Stewardship Plan
for
Hydrography Framework
Water Features

The Idaho Map
State of Idaho

Version 0.5

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Based on Stewardship Plan Template Version 0.2, May 2010
Under the auspices of the Idaho Geospatial Council and
Idaho Technology Authority

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1. Plan Identification and Background

1.1 Introduction

This plan describes the lifecycle management of the Water Features Element of the Hydrography Framework Theme. This is part of The Idaho Map (TIM), formerly referred to as the Idaho Spatial Data Infrastructure (ISDI), and is formally described by the Strategic Plan for Development and Deployment of Idaho's Spatial Data Infrastructure (gis.idaho.gov/portal/pdf/Standards/StrategicPlan.pdf). This plan describes activities, workflow, and resource requirements for the ongoing stewardship of statewide Hydrography framework data. This approach to Framework Stewardship is described in the document Framework Stewardship for the Idaho Spatial Data Infrastructure (http://gis.idaho.gov/portal/pdf/Stewardship/StewardshipPlan.pdf). This document established a sound foundation for ongoing stewardship of the Water Features Element.

1.2 Data and Stewardship Summary

This plan defines stewardship practices for the Hydrography Framework Data, Water Features Element. Water Features are map features that describe surfaces water hydrography. The Water Features Element has streams, rivers, canals, and pipelines represented as line features and waterbodies such as lakes, reservoirs, and ponds as polygon features.

The National Hydrography Dataset (NHD) represents the drainage network with features such as rivers, streams, canals, lakes, ponds, coastline, dams, and stream gages. The NHD is composed of digital vector datasets used by geographic information systems (GIS). These data are designed to be used in general mapping and in the analysis of surface water systems.[i]   By design, and in practice, the National Hydrography Dataset and Watershed Boundary Dataset are governed in a collaborative process consisting of representatives from federal, state, and local government, industry, academia, and non - government organizations.

Stewardship of the NHD relies heavily on State Stewards. State Stewards are focused on the maintenance of the NHD and form a community of users beneficial to the governance of the NHD. This community of data experts meets regularly to resolve largely technical issues around the NHD and WBD. This ensures that the NHD and WBD function properly from a technical standpoint based on experiences and feedback from a range of data maintainers.[ii]

  i.   Framework Steward: USGS (national) and Idaho Department of Water Resources (state)
  ii. Plan/MOU: A Memorandum of Understanding (MOU) between USGS and IDWR for the Stewardship of the National Hydrography Dataset in Idaho was signed in August 2007. A copy of the MOU is available at: http://usgs-mrs.cr.usgs.gov/steward/mou/Idahomou.pdf
  iii. Stewardship Class: The Water Features Element is a Class A dataset because it involves a large number of sources with frequent changes. This dataset is limited to line features for Flowlines

and polygon features for Waterbodies. Integration and update is moderately complex. A description of the stewardship classes is found at [insert link from GIO].

    iv.   Data Description:

        1. NHDFlowline feature class: NHDFlowlines consist of routes that make up a linear surface water drainage network.[iii]

        2. NHDWaterbody features class: NHDWaterbodies contain regions representing areal NHD hydrographic waterbody features.[iv]

    v.   Data Type: Vector

    vi.   Feature Type: Point and Polygon

    vii.   Update Cycle: As needed and time allows

1.3 Data Quality Concepts and Terms

The Federal Geographic Data Committee (FGDC) defines data quality as "an essential or distinguishing characteristic necessary for cartographic data to be fit for use." (See FGDC Content Standard for Geospatial Metadata (GSGM), www.fgdc.gov/metadata/geospatial-metadata-standards). Data quality is expressed as the degree to which a dataset conforms to the specifications established for database development. The CSGM include the following parameters to describe and access data quality: attribute accuracy, positional accuracy, logical consistency, completeness, and lineage/currency. In the context of Framework Stewardship Hydrography Element, quality reflects the degree to which the data compiles with content, format and the mapping rule requirements and the data preparation and submittal requirements stated in this plan and any applicable standard operating procedures (SOPs).

This plan makes reference to tow related terms applied to the data preparation, acceptance, and posting process for Source Steward Contributions and the resulting dataset:

- Quality Control (QC) refers to the procedures and tools used during the data capture and compilation process to meet the stated level of quality.
- Quality Assurance (QA) encompasses procedures and tools used to independently evaluate the quality of submitted data as a step leading to the acceptance of data submittals.

QC and QA are complementary activities designed to ensure conformance with specifications prior to acceptance and posting of the data. Using this definition, QC is the main responsibility of Source Stewards in preparing data for submittal and posting to the Water Features Dataset. QA process are used primarily by the Framework Steward (and resources supporting the Framework Steward) for checking the quality of data submittals, communicating with Source Stewards to resolve any discrepancies, and ultimately accepting and posting the submitted data.

2. Stewardship Program Development and Operation

2.1 Stewardship Roles and Process

The National Hydrography Database (NHD) was initially built by the United States Geological Survey (USGS), the Environmental Protection Agency (EPA), and the United States Forest Service (USFS).[v] The high resolution NHD is maintained at a 1:24,000 scale and was originally based on the USGS Digital Line Graphics, EPA Reach File 3, and USGS topographic maps.[vi] As use of the NHD has grown, more current and accurate data is needed to keep the dataset relevant. This data is best found from users closest to the data, such as state and local governments.

   i. The NHD Stewardship Process:
        1. *National Steward:* The USGS is the National Steward of the NHD. Below is a list of the National Steward's responsibilities:
            a. Housing and maintaining the NHD
            b. Data model updates
            c. Development and maintenance of a NHD Editing Tool that allows Framework Stewards to submit updates to the NHD.
            d. Provide training and support for the use of the NHD and NHD Editing Tool.
            e. Provide extracts of the NHD to the public through the NHD website or thorough the National Map's Hydrography layers.
            f. Address International issues.
        2. *Framework Steward:* An agency in each state that will manage the NHD maintenance activates within the state. This entity is designated via a MOU with the National Steward. Below is a list of the Framework Steward's responsibilities:
            a. Act as the single entity representing the State of Idaho that interfaces with the National Steward regarding stewardship issues.
            b. Provide the National Steward with the most widely accepted representation of the surface water in the NHD.
            c. Through the Hydrography Technical Working Group, inform other agencies and organizations of areas of change in order to include all applicable input for a given area and provide available information on status of data stewardship activities.
            d. Provide updates that meet agreed upon quality standards including metadata standards.
        3. *Framework Sub-Steward:* A source steward that has agreed to be trained in the use of the NHD Edit Tools and make their own modifications to the NHD under the supervision and review of the Framework Steward.
        4. *Source Steward:* Primary organizations or individuals providing data to create and update a Framework Element. Often these organizations or individuals have a business need for accurate and current hydrography data.
        5. *The Idaho Geospatial Council (IGC):* Established though Gubernatorial Executive Order, represents the Idaho geospatial community. Through the IGC-EC, it provides policy-level direction and promotes efficient and effective use of resources for matters related to Geospatial Information.
        6. *The Idaho Geospatial Council Executive Committee (IGC-EC):* The governing body of IGC. Reviews and makes recommendations on TIM initiatives including Framework

Stewardship. The IGC-EC's role includes designating Technical Working Groups and approval of stewardship documents, endorsing data standards, and promoting and facilitating data sharing.

7. *The Hydrography Technical Working Group (Hydro TWG):* A group formed by the IGC-EC to provide expertise and focused effort in the field of Hydrography.

8. *The Framework Leadership Team (FLT):* Leads the coordination, development, and integration of Framework data.   This team facilitates the resolution of inter-theme vertical issues and consists of the Technical Working Group chairs.

ii. Stewardship Workflow

Figure 1 – the Stewardship Process Flow
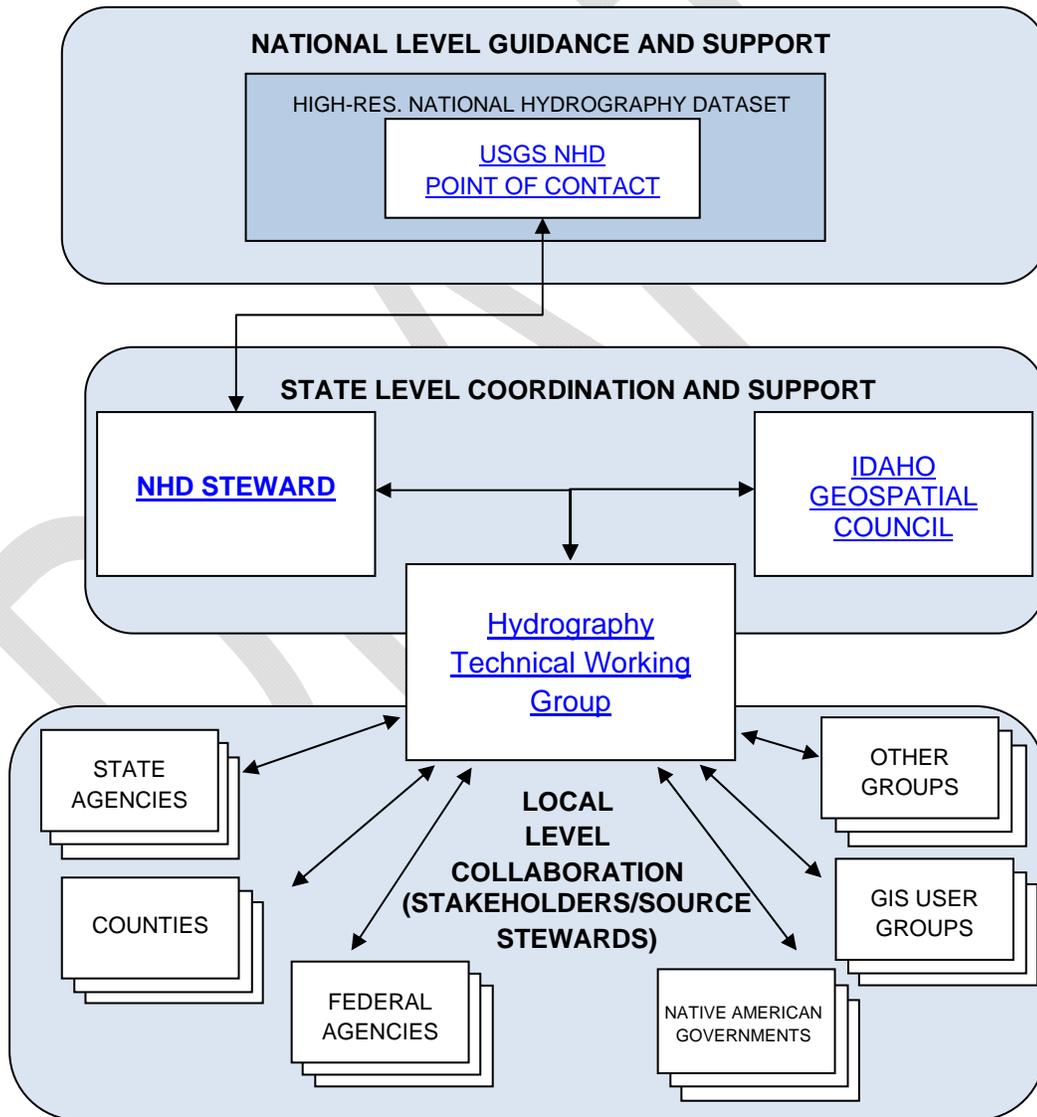
2.2 Data Acquisition

The NHD has been developed Statewide by USGS and is available for download via "The National Map – Hydrography Viewer" (http://viewer.nationalmap.gov/viewer/nhd.html?p=nhd).

2.3 Data Maintenance

The Water Feature Element of the Hydrography Framework Layer is contained as feature classes of the NHD. These subsets must be updated in relation to the entire NHD.

The need for an edit and/or revision is identified by one of the following three groups
- Local level stakeholder/Source Steward
- Principal State Level Steward/Framework Steward
- National Level NHD Points of Contact (POC)

The Framework Steward is informed of proposed edits/changes through the following processes:

1) Paper Maps (or similar media) are submitted to the Framework Steward
2) Using the IDWR NHD Online Editor
3) A Sub-Steward notifies the Framework Steward of edits to be made

For more information regarding submitting a revision/edit/change to the NHD, please see the IDWR NHD Edit Submission Guide (http://www.idwr.idaho.gov/GeographicInfo/NHD/PDFs/NHD_EditSubmissionGuide.pdf).

Upon notification of a proposed edit/change, the Framework Steward will determine the validity of the proposed change.

a. If the edit is not determined to be valid then the originator is notified via e-mail with an explanation.
b. If the edit is determined to be valid, then all stakeholders with interest in the area will be notified via email and/or via meeting called by the Framework Steward with invitations to all interested parties of the proposed edit. Those to be notified include:
    i. The originator of the proposal.
    ii. Stakeholders with responsibilities for lands in or adjacent to the proposed revision.
    iii. Stakeholders with overlapping responsibilities (e.g. state regulatory agencies).
    iv. USGS NHD POCs (National Stewards) will be consulted if the revision involves and international boundary.
    v. Watershed Boundary Dataset (WBD) Stakeholders if the proposed NHD revision affects the WBD and conversely NHD Stakeholders if the WBD revision will affect the NHD. This will also include any interstate Stewards or Stakeholders as necessary.

If a Stakeholder has a concern with the proposed edit, they are to inform the Framework Steward of their concerns. If the Framework Steward cannot adequately address all Stakeholder concerns

through email communications, the concern will be added to the next Hydrography Technical Working Group Agenda for discussion and resolution. If concerns regarding the proposed edit are unresolved, the edit proposal will be rejected and the proposal returned to the originator.

Once submitted edits are reviewed and issues addressed, edits and revisions are completed using the NHD Editing Tools by either the Framework Steward or trained staff or a designated Sub-Steward who has been trained in the tools. Edits must pass the USGS check-in criteria standards for inclusion into the NHD.

Upon successful submission, the new NHD edits are loaded into the National Hydrography Database, and made available for download and use via the National Map at: http://viewer.nationalmap.gov/viewer/

2.4 Data Compilation and Mapping Rules

Data must be at 1:24000 or better scale.

See the Idaho Water Features Data Exchange Standard at http://gis.idaho.gov/portal/pdf/Standards/Themes/XXXXXXXX.pdf

Or

http://www.idwr.idaho.gov/GeographicInfo/NHD/default.htm

2.5 Communication

Stewardship is dependent upon regular, documented communication between organizations and individuals with Stewardship roles. Communication activates include; status briefings with IGC, participation and presentations at the Hydrography TWG, technical support for Source Stewards, communications to resolve questions about submitted data, and general promotion of Stewardship.

2.6 Horizontal Integration

Horizontal Integration refers to the overall approach to integrating data from different Source Stewards, the timing and frequency of integration, the quality assurance/quality control measures that will be applied, how versioning will be managed, and how metadata will be updated. Horizontal Integration errors often results in gapped or overlapping data, disconnected features, or duplicative features.

The Framework Steward is responsible for resolving horizontal integration errors within the State of Idaho. If there is more than one valid source of data for an area and agreement cannot be obtained from the two sources, the Framework Steward will ask the Hydrography Technical Working Group to arbitrate and recommend the data to be used.

2.7 Vertical Integration

Vertical Integration refers to the required spatial registration with this Element or harmonization of its attributes with other Framework Themes and Elements. The Framework Coordinator will work with the Hydrography Technical Working Group Chair to relay and resolve issues regarding vertical integration to the Framework Leadership Team.

2.8 Data Posting, Distribution, and Access Restrictions

The National Steward will provide extracts of the NHD to the public through the NHD website or thorough the National Map's Hydrography layers.

There are no access restrictions on this data. Data submitted into the NHD is fully accessible by the public.

2.9 Improvement

Edit Tool, database design, and stewardship agreements will be revised as needed. Any changes affecting the Hydrography Water Features Exchange Standard will be incorporated into the next evaluation and review of the Stewardship Plan.

2.10 Evaluation

The Framework Steward will request the Hydrography Technical Working Group review and revise the Stewardship Plan and related processes every three years or more frequently if needed. Ongoing monitoring of the stewardship process will drive revisions to procedures, roles, and practices as needed to improve the stewardship process.

2.11 Data Backup

The National Steward has direct responsibility for server administration and will perform routine data back-ups in accordance with established policies.

2.12 Archive

Based on a schedule specified by the Hydrography TWG, the Framework Steward will generate a snapshot of the NHD and store it on stable media (tape or DVD). Archived data will be available through INSIDE Idaho by request or by archive search.

3. Stewardship Management and Resource Requirements

3.1 Resource Needs and Cost Projections

Projected resource requirements for the management and operation of the Hydrography Water Features Stewardship include the following staffing and system resources:

- Computer hardware capable of running software needed for updating the NHD.

- One GIS Analyst (for approximately 0.5 FTE) with GIS software and data management, QC, and technical management skills. The Analyst would be in responsible for coordinating with the USGS on NHD issues, training and technical assistance to Sub-Stewards, inputting and submitting to USGS changes sent directly to the Framework Steward, and supporting the Hydrography TWG.
- GIS management and oversight for approximately 10 hours per month.

4. Revision History

- v. 0.1 based on third Oregon draft Feb. 2010
- v. 0.2 converted from .pdf form to text document, May 2010
- v. 0.3 changed ITRMC to ITA and ISDI to TIM
- v.0.4 reviewed and modified by Idaho State Steward

5. Appendix

A. Glossary of Terms

Feature Class: A collection of geographic features with the same geometry type (i.e., point, line, or polygon), the same attributes, and the same spatial reference. Feature classes allow homogeneous features to be grouped into a single unit for data storage purposes. (http://www.esri.com/software/arcgis/geodatabase/data-storage)

6. Endnotes

[i] http://nhd.usgs.gov/

[ii] http://nhd.usgs.gov/documents/Governance_v1.2a.pdf

[iii]
http://nhd.usgs.gov/userguide.html?url=NHD_User_Guide/Feature_Catalog/NHD_Feature_Catalog.htm

[iv]
http://nhd.usgs.gov/userguide.html?url=NHD_User_Guide/Feature_Catalog/NHD_Feature_Catalog.htm

[v] http://usgs-mrs.cr.usgs.gov/stewweb/process.html

[vi] http://usgs-mrs.cr.usgs.gov/stewweb/process.html