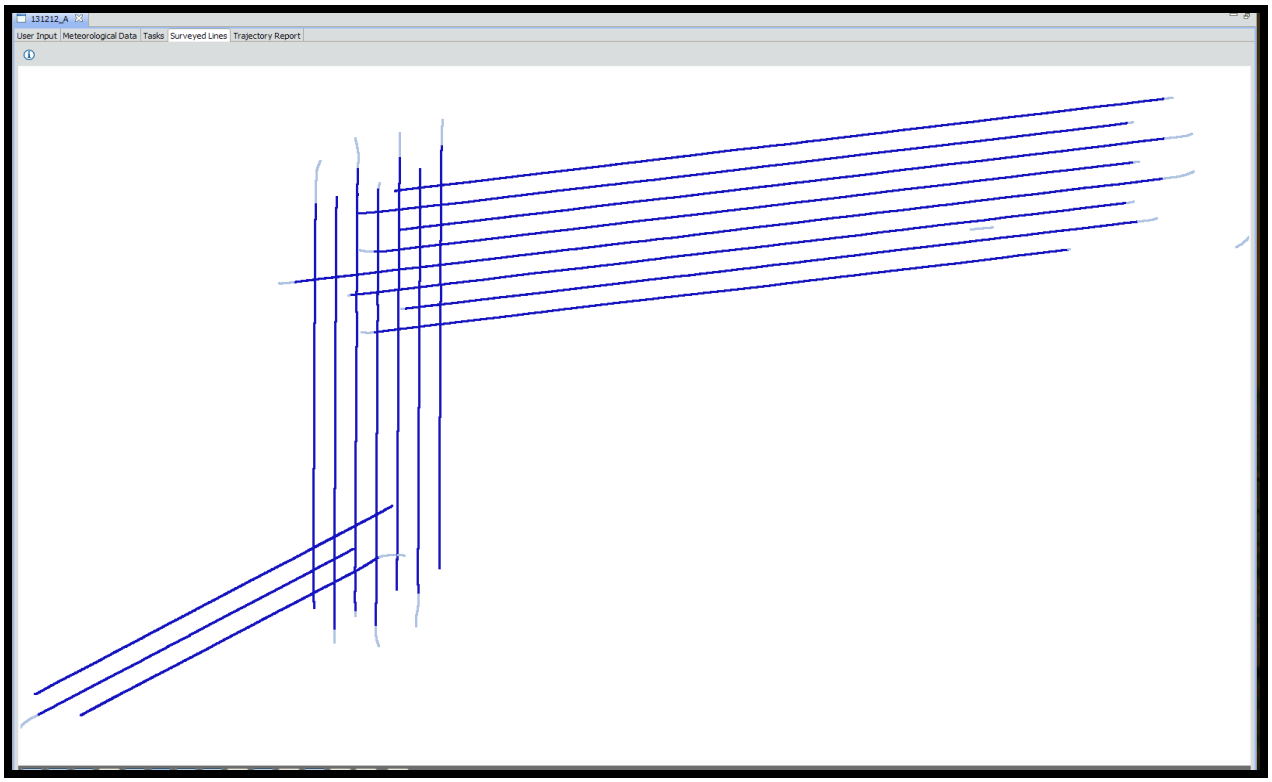


The LMS program outputs a "LCP" file with all the correction parameters. The calibration process may be run several times until the boresight adjustments are acceptable. When the boresight solution is acceptable the LCP file adjustments are saved and also applied to subsequent projects. Each new project is again analyzed and when the adjustment biases show too much drift a new boresight calibration is run. The LCP file may hold calibration tolerances for several projects.

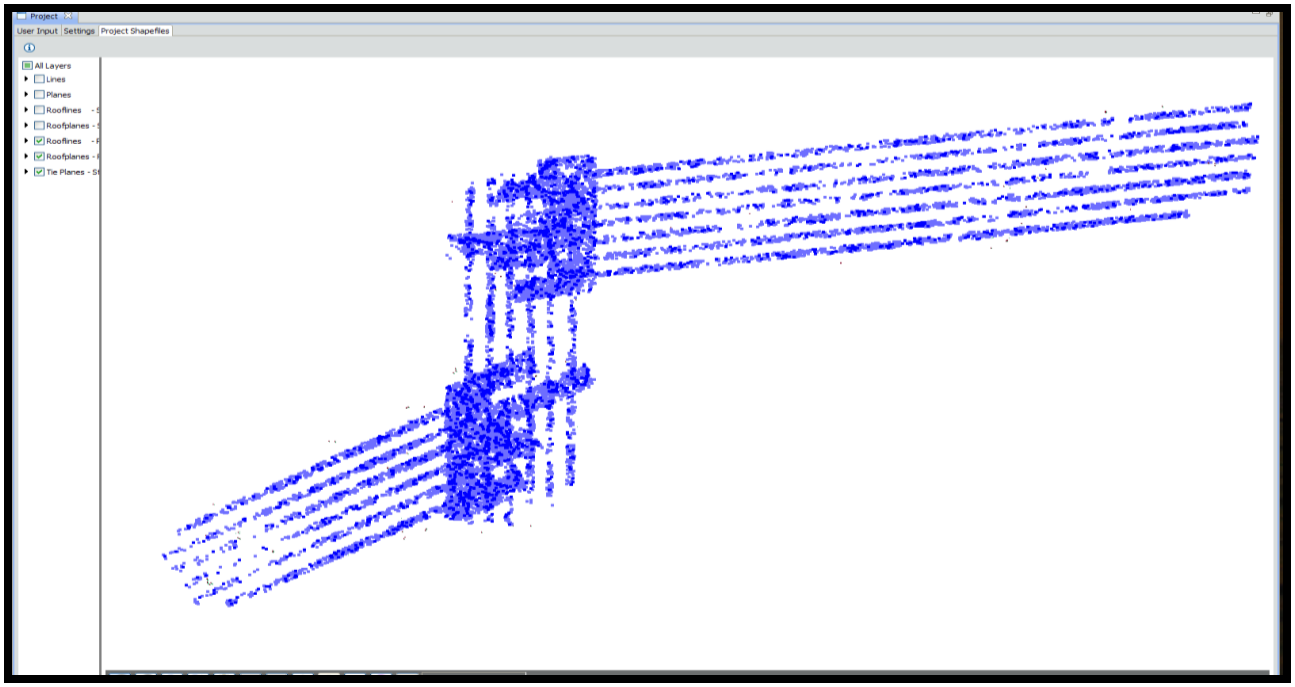
Block LAS Production Processing Procedures

The LMS production mode is run on each flight line to further tie the final lidar LAS flight line files tightly together. Production settings allow scan angle scale, scan angle lag to float and allows elevation to move slightly during flight line to flight line comparison thus further tying flight lines together. A cross flight with locked elevation data is used for controlling flight line elevations.

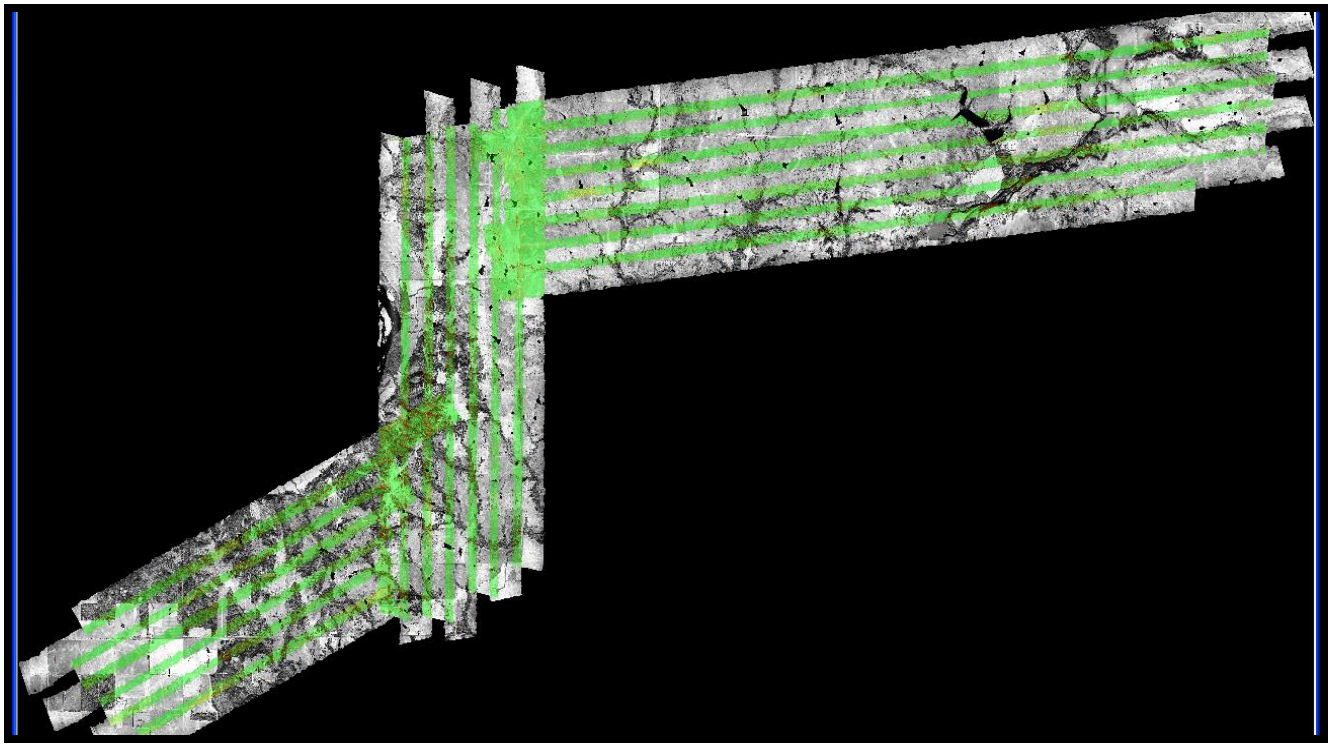
A block of data is selected to process with LMS production settings. Data collected during turns at the ends of flight lines is deselected (light blue lines).



As in self-calibration the LMS production program analyses ground, roof planes and rooflines. One cross flight is locked in elevation and all other lines are adjusted to it. Unlike the calibration site the distribution of roof planes is usually much less dense. Here matched ground tie planes are blue.

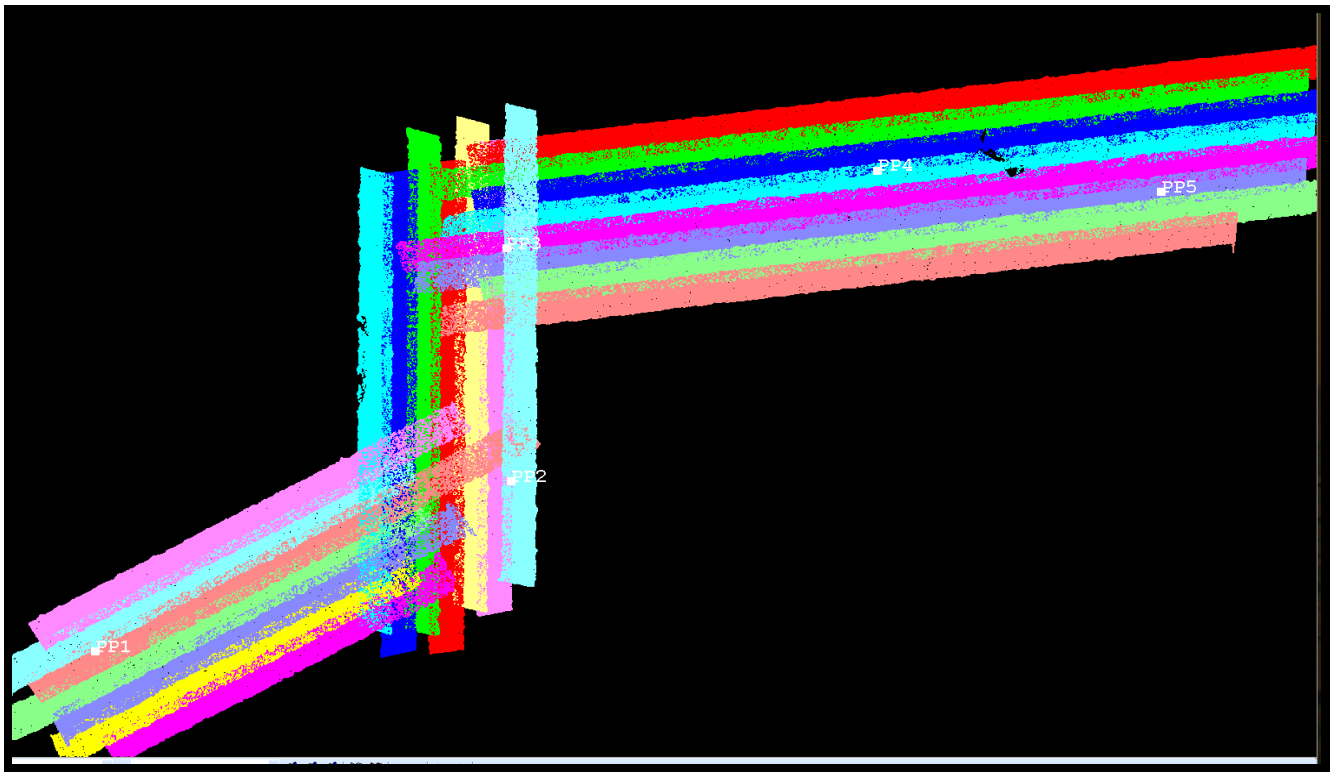


The same quality control outputs used to check self-calibrations are available to analyze the production run. Output plots are again available in LMS and cross sections plus a Flight Line Separation Raster are generated in MARS® to check coverage and quality.



Correcting the Final Elevation

After all the lines are tied together a ground control network is imported into MARS®. The ground control network may be pre-existing or collected by a licensed surveyor.



The next step is to match the ground control elevations to the lidar data set. A control report is run and the data set is shifted slightly to zero out the average elevation error and points checked for quality.

The final step before boresighted, leveled LAS files are ready for filtering is to run the MARS® QC Module on the block data. The Boresighted lidar QC Report outputs individual reports on Point Density, Nominal Pulse Spacing, Data Voids, Spatial Distribution, Scan Angles, Control Report, Flight Line Separation, Flight Line Overlap, Buffered Boundary, LAS Formats, Datums and Coordinates.
These reports are checked with the required specifications in the Project Management Plan.

Appendix 2

Following is a more detailed Survey Report

CWCB EASTERN COLORADO
GROUND CONTROL SURVEY REPORT

JOB NO. 65219844
DATE JULY 2018

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EASTERN COLORADO
LIDAR MAPPING PROJECT
GROUND CONTROL SURVEY REPORT

I. INTRODUCTION

This report summarizes the results of a ground control survey requested by the Colorado Water Conservation Board (CWCB). The survey was conducted in Eastern Colorado for LIDAR (Light Detection and Ranging) mapping. The ground control field observations were performed by Merrick & Company commencing on June 25, 2018 through the completion date of July 25, 2018. Merrick also surveyed approximately 850 checkpoints to verify confidence levels of the LIDAR datasets.

The project area for this report includes all or parts of 13 counties in Eastern Colorado being 18,349 square miles in area. Merrick used Trimble RTX (A satellite-based service using worldwide continuously operating reference stations) verified with NGS (National Geodetic Survey) ground stations to establish horizontal and vertical control constraints for the LIDAR acquisition. RTX coordinates are observed in WGS84(G1762). WGS stands for World Geodetic System and the G1762 is a reference to the GPS week. Coordinate values are converted into NAD83(2011) and NAVD88 values using the HTDP (Horizontal Time Dependent Positioning) program version 3.2.5 published by the National Geodetic Survey.

II. HORIZONTAL AND VERTICAL CONTROL

The project coordinate system is UTM ZONE 13 NORTH based on NAD-83, adjustment of 2011. The geodetic network was tied to CORS (Continuously Operating Reference Stations) via RTX and NGS ground stations. The following existing NGS control points were used as horizontal checks to control this survey.

NGS Primary Horizontal Control Checkpoints		
	RECORD POSITION NAD-83 (2011)	
PT# (NGS NAME)	**LATITUDE**	**LONGITUDE**
K 23	39°25’41.15083"N	104°54'30.69608"W
A 393	39°11'13.63025"N	104°51'03.16011"W
CS 105	38°53'29.36263"N	104°49'31.35173"W
CARLSON	39°07'47.20957"N	104°28'19.88273"W
COHEN	39°17'46.42298"N	103°51'21.42230"W
WILLOW	39°14'24.37619"N	103°47'21.95753"W
D 395	38°38'58.30103"N	104°41'44.60115"W
L 395	38°58'58.53372"N	104°48'44.63304"W
E 25	39°12'52.58962"N	103°36'07.51947"W
B 257	39°07'39.83731"N	103°27'05.56935"W
LA JUNTA	37°58'46.82984"N	103°34'51.81459"W
C 432	38°00'46.21591"N	103°31'43.63794"W
K 432	38°00'14.71684"N	103°28'00.95454"W
B 4	38°21'13.33932"N	104°37'11.84487"W
W 430	38°18'06.19491"N	104°39'46.57528"W
D 22	37°45'39.85430"N	104°44'32.06443"W
P 21	37°22'10.58033"N	104°35'37.89972"W
H 66	37°13'39.94491"N	105°02'52.48039"W
Y 85	37°15'51.18330"N	103°21'21.12530"W
T 418	40°19'15.23579"N	103°31'47.61357"W
F 391	40°18'41.72027"N	104°44'31.90938"W
DVX H	39°49'18.77515"N	104°45'11.07989"W
K 262	40°42'21.49198"N	104°46'47.89761"W
A 259	39°44'13.82904"N	104°17'54.40079"W

NGS Primary Control Horizontal NAD-83 (2011) Comparisons: Record Versus Measured		
PT# (NGS NAME)	**NORTH (meters)**	**EAST (meters)**
K 23	+0.066	+0.042
A 393	+0.062	+0.044
CS 105	+0.045	+0.016
CARLSON	+0.029	+0.030
COHEN	+0.068	+0.028
WILLOW	+0.047	-0.007
D 395	+0.039	+0.021
L 395	+0.070	+0.014
E 25	+0.023	+0.046
B 257	+0.070	+0.029
LA JUNTA	+0.030	+0.027
C 432	+0.041	+0.008
K 432	+0.030	+0.018
B 4	+0.013	+0.018
W 430	+0.028	+0.015
D 22	+0.026	+0.010
P 21	+0.052	+0.002
H 66	+0.109	+0.002
Y 85	+0.041	+0.012
T 418	+0.049	-0.013
F 391	+0.037	+0.123
DVX H	+0.007	+0.013
K 262	+0.050	+0.014
A 259	+0.052	+0.022

NGS Primary Vertical Control checks		
Comparisons: Record Versus Measured		
PT# (NGS NAME)	**RECORD**	**MEASURED**
	NAVD 88 elevation in meters	**Difference in meters**
K 23	1824.181	-0.166
A 393	2103.767	-0.038
CS 105	1875.981	+0.039
D 395	1677.895	+0.013
L 395	2011.084	-0.028
E 25	1599.645	+0.062
B 257	1528.839	+0.006
LA JUNTA	1279.133	+0.024
C 432	1257.150	-0.001
K 432	1240.044	+0.008
B 4	1483.615	+0.013
W 430	1470.585	+0.004
D 22	1798.908	-0.068
P 21	1922.686	+0.003
Y 85	1730.322	-0.001
T 418	1272.608	+0.034
F 391	1439.980	-0.008
DVX H	1653.621	+0.012
K 262	1582.269	+0.007
A 259	1644.489	+0.002

III. JOB SUMMARY

The coordinate system is the UTM Zone 13 North and the units are in meters. The projection parameters are as follows:

PROJECTION: TRANSVERSE MERCATOR
LATITUDE OF ORIGIN = N 0° 00’ 00.000000”
LONGITUDE OF ORIGIN = W 105° 00’ 00.000000”
FALSE NORTHING =0.000m
FALSE EASTING =500000.000m
SCALE FACTOR =0.9996000000

The data collected was converted and checked with published ground station coordinates. Station USGS 12 WTF did not have a published coordinate to compare.
The specifications for precision of measurement with RTX are 4 centimeters horizontally and 4 centimeters vertically.
Satellite data was collected using two Trimble R10 receivers. The coordinates were processed using Trimble Business Center (Version 4.1).
Existing NGS published control stations were surveyed to assure that there were no discrepancies in the field observation data. Close examinations of the residuals showed no distortions in orientation or scale.

CWCB EASTERN COLORADO LIDAR CHECKPOINTS AND CONTROL
65219844
JULY 2018

PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
1	39°25'41.15298"N	104°54'30.69432"W	1807.249	4364288.825	507872.925	1824.015	MFBC	K 23
2	39°11'13.63225"N	104°51'03.15828"W	2087.222	4337552.422	512878.719	2103.729	MFIR	A 393
3	38°53'29.36407"N	104°49'31.35108"W	1859.197	4304749.716	515144.133	1876.020	MFIR	CS 105
4	39°07'47.21048"N	104°28'19.88148"W	2005.005	4331311.257	545620.577	2022.867	MFBC	CARLSON
5	39°17'46.42516"N	103°51'21.42108"W	1702.430	4350274.117	598652.176	1721.679	MFIR	COHEN
6	39°14'24.37771"N	103°47'21.95808"W	1723.508	4344120.034	604471.502	1742.992	MFBC	WILLOW
7	38°38'58.30228"N	104°41'44.60028"W	1659.678	4277929.455	526477.453	1677.908	MFIR	D 395
8	38°58'58.53598"N	104°48'44.63244"W	1994.283	4314898.674	516248.704	2011.056	MFIR	L 395
9	38°44'00.63859"N	103°25'23.86236"W	1472.706	4288384.666	637044.093	1494.166	MFBC	USGS 12 WTF
10	39°12'52.59031"N	103°36'07.51752"W	1579.644	4341523.235	620683.545	1599.707	MFBC	E 25
11	39°07'39.83956"N	103°27'05.56812"W	1508.181	4332092.920	633845.227	1528.845	MFBC	B 257
12	37°58'46.83079"N	103°34'51.81348"W	1257.184	4204509.639	624616.700	1279.157	MFBC	LA JUNTA
13	38°00'46.21723"N	103°31'43.63824"W	1235.063	4208260.695	629149.389	1257.149	MFBC	C 432
14	38°00'14.71781"N	103°28'00.95376"W	1217.908	4207377.493	634595.760	1240.052	MFBC	K 432
15	38°21'13.33973"N	104°37'11.84412"W	1464.516	4245128.899	533205.944	1483.628	MFBC	B 4
16	38°18'06.19582"N	104°39'46.57464"W	1451.565	4239346.190	529471.577	1470.589	MFIR	W 430
17	37°45'39.85513"N	104°44'32.06400"W	1780.778	4179337.150	522703.885	1798.840	MFBC	D 22
18	37°22'10.58200"N	104°35'37.89960"W	1903.880	4135952.619	535961.067	1922.689	MFBC	P 21
19	37°13'39.94846"N	105°02'52.48032"W	2631.004	4120140.473	495749.799	2647.559	MFBC	H 66
20	37°15'51.18462"N	103°21'21.12480"W	1709.327	4125450.288	645786.055	1730.321	MFBC	Y 85
21	40°19'15.23737"N	103°31'47.61408"W	1252.916	4464411.852	624900.775	1272.642	MFIR	T 418
22	40°18'41.72144"N	104°44'31.90416"W	1421.695	4462373.399	521905.768	1439.972	MFCK	F391
23	39°49'18.77538"N	104°45'11.07936"W	1635.710	4408017.334	521131.896	1653.633	MFCK	DVX H
24	40°42'21.49358"N	104°46'47.89704"W	1565.151	4506141.102	518586.738	1582.276	MFCK	K262
25	39°44'13.83072"N	104°17'54.39984"W	1626.056	4398822.176	560113.812	1644.491	MFCK	A 259
1001	39°50'29.61787"N	104°47'27.17232"W	1592.038	4410193.145	517891.512	1609.904	LIPT	NVA
1002	39°52'13.12774"N	104°37'09.56712"W	1592.326	4413432.752	532555.804	1610.527	LIPT	NVA
1003	39°48'45.97380"N	104°46'20.53560"W	1612.353	4407001.693	519483.316	1630.220	LIPT	NVA
1004	39°47'53.38057"N	104°39'33.24780"W	1649.227	4405411.015	529173.048	1667.284	LIPT	NVA
1005	39°46'16.42372"N	104°50'44.83752"W	1605.820	4402377.727	513207.299	1623.446	LIPT	NVA
1006	39°47'43.53425"N	104°44'14.15940"W	1638.965	4405084.937	522493.649	1656.882	LIPT	NVA
1007	39°55'36.13451"N	104°41'07.47672"W	1584.251	4419669.500	526882.004	1602.439	LIPT	NVA
1008	39°52'14.54974"N	104°42'53.91828"W	1580.514	4413446.127	524375.294	1598.582	LIPT	NVA
1009	39°50'23.02084"N	104°44'51.71352"W	1594.070	4409999.291	521586.685	1612.032	LIPT	NVA
1010	39°56'35.87215"N	104°41'49.67700"W	1557.866	4421507.768	525874.071	1576.065	LIPT	NVA
1011	39°47'02.19606"N	104°47'59.42076"W	1614.656	4403796.649	517139.407	1632.410	LIPT	NVA
1012	39°47'33.38747"N	104°51'07.57224"W	1591.482	4404749.567	512662.521	1609.120	LIPT	NVA
1013	39°56'23.04895"N	104°42'42.74712"W	1557.978	4421108.254	524615.957	1576.151	LIPT	NVA
1014	39°54'29.40437"N	104°44'02.49360"W	1582.526	4417598.686	522733.859	1600.613	LIPT	NVA
1015	39°48'43.07951"N	104°37'10.71948"W	1624.229	4406956.871	532555.970	1642.350	LIPT	NVA
1016	39°52'11.81550"N	104°35'00.06468"W	1610.237	4413406.018	535632.443	1628.478	LIPT	NVA
1017	39°46'27.60582"N	104°44'30.03216"W	1641.430	4402743.001	522122.922	1659.301	LIPT	NVA

PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
1018	39°54'15.36217"N	104°40'07.01760"W	1600.632	4417184.460	528326.329	1618.811	LIPT	NVA
1019	39°49'38.58499"N	104°41'34.63404"W	1629.509	4408643.990	526275.261	1647.561	LIPT	NVA
1020	39°53'30.10556"N	104°35'00.30264"W	1601.115	4415819.684	535615.537	1619.388	LIPT	NVA
2001	39°52'13.91527"N	104°42'32.89896"W	1574.837	4413428.175	524874.687	1592.915	LIPT	VVA
2002	39°50'21.65258"N	104°44'52.12212"W	1595.200	4409957.081	521577.093	1613.162	LIPT	VVA
2003	39°47'01.21268"N	104°48'00.45468"W	1614.312	4403766.277	517114.883	1632.064	LIPT	VVA
2004	39°56'23.86698"N	104°42'43.96824"W	1557.042	4421133.380	524586.896	1575.215	LIPT	VVA
2005	39°54'14.70899"N	104°40'04.44108"W	1599.078	4417164.550	528387.582	1617.258	LIPT	VVA
3001	39°50'27.42238"N	104°47'27.06900"W	1593.091	4410125.464	517894.126	1610.956	LIPT	CAL
3002	39°52'13.24949"N	104°37'17.46876"W	1596.770	4413435.708	532368.077	1614.968	LIPT	CAL
3003	39°46'16.53182"N	104°50'50.96544"W	1605.231	4402380.810	513061.510	1622.853	LIPT	CAL
3004	39°47'47.61676"N	104°44'06.67500"W	1640.640	4405211.323	522671.269	1658.564	LIPT	CAL
3005	39°55'43.35208"N	104°41'07.55376"W	1579.455	4419892.013	526879.391	1597.646	LIPT	CAL
3006	39°47'33.47171"N	104°51'01.81008"W	1591.804	4404752.391	512799.556	1609.447	LIPT	CAL
3007	39°54'29.48598"N	104°44'09.46320"W	1582.775	4417600.711	522568.374	1600.859	LIPT	CAL
3008	39°48'44.59662"N	104°37'17.01084"W	1625.012	4407003.009	532406.189	1643.132	LIPT	CAL
3009	39°46'24.29306"N	104°44'31.04340"W	1642.110	4402640.801	522099.160	1659.978	LIPT	CAL
3010	39°53'57.86131"N	104°35'00.34872"W	1588.460	4416675.394	535610.452	1606.745	LIPT	CAL
4001	37°49'22.70773"N	103°59'07.57824"W	1383.414	4186658.770	589290.666	1404.287	LIPT	NVA
4002	39°00'41.35234"N	103°42'06.71508"W	1645.450	4318852.816	612391.601	1665.594	LIPT	NVA
4003	39°21'34.82946"N	104°54'30.31380"W	1957.519	4356695.322	507889.725	1974.120	LIPT	NVA
4004	39°10'21.13561"N	103°53'53.43864"W	1750.863	4336501.662	595177.801	1770.122	LIPT	NVA
4005	39°53'58.59226"N	104°19'09.66288"W	1537.305	4416836.586	558185.251	1555.928	LIPT	NVA
4006	40°38'23.84077"N	104°29'13.95888"W	1499.197	4498916.365	543360.268	1517.273	LIPT	NVA
4007	39°18'03.12754"N	104°46'05.24100"W	1988.405	4350190.802	519993.378	2005.423	LIPT	NVA
4008	39°27'51.99480"N	104°37'40.31976"W	1935.572	4368384.458	532012.003	1952.974	LIPT	NVA
4009	39°23'19.86994"N	104°45'39.77460"W	1841.200	4359956.665	520577.509	1858.336	LIPT	NVA
4010	40°00'56.27268"N	103°37'21.34812"W	1359.128	4430400.769	617549.903	1378.987	LIPT	NVA
4011	38°01'00.52925"N	104°23'18.07548"W	1479.964	4207857.036	553688.844	1499.711	LIPT	NVA
4012	39°25'40.46966"N	104°54'00.64476"W	1824.001	4364268.522	508591.363	1840.792	LIPT	NVA
4013	37°45'28.93583"N	103°37'14.32344"W	1429.321	4179865.018	621503.433	1450.747	LIPT	NVA
4014	38°52'26.42801"N	104°19'09.17148"W	1845.956	4303015.442	559055.130	1864.870	LIPT	NVA
4015	40°19'22.76288"N	104°14'41.51184"W	1351.703	4463880.493	564153.728	1370.804	LIPT	NVA
4016	39°07'40.76828"N	103°36'12.24432"W	1624.367	4331908.612	620718.221	1644.592	LIPT	NVA
4017	40°11'25.28074"N	103°32'51.21672"W	1347.518	4449896.602	623637.114	1367.309	LIPT	NVA
4018	39°24'14.81980"N	103°12'39.52512"W	1525.459	4363150.209	654034.288	1546.282	LIPT	NVA
4019	39°16'24.83080"N	104°07'46.48836"W	1785.530	4347496.030	575080.671	1804.067	LIPT	NVA
4020	39°16'32.22073"N	103°30'32.64048"W	1692.696	4348422.185	628603.069	1712.870	LIPT	NVA
4021	40°36'38.91056"N	103°45'43.28208"W	1413.955	4496291.089	604727.051	1433.064	LIPT	NVA
4022	40°53'13.12652"N	104°21'00.70524"W	1558.272	4526414.047	554742.934	1576.302	LIPT	NVA
4023	40°18'42.88079"N	103°41'47.29704"W	1281.117	4463192.473	610762.465	1300.680	LIPT	NVA
4024	40°21'05.06419"N	104°03'40.03416"W	1317.038	4467184.101	579730.718	1336.283	LIPT	NVA

PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
4025	39°35'42.76061"N	103°56'44.15712"W	1623.684	4383362.177	590533.497	1642.732	LIPT	NVA
4026	40°57'03.26869"N	104°13'11.53092"W	1579.613	4533600.384	565659.100	1597.791	LIPT	NVA
4027	38°34'45.36185"N	103°42'52.58088"W	1440.932	4270872.349	611962.806	1461.844	LIPT	NVA
4028	38°34'41.29997"N	104°28'43.75452"W	1585.181	4270092.650	545396.728	1604.411	LIPT	NVA
4029	38°55'57.95551"N	104°57'40.32792"W	2793.099	4309316.248	503362.747	2808.572	LIPT	NVA
4030	39°12'54.48146"N	103°26'07.60308"W	1578.871	4341816.742	635069.724	1599.383	LIPT	NVA
4031	39°43'33.48073"N	103°55'36.67620"W	1574.701	4397893.443	591969.498	1593.874	LIPT	NVA
4032	39°01'54.70640"N	104°29'50.22636"W	2071.938	4320432.665	543511.551	2089.884	LIPT	NVA
4033	39°27'42.73726"N	103°53'49.61004"W	1674.068	4368613.400	594877.988	1693.153	LIPT	NVA
4034	40°12'05.11139"N	104°15'20.96568"W	1408.159	4450378.741	563335.923	1427.210	LIPT	NVA
4035	38°54'28.09440"N	103°16'27.44328"W	1410.344	4307961.098	649630.833	1431.943	LIPT	NVA
4036	38°48'34.48789"N	103°52'29.31456"W	1650.495	4296247.066	597694.185	1670.543	LIPT	NVA
4037	39°41'25.84129"N	104°20'59.98740"W	1653.036	4393609.845	555734.002	1671.305	LIPT	NVA
4038	38°44'06.12427"N	104°49'46.58448"W	1921.227	4287387.527	514809.522	1938.250	LIPT	NVA
4039	40°02'12.81926"N	104°29'22.38720"W	1483.238	4431976.921	543548.330	1501.818	LIPT	NVA
4040	40°55'29.25246"N	104°04'03.73044"W	1653.901	4530826.726	578497.169	1672.281	LIPT	NVA
4041	38°57'19.83661"N	104°05'17.72268"W	1859.407	4312234.721	578999.610	1878.579	LIPT	NVA
4042	37°42'51.79280"N	103°53'39.25824"W	1407.438	4174701.759	597459.765	1428.363	LIPT	NVA
4043	37°40'29.65174"N	103°59'39.91668"W	1477.276	4170221.487	588676.606	1497.935	LIPT	NVA
4044	38°10'20.96616"N	103°30'33.79896"W	1250.947	4226003.311	630568.079	1273.134	LIPT	NVA
4045	38°07'43.29404"N	103°27'14.13360"W	1231.732	4221222.894	635507.557	1254.018	LIPT	NVA
4046	39°14'16.33708"N	104°24'40.59864"W	2007.285	4343339.083	550807.571	2025.176	LIPT	NVA
4047	38°48'25.65191"N	103°32'02.65020"W	1496.025	4296394.035	627284.407	1517.054	LIPT	NVA
4048	39°18'25.11173"N	103°17'07.91520"W	1577.196	4352244.113	647819.567	1597.934	LIPT	NVA
4049	37°56'13.98383"N	104°58'40.31400"W	2272.937	4198849.465	501945.050	2289.413	LIPT	NVA
4050	40°23'34.72246"N	103°48'15.04296"W	1338.092	4472061.838	601488.598	1357.441	LIPT	NVA
4051	37°53'26.42957"N	103°40'30.89928"W	1295.874	4194512.412	616484.558	1317.531	LIPT	NVA
4052	39°16'25.57441"N	104°19'04.97136"W	1815.516	4347379.532	558823.495	1833.593	LIPT	NVA
4053	37°52'07.27507"N	103°44'29.53680"W	1301.394	4191992.058	610688.541	1322.874	LIPT	NVA
4054	39°55'34.62913"N	103°49'01.06032"W	1444.926	4420245.615	601093.622	1464.456	LIPT	NVA
4055	39°03'20.60834"N	104°03'11.53512"W	1919.062	4323386.921	581921.139	1938.070	LIPT	NVA
4056	40°18'42.24424"N	104°36'07.40196"W	1449.170	4462433.602	533813.445	1467.755	LIPT	NVA
4057	40°27'54.95339"N	103°31'49.64772"W	1326.893	4480436.167	624586.370	1346.433	LIPT	NVA
4058	39°25'06.32572"N	104°06'24.36120"W	1731.228	4363591.786	576889.601	1749.751	LIPT	NVA
4059	39°23'40.59924"N	104°32'58.33356"W	1969.024	4360665.239	538788.860	1986.513	LIPT	NVA
4060	38°02'55.91875"N	104°59'22.46136"W	2011.048	4211236.914	500914.890	2027.745	LIPT	NVA
4061	40°01'57.40367"N	104°42'57.81780"W	1511.609	4431415.467	524225.474	1529.887	LIPT	NVA
4062	40°48'42.25540"N	104°39'27.87768"W	1602.141	4517914.842	528866.042	1619.496	LIPT	NVA
4063	38°45'00.90547"N	103°42'01.21968"W	1520.489	4289864.142	612936.620	1541.125	LIPT	NVA
4064	38°07'17.16136"N	103°27'13.87872"W	1237.050	4220417.500	635527.186	1259.332	LIPT	NVA
4065	38°04'56.43563"N	104°26'05.77932"W	1459.843	4215101.961	549555.543	1479.562	LIPT	NVA
4066	40°32'12.01132"N	104°34'26.58900"W	1447.571	4487412.235	536072.567	1465.771	LIPT	NVA

PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
4067	38°56'19.98956"N	103°48'46.67724"W	1686.715	4310664.560	602877.291	1706.655	LIPT	NVA
4068	38°23'08.13862"N	104°06'41.77584"W	1489.889	4248972.426	577589.304	1510.252	LIPT	NVA
4069	40°46'09.84115"N	104°55'30.08928"W	1692.226	4513161.527	506327.454	1708.616	LIPT	NVA
4070	37°43'33.90125"N	103°30'16.44660"W	1272.979	4176476.612	631785.538	1294.563	LIPT	NVA
4071	39°41'57.47921"N	104°04'11.05788"W	1547.992	4394796.890	579754.724	1566.856	LIPT	NVA
4072	39°28'35.60992"N	103°27'33.06204"W	1608.791	4370795.992	632525.436	1628.940	LIPT	NVA
4073	38°38'48.15006"N	104°29'51.49356"W	1659.629	4277692.308	543716.104	1678.660	LIPT	NVA
4074	39°18'19.85152"N	104°34'48.45396"W	1998.758	4350764.750	536200.810	2016.202	LIPT	NVA
4075	38°44'17.44544"N	104°07'50.30364"W	1769.808	4288081.425	575556.697	1789.487	LIPT	NVA
4076	38°32'09.79382"N	104°04'23.00700"W	1591.747	4265701.185	580787.905	1611.927	LIPT	NVA
4077	39°32'06.35903"N	103°12'40.93632"W	1484.891	4377687.427	653711.951	1505.660	LIPT	NVA
4078	40°04'24.74278"N	104°00'15.93684"W	1407.948	4436394.284	584891.327	1427.257	LIPT	NVA
4079	40°08'29.70528"N	104°31'40.97064"W	1503.236	4443578.684	540202.482	1521.874	LIPT	NVA
4080	40°27'54.69242"N	104°43'51.98736"W	1420.219	4479425.814	522796.075	1438.239	LIPT	NVA
4081	40°13'41.64643"N	104°30'02.09376"W	1425.082	4453209.178	542488.025	1443.829	LIPT	NVA
4082	40°38'23.69594"N	104°52'30.33084"W	1583.569	4498793.021	510561.926	1600.441	LIPT	NVA
4083	40°20'56.14444"N	103°35'14.39700"W	1260.047	4467443.756	619970.851	1279.685	LIPT	NVA
4084	38°11'51.53118"N	104°49'58.44396"W	1568.614	4227757.990	514631.379	1586.816	LIPT	NVA
4085	39°06'56.24662"N	104°46'50.23884"W	2195.769	4329630.543	518965.388	2212.572	LIPT	NVA
4086	39°09'47.77859"N	104°20'51.21132"W	1933.806	4335097.969	556366.214	1951.973	LIPT	NVA
4087	40°25'17.92243"N	103°57'16.80156"W	1418.709	4475081.973	588678.852	1437.890	LIPT	NVA
4088	38°46'55.35901"N	104°01'22.23120"W	1720.496	4293043.592	584873.698	1740.294	LIPT	NVA
4089	38°16'34.68778"N	104°06'28.21320"W	1426.929	4236848.409	578035.467	1447.494	LIPT	NVA
4090	38°40'51.36895"N	103°45'40.22712"W	1521.907	4282098.769	607754.062	1542.504	LIPT	NVA
4091	38°04'54.19762"N	103°31'40.89396"W	1242.579	4215905.189	629095.261	1264.737	LIPT	NVA
4092	39°05'48.03212"N	103°16'31.80720"W	1538.987	4328920.396	649128.545	1560.111	LIPT	NVA
4093	38°57'17.29836"N	104°14'07.78704"W	2027.313	4312039.135	566242.217	2046.129	LIPT	NVA
4094	39°01'36.93562"N	103°54'17.03772"W	1787.745	4320335.294	594806.368	1807.227	LIPT	NVA
4095	38°32'47.62813"N	103°34'41.09772"W	1441.534	4267418.433	623911.174	1462.841	LIPT	NVA
4096	40°42'32.59832"N	104°45'11.24244"W	1566.143	4506489.537	520853.783	1583.354	LIPT	NVA
4097	38°50'19.01159"N	104°56'38.40036"W	2690.404	4298869.180	504860.126	2706.103	LIPT	NVA
4098	39°04'15.41183"N	104°10'57.43668"W	1931.086	4324967.677	570708.015	1949.787	LIPT	NVA
4099	38°11'25.78718"N	103°24'47.78100"W	1232.637	4228141.116	638953.523	1254.973	LIPT	NVA
4100	38°56'31.81110"N	104°49'12.46152"W	1909.104	4310374.509	515588.091	1925.884	LIPT	NVA
4101	40°56'54.94250"N	103°40'00.37308"W	1484.221	4533906.398	612215.177	1503.112	LIPT	NVA
4102	39°08'44.11392"N	103°46'15.78216"W	1713.925	4333651.829	606200.130	1733.595	LIPT	NVA
4103	40°42'08.11026"N	104°16'39.38952"W	1478.949	4505956.053	561027.078	1497.267	LIPT	NVA
4104	39°48'45.47678"N	103°44'34.18332"W	1436.786	4407717.527	607606.066	1456.351	LIPT	NVA
4105	39°03'42.10654"N	104°41'20.65344"W	2265.776	4323669.116	526900.569	2282.963	LIPT	NVA
4106	38°33'01.52071"N	104°41'35.34576"W	1642.311	4266933.021	526737.893	1660.770	LIPT	NVA
4107	39°31'16.40298"N	103°21'35.13708"W	1557.417	4375904.273	640986.997	1577.813	LIPT	NVA
4108	37°53'43.15456"N	103°52'35.15232"W	1333.583	4194795.725	598787.965	1354.748	LIPT	NVA

PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
4109	38°38'27.00208"N	103°15'55.70568"W	1434.525	4278347.832	650957.167	1456.493	LIPT	NVA
4110	38°44'01.16030"N	103°25'24.67740"W	1473.603	4288400.409	637024.137	1495.062	LIPT	NVA
4111	38°42'20.28352"N	103°33'17.22744"W	1540.020	4285102.488	625663.478	1561.137	LIPT	NVA
4112	40°51'25.21382"N	104°27'50.97168"W	1575.058	4523021.482	545162.416	1592.874	LIPT	NVA
4113	39°01'25.29224"N	104°22'28.76340"W	2023.751	4319591.751	554131.752	2042.086	LIPT	NVA
4114	40°32'18.09377"N	104°14'55.71528"W	1441.812	4487783.686	563615.260	1460.505	LIPT	NVA
4115	38°08'36.38890"N	103°30'28.58760"W	1250.147	4222781.929	630746.760	1272.353	LIPT	NVA
4116	40°13'56.66228"N	103°46'32.12544"W	1297.257	4454271.463	604161.377	1316.839	LIPT	NVA
4117	40°17'34.55398"N	104°48'39.64104"W	1431.353	4460287.724	516062.870	1449.419	LIPT	NVA
4118	39°41'01.42836"N	104°29'41.96904"W	1753.128	4392777.182	543305.704	1771.123	LIPT	NVA
4119	38°34'41.43421"N	104°38'04.11720"W	1594.659	4270031.365	531838.397	1613.322	LIPT	NVA
4120	37°42'07.30822"N	103°45'06.82416"W	1464.992	4173488.403	610024.340	1486.075	LIPT	VVA
4121	38°51'38.38201"N	104°41'44.35188"W	1941.840	4301358.247	526405.552	1959.495	LIPT	NVA
4122	40°35'48.66472"N	104°04'08.93820"W	1486.973	4494421.658	578761.547	1505.771	LIPT	NVA
4123	38°47'45.89563"N	104°13'07.32216"W	1824.590	4294437.844	567848.304	1843.948	LIPT	NVA
4124	38°51'32.83042"N	104°11'07.21500"W	1908.783	4301458.407	570683.243	1928.011	LIPT	NVA
4125	37°48'11.95369"N	103°29'47.01732"W	1314.918	4185058.136	632368.222	1336.668	LIPT	NVA
4126	39°00'57.69389"N	103°24'17.28792"W	1487.261	4319765.478	638103.551	1508.258	LIPT	NVA
4127	38°56'14.35175"N	103°29'49.00236"W	1530.089	4310894.952	630270.087	1550.976	LIPT	NVA
4128	39°30'19.06153"N	104°02'51.10152"W	1669.004	4373285.145	581887.100	1687.745	LIPT	NVA
4129	38°27'50.49551"N	104°11'05.73936"W	1574.267	4257616.388	571108.463	1594.340	LIPT	NVA
4130	37°45'50.17439"N	104°06'34.38720"W	1450.679	4179997.151	578429.691	1471.166	LIPT	NVA
4131	40°29'42.14134"N	104°00'47.90304"W	1466.704	4483171.641	583613.168	1485.707	LIPT	NVA
4132	38°39'11.11756"N	104°00'59.69628"W	1648.512	4278739.268	585571.057	1668.595	LIPT	NVA
4133	38°43'22.17918"N	104°24'51.08184"W	1713.724	4286182.045	550923.875	1732.840	LIPT	NVA
4134	38°58'12.59332"N	104°38'58.65252"W	2170.218	4313524.115	530352.302	2187.746	LIPT	NVA
4135	40°13'58.47654"N	103°58'57.27324"W	1335.990	4454104.868	586551.993	1355.356	LIPT	NVA
4136	39°39'00.36529"N	104°12'36.96228"W	1606.787	4389221.046	567754.559	1625.283	LIPT	NVA
4137	38°59'14.17708"N	103°13'06.94344"W	1458.591	4316873.367	654287.819	1480.138	LIPT	NVA
4138	38°03'00.00011"N	104°48'35.64972"W	1660.609	4211379.704	516678.704	1678.684	LIPT	NVA
4139	40°26'06.47844"N	104°36'40.93668"W	1396.239	4476127.039	532961.746	1414.668	LIPT	NVA
4140	39°28'25.59475"N	104°26'29.12532"W	1829.664	4369503.077	548044.029	1847.384	LIPT	NVA
4141	39°46'04.49162"N	104°14'46.07988"W	1557.597	4402270.224	564567.504	1576.192	LIPT	NVA
4142	39°52'12.54461"N	104°05'22.59348"W	1478.608	4413741.987	577858.263	1497.631	LIPT	NVA
4143	39°28'04.40663"N	104°53'57.99480"W	1944.545	4368705.836	508649.769	1961.386	LIPT	NVA
4144	39°17'14.31848"N	103°25'03.15948"W	1640.418	4349854.099	636475.195	1660.831	LIPT	NVA
4145	39°12'01.51535"N	103°12'40.95504"W	1551.575	4340541.826	654447.266	1572.660	LIPT	NVA
4146	40°51'39.20940"N	103°45'55.80756"W	1458.221	4524048.235	604042.317	1477.113	LIPT	NVA
4147	39°23'25.84907"N	104°50'43.41768"W	1913.858	4360125.156	513313.723	1930.746	LIPT	NVA
4148	39°20'02.38549"N	104°50'03.79320"W	1972.042	4353854.615	514273.059	1988.882	LIPT	NVA
4149	40°16'07.53758"N	104°07'52.96296"W	1351.918	4457949.565	573854.228	1371.147	LIPT	NVA
4150	40°58'03.69973"N	104°55'12.63612"W	1807.625	4535173.908	506716.539	1823.581	LIPT	NVA

PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
4151	40°42'37.79665"N	104°35'36.10428"W	1555.470	4506700.022	534348.094	1573.130	LIPT	NVA
4152	40°37'30.27223"N	104°40'03.37584"W	1489.140	4497191.352	528112.810	1506.842	LIPT	NVA
4153	39°33'20.91474"N	104°15'14.53680"W	1695.785	4378724.011	564086.099	1714.027	LIPT	NVA
4154	40°00'04.57463"N	103°50'07.65384"W	1453.602	4428547.667	599404.197	1473.142	LIPT	NVA
4155	40°28'52.06238"N	104°09'58.59324"W	1404.805	4481493.780	570664.847	1423.732	LIPT	NVA
4156	39°11'20.84071"N	104°35'50.36928"W	2150.854	4337841.260	534775.396	2168.313	LIPT	NVA
4157	40°43'46.14766"N	103°51'33.93468"W	1442.217	4509353.655	596316.065	1461.161	LIPT	NVA
4158	39°28'42.05906"N	104°46'20.84916"W	1785.703	4369886.459	519569.906	1802.921	LIPT	NVA
4159	39°02'19.94366"N	104°50'05.36928"W	2050.750	4321103.381	514294.985	2067.300	LIPT	NVA
4160	39°37'27.75288"N	103°50'09.14676"W	1549.239	4386715.333	599913.068	1568.549	LIPT	NVA
4161	37°53'42.17478"N	104°02'27.61296"W	1385.266	4194603.984	584318.150	1406.026	LIPT	NVA
4162	40°18'37.78578"N	103°58'47.85816"W	1333.338	4462719.332	586675.362	1352.671	LIPT	NVA
4163	40°09'38.14358"N	104°39'33.55668"W	1461.497	4445637.617	529012.021	1479.959	LIPT	NVA
4164	38°12'43.86406"N	103°25'02.46360"W	1243.335	4230541.639	638555.216	1265.646	LIPT	NVA
4165	37°39'32.49529"N	103°37'10.92360"W	1395.464	4168880.474	621748.534	1416.719	LIPT	NVA
4166	40°31'22.45555"N	104°22'30.76284"W	1456.985	4485984.604	552922.861	1475.534	LIPT	NVA
4167	38°06'12.66584"N	104°53'42.87876"W	1774.770	4217305.872	509184.346	1792.381	LIPT	NVA
4168	38°37'56.86619"N	103°29'08.12076"W	1417.925	4277079.603	631814.631	1439.363	LIPT	NVA
4169	39°15'06.63818"N	103°51'25.09884"W	1691.911	4345347.093	598626.297	1711.202	LIPT	NVA
4170	39°39'39.11432"N	103°48'03.60612"W	1533.063	4390804.574	602852.054	1552.462	LIPT	NVA
4171	40°22'40.46009"N	104°52'02.63820"W	1516.354	4469710.852	511256.097	1534.037	LIPT	NVA
4172	38°59'45.34274"N	103°34'18.67152"W	1578.018	4317294.805	623675.517	1598.582	LIPT	NVA
4173	38°54'44.06180"N	103°59'19.96116"W	1766.680	4307523.666	587663.845	1786.219	LIPT	NVA
4174	40°06'07.74223"N	104°23'08.40876"W	1439.884	4439275.863	552361.050	1458.674	LIPT	NVA
4175	39°26'07.49728"N	104°45'53.42508"W	1816.141	4365123.345	520237.509	1833.317	LIPT	NVA
4176	38°04'05.86643"N	104°42'11.91132"W	1631.636	4213434.220	526024.555	1650.294	LIPT	NVA
4177	38°41'40.95175"N	104°15'18.00468"W	1751.661	4283162.314	564787.449	1771.194	LIPT	NVA
4178	40°30'32.46235"N	104°54'30.44232"W	1462.287	4484259.678	507755.821	1479.432	LIPT	NVA
4179	40°58'52.03708"N	104°47'00.57696"W	1837.418	4536683.931	518213.720	1854.015	LIPT	NVA
4180	39°33'49.46969"N	104°24'28.50156"W	1760.290	4379506.011	550860.346	1778.210	LIPT	NVA
4181	39°57'25.30418"N	104°09'03.02256"W	1460.312	4423333.053	572529.963	1479.299	LIPT	NVA
4182	38°45'00.62737"N	104°42'17.47728"W	1750.430	4289095.095	525646.795	1768.338	LIPT	NVA
4183	37°55'56.37878"N	104°16'05.08476"W	1483.360	4198559.207	564320.138	1503.392	LIPT	NVA
4184	38°56'29.76479"N	104°27'30.35664"W	1956.909	4310435.471	546933.961	1975.209	LIPT	NVA
4185	40°22'12.51671"N	104°27'45.47952"W	1372.303	4468979.420	545620.950	1391.079	LIPT	NVA
4186	40°14'05.60659"N	104°41'41.89992"W	1480.990	4453872.935	525947.668	1499.401	LIPT	NVA
4187	38°38'07.48788"N	103°35'56.82660"W	1530.988	4277250.028	621927.553	1552.086	LIPT	NVA
4188	40°07'51.06936"N	104°10'09.11604"W	1421.831	4442611.515	570781.806	1440.948	LIPT	NVA
4189	39°31'27.88568"N	104°30'58.01760"W	1859.699	4375085.616	541589.406	1877.361	LIPT	NVA
4190	40°41'36.42284"N	103°41'36.13884"W	1330.676	4505548.939	610398.429	1349.811	LIPT	NVA
4191	40°10'29.31290"N	103°55'27.53616"W	1349.201	4447714.285	591586.441	1368.645	LIPT	NVA
4192	37°50'50.77601"N	104°12'20.93976"W	1500.174	4189185.273	569871.943	1520.359	LIPT	NVA

PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
4193	39°24'11.37643"N	103°57'17.91576"W	1676.820	4362038.134	589975.618	1695.767	LIPT	NVA
4194	38°36'48.31466"N	104°53'37.16016"W	1952.778	4273884.253	509258.447	1969.765	LIPT	NVA
4195	38°53'41.27680"N	103°37'35.37696"W	1566.668	4305998.969	619112.687	1587.255	LIPT	NVA
4196	40°48'02.23081"N	104°07'32.34144"W	1568.042	4516992.081	573755.705	1586.471	LIPT	NVA
4197	40°39'12.98095"N	103°36'00.12600"W	1383.356	4501247.293	618355.247	1402.603	LIPT	NVA
4198	40°53'26.76412"N	103°36'46.91628"W	1360.200	4527557.217	616840.123	1379.224	LIPT	NVA
4199	38°02'40.54081"N	104°42'00.61848"W	1575.913	4210805.332	526308.195	1594.547	LIPT	NVA
4200	40°58'24.04092"N	104°22'22.84428"W	1625.512	4535987.340	552752.013	1643.418	LIPT	NVA
4201	40°04'23.56558"N	104°15'46.81692"W	1457.557	4436143.360	562842.760	1476.485	LIPT	NVA
4202	39°52'10.42504"N	103°54'56.83428"W	1533.020	4413842.533	592724.922	1552.338	LIPT	NVA
4203	38°50'20.22324"N	104°28'29.17416"W	1874.036	4299036.069	545583.594	1892.628	LIPT	NVA
4204	40°52'12.67396"N	104°47'40.77708"W	1674.817	4524367.062	517303.226	1691.612	LIPT	NVA
4205	40°40'09.44634"N	104°09'45.81792"W	1502.165	4502383.223	570767.089	1520.741	LIPT	NVA
4206	40°47'05.11728"N	104°21'15.41268"W	1523.269	4515063.797	554482.385	1541.341	LIPT	NVA
4207	37°53'30.55322"N	104°49'44.01552"W	1841.931	4193826.170	515044.767	1859.584	LIPT	NVA
4208	38°09'11.43929"N	104°29'50.57268"W	1465.127	4222929.938	544036.767	1484.707	LIPT	NVA
4209	38°45'43.90085"N	103°16'27.91344"W	1388.358	4291801.337	649924.787	1410.206	LIPT	NVA
4210	37°46'52.62917"N	103°48'59.60808"W	1372.930	4182208.106	604212.757	1394.109	LIPT	NVA
4211	37°41'37.99644"N	103°25'54.85872"W	1298.459	4173009.042	638249.236	1320.108	LIPT	NVA
4212	39°44'23.48002"N	103°44'32.67528"W	1482.298	4399640.465	607755.373	1501.833	LIPT	NVA
4213	38°04'48.47704"N	104°09'03.96036"W	1355.367	4215046.129	574450.629	1375.960	LIPT	NVA
4214	39°09'54.74700"N	104°04'05.15604"W	1820.251	4335523.611	580507.686	1839.074	LIPT	NVA
4215	40°08'27.20058"N	103°43'00.87384"W	1353.562	4444183.763	609300.364	1373.245	LIPT	NVA
4216	40°10'19.69680"N	104°22'42.46104"W	1416.577	4447048.308	552921.063	1435.445	LIPT	NVA
4217	39°23'52.21414"N	104°49'34.86720"W	1957.354	4360940.903	514951.922	1974.303	LIPT	NVA
4218	38°15'05.22954"N	104°58'59.99556"W	1633.948	4233714.944	501458.386	1651.398	LIPT	NVA
4219	40°20'42.63659"N	104°42'29.86020"W	1410.958	4466110.444	524774.082	1429.295	LIPT	NVA
4220	40°15'52.95362"N	103°34'01.63416"W	1293.928	4458122.819	621838.673	1313.646	LIPT	NVA
4221	40°26'06.46908"N	103°39'23.53860"W	1378.053	4476920.790	613947.931	1397.473	LIPT	NVA
4222	40°53'20.09166"N	103°52'41.11212"W	1594.233	4527031.385	594513.740	1612.931	LIPT	NVA
4223	38°02'54.94225"N	104°02'28.36464"W	1343.750	4211640.604	584124.364	1364.648	LIPT	NVA
4224	38°07'46.33536"N	103°33'51.77628"W	1280.155	4221161.061	625824.523	1302.249	LIPT	NVA
4225	40°51'20.09030"N	104°55'28.16904"W	1739.056	4522728.088	506364.230	1755.296	LIPT	NVA
4226	39°46'56.82428"N	103°59'59.42688"W	1495.597	4404090.221	585644.397	1514.705	LIPT	NVA
4227	40°01'00.82632"N	103°30'36.56916"W	1342.459	4430695.590	627143.619	1362.493	LIPT	NVA
4228	37°56'30.62029"N	104°37'05.69604"W	1690.220	4199430.674	533543.241	1708.952	LIPT	NVA
4229	39°58'18.38284"N	103°58'41.26404"W	1456.693	4425124.241	587263.334	1476.006	LIPT	NVA
4230	39°18'07.02634"N	103°40'39.69804"W	1637.055	4351118.788	614014.570	1656.759	LIPT	NVA
4231	38°54'53.49287"N	104°36'47.29356"W	2085.444	4307399.606	533539.301	2103.287	LIPT	NVA
4232	38°36'43.57357"N	103°12'35.73036"W	1413.165	4275252.364	655854.161	1435.273	LIPT	NVA
4233	40°31'23.49235"N	103°36'03.70008"W	1374.672	4486769.187	618501.336	1394.045	LIPT	NVA
4234	39°51'18.30521"N	104°13'33.17160"W	1525.798	4411959.932	566218.403	1544.540	LIPT	NVA

PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
4235	38°51'06.92359"N	103°42'02.65680"W	1614.658	4301146.511	612741.578	1635.089	LIPT	NVA
4236	37°57'47.78089"N	104°47'45.52224"W	1750.091	4201759.665	517921.490	1768.061	LIPT	NVA
4237	37°54'38.37830"N	103°26'11.07240"W	1340.594	4197055.230	637449.707	1362.600	LIPT	NVA
4238	39°26'43.73362"N	104°48'05.30496"W	1884.622	4366232.848	517082.438	1901.714	LIPT	NVA
4239	39°18'49.53020"N	104°52'59.62296"W	1933.862	4351602.128	510066.633	1950.495	LIPT	NVA
4240	40°32'17.94203"N	104°48'10.32732"W	1474.307	4487526.618	516694.193	1491.821	LIPT	NVA
4241	40°04'31.65992"N	104°38'55.13496"W	1497.107	4436191.853	529958.243	1515.511	LIPT	NVA
4242	40°00'04.83012"N	103°44'08.86632"W	1369.443	4428671.467	607911.484	1389.126	LIPT	NVA
4243	40°46'08.50476"N	104°30'17.81244"W	1601.126	4513235.483	541779.718	1618.875	LIPT	NVA
4244	40°00'54.66326"N	104°21'50.02992"W	1489.751	4429636.288	554285.711	1508.459	LIPT	NVA
4245	38°40'25.18464"N	104°42'21.12372"W	1665.031	4280604.603	525586.037	1683.145	LIPT	NVA
4246	40°47'12.42258"N	103°59'38.09904"W	1539.927	4515575.383	584885.899	1558.600	LIPT	NVA
4247	38°33'23.27393"N	104°56'43.21104"W	1885.994	4267560.315	504762.826	1902.973	LIPT	NVA
4248	37°49'05.56910"N	104°16'16.30416"W	1580.053	4185895.912	564145.142	1599.939	LIPT	NVA
4249	38°08'50.70563"N	104°21'49.21092"W	1403.858	4222362.835	555756.351	1423.876	LIPT	NVA
4250	40°58'34.24166"N	103°51'52.73136"W	1555.913	4536733.265	595520.134	1574.518	LIPT	NVA
4251	40°05'27.44603"N	103°47'33.63504"W	1344.771	4438551.053	602921.227	1364.371	LIPT	NVA
4252	38°45'45.43981"N	103°11'53.17224"W	1416.748	4291976.622	656555.025	1438.750	LIPT	NVA
4253	40°52'12.10771"N	104°34'33.40740"W	1611.217	4524415.841	535733.560	1628.734	LIPT	NVA
4254	39°11'48.50617"N	103°34'21.87228"W	1573.851	4339587.126	623248.234	1594.036	LIPT	NVA
4255	39°04'55.99038"N	103°26'32.70480"W	1515.375	4327055.244	634720.966	1536.147	LIPT	NVA
4256	38°10'59.21479"N	104°58'00.60852"W	1780.208	4226132.871	502904.482	1797.557	LIPT	NVA
4257	39°06'25.62779"N	104°27'41.13360"W	2005.172	4328801.835	546565.808	2023.100	LIPT	NVA
4258	38°36'58.39438"N	104°13'12.81468"W	1707.209	4274477.893	567885.679	1726.947	LIPT	NVA
4259	38°07'05.93166"N	105°00'25.61688"W	2012.219	4218942.399	499376.257	2029.035	LIPT	NVA
4260	39°57'23.27378"N	104°14'41.71848"W	1524.316	4423198.200	564494.493	1543.130	LIPT	NVA
4261	40°30'33.62483"N	103°51'37.67796"W	1439.368	4484915.176	596544.717	1458.474	LIPT	NVA
4262	40°27'53.10835"N	104°28'12.80424"W	1401.132	4479477.015	544913.603	1419.715	LIPT	NVA
4263	39°17'39.23642"N	103°54'16.07508"W	1699.187	4350000.712	594471.275	1718.310	LIPT	NVA
4264	37°58'55.84897"N	104°02'29.25240"W	1346.722	4204271.250	584178.661	1367.568	LIPT	NVA
4265	40°58'23.89368"N	104°04'02.11800"W	1645.722	4536212.414	578477.418	1664.053	LIPT	NVA
4266	39°11'10.40230"N	103°41'47.90940"W	1673.473	4338251.301	612565.640	1693.303	LIPT	NVA
4267	39°24'18.04453"N	103°24'59.96376"W	1609.252	4362918.688	636322.824	1629.541	LIPT	NVA
4268	39°25'05.47068"N	103°36'03.14676"W	1681.983	4364118.682	620438.719	1701.782	LIPT	NVA
4269	38°51'00.99274"N	103°24'13.34088"W	1479.529	4301372.346	638520.615	1500.857	LIPT	NVA
4270	37°58'46.96316"N	103°47'29.52024"W	1323.385	4204252.849	606131.291	1344.844	LIPT	NVA
4271	38°47'44.28413"N	104°18'14.91768"W	1816.461	4294328.238	560428.681	1835.644	LIPT	NVA
4272	39°21'19.39752"N	104°22'23.93472"W	1890.580	4356402.851	553993.439	1908.412	LIPT	NVA
4273	39°34'01.22308"N	104°00'50.63688"W	1584.935	4380165.129	584688.994	1603.805	LIPT	NVA
4274	38°50'58.90736"N	103°12'03.45276"W	1391.978	4301635.181	656116.679	1413.870	LIPT	NVA
4275	39°05'05.73450"N	103°42'11.23524"W	1664.074	4327001.428	612166.652	1684.076	LIPT	NVA
4276	38°33'39.07854"N	103°15'56.41992"W	1418.029	4269471.875	651107.567	1440.083	LIPT	NVA

PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
4277	38°19'50.82355"N	104°11'02.86548"W	1472.350	4242832.155	571308.882	1492.672	LIPT	NVA
4278	37°29'17.84908"N	104°58'33.24396"W	2206.389	4149042.634	502130.436	2223.442	LIPT	NVA
4279	37°04'27.29582"N	105°04'31.93032"W	2557.784	4103111.756	493285.626	2574.433	LIPT	NVA
4280	37°46'02.40172"N	104°39'47.73204"W	1810.519	4180054.113	529658.175	1828.862	LIPT	NVA
4281	37°07'02.19180"N	104°46'36.59232"W	2005.274	4107905.552	519826.158	2023.371	LIPT	NVA
4282	37°03'42.86563"N	105°00'39.32136"W	2376.125	4101740.020	499028.938	2393.160	LIPT	NVA
4283	37°24'49.62514"N	104°38'02.30100"W	1902.878	4140839.325	532390.417	1921.542	LIPT	NVA
4284	37°29'56.06869"N	104°32'43.01952"W	1878.818	4150317.281	540193.147	1897.827	LIPT	NVA
4285	36°59'55.43250"N	104°21'52.86060"W	2285.321	4094920.237	556529.225	2303.648	LIPT	NVA
4286	37°40'55.91543"N	105°24'17.09460"W	2692.146	4170632.319	464311.282	2707.585	LIPT	NVA
4287	37°09'00.90140"N	104°34'14.23884"W	1891.433	4111626.628	538129.168	1910.098	LIPT	NVA
4288	37°12'05.80756"N	105°02'59.65908"W	2625.422	4117239.526	495571.374	2642.006	LIPT	NVA
4289	37°25'32.17991"N	104°27'53.23248"W	1773.161	4142222.292	547354.610	1792.374	LIPT	NVA
4290	37°45'29.34126"N	105°15'08.59284"W	2254.117	4179011.834	477768.512	2270.066	LIPT	NVA
4291	37°14'57.23041"N	104°51'25.79112"W	2318.052	4122530.478	512667.371	2335.711	LIPT	NVA
4292	37°42'15.87514"N	104°55'47.95680"W	1962.463	4173021.800	506171.457	1979.712	LIPT	NVA
4293	37°52'20.11382"N	104°35'18.17268"W	1777.434	4191721.304	536201.699	1796.105	LIPT	NVA
4294	37°16'25.07351"N	104°35'05.37180"W	1954.041	4125308.673	536807.886	1972.843	LIPT	NVA
4295	37°07'36.38658"N	104°55'33.90132"W	2315.621	4108938.535	506565.847	2333.072	LIPT	NVA
4296	37°33'36.29873"N	104°26'26.13552"W	1824.637	4157154.171	549406.566	1843.965	LIPT	NVA
4297	37°47'33.56466"N	105°11'33.56340"W	2147.582	4182827.749	483037.753	2163.610	LIPT	NVA
4298	37°21'04.15055"N	105°07'32.14668"W	2829.719	4133835.460	488876.533	2845.831	LIPT	NVA
4299	37°13'41.02871"N	104°24'37.17900"W	1779.601	4120335.541	552309.873	1798.782	LIPT	NVA
4300	37°05'07.49980"N	104°41'21.70140"W	2058.328	4104393.111	527608.481	2076.602	LIPT	NVA
4301	37°34'30.58090"N	104°49'11.60328"W	1963.709	4158695.238	515903.990	1981.556	LIPT	NVA
4302	37°19'05.28654"N	104°23'36.01896"W	1732.111	4130337.610	553752.896	1751.494	LIPT	NVA
4303	37°49'48.17615"N	104°44'47.66784"W	1716.083	4186989.118	522301.359	1734.128	LIPT	NVA
4304	37°52'55.34321"N	105°20'01.85496"W	2440.327	4192779.739	470642.056	2455.643	LIPT	NVA
4305	37°24'39.93775"N	105°04'15.24144"W	2423.920	4140480.288	493725.685	2440.379	LIPT	NVA
4306	37°43'04.95469"N	104°33'14.48424"W	1811.020	4174625.638	539305.095	1829.776	LIPT	NVA
4307	37°52'15.45100"N	104°55'16.15476"W	2116.811	4191500.696	506934.572	2133.803	LIPT	NVA
4308	37°38'51.34546"N	104°23'45.90708"W	1754.013	4166887.730	553275.072	1773.502	LIPT	NVA
4309	37°39'45.43322"N	104°42'16.49448"W	1806.413	4168424.163	526055.332	1824.710	LIPT	NVA
4310	37°12'50.52960"N	104°45'20.58444"W	2170.818	4118644.453	521674.203	2188.966	LIPT	NVA
4311	37°44'38.65258"N	105°03'39.53160"W	2018.986	4177421.441	494627.478	2035.536	LIPT	NVA
4312	37°30'29.70126"N	104°41'04.99704"W	1926.285	4151303.337	527864.469	1944.753	LIPT	NVA
4313	37°49'17.31202"N	105°17'04.27884"W	2278.599	4186045.789	474959.276	2294.308	LIPT	NVA
4314	37°08'51.69678"N	104°24'26.29152"W	1955.815	4111421.100	552633.912	1974.700	LIPT	NVA
4315	37°19'34.94874"N	104°53'05.08056"W	2387.583	4131085.398	510210.977	2404.926	LIPT	NVA
4316	37°03'35.96116"N	104°31'26.80104"W	2035.338	4101633.094	542309.543	2053.772	LIPT	NVA
4317	37°53'46.74908"N	105°06'52.94664"W	2745.934	4194317.721	489914.833	2761.559	LIPT	NVA
4318	37°43'20.95565"N	105°01'05.05776"W	1987.048	4175025.333	498407.401	2003.809	LIPT	NVA

PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
4319	37°29'14.27726"N	104°52'55.56576"W	2159.286	4148938.814	510422.815	2176.751	LIPT	NVA
4320	37°33'34.11367"N	105°08'08.37780"W	2460.052	4156948.449	488018.473	2476.345	LIPT	NVA
4321	37°36'56.43302"N	104°26'34.67760"W	1769.588	4163320.712	549160.422	1788.932	LIPT	NVA
4322	37°54'36.89716"N	105°14'09.64680"W	2626.361	4195883.314	479253.446	2641.689	LIPT	NVA
4323	37°05'16.70802"N	104°37'27.39072"W	1966.537	4104697.760	533392.027	1984.960	LIPT	NVA
4324	37°42'37.95588"N	104°49'00.66720"W	1855.776	4173715.771	516142.909	1873.575	LIPT	NVA
4325	37°35'36.86006"N	104°44'36.75948"W	1873.204	4160753.486	522639.841	1891.393	LIPT	NVA
5001	37°49'22.23556"N	103°59'08.28240"W	1383.371	4186644.031	589273.609	1404.244	LIPT	VVA
5002	39°00'41.27922"N	103°42'07.36056"W	1645.606	4318850.341	612376.109	1665.749	LIPT	VVA
5003	39°21'34.87968"N	104°54'30.56076"W	1957.206	4356696.864	507883.814	1973.806	LIPT	VVA
5004	39°10'20.89826"N	103°53'54.17880"W	1750.613	4336494.130	595160.129	1769.871	LIPT	VVA
5005	39°53'58.58632"N	104°19'08.82624"W	1535.670	4416836.554	558205.119	1554.293	LIPT	VVA
5006	40°38'25.15769"N	104°29'13.83756"W	1497.864	4498956.988	543362.881	1515.939	LIPT	VVA
5007	39°18'03.47152"N	104°46'05.62440"W	1989.880	4350201.382	519984.168	2006.898	LIPT	VVA
5008	39°27'51.84950"N	104°37'40.68660"W	1935.312	4368379.943	532003.256	1952.714	LIPT	VVA
5009	39°23'26.18156"N	104°45'39.24828"W	1838.906	4360151.269	520589.584	1856.044	LIPT	VVA
5010	40°00'56.29122"N	103°37'21.83736"W	1359.495	4430401.161	617538.296	1379.354	LIPT	VVA
5011	38°01'00.41466"N	104°23'17.56716"W	1479.770	4207853.586	553701.261	1499.518	LIPT	VVA
5012	37°45'29.04718"N	103°37'15.49560"W	1428.547	4179868.027	621474.700	1449.972	LIPT	VVA
5013	38°52'27.04933"N	104°19'09.18912"W	1846.231	4303034.591	559054.562	1865.145	LIPT	VVA
5014	40°19'22.92154"N	104°14'40.30080"W	1351.323	4463885.628	564182.266	1370.424	LIPT	VVA
5015	39°07'40.97806"N	103°36'11.99160"W	1623.911	4331915.173	620724.189	1644.136	LIPT	VVA
5016	40°11'25.48298"N	103°32'50.96400"W	1347.159	4449902.936	623642.988	1366.950	LIPT	VVA
5017	39°24'14.28170"N	103°12'40.19760"W	1525.623	4363133.300	654018.533	1546.446	LIPT	VVA
5018	39°16'24.88465"N	104°07'46.91568"W	1785.072	4347497.592	575070.416	1803.609	LIPT	VVA
5019	39°16'31.58533"N	103°30'32.37372"W	1692.124	4348402.701	628609.784	1712.298	LIPT	VVA
5020	40°36'40.47912"N	103°45'44.32392"W	1413.709	4496339.111	604701.888	1432.817	LIPT	VVA
5021	40°53'13.69190"N	104°21'00.57996"W	1558.060	4526431.503	554745.737	1576.090	LIPT	VVA
5022	40°18'43.73564"N	103°41'48.57468"W	1281.263	4463218.388	610731.920	1300.825	LIPT	VVA
5023	40°21'05.90807"N	104°03'41.28300"W	1316.188	4467209.807	579700.983	1335.432	LIPT	VVA
5024	39°35'43.03964"N	103°56'44.56464"W	1623.509	4383370.666	590523.676	1642.557	LIPT	VVA
5025	40°57'02.59355"N	104°13'10.01604"W	1579.356	4533579.882	565694.702	1597.535	LIPT	VVA
5026	38°34'45.93313"N	103°42'52.23276"W	1441.067	4270890.077	611970.983	1461.979	LIPT	VVA
5027	38°34'41.59628"N	104°28'42.90888"W	1585.151	4270101.900	545417.137	1604.382	LIPT	VVA
5028	38°55'57.64696"N	104°57'38.95632"W	2790.172	4309306.751	503395.774	2805.647	LIPT	VVA
5029	39°12'53.80225"N	103°26'07.24668"W	1578.776	4341795.950	635078.632	1599.288	LIPT	VVA
5030	39°43'34.22550"N	103°55'35.95332"W	1573.353	4397916.610	591986.432	1592.527	LIPT	VVA
5031	39°01'54.96593"N	104°29'51.02268"W	2071.993	4320440.559	543492.361	2089.938	LIPT	VVA
5032	39°27'42.51946"N	103°53'50.17884"W	1673.367	4368606.519	594864.477	1692.452	LIPT	VVA
5033	40°12'03.55738"N	104°15'23.63436"W	1407.282	4450330.299	563273.232	1426.332	LIPT	VVA
5034	38°54'27.85154"N	103°16'27.44148"W	1410.293	4307953.612	649631.018	1431.892	LIPT	VVA
5035	38°48'35.06256"N	103°52'29.06328"W	1650.627	4296264.855	597700.028	1670.675	LIPT	VVA

PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
5036	39°41'26.20885"N	104°21'00.38916"W	1651.950	4393621.107	555724.351	1670.219	LIPT	VVA
5037	38°44'05.70772"N	104°49'46.65216"W	1920.794	4287374.684	514807.912	1937.818	LIPT	VVA
5038	40°02'14.60443"N	104°29'23.33220"W	1483.478	4432031.831	543525.619	1502.058	LIPT	VVA
5039	40°55'28.58077"N	104°04'02.51508"W	1652.982	4530806.317	578525.815	1671.363	LIPT	VVA
5040	38°57'20.09956"N	104°05'17.52828"W	1858.832	4312242.873	579004.208	1878.004	LIPT	VVA
5041	37°42'51.11989"N	103°53'39.17400"W	1407.074	4174681.044	597462.073	1427.999	LIPT	VVA
5042	37°40'29.15616"N	103°59'40.12584"W	1476.066	4170206.159	588671.646	1496.725	LIPT	VVA
5043	38°10'20.41370"N	103°30'34.19820"W	1249.608	4225986.126	630558.638	1271.795	LIPT	VVA
5044	39°14'17.61101"N	104°24'40.54752"W	2006.751	4343378.363	550808.541	2024.642	LIPT	VVA
5045	38°48'25.95326"N	103°32'02.62392"W	1496.132	4296403.335	627284.892	1517.161	LIPT	VVA
5046	39°18'25.27542"N	103°17'07.22616"W	1576.498	4352249.473	647835.974	1597.237	LIPT	VVA
5047	37°56'13.82093"N	104°58'40.81116"W	2273.049	4198844.441	501932.916	2289.523	LIPT	VVA
5048	40°23'35.73319"N	103°48'17.01540"W	1337.410	4472092.374	601441.676	1356.758	LIPT	VVA
5049	37°53'26.64636"N	103°40'30.00432"W	1295.266	4194519.404	616506.323	1316.924	LIPT	VVA
5050	39°16'24.92821"N	104°19'05.36988"W	1816.559	4347359.540	558814.096	1834.636	LIPT	VVA
5051	37°52'07.00777"N	103°44'29.46840"W	1301.390	4191983.842	610690.323	1322.870	LIPT	VVA
5052	39°55'35.11726"N	103°49'02.15832"W	1442.660	4420260.319	601067.359	1462.189	LIPT	VVA
5053	39°03'20.43450"N	104°03'11.84472"W	1918.878	4323381.484	581913.754	1937.886	LIPT	VVA
5054	40°18'41.22410"N	104°36'04.24584"W	1448.305	4462402.484	533888.081	1466.892	LIPT	VVA
5055	40°27'55.58544"N	103°31'50.20788"W	1327.499	4480455.436	624572.853	1347.038	LIPT	VVA
5056	39°25'06.39462"N	104°06'24.03792"W	1730.725	4363593.986	576897.310	1749.248	LIPT	VVA
5057	39°23'41.48117"N	104°32'59.28108"W	1972.171	4360692.314	538766.060	1989.660	LIPT	VVA
5058	38°02'55.87955"N	104°59'23.09064"W	2009.397	4211235.704	500899.553	2026.092	LIPT	VVA
5059	40°01'56.96105"N	104°42'56.90808"W	1510.268	4431401.890	524247.077	1528.547	LIPT	VVA
5060	40°48'43.40531"N	104°39'30.34656"W	1600.057	4517950.074	528808.063	1617.410	LIPT	VVA
5061	38°45'00.35993"N	103°42'00.09180"W	1520.267	4289847.711	612964.084	1540.904	LIPT	VVA
5062	38°07'17.03849"N	103°27'14.75856"W	1237.097	4220413.356	635505.825	1259.379	LIPT	VVA
5063	38°04'56.35535"N	104°26'05.27316"W	1459.398	4215099.561	549567.888	1479.117	LIPT	VVA
5064	40°32'12.51071"N	104°34'26.67288"W	1447.497	4487427.624	536070.519	1465.696	LIPT	VVA
5065	38°56'19.67975"N	103°48'46.82772"W	1686.390	4310654.963	602873.793	1706.330	LIPT	VVA
5066	38°23'08.26728"N	104°06'42.55488"W	1489.865	4248976.210	577570.366	1510.228	LIPT	VVA
5067	40°46'09.50210"N	104°55'31.15596"W	1692.517	4513151.051	506302.457	1708.905	LIPT	VVA
5068	37°43'34.02620"N	103°30'16.71624"W	1272.869	4176480.358	631778.876	1294.452	LIPT	VVA
5069	39°41'56.83664"N	104°04'11.23068"W	1548.084	4394777.037	579750.814	1566.948	LIPT	VVA
5070	39°28'35.31493"N	103°27'32.97708"W	1608.418	4370786.933	632527.622	1628.567	LIPT	VVA
5071	38°38'48.36174"N	104°29'51.11412"W	1659.660	4277698.883	543725.240	1678.691	LIPT	VVA
5072	39°17'52.51578"N	104°34'47.56152"W	2017.644	4349922.168	536226.097	2035.091	LIPT	VVA
5073	38°44'17.71854"N	104°07'50.28780"W	1769.814	4288089.847	575557.000	1789.493	LIPT	VVA
5074	38°32'09.69065"N	104°04'22.43712"W	1591.432	4265698.144	580801.734	1611.613	LIPT	VVA
5075	39°32'06.61132"N	103°12'40.70232"W	1484.941	4377695.316	653717.383	1505.710	LIPT	VVA
5076	40°04'23.63153"N	104°00'17.44920"W	1407.626	4436359.622	584855.888	1426.935	LIPT	VVA
5077	40°08'32.08517"N	104°31'43.28004"W	1501.649	4443651.770	540147.448	1520.287	LIPT	VVA

PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
5078	40°27'54.06138"N	104°43'49.18476"W	1421.098	4479406.559	522862.134	1439.122	LIPT	VVA
5079	40°13'41.91953"N	104°30'03.28212"W	1424.887	4453217.440	542459.894	1443.634	LIPT	VVA
5080	40°38'22.00002"N	104°52'30.37512"W	1582.340	4498740.727	510560.960	1599.213	LIPT	VVA
5081	40°20'55.38628"N	103°35'11.19624"W	1255.878	4467421.584	620046.734	1275.517	LIPT	VVA
5082	38°11'51.60426"N	104°49'57.72936"W	1568.398	4227760.273	514648.756	1586.602	LIPT	VVA
5083	39°06'55.23224"N	104°46'50.52144"W	2196.605	4329599.258	518958.677	2213.408	LIPT	VVA
5084	39°09'47.91283"N	104°20'50.18100"W	1934.313	4335102.285	556390.911	1952.480	LIPT	VVA
5085	40°25'17.40688"N	103°57'17.79624"W	1415.793	4475065.800	588655.601	1434.974	LIPT	VVA
5086	38°46'56.28403"N	104°01'22.39716"W	1720.000	4293072.063	584869.389	1739.797	LIPT	VVA
5087	38°16'34.96897"N	104°06'36.29988"W	1427.955	4236855.184	577838.901	1448.515	LIPT	VVA
5088	38°40'51.92393"N	103°45'40.31388"W	1521.546	4282115.848	607751.734	1542.143	LIPT	VVA
5089	38°04'54.29381"N	103°31'41.76048"W	1242.389	4215907.819	629074.103	1264.546	LIPT	VVA
5090	39°05'47.02013"N	103°16'32.53944"W	1536.953	4328888.863	649111.547	1558.077	LIPT	VVA
5091	38°57'17.42702"N	104°14'07.17828"W	2027.082	4312043.224	566256.836	2045.898	LIPT	VVA
5092	39°03'22.96616"N	103°54'13.57092"W	1797.618	4323604.870	594850.331	1817.044	LIPT	VVA
5093	38°32'47.71982"N	103°34'41.65824"W	1441.459	4267421.050	623897.562	1462.766	LIPT	VVA
5094	40°42'31.52142"N	104°45'11.54268"W	1565.923	4506456.311	520846.831	1583.135	LIPT	VVA
5095	38°50'20.44676"N	104°56'38.65200"W	2690.524	4298913.415	504854.032	2706.223	LIPT	VVA
5096	39°04'15.90701"N	104°10'56.81568"W	1930.408	4324983.076	570722.800	1949.109	LIPT	VVA
5097	38°56'31.10057"N	104°49'13.10088"W	1908.719	4310352.577	515572.743	1925.498	LIPT	VVA
5098	40°56'55.82087"N	103°40'01.12872"W	1482.115	4533933.214	612197.096	1501.006	LIPT	VVA
5099	39°08'43.89925"N	103°46'15.29544"W	1713.676	4333645.369	606211.904	1733.347	LIPT	VVA
5100	40°42'06.76447"N	104°16'38.34948"W	1477.287	4505914.756	561051.825	1495.607	LIPT	VVA
5101	39°48'44.23360"N	103°44'32.79732"W	1436.133	4407679.662	607639.560	1455.699	LIPT	VVA
5102	39°03'41.72576"N	104°41'20.05980"W	2265.883	4323657.427	526914.876	2283.071	LIPT	VVA
5103	38°33'02.93645"N	104°41'46.72248"W	1628.957	4266975.744	526462.378	1647.401	LIPT	VVA
5104	39°31'16.85856"N	103°21'35.78004"W	1556.717	4375918.039	640971.389	1577.112	LIPT	VVA
5105	37°53'43.02773"N	103°52'35.96088"W	1334.585	4194791.578	598768.264	1355.749	LIPT	VVA
5106	38°38'27.11789"N	103°15'55.14552"W	1434.266	4278351.659	650970.643	1456.234	LIPT	VVA
5107	38°44'00.47422"N	103°25'24.35628"W	1473.129	4288379.393	637032.254	1494.589	LIPT	VVA
5108	38°42'19.40796"N	103°33'17.80704"W	1539.992	4285075.278	625649.904	1561.109	LIPT	VVA
5109	40°51'24.55283"N	104°27'50.37048"W	1574.845	4523001.186	545176.617	1592.661	LIPT	VVA
5110	39°01'21.57737"N	104°22'13.01124"W	2025.162	4319479.849	554511.314	2043.511	LIPT	VVA
5111	40°32'17.36952"N	104°14'55.67172"W	1441.055	4487761.363	563616.475	1459.749	LIPT	VVA
5112	40°13'56.60569"N	103°46'32.40660"W	1297.316	4454269.626	604154.757	1316.898	LIPT	VVA
5113	40°17'34.64002"N	104°48'38.81520"W	1430.723	4460290.419	516082.362	1448.789	LIPT	VVA
5114	39°41'01.46810"N	104°29'41.56908"W	1753.315	4392778.461	543315.224	1771.310	LIPT	VVA
5115	38°34'40.41343"N	104°38'03.40188"W	1593.738	4269999.970	531855.830	1612.402	LIPT	VVA
5116	37°42'07.02720"N	103°45'05.61996"W	1465.351	4173480.135	610053.944	1486.434	LIPT	VVA
5117	38°51'38.72905"N	104°41'44.03436"W	1942.478	4301368.969	526413.169	1960.133	LIPT	VVA
5118	40°35'47.85670"N	104°04'08.49468"W	1487.093	4494396.853	578772.235	1505.891	LIPT	VVA
5119	38°47'45.90874"N	104°13'14.84832"W	1824.385	4294436.699	567666.749	1843.739	LIPT	VVA

PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
5120	38°51'32.58504"N	104°11'07.23264"W	1908.767	4301450.839	570682.885	1927.996	LIPT	VVA
5121	37°48'12.24090"N	103°29'47.13684"W	1314.630	4185066.941	632365.157	1336.380	LIPT	VVA
5122	39°01'24.81319"N	103°24'17.12484"W	1490.769	4320601.579	638092.814	1511.751	LIPT	VVA
5123	38°56'14.35322"N	103°29'49.84116"W	1530.121	4310894.665	630249.891	1551.007	LIPT	VVA
5124	39°30'18.84985"N	104°02'51.36756"W	1668.591	4373278.552	581880.815	1687.332	LIPT	VVA
5125	38°27'51.95455"N	104°11'06.20016"W	1573.287	4257661.262	571096.898	1593.359	LIPT	VVA
5126	37°46'02.06090"N	104°06'46.17180"W	1448.239	4180360.751	578137.885	1468.720	LIPT	VVA
5127	40°29'40.94923"N	104°00'46.87848"W	1466.758	4483135.153	583637.697	1485.762	LIPT	VVA
5128	38°39'11.54840"N	104°00'59.25240"W	1648.252	4278752.664	585581.644	1668.335	LIPT	VVA
5129	38°43'21.24466"N	104°24'58.26456"W	1714.224	4286152.131	550750.616	1733.335	LIPT	VVA
5130	38°58'13.24225"N	104°38'58.73100"W	2170.896	4313544.112	530350.337	2188.424	LIPT	VVA
5131	40°13'59.04476"N	103°58'56.02152"W	1334.789	4454122.728	586581.371	1354.155	LIPT	VVA
5132	39°39'00.57060"N	104°12'37.30248"W	1606.224	4389227.305	567746.395	1624.720	LIPT	VVA
5133	38°59'13.91150"N	103°13'07.03812"W	1458.396	4316865.136	654285.701	1479.943	LIPT	VVA
5134	38°03'00.42800"N	104°48'36.09972"W	1660.659	4211392.870	516667.710	1678.733	LIPT	VVA
5135	40°26'04.45434"N	104°36'40.97880"W	1394.846	4476064.626	532961.028	1413.276	LIPT	VVA
5136	39°28'25.36691"N	104°26'28.92552"W	1830.124	4369496.083	548048.846	1847.844	LIPT	VVA
5137	39°46'03.80388"N	104°14'45.80664"W	1556.928	4402249.076	564574.184	1575.523	LIPT	VVA
5138	39°52'14.04404"N	104°05'24.77868"W	1479.503	4413787.687	577805.880	1498.526	LIPT	VVA
5139	39°28'06.10435"N	104°53'53.03760"W	1942.747	4368758.306	508768.158	1959.593	LIPT	VVA
5140	39°17'14.55796"N	103°25'03.47340"W	1640.023	4349861.350	636467.545	1660.436	LIPT	VVA
5141	39°12'01.65085"N	103°12'43.91460"W	1551.736	4340544.602	654376.190	1572.819	LIPT	VVA
5142	40°51'40.52128"N	103°45'56.72736"W	1458.229	4524088.385	604020.213	1477.120	LIPT	VVA
5143	39°23'25.37329"N	104°50'43.31040"W	1914.326	4360110.493	513316.314	1931.214	LIPT	VVA
5144	40°16'08.63144"N	104°07'52.05864"W	1350.717	4457983.501	573875.256	1369.947	LIPT	VVA
5145	40°58'08.05552"N	104°55'11.46972"W	1811.946	4535308.247	506743.678	1827.901	LIPT	VVA
5146	40°42'38.19146"N	104°35'39.10848"W	1554.513	4506711.870	534277.549	1572.170	LIPT	VVA
5147	40°37'29.50460"N	104°40'04.08936"W	1488.429	4497167.620	528096.136	1506.132	LIPT	VVA
5148	39°33'22.75207"N	104°15'14.14836"W	1694.883	4378780.731	564094.900	1713.126	LIPT	VVA
5149	40°00'03.83749"N	103°50'08.52540"W	1453.116	4428524.669	599383.828	1472.656	LIPT	VVA
5150	40°28'53.24772"N	104°09'59.07240"W	1404.872	4481530.222	570653.221	1423.799	LIPT	VVA
5151	39°11'20.52157"N	104°35'52.71612"W	2149.815	4337831.172	534719.141	2167.272	LIPT	VVA
5152	40°43'45.45426"N	103°51'33.36876"W	1441.239	4509332.446	596329.618	1460.183	LIPT	VVA
5153	39°28'43.59072"N	104°46'26.21208"W	1791.614	4369933.355	519441.665	1808.830	LIPT	VVA
5154	39°02'19.92120"N	104°50'08.64312"W	2047.545	4321102.546	514216.282	2064.088	LIPT	VVA
5155	39°37'27.75374"N	103°50'08.34396"W	1550.488	4386715.608	599932.208	1569.798	LIPT	VVA
5156	37°53'43.38060"N	104°02'26.03112"W	1383.843	4194641.545	584356.403	1404.604	LIPT	VVA
5157	40°18'38.47878"N	103°58'48.56232"W	1333.396	4462740.508	586658.495	1352.729	LIPT	VVA
5158	40°09'38.61922"N	104°39'34.92756"W	1461.346	4445652.157	528979.536	1479.807	LIPT	VVA
5159	38°12'43.94761"N	103°25'03.14400"W	1243.322	4230543.931	638538.624	1265.632	LIPT	VVA
5160	37°39'33.57130"N	103°37'13.92132"W	1395.276	4168912.556	621674.594	1416.530	LIPT	VVA
5161	40°31'21.87613"N	104°22'31.99944"W	1459.455	4485966.532	552893.892	1478.004	LIPT	VVA

PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
5162	38°06'11.96503"N	104°53'42.23292"W	1773.455	4217284.290	509200.099	1791.066	LIPT	VVA
5163	38°37'56.83336"N	103°29'07.71000"W	1417.818	4277078.755	631824.579	1439.257	LIPT	VVA
5164	39°15'06.14480"N	103°51'24.19560"W	1692.107	4345332.156	598648.139	1711.399	LIPT	VVA
5165	39°39'39.67805"N	103°48'03.66948"W	1533.137	4390821.933	602850.312	1552.536	LIPT	VVA
5166	40°22'41.32024"N	104°52'31.50804"W	1503.329	4469736.383	510575.315	1520.975	LIPT	VVA
5167	38°59'45.39167"N	103°34'18.89040"W	1578.025	4317296.230	623670.228	1598.589	LIPT	VVA
5168	38°54'43.79116"N	103°59'19.98708"W	1766.814	4307515.316	587663.313	1786.353	LIPT	VVA
5169	40°06'08.43480"N	104°23'07.76760"W	1438.858	4439297.320	552376.083	1457.648	LIPT	VVA
5170	38°04'05.84299"N	104°42'11.06136"W	1631.082	4213433.564	526045.267	1649.741	LIPT	VVA
5171	38°41'41.40913"N	104°15'18.34236"W	1751.503	4283176.346	564779.177	1771.036	LIPT	VVA
5172	40°30'31.41288"N	104°54'31.02120"W	1460.802	4484227.305	507742.231	1477.947	LIPT	VVA
5173	40°58'51.39703"N	104°47'00.84156"W	1837.402	4536664.179	518207.586	1853.999	LIPT	VVA
5174	39°33'49.40082"N	104°24'27.83700"W	1759.805	4379503.993	550876.218	1777.725	LIPT	VVA
5175	39°57'26.15814"N	104°09'03.77136"W	1461.338	4423359.213	572511.946	1480.325	LIPT	VVA
5176	38°45'00.49295"N	104°42'18.56052"W	1750.550	4289090.867	525620.661	1768.456	LIPT	VVA
5177	37°55'55.82608"N	104°16'06.23460"W	1483.928	4198541.952	564292.203	1503.958	LIPT	VVA
5178	38°56'30.00509"N	104°27'31.31640"W	1956.601	4310442.741	546910.813	1974.900	LIPT	VVA
5179	40°22'11.88682"N	104°27'43.76592"W	1372.113	4468960.244	545661.479	1390.890	LIPT	VVA
5180	40°14'06.25578"N	104°41'42.12348"W	1481.739	4453892.933	525942.317	1500.149	LIPT	VVA
5181	38°38'07.06812"N	103°35'56.67972"W	1530.684	4277237.143	621931.302	1551.782	LIPT	VVA
5182	40°07'51.64291"N	104°10'09.43320"W	1420.797	4442629.128	570774.135	1439.914	LIPT	VVA
5183	39°31'28.50888"N	104°30'57.97260"W	1859.924	4375104.834	541590.377	1877.586	LIPT	VVA
5184	40°41'37.72554"N	103°41'38.03856"W	1331.087	4505588.445	610353.245	1350.221	LIPT	VVA
5185	40°10'28.70112"N	103°55'28.59636"W	1347.581	4447695.118	591561.594	1367.025	LIPT	VVA
5186	37°50'51.60235"N	104°12'19.51524"W	1498.340	4189211.037	569906.540	1518.527	LIPT	VVA
5187	39°24'11.55672"N	103°57'17.99028"W	1676.682	4362043.671	589973.771	1695.628	LIPT	VVA
5188	40°48'03.38270"N	104°07'33.37032"W	1566.568	4517027.360	573731.242	1584.996	LIPT	VVA
5189	39°52'10.99157"N	103°54'58.10796"W	1532.475	4413859.632	592694.452	1551.793	LIPT	VVA
5190	38°45'43.51673"N	103°16'27.20316"W	1388.340	4291789.819	649942.154	1410.188	LIPT	VVA
5191	38°15'04.86637"N	104°58'59.90448"W	1633.540	4233703.751	501460.602	1650.990	LIPT	VVA
5192	37°56'31.65191"N	104°37'05.76192"W	1689.259	4199462.461	533541.503	1707.992	LIPT	VVA
5193	39°18'07.95784"N	103°40'40.44396"W	1636.906	4351147.243	613996.284	1656.609	LIPT	VVA
5194	37°29'18.57444"N	104°58'33.65544"W	2205.102	4149064.985	502120.326	2222.156	LIPT	VVA
5195	37°04'27.01405"N	105°04'33.21804"W	2557.472	4103103.098	493253.823	2574.119	LIPT	VVA
5196	37°46'03.09374"N	104°39'48.60180"W	1809.186	4180075.364	529636.820	1827.528	LIPT	VVA
5197	37°07'01.89869"N	104°46'35.69160"W	2003.372	4107896.572	519848.407	2021.470	LIPT	VVA
5198	37°03'43.39775"N	105°00'39.21804"W	2376.453	4101756.417	499031.492	2393.488	LIPT	VVA
5199	37°24'52.70742"N	104°38'05.38080"W	1904.722	4140934.019	532314.345	1923.383	LIPT	VVA
5200	37°29'55.90680"N	104°32'42.84528"W	1878.589	4150312.312	540197.450	1897.598	LIPT	VVA
5201	36°59'54.71732"N	104°21'54.17460"W	2283.498	4094897.982	556496.895	2301.824	LIPT	VVA
5202	37°40'56.79304"N	105°24'16.20720"W	2691.332	4170659.272	464333.134	2706.772	LIPT	VVA
5203	37°09'00.56725"N	104°34'12.84276"W	1890.311	4111616.487	538163.652	1908.977	LIPT	VVA

PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
5204	37°12'05.49745"N	105°03'00.58284"W	2623.670	4117229.982	495548.598	2640.252	LIPT	VVA
5205	37°25'39.68954"N	104°27'54.89856"W	1773.910	4142453.487	547312.350	1793.122	LIPT	VVA
5206	37°45'30.26048"N	105°15'09.25488"W	2256.095	4179040.207	477752.390	2272.043	LIPT	VVA
5207	37°14'57.84601"N	104°51'25.56828"W	2317.797	4122549.457	512672.832	2335.456	LIPT	VVA
5208	37°42'17.38379"N	104°55'40.38204"W	1956.053	4173068.435	506356.895	1973.313	LIPT	VVA
5209	37°52'22.12576"N	104°35'26.28132"W	1773.319	4191782.440	536003.329	1791.985	LIPT	VVA
5210	37°16'25.23457"N	104°35'04.96680"W	1953.529	4125313.680	536817.838	1972.332	LIPT	VVA
5211	37°07'36.26666"N	104°55'34.62060"W	2315.229	4108934.826	506548.102	2332.679	LIPT	VVA
5212	37°33'36.48668"N	104°26'26.47464"W	1824.899	4157159.914	549398.212	1844.227	LIPT	VVA
5213	37°47'35.20496"N	105°11'32.98848"W	2150.248	4182878.272	483051.918	2166.275	LIPT	VVA
5214	37°21'04.46339"N	105°07'32.26764"W	2830.668	4133845.104	488873.570	2846.780	LIPT	VVA
5215	37°13'38.76913"N	104°24'37.09080"W	1780.262	4120265.922	552312.480	1799.441	LIPT	VVA
5216	37°05'07.28765"N	104°41'20.75280"W	2058.649	4104386.651	527631.922	2076.924	LIPT	VVA
5217	37°34'30.23926"N	104°49'11.70156"W	1963.650	4158684.705	515901.599	1981.497	LIPT	VVA
5218	37°19'04.76213"N	104°23'35.28600"W	1733.136	4130321.565	553771.040	1752.519	LIPT	VVA
5219	37°49'48.37152"N	104°44'48.17760"W	1716.034	4186995.106	522288.882	1734.078	LIPT	VVA
5220	37°52'55.09074"N	105°20'01.71600"W	2440.291	4192771.946	470645.422	2455.608	LIPT	VVA
5221	37°24'38.66317"N	105°04'15.54384"W	2423.897	4140441.015	493718.222	2440.355	LIPT	VVA
5222	37°43'05.45488"N	104°33'13.60260"W	1810.585	4174641.156	539326.605	1829.342	LIPT	VVA
5223	37°52'14.73283"N	104°55'15.99960"W	2117.239	4191478.566	506938.382	2134.232	LIPT	VVA
5224	37°38'52.35569"N	104°23'46.21668"W	1754.017	4166918.815	553267.285	1773.506	LIPT	VVA
5225	37°39'34.26444"N	104°42'15.64164"W	1797.013	4168080.026	526077.312	1815.315	LIPT	VVA
6001	37°49'22.56276"N	103°59'09.14064"W	1383.416	4186653.887	589252.517	1404.288	LIPT	CAL
6002	38°59'49.54787"N	103°42'06.09048"W	1640.966	4317256.055	612429.402	1661.136	LIPT	CAL
6003	39°21'36.23310"N	104°54'31.45176"W	1955.398	4356738.564	507862.449	1971.998	LIPT	CAL
6004	39°10'21.22482"N	103°54'04.23432"W	1750.062	4336501.270	594918.718	1769.313	LIPT	CAL
6005	39°53'53.00156"N	104°19'09.70536"W	1538.383	4416664.215	558185.556	1557.004	LIPT	CAL
6006	40°38'19.71467"N	104°29'13.06680"W	1499.224	4498789.262	543381.964	1517.303	LIPT	CAL
6007	39°18'15.26342"N	104°46'08.15124"W	1981.545	4350564.736	519922.719	1998.563	LIPT	CAL
6008	39°27'47.70900"N	104°37'40.74600"W	1940.300	4368252.294	532002.363	1957.701	LIPT	CAL
6009	39°23'11.92229"N	104°45'40.72968"W	1845.072	4359711.599	520555.311	1862.205	LIPT	CAL
6010	40°00'57.17448"N	103°37'21.31932"W	1359.058	4430428.584	617550.156	1378.917	LIPT	CAL
6011	37°56'29.58493"N	104°37'02.10612"W	1688.215	4199399.124	533630.993	1706.951	LIPT	CAL
6012	37°45'29.32668"N	103°37'12.50148"W	1430.389	4179877.722	621547.839	1451.816	LIPT	CAL
6013	38°52'25.02782"N	104°19'09.29928"W	1844.830	4302972.258	559052.372	1863.745	LIPT	CAL
6014	40°19'11.43797"N	104°14'51.65736"W	1351.820	4463529.276	563917.268	1370.919	LIPT	CAL
6015	39°07'39.75704"N	103°36'36.13464"W	1627.379	4331868.634	620145.060	1647.583	LIPT	CAL
6016	40°11'25.30306"N	103°32'50.53812"W	1347.244	4449897.553	623653.150	1367.035	LIPT	CAL
6017	39°24'14.73048"N	103°12'40.01436"W	1525.693	4363147.223	654022.641	1546.516	LIPT	CAL
6018	39°16'26.33826"N	104°07'55.72488"W	1772.113	4347540.376	574858.910	1790.643	LIPT	CAL
6019	39°16'21.82904"N	103°30'32.68152"W	1684.469	4348101.805	628607.364	1704.648	LIPT	CAL
6020	40°36'39.51349"N	103°46'20.63964"W	1426.417	4496297.384	603848.917	1445.514	LIPT	CAL

PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
6021	40°52'12.41976"N	104°42'54.34956"W	1665.449	4524377.993	524007.759	1682.559	LIPT	CAL
6022	40°18'23.61614"N	103°41'47.48244"W	1279.588	4462598.411	610766.832	1299.157	LIPT	CAL
6023	40°21'06.87971"N	104°03'40.01616"W	1316.752	4467240.083	579730.549	1335.996	LIPT	CAL
6024	39°35'43.16528"N	103°58'04.84716"W	1633.108	4383352.317	588608.800	1652.102	LIPT	CAL
6025	40°56'46.26154"N	104°13'11.22816"W	1588.360	4533076.013	565670.858	1606.541	LIPT	CAL
6026	38°34'45.17587"N	103°42'46.47564"W	1441.143	4270868.685	612110.611	1462.059	LIPT	CAL
6027	38°34'41.46546"N	104°28'43.96728"W	1584.992	4270097.722	545391.551	1604.222	LIPT	CAL
6028	38°55'58.71076"N	104°57'37.74096"W	2787.983	4309339.555	503425.020	2803.460	LIPT	CAL
6029	39°12'53.13928"N	103°26'07.59552"W	1578.695	4341775.367	635070.619	1599.208	LIPT	CAL
6030	39°43'58.47409"N	103°55'35.63076"W	1557.094	4398664.291	591985.158	1576.273	LIPT	CAL
6031	39°01'56.42746"N	104°29'49.69464"W	2072.590	4320485.788	543524.042	2090.535	LIPT	CAL
6032	39°27'43.07821"N	103°53'53.81196"W	1671.122	4368622.683	594777.446	1690.204	LIPT	CAL
6033	40°12'05.78506"N	104°15'21.36852"W	1407.235	4450399.432	563326.225	1426.286	LIPT	CAL
6034	38°55'37.98984"N	103°16'28.76628"W	1413.940	4310115.220	649558.193	1435.496	LIPT	CAL
6035	38°48'34.05114"N	103°52'09.87024"W	1646.628	4296239.389	598163.322	1666.689	LIPT	CAL
6036	39°20'06.44287"N	104°50'09.32676"W	1976.024	4353979.450	514140.360	1992.861	LIPT	CAL
6037	38°44'09.70066"N	104°49'45.27696"W	1929.362	4287497.824	514840.884	1946.387	LIPT	CAL
6038	40°02'04.81999"N	104°29'22.46928"W	1483.518	4431730.284	543547.798	1502.096	LIPT	CAL
6039	40°55'43.52408"N	104°04'03.66816"W	1657.175	4531266.824	578493.934	1675.551	LIPT	CAL
6040	38°57'19.08587"N	104°05'24.45864"W	1859.534	4312209.958	578837.713	1878.702	LIPT	CAL
6041	37°42'41.30795"N	103°54'11.80872"W	1408.174	4174369.245	596666.597	1429.079	LIPT	CAL
6042	37°40'45.90743"N	103°58'17.06196"W	1458.524	4170744.504	590700.750	1479.240	LIPT	CAL
6043	38°10'15.91273"N	103°30'33.49800"W	1250.067	4225847.665	630577.907	1272.256	LIPT	CAL
6044	39°14'15.76882"N	104°24'56.62440"W	2019.876	4343319.078	550423.502	2037.754	LIPT	CAL
6045	38°51'01.55437"N	103°32'02.11704"W	1511.904	4301200.180	627220.146	1532.854	LIPT	CAL
6046	39°18'13.10828"N	103°17'08.48472"W	1577.068	4351873.792	647812.942	1597.810	LIPT	CAL
6047	37°56'19.87278"N	104°58'51.29364"W	2288.664	4199030.901	501677.011	2305.114	LIPT	CAL
6048	40°23'34.68390"N	103°48'17.58600"W	1335.755	4472059.839	601428.661	1355.103	LIPT	CAL
6049	37°52'43.11026"N	103°41'35.87964"W	1305.724	4193154.861	614916.055	1327.321	LIPT	CAL
6050	38°10'28.07216"N	103°26'55.17780"W	1237.187	4226309.641	635884.112	1259.478	LIPT	CAL
6051	37°49'06.15922"N	104°16'16.73472"W	1580.521	4185914.017	564134.473	1600.406	LIPT	CAL
6052	39°54'48.25912"N	103°49'00.99372"W	1454.619	4418815.986	601114.149	1474.139	LIPT	CAL
6053	38°12'44.30041"N	103°25'02.86284"W	1243.368	4230554.923	638545.276	1265.678	LIPT	CAL
6054	40°18'18.24232"N	104°36'01.93464"W	1459.106	4461694.147	533945.828	1477.696	LIPT	CAL
6055	40°27'54.87102"N	103°31'22.20060"W	1316.336	4480444.417	625232.807	1335.886	LIPT	CAL
6056	39°25'06.28187"N	104°07'04.54260"W	1752.472	4363580.981	575928.816	1770.957	LIPT	CAL
6057	39°23'40.11551"N	104°32'58.38972"W	1968.586	4360650.320	538787.591	1986.075	LIPT	CAL
6058	38°15'05.11747"N	105°00'44.98956"W	1664.251	4233711.432	498906.545	1681.543	LIPT	CAL
6059	40°01'59.65833"N	104°43'09.73790"W	1514.782	4431484.085	523942.751	1533.055	LIPT	CAL
6060	40°47'11.83686"N	104°00'40.83516"W	1553.713	4515540.601	583415.744	1572.357	LIPT	CAL
6061	38°45'00.87228"N	103°42'00.49212"W	1520.844	4289863.368	612954.197	1541.481	LIPT	CAL
6062	38°07'30.31054"N	103°27'13.97880"W	1234.755	4220822.762	635517.995	1257.039	LIPT	CAL

PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
6063	38°04'55.77179"N	104°27'06.59916"W	1478.297	4215072.622	548074.023	1497.956	LIPT	CAL
6064	40°32'12.38629"N	104°35'00.16944"W	1448.473	4487420.022	535282.551	1466.654	LIPT	CAL
6065	38°56'20.40403"N	103°49'53.09940"W	1697.102	4310656.674	601278.012	1716.989	LIPT	CAL
6066	39°18'50.24743"N	104°52'59.58732"W	1934.589	4351624.239	510067.457	1951.223	LIPT	CAL
6067	40°46'08.74322"N	104°55'30.16164"W	1692.031	4513127.671	506325.787	1708.421	LIPT	CAL
6068	37°43'27.63102"N	103°30'16.59780"W	1273.025	4176283.297	631784.924	1294.606	LIPT	CAL
6069	39°26'38.53936"N	104°48'04.13172"W	1881.170	4366072.783	517110.834	1898.261	LIPT	CAL
6070	39°28'35.80079"N	103°27'13.26348"W	1603.313	4370809.981	632998.378	1623.476	LIPT	CAL
6071	39°28'40.74571"N	104°46'21.05940"W	1785.169	4369845.959	519564.986	1802.387	LIPT	CAL
6072	39°17'53.42244"N	104°34'48.32544"W	2015.991	4349950.033	536207.670	2033.437	LIPT	CAL
6073	38°44'17.15766"N	104°07'37.71408"W	1763.147	4288075.446	575860.722	1782.833	LIPT	CAL
6074	38°32'27.30322"N	104°04'21.32328"W	1591.245	4266241.302	580823.225	1611.418	LIPT	CAL
6075	39°32'07.01844"N	103°13'49.07424"W	1497.559	4377675.594	652084.878	1518.282	LIPT	CAL
6076	40°04'24.65789"N	103°59'37.22352"W	1408.429	4436401.981	585808.328	1427.752	LIPT	CAL
6077	40°08'31.25695"N	104°31'41.04156"W	1502.459	4443626.516	540200.550	1521.098	LIPT	CAL
6078	40°30'37.21720"N	104°54'09.79776"W	1461.175	4484406.806	508241.509	1478.345	LIPT	CAL
6079	40°13'36.00142"N	104°29'59.63568"W	1425.272	4453035.458	542547.095	1444.019	LIPT	CAL
6080	40°38'23.55896"N	104°53'16.99008"W	1567.224	4498787.322	509465.989	1584.038	LIPT	CAL
6081	40°20'30.50005"N	103°34'56.00280"W	1258.681	4466659.977	620417.460	1278.333	LIPT	CAL
6082	38°11'52.48594"N	104°50'13.45308"W	1573.578	4227786.766	514266.267	1591.758	LIPT	CAL
6083	39°06'44.44542"N	104°46'55.47468"W	2215.244	4329266.458	518840.527	2232.040	LIPT	CAL
6084	39°09'34.62559"N	104°20'51.13932"W	1941.071	4334692.520	556370.858	1959.243	LIPT	CAL
6085	40°25'15.49898"N	103°57'18.40068"W	1413.260	4475006.804	588642.053	1432.442	LIPT	CAL
6086	38°46'55.65252"N	104°02'04.63380"W	1732.904	4293041.776	583850.528	1752.677	LIPT	CAL
6087	38°16'34.70218"N	104°06'35.48124"W	1428.091	4236847.152	577858.871	1448.652	LIPT	CAL
6088	38°40'51.54974"N	103°45'26.51112"W	1533.570	4282108.828	608085.394	1554.176	LIPT	CAL
6089	38°05'04.01345"N	103°31'39.17784"W	1239.277	4216208.404	629132.274	1261.437	LIPT	CAL
6090	39°07'39.19670"N	103°16'34.04424"W	1558.229	4332346.443	649009.738	1579.291	LIPT	CAL
6091	38°57'18.34146"N	104°14'21.11244"W	2031.868	4312068.605	565921.219	2050.675	LIPT	CAL
6092	39°01'37.83306"N	103°54'17.08452"W	1788.435	4320362.946	594804.909	1807.917	LIPT	CAL
6093	38°33'39.64561"N	103°34'39.84132"W	1459.206	4269022.347	623916.777	1480.489	LIPT	CAL
6094	40°42'37.98954"N	104°45'19.77264"W	1565.079	4506655.212	520653.167	1582.279	LIPT	CAL
6095	38°50'19.41659"N	104°56'39.33708"W	2691.396	4298881.650	504837.536	2707.093	LIPT	CAL
6096	39°04'33.01399"N	104°10'57.31464"W	1908.094	4325510.314	570706.068	1926.788	LIPT	CAL
6097	38°56'41.17700"N	104°49'14.81628"W	1918.336	4310663.102	515530.837	1935.108	LIPT	CAL
6098	40°56'54.36164"N	103°40'15.00240"W	1488.071	4533883.277	611873.407	1506.957	LIPT	CAL
6099	39°17'41.51454"N	103°52'58.74600"W	1697.484	4350093.595	596322.766	1716.663	LIPT	CAL
6100	40°42'37.88881"N	104°16'39.73368"W	1494.909	4506874.201	561011.452	1513.212	LIPT	CAL
6101	39°47'52.77012"N	103°44'33.97056"W	1439.290	4406092.603	607633.956	1458.846	LIPT	CAL
6102	39°03'28.90861"N	104°41'13.83072"W	2272.759	4323262.843	527065.935	2289.956	LIPT	CAL
6103	38°33'02.64460"N	104°41'46.08816"W	1629.173	4266966.799	526477.761	1647.618	LIPT	CAL
6104	39°39'46.01545"N	103°47'53.04804"W	1521.023	4391020.701	603100.792	1540.430	LIPT	CAL

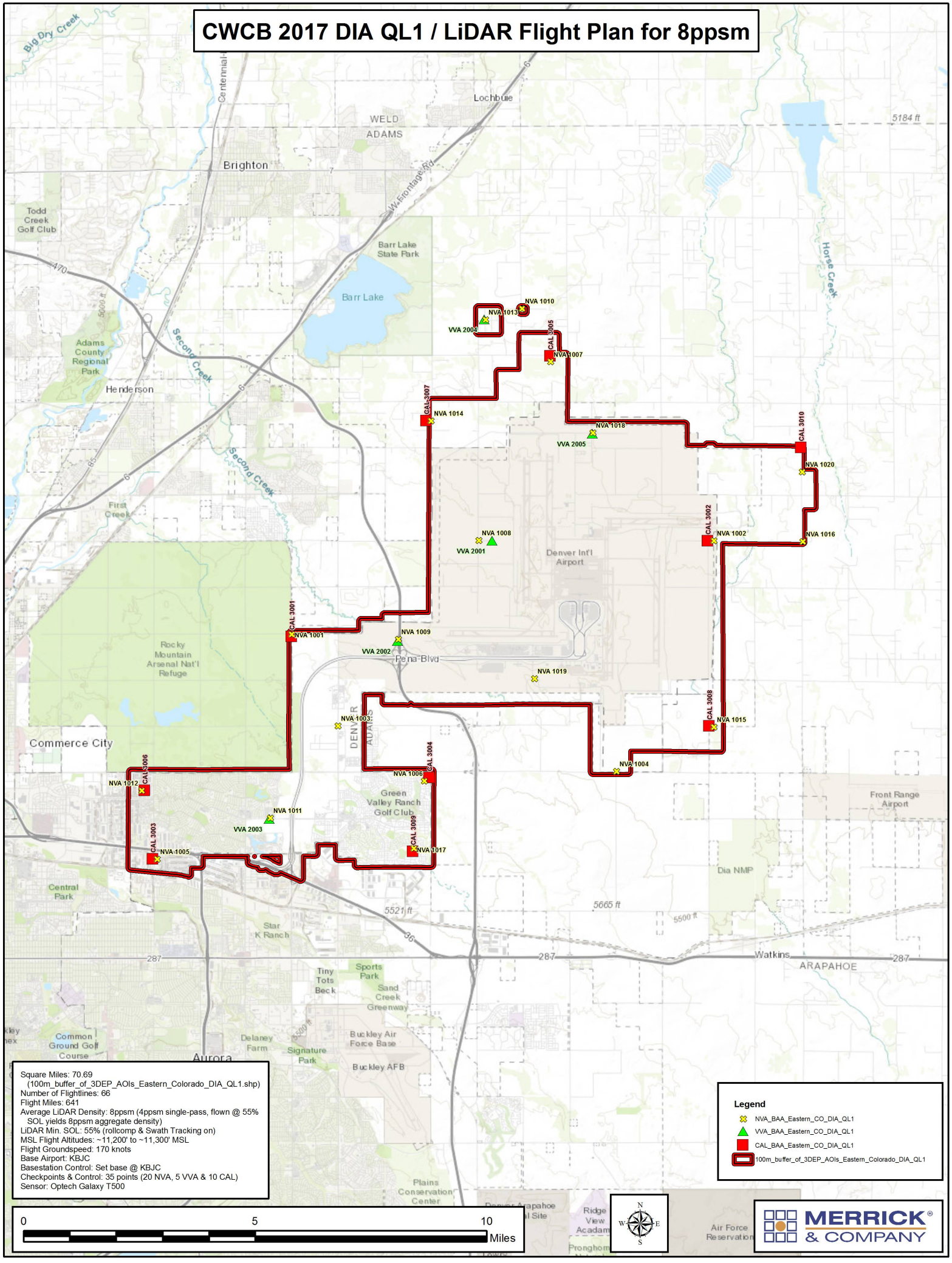
PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
6105	38°02'18.73630"N	104°02'28.01328"W	1344.942	4210524.778	584144.438	1365.835	LIPT	CAL
6106	38°38'27.41363"N	103°15'29.15388"W	1432.158	4278372.684	651598.866	1454.141	LIPT	CAL
6107	38°43'56.02343"N	103°25'22.74672"W	1474.920	4288242.861	637073.481	1496.383	LIPT	CAL
6108	38°42'26.85964"N	103°33'16.43544"W	1536.935	4285305.505	625679.410	1558.050	LIPT	CAL
6109	40°57'00.56189"N	104°55'27.68628"W	1789.866	4533226.692	506366.457	1805.843	LIPT	CAL
6110	39°01'21.50857"N	104°22'13.96524"W	2026.845	4319477.570	554488.389	2045.193	LIPT	CAL
6111	40°32'18.27388"N	104°14'34.88748"W	1437.233	4487793.430	564105.168	1455.935	LIPT	CAL
6112	40°13'56.34984"N	103°46'48.93312"W	1301.085	4454256.356	603764.321	1320.664	LIPT	CAL
6113	40°17'23.55731"N	104°48'04.70520"W	1432.404	4459950.477	516888.445	1450.506	LIPT	CAL
6114	39°41'07.44641"N	104°30'06.16176"W	1742.057	4392959.491	542728.398	1760.046	LIPT	CAL
6115	39°23'25.40022"N	104°50'27.32208"W	1943.725	4360111.988	513698.762	1960.623	LIPT	CAL
6116	38°04'58.11676"N	104°09'03.84336"W	1353.835	4215343.263	574450.764	1374.429	LIPT	CAL
6117	38°51'40.24469"N	104°41'48.98004"W	1944.291	4301415.292	526293.821	1961.938	LIPT	CAL
6118	40°36'41.45065"N	104°04'08.09076"W	1481.719	4496049.495	578764.249	1500.499	LIPT	CAL
6119	38°47'45.61426"N	104°13'14.79612"W	1824.484	4294427.633	567668.086	1843.838	LIPT	CAL
6120	38°07'50.67311"N	103°33'51.90012"W	1281.675	4221294.717	625819.439	1303.769	LIPT	CAL
6121	37°54'36.34380"N	103°26'11.03388"W	1341.174	4196992.537	637451.700	1363.180	LIPT	CAL
6122	39°01'25.39474"N	103°24'17.44236"W	1490.886	4320619.372	638084.864	1511.867	LIPT	CAL
6123	38°56'14.20721"N	103°29'04.17876"W	1519.442	4310908.367	631349.345	1540.363	LIPT	CAL
6124	39°30'19.75140"N	104°03'13.74552"W	1662.540	4373300.712	581346.095	1681.266	LIPT	CAL
6125	38°27'50.60063"N	104°10'49.66500"W	1576.475	4257623.085	571497.984	1596.556	LIPT	CAL
6126	37°45'53.86903"N	104°06'36.99360"W	1449.544	4180110.413	578364.838	1470.030	LIPT	CAL
6127	40°29'42.07340"N	103°59'39.61140"W	1468.689	4483187.698	585220.742	1487.704	LIPT	CAL
6128	38°39'12.80880"N	104°00'59.69340"W	1648.996	4278791.401	585570.568	1669.078	LIPT	CAL
6129	38°43'21.81320"N	104°24'57.63096"W	1714.623	4286169.754	550765.804	1733.734	LIPT	CAL
6130	38°58'12.64656"N	104°39'05.89536"W	2170.229	4313525.088	530178.008	2187.750	LIPT	CAL
6131	40°13'57.52517"N	103°58'16.95108"W	1339.163	4454086.525	587505.182	1358.542	LIPT	CAL
6132	39°39'08.00896"N	104°12'36.83772"W	1604.343	4389456.721	567755.454	1622.842	LIPT	CAL
6133	38°59'40.42158"N	103°13'06.70476"W	1466.989	4317682.555	654277.728	1488.516	LIPT	CAL
6134	38°03'05.29312"N	104°48'44.23608"W	1665.217	4211542.411	516469.111	1683.279	LIPT	CAL
6135	40°26'06.45774"N	104°36'35.98884"W	1396.555	4476126.915	533078.319	1414.987	LIPT	CAL
6136	39°28'38.53466"N	104°26'28.44960"W	1826.516	4369902.090	548057.700	1844.240	LIPT	CAL
6137	39°46'04.51308"N	104°14'47.63832"W	1558.586	4402270.574	564530.421	1577.180	LIPT	CAL
6138	39°52'12.47059"N	104°05'39.40512"W	1483.113	4413735.647	577458.901	1502.126	LIPT	CAL
6139	39°28'02.77900"N	104°54'01.84644"W	1947.806	4368655.557	508557.793	1964.643	LIPT	CAL
6140	37°29'18.77906"N	104°58'34.77036"W	2202.542	4149071.284	502092.946	2219.595	LIPT	CAL
6141	37°04'27.57180"N	105°04'32.40732"W	2558.329	4103120.269	493273.855	2574.977	LIPT	CAL
6142	37°46'02.38786"N	104°39'48.17448"W	1810.061	4180053.647	529647.352	1828.403	LIPT	CAL
6143	37°07'03.88592"N	104°46'35.78124"W	2006.765	4107957.804	519846.051	2024.863	LIPT	CAL
6144	37°03'43.41287"N	105°00'38.68128"W	2375.528	4101756.882	499044.747	2392.564	LIPT	CAL
6145	37°24'52.03901"N	104°38'05.12484"W	1904.630	4140913.445	532320.716	1923.291	LIPT	CAL
6146	37°29'56.36202"N	104°32'42.75672"W	1879.020	4150326.352	540199.556	1898.029	LIPT	CAL

PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
6147	36°59'54.90985"N	104°21'54.55188"W	2283.459	4094903.852	556487.530	2301.785	LIPT	CAL
6148	37°40'56.66045"N	105°24'16.36596"W	2691.320	4170655.203	464329.228	2706.760	LIPT	CAL
6149	37°09'00.77450"N	104°34'14.74896"W	1891.832	4111622.661	538116.603	1910.497	LIPT	CAL
6150	37°12'04.96235"N	105°03'01.48464"W	2622.652	4117213.504	495526.360	2639.233	LIPT	CAL
6151	37°25'39.49687"N	104°27'53.64612"W	1773.399	4142447.724	547343.164	1792.612	LIPT	CAL
6152	37°45'29.70166"N	105°15'08.93880"W	2255.047	4179022.964	477760.077	2270.996	LIPT	CAL
6153	37°17'35.88216"N	104°55'11.58132"W	2460.588	4127412.974	507100.960	2477.785	LIPT	CAL
6154	37°42'16.54888"N	104°55'40.44036"W	1956.655	4173042.703	506355.487	1973.915	LIPT	CAL
6155	37°52'22.54811"N	104°35'26.26584"W	1773.379	4191795.458	536003.650	1792.045	LIPT	CAL
6156	37°16'25.00630"N	104°35'05.72424"W	1954.444	4125306.564	536799.216	1973.246	LIPT	CAL
6157	37°07'36.83010"N	104°55'33.97152"W	2315.580	4108952.201	506564.104	2333.031	LIPT	CAL
6158	37°33'35.57941"N	104°26'26.56752"W	1825.141	4157131.940	549396.099	1844.468	LIPT	CAL
6159	37°47'34.97665"N	105°11'32.48484"W	2150.469	4182871.211	483064.221	2166.497	LIPT	CAL
6160	37°21'03.74857"N	105°07'32.53188"W	2829.530	4133823.085	488867.040	2845.642	LIPT	CAL
6161	37°13'39.73811"N	104°24'37.71432"W	1781.145	4120295.687	552296.930	1800.324	LIPT	CAL
6162	37°05'07.85728"N	104°41'21.07752"W	2057.972	4104404.178	527623.848	2076.247	LIPT	CAL
6163	37°34'30.00821"N	104°49'09.61140"W	1961.547	4158677.683	515952.881	1979.397	LIPT	CAL
1003A	39°48'45.89597"N	104°46'19.60752"W	1612.540	4406999.349	519505.388	1630.408	LIPT	NVA
1004A	39°47'52.83071"N	104°39'32.91156"W	1649.605	4405394.093	529181.108	1667.662	LIPT	NVA
1005A	39°46'15.86960"N	104°50'44.77992"W	1605.587	4402360.646	513208.699	1623.213	LIPT	NVA
1006A	39°47'43.52906"N	104°44'13.62660"W	1638.990	4405084.814	522506.321	1656.908	LIPT	NVA
1012A	39°47'35.14697"N	104°51'08.27352"W	1590.959	4404803.784	512645.754	1608.598	LIPT	NVA
1013A	39°56'23.66711"N	104°42'42.75036"W	1557.678	4421127.312	524615.819	1575.851	LIPT	NVA
1014A	39°54'29.38212"N	104°44'00.99348"W	1582.742	4417598.106	522769.478	1600.830	LIPT	NVA
1019A	39°49'38.41918"N	104°41'32.67780"W	1629.160	4408639.037	526321.780	1647.213	LIPT	NVA
2001A	39°52'14.69471"N	104°42'33.70536"W	1575.137	4413452.143	524855.452	1593.215	LIPT	VVA
2002A	39°50'21.20320"N	104°44'52.28988"W	1595.438	4409943.215	521573.145	1613.399	LIPT	VVA
2003A	39°47'01.36705"N	104°47'58.26948"W	1614.780	4403771.153	517166.849	1632.534	LIPT	VVA
3004A	39°47'48.52205"N	104°44'06.66204"W	1640.360	4405239.234	522671.494	1658.284	LIPT	CAL
3006A	39°47'33.44629"N	104°50'59.99064"W	1591.577	4404751.680	512842.829	1609.221	LIPT	CAL
3008A	39°48'44.64788"N	104°37'17.48568"W	1625.383	4407004.541	532394.892	1643.503	LIPT	CAL
4002A	38°59'49.54283"N	103°42'06.56964"W	1641.262	4317255.735	612417.878	1661.431	LIPT	NVA
4013A	37°49'22.54336"N	103°38'49.72884"W	1353.655	4187030.964	619064.686	1375.189	LIPT	NVA
4025A	39°37'28.32985"N	103°53'24.83340"W	1603.076	4386674.071	595247.420	1622.265	LIPT	NVA
4029A	38°58'31.21079"N	104°59'03.70392"W	2792.953	4314039.751	501354.575	2808.219	LIPT	NVA
4033A	39°28'34.86828"N	103°51'17.81316"W	1668.070	4370265.779	598485.058	1687.273	LIPT	NVA
4043A	37°40'29.08340"N	103°59'39.71832"W	1476.858	4170204.024	588681.653	1497.517	LIPT	NVA
4044A	38°10'20.75736"N	103°30'34.20900"W	1250.178	4225996.714	630558.205	1272.365	LIPT	NVA
4045A	38°07'43.38484"N	103°27'47.39364"W	1235.664	4221212.238	634697.709	1257.937	LIPT	NVA
4053A	37°52'11.40416"N	103°43'47.82864"W	1313.701	4192133.127	611705.866	1335.208	LIPT	NVA
4085A	39°06'01.32412"N	104°47'39.77412"W	2251.009	4327934.724	517779.675	2267.743	LIPT	NVA
4086A	39°08'35.83021"N	104°17'31.71192"W	1945.095	4332915.940	561171.150	1963.418	LIPT	NVA

PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
4094A	39°03'22.11444"N	103°54'14.01444"W	1798.373	4323578.485	594839.988	1817.799	LIPT	NVA
4097A	38°50'30.30223"N	104°54'33.00768"W	2090.450	4299219.637	507882.724	2106.550	LIPT	NVA
4099A	38°10'54.26774"N	103°25'57.50580"W	1233.453	4227140.696	637273.754	1255.765	LIPT	NVA
4108A	37°52'13.05667"N	103°50'33.85500"W	1318.622	4192055.045	601784.973	1339.853	LIPT	NVA
4116A	40°13'56.15875"N	103°46'31.26216"W	1297.522	4454256.219	604181.992	1317.104	LIPT	NVA
4119A	38°34'40.33258"N	104°32'50.60832"W	1600.518	4270031.181	539424.090	1619.525	LIPT	NVA
4123A	38°47'45.59262"N	104°13'15.25044"W	1824.475	4294426.872	567657.132	1843.829	LIPT	NVA
4135A	40°13'57.76964"N	103°58'57.20700"W	1336.898	4454083.091	586553.808	1356.264	LIPT	NVA
4143A	39°28'06.19496"N	104°53'53.45052"W	1942.583	4368761.088	508758.288	1959.429	LIPT	NVA
4148A	39°20'02.36598"N	104°50'03.14088"W	1971.914	4353854.042	514288.676	1988.755	LIPT	NVA
4156A	39°11'20.88935"N	104°35'53.22624"W	2150.429	4337842.455	534706.853	2167.886	LIPT	NVA
4172A	38°58'50.20738"N	103°28'44.27220"W	1545.129	4315725.427	631748.330	1565.986	LIPT	NVA
4175A	39°26'07.39316"N	104°45'53.88300"W	1816.402	4365120.107	520226.571	1833.577	LIPT	NVA
4183A	37°54'05.41814"N	104°15'20.03472"W	1464.325	4195148.085	565447.163	1484.368	LIPT	NVA
4186A	40°14'05.56616"N	104°41'48.34752"W	1483.584	4453871.166	525795.318	1501.990	LIPT	NVA
4199A	38°00'19.10574"N	104°39'13.93776"W	1672.852	4206460.375	530387.004	1691.589	LIPT	NVA
4210A	37°50'13.74256"N	103°49'18.85692"W	1334.031	4188400.606	603663.755	1355.280	LIPT	NVA
4223A	38°02'54.91630"N	104°02'28.95000"W	1343.121	4211639.657	584110.106	1364.019	LIPT	NVA
4228A	37°58'16.75805"N	104°38'00.87396"W	1731.878	4202696.427	532183.617	1750.615	LIPT	NVA
4235A	38°51'07.35372"N	103°42'04.50504"W	1614.902	4301159.137	612696.838	1635.331	LIPT	NVA
4238A	39°26'44.03857"N	104°48'05.57244"W	1885.021	4366242.235	517076.024	1902.113	LIPT	NVA
4247A	38°34'10.41892"N	104°56'25.19412"W	1920.120	4269013.736	505197.941	1937.051	LIPT	NVA
4248A	37°49'05.36581"N	104°16'16.16628"W	1580.254	4185889.673	564148.562	1600.140	LIPT	NVA
4255A	39°07'40.43982"N	103°24'31.89240"W	1526.309	4332175.240	637534.935	1547.074	LIPT	NVA
4256A	38°11'59.34926"N	104°57'19.97640"W	1791.571	4227986.691	503892.066	1809.039	LIPT	NVA
4257A	39°07'46.90225"N	104°28'19.69284"W	2004.636	4331301.781	545625.161	2022.499	LIPT	NVA
4268A	39°25'06.23453"N	103°40'30.19944"W	1721.828	4364045.820	614052.514	1741.429	LIPT	NVA
4270A	37°58'47.20886"N	103°47'29.44608"W	1323.515	4204260.445	606133.002	1344.974	LIPT	NVA
4273A	39°37'26.97132"N	103°59'09.74400"W	1620.549	4386534.984	587024.826	1639.528	LIPT	NVA
4279A	37°05'04.27470"N	105°02'22.95096"W	2497.610	4104249.336	496470.799	2514.456	LIPT	NVA
4285A	36°59'54.81834"N	104°21'55.15056"W	2283.041	4094900.934	556472.752	2301.367	LIPT	NVA
4287A	37°08'28.84700"N	104°31'13.24848"W	1912.117	4110660.233	542598.664	1930.842	LIPT	NVA
4290A	37°43'51.27377"N	105°15'06.22404"W	2303.875	4175989.360	477818.344	2319.833	LIPT	NVA
4291A	37°17'36.21919"N	104°55'11.96580"W	2461.173	4127423.352	507091.485	2478.370	LIPT	NVA
4293A	37°48'20.45711"N	104°36'30.50496"W	1771.049	4184327.635	534465.545	1789.579	LIPT	NVA
4295A	37°04'00.88943"N	104°55'38.08380"W	2229.684	4102297.845	506467.733	2247.139	LIPT	NVA
4298A	37°20'58.57559"N	105°07'23.51640"W	2798.874	4133663.379	489088.626	2814.999	LIPT	NVA
4302A	37°21'57.79800"N	104°23'33.08208"W	1787.024	4135654.366	553790.989	1806.425	LIPT	NVA
4317A	37°51'00.71838"N	105°18'35.45856"W	2341.702	4189239.788	472740.756	2357.234	LIPT	NVA
4318A	37°39'37.91869"N	105°00'35.75916"W	2080.677	4168151.583	499123.896	2097.584	LIPT	NVA
4322A	37°54'48.55036"N	105°19'46.27236"W	2527.804	4196267.387	471035.022	2542.973	LIPT	NVA
4323A	37°01'11.02724"N	104°29'30.71616"W	2170.655	4097181.744	545200.281	2188.983	LIPT	NVA

PT#	NAD83(2011)		ELLIPSOID	UTM ZONE 13 NORTH		NAVD 88	CODE	NOTE
	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING	ELEVATION		
			METERS	METERS	METERS	METERS		
						GEOID 12B		
4324A	37°45'05.09940"N	104°45'20.85912"W	1797.826	4178262.817	521512.805	1815.841	LIPT	NVA
5002A	38°53'40.89854"N	103°37'35.14872"W	1566.012	4305987.391	619118.360	1586.599	LIPT	VVA
5003A	39°21'36.46724"N	104°54'31.16880"W	1954.763	4356745.789	507869.213	1971.364	LIPT	VVA
5005A	39°53'59.18860"N	104°19'10.77384"W	1537.460	4416854.770	558158.730	1556.082	LIPT	VVA
5024A	39°37'27.44314"N	103°59'10.34232"W	1620.895	4386549.369	587010.397	1639.874	LIPT	VVA
5037A	38°36'48.68964"N	104°53'36.75120"W	1953.787	4273895.822	509268.324	1970.775	LIPT	VVA
5050A	38°07'43.76514"N	103°27'47.23848"W	1235.298	4221224.023	634701.293	1257.571	LIPT	VVA
5064A	40°32'13.53793"N	104°34'24.84336"W	1447.701	4487459.505	536113.405	1465.900	LIPT	VVA
5078A	40°27'55.32736"N	104°43'48.93636"W	1420.318	4479445.610	522867.865	1438.341	LIPT	VVA
5082A	38°11'59.46299"N	104°57'19.58760"W	1791.144	4227990.201	503901.521	1808.613	LIPT	VVA
5090A	39°07'40.76872"N	103°24'32.30460"W	1526.048	4332185.206	637524.860	1546.812	LIPT	VVA
5092A	39°01'37.40484"N	103°54'16.61508"W	1787.563	4320349.881	594816.356	1807.045	LIPT	VVA
5106A	38°36'44.04240"N	103°12'36.15228"W	1412.678	4275266.617	655843.674	1434.786	LIPT	VVA
5117A	38°54'54.16754"N	104°36'47.00268"W	2084.753	4307420.432	533546.218	2102.595	LIPT	VVA
5121A	37°54'36.07294"N	103°26'11.63400"W	1340.735	4196983.943	637437.185	1362.740	LIPT	VVA
5122A	39°00'57.64122"N	103°24'16.89480"W	1486.886	4319764.020	638113.034	1507.883	LIPT	VVA
5143A	39°23'52.43554"N	104°49'34.12056"W	1956.978	4360947.763	514969.767	1973.928	LIPT	VVA
5177A	37°54'05.68962"N	104°15'20.56140"W	1464.799	4195156.350	565434.234	1484.842	LIPT	VVA
5178A	38°50'19.87580"N	104°28'28.86672"W	1873.851	4299025.402	545591.067	1892.444	LIPT	VVA
5182A	40°07'52.21866"N	104°10'09.29208"W	1419.438	4442646.911	570777.309	1438.555	LIPT	VVA
5189A	38°07'50.51284"N	103°33'51.57540"W	1281.464	4221289.899	625827.422	1303.558	LIPT	VVA
5195A	37°05'03.51006"N	105°02'22.64388"W	2496.818	4104225.771	496478.371	2513.665	LIPT	VVA
5206A	37°43'50.93404"N	105°15'06.40296"W	2303.881	4175978.902	477813.936	2319.838	LIPT	VVA
5207A	37°17'36.49520"N	104°55'11.99064"W	2461.419	4127431.857	507090.867	2478.615	LIPT	VVA
5218A	37°21'58.24174"N	104°23'33.18396"W	1787.488	4135668.025	553788.395	1806.889	LIPT	VVA
6036A	39°20'06.39560"N	104°50'10.10760"W	1976.354	4353977.959	514121.669	1993.190	LIPT	CAL
6050A	38°08'54.43786"N	103°28'17.15520"W	1234.466	4223390.361	633936.996	1256.731	LIPT	CAL
6068A	37°46'34.35938"N	103°27'32.99004"W	1269.981	4182103.500	635695.481	1291.758	LIPT	CAL
6081A	40°20'30.47118"N	103°35'01.18680"W	1258.192	4466657.128	620295.165	1277.843	LIPT	CAL
6092A	39°03'22.64148"N	103°54'13.71888"W	1797.717	4323594.818	594846.896	1817.143	LIPT	CAL
6136A	39°28'38.64284"N	104°26'28.21920"W	1826.624	4369905.460	548063.184	1844.348	LIPT	CAL
6141A	37°05'03.82513"N	105°02'22.96824"W	2497.431	4104235.483	496470.367	2514.277	LIPT	CAL
6150A	37°12'04.71272"N	105°03'01.25856"W	2622.326	4117205.809	495531.928	2638.907	LIPT	CAL
6152A	37°43'51.10572"N	105°15'08.83260"W	2304.463	4175984.353	477754.480	2320.418	LIPT	CAL
6160A	37°21'03.96317"N	105°07'33.47616"W	2832.000	4133829.729	488843.818	2848.110	LIPT	CAL
6163A	37°14'57.57637"N	104°51'25.47036"W	2317.723	4122541.152	512675.256	2335.382	LIPT	CAL

CWCB 2017 DIA QL1 / LiDAR Flight Plan for 8ppsm



Square Miles: 70.69
(100m_buffer_of_3DEP_AOIs_Eastern_Colorado_DIA_QL1.shp)
Number of Flightlines: 66
Flight Miles: 641
Average LiDAR Density: 8ppsm (4ppsm single-pass, flown @ 55% SOL yields 8ppsm aggregate density)
LiDAR Min. SOL: 55% (rollcomp & Swath Tracking on)
MSL Flight Altitudes: ~11,200' to ~11,300' MSL
Flight Groundspeed: 170 knots
Base Airport: KBJC
Basestation Control: Set base @ KBJC
Checkpoints & Control: 35 points (20 NVA, 5 VVA & 10 CAL)
Sensor: Optech Galaxy T500

Legend

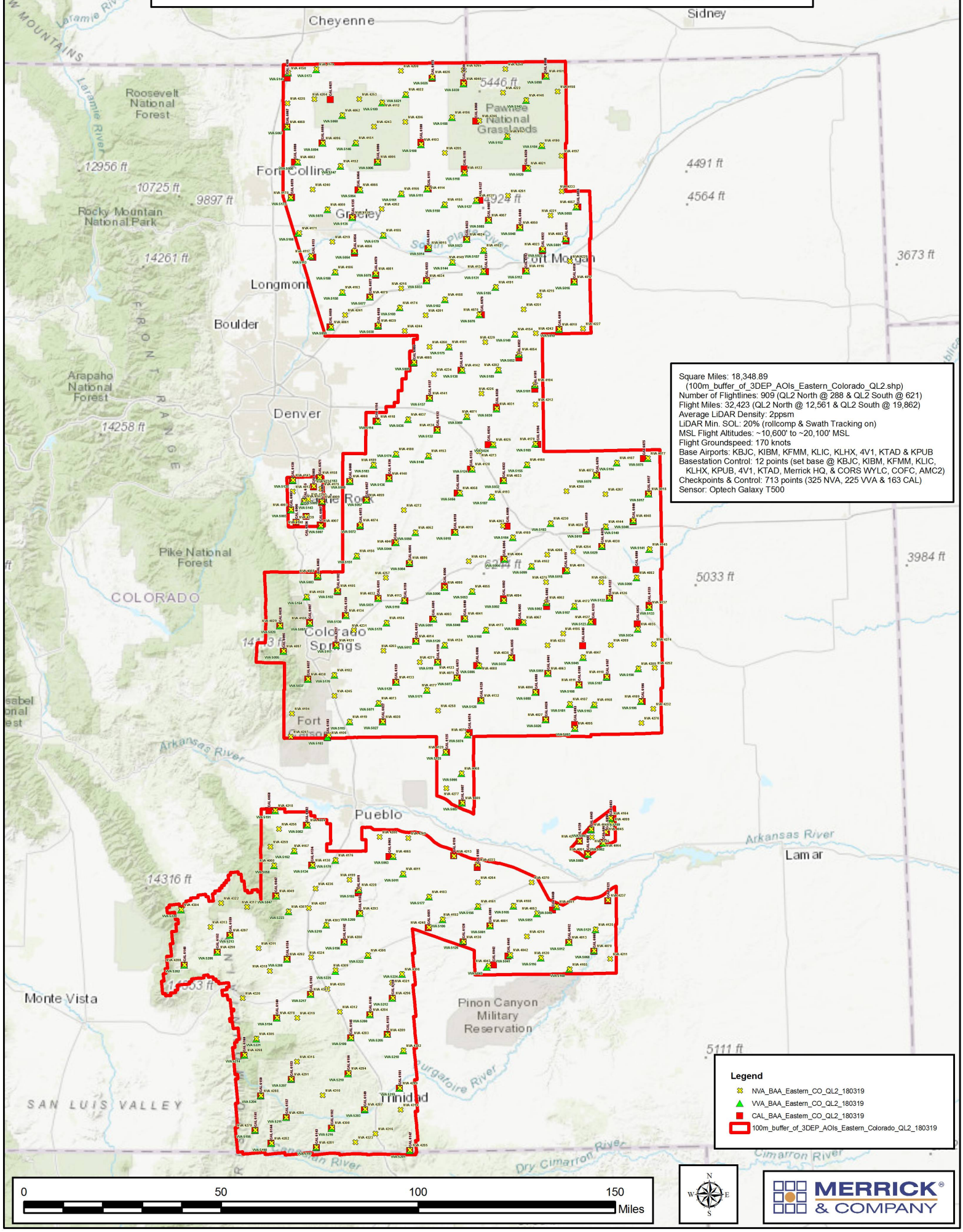
- NVA_BAA_Eastern_CO_DIA_QL1
- VVA_BAA_Eastern_CO_DIA_QL1
- CAL_BAA_Eastern_CO_DIA_QL1
- 100m_buffer_of_3DEP_AOIs_Eastern_Colorado_DIA_QL1

0 5 10 Miles

N W E S

MERRICK® & COMPANY

CWCB 2017 BAA Eastern CO / LiDAR Flight Plan for 2ppsm




6111

The NGS Data Sheet

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

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PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 KK0023
***********************************************************************
 KK0023  DESIGNATION -  A 259
 KK0023  PID         -  KK0023
 KK0023  STATE/COUNTY-  CO/ARAPAHOE
 KK0023  COUNTRY     -  US
 KK0023  USGS QUAD   -  STRASBURG (1978)
 KK0023
 KK0023                         *CURRENT SURVEY CONTROL
 KK0023
_______________________________________________________________________
 KK0023* NAD 83(2011) POSITION- 39 44 13.82904(N) 104 17 54.40079(W)
ADJUSTED
 KK0023* NAD 83(2011) ELLIP HT-  1626.075 (meters)        (06/27/12)
ADJUSTED
 KK0023* NAD 83(2011) EPOCH   -  2010.00
 KK0023* NAVD 88 ORTHO HEIGHT -  1644.489 (meters)     5395.29  (feet)
ADJUSTED
 KK0023
_______________________________________________________________________
 KK0023  GEOID HEIGHT    -        -18.435 (meters)
GEOID12B
 KK0023  NAD 83(2011) X  - -1,213,294.066 (meters)                    COMP
 KK0023  NAD 83(2011) Y  - -4,760,482.165 (meters)                    COMP
 KK0023  NAD 83(2011) Z  -  4,056,627.382 (meters)                    COMP
 KK0023  LAPLACE CORR    -         -4.32  (seconds)
DEFLEC12B
 KK0023  DYNAMIC HEIGHT  -       1642.976 (meters)     5390.33  (feet) COMP
 KK0023  MODELED GRAVITY -    979,648.4   (mgal)                       NAVD
88
 KK0023
 KK0023  VERT ORDER      -  FIRST     CLASS II
 KK0023
 KK0023  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 KK0023  Standards:
 KK0023         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 KK0023            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 KK0023  ------------------------------------------------------------------
 KK0023  NETWORK    0.42   0.74           0.19   0.15   0.38      0.02408235
 KK0023  ------------------------------------------------------------------
 KK0023  Click here for local accuracies and other accuracy information.
 KK0023
 KK0023
 KK0023.The horizontal coordinates were established by GPS observations
 KK0023.and adjusted by the National Geodetic Survey in June 2012.
 KK0023
 KK0023.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 KK0023.been affixed to the stable North American tectonic plate. See
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KK0023.NA2011 for more information.
KK0023
KK0023.The horizontal coordinates are valid at the epoch date displayed above
KK0023.which is a decimal equivalence of Year/Month/Day.
KK0023
KK0023.The orthometric height was determined by differential leveling and
KK0023.adjusted by the NATIONAL GEODETIC SURVEY
KK0023.in June 1991.
KK0023
KK0023.Significant digits in the geoid height do not necessarily reflect accuracy.
KK0023.GEOID12B height accuracy estimate available here.
KK0023
KK0023.The X, Y, and Z were computed from the position and the ellipsoidal ht.
KK0023
KK0023.The Laplace correction was computed from DEFLEC12B derived deflections.
KK0023
KK0023.The ellipsoidal height was determined by GPS observations
KK0023.and is referenced to NAD 83.
KK0023
KK0023.The dynamic height is computed by dividing the NAVD 88
KK0023.geopotential number by the normal gravity value computed on the
KK0023.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
KK0023.degrees latitude (g = 980.6199 gals.).
KK0023
KK0023.The modeled gravity was interpolated from observed gravity values.
KK0023
KK0023. The following values were computed from the NAD 83(2011) position.
KK0023
KK0023;   North   East   Units Scale Factor   Converg.
KK0023;SPC CO C   -   516,829.139 1,017,396.308   MT 0.99999749   +0 45 28.1
KK0023;SPC CO C   - 1,695,630.27 3,337,907.72   sFT 0.99999749   +0 45 28.1
KK0023;UTM 13   - 4,398,822.124   560,113.790   MT 0.99964449   +0 26 54.6
KK0023
KK0023!   - Elev Factor x Scale Factor =   Combined Factor
KK0023!SPC CO C   -   0.99974496 x   0.99999749 =   0.99974245
KK0023!UTM 13   -   0.99974496 x   0.99964449 =   0.99938954
KK0023
KK0023_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SED6011398822(NAD 83)
KK0023
KK0023   SUPERSEDED SURVEY CONTROL
KK0023
KK0023 NAD 83(2007)- 39 44 13.82935(N)   104 17 54.40123(W) AD(2002.00) 0
KK0023 ELLIP H (02/10/07) 1626.073 (m)   GP(2002.00)
KK0023 ELLIP H (12/03/02) 1626.102 (m)   GP(   ) 4 2
KK0023 NAD 83(1992)- 39 44 13.82865(N)   104 17 54.40095(W) AD(   ) 1
KK0023 ELLIP H (09/27/95) 1626.138 (m)   GP(   ) 1 1
KK0023 NAVD 88   1644.49   (m)   5395.3   (f) LEVELING   3

KK0023 NGVD 29 (??/??/92) 1643.626 (m)   5392.46   (f) ADJ UNCH   1
2
KK0023
KK0023.Superseded values are not recommended for survey control.
KK0023
KK0023.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
KK0023.See file dsdata.pdf to determine how the superseded data were
derived.
KK0023
KK0023_MARKER: DB = BENCH MARK DISK
KK0023_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
KK0023_STAMPING: A 259 1938
KK0023_MARK LOGO: CGS
KK0023_MAGNETIC: O = OTHER; SEE DESCRIPTION
KK0023_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
KK0023+STABILITY: SURFACE MOTION
KK0023_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
KK0023+SATELLITE: SATELLITE OBSERVATIONS - February 04, 1999
KK0023
KK0023 HISTORY   - Date   Condition   Report By
KK0023 HISTORY   - 1938   MONUMENTED   CGS
KK0023 HISTORY   - 19950117 GOOD   CODOT
KK0023 HISTORY   - 19990204 GOOD   JRENG
KK0023
KK0023   STATION DESCRIPTION
KK0023
KK0023'DESCRIBED BY COAST AND GEODETIC SURVEY 1938
KK0023'1.5 MI SE FROM STRASBURG.
KK0023'1.5 MILES SOUTHEAST ALONG THE UNION PACIFIC RAILROAD FROM THE
KK0023'STATION AT STRASBURG, ARAPAHOE COUNTY, 9 POLES WEST OF MILEPOST
KK0023'601, 80 FEET NORTH OF THE TRACK, AND AT A GUYED POLE. A STANDARD
KK0023'DISK, STAMPED A 259 1938 AN AND SET IN THE TOP OF A CONCRETE POST.
KK0023
KK0023   STATION RECOVERY (1995)
KK0023
KK0023'RECOVERY NOTE BY COLORADO DEPARTMENT OF TRANSPORTATION 1995 (KAW)
KK0023'THE STATION WILL BE USED DURING A GPS PROJECT. THE STATION IS LOCATED
KK0023'ABOUT 1.5 MI (2.4 KM) EAST OF STRASBURG IN THE NORTHWEST 1/4 OF
KK0023'SECTION 2, T 4 S, R 62 W, 6TH P.M. AT STATE HIGHWAY 36 MILEPOST
96.55.
KK0023'OWNERSHIP--COLORADO DEPARTMENT OF TRANSPORTATION (CDOT). TO REACH THE
KK0023'STATION FROM THE I-70 STRASBURG EXIT (EXIT 310), PROCEED NORTH 0.3 MI
KK0023'(0.5 KM) ON THE STRASBURG BUSINESS SPUR TO STATE HIGHWAY 36 (COLFAX
KK0023'AVENUE), TURN RIGHT AND PROCEED EAST ON STATE HIGHWAY 36 FOR 1.45 MI
KK0023'(2.33 KM) TO A RAILROAD ACCESS ROAD ON THE RIGHT. TURN RIGHT ONTO THE
KK0023'ROAD ACCESS AND PROCEED SOUTHWEST 100 FT (30.5 M) TO A FRONTAGE ROAD
KK0023'ON THE NORTH SIDE OF THE UNION PACIFIC RAILROAD TRACKS, TURN LEFT AND
KK0023'PROCEED SOUTHEAST ON THE FRONTAGE ROAD FOR 500 FT (152.4 M) TO THE
KK0023'STATION ON THE LEFT. THE STATION IS A BRASS DISK SET IN A CONRETE
KK0023'POST. IT IS 52.5 M (172.2 FT) SOUTHWEST OF THE CENTER OF STATE
KK0023'HIGHWAY 36, 35.4 M (116.1 FT) SOUTHWEST OF THE SOUTH RIGHT OF WAY
KK0023'FENCE OF STATE HIGHWAY 36, 25.4 M (83.3 FT) NORTHEAST OF THE NORTH
KK0023'RAIL OF THE UNION PACIFIC RAILROAD TRACK, 14.5 M (47.6 FT) NORHTEAST
KK0023'OF THE CENTER OF THE RAILROAD FRONTAGE ROAD, 4.4 M (14.4 FT) SOUTH OF
KK0023'AN ABANDONED GUY WIRE ANCHOR, 2.3 FT (0.7 M) NORTHWEST OF A
FIBERGLASS
KK0023'CDOT WITNESS POST, AND 1.8 FT (0.5 M) SOUTHEAST OF A FIBERGLASS CDOT

KK0023'WITNESS POST. DESCRIPTION BY K.A. WILLIAMS
KK0023
KK0023 STATION RECOVERY (1999)
KK0023
KK0023'RECOVERY NOTE BY JR ENGINEERING LTD 1999 (TGB)
KK0023'RECOVERED AS DESCRIBED.

*** retrieval complete.
Elapsed Time = 00:00:06

The NGS Data Sheet

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

```
PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 KK1319
***********************************************************************
 KK1319  DESIGNATION -  A 393
 KK1319  PID         -  KK1319
 KK1319  STATE/COUNTY-  CO/DOUGLAS
 KK1319  COUNTRY     -  US
 KK1319  USGS QUAD   -  GREENLAND (1969)
 KK1319
 KK1319                         *CURRENT SURVEY CONTROL
 KK1319
_____________________________________________________________________
 KK1319* NAD 83(2011) POSITION- 39 11 13.63025(N) 104 51 03.16011(W)
ADJUSTED
 KK1319* NAD 83(2011) ELLIP HT-  2087.265 (meters)        (06/27/12)
ADJUSTED
 KK1319* NAD 83(2011) EPOCH   -  2010.00
 KK1319* NAVD 88 ORTHO HEIGHT -  2103.767 (meters)     6902.11  (feet)
ADJUSTED
 KK1319
_____________________________________________________________________
 KK1319  GEOID HEIGHT    -        -16.507 (meters)
GEOID12B
 KK1319  NAD 83(2011) X  - -1,269,178.743 (meters)                    COMP
 KK1319  NAD 83(2011) Y  - -4,786,435.043 (meters)                    COMP
 KK1319  NAD 83(2011) Z  -  4,009,758.535 (meters)                    COMP
 KK1319  LAPLACE CORR    -        -10.02  (seconds)
DEFLEC12B
 KK1319  DYNAMIC HEIGHT  -       2101.450 (meters)     6894.51  (feet) COMP
 KK1319  MODELED GRAVITY -    979,450.4   (mgal)                       NAVD
88
 KK1319
 KK1319  VERT ORDER      -  FIRST     CLASS II
 KK1319
 KK1319  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 KK1319  Standards:
 KK1319         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 KK1319            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 KK1319  ------------------------------------------------------------------
 KK1319  NETWORK    0.49   0.76          0.23   0.16   0.39     -0.00073820
 KK1319  ------------------------------------------------------------------
 KK1319  Click here for local accuracies and other accuracy information.
 KK1319
 KK1319
 KK1319.The horizontal coordinates were established by GPS observations
 KK1319.and adjusted by the National Geodetic Survey in June 2012.
 KK1319
 KK1319.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 KK1319.been affixed to the stable North American tectonic plate. See
```

KK1319.NA2011 for more information.
KK1319
KK1319.The horizontal coordinates are valid at the epoch date displayed above
KK1319.which is a decimal equivalence of Year/Month/Day.
KK1319
KK1319.The orthometric height was determined by differential leveling and
KK1319.adjusted by the NATIONAL GEODETIC SURVEY
KK1319.in June 1991.
KK1319
KK1319.Significant digits in the geoid height do not necessarily reflect accuracy.
KK1319.GEOID12B height accuracy estimate available here.
KK1319
KK1319.Photographs are available for this station.
KK1319
KK1319.The X, Y, and Z were computed from the position and the ellipsoidal ht.
KK1319
KK1319.The Laplace correction was computed from DEFLEC12B derived deflections.
KK1319
KK1319.The ellipsoidal height was determined by GPS observations
KK1319.and is referenced to NAD 83.
KK1319
KK1319.The dynamic height is computed by dividing the NAVD 88
KK1319.geopotential number by the normal gravity value computed on the
KK1319.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
KK1319.degrees latitude (g = 980.6199 gals.).
KK1319
KK1319.The modeled gravity was interpolated from observed gravity values.
KK1319
KK1319. The following values were computed from the NAD 83(2011) position.
KK1319
KK1319;   North   East   Units Scale Factor   Converg.
KK1319;SPC CO C   -   455,281.327   970,480.533   MT 0.99993703   +0 24 33.8
KK1319;SPC CO C   - 1,493,702.15 3,183,984.88   sFT 0.99993703   +0 24 33.8
KK1319;UTM 13   - 4,337,552.360   512,878.675   MT 0.99960204   +0 05 39.2
KK1319
KK1319!   - Elev Factor x Scale Factor =   Combined Factor
KK1319!SPC CO C   -   0.99967263 x   0.99993703 =   0.99960968
KK1319!UTM 13   -   0.99967263 x   0.99960204 =   0.99927480
KK1319
KK1319_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SED1287837552(NAD 83)
KK1319
KK1319   SUPERSEDED SURVEY CONTROL
KK1319
KK1319 NAD 83(2007)- 39 11 13.63035(N)   104 51 03.16056(W) AD(2002.00) 0
KK1319 ELLIP H (02/10/07) 2087.283 (m)   GP(2002.00)
KK1319 ELLIP H (12/03/02) 2087.275 (m)   GP(   ) 4 2
KK1319 NAD 83(1992)- 39 11 13.63017(N)   104 51 03.16034(W) AD(   ) 1

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 KK1319  ELLIP H (10/14/94) 2087.286  (m)                        GP(       ) 3
1
 KK1319  NAVD 88            2103.77   (m)         6902.1    (f) LEVELING    3
 KK1319
 KK1319.Superseded values are not recommended for survey control.
 KK1319
 KK1319.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 KK1319.See file dsdata.pdf to determine how the superseded data were
derived.
 KK1319
 KK1319_MARKER: F = FLANGE-ENCASED ROD
 KK1319_SETTING: 49 = STAINLESS STEEL ROD W/O SLEEVE (10 FT.+)
 KK1319_STAMPING: A 393 1983
 KK1319_MARK LOGO: NGS
 KK1319_PROJECTION: FLUSH
 KK1319_MAGNETIC: I = MARKER IS A STEEL ROD
 KK1319_STABILITY: A = MOST RELIABLE AND EXPECTED TO HOLD
 KK1319+STABILITY: POSITION/ELEVATION WELL
 KK1319_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 KK1319+SATELLITE: SATELLITE OBSERVATIONS - October 07, 1993
 KK1319_ROD/PIPE-DEPTH: 19.5 meters
 KK1319
 KK1319  HISTORY     - Date     Condition        Report By
 KK1319  HISTORY     - 1983     MONUMENTED       NGS
 KK1319  HISTORY     - 19930128 GOOD             MSAM
 KK1319  HISTORY     - 19931007 GOOD             MSAM
 KK1319  HISTORY     - 20070310 GOOD             GEOCAC
 KK1319
 KK1319                          STATION DESCRIPTION
 KK1319
 KK1319'DESCRIBED BY NATIONAL GEODETIC SURVEY 1983
 KK1319'24.0 KM (14.9 MI) SOUTH FROM CASTLE ROCK.
 KK1319'24.O KM (14.9 MI) SOUTHERLY ALONG INTERSTATE HIGHWAY 25 FROM ITS
 KK1319'JUNCTION WITH THE DENVER AND RIO GRANDE WESTERN RAILROAD IN CASTLE
 KK1319'ROCK, 68.0 METERS (223.1 FT) SOUTH OF THE CENTER OF COUNTY ROAD 74,
 KK1319'37.5 METERS (123.0 FT) WEST OF THE CENTERLINE OF THE SOUTH BOUND
LANES
 KK1319'OF THE HIGHWAY, 12.6 METERS (41.3 FT) SOUTHWEST OF THE CENTER OF AN
ON
 KK1319'RAMP AND 1.6 METERS (5.2 FT) SOUTH OF A FENCE CORNER.  NOTE=ACCESS TO
 KK1319'THE DATUM POINT IS THROUGH A 5-INCH LOGO CAP.
 KK1319'THE MARK IS 0.3 METERS  E FROM  A WITNESS POST AND FENCE
 KK1319'THE MARK IS 3.5 M BELOW THE HIGHWAY.
 KK1319
 KK1319                          STATION RECOVERY (1993)
 KK1319
 KK1319'RECOVERY NOTE BY MOUNTAIN SURVEYING AND MAPPING INC 1993 (KCH)
 KK1319'RECOVERED AS DESCRIBED.
 KK1319
 KK1319                          STATION RECOVERY (1993)
 KK1319
 KK1319'RECOVERY NOTE BY MOUNTAIN SURVEYING AND MAPPING INC 1993 (KCH)
 KK1319'RECOVERED AS DESCRIBED.
 KK1319
 KK1319                          STATION RECOVERY (2007)
 KK1319
 KK1319'RECOVERY NOTE BY GEOCACHING 2007 (TFW)
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The NGS Data Sheet

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

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PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 JK0064
***********************************************************************
 JK0064  DESIGNATION -  B 4
 JK0064  PID         -  JK0064
 JK0064  STATE/COUNTY-  CO/PUEBLO
 JK0064  COUNTRY     -  US
 JK0064  USGS QUAD   -  NORTHEAST PUEBLO (1974)
 JK0064
 JK0064                         *CURRENT SURVEY CONTROL
 JK0064
_____________________________________________________________________
 JK0064* NAD 83(2011) POSITION- 38 21 13.33932(N) 104 37 11.84487(W)
ADJUSTED
 JK0064* NAD 83(2011) ELLIP HT-  1464.514 (meters)        (06/27/12)
ADJUSTED
 JK0064* NAD 83(2011) EPOCH   -  2010.00
 JK0064* NAVD 88 ORTHO HEIGHT -  1483.615 (meters)     4867.49  (feet)
ADJUSTED
 JK0064
_____________________________________________________________________
 JK0064  GEOID HEIGHT    -        -19.111 (meters)
GEOID12B
 JK0064  NAD 83(2011) X  - -1,264,382.156 (meters)                    COMP
 JK0064  NAD 83(2011) Y  - -4,847,115.904 (meters)                    COMP
 JK0064  NAD 83(2011) Z  -  3,937,216.189 (meters)                    COMP
 JK0064  LAPLACE CORR    -         -7.03  (seconds)
DEFLEC12B
 JK0064  DYNAMIC HEIGHT  -       1482.067 (meters)     4862.41  (feet) COMP
 JK0064  MODELED GRAVITY -    979,533.7   (mgal)                       NAVD
88
 JK0064
 JK0064  VERT ORDER      -  FIRST     CLASS II
 JK0064
 JK0064  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 JK0064  Standards:
 JK0064         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 JK0064            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 JK0064  ------------------------------------------------------------------
 JK0064  NETWORK    0.61   1.12          0.28   0.21   0.57      0.04046343
 JK0064  ------------------------------------------------------------------
 JK0064  Click here for local accuracies and other accuracy information.
 JK0064
 JK0064
 JK0064.The horizontal coordinates were established by GPS observations
 JK0064.and adjusted by the National Geodetic Survey in June 2012.
 JK0064
 JK0064.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 JK0064.been affixed to the stable North American tectonic plate. See
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 JK0064.NA2011 for more information.
 JK0064
 JK0064.The horizontal coordinates are valid at the epoch date displayed
above
 JK0064.which is a decimal equivalence of Year/Month/Day.
 JK0064
 JK0064.The orthometric height was determined by differential leveling and
 JK0064.adjusted by the NATIONAL GEODETIC SURVEY
 JK0064.in June 1991.
 JK0064
 JK0064.WARNING-Repeat measurements at this control monument indicate
possible
 JK0064.vertical movement.
 JK0064
 JK0064.Significant digits in the geoid height do not necessarily reflect
accuracy.
 JK0064.GEOID12B height accuracy estimate available here.
 JK0064
 JK0064.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 JK0064
 JK0064.The Laplace correction was computed from DEFLEC12B derived
deflections.
 JK0064
 JK0064.The ellipsoidal height was determined by GPS observations
 JK0064.and is referenced to NAD 83.
 JK0064
 JK0064.The dynamic height is computed by dividing the NAVD 88
 JK0064.geopotential number by the normal gravity value computed on the
 JK0064.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 JK0064.degrees latitude (g = 980.6199 gals.).
 JK0064
 JK0064.The modeled gravity was interpolated from observed gravity values.
 JK0064
 JK0064. The following values were computed from the NAD 83(2011) position.
 JK0064
 JK0064;                    North         East     Units Scale Factor
Converg.
 JK0064;SPC CO S     -   492,402.205   991,323.266   MT  0.99998644   +0 32
23.3
 JK0064;SPC CO S     - 1,615,489.57  3,252,366.42   sFT  0.99998644   +0 32
23.3
 JK0064;UTM  13      - 4,245,128.886   533,205.926   MT  0.99961358   +0 14
09.0
 JK0064
 JK0064!             -  Elev Factor  x  Scale Factor =   Combined Factor
 JK0064!SPC CO S     -   0.99977026  x   0.99998644  =   0.99975670
 JK0064!UTM  13      -   0.99977026  x   0.99961358  =   0.99938393
 JK0064
 JK0064_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SEC3320545128(NAD 83)
 JK0064
 JK0064                           SUPERSEDED SURVEY CONTROL
 JK0064
 JK0064  NAD 83(2007)-  38 21 13.33920(N)    104 37 11.84520(W) AD(2002.00) 0
 JK0064  ELLIP H (02/10/07) 1464.539  (m)                       GP(2002.00)
 JK0064  ELLIP H (10/21/02) 1464.551  (m)                       GP(       ) 5
1
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 JK0064  NAD 83(1992)-  38 21 13.33883(N)    104 37 11.84477(W) AD(       ) 1
 JK0064  ELLIP H (01/17/97) 1464.531  (m)                       GP(       ) 1
1
 JK0064  NAVD 88            1483.62   (m)         4867.5    (f) LEVELING    3
 JK0064  NGVD 29 (??/??/92) 1482.703  (m)         4864.50   (f) ADJ UNCH    1
2
 JK0064
 JK0064.Superseded values are not recommended for survey control.
 JK0064
 JK0064.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 JK0064.See file dsdata.pdf to determine how the superseded data were
derived.
 JK0064
 JK0064_MARKER: DB = BENCH MARK DISK
 JK0064_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 JK0064_STAMPING: B 4 1925
 JK0064_MARK LOGO: CGS
 JK0064_MAGNETIC: N = NO MAGNETIC MATERIAL
 JK0064_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 JK0064+STABILITY: SURFACE MOTION
 JK0064_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 JK0064+SATELLITE: SATELLITE OBSERVATIONS - May 27, 1999
 JK0064
 JK0064  HISTORY     - Date     Condition        Report By
 JK0064  HISTORY     - 1925     MONUMENTED       CGS
 JK0064  HISTORY     - 1954     GOOD             CGS
 JK0064  HISTORY     - 1983     GOOD             NGS
 JK0064  HISTORY     - 19950105 GOOD             CODOT
 JK0064  HISTORY     - 19990527 GOOD             MSAM
 JK0064  HISTORY     - 20040301 GOOD             USPSQD
 JK0064  HISTORY     - 20080212 GOOD             GEOCAC
 JK0064
 JK0064                          STATION DESCRIPTION
 JK0064
 JK0064'DESCRIBED BY COAST AND GEODETIC SURVEY 1954
 JK0064'7.5 MI N FROM PUEBLO.
 JK0064'7.5 MILES NORTH ALONG THE DENVER AND RIO GRANDE WESTERN RAILROAD FROM
 JK0064'THE UNION STATION AT PUEBLO, 3 1/2 POLES NORTH OF MILEPOST 112,
 JK0064'150 FEET EAST OF THE CENTER LINE OF U.S. HIGHWAYS 85 AND 87, 47.3
 JK0064'FEET WEST OF THE WEST RAIL, 30.5 FEET SOUTH OF A TELEPHONE POLE, 1
 JK0064'FOOT EAST OF A FENCE, 3 FEET NORTH OF A WITNESS POST, SET IN THE TOP
 JK0064'OF A CONCRETE POST WHICH PROJECTS 0.2 FOOT ABOVE THE GROUND.
 JK0064
 JK0064                          STATION RECOVERY (1983)
 JK0064
 JK0064'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1983
 JK0064'RECOVERED IN GOOD CONDITION.  THE DESCRIPTION IS ADEQUATE EXCEPT ADD
 JK0064'0.3 METER (1.0 FT) SOUTH OF A WITNESS POST.
 JK0064
 JK0064                          STATION RECOVERY (1995)
 JK0064
 JK0064'RECOVERY NOTE BY COLORADO DEPARTMENT OF TRANSPORTATION 1995 (MEL)
 JK0064'RECOVERED AS DESCRIBED.
 JK0064
 JK0064                          STATION RECOVERY (1999)
 JK0064
 JK0064'RECOVERY NOTE BY MOUNTAIN SURVEYING AND MAPPING INC 1999 (KCH)
```

JK0064'DESCRIBED BY MOUNTAIN SURVEYING AND MAPPING, INC. 1999 (KCH) THE
JK0064'STATION IS LOCATED ABOUT 65 KM (40.40 MI) SOUTH-SOUTHEAST OF COLORADO
JK0064'SPRINGS AND 10 KM (6.20 MI) NORTH OF PUEBLO. IT IS EAST OF
INTERSTATE
JK0064'HIGHWAY 25 AT MILEPOST 104.6, IN THE NORTHWEST QUARTER OF SECTION 36,
JK0064'T 19 S, R 65 W. OWNERSHIP--RAILROAD RIGHT-OF-WAY
JK0064'TO REACH THE STATION FROM THE JUNCTION OF INTERSTATE HIGHWAY 25 AND
JK0064'U.S. HIGHWAY 50 IN THE NORTH SECTION OF PUEBLO, GO NORTH, ON
JK0064'INTERSTATE HIGHWAY 25 FOR 3.2 MI (5.1 KM) TO THE STATION ON THE RIGHT
JK0064'THE MARK IS A U.S. COAST AND GEODETIC SURVEY BENCHMARK DISK SET IN
JK0064'THE TOP OF 30CM SQUARE CONCRETE POST FLUSH WITH THE GROUND. IT IS
JK0064'34.3 M (112.5 FT) NORTH OF A UTILITY POLE, 20.2 M (66.3 FT) EAST OF
JK0064'THE EAST EDGE OF THE NORTHBOUND LANES OF INTERSTATE HIGHWAY 25, 15.2
M
JK0064'(49.9 FT) W OF THE CENTER OF RAILROAD TRACKS, 9.9 M (32.5 FT) SOUTH
OF
JK0064'A UTILITY POLE, 0.75 M (2.46 FT) NORTH OF A 4X4 WOOD WITNESS POST,
AND
JK0064'0.29 M (0.95 FT) SOUTH OF A FIBERGLASS WITNESS POST.
JK0064
JK0064   STATION RECOVERY (2004)
JK0064
JK0064'RECOVERY NOTE BY US POWER SQUADRON 2004 (GWS)
JK0064'RECOVERED IN GOOD CONDITION.
JK0064
JK0064   STATION RECOVERY (2008)
JK0064
JK0064'RECOVERY NOTE BY GEOCACHING 2008 (TFW)
JK0064'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:04

The NGS Data Sheet

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

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PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 KJ0192
***********************************************************************
 KJ0192  DESIGNATION -  B 257
 KJ0192  PID         -  KJ0192
 KJ0192  STATE/COUNTY-  CO/LINCOLN
 KJ0192  COUNTRY     -  US
 KJ0192  USGS QUAD   -  HUGO (1980)
 KJ0192
 KJ0192                         *CURRENT SURVEY CONTROL
 KJ0192
______________________________________________________________________
 KJ0192* NAD 83(2011) POSITION- 39 07 39.83731(N) 103 27 05.56935(W)
ADJUSTED
 KJ0192* NAD 83(2011) ELLIP HT-  1508.174 (meters)        (06/27/12)
ADJUSTED
 KJ0192* NAD 83(2011) EPOCH   -  2010.00
 KJ0192* NAVD 88 ORTHO HEIGHT -  1528.839 (meters)     5015.87  (feet)
ADJUSTED
 KJ0192
______________________________________________________________________
 KJ0192  GEOID HEIGHT    -        -20.664 (meters)
GEOID12B
 KJ0192  NAD 83(2011) X  - -1,152,777.373 (meters)                    COMP
 KJ0192  NAD 83(2011) Y  - -4,819,615.009 (meters)                    COMP
 KJ0192  NAD 83(2011) Z  -  4,004,279.081 (meters)                    COMP
 KJ0192  LAPLACE CORR    -         -4.81  (seconds)
DEFLEC12B
 KJ0192  DYNAMIC HEIGHT  -       1527.361 (meters)     5011.02  (feet) COMP
 KJ0192  MODELED GRAVITY -    979,607.4   (mgal)                       NAVD
88
 KJ0192
 KJ0192  VERT ORDER      -  FIRST     CLASS II
 KJ0192
 KJ0192  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 KJ0192  Standards:
 KJ0192         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 KJ0192            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 KJ0192  ------------------------------------------------------------------
 KJ0192  NETWORK    0.84   1.27           0.37   0.31   0.65      0.03169816
 KJ0192  ------------------------------------------------------------------
 KJ0192  Click here for local accuracies and other accuracy information.
 KJ0192
 KJ0192
 KJ0192.The horizontal coordinates were established by GPS observations
 KJ0192.and adjusted by the National Geodetic Survey in June 2012.
 KJ0192
 KJ0192.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 KJ0192.been affixed to the stable North American tectonic plate. See
```

KJ0192.NA2011 for more information.
KJ0192
KJ0192.The horizontal coordinates are valid at the epoch date displayed above
KJ0192.which is a decimal equivalence of Year/Month/Day.
KJ0192
KJ0192.The orthometric height was determined by differential leveling and
KJ0192.adjusted by the NATIONAL GEODETIC SURVEY
KJ0192.in June 1991.
KJ0192
KJ0192.Significant digits in the geoid height do not necessarily reflect accuracy.
KJ0192.GEOID12B height accuracy estimate available here.
KJ0192
KJ0192.Photographs are available for this station.
KJ0192
KJ0192.The X, Y, and Z were computed from the position and the ellipsoidal ht.
KJ0192
KJ0192.The Laplace correction was computed from DEFLEC12B derived deflections.
KJ0192
KJ0192.The ellipsoidal height was determined by GPS observations
KJ0192.and is referenced to NAD 83.
KJ0192
KJ0192.The dynamic height is computed by dividing the NAVD 88
KJ0192.geopotential number by the normal gravity value computed on the
KJ0192.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
KJ0192.degrees latitude (g = 980.6199 gals.).
KJ0192
KJ0192.The modeled gravity was interpolated from observed gravity values.
KJ0192
KJ0192. The following values were computed from the NAD 83(2011) position.
KJ0192
KJ0192;   North   East   Units Scale Factor   Converg.
KJ0192;SPC CO C   -   450,485.158 1,091,506.107   MT 0.99993602   +1 17 31.0
KJ0192;SPC CO C   - 1,477,966.72 3,581,049.62   sFT 0.99993602   +1 17 31.0
KJ0192;UTM 13   - 4,332,092.850   633,845.198   MT 0.99982058   +0 58 38.3
KJ0192
KJ0192!   - Elev Factor x Scale Factor =   Combined Factor
KJ0192!SPC CO C   -   0.99976343 x   0.99993602 =   0.99969947
KJ0192!UTM 13   -   0.99976343 x   0.99982058 =   0.99958406
KJ0192
KJ0192_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SFD3384532092(NAD 83)
KJ0192
KJ0192   SUPERSEDED SURVEY CONTROL
KJ0192
KJ0192 NAD 83(2007)- 39 07 39.83738(N)   103 27 05.56972(W) AD(2002.00) 0
KJ0192 ELLIP H (02/10/07) 1508.195 (m)   GP(2002.00)
KJ0192 ELLIP H (12/03/02) 1508.211 (m)   GP(   ) 4 2
KJ0192 NAD 83(1992)- 39 07 39.83733(N)   103 27 05.56952(W) AD(   ) 1

```
 KJ0192  ELLIP H (05/23/95) 1508.224  (m)                        GP(       ) 3
1
 KJ0192  ELLIP H (03/31/95) 1508.224  (m)                        GP(       ) 3
2
 KJ0192  NAVD 88            1528.84   (m)         5015.9    (f) LEVELING    3
 KJ0192  NGVD 29 (??/??/92) 1528.079  (m)         5013.37   (f) ADJ UNCH    1
2
 KJ0192
 KJ0192.Superseded values are not recommended for survey control.
 KJ0192
 KJ0192.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 KJ0192.See file dsdata.pdf to determine how the superseded data were
derived.
 KJ0192
 KJ0192_MARKER: DB = BENCH MARK DISK
 KJ0192_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 KJ0192_STAMPING: B 257 1938
 KJ0192_MARK LOGO: CGS
 KJ0192_MAGNETIC: O = OTHER; SEE DESCRIPTION
 KJ0192_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 KJ0192+STABILITY: SURFACE MOTION
 KJ0192_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 KJ0192+SATELLITE: SATELLITE OBSERVATIONS - July 20, 1993
 KJ0192
 KJ0192  HISTORY     - Date     Condition        Report By
 KJ0192  HISTORY     - 1938     MONUMENTED       CGS
 KJ0192  HISTORY     - 19920827 GOOD             NGS
 KJ0192  HISTORY     - 19930720 GOOD             CODOT
 KJ0192  HISTORY     - 20090831 GOOD             GEOCAC
 KJ0192
 KJ0192                          STATION DESCRIPTION
 KJ0192
 KJ0192'DESCRIBED BY COAST AND GEODETIC SURVEY 1938
 KJ0192'1.2 MI SE FROM HUGO.
 KJ0192'1.2 MILES SOUTHEAST ALONG THE UNION PACIFIC RAILROAD FROM THE STATION
 KJ0192'AT HUGO, LINCOLN COUNTY, 6 1/2 POLES EAST OF AN ANGLE IN A ROW OF
 KJ0192'POLES, IN LINE WITH THE ROW OF POLES LEADING WEST FROM THE ANGLE,
 KJ0192'160 FEET SOUTH OF U.S. HIGHWAY 40, AND 13 FEET SOUTH OF A FENCE.
 KJ0192'A STANDARD DISK, STAMPED B 257 1938 AND SET IN THE TOP OF A CONCRETE
 KJ0192'POST.
 KJ0192
 KJ0192                          STATION RECOVERY (1992)
 KJ0192
 KJ0192'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1992 (RSC)
 KJ0192'THE STATION IS LOCATED ABOUT 17.2 MI (27.7 KM) SOUTHEAST OF LIMON,
1.1
 KJ0192'MI (1.8 KM) SOUTHEAST OF THE JUNCTION OF U.S. HIGHWAY 40 AND COUNTY
 KJ0192'ROAD 109 IN HUGO, ALONG U.S. HIGHWAY 40, IN THE NORTHEAST 1/4 OF
 KJ0192'SECTION 4, T 11 S, R 54 W, AT U.S. HIGHWAY 40 MILEPOST 400.25.
 KJ0192'OWNERSHIP--UNION PACIFIC RAILROAD.
 KJ0192'
 KJ0192'TO REACH THE STATION FROM THE EAST JUNCTION OF U.S. HIGHWAYS 24, 40,
 KJ0192'287, AND INTERSTATE 70, GO SOUTHEAST ON U.S. HIGHWAY 40 FOR 14.25 MI
 KJ0192'(22.93 KM) TO THE STATION ON THE RIGHT.
 KJ0192'
 KJ0192'THE STATION IS A BRASS DISK IN A CONCRETE POST 0.2 FT (0.1 M) ABOVE
 KJ0192'THE GROUND.  IT IS 178.4 FT (54.4 M) SOUTHWEST OF THE CENTERLINE OF
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KJ0192'U.S. HIGHWAY 40, 13.8 FT (4.2 M) SOUTHWEST OF THE SOUTH RIGHT-OF-WAY
KJ0192'FENCE OF U.S.. HIGHWAY 40, 182.7 FT (55.7 M) NORTHEAST OF THE
KJ0192'NORTHEAST RAIL OF THE UNION PACIFIC RAILROAD TRACKS, 13.8 FT (4.2 M)
KJ0192'SOUTHWEST OF A FIBERGLASS WITNESS POST, AND 1.5 FT (0.5 M)
KJ0192'EAST-SOUTHEAST OF A FIBERGLASS WITNESS POST.
KJ0192
KJ0192 STATION RECOVERY (1993)
KJ0192
KJ0192'RECOVERY NOTE BY COLORADO DEPARTMENT OF TRANSPORTATION 1993 (KAW)
KJ0192'RECOVERED AS DESCRIBED.
KJ0192
KJ0192 STATION RECOVERY (2009)
KJ0192
KJ0192'RECOVERY NOTE BY GEOCACHING 2009 (TFW)
KJ0192'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:04

The NGS Data Sheet

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

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PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 JJ0685
***********************************************************************
 JJ0685  DESIGNATION -  C 432
 JJ0685  PID         -  JJ0685
 JJ0685  STATE/COUNTY-  CO/OTERO
 JJ0685  COUNTRY     -  US
 JJ0685  USGS QUAD   -  CHERAW (1979)
 JJ0685
 JJ0685                         *CURRENT SURVEY CONTROL
 JJ0685
_____________________________________________________________________
 JJ0685* NAD 83(2011) POSITION- 38 00 46.21591(N) 103 31 43.63794(W)   NO
CHECK
 JJ0685* NAD 83(2011) ELLIP HT-  1235.075 (meters)        (06/27/12)   NO
CHECK
 JJ0685* NAD 83(2011) EPOCH   -  2010.00
 JJ0685* NAVD 88 ORTHO HEIGHT -  1257.150 (meters)     4124.50  (feet)
ADJUSTED
 JJ0685
_____________________________________________________________________
 JJ0685  GEOID HEIGHT    -        -22.086 (meters)
GEOID12B
 JJ0685  NAD 83(2011) X  - -1,177,278.211 (meters)                     COMP
 JJ0685  NAD 83(2011) Y  - -4,892,885.020 (meters)                     COMP
 JJ0685  NAD 83(2011) Z  -  3,907,327.350 (meters)                     COMP
 JJ0685  LAPLACE CORR    -         -2.72  (seconds)
DEFLEC12B
 JJ0685  DYNAMIC HEIGHT  -       1255.882 (meters)     4120.34  (feet) COMP
 JJ0685  MODELED GRAVITY -    979,577.3   (mgal)                       NAVD
88
 JJ0685
 JJ0685  VERT ORDER      -  FIRST     CLASS II
 JJ0685
 JJ0685  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 JJ0685  Standards:
 JJ0685         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 JJ0685            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 JJ0685  ------------------------------------------------------------------
 JJ0685  NETWORK    1.10   1.53           0.49   0.40   0.78      0.18198746
 JJ0685  ------------------------------------------------------------------
 JJ0685  Click here for local accuracies and other accuracy information.
 JJ0685
 JJ0685
 JJ0685.The horizontal coordinates were established by GPS observations
 JJ0685.and adjusted by the National Geodetic Survey in June 2012.
 JJ0685
 JJ0685.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 JJ0685.been affixed to the stable North American tectonic plate. See
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 JJ0685.NA2011 for more information.
 JJ0685
 JJ0685.The horizontal coordinates are valid at the epoch date displayed
above
 JJ0685.which is a decimal equivalence of Year/Month/Day.
 JJ0685
 JJ0685.No horizontal observational check was made to the station.
 JJ0685.
 JJ0685.The orthometric height was determined by differential leveling and
 JJ0685.adjusted by the NATIONAL GEODETIC SURVEY
 JJ0685.in June 1991.
 JJ0685
 JJ0685.Significant digits in the geoid height do not necessarily reflect
accuracy.
 JJ0685.GEOID12B height accuracy estimate available here.
 JJ0685
 JJ0685.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 JJ0685
 JJ0685.The Laplace correction was computed from DEFLEC12B derived
deflections.
 JJ0685
 JJ0685.The ellipsoidal height was determined by GPS observations
 JJ0685.and is referenced to NAD 83.
 JJ0685
 JJ0685.The dynamic height is computed by dividing the NAVD 88
 JJ0685.geopotential number by the normal gravity value computed on the
 JJ0685.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 JJ0685.degrees latitude (g = 980.6199 gals.).
 JJ0685
 JJ0685.The modeled gravity was interpolated from observed gravity values.
 JJ0685
 JJ0685. The following values were computed from the NAD 83(2011) position.
 JJ0685
 JJ0685;                    North         East     Units Scale Factor
Converg.
 JJ0685;SPC CO S     -   456,031.225 1,087,486.556   MT  0.99995024   +1 12
32.8
 JJ0685;SPC CO S     - 1,496,162.44  3,567,862.14   sFT  0.99995024   +1 12
32.8
 JJ0685;UTM  13      - 4,208,260.654   629,149.397   MT  0.99980543   +0 54
22.2
 JJ0685
 JJ0685!             -  Elev Factor  x  Scale Factor =   Combined Factor
 JJ0685!SPC CO S     -   0.99980624  x   0.99995024  =   0.99975649
 JJ0685!UTM  13      -   0.99980624  x   0.99980543  =   0.99961170
 JJ0685
 JJ0685_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SFC2914908260(NAD 83)
 JJ0685
 JJ0685                           SUPERSEDED SURVEY CONTROL
 JJ0685
 JJ0685  NAD 83(2007)-  38 00 46.21585(N)    103 31 43.63839(W) AD(2002.00) 0
 JJ0685  ELLIP H (02/10/07) 1235.098  (m)                       GP(2002.00)
 JJ0685  ELLIP H (10/21/02) 1235.110  (m)                       GP(       ) 5
1
 JJ0685  NAD 83(1992)-  38 00 46.21537(N)    103 31 43.63842(W) AD(       ) 1
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 JJ0685  ELLIP H (06/30/00) 1235.110  (m)                        GP(       ) 1
1
 JJ0685  NAVD 88            1257.15   (m)         4124.5    (f) LEVELING    3
 JJ0685
 JJ0685.Superseded values are not recommended for survey control.
 JJ0685
 JJ0685.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 JJ0685.See file dsdata.pdf to determine how the superseded data were
derived.
 JJ0685
 JJ0685_MARKER: I = METAL ROD
 JJ0685_SETTING: 49 = STAINLESS STEEL ROD W/O SLEEVE (10 FT.+)
 JJ0685_STAMPING: C 432 1985
 JJ0685_MARK LOGO: NGS
 JJ0685_PROJECTION: FLUSH
 JJ0685_MAGNETIC: I = MARKER IS A STEEL ROD
 JJ0685_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 JJ0685_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 JJ0685+SATELLITE: SATELLITE OBSERVATIONS - March 02, 2010
 JJ0685_ROD/PIPE-DEPTH: 3.7  meters
 JJ0685
 JJ0685  HISTORY     - Date     Condition        Report By
 JJ0685  HISTORY     - 1985     MONUMENTED       NGS
 JJ0685  HISTORY     - 19990422 GOOD             NGS
 JJ0685  HISTORY     - 20100302 GOOD             INDIV
 JJ0685
 JJ0685                          STATION DESCRIPTION
 JJ0685
 JJ0685'DESCRIBED BY NATIONAL GEODETIC SURVEY 1985
 JJ0685'4.5 KM (2.8 MI) NE FROM LA JUNTA.
 JJ0685'1.6 KM (1.0 MI) EASTERLY ALONG U.S. HIGHWAY 50 FROM THE SANTA FE
 JJ0685'RAILROAD STATION IN LA JUNTA, THENCE 2.9 KM (1.8 MI) NORTHERLY ALONG
 JJ0685'STATE HIGHWAY 109, 0.9 KM (0.55 MI) NORTH OF A HIGHWAY BRIDGE
SPANNING
 JJ0685'THE FORT LYON CANAL, 0.2 KM (0.1 MI) SOUTH OF THE CREST OF A HILL,
 JJ0685'22.1 M (72.5 FT) EAST OF THE CENTERLINE OF THE HIGHWAY, 6.5 M
 JJ0685'(21.3 FT) NORTH OF THE CENTER OF A TRACK ROAD LEADING EAST, 0.6 M
 JJ0685'(2.0 FT) NORTH OF A 4- BY 8-FT WOODEN FENCE POST, AND 0.3 M (1.0 FT)
 JJ0685'WEST OF A FENCE.  NOTE--ACCESS TO THE DATUM POINT IS THROUGH A 5-INCH
 JJ0685'LOGO CAP.
 JJ0685'THE MARK IS 0.3 METERS  NNE FROM  A WITNESS POST
 JJ0685'THE MARK IS ABOVE LEVEL WITH THE HIGHWAY.
 JJ0685
 JJ0685                          STATION RECOVERY (1999)
 JJ0685
 JJ0685'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1999 (RSC)
 JJ0685'THE STATION IS LOCATED ABOUT 6.5 MI (10.5 KM) SOUTH-SOUTHWEST OF
 JJ0685'CHERAW, 1.5 MI (2.4 KM) NORTH OF LA JUNTA AND 0.5 MI (0.8 KM) NORTH
OF
 JJ0685'FORT LYON CANAL, IN THE SOUTHEAST 1/4 OF SECTION 26, T 23 S, R 55 W,
 JJ0685'AT STATE HIGHWAY 109 MILEPOST 58.3.  OWNERSHIP--COLORADO DEPT.  OF
 JJ0685'TRANSPORTATION RIGHT-OF-WAY
 JJ0685'TO REACH THE STATION FROM THE INTERSECTION OF U.  S.  HIGHWAY 50 AND
 JJ0685'STATE HIGHWAY 109 IN LA JUNTA, GO NORTH ON STATE HIGHWAY 109 FOR 1.8
 JJ0685'MI (2.9 KM) TO THE STATION ON THE RIGHT.  IT IS 0.9 MI (1.4 KM) NORTH
 JJ0685'OF THE FORT LYON CANAL AND 0.2 MI (0.3 KM) SOUTH OF THE CREST OF A
 JJ0685'HILL
```

JJ0685'THE MARK IS A PUNCH HOLE, TOP CENTER ON A STAINLESS STEEL ROD DRIVEN
JJ0685'TO REFUSAL, ENCASED IN A 5-INCH PVC PIPE WITH LOGO LID, SURROUNDED BY
JJ0685'A CONCRETE COLLAR FLUSH WITH THE GROUND. IT IS 22.1 M (72.5 FT) EAST
JJ0685'FROM THE CENTERLINE OF THE HIGHWAY, 6.5 M (21.3 FT) NORTH FROM A TRACK
JJ0685'ROAD LEADING EAST, 0.9 M (3.0 FT) NORTH-NORTHWEST FROM A WITNESS POST,
JJ0685'0.3 M (1.0 FT) EAST FROM A FENCE AND ABOUT THE SAME LEVEL AS THE
JJ0685'HIGHWAY
JJ0685'NOTE--A TALL TRIPOD OR A FIXED HEIGHT TRIPOD IS NEEDED TO OCCUPY THE
JJ0685'POINT.
JJ0685
JJ0685   STATION RECOVERY (2010)
JJ0685
JJ0685'RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2010 (CHR)
JJ0685'N.G.S. STEEL ROD

*** retrieval complete.
Elapsed Time = 00:00:05

The NGS Data Sheet

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

```
PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 AE4274
**********************************************************************
 AE4274  DESIGNATION -  CARLSON
 AE4274  PID         -  AE4274
 AE4274  STATE/COUNTY-  CO/ELBERT
 AE4274  COUNTRY     -  US
 AE4274  USGS QUAD   -  BIJOU BASIN (1979)
 AE4274
 AE4274                         *CURRENT SURVEY CONTROL
 AE4274
_____________________________________________________________________
 AE4274* NAD 83(2011) POSITION- 39 07 47.20957(N) 104 28 19.88273(W)
ADJUSTED
 AE4274* NAD 83(2011) ELLIP HT-  2005.040 (meters)        (06/27/12)
ADJUSTED
 AE4274* NAD 83(2011) EPOCH   -  2010.00
 AE4274* NAVD 88 ORTHO HEIGHT -  2022.9   (meters)     6637.    (feet) GPS
OBS
 AE4274
_____________________________________________________________________
 AE4274  NAVD 88 orthometric height was determined with geoid model
GEOID96
 AE4274  GEOID HEIGHT    -        -17.808 (meters)
GEOID96
 AE4274  GEOID HEIGHT    -        -17.863 (meters)
GEOID12B
 AE4274  NAD 83(2011) X  - -1,238,504.963 (meters)                    COMP
 AE4274  NAD 83(2011) Y  - -4,798,550.588 (meters)                    COMP
 AE4274  NAD 83(2011) Z  -  4,004,769.045 (meters)                    COMP
 AE4274  LAPLACE CORR    -         -7.88  (seconds)
DEFLEC12B
 AE4274
 AE4274  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 AE4274  Standards:
 AE4274         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 AE4274            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 AE4274  ------------------------------------------------------------------
 AE4274  NETWORK    1.62   5.39          0.75   0.54   2.75      0.02533837
 AE4274  ------------------------------------------------------------------
 AE4274  Click here for local accuracies and other accuracy information.
 AE4274
 AE4274
 AE4274.The horizontal coordinates were established by GPS observations
 AE4274.and adjusted by the National Geodetic Survey in June 2012.
 AE4274
 AE4274.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 AE4274.been affixed to the stable North American tectonic plate. See
 AE4274.NA2011 for more information.
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AE4274
AE4274.The horizontal coordinates are valid at the epoch date displayed above
AE4274.which is a decimal equivalence of Year/Month/Day.
AE4274
AE4274.The orthometric height was determined by GPS observations and a
AE4274.high-resolution geoid model.
AE4274
AE4274.Significant digits in the geoid height do not necessarily reflect accuracy.
AE4274.GEOID12B height accuracy estimate available here.
AE4274
AE4274.The X, Y, and Z were computed from the position and the ellipsoidal ht.
AE4274
AE4274.The Laplace correction was computed from DEFLEC12B derived deflections.
AE4274
AE4274.The ellipsoidal height was determined by GPS observations
AE4274.and is referenced to NAD 83.
AE4274
AE4274. The following values were computed from the NAD 83(2011) position.
AE4274
AE4274;   North   East   Units Scale Factor   Converg.
AE4274;SPC CO C   -   449,218.386 1,003,266.884   MT 0.99993604   +0 38 53.6
AE4274;SPC CO C   - 1,473,810.65 3,291,551.44   sFT 0.99993604   +0 38 53.6
AE4274;UTM 13   - 4,331,311.228   545,620.547   MT 0.99962563   +0 19 59.1
AE4274
AE4274!   - Elev Factor x Scale Factor =   Combined Factor
AE4274!SPC CO C   -   0.99968552 x   0.99993604 =   0.99962158
AE4274!UTM 13   -   0.99968552 x   0.99962563 =   0.99931127
AE4274
AE4274_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SED4562031311(NAD 83)
AE4274
AE4274   SUPERSEDED SURVEY CONTROL
AE4274
AE4274 NAD 83(2007)- 39 07 47.20939(N)   104 28 19.88269(W) AD(2002.00) 0
AE4274 ELLIP H (02/10/07) 2005.071 (m)   GP(2002.00)
AE4274 ELLIP H (12/03/02) 2005.076 (m)   GP(   ) 4 2
AE4274 NAD 83(1992)- 39 07 47.20914(N)   104 28 19.88254(W) AD(   ) 1
AE4274 ELLIP H (10/31/97) 2005.088 (m)   GP(   ) 4 1
AE4274
AE4274.Superseded values are not recommended for survey control.
AE4274
AE4274.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AE4274.See file dsdata.pdf to determine how the superseded data were derived.
AE4274
AE4274_MARKER: DH = HORIZONTAL CONTROL DISK
AE4274_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
AE4274_STAMPING: CARLSON 1996

AE4274_MARK LOGO: NGS
AE4274_MAGNETIC: B = BAR MAGNET IMBEDDED IN MONUMENT
AE4274_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
AE4274+STABILITY: SURFACE MOTION
AE4274_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AE4274+SATELLITE: SATELLITE OBSERVATIONS - 1996
AE4274
AE4274 HISTORY   - Date   Condition   Report By
AE4274 HISTORY   - 1996   MONUMENTED   NGS
AE4274
AE4274   STATION DESCRIPTION
AE4274
AE4274'DESCRIBED BY NATIONAL GEODETIC SURVEY 1996 (RSC)
AE4274'THE STATION IS LOCATED ABOUT 11 MI (17.7 KM) NORTHWEST OF CALHAN, 7
MI
AE4274'(11.3 KM) NORTH-NORTHEAST OF PEYTON AND ON THE EL PASO-ELBERT COUNTY
AE4274'LINE, IN THE SOUTHWEST 1/4 OF SECTION 32, T 10 S, R 62 W.
AE4274'OWNERSHIP--ELBERT COUNTY ROAD RIGHT-OF-WAY TO REACH THE STATION FROM
AE4274'THE TOWN OF PEYTON, INTERSECTION OF U. S. HIGHWAY 24 AND THE PEYTON
AE4274'HIGHWAY, GO NORTH ON THE PEYTON HIGHWAY FOR 3.0 MI (4.8 KM) TO THE
AE4274'INTERSECTION OF SWEET ROAD. CONTINUE AHEAD ON THE PEYTON HIGHWAY,
AE4274'NORTH, FOR 0.55 MI (0.89 KM) TO A FORK. TAKE RIGHT FORK, NORTHEAST,
AE4274'ON PEYTON HIGHWAY FOR 4.0 MI (6.4 KM) TO A RANCH HOUSE WHERE THE ROAD
AE4274'TURNS TO THE LEFT, WEST. TURN LEFT, WEST, ON MAIN ROAD FOR 0.3 MI
AE4274'(0.5 KM) TO THE STATION ON THE LEFT THE MARK IS A STANDARD DISK SET
AE4274'IN A 50 CM ROUND CONCRETE POST, PROJECTION 8 CM ABOVE THE GROUND, IT
AE4274'IS 71.5 M (234.6 FT) EAST FROM A PRIVATE DRIVE TO 10245 ELBERT COUNTY
AE4274'ROAD 7482, 63.8 M (209.3 FT) WEST-NORTHWEST FROM A PRIVATE DRIVE TO
AE4274'10220 ELBERT COUNTY ROAD 7482, 9.2 M (30.2 FT) NORTH FROM THE CENTER
AE4274'OF ELBERT COUNTY ROAD 7482, 0.9 M (3.0 FT) SOUTH FROM A RIGHT-OF-WAY
AE4274'FENCE, 0.65 M (2.13 FT) WEST FROM A WITNESS POST AND ABOUT 30 CM
ABOVE
AE4274'THE ROAD.

*** retrieval complete.
Elapsed Time = 00:00:05

The NGS Data Sheet

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

```
PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 AJ5757
**********************************************************************
 AJ5757  DESIGNATION -  COHEN
 AJ5757  PID         -  AJ5757
 AJ5757  STATE/COUNTY-  CO/ELBERT
 AJ5757  COUNTRY     -  US
 AJ5757  USGS QUAD   -  RIVER BEND (1970)
 AJ5757
 AJ5757                         *CURRENT SURVEY CONTROL
 AJ5757
______________________________________________________________________
 AJ5757* NAD 83(2011) POSITION- 39 17 46.42298(N) 103 51 21.42230(W)
ADJUSTED
 AJ5757* NAD 83(2011) ELLIP HT-  1702.402 (meters)        (06/27/12)
ADJUSTED
 AJ5757* NAD 83(2011) EPOCH   -  2010.00
 AJ5757* NAVD 88 ORTHO HEIGHT -  1721.6   (meters)     5648.    (feet) GPS
OBS
 AJ5757
______________________________________________________________________
 AJ5757  NAVD 88 orthometric height was determined with geoid model
GEOID99
 AJ5757  GEOID HEIGHT    -        -19.234 (meters)
GEOID99
 AJ5757  GEOID HEIGHT    -        -19.249 (meters)
GEOID12B
 AJ5757  NAD 83(2011) X  - -1,183,969.276 (meters)                    COMP
 AJ5757  NAD 83(2011) Y  - -4,800,019.874 (meters)                    COMP
 AJ5757  NAD 83(2011) Z  -  4,018,899.432 (meters)                    COMP
 AJ5757  LAPLACE CORR    -         -5.63  (seconds)
DEFLEC12B
 AJ5757
 AJ5757  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 AJ5757  Standards:
 AJ5757         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 AJ5757            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 AJ5757  ------------------------------------------------------------------
 AJ5757  NETWORK    0.45   0.98          0.20   0.16   0.50     -0.07083769
 AJ5757  ------------------------------------------------------------------
 AJ5757  Click here for local accuracies and other accuracy information.
 AJ5757
 AJ5757
 AJ5757.The horizontal coordinates were established by GPS observations
 AJ5757.and adjusted by the National Geodetic Survey in June 2012.
 AJ5757
 AJ5757.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 AJ5757.been affixed to the stable North American tectonic plate. See
 AJ5757.NA2011 for more information.
```

AJ5757
AJ5757.The horizontal coordinates are valid at the epoch date displayed above
AJ5757.which is a decimal equivalence of Year/Month/Day.
AJ5757
AJ5757.The orthometric height was determined by GPS observations and a
AJ5757.high-resolution geoid model.
AJ5757
AJ5757.Significant digits in the geoid height do not necessarily reflect accuracy.
AJ5757.GEOID12B height accuracy estimate available here.
AJ5757
AJ5757.Photographs are available for this station.
AJ5757
AJ5757.The X, Y, and Z were computed from the position and the ellipsoidal ht.
AJ5757
AJ5757.The Laplace correction was computed from DEFLEC12B derived deflections.
AJ5757
AJ5757.The ellipsoidal height was determined by GPS observations
AJ5757.and is referenced to NAD 83.
AJ5757
AJ5757. The following values were computed from the NAD 83(2011) position.
AJ5757
AJ5757;   North   East   Units Scale Factor   Converg.
AJ5757;SPC CO C   -   468,476.715 1,056,208.148   MT 0.99994170   +1 02 12.8
AJ5757;SPC CO C   - 1,536,994.02 3,465,242.90   sFT 0.99994170   +1 02 12.8
AJ5757;UTM 13   - 4,350,274.049   598,652.148   MT 0.99971983   +0 43 28.6
AJ5757
AJ5757!   - Elev Factor x Scale Factor =   Combined Factor
AJ5757!SPC CO C   -   0.99973298 x   0.99994170 =   0.99967470
AJ5757!UTM 13   -   0.99973298 x   0.99971983 =   0.99945288
AJ5757
AJ5757_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SED9865250274(NAD 83)
AJ5757
AJ5757   SUPERSEDED SURVEY CONTROL
AJ5757
AJ5757 NAD 83(2007)- 39 17 46.42296(N)   103 51 21.42285(W) AD(2002.00) 0
AJ5757 ELLIP H (02/10/07) 1702.431 (m)   GP(2002.00)
AJ5757 ELLIP H (12/03/02) 1702.437 (m)   GP(   ) 4 2
AJ5757 NAD 83(1992)- 39 17 46.42262(N)   103 51 21.42278(W) AD(   ) 1
AJ5757 ELLIP H (10/01/01) 1702.457 (m)   GP(   ) 3 2
AJ5757
AJ5757.Superseded values are not recommended for survey control.
AJ5757
AJ5757.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AJ5757.See file dsdata.pdf to determine how the superseded data were derived.
AJ5757
AJ5757_MARKER: I = METAL ROD

AJ5757_SETTING: 59 = STAINLESS STEEL ROD IN SLEEVE (10 FT.+)
AJ5757_STAMPING: COHEN 2001
AJ5757_MARK LOGO: NGS
AJ5757_PROJECTION: FLUSH
AJ5757_MAGNETIC: I = MARKER IS A STEEL ROD
AJ5757_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
AJ5757_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AJ5757+SATELLITE: SATELLITE OBSERVATIONS - 2001
AJ5757_ROD/PIPE-DEPTH: 5.2 meters
AJ5757_SLEEVE-DEPTH : 1.0 meters
AJ5757
AJ5757 HISTORY   - Date   Condition   Report By
AJ5757 HISTORY   - 2001   MONUMENTED   CODOT
AJ5757
AJ5757   STATION DESCRIPTION
AJ5757
AJ5757'DESCRIBED BY COLORADO DEPARTMENT OF TRANSPORTATION 2001 (DAS)
AJ5757'THE STATION IS LOCATED ABOUT 34 MILES SOUTHEAST OF THE TOWN OF
AJ5757'KIOWA ON STATE HIGHWAY 86 AND 2.0 MILES SOUTHWEST OF THE
AJ5757'INTERSECTION OF STATE HIGHWAY 86 AND INTERSTATE 70 ON STATE
AJ5757'HIGHWAY 86, AT MILE POST 57.1, IN THE NORTHEAST 1/4 OF SECTION 12,
AJ5757'T9S, R58W,
AJ5757'OWNERSHIP -- COLORADO DEPARTMENT OF TRANSPORTATION RIGHT OF WAY.
AJ5757'
AJ5757'TO REACH THE STATION FROM INTERSTATE 70 AND STATE HIGHWAY 86, EXIT
AJ5757'352,
AJ5757'AND GO WESTERLY ON STATE HIGHWAY 86 FOR 2.0 MILES TO A RISE WHERE THE
AJ5757'STATION IS ON THE LEFT
AJ5757'
AJ5757'THE MARK IS A PUNCH HOLE, TOP CENTER ON A STAINLESS STEEL ROD DRIVEN
AJ5757'TO
AJ5757'REFUSAL AT A DEPTH OF 5.2 M, ENCASED IN A 0.9 M LONG FINNED GREASED
AJ5757'SLEEVE,
AJ5757'ENCLOSED IN A PVC PIPE WITH LOGO LID, SURROUNDED BY A CONCRETE COLLAR
AJ5757'FLUSH WITH THE GROUND.   IT IS 46.6 M WEST FROM A ANGLE IRON BRACE
AJ5757'POST
AJ5757'FOR A BARBED-WIRE RIGHT-OF-WAY FENCE, 29.0 M SOUTH FROM THE
CENTERLINE
AJ5757'OF STATE HIGHWAY 86, 19.4 M EAST FROM THE TOP OF A HILL, 1.4 M NORTH
AJ5757'FROM A
AJ5757'BARBED-WIRE RIGHT-OF-WAY FENCE, 1.2 M NORTH FROM AN ORANGE CARSONITE
AJ5757'WITNESS POST AND ABOUT 1.5 M ABOVE THE GRADE OF STATE HIGHWAY 86.
AJ5757'
AJ5757'D. A. STEWART, CDOT
AJ5757'
AJ5757'
AJ5757'
AJ5757'

*** retrieval complete.
Elapsed Time = 00:00:05

The NGS Data Sheet

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

```
PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 DL2020
***********************************************************************
 DL2020  DESIGNATION -  CS 105
 DL2020  PID         -  DL2020
 DL2020  STATE/COUNTY-  CO/EL PASO
 DL2020  COUNTRY     -  US
 DL2020  USGS QUAD   -  PIKEVIEW (1994)
 DL2020
 DL2020                         *CURRENT SURVEY CONTROL
 DL2020
_______________________________________________________________________
 DL2020* NAD 83(2011) POSITION- 38 53 29.36263(N) 104 49 31.35173(W)
ADJUSTED
 DL2020* NAD 83(2011) ELLIP HT-  1859.136 (meters)        (06/27/12)
ADJUSTED
 DL2020* NAD 83(2011) EPOCH   -  2010.00
 DL2020* NAVD 88 ORTHO HEIGHT -  1875.981 (meters)     6154.78  (feet)
ADJUSTED
 DL2020
_______________________________________________________________________
 DL2020  GEOID HEIGHT    -        -16.823 (meters)
GEOID12B
 DL2020  NAD 83(2011) X  - -1,272,293.799 (meters)                    COMP
 DL2020  NAD 83(2011) Y  - -4,806,817.820 (meters)                    COMP
 DL2020  NAD 83(2011) Z  -  3,984,115.432 (meters)                    COMP
 DL2020  LAPLACE CORR    -        -14.52  (seconds)
DEFLEC12B
 DL2020  DYNAMIC HEIGHT  -       1873.925 (meters)     6148.04  (feet) COMP
 DL2020  MODELED GRAVITY -    979,465.7   (mgal)                       NAVD
88
 DL2020
 DL2020  VERT ORDER      -  FIRST     CLASS II
 DL2020
 DL2020  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 DL2020  Standards:
 DL2020         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 DL2020            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 DL2020  ------------------------------------------------------------------
 DL2020  NETWORK    0.33   0.63           0.15   0.11   0.32     -0.03535313
 DL2020  ------------------------------------------------------------------
 DL2020  Click here for local accuracies and other accuracy information.
 DL2020
 DL2020
 DL2020.The horizontal coordinates were established by GPS observations
 DL2020.and adjusted by the National Geodetic Survey in June 2012.
 DL2020
 DL2020.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 DL2020.been affixed to the stable North American tectonic plate. See
```

DL2020.NA2011 for more information.
DL2020
DL2020.The horizontal coordinates are valid at the epoch date displayed above
DL2020.which is a decimal equivalence of Year/Month/Day.
DL2020
DL2020.The orthometric height was determined by differential leveling and
DL2020.adjusted by the NATIONAL GEODETIC SURVEY
DL2020.in June 2009.
DL2020
DL2020.Significant digits in the geoid height do not necessarily reflect accuracy.
DL2020.GEOID12B height accuracy estimate available here.
DL2020
DL2020.The X, Y, and Z were computed from the position and the ellipsoidal ht.
DL2020
DL2020.The Laplace correction was computed from DEFLEC12B derived deflections.
DL2020
DL2020.The ellipsoidal height was determined by GPS observations
DL2020.and is referenced to NAD 83.
DL2020
DL2020.The dynamic height is computed by dividing the NAVD 88
DL2020.geopotential number by the normal gravity value computed on the
DL2020.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
DL2020.degrees latitude (g = 980.6199 gals.).
DL2020
DL2020.The modeled gravity was interpolated from observed gravity values.
DL2020
DL2020. The following values were computed from the NAD 83(2011) position.
DL2020
DL2020;   North   East   Units Scale Factor   Converg.
DL2020;SPC CO C   -   422,480.615   972,927.382   MT 0.99994256   +0 25 31.7
DL2020;SPC CO C   - 1,386,088.48 3,192,012.59   sFT 0.99994256   +0 25 31.7
DL2020;UTM 13   - 4,304,749.671   515,144.117   MT 0.99960282   +0 06 34.7
DL2020
DL2020!   - Elev Factor x Scale Factor =   Combined Factor
DL2020!SPC CO C   -   0.99970839 x   0.99994256 =   0.99965097
DL2020!UTM 13   -   0.99970839 x   0.99960282 =   0.99931133
DL2020
DL2020_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SED1514404749(NAD 83)
DL2020
DL2020   SUPERSEDED SURVEY CONTROL
DL2020
DL2020 NAD 83(2007)- 38 53 29.36243(N)   104 49 31.35209(W) AD(2002.00) B
DL2020 ELLIP H (06/17/11) 1859.171 (m)   GP(2002.00) 3 1
DL2020 NAVD 88   1875.98   (m)   6154.8   (f) LEVELING   3
DL2020
DL2020.Superseded values are not recommended for survey control.
DL2020
DL2020.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

DL2020.See file dsdata.pdf to determine how the superseded data were derived.
DL2020
DL2020_MARKER: F = FLANGE-ENCASED ROD
DL2020_SETTING: 59 = STAINLESS STEEL ROD IN SLEEVE (10 FT.+)
DL2020_STAMPING: CS 105 2007
DL2020_MARK LOGO: CODOT
DL2020_PROJECTION: FLUSH
DL2020_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET
DL2020_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
DL2020_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DL2020+SATELLITE: SATELLITE OBSERVATIONS - October 15, 2010
DL2020_ROD/PIPE-DEPTH: 4.3 meters
DL2020_SLEEVE-DEPTH : 0.9 meters
DL2020
DL2020 HISTORY   - Date   Condition   Report By
DL2020 HISTORY   - 20070427 MONUMENTED   CODOT
DL2020 HISTORY   - 20100730 GOOD   GEOCAC
DL2020 HISTORY   - 20101015 GOOD   WOOLPT
DL2020
DL2020   STATION DESCRIPTION
DL2020
DL2020'DESCRIBED BY COLORADO DEPARTMENT OF TRANSPORTATION 2007
DL2020'THE STATION IS LOCATED ABOUT 3.0 MI (4.8 KM) NORTHWEST OF DOWNTOWN
DL2020'COLORADO SPRINGS, CO, (BIJOU AND NEVADA), IN THE PIKEVIEW QUADRANGLE
DL2020'ON THE EAST SIDE OF MARK DABLING ROAD. EAST OF INTERSTATE 25 AND
DL2020'SOUTH OF GARDEN OF THE GODS ROAD IN THE NORTH END OF RICK GOOSE
DL2020'GOSSAGE PARK.
DL2020'
DL2020'OWNERSHIP-- CITY OF COLORADO SPRINGS.
DL2020'
DL2020'TO REACH FROM THE INTERSECTION OF INTERSTATE 25 AND GARDEN OF THE GODS
DL2020'RD., (EXIT 146), GO EAST ON GARDEN OF THE GODS ROAD FOR 0.23 MI (0.4
DL2020'KM) TO MARK DABLING ROAD. TURN RIGHT ON MARK DABLING ROAD AND GO 0.38
DL2020'MI (0.6 KM) SOUTH TO THE STATION ON THE LEFT. THE MARK IS LOCATED IN
DL2020'A SMALL OPEN AREA BETWEEN MARK DABLING ROAD. AND THE PIKES PEAK
DL2020'GREENWAY NATURE TRAIL.
DL2020'
DL2020'THE MARK IS A PUNCH MARK IN THE TOP OF A STAINLESS STEEL ROD DRIVEN TO
DL2020'REFUSAL, WITHIN A 3 FT (0.9 M) LONG GREASE-FILLED SLEEVE, RECESSED 3
DL2020'INCHES (8 CM) BELOW A 5 INCH (13 CM) CDOT LOGO CAP, WHICH IS FLUSH
DL2020'WITH THE GROUND SURFACE AND SURROUNDED BY 18 INCH (46 CM) DIAMETER
DL2020'CONCRETE. IT IS 16 FT (4.9 M) WEST OF THE CENTERLINE OF THE PIKES
DL2020'PEAK GREENWAY NATURE TRAIL, 71.2 FT (21.7 M) EAST OF THE EASTERLY BACK
DL2020'OF CURB OF MARK DABLING ROAD., 55 FT (16.8 M) NORTHEAST OF A 2 FT (0.6
DL2020'M) DIAMETER ELM TREE, AND 105 FT (32.0 M) SOUTHEAST OF A POWER POLE.
DL2020
DL2020   STATION RECOVERY (2010)
DL2020
DL2020'RECOVERY NOTE BY GEOCACHING 2010 (TFW)
DL2020'RECOVERED IN GOOD CONDITION.
DL2020

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DL2020                          STATION RECOVERY (2010)
DL2020
DL2020'RECOVERY NOTE BY WOOLPERT CONSULTANTS 2010 (DJK)
DL2020'RECOVERED AS DESCRIBED

*** retrieval complete.
Elapsed Time = 00:00:05
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The NGS Data Sheet

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

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PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 HK0131
***********************************************************************
 HK0131  DESIGNATION -  D 22
 HK0131  PID         -  HK0131
 HK0131  STATE/COUNTY-  CO/HUERFANO
 HK0131  COUNTRY     -  US
 HK0131  USGS QUAD   -  LASCAR (1970)
 HK0131
 HK0131                         *CURRENT SURVEY CONTROL
 HK0131
_______________________________________________________________________
 HK0131* NAD 83(2011) POSITION- 37 45 39.85430(N) 104 44 32.06443(W)   NO
CHECK
 HK0131* NAD 83(2011) ELLIP HT-  1780.824 (meters)        (06/27/12)   NO
CHECK
 HK0131* NAD 83(2011) EPOCH   -  2010.00
 HK0131* NAVD 88 ORTHO HEIGHT -  1798.908 (meters)     5901.92  (feet)
ADJUSTED
 HK0131
_______________________________________________________________________
 HK0131  GEOID HEIGHT    -        -18.062 (meters)
GEOID12B
 HK0131  NAD 83(2011) X  - -1,285,109.150 (meters)                    COMP
 HK0131  NAD 83(2011) Y  - -4,883,872.881 (meters)                    COMP
 HK0131  NAD 83(2011) Z  -  3,885,602.640 (meters)                    COMP
 HK0131  LAPLACE CORR    -         -7.41  (seconds)
DEFLEC12B
 HK0131  DYNAMIC HEIGHT  -       1796.846 (meters)     5895.15  (feet) COMP
 HK0131  MODELED GRAVITY -    979,419.8   (mgal)                       NAVD
88
 HK0131
 HK0131  VERT ORDER      -  FIRST     CLASS II
 HK0131
 HK0131  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 HK0131  Standards:
 HK0131         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 HK0131            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 HK0131  ------------------------------------------------------------------
 HK0131  NETWORK    3.41   3.67           1.59   1.06   1.87      0.26822181
 HK0131  ------------------------------------------------------------------
 HK0131  Click here for local accuracies and other accuracy information.
 HK0131
 HK0131
 HK0131.The horizontal coordinates were established by GPS observations
 HK0131.and adjusted by the National Geodetic Survey in June 2012.
 HK0131
 HK0131.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 HK0131.been affixed to the stable North American tectonic plate. See
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HK0131.NA2011 for more information.
HK0131
HK0131.The horizontal coordinates are valid at the epoch date displayed above
HK0131.which is a decimal equivalence of Year/Month/Day.
HK0131
HK0131.No horizontal observational check was made to the station.
HK0131.
HK0131.The orthometric height was determined by differential leveling and
HK0131.adjusted by the NATIONAL GEODETIC SURVEY
HK0131.in June 1991.
HK0131
HK0131.Significant digits in the geoid height do not necessarily reflect accuracy.
HK0131.GEOID12B height accuracy estimate available here.
HK0131
HK0131.Photographs are available for this station.
HK0131
HK0131.The X, Y, and Z were computed from the position and the ellipsoidal ht.
HK0131
HK0131.The Laplace correction was computed from DEFLEC12B derived deflections.
HK0131
HK0131.The ellipsoidal height was determined by GPS observations
HK0131.and is referenced to NAD 83.
HK0131
HK0131.The dynamic height is computed by dividing the NAVD 88
HK0131.geopotential number by the normal gravity value computed on the
HK0131.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
HK0131.degrees latitude (g = 980.6199 gals.).
HK0131
HK0131.The modeled gravity was interpolated from observed gravity values.
HK0131
HK0131. The following values were computed from the NAD 83(2011) position.
HK0131
HK0131;   North   East   Units Scale Factor   Converg.
HK0131;SPC CO S   -   426,532.457   981,168.777   MT 0.99994621   +0 27 53.3
HK0131;SPC CO S   - 1,399,381.90 3,219,051.23   sFT 0.99994621   +0 27 53.3
HK0131;UTM 13   - 4,179,337.124   522,703.875   MT 0.99960635   +0 09 28.2
HK0131
HK0131!   - Elev Factor x Scale Factor =   Combined Factor
HK0131!SPC CO S   -   0.99972063 x   0.99994621 =   0.99966686
HK0131!UTM 13   -   0.99972063 x   0.99960635 =   0.99932709
HK0131
HK0131_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SEB2270379337(NAD 83)
HK0131
HK0131   SUPERSEDED SURVEY CONTROL
HK0131
HK0131 NAD 83(2007)- 37 45 39.85431(N)   104 44 32.06492(W) AD(2002.00) 0
HK0131 ELLIP H (02/10/07) 1780.846 (m)   GP(2002.00)
HK0131 ELLIP H (10/21/02) 1780.846 (m)   GP(   ) 5 1

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 HK0131  NAD 83(1992)-  37 45 39.85383(N)    104 44 32.06447(W) AD(       ) 1
 HK0131  ELLIP H (06/30/00) 1780.853  (m)                        GP(       ) 1
1
 HK0131  NAVD 88            1798.91   (m)         5901.9    (f) LEVELING    3
 HK0131  NGVD 29 (??/??/92) 1797.960  (m)         5898.81   (f) ADJ UNCH    1
2
 HK0131
 HK0131.Superseded values are not recommended for survey control.
 HK0131
 HK0131.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 HK0131.See file dsdata.pdf to determine how the superseded data were
derived.
 HK0131
 HK0131_MARKER: DB = BENCH MARK DISK
 HK0131_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 HK0131_STAMPING: 5898.807 D 22 1929
 HK0131_MARK LOGO: CGS
 HK0131_MAGNETIC: O = OTHER; SEE DESCRIPTION
 HK0131_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 HK0131+STABILITY: SURFACE MOTION
 HK0131_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 HK0131+SATELLITE: SATELLITE OBSERVATIONS - April 20, 1999
 HK0131
 HK0131  HISTORY     - Date     Condition        Report By
 HK0131  HISTORY     - 1929     MONUMENTED       CGS
 HK0131  HISTORY     - 1935     GOOD             CGS
 HK0131  HISTORY     - 1982     GOOD             NGS
 HK0131  HISTORY     - 1982     GOOD             NGS
 HK0131  HISTORY     - 19990420 GOOD             MSAM
 HK0131
 HK0131                          STATION DESCRIPTION
 HK0131
 HK0131'DESCRIBED BY COAST AND GEODETIC SURVEY 1935
 HK0131'11.2 MI N FROM WALSENBURG.
 HK0131'11.2 MILES NORTH ALONG THE COLORADO AND SOUTHERN RAILWAY FROM THE
 HK0131'STATION AT WALSENBURG, HUERFANO COUNTY, 0.4 MILE SOUTH OF MILEPOST
 HK0131'160, 0.3 MILE SOUTH OF WOODEN BRIDGE 160.02, 800 FEET NORTH OF THE
 HK0131'SIGN ROOF, 925 FEET NORTH OF THE SEITCH AT THE SOUTH END OF THE
 HK0131'SIDING, 90.5 FEET WEST OF THE CENTERLINE OF THE WEST MAIN-LINE TRACK,
 HK0131'73 FEET WEST OF THE WEST RAIL OF THE SIDE TRACK, 2 FEET EAST OF THE
 HK0131'WEST RIGHT-OF-WAY FENCE, AND 6 FEET LOWER THAN THE TRACK.  A STANDARD
 HK0131'DISK, STAMPED 5898.807 D 22 1929 AND SET IN THE TOP OF A CONCRETE
 HK0131'POST PROJECTING 8 INCHES ABOVE GROUND.
 HK0131
 HK0131                          STATION RECOVERY (1982)
 HK0131
 HK0131'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1982
 HK0131'A WITNESS POST WAS ADDED AT THIS TIME. A NEW DESCRIPTION FOLLOWS:
 HK0131'ABOUT 18.0 KM (11.2 MI) NORTH ALONG THE OLD COLORADO AND SOUTHERN
 HK0131'RAILWAY FROM THE STATION AT WALSENBURG, HUERFANO COUNTY, 0.6 KM (0. 4
 HK0131'MILE) SOUTH OF MILEPOST 160, 0.5 KM (0.3 MI) SOUTH OF WOODEN BRIDGE
 HK0131'160.02, 282 M (925 FT) NORTH OF THE SEITCH AT THE SOUTH END OF THE
 HK0131'SIDING, 27.0 M (88.5 FT) WEST OF THE WEST RAIL OF THE WEST TRACK,
 HK0131'13.7 M (45 FT) WEST OF A TRACK ROAD IN THE RAILROAD RIGHT-OF-WAY, 0.6
 HK0131'M (2 FT) EAST OF THE WEST RIGHT-OF-WAY FENCE.
 HK0131
 HK0131                          STATION RECOVERY (1982)
```

HK0131
HK0131'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1982
HK0131'A WITNESS POST WAS ADDED AT THIS TIME. A NEW DESCRIPTION FOLLOWS:
HK0131'ABOUT 18.0 KM (11.2 MI) NORTH ALONG THE OLD COLORADO AND SOUTHERN
HK0131'RAILWAY FROM THE STATION AT WALSENBURG, HUERFANO COUNTY, 0.6 KM (0. 4
HK0131'MILE) SOUTH OF MILEPOST 160, 0.5 KM (0.3 MI) SOUTH OF WOODEN BRIDGE
HK0131'160.02, 282 M (925 FT) NORTH OF THE SEITCH AT THE SOUTH END OF THE
HK0131'SIDING, 27.0 M (88.5 FT) WEST OF THE WEST RAIL OF THE WEST TRACK,
HK0131'13.7 M (45 FT) WEST OF A TRACK ROAD IN THE RAILROAD RIGHT-OF-WAY, 0.6
HK0131'M (2 FT) EAST OF THE WEST RIGHT-OF-WAY FENCE.
HK0131
HK0131 STATION RECOVERY (1999)
HK0131
HK0131'RECOVERY NOTE BY MOUNTAIN SURVEYING AND MAPPING INC 1999 (KCH)
HK0131'THE STATION IS LOCATED ABOUT 56 KM (34.80 MI) SOUTHWEST OF PUEBLO AND
HK0131'20 KM (12.40 MI) NORTHWEST ON WALSENBURG COLORADO. IT IS WEST OF THE
HK0131'RAILROAD TRACKS. OWNERSHIP--RAILROAD RIGHT-OF-WAY
HK0131'TO REACH THE STATION FROM INTERSTATE HIGHWAY 25 AT EXIT 52 AT
HK0131'WALSENBURG, GO NORTH ON INTERSTATE HIGHWAY 25 FOR 3.9 MI (6.3 KM) TO
HK0131'EXIT 56 (REDROCK ROAD) . EXIT RIGHT, EAST, FOR 0.05 MI (0.08 KM) TO
A
HK0131'FRONTAGE ROAD. TURN LEFT, NORTH, ON REDROCK ROAD FOR 0.65 MI (1.05
HK0131'KM) TO A BEND IN THE ROAD, RIGHT. FOLLOW THE ROAD, RIGHT, EAST, FOR
HK0131'1.05 MI (1.69 KM) TO A BEND IN THE ROAD LEFT. FOLLOW THE ROAD LEFT,
HK0131'NORTH, FOR 2.4 MI (3.9 KM) TO A SIDE ROAD RIGHT. TURN RIGHT, EAST,
HK0131'FOR 1.0 MI (1.6 KM) TO A CATTLE GUARD. CONTIUNE EAST, FOR 1.0 MI
(1.6
HK0131'KM) TO A CATTLE GUARD. CONTINUE EAST, FOR 0.2 MI (0.3 KM) TO A BEND
HK0131'IN THE ROAD LEFT. FOLLOW THE ROAD LEFT, NORTH, FOR 1.8 MI (2.9 KM)
TO
HK0131'A BEND IN THE ROAD RIGHT. FOLLOW THE ROAD RIGHT, EAST, FOR 0.55 MI
HK0131'(0.89 KM) TO A TWO TRACK ROAD ON THE RIGHT. TURN RIGHT, SOUTHEAST AND
HK0131'SOUTH FOR 1.1 MI (1.8 KM) TO THE STATION ON THE LEFT
HK0131'THE MARK IS A US COAST AND GEODETIC SURVEY BRASS BENCHMARK DISK SET
IN
HK0131'THE TOP CENTER OF A 25-CM SQUARE CONCRETE POST, PROJECTING 25-CM
ABOVE
HK0131'THE GROUND. IT IS 0.4 MI (0.6 KM) SOUTH OF MILEPOST 160, 27 M (88.6
HK0131'FT) WEST OF THE CENTER OF THE WEST TRACK, 0.8 M (2.6 FT) NORTHWEST OF
HK0131'A METAL WITNESS POST, 0.3 M (1.0 FT) EAST OF A FENCE.

*** retrieval complete.
Elapsed Time = 00:00:05

The NGS Data Sheet

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

```
PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 JK0833
***********************************************************************
 JK0833  DESIGNATION -  D 395
 JK0833  PID         -  JK0833
 JK0833  STATE/COUNTY-  CO/EL PASO
 JK0833  COUNTRY     -  US
 JK0833  USGS QUAD   -  FOUNTAIN (1994)
 JK0833
 JK0833                         *CURRENT SURVEY CONTROL
 JK0833
_____________________________________________________________________
 JK0833* NAD 83(2011) POSITION- 38 38 58.30103(N) 104 41 44.60115(W)
ADJUSTED
 JK0833* NAD 83(2011) ELLIP HT-  1659.698 (meters)        (06/27/12)
ADJUSTED
 JK0833* NAD 83(2011) EPOCH   -  2010.00
 JK0833* NAVD 88 ORTHO HEIGHT -  1677.895 (meters)     5504.89  (feet)
ADJUSTED
 JK0833
_____________________________________________________________________
 JK0833  GEOID HEIGHT    -        -18.230 (meters)
GEOID12B
 JK0833  NAD 83(2011) X  - -1,265,642.085 (meters)                    COMP
 JK0833  NAD 83(2011) Y  - -4,825,808.453 (meters)                    COMP
 JK0833  NAD 83(2011) Z  -  3,963,042.762 (meters)                    COMP
 JK0833  LAPLACE CORR    -        -10.42  (seconds)
DEFLEC12B
 JK0833  DYNAMIC HEIGHT  -       1676.106 (meters)     5499.02  (feet) COMP
 JK0833  MODELED GRAVITY -    979,502.9   (mgal)                       NAVD
88
 JK0833
 JK0833  VERT ORDER      -  FIRST     CLASS II
 JK0833
 JK0833  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 JK0833  Standards:
 JK0833         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 JK0833            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 JK0833  ------------------------------------------------------------------
 JK0833  NETWORK    3.42  10.86          1.52   1.24   5.54      0.12943610
 JK0833  ------------------------------------------------------------------
 JK0833  Click here for local accuracies and other accuracy information.
 JK0833
 JK0833
 JK0833.The horizontal coordinates were established by GPS observations
 JK0833.and adjusted by the National Geodetic Survey in June 2012.
 JK0833
 JK0833.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 JK0833.been affixed to the stable North American tectonic plate. See
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 JK0833.NA2011 for more information.
 JK0833
 JK0833.The horizontal coordinates are valid at the epoch date displayed
above
 JK0833.which is a decimal equivalence of Year/Month/Day.
 JK0833
 JK0833.The orthometric height was determined by differential leveling and
 JK0833.adjusted by the NATIONAL GEODETIC SURVEY
 JK0833.in June 1991.
 JK0833
 JK0833.Significant digits in the geoid height do not necessarily reflect
accuracy.
 JK0833.GEOID12B height accuracy estimate available here.
 JK0833
 JK0833.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 JK0833
 JK0833.The Laplace correction was computed from DEFLEC12B derived
deflections.
 JK0833
 JK0833.The ellipsoidal height was determined by GPS observations
 JK0833.and is referenced to NAD 83.
 JK0833
 JK0833.The dynamic height is computed by dividing the NAVD 88
 JK0833.geopotential number by the normal gravity value computed on the
 JK0833.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 JK0833.degrees latitude (g = 980.6199 gals.).
 JK0833
 JK0833.The modeled gravity was interpolated from observed gravity values.
 JK0833
 JK0833. The following values were computed from the NAD 83(2011) position.
 JK0833
 JK0833;                    North         East     Units Scale Factor
Converg.
 JK0833;SPC CO C     -   395,714.057   984,412.650   MT  0.99996676   +0 30
26.1
 JK0833;SPC CO C     - 1,298,271.87  3,229,693.84   sFT  0.99996676   +0 30
26.1
 JK0833;UTM  13      - 4,277,929.416   526,477.432   MT  0.99960863   +0 11
24.1
 JK0833
 JK0833!             -  Elev Factor  x  Scale Factor =   Combined Factor
 JK0833!SPC CO C     -   0.99973966  x   0.99996676  =   0.99970643
 JK0833!UTM  13      -   0.99973966  x   0.99960863  =   0.99934839
 JK0833
 JK0833_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SEC2647777929(NAD 83)
 JK0833
 JK0833                           SUPERSEDED SURVEY CONTROL
 JK0833
 JK0833  NAD 83(2007)-  38 38 58.30106(N)    104 41 44.60157(W) AD(2002.00) 0
 JK0833  ELLIP H (02/10/07) 1659.712  (m)                       GP(2002.00)
 JK0833  ELLIP H (12/03/02) 1659.668  (m)                       GP(       ) 4
2
 JK0833  NAD 83(1992)-  38 38 58.30044(N)    104 41 44.60110(W) AD(       ) 1
 JK0833  ELLIP H (10/31/97) 1659.678  (m)                       GP(       ) 4
1
 JK0833  NAVD 88            1677.90   (m)         5504.9    (f) LEVELING    3
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 JK0833  NGVD 29 (11/26/84) 1676.907  (m)         5501.65   (f) ADJUSTED    1
2
 JK0833
 JK0833.Superseded values are not recommended for survey control.
 JK0833
 JK0833.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 JK0833.See file dsdata.pdf to determine how the superseded data were
derived.
 JK0833
 JK0833_MARKER: I = METAL ROD
 JK0833_SETTING: 49 = STAINLESS STEEL ROD W/O SLEEVE (10 FT.+)
 JK0833_STAMPING: D 395 1983
 JK0833_MARK LOGO: NGS
 JK0833_PROJECTION: FLUSH
 JK0833_MAGNETIC: I = MARKER IS A STEEL ROD
 JK0833_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 JK0833_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 JK0833+SATELLITE: SATELLITE OBSERVATIONS - June 25, 2005
 JK0833_ROD/PIPE-DEPTH: 3.4  meters
 JK0833
 JK0833  HISTORY     - Date     Condition        Report By
 JK0833  HISTORY     - 1983     MONUMENTED       NGS
 JK0833  HISTORY     - 19970128 GOOD             CODOT
 JK0833  HISTORY     - 20040301 GOOD             USPSQD
 JK0833  HISTORY     - 20050625 GOOD             CLSI
 JK0833  HISTORY     - 20070109 GOOD             GEOCAC
 JK0833
 JK0833                          STATION DESCRIPTION
 JK0833
 JK0833'DESCRIBED BY NATIONAL GEODETIC SURVEY 1983
 JK0833'25.3 KM (15.7 MI) SOUTH FROM COLORADO SPRINGS.
 JK0833'19.6 KM (12.15 MI) SOUTHERLY ALONG THE DENVER AND RIO GRANDE WESTERN
 JK0833'RAILROAD FROM THE STATION IN COLORADO SPRINGS, THENCE 2.8 KM (1.75
MI)
 JK0833'SOUTHEASTERLY ALONG U.S. HIGHWAY 85, THENCE 2.9 KM (1.8 MI) SOUTHERLY
 JK0833'ALONG INTERSTATE HIGHWAY 25, 135.6 METERS (444.9 FT) NORTH OF
MILEPOST
 JK0833'126, 18.5 METERS (60.7 FT) EAST OF THE CENTERLINE OF THE NORTH BOUND
 JK0833'LANES OF THE HIGHWAY, 14.7 METERS (48.2 FT) WEST OF THE NEAR RAIL,
AND
 JK0833'1.6 METERS (5.2 FT) SOUTH OF A UTILITY POLE WITH 1 GUY WIRE.
 JK0833'NOTE=ACCESS TO THE DATUM POINT IS THROUGH A 5-INCH LOGO CAP.
 JK0833'THE MARK IS 0.3 METERS  N FROM A WITNESS POST.
 JK0833'THE MARK IS 1.0 M ABOVE THE HIGHWAY.
 JK0833
 JK0833                          STATION RECOVERY (1997)
 JK0833
 JK0833'RECOVERY NOTE BY COLORADO DEPARTMENT OF TRANSPORTATION 1997 (RSC)
 JK0833'RECOVERED AS DESCRIBED.
 JK0833
 JK0833                          STATION RECOVERY (2004)
 JK0833
 JK0833'RECOVERY NOTE BY US POWER SQUADRON 2004 (GWS)
 JK0833'RECOVERED IN GOOD CONDITION.
 JK0833
 JK0833                          STATION RECOVERY (2005)
 JK0833
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JK0833'RECOVERY NOTE BY CLARK LAND SURVEYING INCORPORATED 2005 (MSJ)
JK0833'RECOVERED IN GOOD CONDITION.
JK0833
JK0833                          STATION RECOVERY (2007)
JK0833
JK0833'RECOVERY NOTE BY GEOCACHING 2007 (TFW)
JK0833'RECOVERED AS DESCRIBED

*** retrieval complete.
Elapsed Time = 00:00:05
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The NGS Data Sheet

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

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PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 AE5237
***********************************************************************
 AE5237  DESIGNATION -  DVX H
 AE5237  PID         -  AE5237
 AE5237  STATE/COUNTY-  CO/DENVER
 AE5237  COUNTRY     -  US
 AE5237  USGS QUAD   -  MONTBELLO (1994)
 AE5237
 AE5237                         *CURRENT SURVEY CONTROL
 AE5237
_____________________________________________________________________
 AE5237* NAD 83(2011) POSITION- 39 49 18.77515(N) 104 45 11.07989(W)
ADJUSTED
 AE5237* NAD 83(2011) ELLIP HT-  1635.694 (meters)        (06/27/12)
ADJUSTED
 AE5237* NAD 83(2011) EPOCH   -  2010.00
 AE5237* NAVD 88 ORTHO HEIGHT -  1653.621 (meters)     5425.25  (feet)
ADJUSTED
 AE5237
_____________________________________________________________________
 AE5237  GEOID HEIGHT    -        -17.924 (meters)
GEOID12B
 AE5237  NAD 83(2011) X  - -1,249,498.218 (meters)                    COMP
 AE5237  NAD 83(2011) Y  - -4,744,891.450 (meters)                    COMP
 AE5237  NAD 83(2011) Z  -  4,063,863.307 (meters)                    COMP
 AE5237  LAPLACE CORR    -         -4.43  (seconds)
DEFLEC12B
 AE5237  DYNAMIC HEIGHT  -       1652.070 (meters)     5420.17  (feet) COMP
 AE5237  MODELED GRAVITY -    979,630.3   (mgal)                       NAVD
88
 AE5237
 AE5237  VERT ORDER      -  FIRST     CLASS II
 AE5237
 AE5237  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 AE5237  Standards:
 AE5237         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 AE5237            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 AE5237  ------------------------------------------------------------------
 AE5237  NETWORK    0.46   0.55          0.21   0.16   0.28      0.01232073
 AE5237  ------------------------------------------------------------------
 AE5237  Click here for local accuracies and other accuracy information.
 AE5237
 AE5237
 AE5237.This mark is at Denver Intl Airport (DEN)
 AE5237
 AE5237.The horizontal coordinates were established by GPS observations
 AE5237.and adjusted by the National Geodetic Survey in June 2012.
 AE5237
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AE5237.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
AE5237.been affixed to the stable North American tectonic plate. See
AE5237.NA2011 for more information.
AE5237
AE5237.The horizontal coordinates are valid at the epoch date displayed above
AE5237.which is a decimal equivalence of Year/Month/Day.
AE5237
AE5237.The orthometric height was determined by differential leveling and
AE5237.adjusted by the NATIONAL GEODETIC SURVEY
AE5237.in January 2007.
AE5237
AE5237.Significant digits in the geoid height do not necessarily reflect accuracy.
AE5237.GEOID12B height accuracy estimate available here.
AE5237
AE5237.Photographs are available for this station.
AE5237
AE5237.The X, Y, and Z were computed from the position and the ellipsoidal ht.
AE5237
AE5237.The Laplace correction was computed from DEFLEC12B derived deflections.
AE5237
AE5237.The ellipsoidal height was determined by GPS observations
AE5237.and is referenced to NAD 83.
AE5237
AE5237.The dynamic height is computed by dividing the NAVD 88
AE5237.geopotential number by the normal gravity value computed on the
AE5237.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
AE5237.degrees latitude (g = 980.6199 gals.).
AE5237
AE5237.The modeled gravity was interpolated from observed gravity values.
AE5237
AE5237. The following values were computed from the NAD 83(2011) position.
AE5237
AE5237;   North   East   Units Scale Factor   Converg.
AE5237;SPC CO C   -   525,816.038   978,350.055   MT 1.00001501   +0 28 15.9
AE5237;SPC CO C   - 1,725,114.78 3,209,803.47   sFT 1.00001501   +0 28 15.9
AE5237;UTM 13   - 4,408,017.327   521,131.883   MT 0.99960550   +0 09 29.3
AE5237
AE5237!   - Elev Factor x Scale Factor =   Combined Factor
AE5237!SPC CO C   -   0.99974346 x   1.00001501 =   0.99975846
AE5237!UTM 13   -   0.99974346 x   0.99960550 =   0.99934906
AE5237
AE5237_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SEE2113108017(NAD 83)
AE5237
AE5237   SUPERSEDED SURVEY CONTROL
AE5237
AE5237 NAD 83(2007)- 39 49 18.77553(N)   104 45 11.08036(W) AD(2002.00) 1
AE5237 ELLIP H (06/15/10) 1635.715 (m)   GP(2002.00) 3
2

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 AE5237  NAD 83(2007)-  39 49 18.77556(N)    104 45 11.08042(W) AD(2002.00) 0
 AE5237  ELLIP H (02/10/07) 1635.701  (m)                       GP(2002.00)
 AE5237  ELLIP H (12/03/02) 1635.739  (m)                       GP(       ) 4
2
 AE5237  NAD 83(1992)-  39 49 18.77500(N)    104 45 11.07991(W) AD(       ) 1
 AE5237  ELLIP H (01/12/98) 1635.781  (m)                       GP(       ) 4
1
 AE5237  NAVD 88            1653.62   (m)         5425.3    (f) LEVELING    3
 AE5237  NAVD 88 (01/12/98) 1653.6    (m)  GEOID96 model used   GPS OBS
 AE5237
 AE5237.Superseded values are not recommended for survey control.
 AE5237
 AE5237.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 AE5237.See file dsdata.pdf to determine how the superseded data were
derived.
 AE5237
 AE5237_MARKER: F = FLANGE-ENCASED ROD
 AE5237_SETTING: 59 = STAINLESS STEEL ROD IN SLEEVE (10 FT.+)
 AE5237_STAMPING: DVX H 1995
 AE5237_MARK LOGO: NGS
 AE5237_PROJECTION: FLUSH
 AE5237_MAGNETIC: I = MARKER IS A STEEL ROD
 AE5237_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 AE5237_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 AE5237+SATELLITE: SATELLITE OBSERVATIONS - August 16, 2012
 AE5237_ROD/PIPE-DEPTH: 4.0  meters
 AE5237_SLEEVE-DEPTH  : .9 meters
 AE5237
 AE5237  HISTORY     - Date     Condition        Report By
 AE5237  HISTORY     - 1995     MONUMENTED       NGS
 AE5237  HISTORY     - 20010303 MARK NOT FOUND   METRSC
 AE5237  HISTORY     - 20030909 GOOD             INDIV
 AE5237  HISTORY     - 20051026 GOOD             WOOLPT
 AE5237  HISTORY     - 20100914 GOOD             WOOLPT
 AE5237  HISTORY     - 20120816 GOOD             CO0110
 AE5237
 AE5237                          STATION DESCRIPTION
 AE5237
 AE5237'DESCRIBED BY NATIONAL GEODETIC SURVEY 1995 (RSC)
 AE5237'THE STATION IS LOCATED AT THE NEW DENVER INTERNATIONAL AIRPORT ABOUT
 AE5237'4.5 MI (7.2 KM) WEST-SOUTHWEST OF THE TERMINAL BUILDING, 4.4 MI (7.1
 AE5237'KM) NORTH-NORTHEAST OF THE INTERSECTION OF INTERSTATE 70 AND PENA
 AE5237'BLVD., 1.7 MI (2.7 KM) WEST-SOUTHWEST OF THE TOLL PLAZA ON PENA
BLVD.,
 AE5237'IN THE NORTHWEST 1/4 OF SECTION 2, T 3 S, R 66 W. OWNERSHIP--CITY AND
 AE5237'COUNTY OF DENVER INTERNATIONAL AIRPORT., MR.  KEN CONLAN, 303-342-
8665
 AE5237'TO REACH THE STATION FROM THE INTERSECTION OF TOWER ROAD AND 72ND
 AE5237'AVENUE, 0.45 MI (0.72 KM) SOUTH OF THE CENTER OF THE INTERSECTION OF
 AE5237'PENA BLVD.  AND TOWER ROAD, GO EAST ON 72ND AVENUE FOR 1.0 MI (1.6
KM)
 AE5237'TO A FENCE CORNER AND FIELD ROAD RIGHT.  TURN RIGHT, SOUTH, FOR 0.4
MI
 AE5237'(0.6 KM) TO THE STATION ON THE RIGHT  THE MARK IS A PUNCH HOLE, TOP
 AE5237'CENTER ON A 4.0 M (13.1 FT) LONG STAINLESS STEEL ROD DRIVEN TO
 AE5237'REFUSAL, ENCASED IN A 0.9 M (3.0 FT) LONG GREASED 1-INCH PVC PIPE,
 AE5237'ENCLOSED IN A 5-INCH PVC PIPE WITH LOGO LID, SURROUNDED BY A CONCRETE
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AE5237'COLLAR FLUSH WITH THE GROUND. IT IS 7.1 M (23.3 FT) NORTHWEST OF A
AE5237'DMWW MANHOLE COVER, 6.5 M (21.3 FT) NORTH OF A WATER VENT PIPE NUMBER
AE5237'STA 180+88, 5.5 M (18.0 FT) WEST OF THE CENTER OF A DIRT ROAD, 1.3 M
AE5237'(4.3 FT) WEST OF A 3-WIRE FENCE, 0.9 M (3.0 FT) NORTH OF A WITNESS
AE5237'POST, 0.8 M (2.6 FT) SOUTH OF A WITNESS POST AND A MAGNET WAS DROPPED
AE5237'IN THE HOLE.
AE5237
AE5237   STATION RECOVERY (2001)
AE5237
AE5237'RECOVERY NOTE BY METROPOLITAN STATE COLLEGE OF DENVER 2001 (HWS)
AE5237'MARK NOT FOUND.
AE5237
AE5237   STATION RECOVERY (2003)
AE5237
AE5237'RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2003 (MSJ)
AE5237'RECOVERED IN GOOD CONDITION.
AE5237
AE5237   STATION RECOVERY (2005)
AE5237
AE5237'RECOVERY NOTE BY WOOLPERT CONSULTANTS 2005 (CRR)
AE5237'RECOVERED AS DESCRIBED.
AE5237
AE5237   STATION RECOVERY (2010)
AE5237
AE5237'RECOVERY NOTE BY WOOLPERT CONSULTANTS 2010 (DJK)
AE5237'RECOVERED AS DESCRIBED.
AE5237
AE5237   STATION RECOVERY (2012)
AE5237
AE5237'RECOVERY NOTE BY CITY OF AURORA COLORADO 2012 (DMR)
AE5237'RECOVERED AS DESCRIBED.

*** retrieval complete.
Elapsed Time = 00:00:05

The NGS Data Sheet

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

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PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 KJ0219
***********************************************************************
 KJ0219  DESIGNATION -  E 25
 KJ0219  PID         -  KJ0219
 KJ0219  STATE/COUNTY-  CO/LINCOLN
 KJ0219  COUNTRY     -  US
 KJ0219  USGS QUAD   -  BARRON CREEK (1979)
 KJ0219
 KJ0219                         *CURRENT SURVEY CONTROL
 KJ0219
_______________________________________________________________________
 KJ0219* NAD 83(2011) POSITION- 39 12 52.58962(N) 103 36 07.51947(W)
ADJUSTED
 KJ0219* NAD 83(2011) ELLIP HT-  1579.586 (meters)        (06/27/12)
ADJUSTED
 KJ0219* NAD 83(2011) EPOCH   -  2010.00
 KJ0219* NAVD 88 ORTHO HEIGHT -  1599.645 (meters)     5248.17  (feet)
ADJUSTED
 KJ0219
_______________________________________________________________________
 KJ0219  GEOID HEIGHT    -        -20.063 (meters)
GEOID12B
 KJ0219  NAD 83(2011) X  - -1,164,016.627 (meters)                    COMP
 KJ0219  NAD 83(2011) Y  - -4,810,700.704 (meters)                    COMP
 KJ0219  NAD 83(2011) Z  -  4,011,803.272 (meters)                    COMP
 KJ0219  LAPLACE CORR    -         -5.47  (seconds)
DEFLEC12B
 KJ0219  DYNAMIC HEIGHT  -       1598.100 (meters)     5243.10  (feet) COMP
 KJ0219  MODELED GRAVITY -    979,604.8   (mgal)                       NAVD
88
 KJ0219
 KJ0219  VERT ORDER      -  FIRST     CLASS II
 KJ0219
 KJ0219  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 KJ0219  Standards:
 KJ0219         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 KJ0219            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 KJ0219  ------------------------------------------------------------------
 KJ0219  NETWORK    0.97   1.78           0.44   0.34   0.91      0.01896349
 KJ0219  ------------------------------------------------------------------
 KJ0219  Click here for local accuracies and other accuracy information.
 KJ0219
 KJ0219
 KJ0219.The horizontal coordinates were established by GPS observations
 KJ0219.and adjusted by the National Geodetic Survey in June 2012.
 KJ0219
 KJ0219.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 KJ0219.been affixed to the stable North American tectonic plate. See
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KJ0219.NA2011 for more information.
KJ0219
KJ0219.The horizontal coordinates are valid at the epoch date displayed above
KJ0219.which is a decimal equivalence of Year/Month/Day.
KJ0219
KJ0219.The orthometric height was determined by differential leveling and
KJ0219.adjusted by the NATIONAL GEODETIC SURVEY
KJ0219.in June 1991.
KJ0219
KJ0219.Significant digits in the geoid height do not necessarily reflect accuracy.
KJ0219.GEOID12B height accuracy estimate available here.
KJ0219
KJ0219.Photographs are available for this station.
KJ0219
KJ0219.The X, Y, and Z were computed from the position and the ellipsoidal ht.
KJ0219
KJ0219.The Laplace correction was computed from DEFLEC12B derived deflections.
KJ0219
KJ0219.The ellipsoidal height was determined by GPS observations
KJ0219.and is referenced to NAD 83.
KJ0219
KJ0219.The dynamic height is computed by dividing the NAVD 88
KJ0219.geopotential number by the normal gravity value computed on the
KJ0219.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
KJ0219.degrees latitude (g = 980.6199 gals.).
KJ0219
KJ0219.The modeled gravity was interpolated from observed gravity values.
KJ0219
KJ0219. The following values were computed from the NAD 83(2011) position.
KJ0219
KJ0219;   North   East   Units Scale Factor   Converg.
KJ0219;SPC CO C   -   459,844.571 1,078,291.138   MT 0.99993787   +1 11 49.2
KJ0219;SPC CO C   - 1,508,673.40 3,537,693.51   sFT 0.99993787   +1 11 49.2
KJ0219;UTM 13   - 4,341,523.212   620,683.499   MT 0.99977933   +0 53 02.1
KJ0219
KJ0219!   - Elev Factor x Scale Factor =   Combined Factor
KJ0219!SPC CO C   -   0.99975224 x   0.99993787 =   0.99969012
KJ0219!UTM 13   -   0.99975224 x   0.99977933 =   0.99953162
KJ0219
KJ0219_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SFD2068341523(NAD 83)
KJ0219
KJ0219   SUPERSEDED SURVEY CONTROL
KJ0219
KJ0219 NAD 83(2007)- 39 12 52.58966(N)   103 36 07.51983(W) AD(2002.00) 0
KJ0219 ELLIP H (02/10/07) 1579.608 (m)   GP(2002.00)
KJ0219 ELLIP H (12/03/02) 1579.618 (m)   GP(   ) 4 2
KJ0219 NAD 83(1992)- 39 12 52.58968(N)   103 36 07.51958(W) AD(   ) 1

```
 KJ0219  ELLIP H (03/31/95) 1579.629  (m)                        GP(       ) 3
2
 KJ0219  NAVD 88            1599.65   (m)         5248.2    (f) LEVELING    3
 KJ0219  NGVD 29 (??/??/92) 1598.854  (m)         5245.57   (f) ADJ UNCH    1
2
 KJ0219
 KJ0219.Superseded values are not recommended for survey control.
 KJ0219
 KJ0219.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 KJ0219.See file dsdata.pdf to determine how the superseded data were
derived.
 KJ0219
 KJ0219_MARKER: DB = BENCH MARK DISK
 KJ0219_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 KJ0219_STAMPING: E 25 1929
 KJ0219_MARK LOGO: CGS
 KJ0219_MAGNETIC: O = OTHER; SEE DESCRIPTION
 KJ0219_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 KJ0219+STABILITY: SURFACE MOTION
 KJ0219_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 KJ0219+SATELLITE: SATELLITE OBSERVATIONS - August 27, 1992
 KJ0219
 KJ0219  HISTORY     - Date     Condition        Report By
 KJ0219  HISTORY     - 1929     MONUMENTED       CGS
 KJ0219  HISTORY     - 1938     GOOD             CGS
 KJ0219  HISTORY     - 19920827 GOOD             NGS
 KJ0219  HISTORY     - 20090831 GOOD             GEOCAC
 KJ0219
 KJ0219                          STATION DESCRIPTION
 KJ0219
 KJ0219'DESCRIBED BY COAST AND GEODETIC SURVEY 1938
 KJ0219'6.2 MI SE FROM LIMON.
 KJ0219'6.2 MILES SOUTHEAST ALONG THE UNION PACIFIC RAILROAD FROM THE
CHICAGO,
 KJ0219'ROCK ISLAND AND PACIFIC RAILROAD STATION AT LIMON, LINCOLN COUNTY,
 KJ0219'8 1/2 POLES, EAST OF MILEPOST 545, ABOUT 250 FEET SOUTHEAST OF THE
 KJ0219'JUNCTION OF OLD U.S. HIGHWAY 40 S AND U.S. HIGHWAY 40, ABOUT 150
 KJ0219'FEET NORTH OF THE SOUTHEAST END OF BRIDGE 544.81, 167 FEET NORTHEAST
 KJ0219'OF THE CENTERLINE OF THE TRACK, 65 FEET SOUTHWEST OF THE CENTERLINE
 KJ0219'OF OLD U.S. HIGHWAY 40 S, 30 FEET SOUTHWEST OF A NORTHEAST
 KJ0219'RIGHT-OF-WAY FENCE, 2 FEET SOUTH OF AN EAST-AND-WEST FENCE, AND
 KJ0219'LEVEL WITH THE TRACK.  A STANDARD DISK, STAMPED E 25 1929 AND SET
 KJ0219'IN THE TOP OF A CONCRETE POST PROJECTING 6 INCHES ABOVE GROUND.
 KJ0219
 KJ0219                          STATION RECOVERY (1992)
 KJ0219
 KJ0219'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1992 (RSC)
 KJ0219'THE STATION IS LOCATED ABOUT 7 MI (11.3 KM) SOUTHEAST OF LIMON ALONG
 KJ0219'U.S. HIGHWAY 40, IN THE NORTHWEST 1/4 OF SECTION 6, T 10 S, R 55 W,
AT
 KJ0219'U.S. HIGHWAY 40 MILEPOST 390.1.  OWNERSHIP--UNION PACIFIC RAILROAD.
 KJ0219'
 KJ0219'TO REACH THE STATION FROM THE EAST JUNCTION OF U.S. HIGHWAY 24, 40,
 KJ0219'287, AND INTERSTATE 70, GO SOUTHEAST ON U.S. HIGHWAY 40 FOR 4.1 MI
 KJ0219'(6.6 KM) TO THE STATION ON THE RIGHT.
 KJ0219'
 KJ0219'THE STATION IS A BRASS DISK IN A CONCRETE POST 0.5 FT (0.2 M) ABOVE
```

KJ0219'THE GROUND. IT IS 272.7 FT (83.1 M) SOUTHEAST OF A POWER POLE, 163.7
KJ0219'FT (49.9 M) NORTHEAST OF THE NORTHEAST RAIL OF THE UNION PACIFIC
KJ0219'RAILROAD TRACK, 135.0 FT (41.1 M) SOUTHWEST OF THE CENTERLINE OF U.S.
KJ0219'HIGHWAY 40, 63.3 FT (19.3 M) SOUTHWEST OF THE SOUTH RIGHT-OF-WAY
FENCE
KJ0219'OF U.S. HIGHWAY 40, 14.7 FT (4.5 M) WEST OF A FIELD GATE, 2.3 FT (0.7
KJ0219'M) SOUTH OF A FENCE, 2.7 FT (0.8 M) SOUTH OF A FIBERGLASS WITNESS
KJ0219'POST, AND 2.6 FT (0.8 M) NORTHWEST OF A FIBERGLASS WITNESS POST.
KJ0219
KJ0219   STATION RECOVERY (2009)
KJ0219
KJ0219'RECOVERY NOTE BY GEOCACHING 2009 (TFW)
KJ0219'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:05

The NGS Data Sheet

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

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PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 LL0998
***********************************************************************
 LL0998  DESIGNATION -  F 391
 LL0998  PID         -  LL0998
 LL0998  STATE/COUNTY-  CO/WELD
 LL0998  COUNTRY     -  US
 LL0998  USGS QUAD   -  LA SALLE (1975)
 LL0998
 LL0998                         *CURRENT SURVEY CONTROL
 LL0998
_____________________________________________________________________
 LL0998* NAD 83(1992) POSITION- 40 18 41.72027(N) 104 44 31.90938(W)
ADJUSTED
 LL0998* NAD 83(1992) ELLIP HT-  1421.802 (meters)        (12/03/02)
ADJUSTED
 LL0998* NAVD 88 ORTHO HEIGHT -  1439.980 (meters)     4724.33  (feet)
ADJUSTED
 LL0998
_____________________________________________________________________
 LL0998  GEOID HEIGHT    -        -18.277 (meters)
GEOID12B
 LL0998  NAD 83(1992) X  - -1,239,646.867 (meters)                    COMP
 LL0998  NAD 83(1992) Y  - -4,711,114.389 (meters)                    COMP
 LL0998  NAD 83(1992) Z  -  4,105,348.478 (meters)                    COMP
 LL0998  LAPLACE CORR    -         -5.97  (seconds)
DEFLEC12B
 LL0998  DYNAMIC HEIGHT  -       1438.726 (meters)     4720.22  (feet) COMP
 LL0998  MODELED GRAVITY -    979,704.7   (mgal)                       NAVD
88
 LL0998
 LL0998  HORZ ORDER      -  FIRST
 LL0998  VERT ORDER      -  FIRST     CLASS II
 LL0998  ELLP ORDER      -  FOURTH    CLASS II
 LL0998
 LL0998.The horizontal coordinates were established by GPS observations
 LL0998.and adjusted by the National Geodetic Survey in December 2002.
 LL0998
 LL0998.The orthometric height was determined by differential leveling and
 LL0998.adjusted by the NATIONAL GEODETIC SURVEY
 LL0998.in June 1991.
 LL0998
 LL0998.Significant digits in the geoid height do not necessarily reflect
accuracy.
 LL0998.GEOID12B height accuracy estimate available here.
 LL0998
 LL0998.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 LL0998
```

```
 LL0998.The Laplace correction was computed from DEFLEC12B derived
deflections.
 LL0998
 LL0998.The ellipsoidal height was determined by GPS observations
 LL0998.and is referenced to NAD 83.
 LL0998
 LL0998.The dynamic height is computed by dividing the NAVD 88
 LL0998.geopotential number by the normal gravity value computed on the
 LL0998.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 LL0998.degrees latitude (g = 980.6199 gals.).
 LL0998
 LL0998.The modeled gravity was interpolated from observed gravity values.
 LL0998
 LL0998. The following values were computed from the NAD 83(1992) position.
 LL0998
 LL0998;                    North         East     Units Scale Factor
Converg.
 LL0998;SPC CO N     -   413,692.402   978,814.927   MT  0.99995741   +0 29
22.7
 LL0998;SPC CO N     - 1,357,255.82  3,211,328.64   sFT  0.99995741   +0 29
22.7
 LL0998;UTM  13      - 4,462,373.362   521,905.645   MT  0.99960591   +0 10
00.4
 LL0998
 LL0998!             -  Elev Factor  x  Scale Factor =   Combined Factor
 LL0998!SPC CO N     -   0.99977701  x   0.99995741  =   0.99973443
 LL0998!UTM  13      -   0.99977701  x   0.99960591  =   0.99938301
 LL0998
 LL0998_U.S. NATIONAL GRID SPATIAL ADDRESS: 13TEE2190562373(NAD 83)
 LL0998
 LL0998                          SUPERSEDED SURVEY CONTROL
 LL0998
 LL0998  ELLIP H (12/21/93) 1422.019  (m)                        GP(       ) 4
1
 LL0998  NAD 83(1992)-  40 18 41.72433(N)    104 44 31.90696(W) AD(       ) 1
 LL0998  ELLIP H (01/07/93) 1422.019  (m)                        GP(       ) 4
2
 LL0998  NAD 83(1986)-  40 18 41.70856(N)    104 44 31.90794(W) AD(       ) 1
 LL0998  NGVD 29            1439.09   (m)         4721.4    (f) LEVELING    3
 LL0998  NGVD 29 (11/26/84) 1439.091  (m)         4721.42   (f) ADJUSTED    1
2
 LL0998
 LL0998.Superseded values are not recommended for survey control.
 LL0998
 LL0998.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 LL0998.See file dsdata.pdf to determine how the superseded data were
derived.
 LL0998
 LL0998_MARKER: I = METAL ROD
 LL0998_SETTING: 49 = STAINLESS STEEL ROD W/O SLEEVE (10 FT.+)
 LL0998_STAMPING: F 391 1983
 LL0998_MARK LOGO: NGS
 LL0998_PROJECTION: FLUSH
 LL0998_MAGNETIC: N = NO MAGNETIC MATERIAL
 LL0998_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 LL0998_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 LL0998+SATELLITE: SATELLITE OBSERVATIONS - August 12, 2005
```

LL0998_ROD/PIPE-DEPTH: 17.1 meters
LL0998
LL0998 HISTORY   - Date   Condition   Report By
LL0998 HISTORY   - 1983   MONUMENTED   NGS
LL0998 HISTORY   - 1986   GOOD   NGS
LL0998 HISTORY   - 20050812 GOOD   USPSQD
LL0998 HISTORY   - 20120815 POOR   INDIV
LL0998
LL0998   STATION DESCRIPTION
LL0998
LL0998'DESCRIBED BY NATIONAL GEODETIC SURVEY 1983
LL0998'5.1 KM (3.15 MI) SW FROM LA SALLE.
LL0998'5.1 KM (3.15 MI) SOUTHWESTERLY ALONG THE UNION PACIFIC RAILROAD FROM
LL0998'THE STATION IN LA SALLE, 1.0 KM (0.6 MI) SOUTHWEST OF COUNTY ROAD 46,
LL0998'10.7 METERS (35.1 FT) SOUTHEAST OF THE NEAR RAIL, AND 0.9 METER
LL0998'(3.0 FT) SOUTHWEST OF MILEPOST 43. NOTE=ACCESS TO THE DATUM POINT IS
LL0998'THROUGH A 5-INCH LOGO CAP.
LL0998'THE MARK IS 0.3 METERS NE FROM A WITNESS POST.
LL0998'THE MARK IS 0.3 M BELOW THE TRACKS.
LL0998
LL0998   STATION RECOVERY (1986)
LL0998
LL0998'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1986 (MCG)
LL0998'THE STATION IS LOCATED ABOUT 13.7 KM (8.5 MI)
LL0998'SOUTHWEST OF GREELEY,
LL0998'3.2 KM (2.0 MI) SOUTHWEST OF LA SALLE, AND
LL0998'0.8 KM (0.5 MI) NORTHEAST OF PECKHAM.
LL0998'OWNERSHIP--HIGHWAY RIGHT-OF-WAY.
LL0998'
LL0998'TO REACH THE STATION FROM THE INTERSECTION OF U.S. HIGHWAY 85 AND
LL0998'STATE HIGHWAY 256 IN PECKHAM, GO NORTHERLY FOR 2.2 KM (1.35 MI) ON
LL0998'HIGHWAY 85 TO COUNTY ROAD 46 ON THE RIGHT. TURN RIGHT, AND GO
LL0998'EASTERLY FOR 0.1 KM (0.05 MI) ON COUNTY ROAD 46 TO A JOG IN THE
LL0998'ROAD TO THE SOUTH WHICH BECOMES COUNTY ROAD 35. CONTINUE ON COUNTY
LL0998'ROAD 35 FOR 0.1 KM (0.05 MI) TO A SIDE ROAD RIGHT. TURN RIGHT
LL0998'PASSING THROUGH A SUGAR BEET LOADING AREA AND GO SOUTH ALONG THE
LL0998'FIELD ROAD ALONG THE RAILROAD TRACKS FOR 1.0 KM (0.6 MI) TO THE
LL0998'STATION.
LL0998'
LL0998'THE STATION IS A STANDARD NGS STAINLESS STEEL ROD SET IN A PIPE
LL0998'FLUSH WITH THE GROUND WITH ACCESS THROUGH A 5-INCH LOGO CAP.
LL0998'STAMPED---F 391 1983---,
LL0998'SET INTO THE GROUND
LL0998'35.9 METERS (117.8 FT) SOUTHEAST FROM THE CENTERLINE OF THE
LL0998'NORTHBOUND LANES OF HIGHWAY 85,
LL0998'10.7 METERS (35.1 FT) SOUTHEAST FROM THE NEAR RAIL,
LL0998'5.7 METERS (18.7 FT) NORTHWEST FROM THE NORTHERN EDGE OF A CONCRETE
LL0998'IRRIGATION DITCH,
LL0998'3.4 METERS (11.2 FT) NORTHWEST FROM THE CENTER OF A FIELD ROAD,
LL0998'1.9 METERS (6.2 FT) SOUTHWEST FROM A TELEPHONE POLE WITH MILEPOST
LL0998'ATTACHED, AND
LL0998'0.7 METERS (2.3 FT) NORTHEAST FROM A WITNESS POST.
LL0998'
LL0998'DESCRIBED BY R.S. COHEN.
LL0998
LL0998   STATION RECOVERY (2005)
LL0998

LL0998'RECOVERY NOTE BY US POWER SQUADRON 2005 (GWS)
LL0998'FOUND AS DESCRIBED. ORANGE WITNESS POST IS GOOD.
LL0998
LL0998 STATION RECOVERY (2012)
LL0998
LL0998'RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2012 (BCR)
LL0998'MONUMENT FOUND IN GOOD CONDITION
LL0998'COORDINATE VALUE FROM DATA SHEET DOES NOT MATCH OPUS SOLUTION.
LL0998'HORIZINTAL ERROR = 0.416' VERTICAL ERROR = 0.047'

*** retrieval complete.
Elapsed Time = 00:00:04

The NGS Data Sheet

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

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PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 HK0210
***********************************************************************
 HK0210  DESIGNATION -  H 66
 HK0210  PID         -  HK0210
 HK0210  STATE/COUNTY-  CO/LAS ANIMAS
 HK0210  COUNTRY     -  US
 HK0210  USGS QUAD   -  STONEWALL (1994)
 HK0210
 HK0210                         *CURRENT SURVEY CONTROL
 HK0210
_____________________________________________________________________
 HK0210* NAD 83(2011) POSITION- 37 13 39.94491(N) 105 02 52.48039(W)
ADJUSTED
 HK0210* NAD 83(2011) ELLIP HT-  2630.558 (meters)        (06/27/12)
ADJUSTED
 HK0210* NAD 83(2011) EPOCH   -  2010.00
 HK0210* NAVD 88 ORTHO HEIGHT -  2647.117 (meters)     8684.75  (feet)
ADJUSTED
 HK0210
_____________________________________________________________________
 HK0210  GEOID HEIGHT    -        -16.555 (meters)
GEOID12B
 HK0210  NAD 83(2011) X  - -1,320,678.157 (meters)                    COMP
 HK0210  NAD 83(2011) Y  - -4,912,403.124 (meters)                    COMP
 HK0210  NAD 83(2011) Z  -  3,839,141.452 (meters)                    COMP
 HK0210  LAPLACE CORR    -        -18.39  (seconds)
DEFLEC12B
 HK0210  DYNAMIC HEIGHT  -       2643.463 (meters)     8672.76  (feet) COMP
 HK0210  MODELED GRAVITY -    979,153.8   (mgal)                       NAVD
88
 HK0210
 HK0210  VERT ORDER      -  SECOND    CLASS 0
 HK0210
 HK0210  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 HK0210  Standards:
 HK0210         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 HK0210            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 HK0210  ------------------------------------------------------------------
 HK0210  NETWORK    1.39   1.98          0.60   0.53   1.01     -0.00939318
 HK0210  ------------------------------------------------------------------
 HK0210  Click here for local accuracies and other accuracy information.
 HK0210
 HK0210
 HK0210.The horizontal coordinates were established by GPS observations
 HK0210.and adjusted by the National Geodetic Survey in June 2012.
 HK0210
 HK0210.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 HK0210.been affixed to the stable North American tectonic plate. See
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 HK0210.NA2011 for more information.
 HK0210
 HK0210.The horizontal coordinates are valid at the epoch date displayed
above
 HK0210.which is a decimal equivalence of Year/Month/Day.
 HK0210
 HK0210.The orthometric height was determined by differential leveling and
 HK0210.adjusted by the NATIONAL GEODETIC SURVEY
 HK0210.in June 1991.
 HK0210
 HK0210.Significant digits in the geoid height do not necessarily reflect
accuracy.
 HK0210.GEOID12B height accuracy estimate available here.
 HK0210
 HK0210.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 HK0210
 HK0210.The Laplace correction was computed from DEFLEC12B derived
deflections.
 HK0210
 HK0210.The ellipsoidal height was determined by GPS observations
 HK0210.and is referenced to NAD 83.
 HK0210
 HK0210.The dynamic height is computed by dividing the NAVD 88
 HK0210.geopotential number by the normal gravity value computed on the
 HK0210.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 HK0210.degrees latitude (g = 980.6199 gals.).
 HK0210
 HK0210.The modeled gravity was interpolated from observed gravity values.
 HK0210
 HK0210. The following values were computed from the NAD 83(2011) position.
 HK0210
 HK0210;                    North         East     Units Scale Factor
Converg.
 HK0210;SPC CO S     -   367,170.480   954,522.545   MT  1.00000102   +0 16
38.3
 HK0210;SPC CO S     - 1,204,625.15  3,131,629.38   sFT  1.00000102   +0 16
38.3
 HK0210;UTM  13      - 4,120,140.364   495,749.797   MT  0.99960022   -0 01
44.3
 HK0210
 HK0210!             -  Elev Factor  x  Scale Factor =   Combined Factor
 HK0210!SPC CO S     -   0.99958736  x   1.00000102  =   0.99958838
 HK0210!UTM  13      -   0.99958736  x   0.99960022  =   0.99918775
 HK0210
 HK0210_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SDB9574920140(NAD 83)
 HK0210
 HK0210                           SUPERSEDED SURVEY CONTROL
 HK0210
 HK0210  NAD 83(2007)-  37 13 39.94485(N)    105 02 52.48075(W) AD(2002.00) 0
 HK0210  ELLIP H (02/10/07) 2630.582  (m)                       GP(2002.00)
 HK0210  ELLIP H (12/03/02) 2630.562  (m)                       GP(       ) 4
2
 HK0210  NAD 83(1992)-  37 13 39.94477(N)    105 02 52.48017(W) AD(       ) 1
 HK0210  ELLIP H (12/30/94) 2630.556  (m)                       GP(       ) 3
1
 HK0210  NAVD 88            2647.12   (m)         8684.8    (f) LEVELING    3
```

HK0210 NGVD 29 (??/??/92) 2645.757 (m)   8680.29   (f) ADJ UNCH   2
0
HK0210
HK0210.Superseded values are not recommended for survey control.
HK0210
HK0210.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
HK0210.See file dsdata.pdf to determine how the superseded data were
derived.
HK0210
HK0210_MARKER: DB = BENCH MARK DISK
HK0210_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
HK0210_STAMPING: H 66 1934
HK0210_MARK LOGO: CGS
HK0210_MAGNETIC: N = NO MAGNETIC MATERIAL
HK0210_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
HK0210+STABILITY: SURFACE MOTION
HK0210_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
HK0210+SATELLITE: SATELLITE OBSERVATIONS - June 09, 1994
HK0210
HK0210 HISTORY   - Date   Condition   Report By
HK0210 HISTORY   - 1934   MONUMENTED   CGS
HK0210 HISTORY   - 1967   GOOD   USGS
HK0210 HISTORY   - 19940609 GOOD   CODOT
HK0210
HK0210   STATION DESCRIPTION
HK0210
HK0210'DESCRIBED BY US GEOLOGICAL SURVEY 1967
HK0210'17 MI N FROM WESTON.
HK0210'ABOUT 17.0 MILES NORTH ALONG STATE HIGHWAY 111 FROM WESTON, LAS
HK0210'ANIMAS COUNTY, ABOUT 5.7 MILES NORTH OF STONEWALL CAMP, ABOUT 1.8
HK0210'MILES NORTH OF THE JUNCTION WITH THE WHISKEY PASS ROAD, ABOUT 0.2
HK0210'MILES NORTH OF GLEN ASPEN CAMP ON THE HIGHWAY, 58 FEET SOUTH OF THE
HK0210'CENTER LINE OF A CURVE 1041 FEET EAST OF THE CENTER LINE OF THE NEW
HK0210'HIGHWAY, ABOUT 40 FEET WEST OF A FENCE LINE, AND 1 FOOT EAST OF
HK0210'ANOTHER FENCE LINE. A STANDARD DISK, STAMPED H 66 1934 AND SET IN
HK0210'THE TOP OF A CONCRETE POST.
HK0210
HK0210   STATION RECOVERY (1994)
HK0210
HK0210'RECOVERY NOTE BY COLORADO DEPARTMENT OF TRANSPORTATION 1994 (PG)
HK0210'THE STATION IS LOCATED ABOUT 5.2 MI (8.4 KM) NORTH OF STONEWALL GAP,
HK0210'1.1 MI (1.8 KM) SOUTHWEST OF THE SPILLWAY FOR NORTH LAKE AND 0.55 MI
HK0210'(0.89 KM) NORTH OF THE NORTH END OF MOUNTAIN LAKE, IN THE SOUTHEAST
HK0210'1/4 OF SECTION 25, T 32 S, R 69 W, AT STATE HIGHWAY 12 MILEPOST 31.7.
HK0210'OWNERSHIP--UNKNOWN. TO REACH THE STATION FROM STONEWALL GAP AND STATE
HK0210'HIGHWAY 12, GO NORTHERLY ON STATE HIGHWAY 12 FOR 5.6 MI (9.0 KM) TO
HK0210'THE STATION ON THE RIGHT. THE MARK IS A STANDARD DISK SET IN A 20 CM
HK0210'SQUARE CONCRETE POST PROJECTING 10 CM ABOVE THE GROUND. IT IS 31.4 M
HK0210'(103.0 FT) EAST OF THE CENTERLINE OF THE HIGHWAY, 19.0 M (62.3 FT)
HK0210'EAST OF A WITNESS POST, 18.7 M (61.4 FT) EAST OF A RIGHT-OF-WAY
FENCE,
HK0210'1.5 M (4.9 FT) NORTHEAST OF OLD FENCE POST, 0.5 M (1.6 FT) WEST OF A
HK0210'WITNESS POST AND ABOUT 2.5 M (8.2 FT) BELOW THE HIGHWAY.

*** retrieval complete.
Elapsed Time = 00:00:04

The NGS Data Sheet

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

```
PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 KK0203
***********************************************************************
 KK0203  DESIGNATION -  K 23
 KK0203  PID         -  KK0203
 KK0203  STATE/COUNTY-  CO/DOUGLAS
 KK0203  COUNTRY     -  US
 KK0203  USGS QUAD   -  SEDALIA (1994)
 KK0203
 KK0203                         *CURRENT SURVEY CONTROL
 KK0203
_______________________________________________________________________
 KK0203* NAD 83(2011) POSITION- 39 25 41.15083(N) 104 54 30.69608(W)
ADJUSTED
 KK0203* NAD 83(2011) ELLIP HT-  1807.315 (meters)        (01/16/18)
ADJUSTED
 KK0203* NAD 83(2011) EPOCH   -  2010.00
 KK0203* NAVD 88 ORTHO HEIGHT -  1824.181 (meters)     5984.83  (feet)
ADJUSTED
 KK0203
_______________________________________________________________________
 KK0203  GEOID HEIGHT    -        -16.766 (meters)
GEOID12B
 KK0203  NAD 83(2011) X  - -1,269,576.640 (meters)                    COMP
 KK0203  NAD 83(2011) Y  - -4,768,563.775 (meters)                    COMP
 KK0203  NAD 83(2011) Z  -  4,030,288.350 (meters)                    COMP
 KK0203  LAPLACE CORR    -         -6.17  (seconds)
DEFLEC12B
 KK0203  DYNAMIC HEIGHT  -       1822.315 (meters)     5978.71  (feet) COMP
 KK0203  MODELED GRAVITY -    979,539.6   (mgal)                       NAVD
88
 KK0203
 KK0203  VERT ORDER      -  FIRST     CLASS II
 KK0203
 KK0203  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 KK0203  Standards:
 KK0203         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 KK0203            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 KK0203  ------------------------------------------------------------------
 KK0203  NETWORK    0.72   2.37          0.33   0.24   1.21     -0.02874801
 KK0203  ------------------------------------------------------------------
 KK0203  Click here for local accuracies and other accuracy information.
 KK0203
 KK0203
 KK0203.The horizontal coordinates were established by GPS observations
 KK0203.and adjusted by the National Geodetic Survey in June 2012.
 KK0203
 KK0203.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 KK0203.been affixed to the stable North American tectonic plate. See
```

KK0203.NA2011 for more information.
KK0203
KK0203.The horizontal coordinates are valid at the epoch date displayed above
KK0203.which is a decimal equivalence of Year/Month/Day.
KK0203
KK0203.The orthometric height was determined by differential leveling and
KK0203.adjusted by the NATIONAL GEODETIC SURVEY
KK0203.in June 1991.
KK0203
KK0203.Significant digits in the geoid height do not necessarily reflect accuracy.
KK0203.GEOID12B height accuracy estimate available here.
KK0203
KK0203.The X, Y, and Z were computed from the position and the ellipsoidal ht.
KK0203
KK0203.The Laplace correction was computed from DEFLEC12B derived deflections.
KK0203
KK0203.The ellipsoidal height was determined by GPS observations
KK0203.and is referenced to NAD 83.
KK0203
KK0203.The dynamic height is computed by dividing the NAVD 88
KK0203.geopotential number by the normal gravity value computed on the
KK0203.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
KK0203.degrees latitude (g = 980.6199 gals.).
KK0203
KK0203.The modeled gravity was interpolated from observed gravity values.
KK0203
KK0203. The following values were computed from the NAD 83(2011) position.
KK0203

		North	East	Units	Scale Factor	Converg.
KK0203;SPC CO C	-	481,998.931	965,326.053	MT	0.99995216	+0 22 22.9
KK0203;SPC CO C	-	1,581,358.16	3,167,073.89	sFT	0.99995216	+0 22 22.9
KK0203;UTM 13	-	4,364,288.759	507,872.883	MT	0.99960076	+0 03 29.1

KK0203

		Elev Factor	x	Scale Factor	=	Combined Factor
KK0203!SPC CO C	-	0.99971653	x	0.99995216	=	0.99966871
KK0203!UTM 13	-	0.99971653	x	0.99960076	=	0.99931741

KK0203
KK0203_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SED0787264288(NAD 83)
KK0203
KK0203 SUPERSEDED SURVEY CONTROL
KK0203
KK0203 ELLIP H (06/27/12) 1807.413 (m) GP(2010.00)
KK0203 NAD 83(2007)- 39 25 41.15093(N) 104 54 30.69644(W) AD(2002.00) 0
KK0203 ELLIP H (02/10/07) 1807.417 (m) GP(2002.00)
KK0203 ELLIP H (12/03/02) 1807.426 (m) GP( ) 42
KK0203 NAD 83(1992)- 39 25 41.15066(N) 104 54 30.69573(W) AD( ) 1
KK0203 ELLIP H (11/02/93) 1807.470 (m) GP( ) 32

```
 KK0203  NAVD 88            1824.18   (m)         5984.8    (f) LEVELING    3
 KK0203  NGVD 29 (??/??/92) 1823.200  (m)         5981.62   (f) ADJ UNCH    1
2
 KK0203
 KK0203.Superseded values are not recommended for survey control.
 KK0203
 KK0203.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 KK0203.See file dsdata.pdf to determine how the superseded data were
derived.
 KK0203
 KK0203_MARKER: DB = BENCH MARK DISK
 KK0203_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 KK0203_STAMPING: K 23 1929
 KK0203_MARK LOGO: CGS
 KK0203_PROJECTION: PROJECTING 10 CENTIMETERS
 KK0203_MAGNETIC: N = NO MAGNETIC MATERIAL
 KK0203_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 KK0203+STABILITY: SURFACE MOTION
 KK0203_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 KK0203+SATELLITE: SATELLITE OBSERVATIONS - November 14, 2017
 KK0203
 KK0203  HISTORY     - Date     Condition        Report By
 KK0203  HISTORY     - 1929     MONUMENTED       CGS
 KK0203  HISTORY     - 1954     GOOD             CGS
 KK0203  HISTORY     - 1983     GOOD             NGS
 KK0203  HISTORY     - 19921204 GOOD             CODOT
 KK0203  HISTORY     - 19940312 GOOD             MSAM
 KK0203  HISTORY     - 20021128 GOOD             CODOT
 KK0203  HISTORY     - 20060415 GOOD             COMPDA
 KK0203  HISTORY     - 20080518 GOOD             GEOCAC
 KK0203  HISTORY     - 20100111 GOOD             CLSI
 KK0203  HISTORY     - 20160609 GOOD             INDIV
 KK0203  HISTORY     - 20171114 GOOD             WOOLPT
 KK0203
 KK0203                          STATION DESCRIPTION
 KK0203
 KK0203'DESCRIBED BY COAST AND GEODETIC SURVEY 1954
 KK0203'3 MI SE FROM SEDALIA.
 KK0203'3.0 MILES SOUTHEAST ALONG THE DENVER AND RIO GRANDE WESTERN
 KK0203'RAILROAD FROM THE STATION AT SEDALIA, 0.2 MILE WEST OF A PRIVATE
 KK0203'ROAD CROSSING, 0.15 MILE EAST OF BRIDGE 27.38, 73 FEET SOUTH OF
 KK0203'THE CENTER LINE OF U.S HIGHWAY 85, 48.4 FEET NORTH OF THE NORTH
 KK0203'RAIL, 2 FEET EAST OF A WITNESS POST, 140 FEET WEST OF THE NORTH
 KK0203'END OF A 48 INCH PIPE CULVERT UNDER THE RAILROAD, SET IN THE TOP
 KK0203'OF A CONCRETE POST WHICH PROJECTS 0.4 FOOT ABOVE THE GROUND.
 KK0203
 KK0203                          STATION RECOVERY (1983)
 KK0203
 KK0203'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1983
 KK0203'RECOVERED IN GOOD CONDITION.  A NEW TO REACH FOLLOWS.  6.5 KM
 KK0203'(4.05 MI) NORTHWESTERLY ALONG THE DENVER AND RIO GRANDE WESTERN
 KK0203'RAILROAD FROM ITS JUNCTION WITH INTERSTATE HIGHWAY 25 IN CASTLE ROCK.
 KK0203
 KK0203                          STATION RECOVERY (1992)
 KK0203
 KK0203'RECOVERY NOTE BY COLORADO DEPARTMENT OF TRANSPORTATION 1992
```

KK0203'THE STATION IS LOCATED ABOUT 6.5 MI (10.5 KM) NORTHWEST OF CASTLE ROCK
KK0203'ALONG SH 85, IN THE CENTER OF SECTION 20, T 7 S, R 67 W, AT US
KK0203'HIGHWAY MILEPOST 187.4. OWNERSHIP--COLORADO DEPARTMENT OF
KK0203'TRANSPORTATION.
KK0203'TO REACH THE STATION FROM THE INTERCHANGE OF US HIGHWAY 85 AND
KK0203'INTERSTATE 25, GO NORTHWEST OF US HIGHWAY 85 FOR 3.4 MI (5.5 KM) TO
KK0203'THE STATION ON THE LEFT.
KK0203'THE STATION IS A BRASS DISK SET IN A CONCRETE POST 0.4 FT (0.1 M)
KK0203'ABOVE THE GROUND. IT IS 0.15 MI (0.24 KM) NORTHWEST OF THE HAPPY
KK0203'CANYON ROAD (COUNTY ROAD 33) AND US HIGHWAY 85 INTERSECTION, 73 FT
KK0203'(22.3 M) SOUTH OF THE CENTERLINE OF US HIGHWAY 85, 48.4 FT (14.8 M)
KK0203'NORTH OF THE NORTH RAIL OF THE DENVER AND RIO GRANDE WESTERN RAILROAD
KK0203'TRACKS, 2 FT (0.6 M) EAST OF A WITNESS POST, AND 140 FT (42.7 M) WEST
KK0203'OF THE INLET END OF A 4 FT (1.2 M) CULVERT PIPE UNDER THE RAILROAD.
KK0203
KK0203   STATION RECOVERY (1994)
KK0203
KK0203'RECOVERY NOTE BY MOUNTAIN SURVEYING AND MAPPING INC 1994 (KCH)
KK0203'RECOVERED AS DESCRIBED.
KK0203
KK0203   STATION RECOVERY (2002)
KK0203
KK0203'RECOVERY NOTE BY COLORADO DEPARTMENT OF TRANSPORTATION 2002 (DBB)
KK0203'RECOVERY NOTE BY COLORADO DEPARTMENT OF TRANSPORTATION (2002)
KK0203'
KK0203'RECOVERED IN GOOD CONDITION
KK0203'
KK0203'STATION IS ABOUT 4.8 KM (3.0 MILES) SOUTHEASTERLY OF SEDALIA, CO AND
KK0203'10.5 KM (6.5 MILES) NORTHWESTERLY OF CASTLE ROCK, CO AND IS ON THE
KK0203'PROPERTY OWNED BY THE COLORADO DEPARTMENT OF TRANSPORTATION.
KK0203'
KK0203'TO REACH THE STATION FROM THE JUNCTION OF INTERSTATE 25 AND
KK0203'FOUNDERS-MEADOWS PARKWAYS (EXIT 184) GO WESTERLY FOR 0.5 KM (0.3
KK0203'MILES) TO U.S. HIGHWAY 85 TURN RIGHT AND GO NORTHWESTERLY ON
KK0203'.S.HIGHWAY 85 FOR 3.6 KM (2.25 MILES) TO THE STATION ON THE LEFT, 0.24
KK0203'KM (0.15 MILES) NORTHWEST OF THE HAPPY CANYON ROAD (COUNTY ROAD 33)
KK0203'AND U.S. HIGHWAY 85 INTERSECTION.
KK0203'
KK0203'THE STATION IS A BRASS DISK SET IN A CONCRETE POST 10 CM ABOVE THE
KK0203'GROUND. THE MARK IS 22.3 METERS (73.0 FEET) SOUTH OF THE CENTERLINE
KK0203'OF U.S. HIGHWAY 85, 14.8 METERS (48.4 FEET) NORTH OF THE NORTH RAIL
KK0203'OF THE UNION PACIFIC RAILROAD TRACKS, 0.6 METERS (2.0 FEET) EASTERLY
KK0203'OF CDOH CARSONITE WITNESS POST AND 0.6 METERS (2.0 FEET) WESTERLY OF
KK0203'CDOH CARSONITE WITNESS POST.
KK0203'
KK0203'
KK0203
KK0203   STATION RECOVERY (2006)
KK0203
KK0203'RECOVERY NOTE BY COMPASSDATA INC 2006 (RL)
KK0203'RECOVERED IN GOOD CONDITION.
KK0203
KK0203   STATION RECOVERY (2008)
KK0203
KK0203'RECOVERY NOTE BY GEOCACHING 2008 (TFW)

KK0203'RECOVERED IN GOOD CONDITION.
KK0203
KK0203 STATION RECOVERY (2010)
KK0203
KK0203'RECOVERY NOTE BY CLARK LAND SURVEYING INCORPORATED 2010 (MSJ)
KK0203'RECOVERED IN GOOD CONDITION.
KK0203
KK0203 STATION RECOVERY (2016)
KK0203
KK0203'RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2016 (BB)
KK0203'RECOVERED AS DESCRIBED TRUE NORTH SURVEYING AND MAPPING, LLC
KK0203
KK0203 STATION RECOVERY (2017)
KK0203
KK0203'RECOVERY NOTE BY WOOLPERT CONSULTANTS 2017 (ZJH)
KK0203'THE MARK IS 14.8 METERS (48.4 FEET) NORTH OF THE NORTH RAIL OF THE
KK0203'UNION PACIFIC RAILROAD TRACKS, 0.6 METERS (2.0 FEET) EASTERLY OF CDOH
KK0203'CARSONITE WITNESS POST AND 0.6 METERS (2.0 FEET) WESTERLY OF CDOH
KK0203'CARSONITE WITNESS POST.

*** retrieval complete.
Elapsed Time = 00:00:05

The NGS Data Sheet

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

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PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 LL0301
***********************************************************************
 LL0301  DESIGNATION -  K 262
 LL0301  PID         -  LL0301
 LL0301  STATE/COUNTY-  CO/WELD
 LL0301  COUNTRY     -  US
 LL0301  USGS QUAD   -  NUNN (1975)
 LL0301
 LL0301                         *CURRENT SURVEY CONTROL
 LL0301
_______________________________________________________________________
 LL0301* NAD 83(2011) POSITION- 40 42 21.49198(N) 104 46 47.89761(W)
ADJUSTED
 LL0301* NAD 83(2011) ELLIP HT-  1565.077 (meters)        (06/27/12)
ADJUSTED
 LL0301* NAD 83(2011) EPOCH   -  2010.00
 LL0301* NAVD 88 ORTHO HEIGHT -  1582.269 (meters)     5191.16  (feet)
ADJUSTED
 LL0301
_______________________________________________________________________
 LL0301  GEOID HEIGHT    -        -17.125 (meters)
GEOID12B
 LL0301  NAD 83(2011) X  - -1,235,521.658 (meters)                    COMP
 LL0301  NAD 83(2011) Y  - -4,682,889.327 (meters)                    COMP
 LL0301  NAD 83(2011) Z  -  4,138,746.013 (meters)                    COMP
 LL0301  LAPLACE CORR    -         -7.79  (seconds)
DEFLEC12B
 LL0301  DYNAMIC HEIGHT  -       1580.940 (meters)     5186.80  (feet) COMP
 LL0301  MODELED GRAVITY -    979,729.3   (mgal)                       NAVD
88
 LL0301
 LL0301  VERT ORDER      -  FIRST     CLASS II
 LL0301
 LL0301  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 LL0301  Standards:
 LL0301         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 LL0301            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 LL0301  ------------------------------------------------------------------
 LL0301  NETWORK    1.51   8.06          0.70   0.49   4.11     -0.13294375
 LL0301  ------------------------------------------------------------------
 LL0301  Click here for local accuracies and other accuracy information.
 LL0301
 LL0301
 LL0301.The horizontal coordinates were established by GPS observations
 LL0301.and adjusted by the National Geodetic Survey in June 2012.
 LL0301
 LL0301.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 LL0301.been affixed to the stable North American tectonic plate. See
```

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 LL0301.NA2011 for more information.
 LL0301
 LL0301.The horizontal coordinates are valid at the epoch date displayed
above
 LL0301.which is a decimal equivalence of Year/Month/Day.
 LL0301
 LL0301.The orthometric height was determined by differential leveling and
 LL0301.adjusted by the NATIONAL GEODETIC SURVEY
 LL0301.in June 1991.
 LL0301
 LL0301.Significant digits in the geoid height do not necessarily reflect
accuracy.
 LL0301.GEOID12B height accuracy estimate available here.
 LL0301
 LL0301.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 LL0301
 LL0301.The Laplace correction was computed from DEFLEC12B derived
deflections.
 LL0301
 LL0301.The ellipsoidal height was determined by GPS observations
 LL0301.and is referenced to NAD 83.
 LL0301
 LL0301.The dynamic height is computed by dividing the NAVD 88
 LL0301.geopotential number by the normal gravity value computed on the
 LL0301.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 LL0301.degrees latitude (g = 980.6199 gals.).
 LL0301
 LL0301.The modeled gravity was interpolated from observed gravity values.
 LL0301
 LL0301. The following values were computed from the NAD 83(2011) position.
 LL0301
 LL0301;                    North         East     Units Scale Factor
Converg.
 LL0301;SPC WY E     -    22,942.680   232,676.811   MT  0.99995064   +0 15
07.9
 LL0301;SPC WY E     -    75,271.11    763,373.84   sFT  0.99995064   +0 15
07.9
 LL0301;UTM  13      - 4,506,141.052   518,586.724   MT  0.99960425   +0 08
36.6
 LL0301
 LL0301!             -  Elev Factor  x  Scale Factor =   Combined Factor
 LL0301!SPC WY E     -   0.99975455  x   0.99995064  =   0.99970521
 LL0301!UTM  13      -   0.99975455  x   0.99960425  =   0.99935890
 LL0301
 LL0301_U.S. NATIONAL GRID SPATIAL ADDRESS: 13TEF1858606141(NAD 83)
 LL0301
 LL0301                           SUPERSEDED SURVEY CONTROL
 LL0301
 LL0301  NAD 83(2007)-  40 42 21.49200(N)    104 46 47.89794(W) AD(2002.00) 0
 LL0301  ELLIP H (02/10/07) 1565.151  (m)                       GP(2002.00)
 LL0301  ELLIP H (09/07/01) 1565.185  (m)                       GP(       ) 4
1
 LL0301  NAD 83(1993)-  40 42 21.49149(N)    104 46 47.89784(W) AD(       ) B
 LL0301  ELLIP H (10/19/94) 1565.205  (m)                       GP(       ) 4
1
 LL0301  NAVD 88 (10/19/94) 1582.3    (m)  GEOID93 model used   GPS OBS
```

```
 LL0301  NGVD 29 (??/??/92) 1581.330  (m)         5188.08   (f) ADJ UNCH    1
2
 LL0301
 LL0301.Superseded values are not recommended for survey control.
 LL0301
 LL0301.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 LL0301.See file dsdata.pdf to determine how the superseded data were
derived.
 LL0301
 LL0301_MARKER: DB = BENCH MARK DISK
 LL0301_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 LL0301_STAMPING: K 262 1939
 LL0301_MARK LOGO: CGS
 LL0301_MAGNETIC: O = OTHER; SEE DESCRIPTION
 LL0301_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 LL0301+STABILITY: SURFACE MOTION
 LL0301_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 LL0301+SATELLITE: SATELLITE OBSERVATIONS - December 13, 2006
 LL0301
 LL0301  HISTORY     - Date     Condition        Report By
 LL0301  HISTORY     - 1939     MONUMENTED       CGS
 LL0301  HISTORY     - 1956     GOOD             CGS
 LL0301  HISTORY     - 1983     MARK NOT FOUND   NGS
 LL0301  HISTORY     - 19970730 GOOD             CODOT
 LL0301  HISTORY     - 20020915 GOOD             NGS
 LL0301  HISTORY     - 20061213 GOOD             WAPA
 LL0301
 LL0301                          STATION DESCRIPTION
 LL0301
 LL0301'DESCRIBED BY COAST AND GEODETIC SURVEY 1956
 LL0301'AT NUNN.
 LL0301'AT NUNN, 196 FEET NORTHWEST OF THE NORTHWEST END OF THE UNION
 LL0301'PACIFIC RAILROAD STATION, 40 FEET SOUTHWEST OF THE SOUTHWEST RAIL
 LL0301'OF THE MAIN TRACK, 12 FEET NORTHWEST OF THE 4TH POLE SOUTHEAST OF
 LL0301'MILEPOST 72, IN LINE WITH A ROW OF TELEPHONE POLES, 2.6 FEET
 LL0301'SOUTHWEST OF A WITNESS POST, SET IN THE TOP OF A CONCRETE POST
 LL0301'WHICH PROJECTS 0.5 FOOT ABOVE THE GROUND, IN SECTION 33, TOWNSHIP
 LL0301'9 NORTH, RANGE 66 WEST.
 LL0301
 LL0301                          STATION RECOVERY (1983)
 LL0301
 LL0301'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1983
 LL0301'MARK NOT FOUND.
 LL0301
 LL0301                          STATION RECOVERY (1997)
 LL0301
 LL0301'RECOVERY NOTE BY COLORADO DEPARTMENT OF TRANSPORTATION 1997 (RSC)
 LL0301'THE STATION IS LOCATED IN THE TOWN OF NUNN JUST NORTH OF A SMALL ROAD
 LL0301'SIDE PARK AND 0.35 MI (0.56 KM) SOUTH OF WELD COUNTY ROAD 100, THE
 LL0301'NUNN TO WELLINGTON ROAD, IN THE NORTHEAST 1/4 OF SECTION 33, T 9 N, R
 LL0301'66 W, AT U.  S.  HIGHWAY 85 MILEPOST 288.65.  OWNERSHIP--COLORADO
 LL0301'DEPT.  OF TRANSPORTATION RIGHT-OF-WAY TO REACH THE STATION FROM THE
 LL0301'INTERSECTION OF U.  S.  HIGHWAY 85 AND SECOND STREET IN NUNN, DRIVE
 LL0301'EAST FROM SECOND STREET INTO THE RIGHT-OF-WAY BETWEEN THE HIGHWAY AND
 LL0301'THE RAILROAD TRACKS TO THE STATION ON THE LEFT THE STATION IS A
 LL0301'STANDARD DISK SET IN A SQUARE 15 CM CONCRETE POST PROJECTING 5 CM
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LL0301'ABOVE THE GROUND. IT IS 38.3 M (125.7 FT) EAST FROM THE CENTERLINE
OF
LL0301'U. S. HIGHWAY 85, 11.2 M (36.7 FT) WEST FROM THE WESTERNMOST RAIL
OF
LL0301'THE TRACKS, 8.6 M (28.2 FT) NORTH FROM THE EXTENDED CENTER OF SECOND
LL0301'STREET, 0.2 M (0.7 FT) NORTH FROM A WITNESS POST AND ABOUT 0.6 M (2.0
LL0301'FT) BELOW THE RAILROAD TRACKS.
LL0301
LL0301   STATION RECOVERY (2002)
LL0301
LL0301'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2002 (DW)
LL0301'RECOVERED IN GOOD CONDITION.
LL0301
LL0301   STATION RECOVERY (2006)
LL0301
LL0301'RECOVERY NOTE BY DOE WESTERN AREA POWER ADMIN 2006 (CJD)
LL0301'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:05

The NGS Data Sheet

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

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PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 JJ0683
***********************************************************************
 JJ0683  DESIGNATION -  K 432
 JJ0683  PID         -  JJ0683
 JJ0683  STATE/COUNTY-  CO/OTERO
 JJ0683  COUNTRY     -  US
 JJ0683  USGS QUAD   -  HADLEY (1953)
 JJ0683
 JJ0683                         *CURRENT SURVEY CONTROL
 JJ0683
_____________________________________________________________________
 JJ0683* NAD 83(2011) POSITION- 38 00 14.71684(N) 103 28 00.95454(W)
ADJUSTED
 JJ0683* NAD 83(2011) ELLIP HT-  1217.895 (meters)        (06/27/12)
ADJUSTED
 JJ0683* NAD 83(2011) EPOCH   -  2010.00
 JJ0683* NAVD 88 ORTHO HEIGHT -  1240.044 (meters)     4068.38  (feet)
ADJUSTED
 JJ0683
_____________________________________________________________________
 JJ0683  GEOID HEIGHT    -        -22.144 (meters)
GEOID12B
 JJ0683  NAD 83(2011) X  - -1,172,131.318 (meters)                    COMP
 JJ0683  NAD 83(2011) Y  - -4,894,721.700 (meters)                    COMP
 JJ0683  NAD 83(2011) Z  -  3,906,551.402 (meters)                    COMP
 JJ0683  LAPLACE CORR    -         -1.81  (seconds)
DEFLEC12B
 JJ0683  DYNAMIC HEIGHT  -       1238.806 (meters)     4064.32  (feet) COMP
 JJ0683  MODELED GRAVITY -    979,588.2   (mgal)                       NAVD
88
 JJ0683
 JJ0683  VERT ORDER      -  FIRST     CLASS II
 JJ0683
 JJ0683  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 JJ0683  Standards:
 JJ0683         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 JJ0683            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 JJ0683  ------------------------------------------------------------------
 JJ0683  NETWORK    1.03   1.41           0.46   0.37   0.72     -0.08958760
 JJ0683  ------------------------------------------------------------------
 JJ0683  Click here for local accuracies and other accuracy information.
 JJ0683
 JJ0683
 JJ0683.The horizontal coordinates were established by GPS observations
 JJ0683.and adjusted by the National Geodetic Survey in June 2012.
 JJ0683
 JJ0683.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 JJ0683.been affixed to the stable North American tectonic plate. See
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 JJ0683.NA2011 for more information.
 JJ0683
 JJ0683.The horizontal coordinates are valid at the epoch date displayed
above
 JJ0683.which is a decimal equivalence of Year/Month/Day.
 JJ0683
 JJ0683.The orthometric height was determined by differential leveling and
 JJ0683.adjusted by the NATIONAL GEODETIC SURVEY
 JJ0683.in June 1991.
 JJ0683
 JJ0683.Significant digits in the geoid height do not necessarily reflect
accuracy.
 JJ0683.GEOID12B height accuracy estimate available here.
 JJ0683
 JJ0683.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 JJ0683
 JJ0683.The Laplace correction was computed from DEFLEC12B derived
deflections.
 JJ0683
 JJ0683.The ellipsoidal height was determined by GPS observations
 JJ0683.and is referenced to NAD 83.
 JJ0683
 JJ0683.The dynamic height is computed by dividing the NAVD 88
 JJ0683.geopotential number by the normal gravity value computed on the
 JJ0683.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 JJ0683.degrees latitude (g = 980.6199 gals.).
 JJ0683
 JJ0683.The modeled gravity was interpolated from observed gravity values.
 JJ0683
 JJ0683. The following values were computed from the NAD 83(2011) position.
 JJ0683
 JJ0683;                    North         East     Units Scale Factor
Converg.
 JJ0683;SPC CO S     -   455,176.727 1,092,938.234   MT  0.99994978   +1 14
49.3
 JJ0683;SPC CO S     - 1,493,358.98  3,585,748.19   sFT  0.99994978   +1 14
49.3
 JJ0683;UTM  13      - 4,207,377.463   634,595.742   MT  0.99982312   +0 56
38.7
 JJ0683
 JJ0683!             -  Elev Factor  x  Scale Factor =   Combined Factor
 JJ0683!SPC CO S     -   0.99980893  x   0.99994978  =   0.99975872
 JJ0683!UTM  13      -   0.99980893  x   0.99982312  =   0.99963209
 JJ0683
 JJ0683_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SFC3459507377(NAD 83)
 JJ0683
 JJ0683                           SUPERSEDED SURVEY CONTROL
 JJ0683
 JJ0683  NAD 83(2007)-  38 00 14.71678(N)    103 28 00.95498(W) AD(2002.00) 0
 JJ0683  ELLIP H (02/10/07) 1217.919  (m)                       GP(2002.00)
 JJ0683  ELLIP H (10/21/02) 1217.930  (m)                       GP(       ) 5
1
 JJ0683  NAD 83(1992)-  38 00 14.71632(N)    103 28 00.95513(W) AD(       ) 1
 JJ0683  ELLIP H (06/30/00) 1217.931  (m)                       GP(       ) 1
1
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 JJ0683  ELLIP H (12/21/93) 1218.024  (m)                          GP(       ) 4
1
 JJ0683  NAD 83(1992)-  38 00 14.72444(N)    103 28 00.96820(W) AD(       ) 1
 JJ0683  ELLIP H (01/07/93) 1218.024  (m)                          GP(       ) 4
2
 JJ0683  NAD 83(1986)-  38 00 14.70450(N)    103 28 00.95877(W) AD(       ) 1
 JJ0683  NAD 27      -  38 00 14.66868(N)    103 27 59.17144(W) AD(       ) 1
 JJ0683  NAVD 88           1240.04   (m)         4068.4    (f) LEVELING    3
 JJ0683  NGVD 29           1239.45   (m)         4066.4    (f) LEVELING    3
 JJ0683
 JJ0683.Superseded values are not recommended for survey control.
 JJ0683
 JJ0683.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 JJ0683.See file dsdata.pdf to determine how the superseded data were
derived.
 JJ0683
 JJ0683_MARKER: I = METAL ROD
 JJ0683_SETTING: 15 = METAL ROD DRIVEN INTO GROUND. SEE TEXT FOR ADDITIONAL
 JJ0683+WITH SETTING: INFORMATION.
 JJ0683_STAMPING: K 432 1985
 JJ0683_MARK LOGO: NGS
 JJ0683_PROJECTION: FLUSH
 JJ0683_MAGNETIC: N = NO MAGNETIC MATERIAL
 JJ0683_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 JJ0683_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 JJ0683+SATELLITE: SATELLITE OBSERVATIONS - December 14, 1999
 JJ0683_ROD/PIPE-DEPTH: 1.80 meters
 JJ0683
 JJ0683  HISTORY     - Date     Condition        Report By
 JJ0683  HISTORY     - 1985     MONUMENTED       NGS
 JJ0683  HISTORY     - 19860528 GOOD
 JJ0683  HISTORY     - 19990422 GOOD             NGS
 JJ0683  HISTORY     - 19990526 GOOD             MSAM
 JJ0683  HISTORY     - 19991214 GOOD             CODOT
 JJ0683
 JJ0683                          STATION DESCRIPTION
 JJ0683
 JJ0683'DESCRIBED BY NATIONAL GEODETIC SURVEY 1985
 JJ0683'7.3 KM (4.55 MI) EAST FROM LA JUNTA.
 JJ0683'7.3 KM (4.55 MI) EASTERLY ALONG U.S. HIGHWAY 50 FROM THE SANTA FE
 JJ0683'RAILROAD STATION IN LA JUNTA, 62.2 M (204.1 FT) NORTHWEST OF THE
 JJ0683'CENTERLINE OF THE WESTBOUND LANES OF THE HIGHWAY, 17.8 M (58.4 FT)
 JJ0683'NORTHEAST OF THE CENTER OF A DIRT ROAD LEADING NORTH TO CASSA, AND
0.3
 JJ0683'M (1.0 FT) SOUTHWEST OF A FENCE CORNER.  NOTE--ACCESS TO THE DATUM
 JJ0683'POINT IS THROUGH A 5-INCH LOGO CAP.
 JJ0683'THE MARK IS 0.3 METERS  ENE FROM  A WITNESS POST
 JJ0683'THE MARK IS 1.5 M BELOW THE HIGHWAY.
 JJ0683
 JJ0683                          STATION RECOVERY (1986)
 JJ0683
 JJ0683'RECOVERED 1986
 JJ0683'RECOVERED IN GOOD CONDITION.
 JJ0683
 JJ0683                          STATION RECOVERY (1999)
 JJ0683
 JJ0683'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1999 (RSC)
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JJ0683'RECOVERED AS DESCRIBED.
JJ0683
JJ0683 STATION RECOVERY (1999)
JJ0683
JJ0683'RECOVERY NOTE BY MOUNTAIN SURVEYING AND MAPPING INC 1999 (DS)
JJ0683'RECOVERED IN GOOD CONDITION.
JJ0683
JJ0683 STATION RECOVERY (1999)
JJ0683
JJ0683'RECOVERY NOTE BY COLORADO DEPARTMENT OF TRANSPORTATION 1999
JJ0683'DESCRIBED BY NGS 1999 (RSC)
JJ0683'THE STATION IS LOCATED ABOUT 14.85 MI (23.90 KM) SOUTHWEST FROM LAS
JJ0683'ANIMAS,
JJ0683'4.55 MI (7.32 KM) EAST FROM LA JUNTA AND 0.5 MI (0.8 KM) SOUTHEAST
JJ0683'FROM CASA, IN
JJ0683'THE SOUTHWEST 1/4 OF SECTION 33, T 23 S, R 54 W, AT U.S. HIGHWAY 50
JJ0683'MILEPOST
JJ0683'384.15. OWNERSHIP--COLORADO DEPT. OF TRANSPORTATION RIGHT-OF-WAY
JJ0683'
JJ0683'TO REACH THE STATION FROM U. S. HIGHWAY 50 AND COLORADO AVENUE
JJ0683'(STATE
JJ0683'HIGHWAY 109) IN THE CITY OF LA JUNTA, GO EAST ON U. S. HIGHWAY 50
JJ0683'FOR 4.55 MI
JJ0683'(7.32 KM) TO THE STATION ON THE LEFT AT A SIDE ROAD LEFT TO CASA,
JJ0683'COUNTY
JJ0683'ROAD 33
JJ0683'
JJ0683'THE MARK IS A PUNCH MARK, TOP CENTER ON A 1.8 M (5.9 FT) LONG
JJ0683'STAINLESS
JJ0683'STEEL ROD DRIVEN TO REFUSAL, ENCLOSED IN A 5-INCH PVC PIPE WITH LOGO
JJ0683'LID,
JJ0683'SURROUNDED BY A CONCRETE COLLAR FLUSH WITH THE GROUND. IT IS 62.2
JJ0683'M(204.1
JJ0683'FT) NORTHWEST FROM THE CENTER LINE OF THE WESTBOUND LANES OF U. S.
JJ0683'HIGHWAY 50, 17.8 M (58.4 FT) NORTHEAST FROM THE CENTER OF THE DIRT
JJ0683'ROAD TO
JJ0683'CASA COUNTY ROAD 33, 0.3 M (1.0 FT) EAST-NORTHEAST FROM A WITNESS
POST
JJ0683'AND ABOUT 1.5 M(4.9 FT) BELOW THE HIGHWAY.
JJ0683'
JJ0683'

*** retrieval complete.
Elapsed Time = 00:00:05

The NGS Data Sheet

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

```
PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 JK0858
***********************************************************************
 JK0858  DESIGNATION -  L 395
 JK0858  PID         -  JK0858
 JK0858  STATE/COUNTY-  CO/EL PASO
 JK0858  COUNTRY     -  US
 JK0858  USGS QUAD   -  PIKEVIEW (1994)
 JK0858
 JK0858                         *CURRENT SURVEY CONTROL
 JK0858
_____________________________________________________________________
 JK0858* NAD 83(2011) POSITION- 38 58 58.53372(N) 104 48 44.63304(W)
ADJUSTED
 JK0858* NAD 83(2011) ELLIP HT-  1994.303 (meters)        (06/27/12)
ADJUSTED
 JK0858* NAD 83(2011) EPOCH   -  2010.00
 JK0858* NAVD 88 ORTHO HEIGHT -  2011.084 (meters)     6598.03  (feet)
ADJUSTED
 JK0858
_____________________________________________________________________
 JK0858  GEOID HEIGHT    -        -16.772 (meters)
GEOID12B
 JK0858  NAD 83(2011) X  - -1,269,600.483 (meters)                    COMP
 JK0858  NAD 83(2011) Y  - -4,801,038.222 (meters)                    COMP
 JK0858  NAD 83(2011) Z  -  3,992,098.380 (meters)                    COMP
 JK0858  LAPLACE CORR    -        -11.35  (seconds)
DEFLEC12B
 JK0858  DYNAMIC HEIGHT  -       2008.863 (meters)     6590.74  (feet) COMP
 JK0858  MODELED GRAVITY -    979,451.5   (mgal)                       NAVD
88
 JK0858
 JK0858  VERT ORDER      -  FIRST     CLASS II
 JK0858
 JK0858  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 JK0858  Standards:
 JK0858         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 JK0858            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 JK0858  ------------------------------------------------------------------
 JK0858  NETWORK    0.51   0.98          0.23   0.18   0.50      0.02087113
 JK0858  ------------------------------------------------------------------
 JK0858  Click here for local accuracies and other accuracy information.
 JK0858
 JK0858
 JK0858.The horizontal coordinates were established by GPS observations
 JK0858.and adjusted by the National Geodetic Survey in June 2012.
 JK0858
 JK0858.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 JK0858.been affixed to the stable North American tectonic plate. See
```

JK0858.NA2011 for more information.
JK0858
JK0858.The horizontal coordinates are valid at the epoch date displayed above
JK0858.which is a decimal equivalence of Year/Month/Day.
JK0858
JK0858.The orthometric height was determined by differential leveling and
JK0858.adjusted by the NATIONAL GEODETIC SURVEY
JK0858.in June 2009.
JK0858
JK0858.Significant digits in the geoid height do not necessarily reflect accuracy.
JK0858.GEOID12B height accuracy estimate available here.
JK0858
JK0858.Photographs are available for this station.
JK0858
JK0858.The X, Y, and Z were computed from the position and the ellipsoidal ht.
JK0858
JK0858.The Laplace correction was computed from DEFLEC12B derived deflections.
JK0858
JK0858.The ellipsoidal height was determined by GPS observations
JK0858.and is referenced to NAD 83.
JK0858
JK0858.The dynamic height is computed by dividing the NAVD 88
JK0858.geopotential number by the normal gravity value computed on the
JK0858.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
JK0858.degrees latitude (g = 980.6199 gals.).
JK0858
JK0858.The modeled gravity was interpolated from observed gravity values.
JK0858
JK0858. The following values were computed from the NAD 83(2011) position.
JK0858
JK0858;   North   East   Units Scale Factor   Converg.
JK0858;SPC CO C   -   432,638.905   973,976.363   MT 0.99993802   +0 26 01.2
JK0858;SPC CO C   - 1,419,416.14 3,195,454.12   sFT 0.99993802   +0 26 01.2
JK0858;UTM 13   - 4,314,898.604   516,248.690   MT 0.99960325   +0 07 04.9
JK0858
JK0858!   - Elev Factor x Scale Factor =   Combined Factor
JK0858!SPC CO C   -   0.99968720 x   0.99993802 =   0.99962524
JK0858!UTM 13   -   0.99968720 x   0.99960325 =   0.99929057
JK0858
JK0858_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SED1624814898(NAD 83)
JK0858
JK0858   SUPERSEDED SURVEY CONTROL
JK0858
JK0858 NAD 83(2007)- 38 58 58.53338(N)   104 48 44.63343(W) AD(2002.00) 1
JK0858 ELLIP H (06/17/11) 1994.340 (m)   GP(2002.00) 3 2
JK0858 NAD 83(2007)- 38 58 58.53320(N)   104 48 44.63305(W) AD(2002.00) 0
JK0858 ELLIP H (02/10/07) 1994.346 (m)   GP(2002.00)

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 JK0858  ELLIP H (12/03/02) 1994.392  (m)                        GP(       ) 4
2
 JK0858  NAD 83(1992)-  38 58 58.53302(N)    104 48 44.63251(W) AD(       ) 1
 JK0858  ELLIP H (10/31/97) 1994.387  (m)                        GP(       ) 4
1
 JK0858  NAVD 88            2011.08   (m)         6598.0    (f) LEVELING    3
 JK0858  NAVD 88            2011.07   (m)         6598.0    (f) LEVELING    3
 JK0858  NAVD 88 (06/15/91) 2011.065  (m)         6597.97   (f) SUPERSEDED  1
2
 JK0858
 JK0858.Superseded values are not recommended for survey control.
 JK0858
 JK0858.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 JK0858.See file dsdata.pdf to determine how the superseded data were
derived.
 JK0858
 JK0858_MARKER: F = FLANGE-ENCASED ROD
 JK0858_SETTING: 49 = STAINLESS STEEL ROD W/O SLEEVE (10 FT.+)
 JK0858_STAMPING: L 395
 JK0858_MARK LOGO: NGS
 JK0858_PROJECTION: RECESSED 10 CENTIMETERS
 JK0858_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET
 JK0858_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 JK0858_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 JK0858+SATELLITE: SATELLITE OBSERVATIONS - October 15, 2010
 JK0858_ROD/PIPE-DEPTH: 4.0  meters
 JK0858
 JK0858  HISTORY     - Date     Condition        Report By
 JK0858  HISTORY     - 1983     MONUMENTED       NGS
 JK0858  HISTORY     - 19960808 GOOD             USPSQD
 JK0858  HISTORY     - 19970121 GOOD             CODOT
 JK0858  HISTORY     - 20010829 GOOD             USPSQD
 JK0858  HISTORY     - 20070216 GOOD             GEOCAC
 JK0858  HISTORY     - 20080805 GOOD             CSDOU
 JK0858  HISTORY     - 20080909 GOOD             CODOT
 JK0858  HISTORY     - 20101015 GOOD             WOOLPT
 JK0858
 JK0858                          STATION DESCRIPTION
 JK0858
 JK0858'DESCRIBED BY NATIONAL GEODETIC SURVEY 1983
 JK0858'17.9 KM (11.15 MI) NORT FROM COLORADO SPRINGS.
 JK0858'0.3 KM (0.2 MI) NORTHERLY ALONG THE DENVER AND RIO GRANDE WESTERN
 JK0858'RAILROAD FROM THE STATION IN COLORADO SPRINGS, THENCE 17.6 KM
 JK0858'(10.95 MI) NORTHERLY ALONG INTERSTATE HIGHWAY 25, 3.8 KM (2.35 MI)
 JK0858'NORTH OF STATE HIGHWAY 83, 0.5 KM (0.3 MI) SOUTH OF MILEPOST 153,
46.3
 JK0858'METERS (151.9 FT) WEST OF THE CENTERLINE OF THE SOUTH BOUND LANES OF
 JK0858'THE HIGHWAY, AND 1.7 METERS (5.6 FT) SOUTH OF A FENCE CORNER.
 JK0858'NOTE=ACCESS TO THE DATUM POINT IS THROUGH A 5-INCH LOGO CAP.
 JK0858'THE MARK IS 0.3 METERS  NE FROM  A WITNESS POST AND FENCE
 JK0858'THE MARK IS 1.0 M BELOW THE HIGHWAY.
 JK0858
 JK0858                          STATION RECOVERY (1996)
 JK0858
 JK0858'RECOVERY NOTE BY US POWER SQUADRON 1996
 JK0858'RECOVERED IN GOOD CONDITION.
 JK0858
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 JK0858                          STATION RECOVERY (1997)
 JK0858
 JK0858'RECOVERY NOTE BY COLORADO DEPARTMENT OF TRANSPORTATION 1997 (RSC)
 JK0858'THE STATION IS LOCATED ABOUT 11 MI (17.7 KM) NORTH OF COLORADO
 JK0858'SPRINGS, 5 MI (8.0 KM) SOUTH-SOUTHEAST OF MONUMENT AND 2.2 MI (3.5
KM)
 JK0858'NORTH OF THE SOUTHERN ENTRANCE TO THE AIR FORCE ACADEMY, IN THE
 JK0858'NORTHEAST 1/4 OF SECTION 30, T 12 S, R 66 W, AT INTERSTATE 25
MILEPOST
 JK0858'152.7.  OWNERSHIP--COLORADO DEPT.  OF TRANSPORTATION RIGHT-OF-WAY  TO
 JK0858'REACH THE STATION FROM THE INTERSECTION OF INTERSTATE 25 AND THE
 JK0858'NORTHERN AIR FORCE ACADEMY ENTRANCE-NORTH GATE ROAD OVERPASS, GO
SOUTH
 JK0858'ON INTERSTATE 25 FOR 3.05 MI (4.91 KM) TO THE STATION ON THE RIGHT.
 JK0858'NOTE--THIS IS THE ONLY WAY TO APPROACH THE STATION SINCE THE
 JK0858'INTERSTATE IS DIVIDED THROUGH THIS AREA, THE RIGHT-OF-WAY HERE IS
VERY
 JK0858'WIDE  THE MARK IS A PUNCH MARK, TOP CENTER ON A STAINLESS STEEL ROD
 JK0858'DRIVEN TO REFUSAL, ENCLOSED BY A 5-INCH PVC PIPE WITH LOGO LID,
 JK0858'SURROUNDED BY A CONCRETE COLLAR, FLUSH WITH THE GROUND.  IT IS 39.1 M
 JK0858'(128.3 FT) WEST FROM THE WESTERN EDGE OF OIL OF THE SOUTH BOUND
LANES,
 JK0858'16.3 M (53.5 FT) NORTHWEST FROM THE CENTER OF AN OLD ASPHALT ROAD
 JK0858'GOING TO THE AIR FORCE ACADEMY AIRPORT, 1.75 M (5.74 FT) SOUTHEAST
 JK0858'FROM A FENCE CORNER, 0.3 M (1.0 FT) EAST FROM A FENCE AND WITNESS
POST
 JK0858'AND ABOUT 2 M (6.6 FT) BELOW THE INTERSTATE.
 JK0858
 JK0858                          STATION RECOVERY (2001)
 JK0858
 JK0858'RECOVERY NOTE BY US POWER SQUADRON 2001 (DM)
 JK0858'RECOVERED IN GOOD CONDITION.
 JK0858
 JK0858                          STATION RECOVERY (2007)
 JK0858
 JK0858'RECOVERY NOTE BY GEOCACHING 2007 (TFW)
 JK0858'RECOVERED AS DESCRIBED
 JK0858
 JK0858                          STATION RECOVERY (2008)
 JK0858
 JK0858'RECOVERY NOTE BY CO SPRINGS UTIL DEPT 2008 (ERW)
 JK0858'RECOVERED AS DESCRIBED
 JK0858
 JK0858                          STATION RECOVERY (2008)
 JK0858
 JK0858'RECOVERY NOTE BY COLORADO DEPARTMENT OF TRANSPORTATION 2008 (JPE)
 JK0858'RECOVERED AS DESCRIBED.
 JK0858
 JK0858                          STATION RECOVERY (2010)
 JK0858
 JK0858'RECOVERY NOTE BY WOOLPERT CONSULTANTS 2010 (DJK)
 JK0858'RECOVERED AS DESCRIBED

 *** retrieval complete.
 Elapsed Time = 00:00:05
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The NGS Data Sheet

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

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PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 HJ0220
***********************************************************************
 HJ0220  DESIGNATION -  LA JUNTA
 HJ0220  PID         -  HJ0220
 HJ0220  STATE/COUNTY-  CO/OTERO
 HJ0220  COUNTRY     -  US
 HJ0220  USGS QUAD   -  LA JUNTA (1984)
 HJ0220
 HJ0220                         *CURRENT SURVEY CONTROL
 HJ0220
_____________________________________________________________________
 HJ0220* NAD 83(2011) POSITION- 37 58 46.82984(N) 103 34 51.81459(W)
ADJUSTED
 HJ0220* NAD 83(2011) ELLIP HT-  1257.146 (meters)        (06/27/12)
ADJUSTED
 HJ0220* NAD 83(2011) EPOCH   -  2010.00
 HJ0220* NAVD 88 ORTHO HEIGHT -  1279.133 (meters)     4196.62  (feet)
ADJUSTED
 HJ0220
_____________________________________________________________________
 HJ0220  GEOID HEIGHT    -        -21.972 (meters)
GEOID12B
 HJ0220  NAD 83(2011) X  - -1,182,277.829 (meters)                    COMP
 HJ0220  NAD 83(2011) Y  - -4,894,028.953 (meters)                    COMP
 HJ0220  NAD 83(2011) Z  -  3,904,439.591 (meters)                    COMP
 HJ0220  LAPLACE CORR    -         -2.78  (seconds)
DEFLEC12B
 HJ0220  DYNAMIC HEIGHT  -       1277.834 (meters)     4192.36  (feet) COMP
 HJ0220  MODELED GRAVITY -    979,569.8   (mgal)                       NAVD
88
 HJ0220
 HJ0220  VERT ORDER      -  FIRST     CLASS II
 HJ0220
 HJ0220  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 HJ0220  Standards:
 HJ0220         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 HJ0220            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 HJ0220  ------------------------------------------------------------------
 HJ0220  NETWORK    0.53   1.04           0.24   0.19   0.53     -0.00395339
 HJ0220  ------------------------------------------------------------------
 HJ0220  Click here for local accuracies and other accuracy information.
 HJ0220
 HJ0220
 HJ0220.The horizontal coordinates were established by GPS observations
 HJ0220.and adjusted by the National Geodetic Survey in June 2012.
 HJ0220
 HJ0220.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 HJ0220.been affixed to the stable North American tectonic plate. See
```

HJ0220.NA2011 for more information.
HJ0220
HJ0220.The horizontal coordinates are valid at the epoch date displayed above
HJ0220.which is a decimal equivalence of Year/Month/Day.
HJ0220
HJ0220.The orthometric height was determined by differential leveling and
HJ0220.adjusted by the NATIONAL GEODETIC SURVEY
HJ0220.in June 1991.
HJ0220
HJ0220.Significant digits in the geoid height do not necessarily reflect accuracy.
HJ0220.GEOID12B height accuracy estimate available here.
HJ0220
HJ0220.The X, Y, and Z were computed from the position and the ellipsoidal ht.
HJ0220
HJ0220.The Laplace correction was computed from DEFLEC12B derived deflections.
HJ0220
HJ0220.The ellipsoidal height was determined by GPS observations
HJ0220.and is referenced to NAD 83.
HJ0220
HJ0220.The dynamic height is computed by dividing the NAVD 88
HJ0220.geopotential number by the normal gravity value computed on the
HJ0220.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
HJ0220.degrees latitude (g = 980.6199 gals.).
HJ0220
HJ0220.The modeled gravity was interpolated from observed gravity values.
HJ0220
HJ0220. The following values were computed from the NAD 83(2011) position.
HJ0220
HJ0220;   North   East   Units Scale Factor   Converg.
HJ0220;SPC CO S   -   452,255.664 1,082,973.073   MT 0.99994861   +1 10 37.3
HJ0220;SPC CO S   - 1,483,775.46 3,553,054.16   sFT 0.99994861   +1 10 37.3
HJ0220;UTM 13   - 4,204,509.609   624,616.673   MT 0.99979126   +0 52 23.9
HJ0220
HJ0220!   - Elev Factor x Scale Factor =   Combined Factor
HJ0220!SPC CO S   -   0.99980277 x   0.99994861 =   0.99975139
HJ0220!UTM 13   -   0.99980277 x   0.99979126 =   0.99959408
HJ0220
HJ0220:   Primary Azimuth Mark   Grid Az
HJ0220:SPC CO S   - LA JUNTA AZ MK   071 37 17.2
HJ0220:UTM 13   - LA JUNTA AZ MK   071 55 30.6
HJ0220
HJ0220_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SFC2461604509(NAD 83)
HJ0220
HJ0220|--|
HJ0220| PID   Reference Object   Distance   Geod. Az |
HJ0220| dddmmss.s |

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 HJ0220| HJ0407 LA JUNTA RADIO STA KBNZ MAST        APPROX. 1.8 KM 0561821.8
|
 HJ0220| HJ0401 LA JUNTA WESTERN CANNING STACK      APPROX. 2.3 KM 0681237.4
|
 HJ0220| HJ0405 LA JUNTA SANTA FE RR STACK          APPROX. 3.7 KM 0684919.9
|
 HJ0220| HJ0219 LA JUNTA AZ MK                                     0724754.5
|
 HJ0220| CM8906 LA JUNTA RM 2                        37.820 METERS 08026
|
 HJ0220| HJ0402 LA JUNTA NORTH WATER TANK           APPROX. 2.8 KM 0994206.1
|
 HJ0220| HJ0404 LA JUNTA SOUTH WATER TANK           APPROX. 3.6 KM 1163308.4
|
 HJ0220| HJ0406 LA JUNTA HWY PATROL RAD MAST        APPROX. 3.9 KM 1221021.5
|
 HJ0220| JJ0949 ROCKY FORD CRYSTAL SUGAR COMPANY ST APPROX.15.5 KM 3050116.3
|
 HJ0220| JJ0948 SWINK WATER TANK                    APPROX. 5.8 KM 3130218.6
|
 HJ0220| JJ0945 SWINK HOLLY SUGAR CORP STACK        APPROX. 5.2 KM 3183523.7
|
 HJ0220| CM8905 LA JUNTA RM 1                        32.324 METERS 35052
|
 HJ0220|-----------------------------------------------------------------------
|
 HJ0220
 HJ0220                          SUPERSEDED SURVEY CONTROL
 HJ0220
 HJ0220  NAD 83(2007)-  37 58 46.82975(N)    103 34 51.81495(W) AD(2002.00) 0
 HJ0220  ELLIP H (02/10/07) 1257.171  (m)                       GP(2002.00)
 HJ0220  ELLIP H (12/03/02) 1257.193  (m)                       GP(       ) 4
2
 HJ0220  NAD 83(1992)-  37 58 46.82955(N)    103 34 51.81445(W) AD(       ) 1
 HJ0220  ELLIP H (01/17/97) 1257.161  (m)                       GP(       ) 1
1
 HJ0220  ELLIP H (12/21/93) 1257.279  (m)                       GP(       ) 4
1
 HJ0220  NAD 83(1992)-  37 58 46.83666(N)    103 34 51.82231(W) AD(       ) 1
 HJ0220  ELLIP H (01/07/93) 1257.279  (m)                       GP(       ) 4
2
 HJ0220  NAD 83(1986)-  37 58 46.81624(N)    103 34 51.81373(W) AD(       ) 1
 HJ0220  NAD 27      -  37 58 46.78200(N)    103 34 50.01100(W) AD(       ) 1
 HJ0220  NAVD 88            1279.13   (m)         4196.6    (f) LEVELING    3
 HJ0220  NGVD 29            1278.53   (m)         4194.6    (f) LEVELING    3
 HJ0220  NGVD 29 (07/19/86) 1279.3    (m)         4197.     (f) VERT ANG
 HJ0220
 HJ0220.Superseded values are not recommended for survey control.
 HJ0220
 HJ0220.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 HJ0220.See file dsdata.pdf to determine how the superseded data were
derived.
 HJ0220
 HJ0220_MARKER: DS = TRIANGULATION STATION DISK
 HJ0220_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 HJ0220_STAMPING: LA JUNTA 1952
 HJ0220_MARK LOGO: CGS
```

HJ0220_PROJECTION: PROJECTING 11 CENTIMETERS
HJ0220_MAGNETIC: O = OTHER; SEE DESCRIPTION
HJ0220_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
HJ0220+STABILITY: SURFACE MOTION
HJ0220_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
HJ0220+SATELLITE: SATELLITE OBSERVATIONS - January 05, 1995
HJ0220
HJ0220 HISTORY   - Date   Condition   Report By
HJ0220 HISTORY   - 1952   MONUMENTED   CGS
HJ0220 HISTORY   - 1960   GOOD   CGS
HJ0220 HISTORY   - 1977   GOOD   NGS
HJ0220 HISTORY   - 1985   GOOD   NGS
HJ0220 HISTORY   - 19860528 GOOD
HJ0220 HISTORY   - 19860721 GOOD
HJ0220 HISTORY   - 19950105 GOOD   CODOT
HJ0220 HISTORY   - 19990526 GOOD   MSAM
HJ0220 HISTORY   - 20070601 GOOD   GEOCAC
HJ0220
HJ0220   STATION DESCRIPTION
HJ0220
HJ0220'DESCRIBED BY COAST AND GEODETIC SURVEY 1952 (LGT)
HJ0220'THE STATION IS LOCATED ABOUT 2 MILES WEST OF LA JUNTA ON A
HJ0220'SMALL RIDGE AT THE NORTH EDGE OF A SHALLOW GRAVEL PIT.
HJ0220'
HJ0220'TO REACH THE STATION FROM LA JUNTA, GO WESTERLY ON STATE
HJ0220'HIGHWAY 10 FOR 0.7 MILES TO THE AZIMUTH MARK ON THE LEFT.
HJ0220'CONTINUE WEST ON HIGHWAY 0.7 MILE TO A CROSSROADS. TURN LEFT,
HJ0220'GO SOUTH 0.2 MILE TO A GATE ON THE LEFT. TURN LEFT, PASS
HJ0220'THROUGH GATE AND GO EAST TO THE TOP OF THE RIDGE AND STATION.
HJ0220'
HJ0220'THE STATION MARK IS STAMPED LA JUNTA 1952. IT IS A STANDARD
HJ0220'DISK SET IN A CONCRETE MONUMENT THAT PROJECTS 3 INCHES AND IS
HJ0220'4 FEET NORTHEAST OF A WHITE WITNESS POST.
HJ0220'
HJ0220'REFERENCE MARK 1 IS STAMPED LA JUNTA NO 1 1952. IT IS A
HJ0220'STANDARD DISK SET IN A CONCRETE MONUMENT THAT PROJECTS 8
HJ0220'INCHES AND IS ABOUT 5.5 FEET LOWER THAN THE STATION MARK.
HJ0220'
HJ0220'REFERENCE MARK 2 IS STAMPED LA JUNTA NO 2 1952. IT IS A STANDARD
HJ0220'DISK SET IN A CONCRETE MONUMENT THAT PROJECTS 8 INCHES AND
HJ0220'IS ABOUT THE SAME ELEVATION AS THE STATION MARK.
HJ0220'
HJ0220'THE AZIMUTH MARK IS STAMPED LA JUNTA 1952. IT IS A STANDARD
HJ0220'DISK SET IN A CONCRETE MONUMENT THAT PROJECTS 2 INCHES, IS
HJ0220'27 FEET SOUTH OF THE CENTERLINE OF STATE HIGHWAY 10 AND 3 FEET
HJ0220'WEST OF A TELEPHONE POLE AND A WHITE WITNESS POST.
HJ0220
HJ0220   STATION RECOVERY (1960)
HJ0220
HJ0220'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1960
HJ0220'STATION AND REFERENCE MARKS FOUND IN GOOD CONDITION.
HJ0220
HJ0220   STATION RECOVERY (1977)
HJ0220
HJ0220'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1977 (CLN)
HJ0220'STATION RECOVERED AND ALL MARKS ARE IN GOOD CONDITION. DISTANCE
HJ0220'AND DIRECTION TO THE REFERENCE MARKS CHECKED FAIRLY WELL. THE LINE

HJ0220'TO THE AZIMUTH MARK IS BLOCKED AT THIS TIME BY SEVERAL HAY STACKS
HJ0220'BUT WILL BE VISIBLE WHEN HAY IS REMOVED. THE HORIZONTAL ANGLE
HJ0220'BETWEEN THE LAJUNTA WATER TANKS ALSO CHECKED FAIRLY WELL. A
HJ0220'SLENDER MAST BELONGING TO THE SOUTHEAST COLORADO POWER COMPANY
HJ0220'HAS BEEN ERECTED ABOUT 250 FEET SOUTH OF THE STATION MARK. IT
HJ0220'WAS NOT MEASURED TO DUE TO A BUILDING ON LINE.
HJ0220'
HJ0220'STATION IS REACHED FROM THE JUNCTION OF U.S. HIGHWAY 50 AND STATE
HJ0220'HIGHWAY 10 WHICH IS AT THE WEST EDGE OF LAJUNTA. GO SOUTH AND WEST
HJ0220'ON 10 FOR 0.75 MILE TO A SURFACED CROSSOVER ROAD AND STOP SIGNON
HJ0220'LEFT. (TURN LEFT FOR ABOUT 100 FEET, THENCE LEFT AGAIN AND
HJ0220'CONTINUE ON A SURFACED ROAD, EAST FOR 0.1 MILE, TOP OF RISE,
HJ0220'GRAVELED ROAD, TELEPHONE LINE POLE, AN UNDERGROUND CABLE SIGN AND
HJ0220'AZIMUTH MARK ON THE RIGHT). CONTINUE WEST ON HIGHWAY 10 FOR
HJ0220'0.6 MILE TO A CROSSROAD. TURN LEFT AND GO SOUTH ON A GRADED
HJ0220'ROAD FOR 0.2 MILE TO TWO (2) ROADS ON LEFT (ONE LEADS TO A MAST).
HJ0220'TURN LEFT AND GO NORTHEAST AND EAST ON THE NORTH 1 OF 2 ROADS
HJ0220'ALONG THE WEST AND NORTH EDGE OF HILL FOR 0.1 MILE TO STATION
HJ0220'ON RIGHT, AS DESCRIBED.
HJ0220'
HJ0220'STATION IS A STANDARD STATION MARK DISK, STAMPED LA JUNTA 1952, SET
HJ0220'IN THE TOP OF A SQUARE CONCRETE MONUMENT PROJECTING ABOUT 3 INCHES.
HJ0220'MARK IS 2 FEET NORTH-NORTHWEST OF A WOOD WITNESS POST, 1.7 FEET
HJ0220'EAST OF A METAL WITNESS POST AND 152 FEET SOUTH OF A TRACK ROAD.
HJ0220'
HJ0220'REFERENCE MARK 1 IS A STANDARD REFERENCE MARK DISK, STAMPED LA JUNTA
HJ0220'NO 1 1952, SET IN THE TOP OF A SQUARE CONCRETE MONUMENT PROJECTING
HJ0220'ABOUT 3 INCHES. MARK IS 46 FEET SOUTH OF A TRACK ROAD AND 1.5 FEET
HJ0220'EAST OF A METAL WITNESS POST.
HJ0220'
HJ0220'REFERENCE MARK 2 IS A STANDARD REFERENCE MARK DISK, STAMPED LA JUNTA
HJ0220'NO 2 1952, SET IN THE TOP OF A SQUARE CONCRETE MONUMENT PROJECTING
HJ0220'ABOUT 6 INCHES. MARK IS 1.3 FEET NORTH OF A METAL WITNESS POST.
HJ0220'
HJ0220'AZIMUTH MARK IS A STANDARD AZIMUTH MARK DISK, STAMPED LA JUNTA 1952,
HJ0220'SET IN THE TOP OF A SQUARE CONCRETE MONUMENT FLUSH WITH THE
HJ0220'GROUND. MARK IS 27 FEET SOUTH OF THE CENTER OF A SURFACED ROAD, 17
HJ0220'FEET WEST OF A GRAVELED ROAD, 2.5 FEET WEST OF A TELEPHONE LINE
HJ0220'POLE AND 1 FOOT EAST OF AN UNDERGROUND TELEPHONE CABLE SIGN ON
HJ0220'METAL POST.
HJ0220'
HJ0220'AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN--2 MILES WEST OF
HJ0220'LAJUNTA.
HJ0220
HJ0220   STATION RECOVERY (1985)
HJ0220
HJ0220'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1985
HJ0220'5.6 KM (3.5 MI) SW FROM LA JUNTA.
HJ0220'3.7 KM (2.3 MI) WESTERLY ALONG THE SANTA FE RAILROAD FROM THE STATION
HJ0220'IN LA JUNTA, THENCE 1.9 KM (1.2 MI) SOUTH ALONG A PAVED ROAD, ALONG
HJ0220'THE SOUTH EDGE OF A GRAVEL PIT, 0.3 KM (0.2 MI) SOUTH OF THE
HJ0220'INTERSECTION OF STATE HIGHWAY 10, 186.0 M (610.2 FT) EAST OF THE
HJ0220'CENTER OF THE ROAD, AND 76.5 M (251.0 FT) SOUTH OF A RADIO TOWER.
HJ0220'THE MARK IS 1.2 METERS SW FROM A WITNESS POST
HJ0220'THE MARK IS 3.0 M ABOVE THE ROAD.
HJ0220
HJ0220   STATION RECOVERY (1986)

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HJ0220
HJ0220'RECOVERED 1986
HJ0220'RECOVERED IN GOOD CONDITION.
HJ0220
HJ0220                          STATION RECOVERY (1986)
HJ0220
HJ0220'RECOVERED 1986
HJ0220'RECOVERED IN GOOD CONDITION.
HJ0220
HJ0220                          STATION RECOVERY (1995)
HJ0220
HJ0220'RECOVERY NOTE BY COLORADO DEPARTMENT OF TRANSPORTATION 1995 (MEL)
HJ0220'RECOVERED AS DESCRIBED.
HJ0220
HJ0220                          STATION RECOVERY (1999)
HJ0220
HJ0220'RECOVERY NOTE BY MOUNTAIN SURVEYING AND MAPPING INC 1999 (DS)
HJ0220'RECOVERED IN GOOD CONDITION.
HJ0220
HJ0220                          STATION RECOVERY (2007)
HJ0220
HJ0220'RECOVERY NOTE BY GEOCACHING 2007 (TFW)
HJ0220'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:06
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The NGS Data Sheet

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

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PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 HK0097
***********************************************************************
 HK0097  DESIGNATION -  P 21
 HK0097  PID         -  HK0097
 HK0097  STATE/COUNTY-  CO/LAS ANIMAS
 HK0097  COUNTRY     -  US
 HK0097  USGS QUAD   -  LUDLOW (1971)
 HK0097
 HK0097                         *CURRENT SURVEY CONTROL
 HK0097
_______________________________________________________________________
 HK0097* NAD 83(2011) POSITION- 37 22 10.58033(N) 104 35 37.89972(W)   NO
CHECK
 HK0097* NAD 83(2011) ELLIP HT-  1903.864 (meters)        (06/27/12)   NO
CHECK
 HK0097* NAD 83(2011) EPOCH   -  2010.00
 HK0097* NAVD 88 ORTHO HEIGHT -  1922.686 (meters)     6308.01  (feet)
ADJUSTED
 HK0097
_______________________________________________________________________
 HK0097  GEOID HEIGHT    -        -18.810 (meters)
GEOID12B
 HK0097  NAD 83(2011) X  - -1,279,157.827 (meters)                    COMP
 HK0097  NAD 83(2011) Y  - -4,912,920.453 (meters)                    COMP
 HK0097  NAD 83(2011) Z  -  3,851,228.294 (meters)                    COMP
 HK0097  LAPLACE CORR    -        -10.38  (seconds)
DEFLEC12B
 HK0097  DYNAMIC HEIGHT  -       1920.330 (meters)     6300.28  (feet) COMP
 HK0097  MODELED GRAVITY -    979,337.0   (mgal)                       NAVD
88
 HK0097
 HK0097  VERT ORDER      -  FIRST     CLASS II
 HK0097
 HK0097  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 HK0097  Standards:
 HK0097         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 HK0097            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 HK0097  ------------------------------------------------------------------
 HK0097  NETWORK    1.95   2.72           0.78   0.81   1.39      0.13510994
 HK0097  ------------------------------------------------------------------
 HK0097  Click here for local accuracies and other accuracy information.
 HK0097
 HK0097
 HK0097.The horizontal coordinates were established by GPS observations
 HK0097.and adjusted by the National Geodetic Survey in June 2012.
 HK0097
 HK0097.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 HK0097.been affixed to the stable North American tectonic plate. See
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HK0097.NA2011 for more information.
HK0097
HK0097.The horizontal coordinates are valid at the epoch date displayed above
HK0097.which is a decimal equivalence of Year/Month/Day.
HK0097
HK0097.No horizontal observational check was made to the station.
HK0097.
HK0097.The orthometric height was determined by differential leveling and
HK0097.adjusted by the NATIONAL GEODETIC SURVEY
HK0097.in June 1991.
HK0097
HK0097.Significant digits in the geoid height do not necessarily reflect accuracy.
HK0097.GEOID12B height accuracy estimate available here.
HK0097
HK0097.The X, Y, and Z were computed from the position and the ellipsoidal ht.
HK0097
HK0097.The Laplace correction was computed from DEFLEC12B derived deflections.
HK0097
HK0097.The ellipsoidal height was determined by GPS observations
HK0097.and is referenced to NAD 83.
HK0097
HK0097.The dynamic height is computed by dividing the NAVD 88
HK0097.geopotential number by the normal gravity value computed on the
HK0097.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
HK0097.degrees latitude (g = 980.6199 gals.).
HK0097
HK0097.The modeled gravity was interpolated from observed gravity values.
HK0097
HK0097. The following values were computed from the NAD 83(2011) position.
HK0097
HK0097;   North   East   Units Scale Factor   Converg.
HK0097;SPC CO S   -   383,204.733   994,663.673   MT 0.99997806   +0 33 20.9
HK0097;SPC CO S   - 1,257,230.86 3,263,325.73   sFT 0.99997806   +0 33 20.9
HK0097;UTM 13   - 4,135,952.567   535,961.065   MT 0.99961593   +0 14 47.4
HK0097
HK0097!   - Elev Factor x Scale Factor =   Combined Factor
HK0097!SPC CO S   -   0.99970132 x   0.99997806 =   0.99967939
HK0097!UTM 13   -   0.99970132 x   0.99961593 =   0.99931737
HK0097
HK0097_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SEB3596135952(NAD 83)
HK0097
HK0097   SUPERSEDED SURVEY CONTROL
HK0097
HK0097 NAD 83(2007)- 37 22 10.58030(N)   104 35 37.90009(W) AD(2002.00) 0
HK0097 ELLIP H (02/10/07) 1903.887 (m)   GP(2002.00)
HK0097 ELLIP H (10/21/02) 1903.882 (m)   GP(   ) 5 1
HK0097 NAD 83(1992)- 37 22 10.58037(N)   104 35 37.89966(W) AD(   ) 1

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 HK0097  ELLIP H (06/30/00) 1903.909  (m)                        GP(       ) 1
1
 HK0097  ELLIP H (12/21/93) 1904.111  (m)                        GP(       ) 4
1
 HK0097  NAD 83(1992)-  37 22 10.57842(N)    104 35 37.90812(W) AD(       ) 1
 HK0097  ELLIP H (01/07/93) 1904.111  (m)                        GP(       ) 4
2
 HK0097  NAD 83(1986)-  37 22 10.57836(N)    104 35 37.92108(W) AD(       ) 1
 HK0097  NAD 27      -  37 22 10.53402(N)    104 35 35.93674(W) AD(       ) 1
 HK0097  NAVD 88            1922.69   (m)         6308.0    (f) LEVELING    3
 HK0097  NGVD 29 (??/??/92) 1921.650  (m)         6304.61   (f) ADJ UNCH    1
2
 HK0097  NGVD 29            1921.65   (m)         6304.6    (f) LEVELING    3
 HK0097
 HK0097.Superseded values are not recommended for survey control.
 HK0097
 HK0097.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 HK0097.See file dsdata.pdf to determine how the superseded data were
derived.
 HK0097
 HK0097_MARKER: DB = BENCH MARK DISK
 HK0097_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 HK0097_STAMPING: 6304.613 P 21 1929
 HK0097_MARK LOGO: CGS
 HK0097_MAGNETIC: N = NO MAGNETIC MATERIAL
 HK0097_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 HK0097+STABILITY: SURFACE MOTION
 HK0097_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 HK0097+SATELLITE: SATELLITE OBSERVATIONS - April 23, 1999
 HK0097
 HK0097  HISTORY     - Date     Condition        Report By
 HK0097  HISTORY     - 1929     MONUMENTED       CGS
 HK0097  HISTORY     - 1935     GOOD             CGS
 HK0097  HISTORY     - 19860609 GOOD
 HK0097  HISTORY     - 19990423 GOOD             MSAM
 HK0097
 HK0097                          STATION DESCRIPTION
 HK0097
 HK0097'DESCRIBED BY COAST AND GEODETIC SURVEY 1929
 HK0097'4 MI SE FROM AGUILAR.
 HK0097'17.1 MILES NORTH ALONG THE COLORADO AND SOUTHERN RAILWAY FROM THE
 HK0097'STATION AT TRINIDAD, LAS ANIMAS COUNTY, 4 MILES SOUTHEAST ALONG
 HK0097'U.S. HIGHWAY 85 FROM THE SOUTH CITY LIMITS AT AGUILAR, 1.1 MILES
 HK0097'SOUTH OF THE HIGHWAY OVERPASS, 0.3 MILE SOUTH OF MILEPOST 195,
 HK0097'375 FEET WEST OF U. S. HIGHWAY 85, 54.5 FEET SOUTH OF THE CENTER
 HK0097'OF A CORRUGATED-IRON PIPE CULVERT WITH CONCRETE HEADWALLS, 40
 HK0097'FEET SOUTH OF A CONCRETE CULVERT UNDER THE TRACK, 47.5 FEET EAST
 HK0097'OF THE CENTERLINE OF THE TRACK, 2.8 FEET WEST OF THE EAST RIGHT-
 HK0097'OF-WAY FENCE, AND 1 FOOT LOWER THAN THE TRACK.  A STANDARD DISK,
 HK0097'STAMPED 6304.613 P 21 1929 AND SET IN THE TOP OF A CONCRETE POST
 HK0097'PROJECTING 6 INCHES ABOVE GROUND.
 HK0097
 HK0097                          STATION RECOVERY (1935)
 HK0097
 HK0097'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1935
 HK0097'RECOVERED IN GOOD CONDITION.
 HK0097
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 HK0097                          STATION RECOVERY (1986)
 HK0097
 HK0097'RECOVERED 1986
 HK0097'RECOVERED IN GOOD CONDITION.
 HK0097
 HK0097                          STATION RECOVERY (1999)
 HK0097
 HK0097'RECOVERY NOTE BY MOUNTAIN SURVEYING AND MAPPING INC 1999 (KCH)
 HK0097'DESCRIBED BY MOUNTAIN SURVEYING AND MAPPING, INC.  1999 (KCH) THE
 HK0097'STATION IS LOCATED ABOUT 17 MI (27.4 KM) NORTH OF TRINIDAD AND 4 MI
 HK0097'(6.4 KM) SOUTHEAST OF AGUILAR.  IT IS EAST OF THE RAILROAD TRACK, IN
 HK0097'THE SOUTHEAST QUARTER OF SECTION 6, T 31 S, R 64 W.
 HK0097'OWNERSHIP--RAILROAD RIGHT-OF-WAY.  TO ACCESS THE STATION YOU MUST
HIKE
 HK0097'ACROSS PRIVATE PROPERTY, FOR PERMISSION CONTACT SAMEAH JAROSE AND
 HK0097'PATTI NELSON AT 26500 COUNTY ROAD 63.1, AUGUILAR, COLORADO, 81020
 HK0097'TO REACH THE STATION FROM INTERSTATE HIGHWAY 70 AT EXIT 27 (LUDLOW) ,
 HK0097'GO WEST, FOR 0.05 MI (0.08 KM) TO THE FRONTAGE ROAD (COUNTY ROAD
63.1)
 HK0097', ON THE WEST SIDE OF THE HIGHWAY.  TURN RIGHT, NORTH, ON COUNTY ROAD
 HK0097'63.1 FOR 2.55 MI (4.10 KM) TO A FIBERGLASS WITNESS POST ON THE EAST
 HK0097'SIDE OF THE ROAD AT A CONCRETE CULVERT UNDER THE ROAD. PROCEED FROM
 HK0097'THIS POINT ON FOOT, HIKE WEST, FOR ABOUT 400 FEET (121.9 M) ACROSS
THE
 HK0097'FIELD TO THE STATION IN THE EAST RAILROAD RIGHT-OF-WAY FENCE
 HK0097'THE MARK IS A U.S.  COAST AND GEODETIC SURVEY BENCHMARK DISK SET IN
 HK0097'THE TOP OF A CONCRETE POST PROJECTION 10CM ABOVE THE GROUND.  IT IS
 HK0097'16.6 M (54.5 FT) SOUTH OF THE CENTER OF A CORRUGATED-IRON PIPE
CULVERT
 HK0097'WITH CONCRETE HEADWALLS, 14.5 M (47.6 FT) EAST OF THE CENTER OF THE
 HK0097'TRACKS, 12.2 M (40.0 FT) SOUTH OF A CONCRETE CULVERT UNDER THE TRACKS
 HK0097'AND 0.8 M (2.6 FT) WEST OF A FENCE AND FIBERGLASS WITNESS POST.

 *** retrieval complete.
 Elapsed Time = 00:00:04
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The NGS Data Sheet

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

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PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 LK0387
***********************************************************************
 LK0387  DESIGNATION -  T 418
 LK0387  PID         -  LK0387
 LK0387  STATE/COUNTY-  CO/MORGAN
 LK0387  COUNTRY     -  US
 LK0387  USGS QUAD   -  BRUSH EAST (1984)
 LK0387
 LK0387                         *CURRENT SURVEY CONTROL
 LK0387
_____________________________________________________________________
 LK0387* NAD 83(2011) POSITION- 40 19 15.23579(N) 103 31 47.61357(W)
ADJUSTED
 LK0387* NAD 83(2011) ELLIP HT-  1252.885 (meters)        (06/27/12)
ADJUSTED
 LK0387* NAD 83(2011) EPOCH   -  2010.00
 LK0387* NAVD 88 ORTHO HEIGHT -  1272.608 (meters)     4175.21  (feet)
ADJUSTED
 LK0387
_____________________________________________________________________
 LK0387  GEOID HEIGHT    -        -19.726 (meters)
GEOID12B
 LK0387  NAD 83(2011) X  - -1,139,509.108 (meters)                    COMP
 LK0387  NAD 83(2011) Y  - -4,735,511.575 (meters)                    COMP
 LK0387  NAD 83(2011) Z  -  4,106,027.591 (meters)                    COMP
 LK0387  LAPLACE CORR    -         -2.02  (seconds)
DEFLEC12B
 LK0387  DYNAMIC HEIGHT  -       1271.611 (meters)     4171.94  (feet) COMP
 LK0387  MODELED GRAVITY -    979,797.7   (mgal)                       NAVD
88
 LK0387
 LK0387  VERT ORDER      -  FIRST     CLASS II
 LK0387
 LK0387  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 LK0387  Standards:
 LK0387         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 LK0387            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 LK0387  ------------------------------------------------------------------
 LK0387  NETWORK    1.07   4.29           0.48   0.38   2.19      0.02089002
 LK0387  ------------------------------------------------------------------
 LK0387  Click here for local accuracies and other accuracy information.
 LK0387
 LK0387
 LK0387.The horizontal coordinates were established by GPS observations
 LK0387.and adjusted by the National Geodetic Survey in June 2012.
 LK0387
 LK0387.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 LK0387.been affixed to the stable North American tectonic plate. See
```

```
 LK0387.NA2011 for more information.
 LK0387
 LK0387.The horizontal coordinates are valid at the epoch date displayed
above
 LK0387.which is a decimal equivalence of Year/Month/Day.
 LK0387
 LK0387.The orthometric height was determined by differential leveling and
 LK0387.adjusted by the NATIONAL GEODETIC SURVEY
 LK0387.in June 1991.
 LK0387
 LK0387.Significant digits in the geoid height do not necessarily reflect
accuracy.
 LK0387.GEOID12B height accuracy estimate available here.
 LK0387
 LK0387.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 LK0387
 LK0387.The Laplace correction was computed from DEFLEC12B derived
deflections.
 LK0387
 LK0387.The ellipsoidal height was determined by GPS observations
 LK0387.and is referenced to NAD 83.
 LK0387
 LK0387.The dynamic height is computed by dividing the NAVD 88
 LK0387.geopotential number by the normal gravity value computed on the
 LK0387.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 LK0387.degrees latitude (g = 980.6199 gals.).
 LK0387
 LK0387.The modeled gravity was interpolated from observed gravity values.
 LK0387
 LK0387. The following values were computed from the NAD 83(2011) position.
 LK0387
 LK0387;                    North         East     Units Scale Factor
Converg.
 LK0387;SPC CO N     -   416,310.822 1,081,825.853   MT  0.99995759   +1 16
22.6
 LK0387;SPC CO N     - 1,365,846.42  3,549,290.32   sFT  0.99995759   +1 16
22.6
 LK0387;UTM  13      - 4,464,411.803   624,900.788   MT  0.99979203   +0 57
05.0
 LK0387
 LK0387!             -  Elev Factor  x  Scale Factor =   Combined Factor
 LK0387!SPC CO N     -   0.99980350  x   0.99995759  =   0.99976109
 LK0387!UTM  13      -   0.99980350  x   0.99979203  =   0.99959557
 LK0387
 LK0387_U.S. NATIONAL GRID SPATIAL ADDRESS: 13TFE2490064411(NAD 83)
 LK0387
 LK0387                           SUPERSEDED SURVEY CONTROL
 LK0387
 LK0387  NAD 83(2007)-  40 19 15.23570(N)    103 31 47.61408(W) AD(2002.00) 0
 LK0387  ELLIP H (02/10/07) 1252.912  (m)                       GP(2002.00)
 LK0387  ELLIP H (12/03/02) 1252.926  (m)                       GP(       ) 4
2
 LK0387  NAD 83(1992)-  40 19 15.23519(N)    103 31 47.61306(W) AD(       ) 1
 LK0387  ELLIP H (08/11/98) 1252.944  (m)                       GP(       ) 4
1
 LK0387  NAVD 88            1272.61   (m)         4175.2    (f) LEVELING    3
```

LK0387
LK0387.Superseded values are not recommended for survey control.
LK0387
LK0387.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
LK0387.See file dsdata.pdf to determine how the superseded data were derived.
LK0387
LK0387_MARKER: I = METAL ROD
LK0387_SETTING: 49 = STAINLESS STEEL ROD W/O SLEEVE (10 FT.+)
LK0387_STAMPING: T 418 1984
LK0387_MARK LOGO: NGS
LK0387_PROJECTION: FLUSH
LK0387_MAGNETIC: I = MARKER IS A STEEL ROD
LK0387_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
LK0387_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
LK0387+SATELLITE: SATELLITE OBSERVATIONS - May 05, 1997
LK0387_ROD/PIPE-DEPTH: 22.0 meters
LK0387
LK0387 HISTORY   - Date   Condition   Report By
LK0387 HISTORY   - 1984   MONUMENTED   NGS
LK0387 HISTORY   - 19970505 GOOD   NGS
LK0387 HISTORY   - 20071031 GOOD   GEOCAC
LK0387
LK0387   STATION DESCRIPTION
LK0387
LK0387'DESCRIBED BY NATIONAL GEODETIC SURVEY 1984
LK0387'26.0 KM (16.15 MI) NE FROM FORT MORGAN.
LK0387'18.7 KM (11.7 MI) EASTERLY ALONG INTERSTATE HIGHWAY 76 FROM ITS
LK0387'JUNCTION WITH STATE HIGHWAY 52 IN FORT MORGAN, THENCE 7.3 KM (4.55
LK0387'MI) NORTHEASTERLY ALONG U.S. HIGHWAY 6, 0.3 KM (0.2 MI) NORTHEAST OF
LK0387'MILEPOST 376, 100.6 M (330.1 FT) WEST OF THE CENTERLINE OF THE
LK0387'HIGHWAY, 68.9 M (226.0 FT) WEST-SOUTHWEST OF RAILROAD MILEPOST 143,
LK0387'58.8 M (192.9 FT) WEST OF THE NEAR RAIL OF THE BURLINGTON NORTHERN
LK0387'RAILROAD, 9.8 M (32.2 FT) NORTHEAST OF THE CENTER OF COUNTY ROAD W,
LK0387'AND 0.8 M (2.6 FT) WEST OF A UTILITY POLE. NOTE--ACCESS TO DATUM
LK0387'POINT IS HAD THROUGH A 5-INCH LOGO CAP.
LK0387'THE MARK IS 0.3 METERS SW FROM A WITNESS POST
LK0387'THE MARK IS ABOVE LEVEL WITH THE ROAD.
LK0387
LK0387   STATION RECOVERY (1997)
LK0387
LK0387'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1997 (RSC)
LK0387'THE STATION IS LOCATED ABOUT 6.5 MI (10.5 KM) NORTHEAST OF BRUSH, 3.4
LK0387'MI (5.5 KM) EAST-SOUTHEAST OF SNYDER AND 0.5 MI (0.8 KM) SOUTHWEST OF
LK0387'HILLROSE, IN THE SOUTHEAST 1/4 OF SECTION 9, T 4 N, R 55 W, AT U. S.
LK0387'HIGHWAY 6 MILEPOST 376.2. OWNERSHIP--MORGAN COUNTY ROAD RIGHT-OF-WAY
LK0387'TO REACH THE STATION FROM THE INTERSECTION OF INTERSTATE 76 AND U. S.
LK0387'HIGHWAY 6, EXIT 92B, GO SOUTHEAST ON U. S. HIGHWAY 6 FOR 4.55 MI
LK0387'(7.32 KM) TO THE INTERSECTION OF COUNTY ROAD W. TURN LEFT, WEST, ON
LK0387'COUNTY ROAD W FOR 0.05 MI, (0.08 KM) CROSSING THE RAILROAD TRACKS AND
LK0387'THE STATION ON THE RIGHT THE MARK IS A PUNCH MARK, TOP CENTER ON A
LK0387'22.0 M (72.2 FT) LONG STAINLESS STEEL ROD DRIVEN TO REFUSAL, ENCLOSED
LK0387'IN A 5-INCH PVC PIPE WITH LOGO LID, SURROUNDED BY A CONCRETE COLLAR,
LK0387'FLUSH WITH THE GROUND. IT IS 100.6 M (330.1 FT) WEST FROM THE CENTER
LK0387'LINE OF U. S. HIGHWAY 6, 68.9 M (226.0 FT) WEST-SOUTHWEST OF RAILROAD
LK0387'MILEPOST 143, 58.8 M (192.9 FT) WEST OF THE NEAR RAIL OF THE TRACKS,

LK0387'50.8 M (166.7 FT) EAST FROM THE ENTRANCE TO A HOUSE NUMBER 32755
LK0387'COUNTY ROAD W, 11.6 M (38.1 FT) WEST FROM AN ENTRANCE TO A FIELD ROAD,
LK0387'9.8 M (32.2 FT) NORTHEAST FROM THE CENTER OF COUNTY ROAD W, 2.7 M (8.9
LK0387'FT) SOUTH FROM THE CENTER OF A FIELD ROAD, 0.8 M (2.6 FT) WEST FROM A
LK0387'POWER POLE, 0.4 M (1.3 FT) WEST FROM A WITNESS POST AND ABOUT 0.6 M
LK0387'(2.0 FT) BELOW THE HIGHWAY.
LK0387
LK0387 STATION RECOVERY (2007)
LK0387
LK0387'RECOVERY NOTE BY GEOCACHING 2007 (TFW)
LK0387'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:05

The NGS Data Sheet

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

```
PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 JK0978
***********************************************************************
 JK0978  DESIGNATION -  W 430
 JK0978  PID         -  JK0978
 JK0978  STATE/COUNTY-  CO/PUEBLO
 JK0978  COUNTRY     -  US
 JK0978  USGS QUAD   -  NORTHWEST PUEBLO (1994)
 JK0978
 JK0978                          *CURRENT SURVEY CONTROL
 JK0978
_______________________________________________________________________
 JK0978* NAD 83(2011) POSITION- 38 18 06.19491(N) 104 39 46.57528(W)
ADJUSTED
 JK0978* NAD 83(2011) ELLIP HT-  1451.568 (meters)        (06/27/12)
ADJUSTED
 JK0978* NAD 83(2011) EPOCH   -  2010.00
 JK0978* NAVD 88 ORTHO HEIGHT -  1470.585 (meters)     4824.74  (feet)
ADJUSTED
 JK0978
_______________________________________________________________________
 JK0978  GEOID HEIGHT    -        -19.024 (meters)
GEOID12B
 JK0978  NAD 83(2011) X  - -1,268,921.374 (meters)                    COMP
 JK0978  NAD 83(2011) Y  - -4,849,619.058 (meters)                    COMP
 JK0978  NAD 83(2011) Z  -  3,932,680.359 (meters)                    COMP
 JK0978  LAPLACE CORR    -         -8.16  (seconds)
DEFLEC12B
 JK0978  DYNAMIC HEIGHT  -       1469.043 (meters)     4819.69  (feet) COMP
 JK0978  MODELED GRAVITY -    979,529.4   (mgal)                       NAVD
88
 JK0978
 JK0978  VERT ORDER      -  FIRST     CLASS II
 JK0978
 JK0978  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 JK0978  Standards:
 JK0978         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 JK0978            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 JK0978  ------------------------------------------------------------------
 JK0978  NETWORK    0.50   0.98          0.22   0.19   0.50      0.00382659
 JK0978  ------------------------------------------------------------------
 JK0978  Click here for local accuracies and other accuracy information.
 JK0978
 JK0978
 JK0978.The horizontal coordinates were established by GPS observations
 JK0978.and adjusted by the National Geodetic Survey in June 2012.
 JK0978
 JK0978.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 JK0978.been affixed to the stable North American tectonic plate. See
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 JK0978.NA2011 for more information.
 JK0978
 JK0978.The horizontal coordinates are valid at the epoch date displayed
above
 JK0978.which is a decimal equivalence of Year/Month/Day.
 JK0978
 JK0978.The orthometric height was determined by differential leveling and
 JK0978.adjusted by the NATIONAL GEODETIC SURVEY
 JK0978.in June 1991.
 JK0978
 JK0978.Significant digits in the geoid height do not necessarily reflect
accuracy.
 JK0978.GEOID12B height accuracy estimate available here.
 JK0978
 JK0978.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 JK0978
 JK0978.The Laplace correction was computed from DEFLEC12B derived
deflections.
 JK0978
 JK0978.The ellipsoidal height was determined by GPS observations
 JK0978.and is referenced to NAD 83.
 JK0978
 JK0978.The dynamic height is computed by dividing the NAVD 88
 JK0978.geopotential number by the normal gravity value computed on the
 JK0978.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 JK0978.degrees latitude (g = 980.6199 gals.).
 JK0978
 JK0978.The modeled gravity was interpolated from observed gravity values.
 JK0978
 JK0978. The following values were computed from the NAD 83(2011) position.
 JK0978
 JK0978;                    North         East     Units Scale Factor
Converg.
 JK0978;SPC CO S     -   486,597.583   987,618.290   MT  0.99997863   +0 30
48.4
 JK0978;SPC CO S     - 1,596,445.57  3,240,211.01   sFT  0.99997863   +0 30
48.4
 JK0978;UTM  13      - 4,239,346.162   529,471.562   MT  0.99961070   +0 12
32.1
 JK0978
 JK0978!             -  Elev Factor  x  Scale Factor =   Combined Factor
 JK0978!SPC CO S     -   0.99977229  x   0.99997863  =   0.99975092
 JK0978!UTM  13      -   0.99977229  x   0.99961070  =   0.99938308
 JK0978
 JK0978_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SEC2947139346(NAD 83)
 JK0978
 JK0978                           SUPERSEDED SURVEY CONTROL
 JK0978
 JK0978  NAD 83(2007)-  38 18 06.19480(N)    104 39 46.57561(W) AD(2002.00) 0
 JK0978  ELLIP H (02/10/07) 1451.593  (m)                       GP(2002.00)
 JK0978  ELLIP H (12/03/02) 1451.592  (m)                       GP(       ) 4
2
 JK0978  NAD 83(1992)-  38 18 06.19433(N)    104 39 46.57523(W) AD(       ) 1
 JK0978  ELLIP H (08/30/94) 1451.582  (m)                       GP(       ) 4
1
 JK0978  NAVD 88            1470.59   (m)         4824.8    (f) LEVELING    3
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JK0978
JK0978.Superseded values are not recommended for survey control.
JK0978
JK0978.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
JK0978.See file dsdata.pdf to determine how the superseded data were derived.
JK0978
JK0978_MARKER: I = METAL ROD
JK0978_SETTING: 49 = STAINLESS STEEL ROD W/O SLEEVE (10 FT.+)
JK0978_STAMPING: W 430 1984
JK0978_MARK LOGO: NGS
JK0978_PROJECTION: FLUSH
JK0978_MAGNETIC: I = MARKER IS A STEEL ROD
JK0978_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
JK0978_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
JK0978+SATELLITE: SATELLITE OBSERVATIONS - March 12, 2012
JK0978_ROD/PIPE-DEPTH: 0.9 meters
JK0978
JK0978 HISTORY   - Date   Condition   Report By
JK0978 HISTORY   - 1984   MONUMENTED   NGS
JK0978 HISTORY   - 19931007 GOOD   CODOT
JK0978 HISTORY   - 19950105 GOOD   CODOT
JK0978 HISTORY   - 20120312 GOOD   BOR
JK0978
JK0978   STATION DESCRIPTION
JK0978
JK0978'DESCRIBED BY NATIONAL GEODETIC SURVEY 1984
JK0978'5.8 KM (3.6 MI) NW FROM PUEBLO.
JK0978'4.2 KM (2.6 MI) WESTERLY ALONG U.S. HIGHWAY 50 FROM ITS JUNCTION
JK0978'WITH INTERSTATE HIGHWAY 25 IN PUEBLO, THENCE 1.6 KM (1.0 MI)
JK0978'SOUTHERLY ALONG STATE HIGHWAY 45, 46.3 M (151.9 FT) EAST OF THE
JK0978'CENTERLINE OF THE HIGHWAY, AND 17.7 M (58.1 FT) NORTH OF A FENCE
JK0978'CORNER. NOTE--ACCESS TO DATUM POINT IS HAD THROUGH A 5-INCH LOGO
JK0978'CAP.
JK0978'THE MARK IS 0.1 METERS W FROM A WITNESS POST AND FENCE
JK0978'THE MARK IS 1.9 M BELOW THE HIGHWAY.
JK0978
JK0978   STATION RECOVERY (1993)
JK0978
JK0978'RECOVERY NOTE BY COLORADO DEPARTMENT OF TRANSPORTATION 1993
JK0978'RECOVERED IN GOOD CONDITION.
JK0978
JK0978   STATION RECOVERY (1995)
JK0978
JK0978'RECOVERY NOTE BY COLORADO DEPARTMENT OF TRANSPORTATION 1995 (MEL)
JK0978'RECOVERED AS DESCRIBED.
JK0978
JK0978   STATION RECOVERY (2012)
JK0978
JK0978'RECOVERY NOTE BY US BUREAU OF RECLAMATION 2012 (TAC)
JK0978'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:05

The NGS Data Sheet

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

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PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 KJ0525
***********************************************************************
 KJ0525  DESIGNATION -  WILLOW
 KJ0525  PID         -  KJ0525
 KJ0525  STATE/COUNTY-  CO/ELBERT
 KJ0525  COUNTRY     -  US
 KJ0525  USGS QUAD   -  MATHESON NE (1970)
 KJ0525
 KJ0525                         *CURRENT SURVEY CONTROL
 KJ0525
_______________________________________________________________________
 KJ0525* NAD 83(2011) POSITION- 39 14 24.37619(N) 103 47 21.95783(W)
ADJUSTED
 KJ0525* NAD 83(2011) ELLIP HT-  1723.507 (meters)        (06/27/12)
ADJUSTED
 KJ0525* NAD 83(2011) EPOCH   -  2010.00
 KJ0525* NAVD 88 ORTHO HEIGHT -  1743.0   (meters)     5718.    (feet) GPS
OBS
 KJ0525
_______________________________________________________________________
 KJ0525  NAVD 88 orthometric height was determined with geoid model
GEOID99
 KJ0525  GEOID HEIGHT    -        -19.458 (meters)
GEOID99
 KJ0525  GEOID HEIGHT    -        -19.484 (meters)
GEOID12B
 KJ0525  NAD 83(2011) X  - -1,179,340.052 (meters)                    COMP
 KJ0525  NAD 83(2011) Y  - -4,805,238.280 (meters)                    COMP
 KJ0525  NAD 83(2011) Z  -  4,014,087.554 (meters)                    COMP
 KJ0525  LAPLACE CORR    -         -5.95  (seconds)
DEFLEC12B
 KJ0525
 KJ0525  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 KJ0525  Standards:
 KJ0525         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 KJ0525            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 KJ0525  ------------------------------------------------------------------
 KJ0525  NETWORK    0.46   1.06          0.21   0.16   0.54     -0.07194231
 KJ0525  ------------------------------------------------------------------
 KJ0525  Click here for local accuracies and other accuracy information.
 KJ0525
 KJ0525
 KJ0525.The horizontal coordinates were established by GPS observations
 KJ0525.and adjusted by the National Geodetic Survey in June 2012.
 KJ0525
 KJ0525.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
 KJ0525.been affixed to the stable North American tectonic plate. See
 KJ0525.NA2011 for more information.
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 KJ0525
 KJ0525.The horizontal coordinates are valid at the epoch date displayed
above
 KJ0525.which is a decimal equivalence of Year/Month/Day.
 KJ0525
 KJ0525.The orthometric height was determined by GPS observations and a
 KJ0525.high-resolution geoid model.
 KJ0525
 KJ0525.Significant digits in the geoid height do not necessarily reflect
accuracy.
 KJ0525.GEOID12B height accuracy estimate available here.
 KJ0525
 KJ0525.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 KJ0525
 KJ0525.The Laplace correction was computed from DEFLEC12B derived
deflections.
 KJ0525
 KJ0525.The ellipsoidal height was determined by GPS observations
 KJ0525.and is referenced to NAD 83.
 KJ0525
 KJ0525. The following values were computed from the NAD 83(2011) position.
 KJ0525
 KJ0525;                    North         East     Units Scale Factor
Converg.
 KJ0525;SPC CO C     -   462,353.191 1,062,062.248   MT  0.99993885   +1 04
43.8
 KJ0525;SPC CO C     - 1,516,903.76  3,484,449.23   sFT  0.99993885   +1 04
43.8
 KJ0525;UTM  13      - 4,344,119.987   604,471.509   MT  0.99973438   +0 45
57.0
 KJ0525
 KJ0525!             -  Elev Factor  x  Scale Factor =   Combined Factor
 KJ0525!SPC CO C     -   0.99972967  x   0.99993885  =   0.99966854
 KJ0525!UTM  13      -   0.99972967  x   0.99973438  =   0.99946412
 KJ0525
 KJ0525:                Primary Azimuth Mark                    Grid Az
 KJ0525:SPC CO C     -  LIMON                                   065 04 52.2
 KJ0525:UTM  13      -  LIMON                                   065 23 39.0
 KJ0525
 KJ0525_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SFD0447144119(NAD 83)
 KJ0525
 KJ0525|-----------------------------------------------------------------
|
 KJ0525| PID    Reference Object                     Distance      Geod. Az
|
 KJ0525|                                                           dddmmss.s
|
 KJ0525| KJ0511 LIMON                               APPROX. 8.0 KM 0660936.0
|
 KJ0525| CP9379 WILLOW RM 2                          10.462 METERS 17919
|
 KJ0525| CP9378 WILLOW RM 1                          10.474 METERS 35922
|
 KJ0525|-----------------------------------------------------------------
|
 KJ0525
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 KJ0525                          SUPERSEDED SURVEY CONTROL
 KJ0525
 KJ0525  NAD 83(2007)-  39 14 24.37616(N)    103 47 21.95838(W) AD(2002.00) 0
 KJ0525  ELLIP H (02/10/07) 1723.534  (m)                       GP(2002.00)
 KJ0525  ELLIP H (12/03/02) 1723.538  (m)                       GP(       ) 4
2
 KJ0525  NAD 83(1992)-  39 14 24.37581(N)    103 47 21.95824(W) AD(       ) 1
 KJ0525  ELLIP H (10/01/01) 1723.552  (m)                       GP(       ) 3
2
 KJ0525  NAD 83(1992)-  39 14 24.37283(N)    103 47 21.95991(W) AD(       ) 2
 KJ0525  NAD 83(1986)-  39 14 24.36630(N)    103 47 21.95667(W) AD(       ) 2
 KJ0525  NAD 27      -  39 14 24.41152(N)    103 47 20.12304(W) AD(       ) 2
 KJ0525  NGVD 29 (07/19/86) 1742.5    (m)         5717.     (f) VERT ANG
 KJ0525
 KJ0525.Superseded values are not recommended for survey control.
 KJ0525
 KJ0525.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 KJ0525.See file dsdata.pdf to determine how the superseded data were
derived.
 KJ0525
 KJ0525_MARKER: DD = SURVEY DISK
 KJ0525_SETTING: 46 = COPPER-CLAD STEEL ROD W/O SLEEVE (10 FT.+)
 KJ0525_STAMPING: WILLOW ET 1970
 KJ0525_MARK LOGO: USGS
 KJ0525_MAGNETIC: I = MARKER IS A STEEL ROD
 KJ0525_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 KJ0525_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 KJ0525+SATELLITE: SATELLITE OBSERVATIONS - May 31, 2001
 KJ0525
 KJ0525  HISTORY     - Date     Condition        Report By
 KJ0525  HISTORY     - 1970     MONUMENTED       USGS
 KJ0525  HISTORY     - 20010531 GOOD             CODOT
 KJ0525
 KJ0525                           STATION DESCRIPTION
 KJ0525
 KJ0525'DESCRIBED BY US GEOLOGICAL SURVEY 1970 (JP)
 KJ0525'STATION IS LOCATED WEST 12 DEGREES SOUTH ABOUT 5.5 MILES AIRLINE
 KJ0525'FROM LIMON, COLORADO, WEST 24 DEGREES NORTH ABOUT 19.0 MILES
 KJ0525'AIRLINE FROM HUGO, COLORADO, 28 FEET EAST OF THE CENTERLINE OF A
 KJ0525'GRADED ROAD AND 3 FEET WEST OF THE RIGHT-OF-WAY FENCE AND A USGS
 KJ0525'WITNESS SIGN.
 KJ0525'
 KJ0525'TO REACH THE STATION FROM THE INTERSECTION OF U.S. HIGHWAY 24 AND
 KJ0525'STATE HIGHWAY 71 SOUTH IN LIMON, COLORADO, PROCEED WEST ON
 KJ0525'U.S. HIGHWAY 24 FOR 6.3 MILES, THENCE RIGHT (NORTH) FOR 0.3 MILE
 KJ0525'AND STATION MARK ON THE RIGHT.
 KJ0525'
 KJ0525'ALL MARKS ARE USGS BRASS TABLETS SOLDERED TO COPPER COATED STEEL
 KJ0525'RODS CENTERED IN TILE 6 INCHES IN DIAMETER AND 12 INCHES LONG
 KJ0525'FILLED WITH GRAVEL AND SET FLUSH WITH GROUND SURFACE.
 KJ0525'
 KJ0525'STATION MARK IS A ROD DRIVEN 15 FEET, TABLET STAMPED WILLOW ET
 KJ0525'1970.
 KJ0525'
 KJ0525'REFERENCE MARK NO. 1 IS A ROD DRIVEN 15 FEET, TABLET STAMPED
 KJ0525'WILLOW ET 1970 1.
 KJ0525'
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KJ0525'REFERENCE MARK NO. 2 IS A ROD DRIVEN 15 FEET, TABLET STAMPED
KJ0525'WILLOW ET 1970 2.
KJ0525'
KJ0525'STATION LIMON ET 1970 IS VISIBLE FROM THE GROUND AT THIS STATION
KJ0525'AND WILL SERVE AS THE AZIMUTH MARK.
KJ0525'
KJ0525'ALL OBSERVATIONS WERE MADE FROM A STANDARD TRIPOD.
KJ0525
KJ0525 STATION RECOVERY (2001)
KJ0525
KJ0525'RECOVERY NOTE BY COLORADO DEPARTMENT OF TRANSPORTATION 2001 (DAS)
KJ0525'THE STATION IS ABOUT 5.5 MILES SOUTHWESTERLY OF LIMON AND ABOUT
KJ0525'12.0 MILES NORTHEAST OF THE TOWN OF MATHESON ON U. S. HIGHWAY 24
KJ0525'IN THE NORTHWEST 1/4 OF SECTION 28, T9S, R57W.
KJ0525'
KJ0525'TO REACH THE STATION FROM I-70, EXIT I-70 AT I-70 EXIT NO. 359 (U.S.
KJ0525'HIGHWAY MP 377.3), GO SOUTHWESTERLY ON U.S. HIGHWAY 24 FOR 5.4
KJ0525'MILES TO CO. RD. 189 (U.S. HIGHWAY MP 371.95), TURN RIGHT (NORTH) ON
KJ0525'CO. RD. 189 0.3 MILES TO THE MARK ON THE RIGHT.
KJ0525'
KJ0525'THE MARK IS A BRASS USGS DISK ON A COPPER CLAD ROD SET IN THE
KJ0525'GROUND INSIDE A 6 INCH PVC PIPE RECESSED 3 CM BELOW THE GROUND. IT
KJ0525'IS 44.9 M SOUTH FROM A FENCE CORNER BRACE POST, 10.4 M NORTH FROM
KJ0525'A REFERENCE MARK DISK STAMPED WILLOW ET NO. 2, 10.4 M SOUTH FROM A
KJ0525'REFERENCE MARK DISK STAMPED WILLOW ET NO. 1, 8.3 M EAST FROM THE
KJ0525'CENTER OF THE DIRT ROAD, 1.0 M WEST FROM THE EAST RIGHT OF WAY
KJ0525'FENCE OF COUNTY ROAD 189 AND A METAL WITESS POST, 0.6 M
KJ0525'NORTH-NORTHEAST FROM A FIBERGLASS POST, 0.6 M SOUTH FROM A
KJ0525'FIBERGLASS WITNESS POST.
KJ0525'
KJ0525'D. STEWART, CDOT.
KJ0525'

*** retrieval complete.
Elapsed Time = 00:00:04

The NGS Data Sheet

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

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PROGRAM = datasheet95, VERSION = 8.12.5
1        National Geodetic Survey,   Retrieval Date = JULY 26, 2018
 HJ0123
***********************************************************************
 HJ0123  FBN          -  This is a Federal Base Network Control Station.
 HJ0123  DESIGNATION -  Y 85
 HJ0123  PID          -  HJ0123
 HJ0123  STATE/COUNTY-  CO/LAS ANIMAS
 HJ0123  COUNTRY      -  US
 HJ0123  USGS QUAD    -  KIM NORTH (1979)
 HJ0123
 HJ0123                         *CURRENT SURVEY CONTROL
 HJ0123
______________________________________________________________________
 HJ0123* NAD 83(2011) POSITION- 37 15 51.18330(N) 103 21 21.12530(W)
ADJUSTED
 HJ0123* NAD 83(2011) ELLIP HT-  1709.328 (meters)        (06/27/12)
ADJUSTED
 HJ0123* NAD 83(2011) EPOCH   -  2010.00
 HJ0123* NAVD 88 ORTHO HEIGHT -  1730.322 (meters)     5676.90  (feet)
ADJUSTED
 HJ0123
______________________________________________________________________
 HJ0123  GEOID HEIGHT    -        -20.994 (meters)
GEOID12B
 HJ0123  NAD 83(2011) X  - -1,174,316.418 (meters)                    COMP
 HJ0123  NAD 83(2011) Y  - -4,946,160.596 (meters)                    COMP
 HJ0123  NAD 83(2011) Z  -  3,841,805.680 (meters)                    COMP
 HJ0123  LAPLACE CORR    -         -4.72  (seconds)
DEFLEC12B
 HJ0123  DYNAMIC HEIGHT  -       1728.341 (meters)     5670.40  (feet) COMP
 HJ0123  MODELED GRAVITY -    979,423.7   (mgal)                       NAVD
88
 HJ0123
 HJ0123  VERT ORDER      -  SECOND    CLASS 0
 HJ0123
 HJ0123  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 HJ0123  Standards:
 HJ0123         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 HJ0123            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 HJ0123  ------------------------------------------------------------------
 HJ0123  NETWORK    0.62   1.27           0.28   0.22   0.65      0.09034526
 HJ0123  ------------------------------------------------------------------
 HJ0123  Click here for local accuracies and other accuracy information.
 HJ0123
 HJ0123
 HJ0123.The horizontal coordinates were established by GPS observations
 HJ0123.and adjusted by the National Geodetic Survey in June 2012.
 HJ0123
 HJ0123.NAD 83(2011) refers to NAD 83 coordinates where the reference frame
has
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HJ0123.been affixed to the stable North American tectonic plate. See
HJ0123.NA2011 for more information.
HJ0123
HJ0123.The horizontal coordinates are valid at the epoch date displayed above
HJ0123.which is a decimal equivalence of Year/Month/Day.
HJ0123
HJ0123.The orthometric height was determined by differential leveling and
HJ0123.adjusted by the NATIONAL GEODETIC SURVEY
HJ0123.in June 1991.
HJ0123
HJ0123.Significant digits in the geoid height do not necessarily reflect accuracy.
HJ0123.GEOID12B height accuracy estimate available here.
HJ0123
HJ0123.The X, Y, and Z were computed from the position and the ellipsoidal ht.
HJ0123
HJ0123.The Laplace correction was computed from DEFLEC12B derived deflections.
HJ0123
HJ0123.The ellipsoidal height was determined by GPS observations
HJ0123.and is referenced to NAD 83.
HJ0123
HJ0123.The dynamic height is computed by dividing the NAVD 88
HJ0123.geopotential number by the normal gravity value computed on the
HJ0123.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
HJ0123.degrees latitude (g = 980.6199 gals.).
HJ0123
HJ0123.The modeled gravity was interpolated from observed gravity values.
HJ0123
HJ0123. The following values were computed from the NAD 83(2011) position.
HJ0123
HJ0123;   North   East   Units Scale Factor   Converg.
HJ0123;SPC CO S   -   373,301.952 1,104,574.445   MT 0.99999454   +1 18 54.6
HJ0123;SPC CO S   - 1,224,741.49 3,623,924.66   sFT 0.99999454   +1 18 54.6
HJ0123;UTM 13   - 4,125,450.247   645,786.043   MT 0.99986181   +0 59 44.5
HJ0123
HJ0123!   - Elev Factor x Scale Factor =   Combined Factor
HJ0123!SPC CO S   -   0.99973183 x   0.99999454 =   0.99972637
HJ0123!UTM 13   -   0.99973183 x   0.99986181 =   0.99959368
HJ0123
HJ0123_U.S. NATIONAL GRID SPATIAL ADDRESS: 13SFB4578625450(NAD 83)
HJ0123
HJ0123   SUPERSEDED SURVEY CONTROL
HJ0123
HJ0123 NAD 83(2007)- 37 15 51.18333(N)   103 21 21.12571(W) AD(2002.00) 0
HJ0123 ELLIP H (02/10/07) 1709.356 (m)   GP(2002.00)
HJ0123 ELLIP H (09/24/02) 1709.346 (m)   GP(   ) 3 1
HJ0123 ELLIP H (12/21/93) 1709.382 (m)   GP(   ) 4 1
HJ0123 NAD 83(1992)- 37 15 51.18309(N)   103 21 21.12485(W) AD(   ) B

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 HJ0123  ELLIP H (05/26/92) 1709.382  (m)                        GP(       ) 4
1
 HJ0123  NAD 83(1986)-  37 15 51.17602(N)    103 21 21.10606(W) AD(       ) 1
 HJ0123  NAD 27      -  37 15 51.12273(N)    103 21 19.31685(W) AD(       ) 1
 HJ0123  NAVD 88            1730.32   (m)         5676.9    (f) LEVELING    3
 HJ0123  NGVD 29 (??/??/92) 1729.469  (m)         5674.10   (f) ADJ UNCH    2
0
 HJ0123  NGVD 29            1729.47   (m)         5674.1    (f) LEVELING    3
 HJ0123
 HJ0123.Superseded values are not recommended for survey control.
 HJ0123
 HJ0123.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 HJ0123.See file dsdata.pdf to determine how the superseded data were
derived.
 HJ0123
 HJ0123_MARKER: DB = BENCH MARK DISK
 HJ0123_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 HJ0123_STAMPING: Y 85 1935
 HJ0123_MARK LOGO: CGS
 HJ0123_MAGNETIC: N = NO MAGNETIC MATERIAL
 HJ0123_STABILITY: A = MOST RELIABLE AND EXPECTED TO HOLD
 HJ0123+STABILITY: POSITION/ELEVATION WELL
 HJ0123_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 HJ0123+SATELLITE: SATELLITE OBSERVATIONS - February 07, 1994
 HJ0123
 HJ0123  HISTORY     - Date     Condition        Report By
 HJ0123  HISTORY     - 1935     MONUMENTED       CGS
 HJ0123  HISTORY     - 1985     GOOD             NGS
 HJ0123  HISTORY     - 19860601 GOOD
 HJ0123  HISTORY     - 19890608 GOOD             NGS
 HJ0123  HISTORY     - 19910415 GOOD             NGS
 HJ0123  HISTORY     - 19931208 GOOD
 HJ0123  HISTORY     - 19940207 GOOD             CODOT
 HJ0123
 HJ0123                          STATION DESCRIPTION
 HJ0123
 HJ0123'DESCRIBED BY COAST AND GEODETIC SURVEY 1935
 HJ0123'1.5 MI N FROM KIM.
 HJ0123'ABOUT 1.5 MILES NORTH ALONG U.S. HIGHWAY 160 FROM KIM, LAS ANIMAS
 HJ0123'COUNTY, AT A SECTION LINE, 36 FEET SOUTH OF THE CENTER LINE OF A
 HJ0123'ROAD LEADING WEST, ABOUT 56 FEET WEST OF THE CENTER LINE OF THE
 HJ0123'HIGHWAY, AND 1 FOOT NORTH OF A FENCE.  A STANDARD DISK, STAMPED Y
 HJ0123'85 1935 AND SET IN THE TOP OF A CONCRETE POST.
 HJ0123
 HJ0123                          STATION RECOVERY (1985)
 HJ0123
 HJ0123'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1985
 HJ0123'A NEW DESC : ABOUT 2.4 KM (1.5 MI) NORTH ALONG U.S. HIGHWAY 160 FROM
 HJ0123'KIM, LAS ANIMAS COUNTY, AT A SECTION LINE, 20.1 M (66 FT) WEST OF THE
 HJ0123'CENTER LINE OF THE HIGHWAY, 11.0 M (36 FT) SOUTH OF A DIRT ROAD, AND
 HJ0123'0.6 M (2 FT) NORTH OF A FENCE.
 HJ0123
 HJ0123                          STATION RECOVERY (1986)
 HJ0123
 HJ0123'RECOVERED 1986
 HJ0123'RECOVERED IN GOOD CONDITION.
 HJ0123
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HJ0123                          STATION RECOVERY (1989)
HJ0123
HJ0123'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1989
HJ0123'RECOVERED IN GOOD CONDITION.
HJ0123
HJ0123                          STATION RECOVERY (1991)
HJ0123
HJ0123'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1991
HJ0123'STATION IS LOCATED ABOUT 83.7 KM (52.0 MI) SOUTH OF LA JUNTA, 2 KM
HJ0123'(1.2 MI) NORTH OF KIM, 1.3 KM (0.8 MI) SOUTH OF THE JUNCTION OF US
HJ0123'HIGHWAY 160 AND STATE HIGHWAY 109, ALONG HIGHWAY 160, AT MILE 415.8,
HJ0123'IN THE SOUTHEAST CORNER OF A PASTURE, IN THE NORTHEAST CORNER OF
HJ0123'SECTION 16, T 32 S, R 53 W.  OWNERSHIP--STATE OF COLORADO.
HJ0123'TO REACH FROM THE JUNCTION OF US HIGHWAY 160 AND STATE HIGHWAY 109,
HJ0123'ABOUT 3.5 KM (2.2 MI) NORTH OF KIM, GO SOUTH ON HIGHWAY 160 FOR 1.34
HJ0123'KM (0.83 MI) TO A PASTURE ROAD RIGHT AND STATION ON THE RIGHT.
HJ0123'STATION MARK IS SET IN THE TOP OF A 25-CM SQUARE CONCRETE POST
HJ0123'PROJECTING 10 CM ABOVE GROUND.  IT IS 18.6 M (61.0 FT) WEST OF, AND
HJ0123'0.5 M (1.6 FT) LOWER THAN THE HIGHWAY CENTER, 10.5 M (34.4 FT) SOUTH
HJ0123'OF THE ROAD CENTER, 17.8 M (58.4 FT) SOUTH-SOUTHEAST OF A UTILITY
HJ0123'POLE, 3.9 M (12.8 FT) WEST OF A FIBERGLASS WITNESS POST IN THE
HJ0123'RIGHT-OF-WAY FENCE AND 0.6 M (2.0 FT) NORTH OF A WIRE FENCE.
HJ0123'DESCRIBED BY G.R.HEID
HJ0123
HJ0123                          STATION RECOVERY (1993)
HJ0123
HJ0123'RECOVERED 1993
HJ0123'RECOVERED IN GOOD CONDITION.
HJ0123
HJ0123                          STATION RECOVERY (1994)
HJ0123
HJ0123'RECOVERY NOTE BY COLORADO DEPARTMENT OF TRANSPORTATION 1994
HJ0123'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:04
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