

*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 USACE NCMP Topobathy Lidar: California

### **1.2. Summary description of the data:**

These files were collected by Fugro and contain topographic data collected with a RIEGL VQ-480 airborne lidar system over the California coastline. Data coverage generally extends along the shoreline from the waterline to 500 meters onshore. The VQ-480 sensor configuration produced a pulse repetition rate of 200 kHz at near-infrared laser wavelength. VQ-480 data was collected concurrently with SHOALS-1000 bathymetric lidar sensor; the line scheme flown was planned for the narrower scan swath of the SHOALS sensor (230 m) therefore VQ-480 data presents overlap that exceeded over 200% (460 m) of area coverage and point density requirements. Quality assessments allowed to keep best quality flight line data and discard redundant or flight lines of lesser quality. Native lidar data are not generally in a format accessible to most Geographical Information Systems (GIS). Specialized in-house and commercial software packages are used to process the native lidar data into 3-dimensional positions that can be exported to standard formats and imported into GIS software for visualization and further analysis. Each flight line lidar data containing the XYZ points were exported to ASPRS LAS format. The data file naming convention is based on a standardized structure. LAS format is version 1.2. The files also contain airborne bathymetric lidar data collected with the SHOALS-1000T sensor over the California coast. Data coverage generally extends along the coastline from the waterline to 1,000 meters offshore or to laser depth extinction. The SHOALS system has a laser pulse repetition rate of 2.5 kHz at 532 nm (green wavelength). SHOALS lidar data are contained in two basic file types: HOF and INH. HOF files (Hydrographic Output File) contains the XYZ and supporting information for all shots within a flight line; the INH files (Hydrographic Input File) contains information describing the flight line and the digitized laser shot data (waveforms). These data formats, proprietary of Optech, Inc. (Canada), are commonly used in software packages that include SHOALS-GCS and CZMIL-HydroFusion. The Las files were then classified with class 1 being unclassified, 2 being ground and 29 valid bathymetric data in Terrascan. The 3-D position data are used to generate a series of LAS file products, with each covering approximately 5 kilometers of shoreline.

In addition to the lidar point data, topobathy bare earth Digital Elevation Models (DEMs), created from the lidar point data are also available. These products have not been reviewed by the NOAA Office for Coastal Management (OCM) and any conclusions drawn from the analysis of this information are not the responsibility of NOAA or OCM. These data are available for download here: <https://coast.noaa.gov/dataviewer/#/lidar/search/where:ID=5189>

DEMs that were created from all classes of points (1, 2, 29) at a 1 meter grid size are available by request via email at: [coastal.info@noaa.gov](mailto:coastal.info@noaa.gov).

Original contact information:

Contact Org: JALBTCX

Title: Data Production Manager

Phone: 228-252-1131

Email: [JALBTCX@usace.army.mil](mailto:JALBTCX@usace.army.mil)

**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:**

2014-09-08 to 2014-10-05

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

W: -122.529587, E: -117.087133, N: 37.827131, S: 32.533892

**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:

- 2014-09-08 00:00:00 - The topographic lidar data were collected using the RIEGL VQ-480 lidar system, operated by Fugro Pelagos through contract. The system collects topographic lidar data at maximum pulse rate of 200 kHz in a near-infrared wavelength producing point cloud density between 2.5-2.8 pts/sq m. Aircraft position, velocity and acceleration information are collected a Applanix POS AV 510 sensor. All logged raw data were transferred to the office and processed in RIEGL RiPROCESS software v1.6.1. Aircraft position data are processed using Applanix POSpac MMS v6.2.2 software and the results combined with the lidar data to produce 3-D positions for each lidar shot. 3D point clouds are inspected in RiProcess software and scan adjustments performed after careful scrutiny. The 200%

redundant coverage achieved with the VQ-480 flight plan helped in the data validation efforts by removing scan lines that presented excessive mismatch and misalignments. Upon processing and export to LAS format, QA/QC is performed with QPS Fledermaus v7.3.3 software. These bathymetric lidar data were collected using the SHOALS-1000T bathymetric lidar system. It is owned by Fugro Pelagos Inc. and operated through contract. The system collects bathymetric lidar data at 2.5 kHz and RGB imagery at 1 Hz, producing point clouds with an approximate spot spacing of 4.0-5.0 m x 2.5 m. Aircraft position, velocity and acceleration information are collected through a POS AV 510 sensor. All logged raw data streams are transferred to the office for downloading and processing in SHOALS GCS v 6.32 software. Aircraft position data are processed using Applanix POSpac MMS v 6.2.2 software and the results combined with the sensor data to produce 3-D positions for each lidar shot on the NAD83(2011) reference datum. Upon inspection and QA/QC in the software package Fledermaus v7.3.3, anomalous data are flagged as invalid; a percentage of data are also re-processed after further refinement of parameters to account for system-related biases. The data files also contain topographic coverage of adjacent terrain (land elevations). Upon inspection at JALBTCX, utilizing the QA/QC software packages Fledermaus and PFM\_ABE, any additional anomalous data are flagged as invalid. PFM\_ABE software then exports all bathymetric lidar data as a series of unclassified LAS files.

- 2016-02-02 00:00:00 - LAS files are imported into GeoCue V2014.1.21.4, which is a geospatial workflow production and management software tool employed by JALBTCX to perform and monitor production of data products. Upon import into GeoCue, a customized classification macro, built upon the TerraScan V13 module within Microstation V8i, classifies valid topobathy data as ground points (2) and unclassified points (1), and valid bathymetric points (29). Upon completion the macro, the classification results undergo quality control and any misclassified points are manually edited. In areas of dense vegetation the bare earth ground points might be incorrectly classified due to the inability of the laser to penetrate the canopy and reach the bare ground. In these areas, JALBTCX defaults to the algorithm's "ground" surface instead of manually reclassifying those points. They are partitioned into a series of 5km or quarter quad delivery boxes, one Classified LAS file per box. The format of the file is LAS version 1.2. Data are classified as 1 (valid non-ground topographic data), 2 (valid ground topographic data), and 29 (valid bathymetric data).

- 2016-11-15 00:00:00 - The NOAA Office for Coastal Management (OCM) received 117 files in las format from JALBTCX. The files contained lidar intensity and elevation measurements along the coast of California. The data were in geographic coordinates and ellipsoid elevations in meters. OCM performed the following processing on the data for Digital Coast storage and provisioning purposes: 1. Data filenames were standardized to OCM file naming convention (retaining USACE names). 2. The LAsTools software scripts lasinfo and lasvalidate, were run on the las files to check for errors. 3. Internal OCM scripts were run on the las files to check for elevation outliers, to assign the geokeys, to sort the data by gps time and zip the

data to database and to http.

**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/49651>

**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?

**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=4912>

[https://coast.noaa.gov/htdata/lidar1\\_z/geoid12b/data/4912](https://coast.noaa.gov/htdata/lidar1_z/geoid12b/data/4912)

### 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=4912>;

### 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.*