

Development of Technical Guidance on Unique Identifiers for Mapping and Monitoring Wetlands

**WMC Webinar
July 13, 2011**

Conservation Management Institute (CMI)

Jane Awl

What are Unique Identifiers?

“With reference to a given (possibly implicit) set of objects, a **unique identifier (UID)** is any identifier which is guaranteed to be unique among all identifiers used for those objects and for a specific purpose” (from Wikipedia 04-20-2011).

Identifiers generally include numbers, codes and names.

Problem to be Addressed

Currently there are no nationally-accepted standards, conventions, protocols, or tools for creating wetland site names and other stable (not likely to change within a defined set) unique identifiers to allow individual wetland sites and corresponding geographic features (e.g., points, polygons) to be effectively tracked, monitored and reported on over time, and to enhance system interoperability between federal agencies, states, tribes, and contracted partners, to facilitate data sharing at a national scale.

NSDI CAP 2011 Project Description

Technical Guidance on Unique Identifiers for Wetland Mapping Standard Implementation, Outreach and Training Materials <http://www.fgdc.gov/grants/2011CAP/projects/G11AC20060>

The screenshot shows a web browser window with the URL <http://www.fgdc.gov/grants/2011CAP/projects/G11AC20060>. The browser's address bar and tabs are visible. The website header features the FGDC logo (Federal Geographic Data Committee) and navigation links for Site Map, Accessibility, and Contact. A search bar is also present. The main navigation menu includes Home, Library, Calendar, and Contact Us. The Library menu is expanded, showing options like Participants, Data & Services, Standards, Metadata, Framework, Policy & Planning, Training, Grants, International, and Geospatial LoB. The main content area displays the breadcrumb trail: you are here: home → grants → 2011 nsdi cap → 2011 nsdi cap projects → wetland mapping standard implementation, outreach and training materials. The title of the page is "Wetland Mapping Standard Implementation, Outreach and Training Materials". Below the title, the award number is listed as "Award Number G11AC20060, Category 2: FGDC-endorsed Standards Implementation Training and Outreach". The project description states: "The purpose of this project is to facilitate implementation of an FGDC-endorsed standard in user communities by 1) developing technical guidance for carrying out key recommendations included within the FGDC Wetland Mapping Standard for handling and tracking wetland unique identifiers, and in the Implementation Plan to track polygon lineage and change, and 2) producing implementation recommendations and resulting training materials. Virginia Tech's".

Partner Organizations

- FGDC Wetlands Subcommittee including:
 - U.S. Fish and Wildlife Service
 - U.S. Environmental Protection Agency
 - U.S. Army Corps of Engineers
 - U.S. Geological Survey
- National Wetlands Monitoring and Assessment Working Group (NWMAWG)
- Association of State Wetland Managers (ASWM)
- Wetlands Mapping Consortium (WMC)
- Ducks Unlimited (DU)
- Kentucky Division of Water

Purpose

The purpose of this project is to carry out key recommendations included in the Implementation Plan for the FGDC Wetland Mapping Standard adopted in July of 2009.

There are two objectives:

- 1) Develop technical guidance for handling and tracking wetland unique identifiers (*language from FGDC Wetland Mapping Standard*) to support tracking polygon lineage and change, and to enhance system interoperability between federal agencies, states, tribes, and contracted partners, to facilitate data sharing at a national scale (*language from Implementation Plan*).
- 2) Develop implementation recommendations.

Methods

- CMI will work with members of the affected wetlands science community to develop and vet technical guidance for creating wetland site names and other stable unique identifiers applicable to national-scale wetland tracking and monitoring needs.
- CMI will present this information at relevant national and/or regional professional meetings and webinars.
- CMI will provide a final report (Technical Report) on the technical guidance with implementation recommendations.
- The technical guidance and implementation recommendations resulting from this project may be used to update the implementation plan, training materials, and/or outreach materials for the Wetlands Mapping Standard, and will be made available through the WMC and /or the ASWM web sites.

Milestones

(Deliverables and Schedule)

- Request for Information disseminated to affected wetland science community (Spring -Summer 2011)
- Outreach (via presentation, webinar, and/or publication) on the Request for Information (Summer-Fall 2011)
- Interim Progress Report (October 2011)
- Options for Wetland Site Names and Other Unique Identifiers disseminated to affected wetland science community for comment (Winter 2011-Spring 2012)
- Outreach (via presentation, webinar, and/or publication) on the Options for Wetland Site Names and Other Unique Identifiers (Fall 2011- Winter 2012)
- Final Technical Report with guidance and implementation recommendations (Late Spring 2012)
- Outreach and/or Training (via presentation, webinar, and/or publication) on Technical Report (Spring-Summer 2012)

Outcomes

- A significant technical challenge documented in the current version of the Wetlands Mapping Standard will be addressed prior to the next five year maintenance review cycle for the Wetlands Mapping Standard (so the results can be considered when updating the Mapping Standard), and in coordination with the ongoing maintenance review of the Wetlands Classification Standard.
- Resolving this issue can help to improve and modernize the NSDI Wetlands Layer.
- System interoperability can be enhanced between federal agencies, states, tribes, and contracted partners, to facilitate data sharing at a national scale (per Implementation Plan).
- Database capabilities to track polygon lineage and polygon change over time can be improved (per Implementation Plan).
- Capabilities for associating wetland geographic data with other data sets (such as water quality and monitoring data) can be enhanced, expanding the possibilities for analysis (per Public Review document).
- Individual wetland sites and corresponding geographic features (e.g., points, polygons) can be more effectively tracked, monitored and reported on over time.
- The affected wetland science community will benefit from the increased availability of wetland information for analyzing and identifying solutions to wetlands and water resources management, conservation and protection issues.



DUCKS UNLIMITED

Updating and Tracking Wetlands

Example of Unique Identifier use in a Wetlands Mapping Database

Robb Macleod
Ducks Unlimited




Database Keys and Attributes

Wetlands will be tracked through a NWI Key and Parent Key. This will allow us to go back to the original wetland shape and attribute.

WET_POLY	
OBJECTID	OID (4)
ATTRIBUTE	STRING (20)
HGM_CODE	STRING (10)
QAQC_CODE	STRING (9)
WETLAND_TYPE	STRING (50)
ACRES	DOUBLE (8)
DECODE	STRING (40)
NWI_KEY	LONG INTEGER
PARENT_KEY	LONG INTEGER
STATUS	SHORT INTEGER
CONVERSION_TYPE	STRING (1)
PARTIAL	STRING (1)
IMAGE_DATE	STRING (15)
INACTIVE_DATE	STRING (15)
FIELD_VERIFIED	STRING (1)
COMMENTS	STRING (255)
UPDATE_OPERATOR	STRING (50)
UPDATE_DATE	DATE

DU added 11 attributes to the official NWI attributes.

- The NWI Key is a unique number for each wetland.
- The Parent Key keeps track of wetlands that changes over time.
- The Status attribute allow us to query active wetlands from inactive (converted) wetlands.
- Conversion type allow us to identify how it was converted (urban, Ag, etc.). Partial identifies wetlands that were only partially converted (part of the wetlands is still active).

 DUCKS UNLIMITED

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INACTIVE_DATE	STRING (15)
FIELD_VERIFIED	STRING (1)
COMMENTS	STRING (255)
UPDATE_OPERATOR	STRING (50)
UPDATE_DATE	DATE



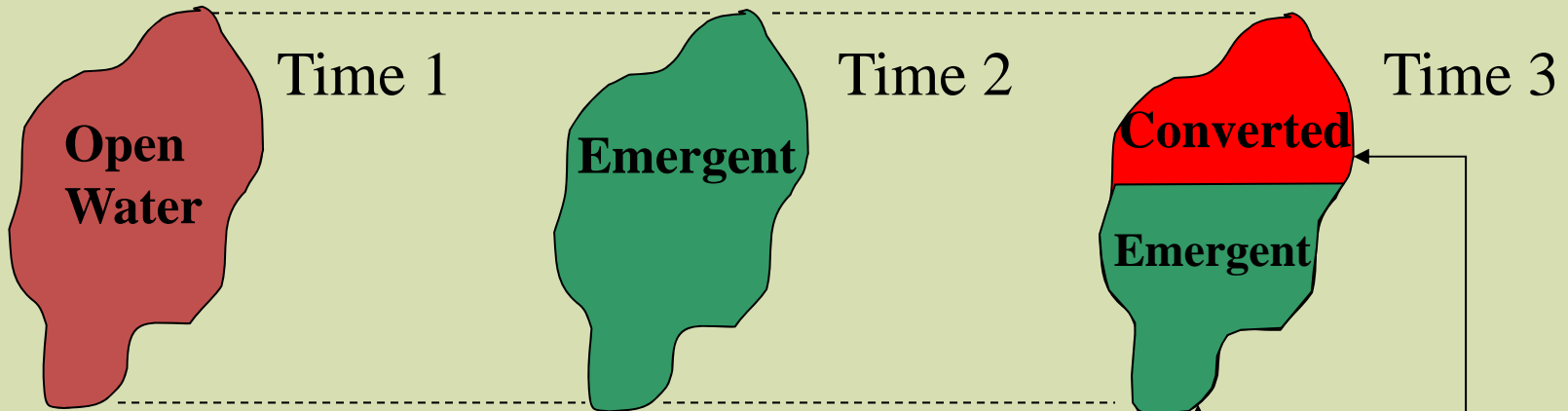
Database Keys and Attributes

Status will allow us to determine if the wetland is “active” (currently exists) or “inactive” (been converted).

WET_POLY	
OBJECTID	OID (4)
ATTRIBUTE	STRING (20)
HGM_CODE	STRING (10)
QAQC_CODE	STRING (9)
WETLAND_TYPE	STRING (50)
ACRES	DOUBLE (8)
DECODE	STRING (40)
NWI_KEY	LONG INTEGER
PARENT_KEY	LONG INTEGER
STATUS	SHORT INTEGER
CONVERSION_TYPE	STRING (1)
PARTIAL	STRING (1)
IMAGE_DATE	STRING (15)
INACTIVE_DATE	STRING (15)
FIELD_VERIFIED	STRING (1)
COMMENTS	STRING (255)
UPDATE_OPERATOR	STRING (50)
UPDATE_DATE	DATE



NWI Key/Parent Key Example



WET_POLY	
OBJECTID	
NWI Key = 101	
DRAINAGE_TYPE	
PARTIAL	
IMAGE_DATE	1978
FIELD_VERIFIED	
COMMENTS	
UPDATE_OPERATOR	
UPDATE_DATE	

WET_POLY	
OBJECTID	
NWI Key = 102	
Parent Key = 101	
IMAGE_DATE	1998
FIELD_VERIFIED	
COMMENTS	
UPDATE_OPERATOR	RDM
UPDATE_DATE	2005

WET_POLY	
OBJECTID	
NWI Key = 103	
Parent Key = 102	
IMAGE_DATE	2008
FIELD_VERIFIED	N
COMMENTS	
UPDATE_OPERATOR	RDM
UPDATE_DATE	2007

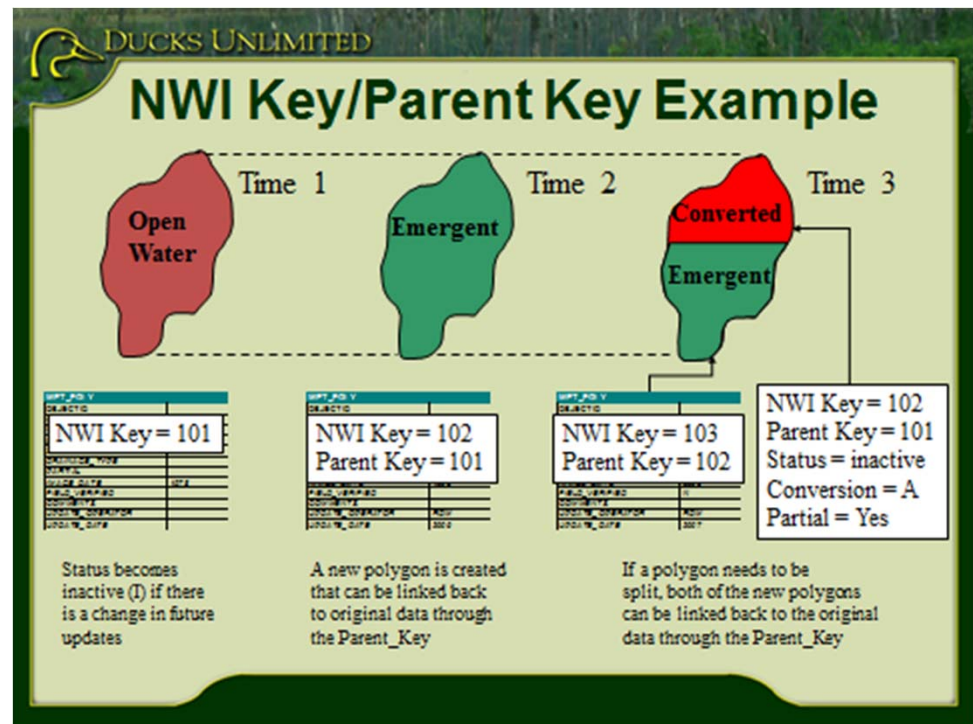
NWI Key = 102
 Parent Key = 101
 Status = inactive
 Conversion = A
 Partial = Yes

Status becomes inactive (I) if there is a change in future updates

A new polygon is created that can be linked back to original data through the Parent_Key

If a polygon needs to be split, both of the new polygons can be linked back to the original data through the Parent_Key

Time 1 is the original wetland with a unique ID (NWI Key = 101). In Time 2, the wetland changed from open water to emergent, so the wetland polygon is copied and pasted (now have two overlapping polygons). The original wetland (polygon) is inactivated and the new wetland polygon has a new NWI Key (unique ID) and Parent Key that equals the NWI key of the original. This allows us to summarize the changes in class and links the original with the changed wetland.



In the case where part of the original wetland is converted, the original wetland is copied and pasted, the new polygon is reshaped. The original polygon is inactivated with a conversion type (A – Agriculture) and the partial attribute is Yes. The new polygon has a new NWI Key and Parent Key that equals the NWI Key of the original.

CMI Technical Guidance on Unique Identifiers for Wetlands

For more information please contact:

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DISCUSSION