

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:

2014 ILHMP Lidar: Madison County, IL

### 1.2. Summary description of the data:

This dataset is LiDAR point cloud data and derivative models of Madison County, Illinois. Madison County is approximately 904 square miles in south western Illinois bordering the Mississippi River. Data was collected at a nominal pulse spacing (NPS) of 0.7 meter.

Data acquisition, processing and assessment is compliant with procedures and methods stated in U.S. Geological Survey National Geospatial Program LiDAR Base Specification Version 1.0 and Federal Emergency Management Agency Procedure Memorandum 61.

This dataset consists of LiDAR LAS swath files and tiled LAS files. Tiled LAS files contain LiDAR point information which has been calibrated, controlled, and classified. Tiled LAS and derived data models are named according to the coordinates at the south west corner of the tile.

Quantum Spatial Project No: 1140309

This metadata record supports the data entry in the NOAA Digital Coast Data Access Viewer (DAV). For this data set, the DAV is leveraging the Entwine Point Tiles (EPT) hosted by USGS on Amazon Web Services.

### 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:

2014-03-23, 2014-03-26, 2014-03-30, 2014-03-31

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

W: -90.3, E: -89.56, N: 39.02, S: 38.62

### 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):*

Lineage Statement:

The NOAA Office for Coastal Management (OCM) ingested references to the USGS Entwine Point Tile (EPT) hosted on Amazon Web Services (AWS) into the Digital Coast Data Access Viewer (DAV). The DAV accesses the point cloud as it resides on AWS under the usgs-lidar-public-container.

Process Steps:

- 2014-06-22 00:00:00 - Ground based survey points are collected to be compared as check points with airborne data points. Measurements are recorded by Quantum Spatial for use in establishment of the LiDAR point set to ground elevations (indexing). Additional ground survey points are made in representative ground cover categories to provide for vertical accuracy assessment of LiDAR data or derivative models.
- 2014-04-01 00:00:00 - Airborne LiDAR collection survey is conducted using fixed wing aircraft equipped with a LiDAR scanning system following specifications of the flight plan. Acquisition flights are planned to assure full coverage of the project area in consideration of local surface terrains. Flight plan is accessed by the aircraft navigation system to achieve predetermined flight specifications. The LiDAR sensor is calibrated prior to each mission. GPS and IMU data are collected during LiDAR acquisition to aid in LiDAR swath calibration.
- 2014-05-01 00:00:00 - Airborne GPS and IMU data are merged to develop a Single Best Estimate Trajectory for each swath. LiDAR data are calibrated using previous best parameters for this instrument and aircraft. Relative calibration is evaluated using plane-matching analysis and parameter corrections are derived. This is repeated iteratively until residual errors between overlapping swaths, across all project lifts, is reduced to acceptable levels. Data are block adjusted to surveyed control points. Raw FVA is checked using surveyed ground checkpoints. Swath overage points are identified and tagged within each swath. Overage points may be classed as Overlap (12) or classed to Non-ground (1).
- 2014-06-01 00:00:00 - Points in the calibrated swaths are classified using analysis routines and proprietary software. The routines analyze information on all points to establish appropriate Class designations. Classified LiDAR is inspected on a per tile basis for local classification, manual editing, and peer-based QC checks. The bare earth surface is manually reviewed to ensure correct classification of Class 2 (Ground) points. After the bare-earth surface is finalized, it is used to guide hydro-breaklines generation through heads-up digitization. All data was manually reviewed and any remaining artifacts removed using controls and tools in TerraScan and TerraModeler. Global Mapper is used as a final check of the bare earth dataset. GeoCue creates the deliverable industry-standard LAS files for both

the All Point Cloud Data and the Bare Earth. All classification tags are stored in the original swath files. Classifications follow ASPRS guidelines: Non-ground (Class 1), Ground (Class 2), Low Vegetation (Class 3), Medium Vegetation (Class 4), High Vegetation (Class 5), Buildings (Class 6), Noise/Low Points (Class 7), Model Key Point (Class 8) Water (Class 9), Ignored Ground/Breakline proximity (Class 10) After completion of classification and final QC approval, the FVA, SVAs, and CVA for the project are calculated. Vertical accuracy is determined by comparison of elevation of the ground survey check points to elevations of DEMs derived from the LiDAR Ground points. Differences are calculated to establish a RSME, FVA, CVA and SVA.

- 2014-06-01 00:00:00 - Ground (class 2) LiDAR is used to create a bare earth surface model. The surface model is then used to heads-up digitize 2D breaklines of rivers of specific width and lakes of specific size. Breaklines delineate the margin where surface water and ground meet. Elevation values are assigned to lakes in accordance with ground data where the water and ground surfaces meet. Elevation values are assigned to rivers of adequate width and are created to depict the flow of the drainage; following the change in ground elevation at the edge of the drainage.

All ground (Class 2) LiDAR data inside of the collected inland breaklines are classified to water (Class 9) using TerraScan macro functionality. A buffer of 1 meter is maintained along breaklines of each hydro flattened feature. Points within this one meter buffer are classed from ground (Class 2) to Ignored Ground (Class 10). The breakline files are then translated to ESRI Shapefile format using ESRI conversion tools.

- 2014-06-01 00:00:00 - Ground (Class 2) points in conjunction with the hydro breaklines are used to generate DEM files in ASCII format on a per tile basis with hydro Breaklines in place to delineate surface water and with neighboring tile data available to minimize seams between tiles. The DEM are converted to ESRI Grid format. Resulting DEM are reviewed in ArcMap for adherence, completeness and any anomalies or inconsistencies.

- 2014-06-01 00:00:00 - On a per tile basis, data files and Triangulated Integrated Network (TIN) files are generated by processing finalized Ground (class 2) LiDAR points with hydro breaklines delineating surface water through a Geopak macro. Subsequent files are reviewed for adherence and completeness to the data and tile layout used during the creation process.

- Original point clouds in LAS/LAZ format were restructured as Entwine Point Tiles and stored on Amazon Web Services. The data were re-projected horizontally to WGS84 web mercator (EPSG 3857) and the vertical units were converted to meters (NAVD88 GEOID12A).

- 2024-05-30 00:00:00 - The NOAA Office for Coastal Management (OCM) created references to the Entwine Point Tile (EPT) that was ingested into the NOAA Digital Coast Data Access Viewer (DAV). No changes were made to the data. The DAV will access the point cloud as it resides on Amazon Web Services (AWS) under the usgs-lidar-public container. This is the AWS URL being accessed: [https://s3-us-west-2.amazonaws.com/usgs-lidar-public/USGS\\_LPC\\_IL\\_MadisonCo\\_2014\\_LAS\\_2016/ept.json](https://s3-us-west-2.amazonaws.com/usgs-lidar-public/USGS_LPC_IL_MadisonCo_2014_LAS_2016/ept.json)

**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/72702>

**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?**

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://coast.noaa.gov/dataviewer/#/lidar/search/where:ID=10124/details/10124>

[https://rockyweb.usgs.gov/vdelivery/Datasets/Staged/Elevation/LPC/Projects/IL\\_5\\_County\\_2014\\_15/IL](https://rockyweb.usgs.gov/vdelivery/Datasets/Staged/Elevation/LPC/Projects/IL_5_County_2014_15/IL)

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

Data is available online for bulk and 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.*