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Wetland Functional Assessments: Rapid Tools Used to Meet the Mandates of the 1985 Food Security Act and NRCS Wetland Protection Policy

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Wetland Functional Assessments: Rapid Tools Used to Meet the Mandates of the 1985 Food Security Act and Natural Resources Conservation Service Wetland Protection Policy

Purpose

The 1985 Food Security Act (FSA) grants the Secretary of Agriculture responsibility and authority to provide exemptions to the wetland conservation provisions. The Secretary delegates this responsibility to Natural Resources Conservation Service (NRCS) State Conservationists. In carrying out these responsibilities, the published rules mandate that wetland functions be considered prior to granting either a Minimal Effect Exemption [7-CFR-12; Section 12.5 (b) (1) (v)] or a Mitigation Exemption [7-CFR-12; Section 12.5 (b) (4)]. The CFR requires the use of a *functional assessment* for decisionmaking (“*Such determination shall be based upon a functional assessment of functions and values of the wetland under consideration...*”). These rules, as well as additional information on wetland conservation programs, can be found at <http://www.nrcs.usda.gov/programs/farmland/1996/HELRule.html>.

In addition to decisions related to the Food Security Act, *functional assessments* are required by the NRCS Wetland Protection Policy found in the General Manual (GM 190, Part 410.26) “(6) *Functional Assessment: As part of the mitigation process, the functions of the affected wetland and the amount of function lost must, in most cases, be determined. The State Conservationist will establish an appropriate assessment procedure to evaluate wetland functions and impacts, determine the type and extent of compensatory mitigation required, and evaluate the success of the compensatory mitigation.*”

Under the broad umbrella of “assessments,” there are two distinct categories: *wetland assessments* commonly referred to as “rapid assessments,” and *wetland functional assessments*. Understanding the distinction and purpose of each is important to the wetland ecologist.

This technical note will provide information to assist State Conservationists in meeting their responsibilities in a technically defensible manner and will provide others with an understanding of various assessment methods for measures of wetland condition or wetland function.

Wetland assessments

Wetland assessments are models developed to provide a measure of the overall health or condition of the wetlands in a study area. They provide a numerical score of the wetland ecosystem and can be applied to areas containing many different wetlands. Because they are designed as a rapid assessment tool for large areas, subjective terms (e.g., little, much, low, high, near, far) are often substituted for detailed quantitative measures (e.g., basal area, ponding duration, soil organic matter content). To derive at this ecosystem condition score, attributes that occur outside the boundaries of a small individual project are commonly used (i.e., watershed condition, habitat fragmentation, and wildlife corridors). Thus, the score is reflective of not just an ecologically isolated wetland, but the small wetland, the adjacent nonwetlands, and other wetlands in the area.

Primarily, *wetland assessments* are used for monitoring overall wetland condition. Typically, data obtained from *wetland assessment* models are used by States and/or Tribes to report to the Environmental Protection Agency (EPA) on the ambient condition of wetland resources (Fennessy et al. 2004). These reports are part of State Water Monitoring and Assessment Programs.

Wetland assessments are not well suited for measuring functional gain or loss associated with project actions. Being a tool that provides a single score for the ecosystem, *wetland assessments* can result in over or under compensation for any particular function being lost as the result of a planned project. This could be of concern in highly impacted watersheds approaching critical thresholds for a function of societal concern (e.g., watersheds with flooding, impaired streams, or declining habitat).

For these and other reasons, *wetland assessments* have great utility for developing “trend” data, but have limited applicability for use by NRCS in granting the minimal effect exemption or deciding on compensatory mitigation requirements.

Wetland functional assessments

Wetland *functional assessments* were developed for the specific purpose of quantifying the levels of *function* of an existing wetland (impacted site) or the levels of function of a compensatory, mitigation site based on predicted future conditions. Individual scores are derived for different functions (i.e., flood water attenuation, carbon sequestration, and/or habitat). Findings provide assurances to NRCS that each target function will be adequately addressed in minimal effect or mitigation determinations. This level of sensitivity to individual wetland functions is not possible with a single-score approach (wetland assessments).

A trait common to *functional assessments* is their exclusive purpose for measuring project impacts. Use of a hydrogeomorphic (HGM) functional assessment, for example, is limited to a particular HGM wetland class, subclass, and modifier. Use of the model outside these restrictive parameters (reference domain) is not permitted. Therefore, *functional assessments* are not well suited to ecosystem scale monitoring projects.

NRCS commonly uses *functional assessment* data to determine if proposed impacts fall below minimal effect thresholds. If impacts exceed the minimal effect threshold, then *functional assessment* data is used to determine the level of compensatory mitigation required to offset the loss of wetland function.

Data derived from a *functional assessment* can also be used to determine how different planned compensatory mitigation actions might impact mitigation ratios.

Because their primary purpose is to make potentially adverse decisions subject to appeal, most *functional assessment* models use metrics that can be measured, repeated, and defended. For example, basal area, stems per acre, and percent cover are used as opposed to subjective terms.

Controlling documents (formal agreements, contracts, and easements) are legally restricted to the boundaries of the mitigation site. Whereas, future condition of lands outside the formal control document cannot be assured. Thus, the authors of wetland *functional assessments* tend to avoid or minimize the use of offsite metrics.

The HGM Approach

In 1995, Smith and others introduced the HGM Approach to wetland functional assessment <http://el.erdc.usace.army.mil/wetlands/pdfs/wrpde9.pdf>. The fundamentals of the HGM Approach are used in the most

current methods of wetland functional assessment. By 2008, the U.S. Army Corps of Engineers (USACE) had developed and approved 18 Regional Guidebooks for use. These guidebooks are available at <http://el.erdc.usace.army.mil/wetlands/guidebooks.html>.

Wetland *functional assessment* methods were originally developed as mitigation tools for USACE Project Managers and/or State wetland regulatory staffs. Accordingly, a foundation of the HGM Approach is that the staff time required to apply a model should be held to a minimum. In support of this concept, the term “rapid” was used by those who developed guidance on the HGM Approach. As early as 1997, the concept of *rapid* was introduced by Brinson, when he stated that “*The HGM Approach was designed to provide a rapid assessment tool that would focus on those functions that are considered... to be the most important for the subclass.*” Brinson (1997) envisioned that significant time be allocated in the developmental and testing phases, but analysis of an individual project would be rapid. Later, when the National Action Plan was published in the Federal Register in 1997, the authors stated that “*One of the primary benefits of the HGM Approach is that it provides a method to rapidly and consistently assess the level of environmental impacts of a proposed project*” (Federal Register 1997).

The first quantified “standard” for the concept of “rapid” was presented in HGM model development documents. Smith and Wakeley (2001) stated, “*For the HGM Approach to be a practical tool in the context of 404, it must be possible to complete the field work required for the assessment in a day or less.*” Clairain (2002) supported this concept in his Hydrogeomorphic Approach to Assessing Wetland Functions: Guidelines for Developing Regional Guidebooks. He stated, “*The term user-friendly is used to mean that the regional guidebook can be implemented efficiently within the time and resources available to agency personnel when making regulatory decisions (i.e., can the regional guidebook be implemented in 4 hours or less in the field by one or two people with some training and basic ecological background?)*”

Even with the stated objective that HGM meet the standard of a rapid approach, many have suggested otherwise. In Review of Rapid Methods for Assessing Wetland Conditions, Fennessy et al. (2004) categorized the HGM Approach as a level 3 approach (i.e., those methods that are not rapid). Interestingly, they then defined rapid as, “*taking no more than two people a half day in the field and requiring no more than a half day of office preparation and data analysis to come to an answer,*” inadvertently reinforcing the one staff-day standard in the HGM Approach.

Rather than making a value decision at the model development level, most Regional Guidebook development teams produced models flexible enough to meet the needs of an array of users. By taking this approach, some Regional Guidebooks contain as many as nine different functions. Conducting an assessment and analyzing data for all functions in a model can require staff allocations in excess of the HGM “rapid” standard. Additionally, it might provide data of little consequence. The solution is to limit the assessment to specific functions. By taking this approach, “target” functions are identified based on either the statutory authority of the regulatory program and/or societal concerns in the proposed project area. For the Clean Water Act, the assessment would consider water quality. Similarly for FSA, assessments would consider hydrologic functions and habitat for assessments as the FSA states:

“The action, individually and in connection with all other similar actions authorized by the Secretary in the area, will have a minimal effect on the functional hydrological and biological value of the wetlands in the area, including the value to waterfowl and wildlife” (Federal Register 1996).

Users of a model should recognize that resource concerns may vary, even within the geographical boundaries (reference domain) described in any Regional Guidebook. For example, flooding may be a concern in one stream segment with little concern regarding water quality. Water quality may be a concern in another segment with few flooding concerns. “Target” functions vary depending on resource concerns within the watershed or region.

NRCS policy

In 1997 a strategic plan regarding the HGM Approach was developed by NRCS, EPA, Department of Transportation (DOT), and the USACE regarding mitigation decisions associated with Section 404 permits and wetland conversions requiring USDA approval under the Wetland Conservation (WC) provisions of the 1985 FSA. This effort, titled A National Action Plan, was published in the Federal Register. It could be argued that the National Action Plan mandates the use of the HGM Approach. However, according to clear wording in the Regulations, the plan is “not policy.” Rather, the action plan outlines strategies. The action plan directs that “*the Corps and other Federal agencies will develop a policy statement clarifying how the HGM Approach will be used within the Section 404 and Swampbuster programs to improve regulatory decision making...*” *The policy statement will be pub-*

lished in the Federal Regulations for public review (Federal Register 1997). The National Action Plan can be found at <http://www.usace.army.mil/cw/cecwo/reg/hydrogeo.htm>.

In the absence of a published NRCS “policy statement,” the National Food Security Act Manual (NFSAM) takes precedence. NFSAM requires the use of HGM Regional Guidebooks, if available. If unavailable, the use of existing *functional assessments* or the development of interim HGM-based models is recommended. Only in the absence of an appropriate *functional assessment* should a *wetland assessment* be used. This policy is supported by regulation [7-CFR-12, Section 12.31 (d)] as they require minimal effect determinations to be “*based upon a functional assessment of functions and values.*”

Summary

There are two distinct categories of assessments used by wetland ecologists: *wetland assessments* commonly referred to as “*rapid assessments*,” and *wetland functional assessments*.

Wetland assessments are designed to assist with wetland monitoring efforts and provide a single score for the entire wetland ecosystem. They are a poor mitigation tool, as they can not ensure adequate compensation for individual wetland functions.

Wetland functional assessments are tools specifically developed to assess project-level impacts to wetlands. They provide methods to measure an array of wetland functions. HGM-based *functional assessments* (Regional Guidebooks, State developed methods, or locally developed interim models) are the most common *functional assessments* used in the United States. Functional assessments are poorly suited to ecosystem scale assessments.

NRCS policy requires the utilization of *functional assessment* methods in granting or denying requests for Food Security Act Minimal Effect or Mitigation Exemptions, and making decisions regarding mitigation requirements associated with the NRCS Wetland Protection Policy.

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