**Idaho Technology Authority (ITA)**

**ENTERPRISE STANDARDS – S4000 – INFORMATION AND DATA**

**Category: S4XXX – Standard for Flood Hazard Datar**

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**I.** **DEFINITION**

 See ITA Guideline G105 (ITA Glossary of Terms) for definitions.

**II.** **RATIONALE**

A statewide National Flood Hazard Layer and data standard, which is part of the Hazards data theme is a critical source of information for State officials (e.g. emergency management and water resources), tribal partners, community officials (planners, GIS professionals, emergency managers, engineers), private entities (engineers, surveyors, architects, real estate professionals, lending and insurance professionals), homeowners, renters, and business owners. Standardized National Flood Hazard Layers data supports those groups by The National Flood Hazard Layer (NFHL) is a geospatial database that contains current effective flood hazard data. FEMA provides the flood hazard data to support the National Flood Insurance Program. You can use the information to better understand your level of flood risk and type of flooding. The NFHL is made from effective flood maps and Letters of Map Change delivered to communities. NFHL digital data covers over 90 percent of the U.S. population. New and revised data is being added continuously.

**III.** **APPROVED STANDARD(S)**

See Attachment

**IV.** **APPROVED PRODUCTS(S)**

Any GIS Software, either desktop or online, capable of ingesting and displaying Open Geospatial Consortium (OGC) Web Map Standard (WMS) services.

**V.** **JUSTIFICATION**

A statewide National Flood Hazard Layer dataset is a critical source of information, as stated under ‘II Rationale’ in this standard. A data exchange standard supports the use of the National Flood Hazard Layer to facility a predictable format, improve collaboration and encourage the use of this dataset.

**VI.** **TECHNICAL AND IMPLEMENTATION CONSIDERATIONS**

Any GIS Software, either desktop or online, capable of ingesting and displaying Open Geospatial Consortium (OGC) Web Map Standard (WMS) services.

**VII.** **EMERGING TRENDS AND ARCHITECTURAL DIRECTIONS**

Data will be shared in accordance with Enterprise Standard 4250 – Enterprise

Geographic Information System (GIS) Data Sharing Standards.

**VIII.** **PROCEDURE REFERENCE**

The format, content and development of this standard adhere to Policy P5030 for Framework Standards, S4250 for Data Sharing Standards and S4220 for Geospatial Metadata.

**IX. REVIEW CYCLE**

Review will occur at least annually.

**X. CONTACT INFORMATION**

For more information, contact the ITA Staff at (208) 605-4064.

**XI. REVISION HISTORY**

XX/XX/202X – Standard Presented to the IGC-EC

 

 STATE OF IDAHO

 **Idaho National Flood Hazard Layers Data Exchange Standard**

Part of the Hazards Theme

Version 1

Effective Month Day, 2022

Developed by the Hazards Technical Working Group

Revision History

Established by Hazards Technical Working Group

Contact

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1. **Introduction to the National Flood Hazard Layer Data Exchange Standard**

A statewide National Flood Hazard Layer is a critical source of information for State officials (e.g., emergency management and water resources), tribal partners, community officials (planners, GIS professionals, emergency managers, engineers), private entities (engineers, surveyors, architects, real estate professionals, lending, and insurance professionals), homeowners, renters, and business owners. Those groups use will benefit from this data because the National Flood Hazard Layer (NFHL) geospatial database contains current effective flood hazard data. FEMA provides flood hazard data to support the National Flood Insurance Program. The information can be used to better understand the level of flood risk and type of flooding. The NFHL is made from effective flood maps and Letters of Map Change delivered to communities. NFHL digital data covers over 90 percent of the U.S. population. New and revised data is being added continuously. Many private sector and local, state, and federal government agencies have business needs for National Flood Hazard Layer data.

The National Flood Hazard Layer Standard is intended to facilitate integration and sharing of up-to-date National Flood Hazard Layer data and enhance the dissemination and use of National Flood Hazard Layer information. This standard does not instruct on how National Flood Hazard Layerdatabases are designed for internal use.

This standard was developed by the HazardsTechnical Working Group, a subgroup of the Idaho Geospatial Council – Executive Committee (IGC-EC). This standard will be reviewed at least annually and updated as needed.

* 1. **Mission and Goals of the Standard**

The National Flood Hazard Layer Standard supports a statewide dataset that is consistent with applicable state and national standards. It establishes the minimum attributes and geospatial database schema for the National Flood Hazard Layer Framework. The standard will communicate with and may have similar attributes to other Idaho Framework data standards. It encourages all Idaho-based agencies with geospatial National Flood Hazard Layer data to contribute to the National Flood Hazard Layer Framework.

The National Flood Hazard Layer Framework will be appropriately shared and beneficial to all. The fields in the National Flood Hazard Layer Data Exchange Standard will be general enough to incorporate basic information without requiring major changes in internal data models. This standard allows for expansion to a more complex data structure and schema.

* 1. **Relationship to Existing Standards**

This National Flood Hazard Layer Exchange Standard relates to various existing standards and technical reference documents as described by FEMA in the [Technical References for Flood Risk Analyses and Mapping](https://www.fema.gov/flood-maps/guidance-reports/guidelines-standards/technical-references-flood-risk-analysis-and-mapping).

* 1. **Description of the Standard**

This standard describes the vision and geospatial data structure of a National Flood Hazard Layer Framework in the state of Idaho. This standard is devised to be:

* Simple, easy to understand, and logical
* Uniformly applicable, whenever possible
* Flexible and capable of accommodating future expansions
* Dynamic in terms of continuous review
	1. **Applicability and Intended Uses**

This standard applies to the National Flood Hazard Layer element of the Hazards theme of The Idaho Map (TIM).

When implemented, this standard will enable access to the National Flood Hazard Layer. W hen aligned with other hazard and risk products, the standard will provide users a more comprehensive view of natural hazard risk for decision making purposes.

This standard does not consider data sharing agreements, contracts, transactions, privacy concerns, or any other issues relating to the acquisition and dissemination of National Flood Hazard Layer data.

* 1. **Standard Development Process**

The Hazards Technical Working Group is a voluntary group of private, city, county, tribal, state, and federal representatives. In 2022 the National Flood Hazard Layer Lead began developing the standard for the National Flood Hazard Layer Framework using the standard development automation tools developed by the IGC-EC to generate the first draft of the Standard. This standard was then reviewed and edited by the members of the Hazards Technical Working Group.

After initial development the draft standard document was shared with the IGC-EC and IGC in accordance with the review and approval process described in ITA’s Framework Standards Development Policy (P5030).

The standard was presented to the IGC-EC in <<insert month and year>> and approved by the IGC-EC in <<insert month and year>>.

* 1. **Maintenance of the Standard**

This standard will be revised as needed and in accordance with the ITA Framework Standards Development Policy (P5030).

1. **Body of the Standard**
	1. **Scope and Content**

The scope of the National Flood Hazard Layer Data Exchange Standard is to describe a statewide layer which identifies the physical locations and attributes of National Flood Hazard Layers in Idaho.

* 1. **Need**

National Flood Hazard Layers are a key dataset needed for State officials (e.g. emergency management and water resources), tribal partners, community officials (planners, GIS professionals, emergency managers, engineers), private entities (engineers, surveyors, architects, real estate professionals, lending and insurance professionals), homeowners, renters, and business owners. This standard provides the foundation to aggregate National Flood Hazard Layer data for centralized access and stewardship information.

National Flood Hazard Layer data is needed because it is intended to be a comprehensive dataset of flood hazards in Idaho.

* 1. **Participation in the Standard Development**

The development of the National Flood Hazard Layer Data Exchange Standard adheres to the ITA Framework Standards Development Policy (P5030). The Hazards Standard Team tasked with developing this standard invite input and comments from private, county, state, and federal organizations. As the standard is reviewed in accordance with Policy P5030 requirements, there will be opportunity for broad participation and input by stakeholders in the development of this standard. The process will be equally broad for input on updates and enhancements to the standard. As with all Idaho Framework standards, public review and comments on the National Flood Hazard Layer Data Exchange Standard is encouraged.

* 1. **Integration with Other Standards**

The National Flood Hazard Layer Data Exchange Standard follows the same format as other Idaho geospatial framework data standards. The National Flood Hazard Layer standard may contain some of the same attributes as other framework standards and may adopt the field name, definition, and domain from the other standards to promote consistency.

* 1. **Technical and Operation Context**
		1. **Data Environment**

The data environment is a digital Map/App with a specific, standardized set of attributes pertinent to the National Flood Hazard Layer Framework. National Flood Hazard Layer data shared under this standard must be in a format supporting digital Map/Apps.

* + 1. **Reference Systems**

The National Flood Hazard Layer Framework will be published in the NAD 1983 coordinate system, which is the State of Idaho’s single-zone coordinate system. Data is not required to be submitted in the Idaho Transverse Mercator NAD83 (IDTM83) coordinate system but must have a defined coordinate system clearly described in the metadata.

* + 1. **Global Positioning Systems (GPS)**

Some data provided might contain geometry from GPS methods, and the provided metadata should describe this, if applicable.

* + 1. **Interdependence of Themes**

National Flood Hazard Layer has geometry data that should be coincident with other framework data, such as Flood hazards, and should align with county or watershed boundaries. Some study areas may be patch updates (Letters of Map Revision or Physical Map Revisions). These patch updates are stitched in seamlessly to countywide datasets.

* + 1. **Encoding**

When data is imported into and exported from the National Flood Hazard Layer Framework, encoding will take place to convert data formats and attributes.

* + 1. **Resolution**

Please see standards 47, 148, 149, 605, and 606 here: <https://www.fema.gov/flood-maps/guidance-reports/guidelines-standards/standards-flood-risk-analysis-and-mapping-public-review>. Resolution will be documented in the metadata.

* + 1. **Accuracy**

Any new digitizing has to be done in conformance with FEMA’s accuracy standards and is further described in the [Guidance for Flood Risk Analysis and Mapping – Flood Insurance Rate Map (FIRM) Database](https://www.fema.gov/sites/default/files/documents/fema_firm-database-guidance.pdf).

* + 1. **Edge Matching**

No edge matching is required between jurisdictions, or between this and other framework layers

* + 1. **Unique Identifiers**

The unique identifiers for each layer is assigned by FEMA and are as follows:

|  |  |
| --- | --- |
| Flood Hazard Zones | FLD\_AR\_ID |
| FIRM Panels | FIRM\_ID |
| Letter of Map Revisions (LOMR) | LORM\_ID |

* + 1. **Attributes**

Attributes for public and intergovernmental distribution are described in Section 3 of this standard.

* + 1. **Stewardship**

Perpetual maintenance and other aspects of lifecycle management are essential to the National Flood Hazard Layer Framework. Details of stewards, their roles and responsibilities, and processes are set forth, or are being planned to set forth in a National Flood Hazard Layer Framework Stewardship Plan and related documents.

* + 1. **Records Management and Archiving**

Records management and archiving will be provided by FEMA contract support.

* + 1. **Metadata**

The National Flood Hazard Layer Framework metadata will describe the methods used to update and aggregate the individual National Flood Hazard Layer data contributions, processes or crosswalks performed, definition of attributes, and other required information. This metadata will conform to the metadata standards as set out in S4220 – GEOSPATIAL METADATA

1. **Data Characteristics**
	1. **Minimum Graphic Data Elements**

The geometry of the features in National Flood Hazard Layer Framework are polygons.

* 1. **Optional Graphic Data Elements**

Not applicable.

* 1. **Standard Attribute Schema**
		1. **Flood Hazard Zones**

| **Field Name** | **Data Type** | **Length**  | **Description** | **Examples** |
| --- | --- | --- | --- | --- |
| DFIRM\_ID | Text | 6 | Study identifier, within each FIRM Database, the DFIRM\_ID value will be identical | 16005C |
| VERSION\_ID | Text | 11 | Identifies the product version and relates the features to standards according to how it was created | 1.1.1.0 |
| FLD\_AR\_ID | Text | 32 | Primary key for table lookup | 16005C\_1 |
| STUDY\_TYP | Text | 38 | Describes the type of Flood Risk Project performed for flood hazard identification | NP |
| FLD\_ZONE | Text | 17 | Flood zone designation used by FEMA to designate SFHAs and for insurance rating purposes | A, AE, AO, AH, X, etc. |
| ZONE\_SUBTY | Text | 76 | Captures additional information about flood zones not related to insurance rating purposes | 0.2 PCT ANNUAL CHANCE FLOOD HAZARD |
| SFHA\_TF | Text | 1 | If area is within a special flood hazard zone | T, F |
| STATIC\_BFE | Double | - | Static base flood elevation for areas determined to have a constant BFE over a flood zone | 4526, -9999 |
| V\_DATUM | Text | 17 | Vertical datum | NAD88 |
| DEPTH | Double | - | Depth for Zone AO areas | 2, -9999 |
| LEN\_UNIT | Text | 16 | Measurement system used for BFEs and/or depths | Feet |
| VELOCITY | Double | - | Velocity measurement of the flood flow in the area | -9999 |
| VEL\_UNIT | Text | 20 | Unit of measurement for VELOCITY |  |
| AR\_REVERT | Text | 17 | If area is Zone AR, this field holds the zone the area would revert to if AR zone were removed |  |
| AR\_SUBTRV | Text | 57 | If area is Zone AR, this field holds the zone subtype the area would revert to if AR zone were removed |  |
| BFE\_REVERT | Double | - | If area is Zone AR, this field holds STATIC\_BFE for reverted zone | -9999 |
| DEP\_REVERT | Double | - | If area is Zone AR, this field holds DEPTH for reverted zone | -9999 |
| DUAL\_ZONE | Text | 1 | If area shall be designated as ‘dual’ flood insurance rate zones | T, F |
| SOURCE\_CIT | Text | 21 | Abbreviation used in metadata file when describing source information for the feature | 16005C\_FIRM1 |

* + 1. **FIRM Panels**

| **Field Name** | **Data Type** | **Length**  | **Description** | **Examples** |
| --- | --- | --- | --- | --- |
| DFIRM\_ID | Text | 6 | Study identifier, within each FIRM Database, the DFIRM\_ID value will be identical | 16005C |
| VERSION\_ID | Text | 11 | Identifies the product version and relates the features to standards according to how it was created | 1.1.1.0 |
| FIRM\_ID | Text | 32 | Primary key for table lookup | 16005C\_1 |
| ST\_FIPS | Text | 2 | State FIPS code | 16 |
| PCOMM | Text | 4 | Community or county identification number (first two digits of panel number) | 005C |
| PANEL | Text | 4 | Panel number (7th – 10th digits in complete panel number) | 0410 |
| SUFFIX | Text | 1 | Map suffix (final digit in complete panel number) | D |
| FIRM\_PAN | Text | 11 | Complete FIRM panel number | 16005C0565D |
| PANEL\_TYP | Text | 30 | Whether panel is community-based of countywide, whether panel is printed or not | Countywide, Panel Printed |
| PRE\_DATE | Date | - | Preliminary release date of current map revision | 9/9/9999 |
| EFF\_DATE | Date | - | Effective date of current map revision | 7/7/2009 |
| SCALE | Text | 5 | Denominator of map scale | 6000, 12000 |
| PNP\_REASON | Text | 254 | Reason panels are not printed if hardcopy panel is not printed by FEMA | AREA OUTSIDE COUNTY BOUNDARY, NO SPECIAL FLOOD HAZARD LAYERS |
| BASE\_TYP | Text | 10 | Type of basemap used for the FIRM panel | NP |
| SOURCE\_CIT | Text | 21 | Abbreviation used in metadata file when describing source information for the feature | 16005C\_BASE14 |

* + 1. **Letters of Map Revisions**

| **Field Name** | **Data Type** | **Length**  | **Description** | **Examples** |
| --- | --- | --- | --- | --- |
| DFIRM\_ID | Text | 6 | Study identifier, within each FIRM Database, the DFIRM\_ID value will be identical | 16005C |
| VERSION\_ID | Text | 11 | Identifies the product version and relates the features to standards according to how it was created | 1.1.1.0 |
| LOMR\_ID | Text | 32 | Primary key for table lookup | 16005C\_1 |
| EFF\_DATE | Date | - | Effective date of the LOMR | 3/2/2022 |
| CASE\_NO | Text | 13 | Case number of the LOMR assigned by FEMA | 21-10-0870P |
| SCALE | Text | 5 | Denominator of map scale | 6000, 12000 |
| STATUS | Text | 12 | Status of the LOMR | EFFECTIVE |
| SOURCE\_CIT | Text | 21 | Abbreviation used in metadata file when describing source information for the feature | 16005C\_LOMC1 |

* 1. **Data Quality**

Data quality considerations for National Flood Hazard Layers include:

 a) All National Flood Hazard Layers should have National Flood Hazard Layer IDs.

b)

**Appendix A: References**

Idaho Technology Authority (ITA). *Information and Data Policy P5000, Category: P5030 Framework Standards Development Policy.* <https://ita.idaho.gov/psg/p5030.pdf>

Idaho Technology Authority (ITA). *Enterprise Standards S4000 Geographic Information Systems (GIS) Data, Category: S4220 Geospatial Metadata.* <https://ita.idaho.gov/psg/s4220.pdf>

<< Add More References as Needed>>

# Appendix B: Glossary

See ITA Guideline [G105](https://nam01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fita.idaho.gov%2Fpsg%2Fg105.pdf&data=01%7C01%7Cpbond%40cityofboise.org%7C2ca8b62d08b14c86824608d6d25b20ad%7Cda3e15835c884f8ea832bd79cbd319cb%7C0&sdata=Nsvlb1tLNvY1YuorWK8VNvl5P4gRou8Pk0AkKq6iNp8%3D&reserved=0) (ITA Glossary of Terms) for definitions.

|  |
| --- |
| **National Flood Hazard Layer Nomination** |
| **Framework Data Theme:** Hazards |
| **Framework Dataset:** National Flood Hazard Layer |
| **Proposed Framework Dataset Name:** National Flood Hazard Layer |
| **Link to Publication Dataset of Proposed Framework Dataset:** <https://hazards.fema.gov/femaportal/wps/portal/NFHLWMS> |
| **Link to Metadata of Proposed Framework Dataset:** <https://www.fema.gov/sites/default/files/documents/fema_firm-database-guidance.pdf> |
| **Authoritative Source(s) Description:** FEMA provides flood hazard data to support the National Flood Insurance Program. For all features and attributes, please review here: <https://www.fema.gov/sites/default/files/documents/fema_FIRM-database-technical-reference_112021_0.pdf> |
| **Link to Data Exchange Standard:** <Will be added when standard is approved>  |
| **Trusted Source Description:** FEMA provides the flood hazard data to support the National Flood Insurance Program. For all features and attributes, please review here: <https://www.fema.gov/sites/default/files/documents/fema_FIRM-database-technical-reference_112021_0.pdf> |
| **Please attach copies of the agreements between Authoritative Source(s) and Trusted Source.**  |
| **Minimum Scale of Dataset:** 1:6000 |
| **Please describe the proposed maintenance schedule for the dataset:** N/A will be maintained by FEMA contract support.  |
| **If this dataset is not a statewide coverage, please describe the methodology for developing or incorporating other data to make a statewide coverage:** FEMA is undergoing map updates, however statewide coverage will likely be longer than 10-years due to funding availability and local cooperation.  |