

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:

2013 Puget Sound LiDAR Consortium (PSLC) Topographic LiDAR: Nooksack

1.2. Summary description of the data:

In July 2012, WSI (Watershed Sciences, Inc.) was contracted by the Puget Sound LiDAR Consortium (PSLC) to collect Light Detection and Ranging (LiDAR) data on a 5-year cycle for the Nooksack River Basin LiDAR site in the Northwest Washington. Data were collected to aid the Tribe in assessing the topographic and geophysical properties of the study area to support restoration efforts.

This data delivery and report covers the entire project area, including the portion of the Middle Fork Nooksack River which was delayed due to snow conditions. It describes the LiDAR data and documents data acquisition procedures, processing methods, and results of all accuracy assessments. The Nooksack River Basin project covers 116,490 acres, collected January 12, 13 and 15, March 3, April 1, 3 and 15, & June 16 and 28 in 2013. This dataset contains project deliveries 1 and 2, the average first-return density for the LiDAR data for the Nooksack River Basin LiDAR was 9.40 points/m² calculated to 0.328 nominal point/pulse spacing.

1.3. Is this a one-time data collection, or an ongoing series of measurements?

1.4. Actual or planned temporal coverage of the data:

1.5. Actual or planned geographic coverage of the data:

W: -122.6964482, E: -121.8071416, N: 48.9642487, S: 48.5929087

1.6. Type(s) of data:

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

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:

- Planning. In preparation for data collection, WSI reviewed the project area using Google Earth, and flightlines were developed using a combination of specialized software. Careful planning by acquisition staff entailed adapting the pulse rate, flight altitude, scan angle, and ground speed to ensure complete coverage of the study area at the target point density of 9.40 points per square meter (0.87 pulses/square foot). Efforts are taken to optimize flight paths by minimizing flight times while meeting all accuracy specifications. Factors such as satellite constellation availability and weather windows must be considered during the planning stage. Any weather hazards or conditions affecting the flight were continuously monitored due to their potential impact on the daily success of airborne and ground operations. In addition, a variety of logistical considerations required review including private property access, potential airspace restrictions, and availability of company resources (both staff and equipment). Special care was taken to acquire the tidal flats at low tide where possible. Acquisition on the upper reach of the Middle Fork Nooksack study area was postponed due to snow. Full acquisition of the entire area was completed on July 28, 2013.
- LiDAR Processing Steps: 1. Resolve kinematic corrections for aircraft position data using kinematic aircraft GPS and static ground GPS data. Software - Waypoint GPS v. 8.3 Trimble Business Center v.3.00 Geographic Calculator 20132. Develop a smoothed best estimate of trajectory (SBET) file that blends post-processed aircraft position with attitude data. Sensor head position and attitude are calculated throughout the survey. The SBET data are used extensively for laser point processing. Software - IPAS TC v.3.13. Calculate laser point position by associating SBET position to each laser point return time, scan angle, intensity, etc. Create raw laser point cloud data for the entire survey in *.las (ASPRS v. 1.2) format. Data are converted to orthometric elevations (NAVD88) by applying a Geoid12 correction. Software - ALS Post Processing Software v.2.744. Import raw laser points into manageable blocks (less than 500 MB) to perform manual relative accuracy calibration and filter erroneous points. Ground points are then classified for individual flight lines (to be used for relative accuracy testing and calibration). Software - TerraScan v.13.0085. Using ground classified points per each flight line, the relative accuracy is tested. Automated line-to-line calibrations are then performed for system attitude parameters (pitch, roll, heading), mirror flex (scale) and GPS/IMU drift. Calibrations are calculated on ground classified points from paired flight lines and results are applied to all points in a flight line. Every flight line is used for relative accuracy calibration. Software - TerraMatch v.13.0026. Classify resulting data to ground and other client designated ASPRS classifications (Table 7). Assess statistical absolute accuracy via direct comparison of ground classified points to ground RTK survey data. Software - TerraScan v.13.008 TerraModeler v.13.0027. Generate bare earth models as triangulated surfaces.

Highest hit models were created as a surface expression of all classified points (excluding the noise and withheld classes). All surface models were exported as ESRI grids at a 3-foot pixel resolution. Software - TerraScan v.13.008 ArcMap v. 10.1 TerraModeler v.13.002

- 2014-01-14 00:00:00 - The NOAA Office for Coastal Management (OCM) downloaded topographic files in LAZ format from PSLC's website. The files contained lidar easting, northing, elevation, intensity, return number, class, scan angle and GPS time measurements. Entiat data were received in Washington State Plane North, 4601 (feet) and referenced to NAVD88 (feet). OCM performed the following processing for data storage and Digital Coast provisioning purposes: 1. The All-Return LAZ files were cleared of variable lengths records. 2. The All-Return LAZ files were converted from a Projected Coordinate System (State Plane 4601) to a Geographic Coordinate system (NAD83). 3. The All-Return LAZ files were converted from NAVD88 to ellipsoidal heights using Geoid03.

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:

- 1.3. Is this a one-time data collection, or an ongoing series of measurements?
- 1.4. Actual or planned temporal coverage of the 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/50172>

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=2615>

<https://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/laz/geoid18/2615/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/#/lidar/search/where:ID=2615>;

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.