

Chemung Watershed, NY
 LiDAR Checkpoint Surveys
 FEMA Task Order # HSFEHA-10-J-0006
 February 21, 2011

Summary

ESP Associates, P.A. performed a total of 80 LiDAR checkpoint surveys within the Chemung Watershed in Steuben County, NY between January 8 and January 28, 2011. The total number of checkpoint surveys is divided into the following categories: 20 Category A (Open/Bare Earth), 20 Category B (Grass/Crops), 20 Category D (Forested), and 20 Category E (Urban). The Category A checkpoints were spread over a 709 square mile acquisition area while category B, D & E checkpoints were contained within a more refined 297 square mile “stream buffer” processing area (see “Chemung Watershed, NY LiDAR Checkpoint Study Area Map” on page 15 of the Survey TSDN. 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 KeyNetGPS, Inc. ESP surveyed all Category A, B and E checkpoints using redundant VRS/RTK GPS observations under different satellite constellations. The Category D (Forested) checkpoints were surveyed using conventional survey methods (total station) stemming from control pairs established using redundant VRS/RTK GPS observations under different satellite constellations. ESP observed five (5) National Geodetic Survey (NGS) control monuments throughout the project area in order to verify the horizontal and vertical consistency of the ellipsoid and Geoid 09-derived VRS Network observations with published local benchmark positions and elevations. ESP also observed the LiDAR Base station point (MAEC 201) that was set by Tuck Mapping Solutions, Inc. and used for the LiDAR acquisition. The locations of these control points are shown on the “NGS Primary Control/Monuments Map” located in Appendix B of the survey TSDN. ESP performed a site calibration using the following NGS benchmarks and MAEC 201. The “HELD” column reflects what NGS published values were held during the calibration (Horizontal, Vertical or both) and the following Vertical and Horizontal deltas reflect the variance between the VRS/RTK GPS-observed values and the corresponding published values once all values are constrained. All resultant deltas are within 5 centimeters (0.16 feet) both horizontally and vertically. All surveyed checkpoint observations and supplemental control pairs have been adjusted and constrained to this site calibration.

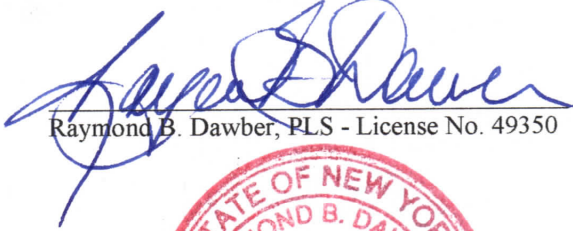
<u>NGS Monument</u>	<u>PID</u>	<u>HELD (H and/or V)</u>	<u>V Delta</u>	<u>H Delta</u>
R 135	NB0331	V	-0.12'	N/A
VANGELDER RESET	NB1027	H&V	-0.07'	0.05'
R 132	NB1234	V	-0.11'	N/A
TT 40 R	NB2147	H&V	0.05'	0.06'
S 157	NB1453	V	0.02'	N/A
MAEC 201	N/A	H&V	0.16'	0.03'

Survey Data

The final coordinates and elevations of the LiDAR QC checkpoints are shown on pages 13-15 of the survey TSDN. The data is sorted by QC checkpoint name, northing, easting, elevation, method of observation/collection and units. The point names are designated by the following scheme “CH_E_01” whereas the first two letters represent the watershed (Chemung); the second letter represents the category/vegetation type (E = urban); and the last two digits represent the point ID number falling between 01 and 80.

This project is based on the NAD 83/2007 and NAVD 88 horizontal and vertical datum respectively. The Geoid 09 was used to obtain the orthometric heights. All coordinates listed within this survey report are based on the New York Central Zone (3102) State Plane Coordinate System. The LiDAR QC checkpoints surveyed for this project meet a 5 cm (0.16 feet) horizontal and vertical accuracy, at a 95% confidence level, relative to the monuments and respective site calibration listed/described above. All LiDAR QC checkpoint coordinates and elevations are listed in US Survey Feet unless otherwise noted. These LiDAR Quality Control checkpoint surveys were performed under the supervision of a licensed New York Professional Land Surveyor.

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


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2/25/11
Date

