

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:**

2020 USGS Topobathy Lidar: Nisqually River Basin, WA

1.2. Summary description of the data:

Product: Classified LAS 1.4 files, formatted to 85 individual 1,000m x 1,000m covering the Nisqually River Basin 2020 project area.

Geographic Extent: This dataset and derived products encompass an area covering approximately 13,189 acres of Western Washington.

Dataset Description: The Nisqually River Basin 2020 Lidar project called for the planning, acquisition, and processing of topobathy Lidar data collected to Quality Level 1 (QL1) standards. Project specifications are based on the U.S. Geological Survey National Geospatial Program LIDAR Base Specification, Version 2.1. The data was developed based on the NAD83 2011 horizontal datum and the NAVD88 Geoid 18 vertical datum. Data was projected in UTM Zone 10. Lidar data was delivered as calibrated and classified LAS 1.4 files. Non-Vegetated Vertical Accuracy (NVA) was assessed using 22 check points located on bare earth in clear, unobstructed areas. Submerged Topography accuracy was assessed using 86 check points collected as feasible in depths up to 1m. Vegetated Vertical Accuracy (VVA) was assessed using 14 check points in tall grass, forest, and shrubland landcover types. Single swath nominal pulse spacing (NPS) was designed to be 9.5 points per meter squared at nadir. Aggregate Nominal Pulse Spacing (ANPS) was calculated to be 36.59 points per meter squared using all valid first return points. Derived products include: Intensity Imagery, Topbathymetric Digital Elevation Models (DEMs), Hydro-flattened Bare Earth Digital Elevation Models (DEMs), Highest Hit Digital Surface Models (DSMs), 3D waters edge breaklines, and a bathymetric coverage shape.

Ground Condition: Ground condition was free of snow and acquisition occurred free of smoke, fog and cloud cover.

This metadata 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:

2020-11-08, 2020-12-22

1.5. Actual or planned geographic coverage of the data:

W: -122.768716, E: -122.655393, N: 47.11291, S: 46.989727

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 Nisqually River Basin lidar was ingested into the Data Access Viewer for custom product generation by leveraging USGS hosted Entwine Point Tiles.

Process Steps:

- 2021-03-30 00:00:00 - Lidar Pre-Processing:1. Review flight lines and data to ensure complete coverage of the study area and positional accuracy of the laser points.2. Resolve kinematic corrections for aircraft position data using kinematic aircraft GPS and static ground GPS data.3. Develop a smoothed best estimate of trajectory (SBET) file that blends post-processed aircraft position with sensor head position and attitude recorded throughout the survey.4. 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 format. Convert data to orthometric elevations by applying a Geoid 18 correction.5. Apply refraction correct to bathymetric returns by flightline.6. Import raw laser points into manageable blocks to perform manual relative accuracy calibration and filter erroneous points. Classify ground points for individual flight lines.7. Using ground classified points per each flight line, test the relative accuracy. Perform automated line-to-line calibrations for system attitude parameters (pitch, roll, heading), mirror flex (scale) and GPS/IMU drift. Calculate calibrations on ground classified points from paired flight lines and apply results to all points in a flight line. Use every flight line for relative accuracy calibration.8. Adjust the point cloud by comparing ground classified points to supplemental ground control points.
- 2021-03-30 00:00:00 - Lidar Post-Processing:1. Classify data to ground and other client designated classifications using proprietary classification algorithms.2. Manually QC data classification.3. After completion of classification and final QC approval, calculate final NVA, VVA, and density information for the project using

ground control quality check points.

- 2021-03-30 00:00:00 - Breaklines: Water boundary polygons were developed using an algorithm which weights lidar-derived slopes, intensities, and return densities to detect the water's edge. The water's edge was then manually reviewed and edited as necessary.
- 2021-03-30 00:00:00 - Bathymetric Coverage Shape: Insufficiently mapped areas were identified by triangulating bathymetric bottom points with an edge length maximum of 4.56 meters. This shape was used to clip the final topobathymetric DEMs to avoid interpolation over areas lacking bathymetric returns.
- 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). Vertically, the data were converted to meters and no changes were made to the vertical datum (NAVD88 GEOID18; EPSG 5703).
- 2022-05-02 00:00:00 - References to the entwine point tiles and data reports were ingested into the Digital Coast Data Access Viewer. No changes to the data were made at this point. The Data Access Viewer will access the point cloud as it resides on AWS under the usgs-lidar-public container.

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/67100>

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://coast.noaa.gov/dataviewer/#/lidar/search/where:ID=9493/details/9493>

https://rockyweb.usgs.gov/vdelivery/Datasets/Staged/Elevation/LPC/Projects/WA_Nisqually_TopoBath

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_CO

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 tape and 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.