

Proposal for a National Hydrography Framework Standard

PROJECT TITLE: National Hydrography Framework Geospatial Data Content Standard

DATE OF PROPOSAL: December 12, 2000 (revised)

TYPE OF STANDARD PROPOSED: Content Standard or Application Schema

SUBMITTING ORGANIZATION: FGDC Spatial Water Data Subcommittee (SWDS)

POINT OF CONTACT: Robert Pierce, Chair, Spatial Water Data Subcommittee, U.S. Geological Survey, 3039 Amwiler Road, Atlanta, GA 30360 (770) 903-9113 (rrpierce@usgs.gov)

OBJECTIVE: To create a new Framework content standard for hydrography (hereafter referred to as the Hydrography Framework Standard).

SCOPE: The effort shall extract sufficient capabilities from existing implementations of hydrography content to facilitate common adoption across the widest possible user community. The Hydrography Framework Standard will include a conceptual model including an essential data schema, its data entities and attributes, and functional capabilities that conforming data shall support. Supported Feature classes within the Framework, a system of permanent Feature identifiers, and the linkage of characteristics that exist at points and along sections of water bodies will be considered in the development of the standard^[usgs3]. The standards document will address how cross-walks can be constructed from alternative coding systems to the Framework schema for information exchange using the encoded Framework schema as a common reference. The standard *may* exclude definition and classification of basin or watershed boundaries.

JUSTIFICATION/BENEFITS: The proposed Hydrography Framework Standard will build on the efforts and implementations by organizations in different parts of the U.S. that have identified local, regional, and national business requirements for networked surface water hydrography data. A major goal is the development of a harmonized single conceptual model of minimum content for hydrography valid nationwide that supports a logical intersection of requirements. Through shared feature identification, agencies will benefit from a single referencing system for managing and sharing water-related phenomena with other organizations. Linkage from coding systems that exist at the local and state level to a single encoding or exchange format for the Hydrography Framework Standard will facilitate exchange of information and minimize the need for construction of multiple translators.

DEVELOPMENT APPROACH: This activity will focus on the development of a Framework content standard for hydrography with design input from existing federal, local, state, and regional hydrography reference systems that recognize the value of a consistent nationwide schema that promotes sharing of “core” hydrography data. Stakeholder organizations in the NSDI will be requested to contribute prioritized business

requirements for the Hydrography Framework Standard. A small modeling advisory team is being convened from representatives of stakeholder federal and non-federal activities to select from the requirements and work with a contractor modeler to build a useful Hydrography Framework conceptual content model and guidance for encoding that provides sufficient detail for widespread usage and supports related national and international standards and specifications. The Standard will be minimal in scope and detail and shall be built from existing documentation.

RELATED STANDARDS:

(FGDC Draft) Hydrographic Data Content Standard for Coastal and Inland Waterways. If the SWG is interested in consistency with ISO TC 211 nomenclature, according to the draft ISO 19110, Feature Cataloguing Methodology, the Coastal and Inland Waterways draft standard is really a Feature Catalog as it does not include the relationships between features, structures, conditionality, repeatability, or other constructs as should be present in a content standard or Application Schema. Furthermore, the Coastal and Inland Waterway draft usurps the public recognition of the reserved term “hydrography” as described in the Framework handbook to describe a suite of features specifically suited to charting and navigation of coastal and inland waterways. It is recommended that the SWG reconsider the final naming of the draft Coastal and Inland waterway standard to be consistent with ISO TC 211 nomenclature and call it a “Feature Catalog for Coastal and Inland Waterways.” The few feature types (less than ten) that exist in both lexicons will be cross-referenced for clarity.

Spatial Data Transfer Standard (SDTS) The Hydrography Framework Standard will recommend development of a community “Profile” of SDTS for data transfer purposes.

ISO 19109.3CD Rules for Application Schema. (Section 6.3) Provides guidance on modeling of data for a specific community of interest using the Unified Modeling Language (UML). It states, “Data interchange between information systems may take place in two ways:

- In the traditional **data transfer model**, the data supplier creates a dataset that is transferred to the user. The structure and the content of data are described in the application schema for the dataset. The dataset is sent in a transfer format.
- In the **interoperability model**, the user application communicates with the supplier application through a common communication protocol. In this scenario, the user invokes services that result in data being passed from the service provider to the user application. The application schema describes not only the structure and content of the exchanged data but also the structure of the interfaces involved in the transaction.”

It is anticipated that the proposed standard will develop an application schema to include spatial schema, feature catalog, quality schema, metadata schema, and temporal schema, as applicable, in an effort to prototype ISO 19109.3CD for hydrography data. Further, *both* data transfer (for which SDTS is a candidate methodology) and interoperability models (such as Interface Specifications defined by OGC) are relevant to encoding

discussions in the proposed standard. Using the four-tier model of ISO 19100, the proposed standard would include definitions at both the Meta Level (Model of Conceptual Schema Language) and at the Application Level (Application Schema) rather than at the Data Level where data sets such as the National Hydro Dataset and other systems operate (ISO 19109.3CD, Figure B.1).

DEVELOPMENT AND COMPLETION SCHEDULE: A SWDS workshop was held in June 2000 to build consensus on the scope of the proposed Hydrography Framework Standard. A request for requirements will be made during December 2000, when the drafting team will be constituted from stakeholder organizations. The team will use electronic methods and hold at least one face-to-face meeting to prepare a draft Standard for the SWDS to submit to the FGDC Standards Working Group by Spring 2001. It is desired that a brief public review period can take place soon thereafter, with adoption as a formal FGDC Standard expected in mid CY 2001.

RESOURCES REQUIRED: The SWDS members have sufficient resources to carry out standards development, given that the Hydrography Framework Standard will be largely derived from existing implementations. If there is considerable review and comment from non-Federal sectors, additional resources may be required.

POTENTIAL PARTICIPANTS: The primary contributors to the requirements will include members of the Spatial Water Data Subcommittee and interested individuals from stakeholder organizations to be determined in the requirements process^[usgs4]. The design team would likely have less than ten individuals from stakeholder organizations, balanced in geography and organizational affiliation with blanket authorization to participate on behalf of the organization they represent.

OTHER TARGET AUTHORIZATION BODIES: None anticipated beyond FGDC.

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[usgs1] Explain the purpose of the standard. Indicate whether the proposal is for the endorsement of an existing standard, creation of a new standard, or adaptation of existing standard(s).

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[usgs2] The first two sentences apply to Development Approach

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[usgs3] Will this discussion be part of standards development or be documented in the standard?

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[usgs4] What are these stakeholder organizations?