

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:

2008 City of Baltimore Lidar

1.2. Summary description of the data:

In the spring of 2008, the City of Baltimore expressed an interest to upgrade the City GIS Database with mapping quality airborne LiDAR data.

The City of Baltimore currently had in place a contract for mapping GIS/services with the KCI/Sanborn Joint Venture Partnership, L.L.C. under

Project 1051. The City of Baltimore issued Change Order #1 on on Project 1051 for the LiDAR acquisition and processing. KCI/Sanborn acquired

the LiDAR data over the City of Baltimore (approximately 90 square miles) during one long mission on 15 April 2008.

A Leica Airborne Airborne Laser Scanner Model ALS 50 was used in a Sanborn Aero Commander 500B (Registration N6172X) to acquire the data. The

airborne mission was flown 15 April 2008. The LiDAR system acquired calibration data the same day by conducting flight passes over a known

ground surface before and the LiDAR mission. During final data processing, the calibration parameters were used in the final post-processing

software.

The acquired LiDAR data were processed to obtain the following deliverables:

-DEMs of first and last returns and bare earth (all point data)

-LAS format data in a tile grid provided by the City/KCI

-Gridded DEM in ESRI format (Arc Binary Grid -Arc/INFO Lattice) produced from Bare Earth Mass Points in 1-meter resolution (Grid size)

-Associated FGDC compliant metadata in XML format

The project specifications called for the LiDAR survey to comply with industry standard

FEMA guidelines for accuracy. The FEMA requirement for this type of mapping calls for vertical errors not to exceed 0.185 meter (0.61 feet) RMSE when compared with ground check points over open flat terrain and 0.370 meter (1.22 feet) for other types of terrain. This accuracy requirement was comfortably met with comparing LiDAR derived elevations against 50 ground control check points provided by KCI Technologies. These control points were photo control points used as part of the photogrammetric mapping project and independent LiDAR checkpoints surveyed by KCI and Mercado after the data was delivered. The RMSE error observed was 0.058 meter (0.189 feet) over all 50 check points.

Original contact information:

Contact Name: Josh Nimetz

Contact Org: KCI/Sanborn Joint Venture Partnership, L.L.C. (hereafter referred to as KCI/Sanborn)

Title: LiDAR Production Manager

Phone: 719-264-5513

Email: jnimetz@sanborn.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:

2008-04-15

1.5. Actual or planned geographic coverage of the data:

W: -76.713701, E: -76.526548, N: 39.372703, S: 39.195787

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:

- 2008-04-15 00:00:00 - Using a Leica Geosystems ALS50 Light Detection And Ranging (LiDAR) system, 29 flight lines of an average density of 1.0 meter ground sample distance, data were collected over areas in Baltimore City, MD (approximately 90

square miles). Multiple returns were recorded for each laser pulse along with an intensity value for each return. The data acquisition occurred in 1 mission on April 15, 2008. During the LIDAR campaign, the Sanborn field crew conducted a GPS field survey to establish final coordinates of the ground base stations for final processing of the base-remote GPS solutions. Airborne GPS data was differentially processed and integrated with the post processed IMU data to derive a Smoothed Best Estimate of Trajectory (SBET). The SBET was used to reduce the LiDAR slant range measurements to a raw reflective surface for each flight line. The overlap between flight lines was removed to provide a homogeneous coverage, and the coverage was classified to extract a bare earth digital elevation model (DEM). Airborne GPS is differentially processed using the GrafNAV V7.50 software by Waypoint Consulting of Calgary, Alberta, Canada. The PDOP and distance separation is as follows: The classification and quality control (QC) of LiDAR data is carried out using TerraScan software by Terrasolid Limited of Helinski, Finland. IMU data provides information concerning roll, pitch and yaw of collection platform during collection event. IMU information allows the pulse vector to be properly placed in 3D space allowing the distance from the aircraft reference point to be properly positioned on the elevation model surface. The IMU data is processed using the PosPac V4.2 software by Applanix Corporation of Richmond Hill, Ontario, Canada. The reflective surface is derived using the ALS Post Processor software by Leica Geosystems GIS & Mapping Division of Atlanta, Georgia.

- 2012-07-01 00:00:00 - The NOAA Office for Coastal Management (OCM) received data in LAS v1.1 format. The files contained LiDAR elevation and intensity measurements. The data were received in state plane coordinates (Maryland; NAD83) and vertically referenced to NAVD88 using the Geoid03 model. The vertical units of data were feet. The data were classified according to ASPRS LAS classification scheme (0 = never classified, 1 = unclassified, 2 = ground 3 = low vegetation, 7 = noise, 12 = overlap). OCM performed the following processing for data storage and Digital Coast provisioning purposes: 1. The data were converted from state plane coordinates to geographic coordinates (NAD83). 2. The data were converted from orthometric heights to ellipsoidal heights (GRS80) using Geoid 03. 3. The vertical units of the data were changed from feet to meters. 2. 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
- 7.4. 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/49785>

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=1199>

<https://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/laz/geoid18/1199/index.html>

7.3. Data access methods or services offered:

This data can be obtained on-line at the following URL: <https://coast.noaa.gov/dataviewer/>;

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.