

*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:**

2004 USACE Puerto Rico Lidar

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

This record describes Light Detection and Ranging (Lidar) data acquired for the island of Puerto Rico. The data were acquired for

USACE, St. Louis District by 3001, Inc., between January 10 and February 8, 2004. The mission was flown at a density sufficient to support

a maximum final post spacing of 6 feet for unobscured areas. The Puerto Rico LiDAR Survey was collected under the guidance of a

Professional Mapper/Surveyor.

Original contact information:

Contact Org: 3001, Inc.

Title: LiDAR Department

Phone: (985) 661- 3001

Email: lidar@3001inc.com

### **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:**

2004-01-10 to 2004-02-08

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

W: -67.271346, E: -65.204146, N: 18.515932, S: 17.913132

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

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

**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:

- 2007-01-01 00:00:00 - The ABGPS, inertial measurement unit (IMU), and raw scans are collected during the LiDAR aerial survey. The ABGPS monitors the xyz position of the sensor and the IMU monitors the orientation. During the aerial survey laser pulses reflected from features on the ground surface are detected by the receiver optics and collected by the data logger. GPS locations are based on data collection receivers on the aircraft and base stations on the ground. The ground base stations are placed no more than 35 km radius from the flight survey area.
- 2007-01-01 00:00:00 - The ABGPS, IMU, and raw scans are integrated using proprietary software developed by the Leica Geosystems and delivered with the Leica ALS50 System. The resultant file is in a LAS binary file format. The LAS file version 1.0 format can easily transferred from one file format to another. It is a binary file format that maintains information specific to the LiDAR data (return#, intensity value, xyz, etc.). The resultant points are produced in the State Plane Puerto Rico FIPS 5200 coordinate system, with units in feet and referenced to the NAD83 horizontal datum and NAVD88 vertical datum.
- 2007-01-01 00:00:00 - The unedited data are classified to facilitate the application of the appropriate feature extraction filters. A combination of proprietary filters is applied as appropriate for the production of bare-earth digital terrain models (DTMs). Interactive editing methods are applied to those areas where it is inappropriate or impossible to use the feature extraction filters, based upon the design criteria and/or limitations of the relevant filters. These same feature extraction filters are used to produce elevation height surfaces.
- 2007-01-01 00:00:00 - Filtered and edited data are subjected to rigorous QA/QC according to the 3001 Inc. Quality Control Plan and procedures. Very briefly, a series of quantitative and visual procedures are employed to validate the accuracy and consistency of the filtered and edited data. Ground control is established by 3001, Inc. and GPS-derived ground control points (GCPs) points in various areas of dominant and prescribed land cover. These points are coded according to landcover, surface material and ground control suitability. A suitable number of points are selected for calculation of a statistically significant accuracy assessment as per the requirements of the National Standard for Spatial Data Accuracy. A spatial proximity analysis is used to select edited LiDAR data points within a specified distance of the relevant GCPs. A search radius decision rule is applied with consideration of terrain complexity, cumulative error and adequate sample size. Accuracy validation and evaluation is accomplished using proprietary software to apply relevant statistical routines for calculation of Root Mean Square Error (RMSE) and the National Standard for Spatial Data Accuracy (NSSDA) according the Federal Geographic Data Committee (FGDC) specifications.

- 2007-01-01 00:00:00 - The LiDAR mass points were delivered in ASPRS LAS 1.0 format. The header file for each dataset is complete as defined by the LAS 1.0 specification. The LAS files do not include overlap. The delivered tiles are suitable for seamless topographic data mosaics that include no "no data" areas. The names of the tiles are left padded with zeros as required to achieve a five character length and all files utilize the LAS file extension.
- 2010-12-07 00:00:00 - The NOAA Office for Coastal Management (OCM) received the files in las format. The files contained Lidar elevation and intensity measurements. The data were in projected in Puerto Rico State Plane Coordinates (FIPS 5200/ NAD83), and referenced to the orthometric datum of NAVD88 utilizing Geoid 99. Both planar and vertical units were measured in feet. OCM performed the following processing to the data to make it available within the Digital Coast: 1. The data were converted from State Plane Coordinates (NAD83; ft) to UTM coordinates (Zone 20/ NAD83; m). 2. The vertical units of the data were converted from NAVD88 (ft) to NAVD88 (m). 3. The data were re-tiled using MARS software. 4. The data were reclassified such that all classifications were set to Class 0. 5. The data were filtered to Bare Earth (Class 2) and Unclassified (Class 1) using an automated process in LASEdit. 6. The data were converted from UTM coordinates (Zone 20/NAD83) to geographic coordinates (NAD83) and ellipsoidal elevations (GRS80) using Geoid 99. 7. The LAS data were sorted by latitude and the headers were updated.

**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:

- 1.6. Type(s) of data
- 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
- 7.3. Data access methods or services offered
- 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/50051>

**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?**

**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=560>

<https://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/laz/geoid18/560/index.html>

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