

# Dewberry Response to USGS Review of the New York Great Lakes LiDAR Processing Project

Produced for U.S. Geological Survey

USGS Contract: G10PC00013

Task Order:G14PD0043

Report Date: 02/11/2016

SUBMITTED BY:

**Dewberry**  
1000 North Ashley Drive Suite 801  
Tampa, FL 33602  
813.225.1325

SUBMITTED TO:

**U.S. Geological Survey**  
1400 Independence Road  
Rolla, MO 6540  
573.308.3810

## Table of Contents

Executive Summary .....	3
Project area .....	4
Edit Calls .....	5
Metadata.....	5
Survey Checkpoints .....	6
Classified LAS .....	6
Raw Swaths .....	6

## **Executive Summary**

The primary purpose of this project was to develop a consistent and accurate surface elevation dataset derived from high-accuracy Light Detection and Ranging (LiDAR) technology for the USGS New York Great Lakes Project Area.

The LiDAR data were processed to a bare-earth digital terrain model (DTM). Detailed breaklines and bare-earth Digital Elevation Models (DEMs) were produced for the project area.

Deliverables for this project included raw swath point cloud data, classified LAS point cloud data, bare earth digital elevation models, intensity images, breaklines, survey data, metadata, project report, and project extent shapefiles.

The USGS review of these deliverables resulted in calls to the metadata, classified LAS, raw swaths and the survey checkpoints shapefile.

## PROJECT AREA

Data was formatted according to tiles with each tile covering an area of 1,500 m by 1,500 m. A total of 3,070 tiles were produced for the project encompassing an area of approximately 2,667 square miles.



Figure 1: Project Map of Orleans and Chautauqua Counties.

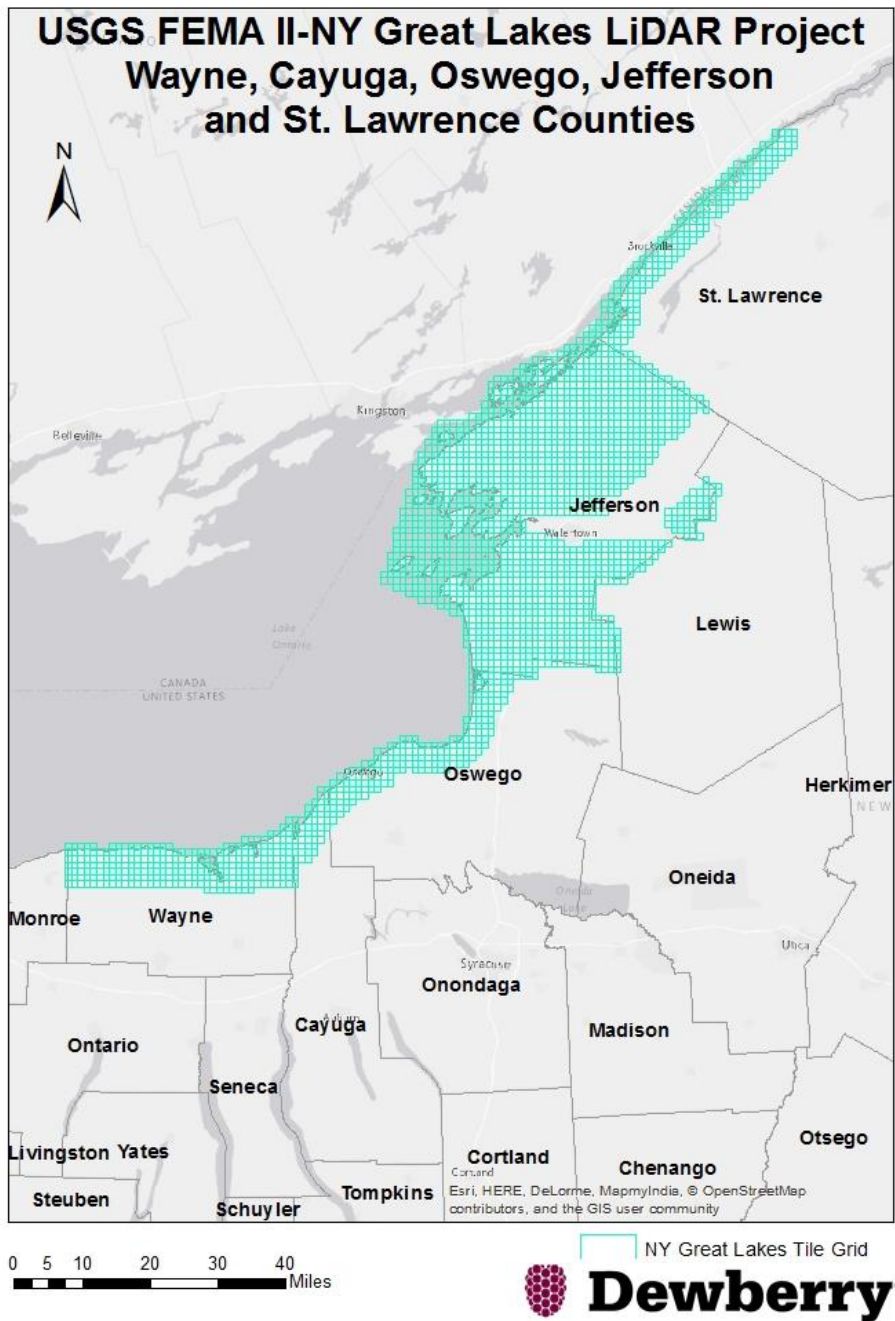


Figure 2: Project Map of Wayne, Cayuga, Oswego, Jefferson and St. Lawrence Counties

## Edit Calls

### METADATA

USGS identified the following issues in the metadata which have been resolved with this

redelivery:

- LAS Lifts: incorrect “begdate” and “enddate” tags corrected, removed all LAS class code tags except for class 0,
- Boundary: “geoform” tag corrected.
- Bridge Breaklines: “geoform” tag corrected.
- Calibration Points: coordinate system tags corrected.
- LAS Bare Earth: “geoform” tag corrected, removed LAS class code for class 0.

USGS also made a call that vertical accuracy results are not needed in the classified LAS and breakline metadata files. As standard procedure, Dewberry tests the vertical accuracy of the classified LAS point cloud data and these values are required for the “clsnva” and “clsvva” LiDAR tags in the metadata. Dewberry includes these vertical accuracy results in the metadata for the classified LAS as they are valid, tested results that provide important information about the classified point cloud data. Dewberry includes the classified LAS point cloud vertical accuracy results in all metadata files representing data derived from the classified LiDAR point cloud, such as breaklines, with additional statements that explain the vertical accuracy results provided are not a result of testing the breaklines directly but as the breaklines, or other data product, are derived from the source LAS, these products inherit the accuracy of the source data. Dewberry has left these vertical accuracy tags in the metadata files because the vertical accuracy of the classified LiDAR point cloud and final bare earth DEMs can be different. If end-users of the data want to manipulate or create additional data products from the source lidar, breaklines, or anything other than the unclassified swath data or bare earth DEMs, knowing the vertical accuracy of the dataset they are using as a source can be extremely beneficial and helpful.

### **SURVEY CHECKPOINTS**

USGS identified three survey checkpoints that have survey elevation values in the survey checkpoints shapefile that are different from the values listed in project report. The surveyor for New York Great Lakes project reported the elevations for these three checkpoints before an adequate OPUS solution was available. The surveyor later corrected these elevations after an adequate OPUS solution was available. This was revised in survey report, but was not revised in the shapefile of the checkpoints. Dewberry has revised the values in the redelivered survey checkpoints shapefile.

### **CLASSIFIED LAS**

USGS identified several LAS tiles that had an erroneous minimum GPS timestamp recorded and one LAS tile that had points in classes outside the project’s classification schema. Dewberry corrected both of these issues in the redelivered LAS tiles.

### **RAW SWATHS**

USGS identified raw swaths for Chautauqua County that have points classified in classes 2 and 4. Dewberry corrected these swaths and classified all points to class 0 in the redelivered swaths. USGS also identified swaths in the Phase 2 delivery that had erroneous minimum GPS timestamps and points classified in classes other than 0. Dewberry also corrected these Phase 2 swaths in the provided redelivery.