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:
2010 FEMA Lidar: Racine County, WI

1.2. Summary description of the data:
This task order is for planning, acquisition, processing, and derivative products of lidar data for Starr Project number 400000096. FEMA Task Order number is HSFE05-11-J-0090. The area of data acquisition is for the entire county of Racine County in Wisconsin. The collection area consists of 332 square miles and was captured to the "Highest" vertical accuracy requirement.

Specifications listed below are based on FEMA Procedure Memorandum No. 61 Standards for LiDAR and Other High Quality Digital Topography. This collection specification is the equivalent of a 2 foot contour accuracy, and was collected with a nominal pulse spacing of 1.3 meters. The airborne GPS and IMU data were processed immediately following each mission. In addition, a sample of the LIDAR data was post-processed at the completion of each mission and the data was reviewed to ensure planned data quality and coverage.

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:
2010-03-18

1.5. Actual or planned geographic coverage of the data:
W: -88.308, E: -87.757, N: 42.844, S: 42.61

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):

Process Steps:

- 2013-12-20 00:00:00 - Ground based survey points were compared to the LiDAR airborne data points.   Two hundred twenty-three survey points were collected throughout Racine County in various ground cover categories.

- 2013-12-21 00:00:00 - The LiDAR data was captured using Quantum Spatial's twin-engine AeroCommander 500 or a Cessna 320 with an Optech ALTM Gemini LiDAR system. This system consists of a Airborne Global Position System (ABGPS), inertial measurement unit (IMU), and laser sensor. The ABGPS collects XYZ coordinates of the laser sensor and the IMU calibrates the orientation of the aircraft. During flight, laser pulses are reflected from features on the surface and the system collects this data. The acquired LiDAR data receives a preliminary review to assure that complete coverage is obtained and to ensure the absence of data gaps.
Acquisition parameters: 1. Scanner - Optech ALTM Gemini LIDAR 2. Flight Height - 1700 meters above ground level 3. Swath Width - 44 degrees 4. Sidelap - 55% 5. Nominal Point Spacing - 1.3m   GPS and IMU processing parameters: 1. Processing Programs and version - Applanix POSPac, version 4.4 2. IMU processing monitored for consistency and smoothness - Yes.

- 2013-12-30 00:00:00 - Point Cloud Processing: 1. Program and version - Optech ASDA 2. Horizontal Datum - NAD83 3. Horizontal Coordinates - UTM zone 16N, in meters. 4. Vertical Datum - NAVD88   5. Geoid Model used to reduce satellite derived elevations to orthometric heights - Geoid09 (Meters). LIDAR Processing: 1. Processing Programs and versions - TerraSolid TerraScan (version 013.020), TerraModeler (version 013.005) and TerraMatch (version 013.009), Intergraph MicroStation (version 08.05.02.70), and GeoCue (version 2013.1.45.1) GlobalMapper (version 13.2.1). 2. Point Cloud data is imported to TerraScan in a Microstation V8 (V) CAD environment on a specified 1500m by 1500m tiling scheme 3. Analyze the data for overall completeness and consistency. This is to ensure that there are no voids in the data collection.   4. QC (Quality Control) for calibration errors in the dataset. This is accomplished by sampling the data collected accross all flight lines and classify the individual lines to ground. The software will use the ground-classified lines to compute corrections (Heading, Pitch, Roll, and Scale).   5. Orientation corrections (i.e. Calibration corrections) are then applied (if needed) to the entire dataset.   6. Automatic ground classification is performed using algorithms with customized parameters to best fit the project area. Several areas of varying relief and planimetric features were inspected to verify the final ground surface.   7. Quantum Spatial provided Quality Assurance and Quality Control (QAQC) data for this project. Quantum Spatial processed QA/QC points in 'open terrian' land cover category that were used to test the accuracy of the LiDAR ground surface. TerraScan's Output Control Report (OCR) was used to compare the QAQC data to the LIDAR data. This routine searches the LIDAR dataset by X and Y coordinate, finds the closest LIDAR point and compares the vertical (Z) values to the known data collected in the field. Based on the QAQC data, a bias adjustment was determined,

and the results were applied to the LIDAR data.   8. Once the automatic processing and testing of LiDAR is complete, Quantum Spatial meticulously reviews the generated bare-earth surface data to insure that proper classification was achieved as part of a Quality Control process. Point classification follows the standard established by The American Society for Photogrammetry and Remote Sensing (ASPRS).   Class 1 Unclassified   Code 2 Ground   Code 7 Low Points   Code 8 Model Key Points   Code 9 Water   Code 10 Ignored Ground   Code 12 Overlap   9. Linework is created of water bodies and drainage. A routine is used to drape line work following monotonic elevation change of drainage. 10. Final deliverables are generated and output to a client specified PLSS tiling scheme.
- 2023-11-16 00:00:00 - Data were retrieved from the Wisconsin View website in LAS format, NAD83(2007) UTM 16N projection with NAVD88 (Geoid09) vertical meters. The data were converted to geographic projection on the ellipsoid (EPSG:4893) in the cloud optimized point cloud (COPC) version of LAZ format and ingested into the Digital Coast Data Access Viewer. (Citation: Point cloud data)

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/71418

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?
  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://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/entwine/geoid18/9978/ept.json
  https://coast.noaa.gov/dataviewer/#/lidar/search/where:ID=9978/details/9978
  https://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/laz/geoid18/9978/index.html

7.3. Data access methods or services offered:
  Data is available online for bulk or 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.