

Wetland Assessment in the §404 Regulatory Program



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Purpose

- **Per Mitigation Rule, NAE needs a method to assess wetland losses and determine compensatory mitigation needs for permitted projects**
- **We currently use ratios based on wetland type**
- **We need a defensible, measurable, repeatable method that can be performed by project managers in the field; regional approach is preferred**

Base Ratios

Type of Mitigation	Wetland Community	
	Forested	Scrub-Scrub & Emergent
Restoration	2:1-3:1	2:1
Creation	3:1-4:1	2:1-3:1
Enhancement	5:1-10:1	3:1-10:1
Preservation	-----15:1-----	

Types of Assessment Methods

Wetland Condition Assessment

- **Evaluate** ability to support/maintain a balanced, adaptive community of organisms comparable with that of minimally disturbed wetlands within a region.
- **Provide** single numeric score that represents overall health or condition of wetland ecosystem.
- **Used** to monitor ambient condition of wetland resources and trends.
- **Ecosystem-Scale**

Wetland Functional Assessment

- **Evaluate** current wetland functions and predict potential changes from proposed activities.
- **Provide** individual scores for different functions (by combining variables that are typically structural measures or indicators associated with ecosystem functions)
- **Used** to measure project impacts and mitigation needs and success
- **Project-Scale**

Examples of Wetland Functions

- **Hydrologic: Store Surface Water**
- **Biogeochemical: Cycle Nutrients**
- **Habitat: Provide Habitat for Plants and Animals**
- **Landscape: Spatial Mosaic of Ecosystem in Landscapes**

What do we want?

- Method to compare project alternatives
- Method to quantify losses associated with permitted activities
- Method to select, plan, monitor compensatory mitigation
- This may best be achieved through a hybrid approach—condition assessment for alternatives analysis & functional assessment to quantify lost functions for replacement via mitigation. **Too complicated?**

Hydrogeomorphic Approach

- **HGM assumes that:**
 - **Not all types of wetlands perform the same functions**
 - **Similar types of wetlands do not perform the same functions at the same level of performance**

What is the HGM Approach?

- **Method for assessing the functional capacity of a wetland ecosystem**
- **Designed initially to assess changes in function in order to ...**
 - **Compare alternatives**
 - **Identify how to minimize impacts**
 - **Assess project impacts**
 - **Determine mitigation requirements**
 - **Monitor success / failure of mitigation**

HGM Approach

Overview

Hydrogeomorphic Classification

- Hydrology and geomorphology strongly influence how wetlands function
- As a result, the hydrogeomorphic classification is based on ...
 - Geomorphic setting
 - Water source
 - Hydrodynamics

HGM Approach

Overview

What is an assessment model?

- Simple representation of how specific characteristics and processes of the wetland and surrounding landscape influence the capacity of a wetland to perform a function
- Consists of model variables aggregated in a simple equation to produce a functional capacity index (FCI)

$$FCI = \{(V_{FREQ} \times V_{XSEC})^{1/2} \times (V_{ROUGH} + V_{GRADIENT})/2\}^{1/2}$$

Use of FCUs in Regulatory Decisions

Project Site

Mitigation Site

	Size of WAA (acres)	FCI Pre	Post	FCU Loss	FCI Pre	Post	Delta	Acres needed?
Function 1	10	1.0	0	10	0.2	0.8	0.6	16.66
Function 2	10	0.5	0	5	0	0.5	0.5	10
Function 3	10	0.8	0	8	0.5	1.0	0.5	16
Function 4	10	1.0	0	10	0.5	0.8	0.3	33.33

Where do we go from here?

- **Compile existing state methods (& possibly review methods from other regions)**
- **Develop gap analyses and field study needs**
- **Develop draft regional method, in consultation with regional experts; publish for peer review**
- **Plan/schedule field work to calibrate and validate**
- **Timeline--???**