Stewardship Plan

for the

Statewide Building Footprints for Oregon Database

Addresses and Buildings Framework

State of Oregon

Version 0.1

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Under the auspices of the Oregon Geographic Information Council

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Purpose

The building footprints stewardship plan is a supplemental document that supports the Statewide Building Footprints for Oregon (SBFO) data standard. It sets guidelines for the long-term maintenance of the SBFO dataset and coordination with data contributors. The Building Footprints Work Group will meet annually to review any needed changes and to foster collaboration with data contributors. The SBFO dataset is an element within the Addresses and Buildings theme of the Oregon Framework spatial data infrastructure.

Stewardship Classification

The building footprints stewardship plan is for the long-term maintenance of the Statewide Building Footprints for Oregon framework element of the Addresses and Buildings theme.

This is a Class B stewardship plan because this data element:

- Is not a base map element of the Framework Program,
- Is a compilation dataset made up of multiple data sources,
- Has features that need regular updates,
- Does not have a high level of dependency by other Framework data elements

The SBFO is a Class B element and requires documentation for stewardship. This stewardship plan, used in tandem with the SBFO data standard, and the metadata are used to document this Framework element.

Framework Element Steward

Agency or organization: Oregon Department of Geology and Mineral Industries (DOGAMI) serves as the steward of the SBFO Framework element.

Position within Agency with stewardship responsibilities: GIS Analyst/Geohazards Analyst

Custodian(s): Local, state, and federal natural resource agencies, universities, tribes, private corporations develop and manage data that all contribute toward the SBFO database.

Data Description

Building footprint data or a 2-D representation of a building's outline as seen from above can be utilized in a vast number of ways for geospatial and cartographic purposes. Natural hazard preparedness and risk assessment, emergency planning and response, land use planning and development, asset management, real estate interests, and general cartography are some of the activities that are supported by building footprint data. In 2018 Microsoft mapped building footprints for the entire United States and made them publicly available via the open-source website GitHub. Through funding from the Oregon Geospatial

Enterprise Office (GEO), DOGAMI was able to use the Microsoft data and other pre-existing building footprint datasets in the state to review, edit, and compile a high-quality building footprints dataset for the entire state of Oregon.

The completed Statewide Building Footprints of Oregon (SBFO) is a compilation of contributed datasets from city, county, and state agencies, regional planning organizations, and open-source groups. The building footprint datasets were derived using various digitization methods and various base map data types. The Department of Geological and Mineral Industries (DOGAMI) reviewed and edited the building footprints from the contributing sources to achieve consistency within the compiled statewide dataset. The total number of features in the SBFO dataset was 2,153,294.

Data Type: Vector **Feature Type**: Polygon **Update Cycle**: Ongoing

Stewardship Approach

The primary purpose of the data standard is to establish an aggregated dataset from multiple data contributors that conform to a single format. While the data-use varies slightly from contributor to contributor, attribute values (and other criteria) will likewise vary from one dataset to the next. Close coordination with data contributors is one of the most important roles of the data steward. Coordination will be accomplished primarily through regularly scheduled work group meetings, so that participants can work collaboratively to make decisions regarding the management and maintenance of the SBFO.

Update Frequency

DOGAMI will oversee updates to the SBFO. We will make formal requests of data contributors (GIS point of contact) on an annual basis via email. Additional annual coordination will occur as work group meetings, of which many of the participants are also data contributors. The work group meeting provides an opportunity of collaboration and to work through any potential changes needed to the data standard or the stewardship plan.

Stewardship Workflow

Once a year, DOGAMI will send a data request to data contributors in the state that are performing regular maintenance on their own building footprints datasets. Data contributors should create a copy of their most recently published building footprints dataset and format it so that it complies with the SBFO data standard. Data steward anticipates that most data contributors will be unable to fully comply with the data standard. After the data contributor has made changes to the data, it will then be submitted via a data sharing site to the data steward for further curating.

Once the data is submitted, DOGAMI will run data validation scripts that will ensure that new building footprint data is full in compliance with the SBFO data standard before being integrated into the overall dataset. Additional DOGAMI-created scripts will supply default values and reformat field on an as-needed basis.

Open-source building footprint datasets that are generated using automated methods are infrequent and have no determined timeline that require a more intensive process. We will need to review newly added building footprints, run data validation tools, and potentially reformat fields or attribute values before appending to the SBFO on a county-by-county basis. In the future, we anticipate that open-source building footprints will be available and will be a key component to maintaining the SBFO.

Data Acquisition

There are two primary sources of new building footprint data for Oregon, public entities with GIS capabilities and open-source data creators. Several Oregon counties and cities maintain their own building footprint datasets to serve a variety of functions. Upon email notification, data contributors can prepare a dataset of building footprints according to the SBFO data standard and submit it for updating the SBFO.

Bing and others using automated techniques (e.g. machine learning) to generate building footprints. DOGAMI will monitor for releases of these types of datasets. We will review and, if necessary, format the building footprint data according to the data standard. Older data will be replaced by newer updated data that share the same spatial extent.

Data Maintenance

The data steward will take responsibility of the maintenance for the SBFO dataset. Once data contributors have submitted their building footprint data to the data steward, additional reviews and data validation are necessary. DOGAMI will use python scripts to perform any needed reformatting, attribution changes, topology checks, and validation checks to ensure that the submitted building footprints meet the requirements of the data standard. After these reviews and checks are complete, the data steward will then replace the old data with the new that share the same spatial extent and incorporate it into the SBFO.

Updates to related datasets (i.e., Addresses and Cadastral) may require the data steward to assess the impacts of changes to the SBFO.

Communication

Communication is a key aspect to coordination with data contributors and ensuring that data maintenance is ongoing. Annual building footprints work group meetings will keep the data steward and stakeholders informed and will provide an opportunity to discuss potential issues that may arise. Additionally, communication will occur through email during the annual data update request to data contributors.

Horizontal Integration

Building footprints represent physical objects in the real world. A single building footprint polygon represents one building regardless of the variety of uses, number of owners, or number of addresses. Adjacent buildings may have concurrent edges. Some unidentified errors exist for buildings that share a wall but were digitized as a single building footprint. Overlapping polygons are not allowed in the building footprint data standard. Any identified topology errors will be corrected by the data steward.

Vertical Integration

The building footprints are intended to be vertically integrated with address points and tax lot polygons. While the relationship between building footprints and address points is not completely straightforward, it is the intended purpose of the SBFO data standard that all building footprints contain an address point unique identifier that is associated with it. The relationship between building footprints and tax lots is far simpler. Typically, building footprints will always lie within the bounds of a tax lot. The tax lot unique identifier will also be retained by the building footprints that are within them.

Data Distribution

The SBFO Framework element is published as a set of 2D building outlines as polygon features and are available through DOGAMI's Publication Webpage and the Oregon GEOHub. The data are downloadable as a singular statewide dataset or can be queried into countywide downloads.

Quality Checking

Data validation tools will be developed by DOGAMI to ensure that all data falls within the parameters of the data standard. We intend to conduct periodic checking of data integration, especially affirming the relationship with Address Points and Cadastral data.

Due to the sheer size of the SBFO, it is very difficult, if not impossible, to eliminate all errors.

Improvement

The accuracy of building footprint geometry is reliant on the quality of imagery from which they are derived. We anticipate that imagery used to generate build footprints will only improve with time and thus the building footprints will also improve. Improvements to building footprint attributes will be a slower process as more detailed assessor's databases are made available and related datasets (i.e., Address Points and Taxlots) are also improved.

We anticipate that building generation from automated methods (including A.I.) will only become more accurate over time.

Evaluation

Biennial workgroup reviews and discussions will be an optimal way to ensure that the SBFO is still meeting its intended functions. The steward will evaluate work group to determine if future changes need to be made to the data processing methodology. The data steward will also accept comments provided by the GIS community at large to find ways to better serve those needs.

Archiving

We anticipate consistent changes to the SBFO over time which will generate multiple versions of the dataset. These versions will be stored by the Geospatial Enterprise Office and by DOGAMI. DOGAMI can make older versions of the SBFO accessible upon request.