

*Please provide the following information, and submit to the NOAA DM Plan Repository.*

### **Reference to Master DM Plan (if applicable)**

*As stated in Section IV, Requirement 1.3, DM Plans may be hierarchical. If this DM Plan inherits provisions from a higher-level DM Plan already submitted to the Repository, then this more-specific Plan only needs to provide information that differs from what was provided in the Master DM Plan.*

URL of higher-level DM Plan (if any) as submitted to DM Plan Repository:

## **1. General Description of Data to be Managed**

### **1.1. Name of the Data, data collection Project, or data-producing Program:**

2016 AGIO Lidar: 6 County (Fayette, Franklin, Greene, Marion, Pickens, Sumter), AL

### **1.2. Summary description of the data:**

Geographic Extent: This data set consists of the lidar point cloud, classified lidar, digital elevation model, and lidar intensity images which encompasses the six counties in the AGIO (AL Geographic Information Office) portion of the 2016 Alabama AGIO/ADECA 12 County Lidar Area of Interest (AOI). The entire 12 county project covers approximately 22,909 square kilometers or 8845 square miles. The AGIO portion covers the following counties: Fayette, Franklin, Greene, Marion, Pickens, and Sumter.

Data set Description: This data set consists of lidar point cloud LAS swath files and tiled LAS files. Each LAS file contains lidar point information, which has been calibrated, controlled, and classified. Each file represents a separate swath of lidar.

Ground Conditions: water at normal levels; no unusual inundation; no snow; leaf off

How the Withheld Points are Identified: Withheld (ignore) points were identified in the files using the standard LAS Withheld bit.

Class Code:1 - Class Item: Unclassified, Class Code:2 - Class Item: Ground, Class Code:7 - Class Item: Low Noise, Class Code:9 - Class Item: Water, Class Code:10 - Class Item: Ignored Ground, Class Code:17 - Class Item: Bridges, Class Code:18 - Class Item: High Noise

This metadata supports the data entry in the NOAA Digital Coast Data Access Viewer (DAV). For this data set, the DAV is leveraging the Entwine Point Tiles (EPT) hosted by USGS on Amazon Web Services.

### **1.3. Is this a one-time data collection, or an ongoing series of measurements?**

One-time data collection

### **1.4. Actual or planned temporal coverage of the data:**

2016-12-02 to 2017-03-15

### **1.5. Actual or planned geographic coverage of the data:**

W: -88.45, E: -87.42, N: 34.59, S: 32.29

**1.6. Type(s) of data:**

*(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)*

Model (digital)

**1.7. Data collection method(s):**

*(e.g., satellite, airplane, unmanned aerial system, radar, weather station, moored buoy, research vessel, autonomous underwater vehicle, animal tagging, manual surveys, enforcement activities, numerical model, etc.)*

**1.8. If data are from a NOAA Observing System of Record, indicate name of system:**

**1.8.1. If data are from another observing system, please specify:**

**2. Point of Contact for this Data Management Plan (author or maintainer)**

**2.1. Name:**

NOAA Office for Coastal Management (NOAA/OCM)

**2.2. Title:**

Metadata Contact

**2.3. Affiliation or facility:**

NOAA Office for Coastal Management (NOAA/OCM)

**2.4. E-mail address:**

coastal.info@noaa.gov

**2.5. Phone number:**

(843) 740-1202

**3. Responsible Party for Data Management**

*Program Managers, or their designee, shall be responsible for assuring the proper management of the data produced by their Program. Please indicate the responsible party below.*

**3.1. Name:**

**3.2. Title:**

Data Steward

**4. Resources**

*Programs must identify resources within their own budget for managing the data they produce.*

**4.1. Have resources for management of these data been identified?**

Yes

#### 4.2. Approximate percentage of the budget for these data devoted to data management (specify percentage or "unknown"):

Unknown

### 5. Data Lineage and Quality

*NOAA has issued Information Quality Guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information which it disseminates.*

#### 5.1. Processing workflow of the data from collection or acquisition to making it publicly accessible

*(describe or provide URL of description):*

Lineage Statement:

The NOAA Office for Coastal Management (OCM) ingested references to the USGS Entwine Point Tiles (EPT) hosted on Amazon Web Services (AWS) into the Digital Coast Data Access Viewer (DAV). The DAV accesses the point cloud as it resides on AWS under the usgs-lidar-public-container.

Process Steps:

- 2017-03-15 00:00:00 - Aerial Lidar Acquisition: Aerial data collection was acquired in thirty-eight (38) flight missions, using the ALS70 SN#7123/7225 at an altitude of 2300 meters AGL. During flight operations, the flight crew monitored weather and atmospheric conditions. Lidar missions were flown only when no condition existed below the sensor that would affect the collection of data. The pilot constantly monitored the aircraft course, position, pitch, roll, and yaw of the aircraft. The sensor operator monitored the sensor, the status of the GNSS constellations, and performed the first QC review during acquisition. The flight crew constantly reviewed weather and cloud locations. Data acquisition was completed on March 15, 2017. Ground Control Survey: This GNSS survey consisted of twelve (12) contiguous Alabama counties which due to geographic proximity were combined into one Area of Interest (AOI) the five hundred twenty-four (524) checkpoints were subdivided into 3 main categories: NVA, VVA, and LCP. A survey crew mobilized to the AOI to perform the RTN –RTK survey to support the aerial LiDAR collection October 20th through November 19th 2016. The RTN –RTK survey consisted of independent GNSS observations on Non-Vegetated Vertical Accuracy, Vegetated Vertical Accuracy (NVA-VVA), and LiDAR Calibration Points (LCP).
- 2017-03-16 00:00:00 - Lidar Pre-processing: Airborne GPS and IMU data were merged to develop a Smoothed Best Estimate Trajectory (SBET) of the lidar system for each lift. Lidar ranging data were initially calibrated using previous best parameters for this instrument and aircraft. Relative calibration was evaluated using advanced plane-matching analysis and parameter corrections derived. This process was repeated interactively until residual errors between overlapping swaths, across all project lifts, was reduced to 2 cm or less. Data were then block adjusted to match surveyed calibration control. Raw data NVA were checked using independently surveyed check points. Swath overage points were identified and tagged within each swath file

- 2017-03-18 00:00:00 - Initial processing of the GPS data was processed using Inertial Explorer. The solution file was generated and CloudPro software was used to generate georeferenced laser returns which were then processed in strip form allowing for the QC of the overlap between strips (lines). The data from each line were combined and automated classification routines run to determine the initial surface model. This initial surface model was then verified to the surveyed test points.
- 2017-03-25 00:00:00 - Lidar Post-Processing: The calibrated and controlled lidar swaths were processed using automatic point classification routines in TerraSolid software. These routines operate against the entire collection (all swaths, all lifts), eliminating character differences between files. Data were then distributed as virtual tiles to experienced Lidar analysts for localized automatic classification, manual editing, and peer-based QC checks. Supervisory QC monitoring of work in progress and completed editing ensured consistency of classification character and adherence to project requirements across the entire project. All classification tags are stored in the original swath files. After completion of classification and final QC approval, the NVA and VVA for the project are calculated. Sample areas for each land cover type present in the project were extracted and forwarded to the client, along with the results of the accuracy tests. Upon acceptance, the complete classified Lidar swath files were delivered to the client.
- 2017-04-05 00:00:00 - Lidar Classification: The calibrated Lidar data was run through automated classification routines and then manually checked and edited. The data was classified into the following classes: 1-unclassified\*, 2-ground, 7-low noise, 9-water, 10-ignored ground, 17-bridges, and 18-high noise
- 2017-05-15 00:00:00 - Lidar Intensity Imagery Creation: All lidar intensity imagery was created from the final calibrated and classified lidar point cloud. Intensity images were produced from all classified points and are posted to a 1 meter cell size. Intensity images were cut to match the tile index and have corresponding names to match tile names.
- 2017-06-15 00:00:00 - Hydro line Collection: Hydro break lines were compiled using the lidar intensity data and surface terrain model of the entire project area. After the collection of hydro lines all features were validated for monotonicity and vertical variance, to ensure that no points were floating above ground. The hydro break lines were encoded into the lidar surface and used to hydro-enforce/flatten all significant water bodies. These final hydro lines were then used in the production of bare Earth digital models to hydro flatten significant water bodies.
- 2017-08-10 00:00:00 - Bare-Earth DEM Creation: Bare-Earth digital elevation models (DEMs) were derived using the hydro break line and bare-earth (ground) lidar points, all DEMs were created with a grid spacing of 1 meter. The DEMs were cut to tiles of 1500 meters X 1500 meters index.
- Original point clouds in LAS/LAZ format were restructured as Entwine Point Tiles and stored on Amazon Web Services. The data were re-projected horizontally to WGS84 Web Mercator (EPSG 3857). Vertically, no changes were made to the vertical datum (NAVD88 GEOID12B; EPSG 5703).

- 2024-06-07 00:00:00 - References to the entwine point tiles and data reports were ingested into the Digital Coast Data Access Viewer. No changes to the data were made at this point. The Data Access Viewer will access the point cloud as it resides on AWS under the usgs-lidar-public container. These are the EPT files being accessed: 1. [https://s3-us-west-2.amazonaws.com/usgs-lidar-public/USGS\\_LPC\\_AL\\_AGIO\\_B1\\_2016\\_LAS\\_2019/ept.json](https://s3-us-west-2.amazonaws.com/usgs-lidar-public/USGS_LPC_AL_AGIO_B1_2016_LAS_2019/ept.json) 2. [https://s3-us-west-2.amazonaws.com/usgs-lidar-public/USGS\\_LPC\\_AL\\_AGIO\\_B2\\_2016\\_LAS\\_2019/ept.json](https://s3-us-west-2.amazonaws.com/usgs-lidar-public/USGS_LPC_AL_AGIO_B2_2016_LAS_2019/ept.json)

**5.1.1. If data at different stages of the workflow, or products derived from these data, are subject to a separate data management plan, provide reference to other plan:**

**5.2. Quality control procedures employed (describe or provide URL of description):**

## 6. Data Documentation

*The EDMC Data Documentation Procedural Directive requires that NOAA data be well documented, specifies the use of ISO 19115 and related standards for documentation of new data, and provides links to resources and tools for metadata creation and validation.*

**6.1. Does metadata comply with EDMC Data Documentation directive?**

No

**6.1.1. If metadata are non-existent or non-compliant, please explain:**

Missing/invalid information:

- 1.7. Data collection method(s)
- 3.1. Responsible Party for Data Management
- 5.2. Quality control procedures employed
- 7.1.1. If data are not available or has limitations, has a Waiver been filed?
- 7.4. Approximate delay between data collection and dissemination
- 8.3. Approximate delay between data collection and submission to an archive facility

**6.2. Name of organization or facility providing metadata hosting:**

NMFS Office of Science and Technology

**6.2.1. If service is needed for metadata hosting, please indicate:**

**6.3. URL of metadata folder or data catalog, if known:**

<https://www.fisheries.noaa.gov/inport/item/72898>

**6.4. Process for producing and maintaining metadata**

*(describe or provide URL of description):*

Metadata produced and maintained in accordance with the NOAA Data Documentation Procedural Directive: [https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC\\_PD-Data\\_Documentation\\_v1.pdf](https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC_PD-Data_Documentation_v1.pdf)

## 7. Data Access

NAO 212-15 states that access to environmental data may only be restricted when distribution is explicitly limited by law, regulation, policy (such as those applicable to personally identifiable information or protected critical infrastructure information or proprietary trade information) or by security requirements. The EDMC Data Access Procedural Directive contains specific guidance, recommends the use of open-standard, interoperable, non-proprietary web services, provides information about resources and tools to enable data access, and includes a Waiver to be submitted to justify any approach other than full, unrestricted public access.

### 7.1. Do these data comply with the Data Access directive?

Yes

#### 7.1.1. If the data are not to be made available to the public at all, or with limitations, has a Waiver (Appendix A of Data Access directive) been filed?

#### 7.1.2. If there are limitations to public data access, describe how data are protected from unauthorized access or disclosure:

### 7.2. Name of organization of facility providing data access:

NOAA Office for Coastal Management (NOAA/OCM)

#### 7.2.1. If data hosting service is needed, please indicate:

#### 7.2.2. URL of data access service, if known:

<https://coast.noaa.gov/dataviewer/#/lidar/search/where:ID=10129/details/10129>

[https://rockyweb.usgs.gov/vdelivery/Datasets/Staged/Elevation/LPC/Projects/AL\\_AGIO\\_6\\_County\\_Lidar](https://rockyweb.usgs.gov/vdelivery/Datasets/Staged/Elevation/LPC/Projects/AL_AGIO_6_County_Lidar)

### 7.3. Data access methods or services offered:

Data is available online for bulk and custom downloads.

### 7.4. Approximate delay between data collection and dissemination:

#### 7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed:

## 8. Data Preservation and Protection

The NOAA Procedure for Scientific Records Appraisal and Archive Approval describes how to identify, appraise and decide what scientific records are to be preserved in a NOAA archive.

### 8.1. Actual or planned long-term data archive location:

(Specify NCEI-MD, NCEI-CO, NCEI-NC, NCEI-MS, World Data Center (WDC) facility, Other, To Be Determined, Unable to Archive, or No Archiving Intended)

NCEI\_NC

**8.1.1. If World Data Center or Other, specify:**

**8.1.2. If To Be Determined, Unable to Archive or No Archiving Intended, explain:**

**8.2. Data storage facility prior to being sent to an archive facility (if any):**

Office for Coastal Management - Charleston, SC

**8.3. Approximate delay between data collection and submission to an archive facility:**

**8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?**

*Discuss data back-up, disaster recovery/contingency planning, and off-site data storage relevant to the data collection*

Data is backed up to cloud storage.

## **9. Additional Line Office or Staff Office Questions**

*Line and Staff Offices may extend this template by inserting additional questions in this section.*