

*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:**

2012 NOAA American Samoa Lidar DEM: Islands of Tutuila, Aunu'u, Ofu, Olosega, Ta'u and Rose Atoll

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

Light Detection and Ranging (LiDAR) data is remotely sensed high-resolution elevation data collected by an airborne collection

platform. This LiDAR dataset is a survey of American Samoa including the islands of Tutuila, Aunu'u, Ofu, Olosega, Ta'u and Rose Atoll.

The project area consists of approximately 75 square miles. The project design of the LiDAR data acquisition was developed

to support a nominal post spacing of 1.0 meter or better (1.0 meter GSD). GMR Aerial Surveys Inc. d/b/a Photo Science, Inc.

acquired 108 flight lines in 7 lifts between June 2012 and July 2012. This collection was for NOAA Office for Coastal Management (OCM).

The data collection was performed with a Beechcraft King Air 90 twin engine aircraft (tail number N87E) utilizing an Optech Gemini

sensor; collecting multiple return x, y, and z as well as intensity data. The data were provided to OCM, classified as:

Unclassified (1), Ground (2), Low Point (Noise) (7), Water (9), Breakline Edge (10), Overlap Unclassified (17) and Overlap Ground (18).

The classifications available for download from the Digital Coast are:

Unclassified (1), Ground (2), Low Point (Noise) 7, Water (9), Removed Ground (breakline edge) (10), and Overlap (12).

The collection conditions were cloud and fog-free between the aircraft and the ground; streams must be within their banks; and

low tide acquisition if at all possible.

Data voids within a single swath were avoided whenever possible. Acceptable void areas are caused by a water body;

areas of low near infrared (NIR) reflectivity such as asphalt or composition roofing and where appropriately filled in by another swath.

Unfortunately, during the LiDAR acquisition there were a few mountain peaks where the clouds never lifted high enough to collect LiDAR.

In order to post process the LiDAR data to meet task order specifications, Photo Science, Inc. established control points that

were used to calibrate the LiDAR to known ground locations established on Tutuila. Please see the survey report for more details on

ground control point collection at:

[https://coast.noaa.gov/htdata/lidar1\\_z/geoid12a/data/2490/supplemental/PhotoScience-AmSam\\_PostFlightAcquisitionReport\\_FINAL.pdf](https://coast.noaa.gov/htdata/lidar1_z/geoid12a/data/2490/supplemental/PhotoScience-AmSam_PostFlightAcquisitionReport_FINAL.pdf)

The dataset was developed based on a horizontal projection/datum of UTM NAD83 (PACP00), UTM Zone 2, meters. The vertical datum

used during the collection, varied by island. NAVD88 (ASVD02), meters was used for the island of Tutuila (and Aunu'u). NAVD1988

(GEOID09), meters was used for the islands of Ofu, Olosega and Tau. Rose atoll was adjusted from Ellipsoid heights to a mean

low water (MLW) datum.

**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:**

2012-06-25, 2012-06-27, 2012-07-05

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

W: -170.851652, E: -168.132827, N: -14.152104, S: -14.564143

**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:

- 2012-01-01 00:00:00 - Control Process: Photo Science, Inc. established control points on Tutuila that were used to calibrate the LiDAR to known ground locations to be used in the post processing of the LiDAR data. The points were located on relatively flat terrain on surfaces that generally consisted of grass, gravel, pavement or bare earth and were in well-defined discrete locations. Raw Flight Line Process: Applanix 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. POSPac MMS provides the smoothed best estimate of trajectory (SBET) that is necessary for Optech's post processor to develop the point cloud from the LiDAR missions. The point cloud is the mathematical three dimensional collection of all returns from all laser pulses as determined from the aerial mission. 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. The point cloud was manipulated within the Optech software; GeoCue, TerraScan, and TerraModeler software was used for the automated data classification, manual cleanup, and bare earth generation from this data. Project specific macros were used to classify the ground and to remove the side overlap between parallel flight lines. All data were manually reviewed and any remaining artifacts removed using functionality provided by TerraScan and TerraModeler. Classified LAS Process: All ground (ASPRS Class 2) LiDAR data inside of the Lake Pond and Double Line Drain hydro flattening breaklines were then classified to water (ASPRS Class 9) using TerraScan macro functionality. A buffer of 1 meter was also used around each hydro flattened feature to classify these ground (ASPRS Class 2) points to ignored ground (ASPRS Class 10). All Lake Pond Island and Double Line Drain Island features were checked to ensure that the ground (ASPRS Class 2) were reclassified to the correct classification after the automated classification was completed. A description of each deliverable class can be found below: Class 1 - Unclassified points; includes non-ground points such as buildings and vegetation. Class 2 - Ground points Class 7 - Noise points; includes all high and low noise points that do not represent legitimate features. Class 9 - Water points Class 10 - Ignored Ground points; includes all ground points that fall within a 1 meter buffer around any hydro breakline feature. Classifying these points aids in the hydro flattened DEM creation. Class 17 - Overlap Unclassified points; Overlap points that represent non-ground features. Class 18 - Overlap Ground points; Overlap points that represent the ground surface. These points were classified based on their x,y and z proximity to the Class 2 ground points. No manual cleanup was performed on these points. All overlap data was processed through automated functionality provided by TerraScan to classify the overlapping flight line data to class. Data was then run through additional macros to ensure deliverable classification levels matching the ASPRS LAS Version 1.2 Classification structure. GeoCue functionality was then used to ensure correct LAS Versioning. In-house software was used as a final QA/QC check to provide LAS Analysis of the delivered tiles. QA/QC checks were performed on a per tile level to verify final classification metrics and full LAS header information.

- 2018-06-13 00:00:00 - The NOAA Office for Coastal Management (OCM) received the files in ERDAS img format. Files were converted to cloud optimized GeoTiff format using GDAL.

**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
- 7.4. 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/52876>

#### 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=8543>

[https://coast.noaa.gov/htdata/raster2/elevation/AmSam\\_DEM\\_2012\\_8543](https://coast.noaa.gov/htdata/raster2/elevation/AmSam_DEM_2012_8543)

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

This data can be obtained on-line at the following URL:

<https://coast.noaa.gov/dataviewer/#/lidar/search/where:ID=8543>

This data set is dynamically generated based on user-specified parameters.

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#### 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.*