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:

2017 Lidar: Town of York, ME

1.2. Summary description of the data:

Extent: The project area covers 76 sq. miles of the Town of York, ME. Ground Conditions During Flight: The project was flown in May 2017 during leaf off conditions and when there was no snow on the ground. The project area required LiDAR to be collected on 8 points/sq. meter equivalent to 4 points/sq. meter single swath or better and processed to meet the bare earth vertical accuracy as described with LiDAR Base Specifications v1.2. Project deliverables include: raw point cloud by swath, classified point cloud, Bare-Earth Surface (Raster DEM) 0.5m resolution, breaklines used for hydro-flattening Raw point cloud data is delivered by individual swath. All other deliverables are delivered in a 1050m x 1050m tiling scheme.

OCM noted that there are inconsistencies in the class definitions and gps times. It is left to the user to determine the usability of the data.

Classes available are:

1 - Unclassified

2 - Ground

7 - Low noise

9 - Water

10 - Ignored Ground (Breakline proximity)

12 - Overlap

In addition to these lidar point data, the bare earth Digital Elevation Models (DEM) created from the lidar point data and breakines are also available. These data are are available for custom download at the link provided in the URL section of this metadata record.

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:
2017-05-15 to 2017-05-16

1.5. Actual or planned geographic coverage of the data:
W: -70.772045, E: -70.565639, N: 43.268821, S: 43.07034

1.6. Type(s) of data:
(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)
Point Cloud (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?

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

Process Steps:

- LIDAR Preprocessing: Leica Cloud Pro Point cloud Processor software was used in the post processing of the airborne GPS and inertial data that is critical to the positioning and orientation of the sensor during all flights. Leica Cloud Pro provides the smoothed best estimate of trajectory (SBET) that is necessary for Leica ALS post processor to develop the point cloud from the LiDAR missions. Calibration of the data is done using the Leica Cloud Pro software. The .las files are imported in, prepped, and spatially indexed. Ground control points/check points are imported and a QA/QC module is run. Relative calibration was evaluated using advanced plane-matching analysis and parameter corrections. Relative calibration was repeated iteratively until errors between overlapping swaths, across all project lifts, was reduced to ±16cm on planar surfaces within the area of interest. A flight line separation report is exported to a .jp2 file. Global Mapper is used to view the .jp2 file to determine if the data is within the client's specifications. A control report was generated to assess the RMSE of check points and ensure compliance with QL1 specification. At this point this data is ready for analysis, classification, and filtering to generate a bare earth surface model in which the above ground features are removed from the data set.
- LIDAR Postprocessing: Subsequent to pre-processing, 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. The point cloud was manipulated within TerraScan and TerraModeler software was used for the automated data classification, manual cleanup, and bare earth generation from this data. Classification of the point cloud to contract specifications: 1-Unclassified, 2-Bare-earth ground, 3-Low Vegetation, 4-Medium Vegetation,5-High Vegetation, 7-Low Noise, 9-Water, 10-Ignored Ground due to breakline proximity, and 11-Withheld, 17-Bridge decks, 18-High Noise. Project specific macros were used to

classify the ground, the three types of vegetation and to remove the side overlap between parallel flight lines. Client defined vegetation height ranges are 0-0.5 m (low), 0.51 – 1.5m (medium) and 1.51m and above (high). All data was manually reviewed and any remaining artifacts removed using functionality provided by TerraScan and TerraModeler. 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 was extracted and forwarded to the client, along with the results of the accuracy tests. Class 2 LiDAR was used to create a bare earth surface model. The surface model was then used to heads-up digitize 3D breaklines of inland streams and rivers with a 30 meter nominal width and inland ponds and lakes of 8,000 sq. meters or greater surface area. All data was processed in UTM NAD83 Zone 12, Meters. All ground (ASPRS Class 2) LiDAR data inside of the collected inland breaklines were then classified to water (ASPRS Class 9) using TerraScan macro functionality. A buffer of 0.7 meter was also used around each hydro flattened breakline feature. These points were moved from ground (ASPRS Class 2) to Ignored Ground (ASPRS Class 10).
- Quality control by Aeroptic LLC completed independent QA/QC of the calibrated files, classified files and derivative products. QC module and other software was used validate the data sets for compliance with LiDAR Base Specifications v1.2. Outputs in included Data Check and Calibration Check Reports. Absolute Accuracy Reports for pre-and post-classified LiDAR date were also generated. All reports are on file with the owner.
- Breakline:The LiDAR surface model was used to heads-up digitize 3D breaklines of inland streams and rivers with a 30 meter nominal width and Inland Ponds and Lakes of 8,000 sq. meters or greater surface area. all data was processed in UTM NAD83 Zone 19, Meters. All ground (ASPRS Class 2) LiDAR data inside of the collected inland breaklines were then classified to water (ASPRS Class 9)using TerraScan macro functionality. A buffer of 0.7 meter was also used around each hydro flattened feature. These points were moved from ground (ASPRS Class 2) to Ignored Ground (ASPRS Class 10). The breaklines were used to perform the hydrologic flattening of water bodies, and gradient hydrologic flattening of double line streams. Lakes, reservoirs and ponds, at a nominal minimum size of two (2) acres or greater, were compiled as closed polygons. The closed water bodies were collected at a constant elevation. Rivers and streams, at a nominal minimum width of 30.5 meters (100 feet), were compiled in the direction of flow with both sides of the stream maintaining an equal gradient elevation.
- 2017-12-11 00:00:00 - The NOAA Office for Coastal Management (OCM) received the point and raster dem data from the Town of York, ME. The files contained lidar elevation and intensity measurements. OCM noted that certain classes (13, 17, 18) and the gps times for this data set are inconsistent. It is left to the the user to determine the usability of this data. Points that were classified as 13, 17, 18 are not included as points available to the user. The data were in UTM Zone 19 (NAD83) meters coordinates and NAVD88 (Geoid12a) elevations in meters. OCM did the following processing to the data for Digital Coast storage and provisioning purposes:

1. Converted from UTM Zone 19 (NAD83) meters coordinates to geographic coordinates 2. Converted from NAVD88 elevations to NAD83 (2011) ellipsoid elevations using Geoid12a grids 3. Copied the laz files to database and https - 2019-04-25 00:00:00 - In April 2019, after the data had been available for download from the Data Access Viewer for approximately one year, the NOAA Office for Coastal Management (OCM) determined that the elevation values in this data set were 1 to 1.5 m lower than valid elevations. After receiving the control point data from the Town of York, it appears that the data were originally in WGS84 ellipsoid heights and GEOID12a was applied to convert to NAVD88. However, GEOID12a should be applied to NAD83 ellipsoid heights, not WGS84. To correct the problem, OCM converted the WGS84 ellipsoid heights to NAD83 ellipsoid heights. The translation between ellipsoids was done as a Helmert Transform between IGS08 and NAD83(2011) using parameters t0 = 1997.0 x(t0) = 0.99343 m; y(t0) = -1.90331m; z(t0) = -0.52655 m epsilon_x(t0) = 25.91467 mas; epsilon_y(t0) = 9.42645 mas; epsilon_z(t0) = 11.59935 mas s(t0) = 1.71504 · 10-9 (unitless) taken from the IGS08-> NAD83(2011) entry in https://www.ngs.noaa.gov/CORS/coords.shtml. No temporal shift was applied. The documentation on the original ellipsoid was incomplete. Essentially we only had WGS84 in a filename for the control points. IGS08 was assumed to be an appropriate reference frame for GNSS derived coordinates.

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
- 4.1. Have resources for management of these data been identified?
- 4.2. Approximate percentage of the budget for these data devoted to data management
- 5.2. Quality control procedures employed
- 7.1. Do these data comply with the Data Access directive?
- 7.1.1. If data are not available or has limitations, has a Waiver been filed?

- 7.1.2. If there are limitations to data access, describe how data are protected
- 7.4. Approximate delay between data collection and dissemination
- 8.1. Actual or planned long-term data archive location
- 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?

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/50722

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

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?

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=6368
https://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/laz/geoid18/6368/index.html

7.3. Data access methods or services offered:
Users may access the data from two links. Custom download and bulk download options are available.

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)

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

9. Additional Line Office or Staff Office Questions

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