

Central TX (Comal & Guadalupe Counties)
 LiDAR Checkpoint Surveys
 FEMA Task Order # HSFEHA-10-J-0006
 January 12, 2011

Summary

ESP Associates, P.A. performed a total of 83 LiDAR checkpoint surveys within Central TX (Comal County and Guadalupe County) between December 2 and December 14, 2010. The total number of surveys is divided into the following categories: 22 Category A (Open/Bare Earth), 20 Category B (Grass/Crops), 20 Category D (Wooded), and 21 Category E (Urban). Category A checkpoints were spread over a 1326 square mile acquisition area while category B, D, & E checkpoints were contained within a 634 square mile processing area. All LIDAR Checkpoint surveys were performed in accordance with RAMPP's Guidelines for Performing Surveying of LiDAR Checkpoints.

GPS Control & Survey Procedures

ESP used a private RTK/VRS network that is owned and operated by Western Data Systems, Inc., to perform redundant GPS observations (under different satellite geometries) on Category A, B and E checkpoints. The same type of redundant GPS observations were also performed on the control pairs used to conventionally survey the Category D checkpoints. ESP observed eight (8) NGS control monuments throughout the project area in order to compare local benchmark elevations to the GPS network elevations derived from the ellipsoid and Geoid 09. NGS monument "3R5 A" (PID AB3888) was the base station occupied by Fugro-Earth Data, Inc. during their LiDAR data acquisition. The differences between the GPS-observed NGS monuments and their published values are shown below. The project site calibration was computed by constraining the GPS observations to the selected published NGS values. Monument "EDEN ET" has a published horizontal datum of NAD 83/1993, so we held the horizontal datum established by the GPS observation (NAD 83/CORS 96 Epoch 2002) in order to be consistent with the LiDAR base point datum (NAD 83/2007).

<u>NGS Monument</u>	<u>PID</u>	<u>HELD (H and/or V)</u>	<u>V Delta</u>	<u>H Delta</u>
3R5 A	AB3888	H	N/A	0.07'
EDEN ET	AG9955	H (observed only)	N/A	N/A
G 797	AY0008	V	+0.12'	N/A
J 835 Reset 1970	AX2349	V	+0.08'	N/A
M 323	AY0187	V	+0.08'	N/A
T 1307	AY1577	V	-0.03'	N/A
U 807	AY0167	V	+0.08'	N/A
Z 1003	AY1056	V	-0.01'	N/A

Survey Data

The horizontal survey coordinates referred to in this report are based on the Texas South Central Zone (4204) State Plane Coordinate System. The project horizontal datum is NAD83/CORS96 Epoch 2002. Project elevations are based on the NAVD 88 vertical datum and were computed using GEOID09. All LiDAR QC checkpoint coordinates and elevations are listed in US Survey Feet unless otherwise specified. Each checkpoint established has a 2 to 5 cm (0.07 to 0.16) relative horizontal and vertical positional accuracy, with a 95% confidence level, with respect to the aforementioned primary control/site calibration used. This

LiDAR Quality Control checkpoint project was performed under the supervision of a licensed Texas Professional Land Surveyor.

Please contact Daniel B. Hill, PLS (Senior Survey Project Manager) at 803-802-2440 if you have any questions regarding the contents of the survey report.

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Date

