



Minnesota Department of Transportation

Photogrammetric Unit
395 John Ireland Boulevard, MS 640
Saint Paul, MN 55155

23 June 2014

Eric Ratcliffe
STARR MT-1 Project Manager
Atkins Global
3901 Calverton Boulevard, Suite 400
Calverton, MD, 20705

RE: Certification of Minnesota LiDAR Quality
Red River Valley Project – Priority Area 2

Dear Mr. Ratcliffe:

Attached you will find a signed and sealed Certification Statement for LiDAR Data that was collected independently by the International Water Institute (IWI) and its partners for the following counties: Kittson, Marshall, Norman, Pennington, Polk and Red Lake. The Minnesota Department of Transportation, in partnership with the Minnesota Department of Natural Resources and the IWI, helped prepare Request for Proposals, served on the selection committee and provided guidance. Initial quality assurance was provided by Houston Engineering, Inc. and we collected independent test points in order to validate the contract deliverables. The Minnesota counties were part of a larger project and which fell outside of Minnesota.

If you have any additional questions concerning the testing process, please contact me at 651.366.3457.

Sincerely,

Peter W. Jenkins, PLS, CFedS
Photogrammetric Unit Supervisor

Enclosures: Certification Letter

cc: S. Jiwani
T. Loesch



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Certification of Minnesota LiDAR Data Quality

Project Area: Red River Valley Project, Minnesota

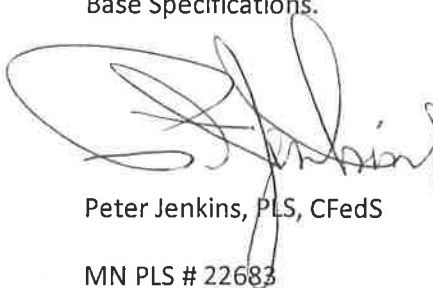
Counties covered: Kittson, Marshall, Norman, Pennington, Polk, Red Lake and Roseau.

Date of acquisition: 18 April 2008 to 2 May 2008 & 25 April 2009 to 30 April 2009

Horizontal Positional Accuracy: All these data products were acquired at 2400 meters above mean terrain (AMT) and have a horizontal accuracy of less than one meters, with a nominal point spacing of 1.35 meters.

Vertical Positional Accuracy: Accuracy of the dataset was verified by a second set of ground control points provided by each County and tested by the State of Minnesota. The Consolidated Vertical Accuracy (CVA) of the TIN as tested by the State of Minnesota of all land cover categories covering the 5 land classes as defined by ASPRS and NDEP were used in this evaluation. The vertical RMSE, 95% Confidence Level, and the sample count per county as tested by the State of Minnesota is as follows: Kittson, 0.100m (RMSE), 0.195m (95%), 103 points; Marshall, 0.137m (RMSE), 0.268m (95%), 109 points; Norman, 0.111m (RMSE), 0.217m (95%), 204 points; Pennington, 0.105m (RMSE), 0.205m (95%), 105 points; Polk, 0.145m (RMSE), 0.285m (95%), 107 points; Red Lake, 0.129m (RMSE), 0.253m (95%), 101 points and Roseau, 0.158m (RMSE), 0.309m (95%), 112 points.

This is to certify that the work summarized above was completed in accordance with sound and accepted surveying practices and meets the accuracy requirements in the USGS's Lidar Guidelines and Base Specifications.



Peter Jenkins, PLS, CFedS

MN PLS # 22683



Photogrammetric Unit Supervisor

Minnesota Department of Transportation

