LiDAR Quality Assessment Report

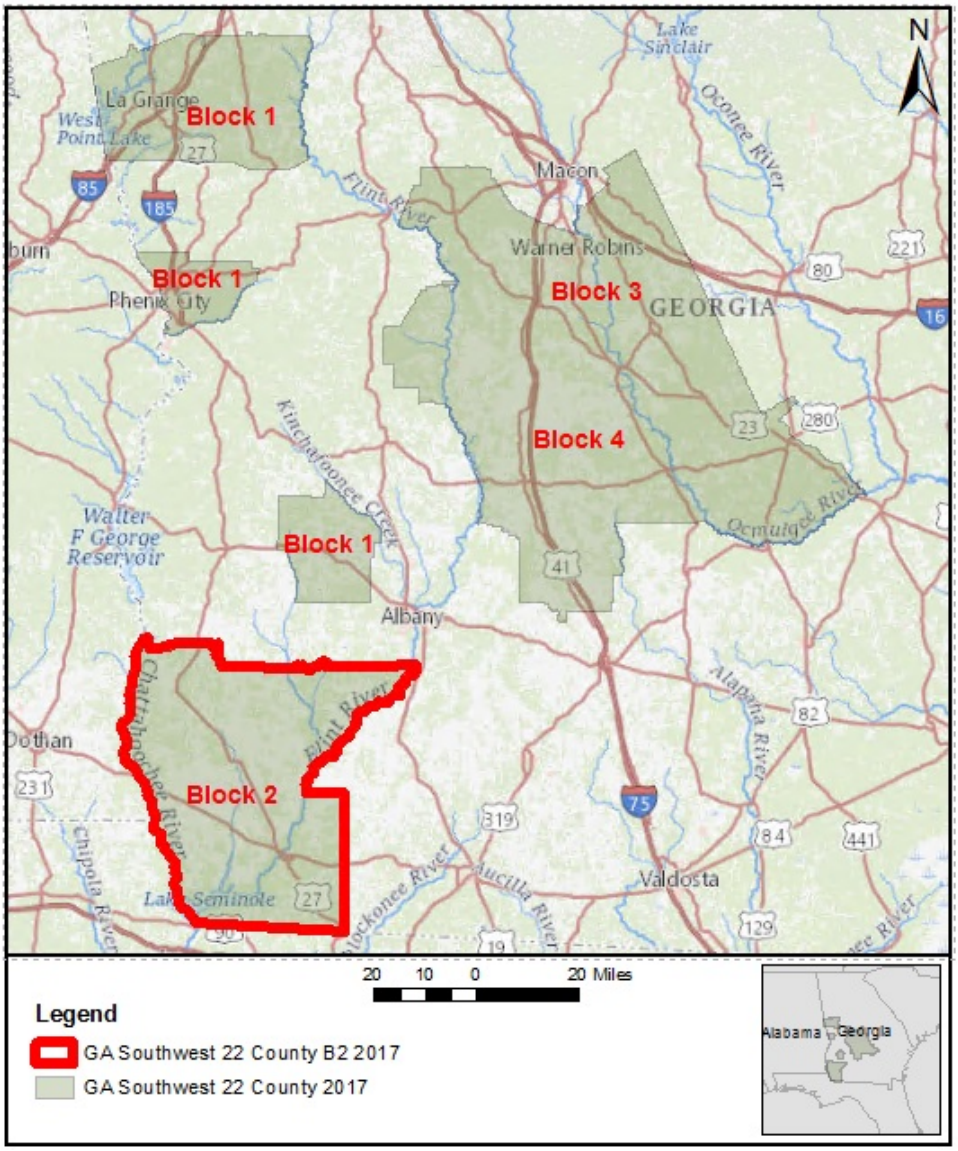
The USGS National Geospatial Technical Operations Center, Data Operations Branch is responsible for conducting reviews of all Light Detection and Ranging (LiDAR) point-cloud data and derived products delivered by a data supplier before it is approved for inclusion in the National Elevation Dataset. The USGS recognizes the complexity of LiDAR collection and processing performed by the data suppliers and has developed this Quality Assessment (QA) procedure to accommodate USGS collection and processing specifications with flexibility. The goal of this process is to assure LiDAR data are of sufficient quality for database population and scientific analysis. Concerns regarding the assessment of these data should be directed to the Chief, Data Operations Branch, 1400 Independence Road, Rolla, Missouri 65401.

GA_SW Georgia 22 County Lidar_2017_B17 - Block 2

NGTOC

2019-05-22

S Ruhl



Project Information

Project: GA_SW Georgia 22 County Lidar_2017_B17 - Block 2

Contractor: The Atlantic Group

Project Type:
GPSC

Applicable Specification:
NGP LiDAR Base Specification V 1.2

Project Points of Contact:

Name:	Type:	Email:
Dan Vincent	CPT	dvinc@usgs.gov

REPORT QUALIFICATION SUMMARY:

Task Order Overall:
Does Not Meet Requirements

Metadata:
0 of 1 Reviews Accepted
0 Reviews Not Accepted

Vertical Accuracy:
0 of 1 Reviews Accepted
0 Reviews Not Accepted

Swath/Raw LAS:
1 of 1 Reviews Accepted
0 Reviews Not Accepted

Tiled/Classified LAS:
1 of 1 Reviews Accepted
0 Reviews Not Accepted

Breakline:
1 of 1 Reviews Accepted
0 Reviews Not Accepted

DEM(s):
1 of 1 Reviews Accepted
0 Reviews Not Accepted

NED Review:
0 of 1 DEM tile reviews recommended for NED 1/3rd
0 of 1 DEM tile reviews recommended for NED 1/9th

Project Subdivision: Lots

List Subdivision:
•
of: 6

Dates Collected Range:
Collection Start: 2/28/2017
Collection End: 1/17/2018

Project Aliases:

Licensing:
Public Domain

Project Description:
This task is for a high resolution data set of lidar of approximately 7931 square miles of counties in Georgia. Counties include Baker, Bleckley, Crawford, Crisp, Decatur, Dodge, Dooly, Early, Houston, Macon, Meriwether, Miller, Muscogee, Peach, Pulaski, Seminole, Telfair, Terrell, Troup, Turner, Twiggs and Wilcox.

Review Information

Reviewer:	S Ruhl	*Date Delivered:*	5/5/2018
3rd Party QA Performed:	☐	*Date Assigned:*	5/18/2018

Action To Contractor Date:	*Issue Description:*	*Return Date:*
	DEM Projection errors: The projection is described differently in 3 groups. **4 of 2423** tile projections have nine 3s in the False Easting and nine 6s in the Central Meridian. **103 of 2423** tile projections have eight 3s in the False Easting and eight 6s in the Central Meridian. **2315 of 2423** tiles have compound CS that is unknown and eight 3s in the False Easting and 8 6s in the Central Meridian. **Please describe the projection the same in all tiles** **Projection errors CORRECTED** **DEM Errors Remaining:** 1 - shoreline 2 deep 1 - building 11 - bridge - finish bridge/deck removal **CORRECTED** **The 11 DEM tiles sent with corrections 05-02-19 are missing EPSG codes and the vertical datum, therefore the projection in these 11 tiles is not the same as the rest of the DEM tiles.** **XML Metadata:** Please see XML Metadata Review section for all errors **Revised XML Metadata WAS NOT DELIVERED with 121818 corrections…** **Revised XML Metadata WAS NOT DELIVERED with 050219 corrections…** **Vertical Accuracy**	

Vertical accuracy is pending completion of all blocks in Georgia SW project.

DEM Notes:

Unnatural corn rowing is endemic throughout the project.
Triangulation exist in dense tree canopy and low marshy areas throughout the project.

All DEM NoData value = -9999

XML Metdata Notes:

RMSEz is not required and preferably not noted concerning VVA. The 95th percentile is the only accuracy required for VVA.

Review Complete:

5/22/2019

Dates Project Worked:

Start:	5/21/2018	7/5/2018	1/28/2019	5/3/2019
End:	5/23/2018	7/9/2018	1/28/2019	5/6/2019

5/22/2019

5/22/2019

Project Materials Received

All project deliverables must be supplied according to collection and processing specifications. The USGS will postpone the QA process when any of the required deliverables are missing. When deliverables are missing, the Contracting Officer Technical Representative (COTR) will be contacted by the Elevation Section supervisor and informed of the problem. Processing will resume after the COTR has coordinated the deposition of remaining deliverables.

METADATA

Deliverables	*Delivered*	*XML Metadata*	*Required*	*Format*	*Quantity*	*Additional Details*
Collection Report:	☑		☑	*PDF*	*1*	
Survey Report:	☑		☑	*PDF*	*1*	
Processing Report:	☑		☑	*PDF*	*1*	
QA/QC Report:	☑		☑	*PDF*	*1*	

Project Level XML Metadata:	☑		☑	*XML*	*1*	
Project Extent:	☑	☑	☑	*.shp*	*1*	
Tile Scheme:	☑	☑	☑	*.shp*	*1*	
Control (Calibration) Points:	☑	☑	☑	*.shp*	*1*	
Check (Validation) Points:	☑	☑	☑	*.shp*	*1*	
Additional Comments:	Block 2					

LIDAR DATA

Deliverables	*Delivered*	*XML Metadata*	*Required*	*Format*	*Quantity*	*Additional Details*
Swath Data:	☑	☑	☑	.las	*91*	
Classified/ Tiled Data:	☑	☑	☑	.las	*2,422*	
Additional Comments:						

DERIVED DELIVERABLES

Deliverables	*Delivered*	*XML Metadata*	*Required*	*Format*	*Quantity*	*Additional Details*
DEM Tiles:	☑	☑	☑	IMG	*2,422*	
Breaklines:	☑	☑	☑	.shp	*2*	
Additional Comments:						

OTHER

Additional Deliverables	*Delivered*	*XML Metadata*	*Required*	*Format*	*Quantity*	*Additional Details*
intensity images	☑	☑	☑	.tif	2,422	

Additional Comments:	**intensity images and DEM images are different resolution** DEM cell = 2.5x2.5 US foot intensity cell = 3.28x3.28 US foot

Geographic Information

Area Extent: 2044 *Sq. Miles*

Tile Size: 5000 x 5000 *Feet*

DEM/DTM Grid Spacing: 1 *U.S. Feet*

Coordinate Reference System:

StatePlane_Georgia_West_FIPS_1002_Ft_US

Projection: Transverse Mercator

Horizontal Datum: NAD83 2011

- ○ Meters
- ◉ U.S. Feet
- ○ Int'l Feet

Vertical Datum: NAVD88 GEOID12B

- ○ Meters
- ◉ U.S. Feet
- ○ Int'l Feet

THIS PROJECTION COORDINATE REFERENCE SYSTEM IS CONSISTENT ACROSS THE FOLLOWING DELIVERABLES

- ☑ *Project Extent*
- ☑ *Project Extent XML Metadata*
- ☑ *Project Tile Scheme*
- ☑ *Project Tile Scheme XML Metadata*
- ☑ *Control Points*
- ☑ *Control Points XML Metadata*
- ☑ *Checkpoints*
- ☑ *Checkpoint XML Metadata*
- ☑ *Project Level XML Metadata*
- ☑ *Tiled/Classified XML Metadata*
- ☑ *Tiled/Classified LiDAR*
- ☑ *Swath/Raw LiDAR XML Metadata*
- ☑ *Swath/Raw LiDAR*
- ☑ *DEM(s)*
- ☑ *DEM XML Metadata*
- ☑ *Breakline(s)*
- ☑ *Breakline XML Metadata*

Additional Comments:

Collection Information

Quality Level: ***2***

Configured Nominal Pulse Spacing:

.7 Meters

Additional Comments:

Metadata Review

Vendor provided metadata files have been parsed using 'mp' metadata parser. Any errors generated by the parser are documented below for reference and/or corrective action.
Parser can be found @ http://geo-nsdi.er.usgs.gov/validation/

The Project Level XML Metadata parsed with errors.

```
Error (line 17): Unknown extension element ignored: Lidar
Error (line 42): Lidar_Collection_Information is not expected in Description
Error (line 148): Lidar_Accuracy_Information is not expected in Description
Error (line 203): Lidar_LAS_Information is not expected in Description
```

Check if 'Best Use' metadata for NED: ☐

The Project Extent XML Metadata parsed without errors.

Check if 'Best Use' metadata for NED: ☐

The Project Tile Scheme XML Metadata parsed without errors.

Check if 'Best Use' metadata for NED: ☐

The Control Point XML Metadata parsed without errors.

Check if 'Best Use' metadata for NED: ☐

The Check Point XML Metadata parsed without errors.

Check if 'Best Use' metadata for NED: ☐

The Swath XML Metadata parsed with errors.

```
Error (line 17): Unknown extension element ignored: Lidar
Error (line 42): Lidar_Collection_Information is not expected in Description
Error (line 148): Lidar_Accuracy_Information is not expected in Description
Error (line 203): Lidar_LAS_Information is not expected in Description
```

Check if 'Best Use' metadata for NED: ☐

The Classified XML Metadata parsed with errors.

```
Error (line 17): Unknown extension element ignored: Lidar
Error (line 42): Lidar_Collection_Information is not expected in Description
Error (line 148): Lidar_Accuracy_Information is not expected in Description
Error (line 203): Lidar_LAS_Information is not expected in Description
```

Check if 'Best Use' metadata for NED: ☐

The DEM XML Metadata parsed without errors.

Check if 'Best Use' metadata for NED: ☑

The Breakline XML Metadata parsed without errors.

Check if 'Best Use' metadata for NED: ☐

Additional Comments:

Metadata acceptance pending final deliveries, please address all issues noted below in your final metadata deliveries

Intensity xml parsed without errors

XML Metadata/Report:

In DEM.xml change
from:
<absres>0.01</absres><ordres>0.01</ordres>
to:

<absres>2.5</absres><ordres>2.5</ordres>

In intensity.xml change
from:
<absres>0.01</absres><ordres>0.01</ordres>
to:
<absres>3.28</absres><ordres>3.28</ordres>

In all xmls with <ldrinfo> tags

Classes described in the **<abstract></abstract>** and **<clascode></clascode>** **<clasitem></clasitem>** in xml metadata with **<ldrinfo>** do not match the classes in **Classified LAS** or **table 5 pg. 10** of the **Lidar Acquisition Report**. **The Lidar report and xmls must match. Please correct xmls. In the Classified LAS, flightline acquisition & SW Georgia LiDAR.xmls please add:**
<clascode></clascode>
<clasitem></clasitem>
for classes 3, 4, & 5

In all flightline acquisition.xmls:
change:
<clascode>1</clascode>
<clasitem>Unclassified</clasitem>
to:
<clascode>0</clascode>
<clasitem>never processed</clasitem>

2 flightlines and 23 classified tiles are recorded as April 14 2017. Change xmls and the Lidar Acquisition Report to include these times.

<ldrchacc> </ldrchacc> is not populated correctly. Base Specification 1.2 and the xml metadata templates are in error.
<ldrchacc> </ldrchacc> has not changed from Base Specification 1.0. See **Appendix 5 -Lidar Metadata Template - page 39** of **LiDAR Base specification 1.0. See example below:**

<ldrchacc>EXAMPLE: 0.5
<!--**REQUIRED Element**: the **calculated horizontal accuracy** of the point cloud data
-->
<ldrchacc> </ldrchacc> is to be populated with the calculated horizontal accuracy of the project. If the calculated horizontal accuracy is not available then populate with 0.

Based on this review, the USGS Select... the xml metadata provided.

End of Metadata Review

Vertical Accuracy Review

ASPRS recommends that checkpoint surveys be used to verify the vertical accuracy of LiDAR data sets. Checkpoints are to be collected by an independent survey firm licensed in the particular state(s) where the project is located. While subjective, checkpoints should be well distributed throughout the dataset. National Standards for Spatial Data Accuracy (NSSDA) guidance states that checkpoints may be distributed more densely in the vicinity of important features and more sparsely in areas that are of little or no interest. Checkpoints should be distributed so that points are spaced at intervals of at least ten percent of the diagonal distance across the dataset and at least twenty percent of the points are located in each quadrant of the dataset.

NSSDA and ASPRS require that a minimum of twenty checkpoints (thirty is preferred) are collected for each major land cover category represented in the LiDAR data. Checkpoints should be selected on flat terrain, or on uniformly sloping terrain in all directions from each checkpoint. They should not be selected near severe breaks in slope, such as bridge abutments, edges of roads, or near river bluffs. Checkpoints are an important component of the USGS QA process. There is the presumption that the checkpoint surveys are error free and the discrepancies are attributable to the LiDAR dataset supplied.

For this dataset, USGS checked the spatial distribution of checkpoints with an emphasis on the bare-earth (open terrain) points; the number of points per class; the methodology used to collect these points; and the relationship between the data supplier and checkpoint collector. When independent control data are available, USGS has incorporated this into the analysis.

Required Vertical Accuracy

◉ *Yes* ○ *No*

REQUIRED NON-VEGETATED VERTICAL ACCURACY FOR SWATH AND DEM FILES

Required Unit:	Centimeters
Required # of checkpoints:	202
Required RMSEz:	10
*Required Vertical Accuracy (RMSEz * 95th CI)*	19.6

REQUIRED VEGETATED VERTICAL ACCURACY FOR DEM FILES

Required Unit:	Centimeters
Required # of checkpoints:	143
Required Vertical Accuracy (@ 95th percentile)	29.4
Additional Required Vertical Accuracy Information:	Vertical Accuracy pending all blocks tested.

Reported Vertical Accuracy

◉ *Yes* ○ *No*

REPORTED NON-VEGETATED VERTICAL ACCURACY FOR SWATH LIDAR FILES

Reported Unit:	Centimeters
Reported # of checkpoints:	
Reported RMSEz:	
*Reported Vertical Accuracy (RMSEz * 95th CI)*	

REPORTED NON-VEGETATED VERTICAL ACCURACY FOR DEM FILES

Reported Unit: Centimeters

Reported # of checkpoints:

Reported RMSEz:

*Reported Vertical Accuracy (RMSEz * 95th CI)*

REPORTED VEGETATED VERTICAL ACCURACY FOR DEM FILES

Reported Unit: Centimeters

Reported # of checkpoints:

Reported Vertical Accuracy (95th percentile)

Additional Reported Vertical Accuracy Information:

Reported by Block

Block 2 independently tested

Swath NVA = 0.244' RMSEz or 7.44cm
0.478' @ 95% CL or 14.58cm - **43 points reported tested**
DEM NVA = 0.229' RMSEz or 6.97cm
0.450' @ 95% CL or 13.7cm - **43 points reported tested**
DEM VVA = 0.661' or 20.15cm @ 95th %tile - **25 points reported tested**

BR29, BR35 & HG30 were noted as outliers by the contractor
BR = Brush
HG = High Grass

Reviewed Vertical Accuracy

○ *Yes* ○ *No*

Based on this review, the USGS Select... the vertical accuracy.

End of Vertical Accuracy Review

Raw-Swath LiDAR Review Accepted

LAS swath files or raw unclassified LiDAR data are reviewed to assess the quality control used by the data supplier during collection. Furthermore, LAS swath data are checked for positional accuracy. The data supplier should have calculated the Non-Vegetated Vertical Accuracy using ground control checkpoints measured in clear open terrain (*see Vertical Accuracy Review Section*).

Review Required: ◉ *Yes* ○ *No*

RAW-SWATH LIDAR FILE CHARACTERISTICS

☑ *Separate folder for swath/raw LiDAR files*

LAS Version: 1.4

Point Record Format: 6

*If specified, *.wpd files for full waveform data have been provided:* Not Required

☐ *Correct and properly formatted georeference information is included in all LAS file headers, including the use of OGC 2001 Well Known Text (WKT).*

In **future projects NGTOC requests** the **datum** be **described** with no underscores **as shown below**:

DATUM["NAD83 (National Spatial Reference System 2011)",

☐ *Adjusted GPS time used with the global encoder id set to 1*

The Global Encoder is set to 17 per Base Specification and LAS specification

Additional comments:

Swath is reporting 15 1.4 return counts. Counts 6-15 are all 0. There are 5 actual returns.

Based on this review, the USGS accepts the swath/raw LiDAR data.

End of Swath/Raw LiDAR Review

Tiled/Classified LiDAR Review Accepted

Classified LAS tile files are used to build digital terrain models using the points classified as ground. Therefore, it is important that the classified LAS are of sufficient quality to ensure that the derivative product accurately represents the landscape that was measured. Classified LAS Tiles are comprised as follows, "all project swaths, returns, and collected points, fully calibrated, adjusted to ground, and classified and cut, by tiles, excluding calibration swaths, cross-ties, and other swaths not used, or intended to be used, in product generation".

Review Required: ◉ *Yes* ○ *No*

CLASSIFIED LIDAR TILE CHARACTERISTICS

☑ *Separate folder for classified/tiled LiDAR files*

LAS Version: 1.4

Point Record Format: 6

*If specified, *.wpd files for full waveform data have been provided:* Not Required

☑ *Classified LAS tile files conform to project tiling scheme*

☑ *Quantity of classified LAS tile files conforms to project tiling scheme*

☑ *Classified LAS tile files do not overlap*

☑ *Classified LAS tile files are uniform in size*

☐ *Correct and properly formatted georeference information is included in all LAS file headers, including the use of OGC 2001 Well Known Text (WKT).*

In **future projects NGTOC requests** the **datum** be **described** with no underscores **as shown below**:

DATUM["NAD83 (National Spatial Reference System 2011)",

In **future projects NGTOC requests** the **AXIS height** tag be **as shown below:**

AXIS["Up",UP]

The LAS tiles in corrections 5/2/19 have been described with 3 different wkts all of which pass the parser: All discrepancy is in the vert_cs.

The **AXIS["Up",UP]** is **missing** from one description
The **US Foot Authority EPSG code 9003** is **missing** from one description
Both the **above tags** are **missing** in one description.

Preferred projection listed below:

```
COMPD_CS["NAD83(2011) / Georgia West (ftUS) + NAVD88 height - Geoid12B (ftUS)",
        PROJCS["NAD83(2011) / Georgia West (ftUS)",
                GEOGCS["NAD83(2011)",
                        DATUM["NAD83 (National Spatial Reference System 2011)",
                                SPHEROID["GRS 1980",6378137,298.257222101,
                                        AUTHORITY["EPSG","7019"]],
                                AUTHORITY["EPSG","1116"]],
                        PRIMEM["Greenwich",0,
                                AUTHORITY["EPSG","8901"]],
                        UNIT["degree",0.0174532925199433,
                                AUTHORITY["EPSG","9122"]],
                        AUTHORITY["EPSG","6318"]],
                PROJECTION["Transverse_Mercator"],
                PARAMETER["latitude_of_origin",30],
                PARAMETER["central_meridian",-84.16666666666667],
                PARAMETER["scale_factor",0.9999],
                PARAMETER["false_easting",2296583.333],
                PARAMETER["false_northing",0],
                UNIT["US survey foot",0.3048006096012192,
                        AUTHORITY["EPSG","9003"]],
                AXIS["X",EAST],
                AXIS["Y",NORTH],
                AUTHORITY["EPSG","6447"]],
          VERT_CS["NAVD88 height - Geoid12B (ftUS)",
                VERT_DATUM["North American Vertical Datum 1988",2005,
                        AUTHORITY["EPSG","5103"]],
                UNIT["US survey foot",0.3048006096012192,
                        AUTHORITY["EPSG","9003"]],
                AXIS["Up",UP],
                AUTHORITY["EPSG","6360"]]]
```

☐ *Adjusted GPS time used with the global encoder id set to 1*

The Global Encoder is set to 17 per Base Specification and LAS specification

☐ *Classified LAS tile files have no points classified as '12' (Overlap) and correctly use overlap bit.*

☐ *Point classifications are limited to the standard values listed below:*

Code	Description	Used
1	Processed, but unclassified	☐
2	Bare-earth/Ground	☐
7	Noise (low, manually identified, if needed)	☐
8	Model key points	☐
9	Water	☐
10	Ignored ground (breakline proximity)	☐
11	Withheld (if the "Withheld Bit" is not implemented in the processing software	☐
17	Bridges	☐
18	Noise (high, manually identified, if needed)	

☐

Additional comments:

File source ID is not correct. The File Source ID should be 0 in all tiles.
The System ID is NIIRS10 in 349 tiles and should be ALS70

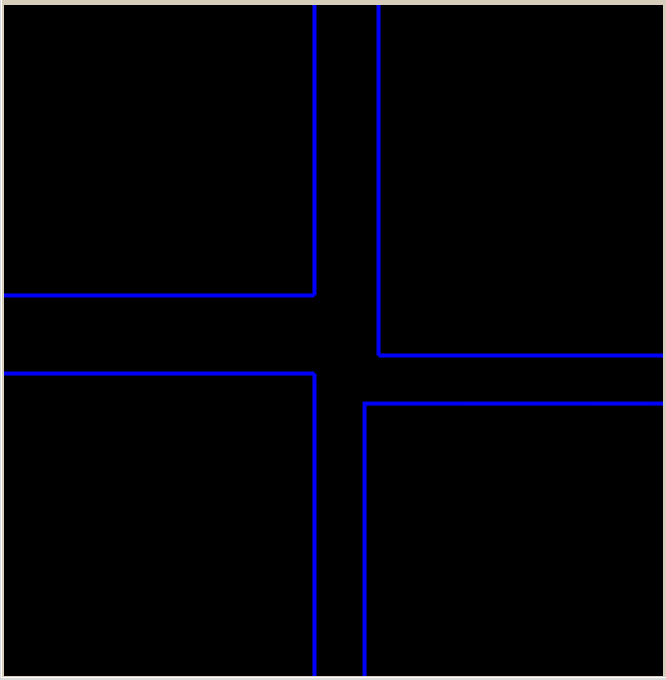
Remove classes 0,6,8,11,12,13,14,15,16,19,20,21,22,23,24,25,26,27,28,29,30,31 from all tiles which contain these classes. Please reprocess Classified LAS either to match the classes in xmls or the LiDAR Acquisition Report or correct the xmls and the LiDAR Acquisition Report to match. ALL REPORTS, XMLS & DATA MUST MATCH.

Las Tiles GAW_20650540 and GAW_21950495 have classes 0-31. Please re-process.

Check the number of VLRs. IF more than one is not needed then remove multiple VLRs.

Notes:
4 las tiles from B1 were delivered in correction delivery 5/2/2019. They are tiles
20500870, 20500875, 20450870 & 20450875

All LAS tiles appear to have gaps between tiles. See Image below. The example below is the corner join of 4 tiles. This anomaly still exist in corrections of 5/2/2019.



Based on this review, the USGS accepts classified/tiled LiDAR data.

End of Tiled/Classified LiDAR Review

Breakline Review Accepted

Breaklines are vector feature classes that are used to hydro-flatten the bare earth Digital Elevation Models.

Review Required: ◉ *Yes* ○ *No*

BREAKLINE FILE CHARACTERISTICS:

☑ Separate folder for breakline files.

☑ Breaklines contain elevation values.

Elevation values stored in Geometery (ZEnabled) .

Units: U.S. Feet

☑ Waterbody Breaklines.

Polyline ☐ Polygon ☑
☐ Single elevation value per waterbody feature.
☑ Required.
Waterbody Elevations were created via Unknown waterbody level techniques.

☑ Double Line Stream Breaklines (Streams Approximately > 100 ft).

Polyline ☐ Polygon ☑
Downstream DLS Flow is Monotonic .
☑ Required.

☐ Single Line Breaklines.
☑ No missing or misplaced breaklines.

Based on this review, the USGS accepts the breakline files.

End of Breakline Review

DEM Review Accepted

The derived bare-earth file(s) receive a review of the vertical accuracies provided by the data supplier, vertical accuracies calculated by the USGS using supplied and independent checkpoints (*see the prior Vertical Accuracy Review Section*), and a thorough visual review for any anomalies or inconsistencies in assessing the quality of the DEM(s).

BARE-EARTH DEM TILE CHARACTERISTICS:

☑ Separate folder for bare-earth DEM files
Raster File Type: IMG
Raster Cell Size: 1 U.S. Feet
Tile bit depth/pixel Type: 32_BIT_FLOAT
Interpolation or Resampling Technique: Unknown

☑ DEM tiles do not overlap
☑ DEM tiles conform to Project Tiling Scheme
☑ Quantity of DEM files conforms to Project Tiling Scheme
☑ DEM tiles are uniform in size

☑ DEM tiles properly edge match and free of edge artifacts
☑ Tiles are free from Spikes and Pits
☐ Tiles are free from Data Holidays (*voids due to processing or collection errors*)

☐ Tiles do not exhibit systematic sensor error or cornrowing

Corn rowing exist throughout the project

Hydro Treatment: hydro-flattened

DEM tiles are properly Hydro Flattened ◉ Yes ○ No

☑ Waterbodies 2 Acres or greater are flattened
☑ Streams 100 ft. or greater are flattened in a downstream manner
☐ Tidal Boundaries/Shorelines are flattened

N\A

☑ No missing islands 1 Acre or larger
☑ Bridges/Overpasses are properly removed
☑ Culverts are maintained (Not Hydro Enforced)
☑ Depressions, Sinks, are not filled in (Not Hydro Conditioned)
☑ Vegetation properly removed
☑ Manmade structures properly removed

ADDITIONAL COMMENTS, ERRORS, ANOMALIES, OR OTHER ISSUES:

DEM Projection errors:

The projection is described differently in 3 groups.
4 of 2423 tile projections have nine 3s in the False Easting and nine 6s in the Central Meridian.
103 of 2423 tile projections have eight 3s in the False Easting and eight 6s in the Central Meridian.
2315 of 2423 tiles have compound CS that is unknown and eight 3s in the False Easting and 8 6s in the Central Meridian.

Please describe the projection the same in all tiles.

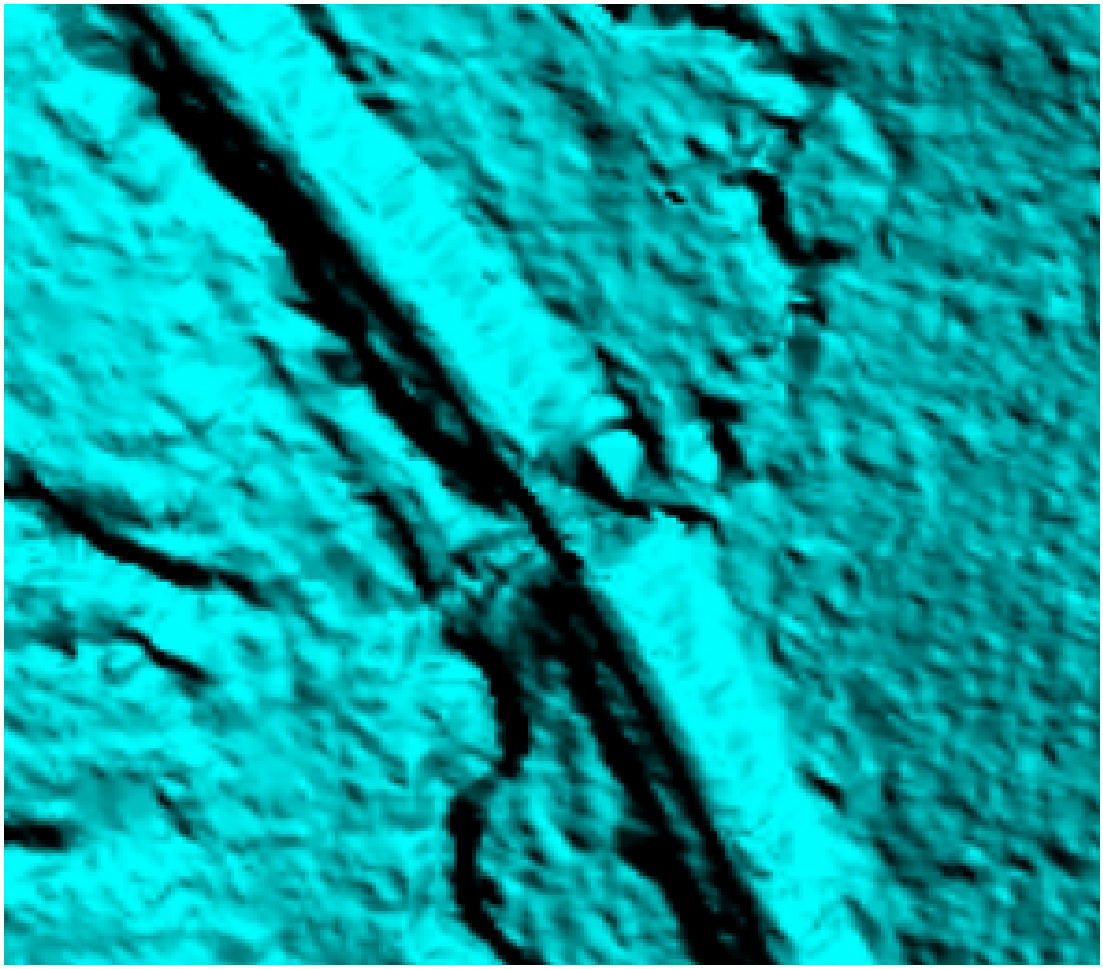
Projection errors CORRECTED

DEM Errors Remaining:

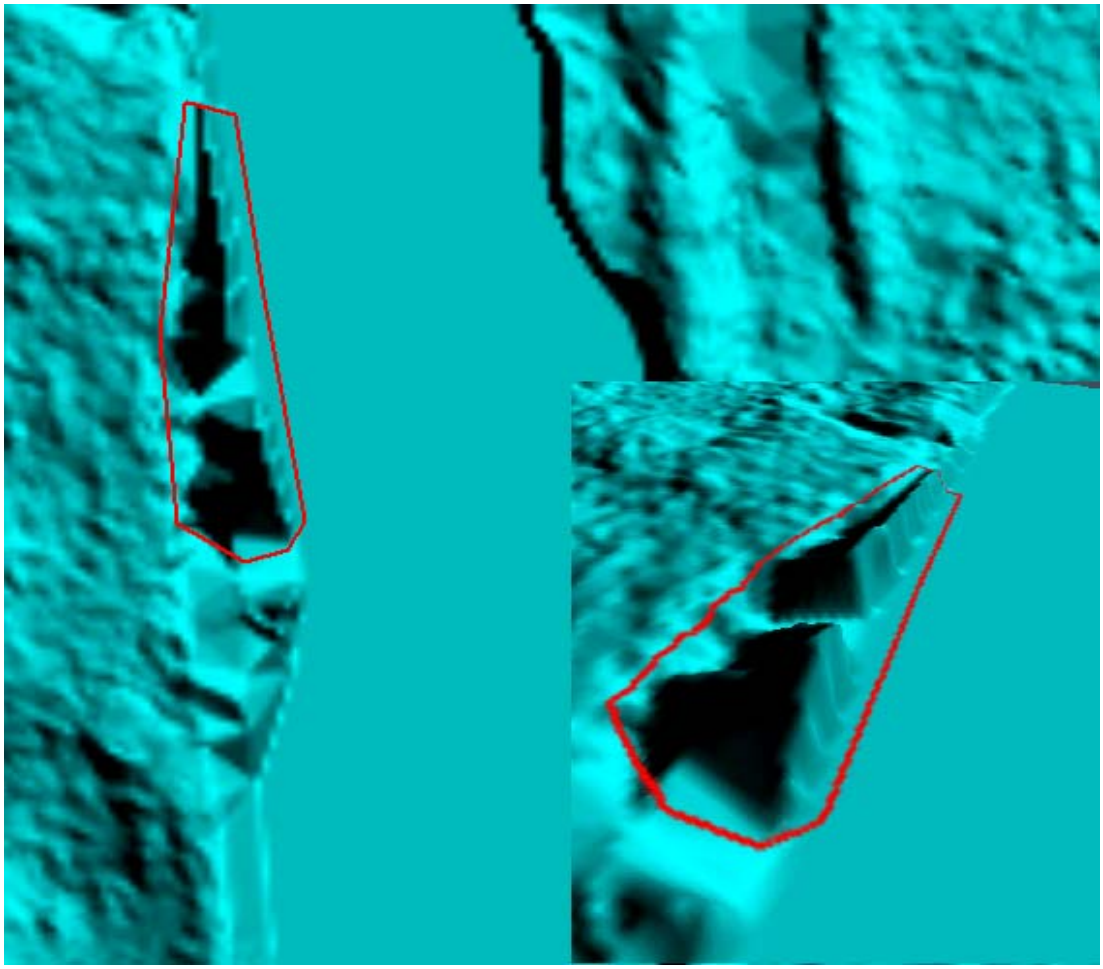
1 - shoreline 2 deep
1 - building
11 - bridge - finish bridge/deck removal

1 - missing complete grid @ 30° 54' 49.4479" N, 84° 30' 52.4381" W
CORRECTED

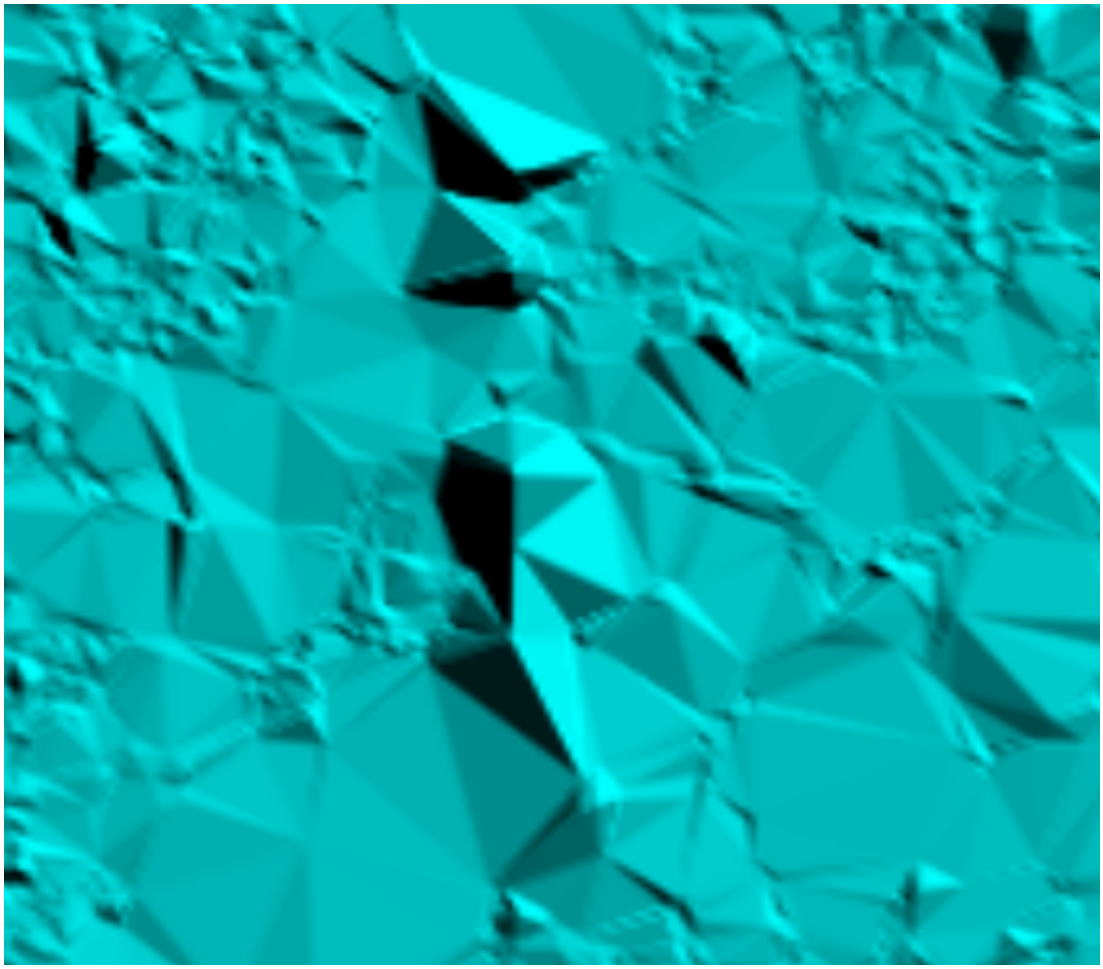
1 - finish removal or replace ground points on track @ 30° 47' 35.9702" N, 84° 31' 12.5191" W
CORRECTED



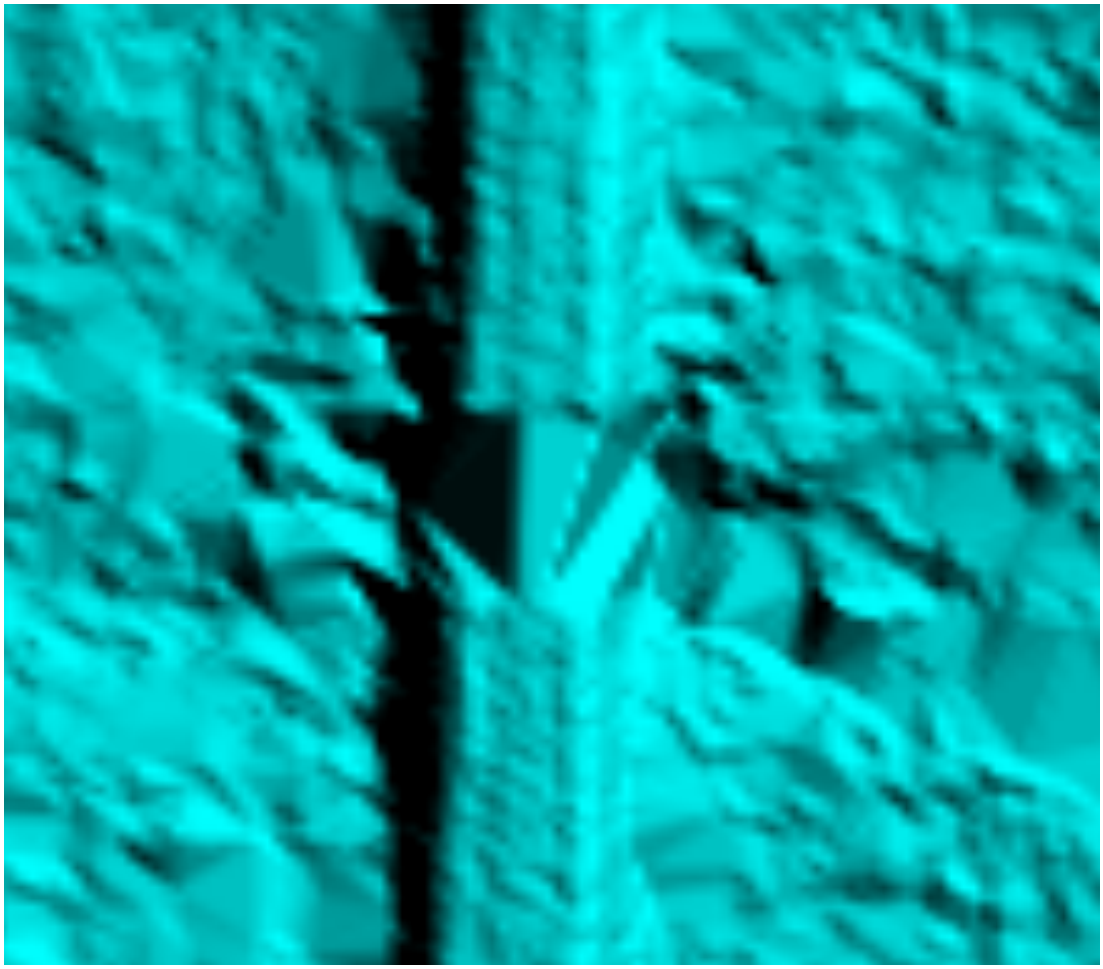
1 - check classification @ 30° 54' 12.2356" N, 84° 44' 59.0097" W
CORRECTED



1 - smooth triangulation on tile seam @ 31° 15' 04.8555" N, 84° 49' 39.9932" W
CORRECTED

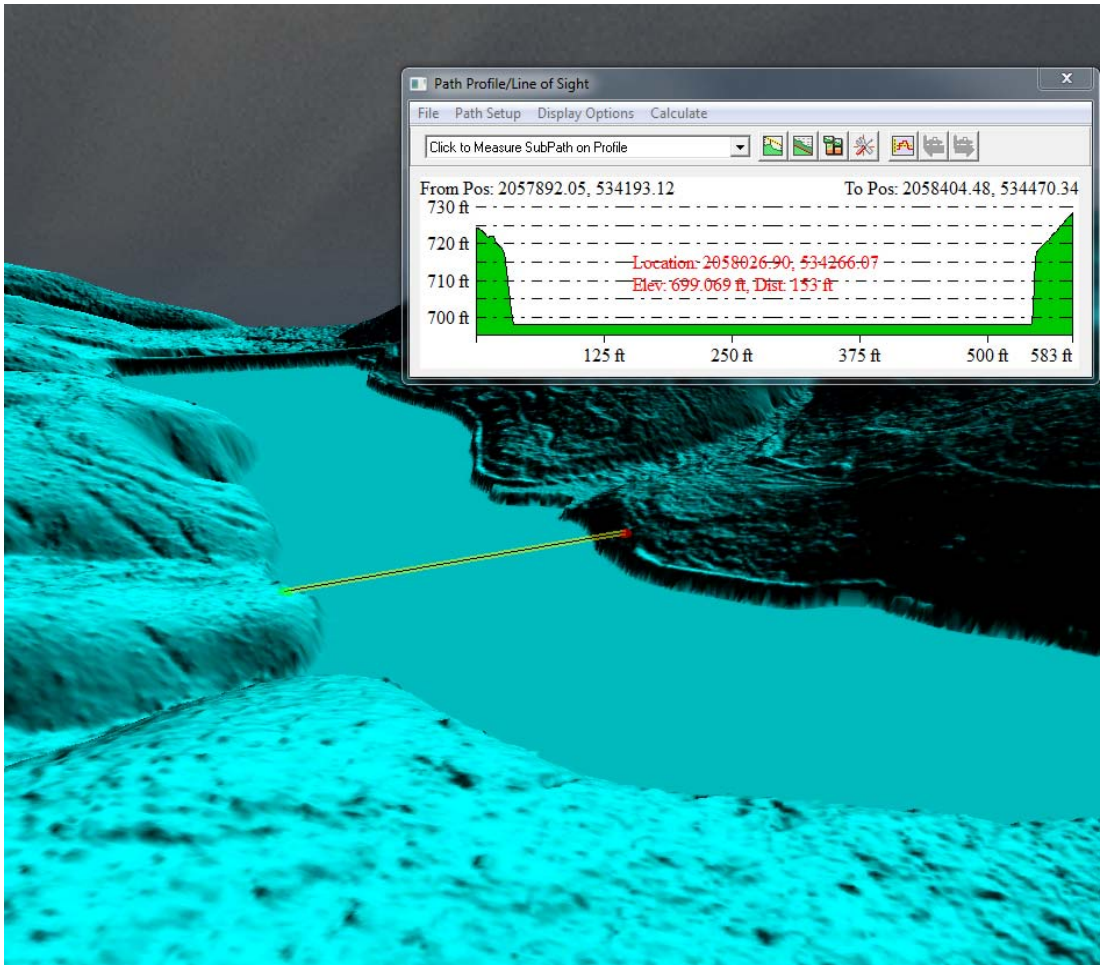


1 - replace ground points on road @ 31° 08' 52.9875" N, 84° 49' 31.1351" W
CORRECTED

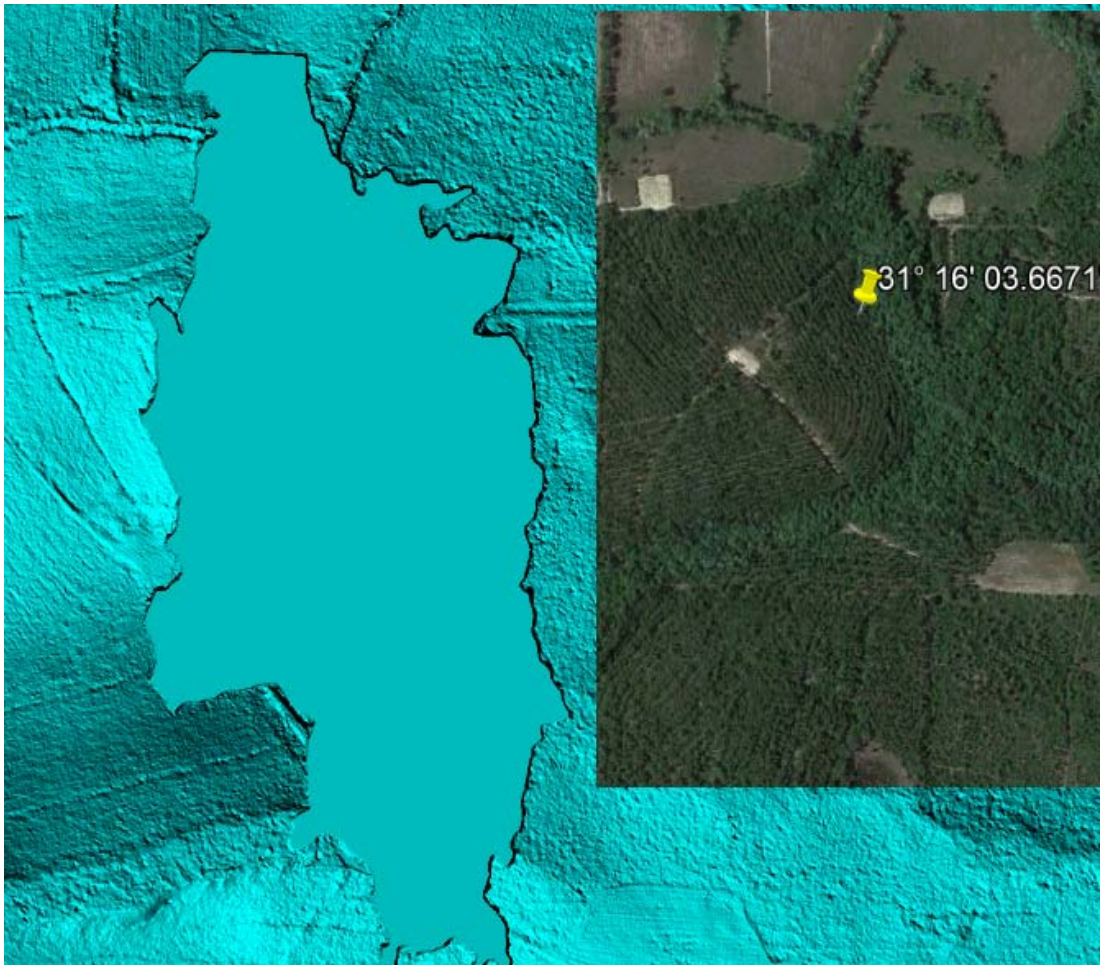


1 - shoreline 2 deep @ 31° 28' 00.8803" N, 84° 55' 53.1104" W
approx. 20' too deep

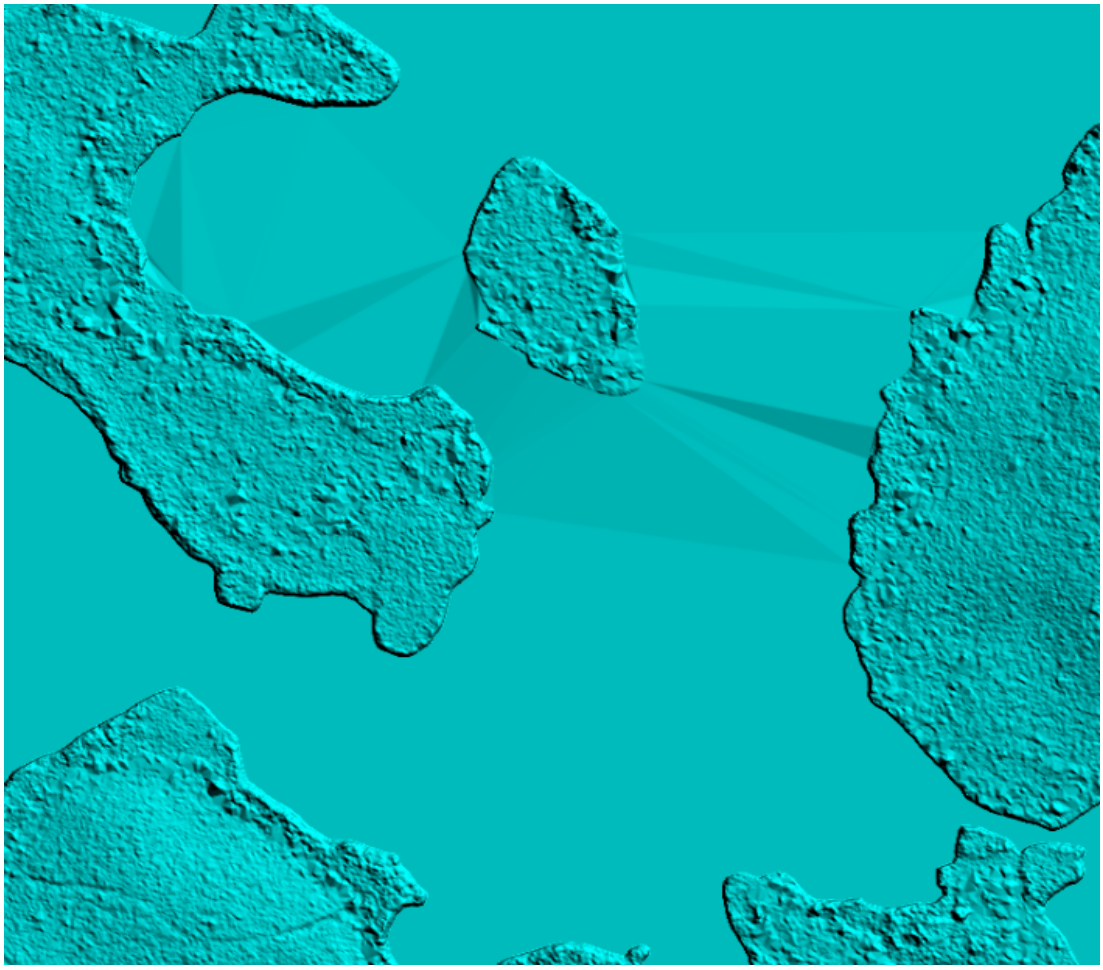
CORRECTED



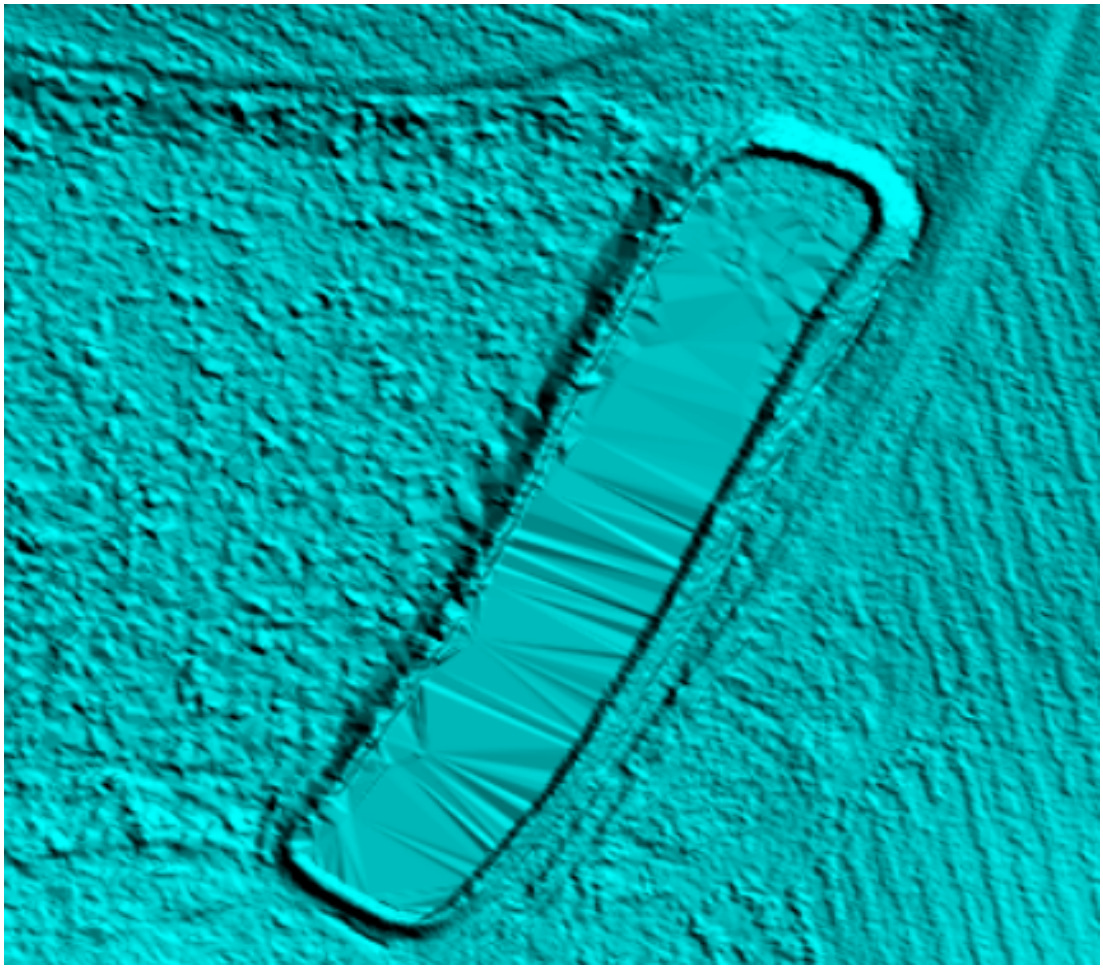
1 of 3 not water - un-flatten @ 31° 16' 03.6671" N, 85° 05' 00.0482" W
CORRECTED



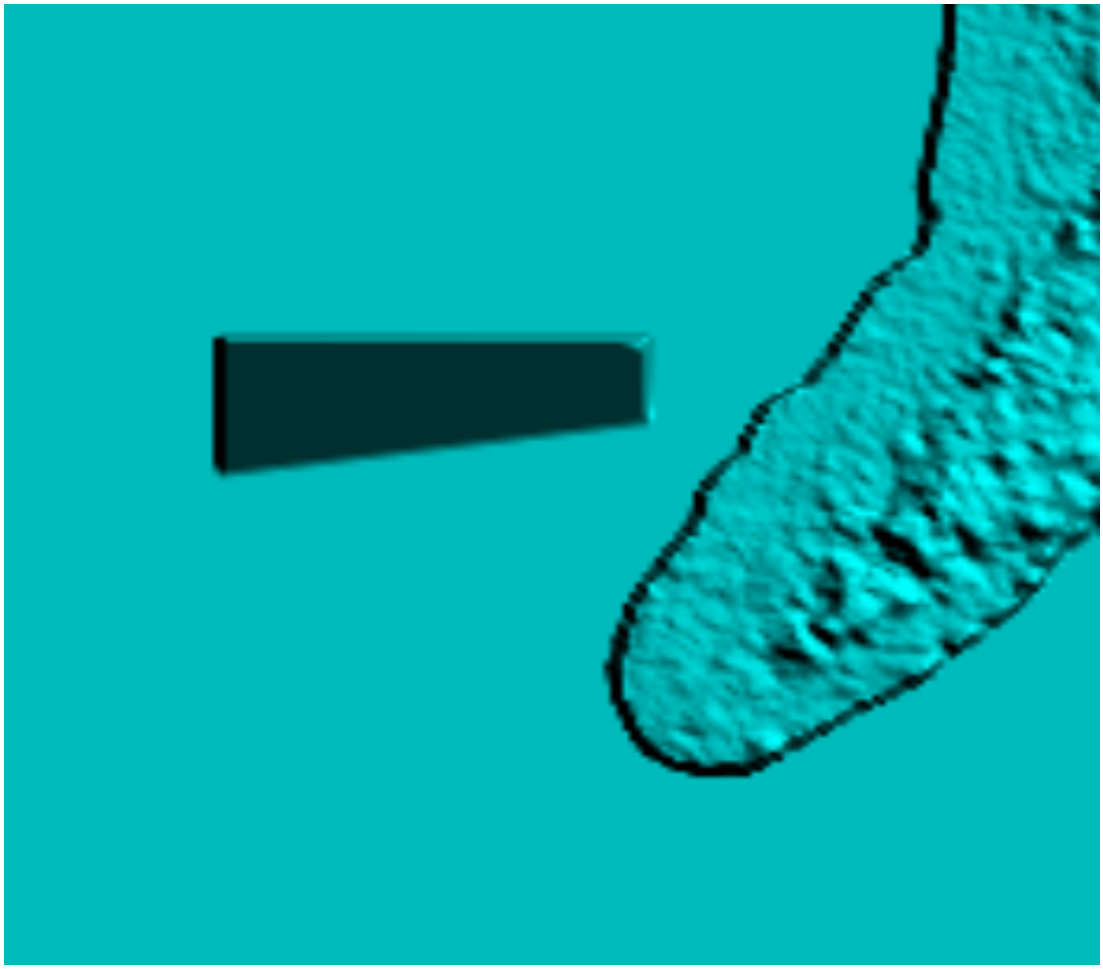
1 of 3 re-flatten @ 30° 46' 23.4706" N, 84° 51' 31.0172" W
CORRECTED



1 of 3 flatten @ 31° 20' 45.3272" N, 84° 58' 22.4874" W
CORRECTED

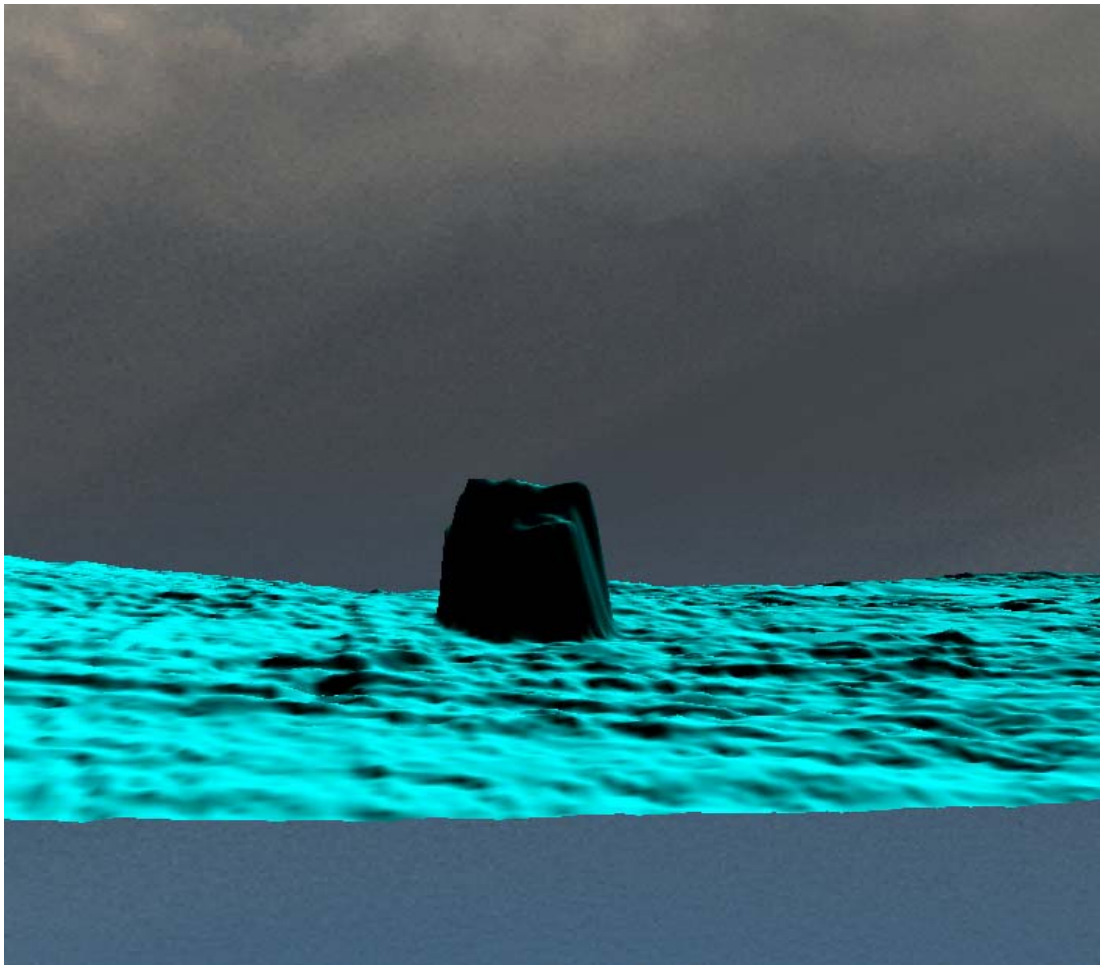


1 of 4 processing error @ 30° 51' 21.7042" N, 84° 38' 25.5508" W
CORRECTED



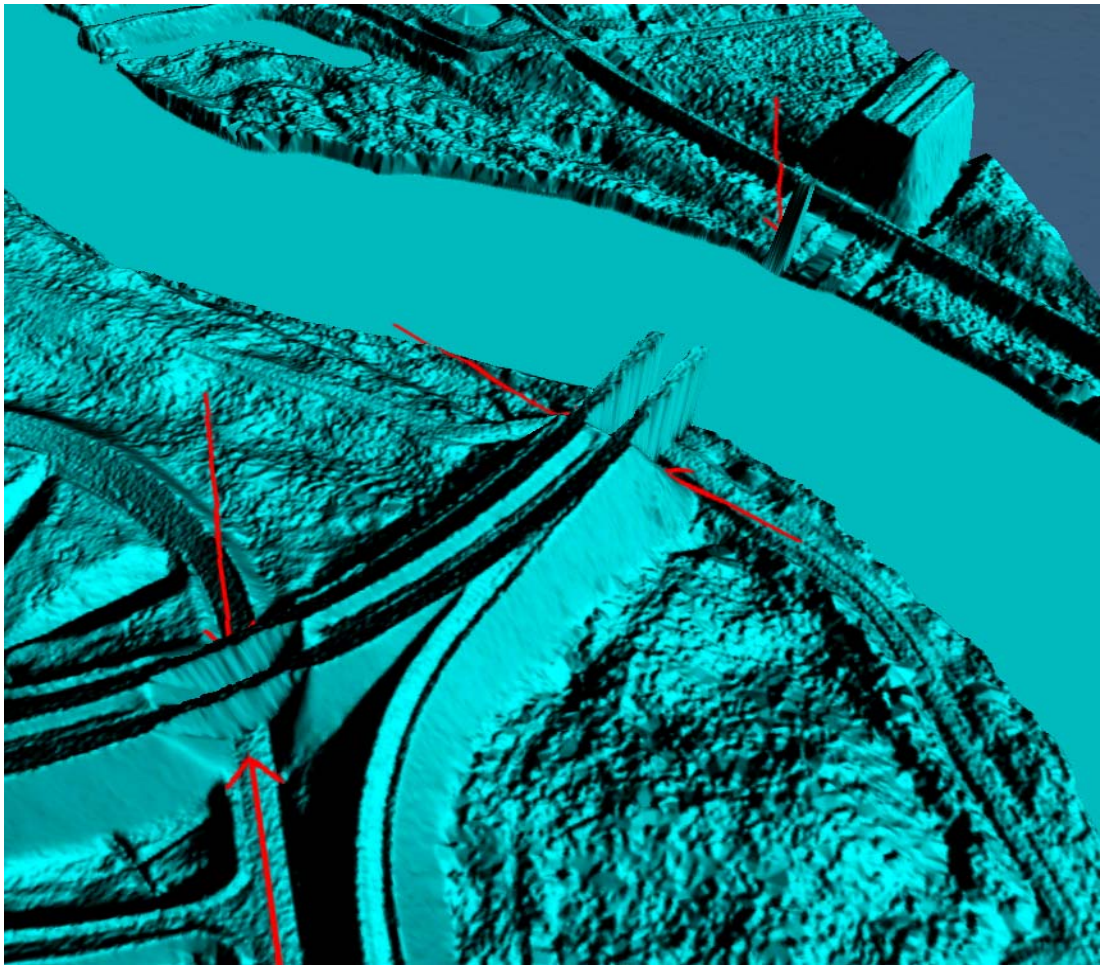
1 - building @ 30° 53' 18.0923" N, 84° 51' 51.1701" W

CORRECTED



3 of 11 - bridge/finish bridge/deck removal @ 30° 54' 24.2909" N, 84° 35' 21.3280, W 30° 54' 16.9730" N, 84° 35' 14.2050" W, and 30° 54' 14.6221" N, 84° 35' 13.0243" W

CORRECTED



Tiles recommended for NED 1/3rd: ○ Yes. ◉ No.
Tiles recommended for NED 1/9th: ○ Yes. ○ No.
Tiles recommended for NED 1 Meter: ○ Yes. ◉ No.
LAS dataset recommended for distribution: tile classified

Based on this review, the USGS accepts the DEM tiles.

End of DEM Review

Based on this review, the provided delivery Does Not Meet the Contract and/or Task Order requirements.
Additional Comments:

INTERNAL COMMENTS

END OF REPORT (v2.4.0)