NRCS WETLAND FUNCTIONAL ASSESSMENT AND MITIGATION DECISION PROCEDURES, used to support the mitigation requirements provided at 7 CFR §12.4(c), §12.5(b)(4), and §12.5(b)(5).

EXECUTIVE SUMMARY

On December 23, 1985, the enactment of the Food Security Act of 1985 (P.L. 99-198) (Act) initiated what is generally known as the USDA conservation compliance provisions. The Wetland Conservation portion of the provisions have undergone significant revisions in subsequent farm bills.

The 1990 amendments to the Act expanded the minimal effect exemption section to include a new mitigation exemption that was limited to the conversion of "frequently cropped wetlands." In the 1991 Highly Erodible Land Conservation and Wetland Conservation rule published in 7 Code of Federal Regulations (CFR) Part 12, the Secretary of Agriculture (Secretary) assigned the Natural Resources Conservation Service (NRCS) the administration of the mitigation exemption.

The 1996 amendments to the Act removed this limitation and allowed mitigation as an option for all wetlands. In response, on September 6, 1996, the Secretary published a new rule providing details to the changes at 7 CFR §12.5(b)(4).

A good faith exemption, also known as a good faith waiver, was added through the 1996 amendments to the Act. As a requirement of the good faith exemption, the person must mitigate the lost acres, functions, and values of the converted wetland. The regulations assign NRCS the responsibility for the approval of the mitigation plan.

In addition to the responsibility to approve mitigation plans, the Secretary also assigned NRCS the responsibility to make or approve wetland functional assessments used to determine mitigation requirements. The NRCS wetland functional assessment informs the agency and person on how alternative wetland restoration actions (e.g., vegetative establishment, hydrology restoration, and the location of the mitigation site) will influence mitigation ratios[1].

The NRCS Wetland Functional Assessment and Mitigation Decision Procedures must meet all statutory, regulatory, and policy mandates associated with the use of wetland mitigation as provided at 7 CFR §12.4(c), §12.5(b)(4), and §12.5(b)(5).

[1] *Mitigation ratios* are the relative number of acres required to replace lost wetland acres, functions, and values.

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INTRODUCTION AND LEGAL AUTHORITIES

On December 23, 1985, the enactment of the Food Security Act of 1985 (P.L. 99-198) (Act) initiated what is generally known as the USDA conservation compliance provisions. The provisions have been modified in subsequent farm bills. These provisions are more specifically known as:

- Sodbuster, or the Highly Erodible Land Conservation (HELC) provisions and
- Swampbuster, or the Wetland Conservation (WC) provisions.

The conservation provisions require USDA program participants to adhere to certain HELC/WC requirements, as outlined in the Act and in the controlling regulations [7 Code of Federal Regulations (CFR) Part 12— HELC and WC]. Persons[2] adhering to the HELC/WC provisions are eligible to participate in the USDA programs. The administration of the HELC/WC provisions is shared between the USDA Farm Service Agency (FSA) and the Natural Resources Conservation Service (NRCS).

The 1990 amendments to the Act expanded the minimal effect exemption section to include a new mitigation exemption that was limited to the conversion of frequently cropped wetlands (e.g., farmed wetlands or wetlands being farmed under natural conditions). NRCS was granted the responsibility to administer the mitigation exemption. The 1996 amendments removed this limitation, allowing mitigation as an option for all wetlands. Then, on September 6, 1996, the Secretary of Agriculture (Secretary) provided details at 7 CFR §12.5(b)(4) on the expanded mitigation exemption. The regulations were again updated in response to the 2014 amendments at 16 U.S.C. 3822(k), which authorized the establishment of mitigation banks to assist persons in complying with the WC provisions, also known as the Wetland Mitigation Banking Program (WMBP).

A good faith exemption was also added to the Act through the 1996 amendments. The Secretary provided details on the good faith exemption at 7 CFR §12.5(b)(5) and designated the administration of the good faith exemption to the FSA. FSA provides internal agency policy on the administration of good faith in their FSA Handbook - HELC and WC Provisions; 6-CP (6-CP). Because a good faith decision is not a true exemption, but rather a waiver from the penalties of ineligibility, FSA 6-CP refers to the good faith exemption as a good faith waiver of ineligibility. As provided at 7 CFR §12.4(c), a requirement of a good faith waiver is that the person mitigate wetland acres, functions, and values lost through the conversion action. The regulations and 6-CP allocate to NRCS the technical responsibility of approving the mitigation plan to ensure the plan replaces lost acres, functions, and values of the converted wetland.

The regulations are ambiguous regarding whether restoration[3] of the converted wetland is the only type of mitigation associated with good faith, or if compensatory mitigation[4] is also an

[2] The term *person* is from the Administrative Procedures Act of 1946, as amended, and is defined in 7 CFR Part 12.
[3] As used within the WC provisions, *restoration* is a form of mitigation, where the lost wetland functions and values from a conversion action are restored on the same site as the converted wetland.
[4] *Compensatory mitigation* is where lost functions and values associated with converting a wetland are compensated by restoring the lost wetland acres, functions, and values on a different site on the farm or on another farm. Another option is the use of a wetland mitigation bank.

option. NRCS provides the necessary clarity in the NRCS National Food Security Act Manual (NFSAM), by explaining that either (i) onsite restoration of the converted wetland or (ii) compensatory mitigation at another location, are allowable mitigation approaches associated with a good faith waiver (NFSAM §515.30).

In addition to the responsibility to approve mitigation plans, the Secretary also allocated to NRCS the responsibility to make or approve wetland functional assessments used to decide upon mitigation requirements, including mitigation ratios [7 CFR §12.30(a)(3)].

The NFSAM suggests that NRCS State Conservationists (STC) should utilize published Hydrogeomorphic (HGM) Evaluation Guides, if available. Regional HGM guidebooks were developed by the U.S. Army Corps of Engineers (Corps) starting in the late 1990s and are based on the HGM wetland classification system, limiting each guidebook to a particular HGM wetland class (USDA NRCS 2008). The Corps regional guidebooks have limited applicability for NRCS as they do not consider the societal values of a wetland, which is a statutory, regulatory, and policy mandate for the WC provisions. Additionally, the regional guidebooks only represent a portion of U.S. wetland types.

As an alternative to Corps regional guidebooks, the NFSAM provides an option to the STC to develop functional assessments for application in their state. Thus, rather than approving a functional assessment developed by the Corps to meet the legal mandates of Section 404 of the Clean Water Act, NRCS elected to develop, and approve for use, a functional assessment process specific to the statutory and regulatory requirements of the WC provisions of the Act.

Accordingly, the NRCS National Technology Support Centers developed the NRCS Wetland Functional Assessment and Mitigation (FAM) Procedures for the consideration of adoption by STCs in supporting decisions related to mitigation for WC purposes, including onsite restoration[5], offsite compensatory mitigation, and the WMBP. The NRCS FAM Procedures meet all statutory, regulatory, and policy mandates.

The NRCS FAM Procedures are designed for the sole purpose of mitigation and will not be used for the administration of the minimal effect exemption as provided at 7 CFR §12.5(b)(1)(v).

Calibration: The NRCS beta-testing team thoroughly tested and calibrated the FAM Procedures on an array of past converted wetlands, existing mitigation banks, and theoretical conversion and mitigation scenarios. Eventually, through this testing (beta testing) and calibration the assessment procedures demonstrated results (mitigation ratios) that were expected, reasonable, and consistent.

PROXIMITY OF MITIGATION SITE TO THE CONVERTED WETLAND

NRCS policy, outlined in NFSAM §515.10(C)(2)(iv), requires mitigation to occur within the same 8-digit Hydrologic Unit Code (HUC) unless NRCS determines that mitigation outside the HUC provides advantages. NRCS recognizes the ecological value of onsite mitigation. In the absence of onsite mitigation, compensatory mitigation occurring near the impacted wetland can

[5] Onsite restoration of a converted wetland is also referred to as onsite mitigation.

have ecological advantages to mitigation of lost values and functions at locations near the converted wetland. However, the advantages are rapidly diminished as the distance between the converted wetland and the mitigation site increases. Thus, rather than the use of a HUC, the proximity of the mitigation site to the converted wetland is used as an ecological variable within the assessment procedures. Unlike restricting mitigation to a HUC, the proximity approach allows for the use of the WMBP provided for in the Act.

MITIGATION OF LOST WETLAND ACRES, FUNCTIONS, AND VALUES

The statute, regulation, and internal agency policy require the mitigation effort to replace lost wetland acres, functions, and values. Because the mitigation effort must replace wetland acres lost at the converted wetland location with an equal number of acres of wetlands at the mitigation location, mitigation ratios cannot be less than 1:1, regardless of the functional lift[6] at a mitigation site.

For some situations, the converted wetland was not functionally monotypic (e.g., a portion supporting native woody vegetation and another portion supporting non-native herbaceous vegetation). Similarly, some mitigation plans will dictate different areas to function at different levels. When this occurs, the areas functioning at different levels will be delineated and labeled as different Wetland Assessment Areas (WAA).

Each function must be assessed independent of other functions to ensure that each function's loss is adequately replaced. Thus, NRCS determines a mitigation ratio for each function and cumulatively for all WAAs. Taking this approach, the largest ratio required to replace the functional loss for a single function will dictate the mitigation ratio required. For example, if the assessment completed for each function determines a ratio of 1:1 for wildlife, but a ratio of 2:1 for water quality, the mitigation ratio for the project will be 2:1.

The statute, regulation, and policy provide that mitigation can be implemented by wetland restoration, wetland enhancement, or wetland creation[7]. This includes areas enrolled in voluntary easement programs (e.g., Conservation Reserve Program) where those contracts have expired[8]. Wetland protection is not allowed under the WC provisions. This is discussed in more detail in NFSAM §515.10(G).

Associated Non-wetland Areas: As discussed, the statute and regulation require replacement of lost wetland acres. Non-wetlands occurring in association with the mitigation site provide no consideration or value in meeting the replacement of lost wetland acres. For this reason,

[6] The term *functional lift* refers to creating or increasing wetland functions at a mitigation site after implementation of the mitigation plan to compensate for functions lost due to the wetland conversion action.
[7] *Wetland restoration*, *enhancement,* and *creation* are defined in 7 CFR §12.2.
[8] For areas previously restored under a voluntary restoration agreement, which are eligible land for wetland mitigation sites, NRCS will use the pre-restoration conditions as the baseline conditions, rather than applying the Rules as provided beginning on page 9

associated non-wetlands are not provided any consideration in the NRCS FAM Procedures, unless used as part of the mitigation action[9] (wetland creation).

Wetland Values: One way for NRCS to meet the mandate to mitigate for lost wetland values is by identifying functions with high societal value, and then using those functions in the assessment. The wetland functions identified by NRCS as high in ecological/societal value in agricultural landscapes are:

- wildlife habitat
- sequestration of sediments, elements, and compounds
- floodwater storage

The selection of these three functions is supported in 16 U.S.C. 3901 (a)(1)-(9), where "The Congress finds that…wetlands play an integral role in maintaining the quality of life through material contributions to our…water supply and quality, flood control, and…wildlife." The statutory mandate to mitigate for lost wetland values is further addressed in the selection of variables and the establishment of ratings for each variable. For example, all wetlands provide wildlife habitat regardless of the hydroperiods (depth, duration, timing, and frequency of saturation or inundation). However, most wetland ecologists and wildlife biologists agree that the societal value of wetlands that pond water for longer duration is greater than wetlands that pond for brief periods or are only saturated[10]. Additionally, areas that pond water seasonally (e.g., the Cowardin system of wetland classification), but not permanently, provide more societal value for floodwater storage and water quality than permanently ponded wetlands. For these reasons, NRCS made a value-based decision that wetlands which seasonally pond water for more than brief periods will be provided a higher rating than wetlands that do not pond water or pond water briefly or permanently.

Using the HGM functional assessment approach[11], the selection of the reference wetland(s)[12] and the standard reference wetland(s)[13] will impact the ratings for each variable. For example, to meet the requirement to consider wetland values, NRCS has identified high-value wetlands as those that i) typically pond shallow water for long duration (seasonally), ii) have high plant species richness, and iii) if forested, support late successional and/or hard mast species. Thus, wetlands with those characteristics were identified as standard reference wetlands.

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[9] Associated non-wetlands can be used for wetland creation; thereby, contributing to meeting the mitigation requirement for WC purposes.

[10] Legislative records demonstrate that much of the concerns that initiated the WC provisions in 1985 and concerns resulting in subsequent amendments to the Act were based on the loss of waterfowl breeding habitat.

[11] The HGM Approach to the development of functional assessments requires the selection of reference wetlands. The conditions at the "standard" reference wetlands (least disturbed) establishes what will score a 1.0. Then reference wetlands along the disturbance gradient (low to high) are used to establish lessor scores (e.g., 0.75. 0.5. 0.25, and 0.1).

[12] The term *reference wetlands* in HGM are wetlands used to construct and calibrate the model to account for disturbance-based variability. Reference wetlands score less than 1.0 for variables, because they occur somewhere on the disturbance gradient.

[13] The term *standard reference wetland* in HGM are those wetlands within the HGM class that score a 1.0 for all variables.

Wetland Acres: NRCS meets the mandate to replace lost wetland acres by requiring the person to either restore the converted wetland or to use a compensatory mitigation site that is either Non-Wetland (meets the NFSAM label definition of Non-Wetland) or Prior-Converted Cropland (PC)[14]. Wetland types[15] that retain wetland hydrology [e.g., Farmed Wetland (FW), Farmed Wetland Pasture (FWP), and Wetland (W)] cannot be used to replace wetland acres, with one exception. If the converted wetland action results in more functional loss than is replaced at the mitigation site with the use of a 1:1 ratio, then degraded wetlands (FW, FWP, degraded W) can be used to replace the additional functional capacity units (FCU) not replaced at the primary mitigation site[16]. The policy is provided in NFSAM §515.10 (G)(1)(iii) and §515.10 (H).

Wetland Functions: NRCS will meet the mandate of replacement of lost wetland function by applying the FAM Procedures. The FAM Procedures compare the functional loss (FCUs lost) of the converted wetland prior to the conversion action, to the functional gain (FCUs gained) after full implementation of the plan. Each wetland function is determined through the consideration of an array of wetland variables.

NRCS FUNCTIONAL ASSESSMENT APPROACH

The approach used in the NRCS FAM Procedures is based on the hydrogeomorphic evaluation procedures (Smith et. al. 1995) and a modified approach (NRCS 2008) to the hydrogeomorphic classification system originally developed by W. W. Brinson (1993). NRCS policy (NFSAM §516.1(B), Step 2) requires that each wetland function identified as high value by the NRCS STC be adequately mitigated. This includes the assurance that the proposed mitigation action replaces the functional losses for each function, not an average of all functions.

Data Collection: A certified wetland determination is required on the wetland(s) converted or proposed for conversion. Additionally, if a certified determination has not been previously issued on the proposed mitigation site(s), then NRCS shall issue a certified determination with appeal rights on the proposed mitigation site(s).

Wetland functional losses and gains are measured in functional capacity indices (FCIs) and FCUs. The comparisons of the functional losses for each function at the converted wetland verses gains at the mitigation site (functional lift) are then used to determine mitigation ratios.

The wetland identification base map, used by NRCS in the wetland determination process, will be utilized to identify WAAs and sampling points (SP). Each sampling unit (SU) from the base map will serve as a WAA, while the associated representative observation point (ROP) location will be used as a SP. In situations where the case file for the previously certified wetland determination does not contain a base map or ROP locations, the WAA(s) and SP(s) will be identified on the land, and on a map, based on the boundaries of the existing certified

[14] *Prior Converted Cropland* (PC) is defined in 7 CFR 12.2 and discussed in more detail in NFSAM §514.30. Some PC areas retain wetland hydrology but are considered eligible as a mitigation site to replace lost wetland acres.
[15] The term *type* is used in 7 CFR 12 to refer to the various labels applied to a wetland determination map.
[16] The primary mitigation site is the one used to replace lost wetland acres and most of the lost wetland functions and values. In some situations, a secondary mitigation site (or additional acres adjacent to the primary mitigation site) is required to replace wetland functions and values not replaced at the primary mitigation site.

determination. When applicable, data from the certified wetland determination shall be used for application of the assessment. In situations where a SU supports two or more land uses (e.g., pasture and forest) or vegetative types (e.g., trees and herbaceous), those units will be subdivided into different WAAs.

Variables and Ratings: A foundation to all wetland functional assessments is an assessment of the physical characteristics of the wetland (or proposed mitigation site) under consideration. This assessment determines a numeric score (FCI) for one or more identified wetland functions. Each physical characteristic used to calculate the FCI is referred to as a variable, which is used to describe how a wetland functions compared to other wetlands. Variables selected for use in a wetland functional assessment are quantifiable and change depending on the physical conditions of the wetland being assessed. Common examples of variables are vegetative species richness, ponding depth, and proximity to other wetlands. Variables are commonly used in the determination of more than one wetland function. For example, most wetland functional assessments include ponding depth as a variable to determine the functional levels for both habitat and floodwater storage.

Because PC areas have a low functional level and are exempt from drainage and use restrictions, NRCS considers NW and PC areas collectively as non-wetland areas for the purposes of mitigation planning. Although the intensity required in a wetland mitigation plan may vary significantly between a NW and PC mitigation site, both NW and PC areas will always score a zero for each wetland function prior to implementation of a mitigation plan.

Rules: In the application of the FAM procedures, four rules are applied to ensure consistency and adherence to NRCS policy.

Five-year Rule: It is common for a wetland to be in various stages of manipulation prior to the NRCS evaluation of wetland functions. This complicates the assignment of an accurate rating for most variables because the site does not exhibit conditions that occurred prior to the beginning of the conversion process. The most extreme example is when a wetland has already been converted and is being used for agricultural commodity production prior to consideration of mitigation requirements. Below are additional examples of common situations where it is challenging to assess the wetland functions and values lost due to a proposed or past conversion action.

- A person requests a mitigation exemption for a forested wetland that was recently harvested of timber in anticipation of completing the conversion action.
- FSA submits form FSA-569 NRCS Report of HELC and WC Compliance to NRCS for an area that was converted after November 28, 1990, and subsequently has been used for different purposes (forage, crop, hay, fallow).
- NRCS responds to receipt of form AD-1026 Highly Erodible Land Conservation (HELC) and Wetland Conservation (WC) Certification and discovers a forested area has been cleared and piled, but production of an agricultural commodity has not been made possible. The area is identified as a Manipulated Wetland (WX), but the person desires to continue the project to make production possible.

In such situations, the site did not exhibit consistent conditions, nor conditions that might have occurred prior to the beginning of the conversion process. To address these challenges, NRCS will determine a rating for each variable based on the conditions predicted to have occurred on the converted wetland five years prior to the beginning of the conversion action (or based on the conditions of the wetland prior to a WX exemption label decision) [17].

Information gathered onsite (e.g., the identification and aging of trees from stumps, visits to adjacent wetland areas, etc.) and review of aerial imagery and other remote sources (e.g., LiDAR, NWI maps, and USGS Topographic Maps) are used to predict the conditions that occurred on the site five years prior to the conversion action.

Ten-year Rule: At the mitigation site, variables are rated based on the anticipated conditions that will occur at the mitigation site 10 years following full implementation of the mitigation plan. This approach allows for acknowledgement of the future functional lift provided by implementation of the mitigation plan, while still recognizing the time/function relationships inherent to ecological restoration.

1:1 Ratio Rule: As provided in NFSAM §515.12 D.(1)(iii), a ratio of one acre mitigated for one acre converted is the minimum replacement ratio, regardless of the functional lift from implementation of the mitigation plan.

Rounding Rule: When determining final mitigation acres required, the calculations are rounded to the nearest 0.10 acre. FCI and FCU are rounded to the nearest 0.01 index or acre.

Determining Ratings for Each Variable:
As a reminder, variables are determined for each WAA and may be used to determine functional capacity for more than one wetland function. The variable ratings are between 0.1 and 1.0. The following are the abiotic and biotic variables and associated ratings used.

- Ponding Depth **(V^{pd})**: Ponding depth influences the societal value of a wetland. Ponded wetlands provide wetland wildlife habitat to a greater number of wetland dependent species than saturated wetlands. Seasonally flooded/ponded wetlands provide more water quality function and floodwater storage function than saturated wetlands not subject to flooding/ponding. Permanently ponded wetlands do not contribute to the accumulation of soil organic matter (critical to the denitrification process) at a rate equivalent to seasonally ponded wetlands, and they generally have lower invertebrate and amphibian production rate than seasonally ponded wetlands due to predation by fish. Thus, seasonally ponded wetlands have been determined by NRCS to have greater societal value than wetlands that are permanently ponded or wetlands that are only saturated.

[17] For the subsequent conversion of manipulated wetlands, where NRCS previously issued the WX exemption label, the condition of the wetland prior to the WX decision will be used.

Ponding depth is the depth of ponding predicted to occur or measured at the SP, under normal circumstances[18], which includes normal environmental conditions[19]. Because ponding depth predicates ponding duration (deeper ponding results in longer duration), this variable also represents ponding duration. Ponding depth can be estimated based on drift lines, water marks, elevation, or best professional judgement. Alternatively, ponding depth can be measured under normal environmental conditions. Regardless, ponding depth will be rounded to the nearest inch. Mitigation plans will not be approved with a ponding depth over 14 inches unless the converted wetland ponded water over 14 inches prior to the conversion action, or if a variance is specifically approved by the STC.

For the conversion site, this variable is based on the normal circumstances. For the mitigation site, this variable is based on the anticipated (planned) conditions for the mitigation site 10 years after full implementation of the mitigation plan.

Ponding Depth (inches)	Rating
0	0.1
1-3	0.2
4-6	0.6
7-14	1.0
Over 14	0.7

- Micro-Topography **(V^{mt})**: The presence of micro-topography[20] increases the heterogeneity of the WAA, thereby increasing the functional level for wildlife and sequestration of sediments, elements, and compounds. This variable is determined based on visual estimates of the percent of land covered by micro-highs within the WAA. In making this estimate, the footprint of the entire micro-high (convex shape) is used. Micro-lows (concave shaped) and flats would represent the remainder of the WAA. This variable is an estimate based on the conditions within the entire WAA anticipated to exist five years prior to the conversion action for the converted wetland, or the anticipated (planned) conditions for the mitigation site 10 years after full implementation of the mitigation plan.

PERCENT OF WAA REPRESENTED BY MICRO-HIGHS	Rating
< 5 %	0.1

[18] *Normal circumstances*, defined in the NRCS Wetland Identification Procedures found in the NFSAM §514.8(A), is a crucial concept in wetland identification for Food Security Act purposes. The term includes both disturbance and climate considerations.

[19] *Normal Environmental Conditions* (NEC) is defined in the NRCS Wetland Identification Procedures found in the NFSAM §514.8(A). In general, NEC are the hydrologic conditions that occur in a wetland during the normal wet portion of the growing season under *normal climatic conditions* (not abnormally wet or dry).

[20] *Micro-topography*, as used here, are generally small landscape features (highs and lows) that can be removed with normal farming practices (repeated tillage and soil erosion). Their width is normally between 2 -15 feet in diameter. Forest bedding shall be considered micro-topography if installed across the slope. Macro-topography are larger landscape features that are not normally removed by tillage or soil erosion but would require land leveling construction equipment (e.g., hydraulic scrapers common to land leveling operations).

6 – 10%	0.4
11 – 20%	0.7
> 20%	1.0

— Land Use (**V^{use}**): The use of a wetland impacts the societal value and functional level of wetlands. For the converted wetland, the land use category is selected based on the conditions occurring five years prior to the conversion. For the mitigation site, the planned land use is used.

LAND USE	**Rating**
Cropped or hayed	0.1
Managed[21] improved pasture	0.3
Managed native pasture, managed timber[22], or silvopasture	0.5
Grazed, without active management[23]	0.7
Not cropped, hayed, managed, or grazed	1.0

– Vegetative Type (**V^{vt}**): The vegetative type impacts the societal value and functional level of wetlands. Wetlands with higher species richness of native plants have higher functional levels for wildlife than wetlands with low species richness (e.g., cropland or monocultures) or wetlands dominated by introduced plant species. Forested wetlands supporting hard mast species (e.g., oaks) generally provide higher quality wildlife habitat than those supporting early successional species of trees (e.g., green ash, hackberry, and elm). The vegetative type predicted to occur five years prior to the conversion can be informed by the vegetation observed during the site visit. If necessary, the vegetative type can be identified with the use of a comparison site with similar disturbance regime or aerial imagery. The mitigation plan informs the vegetative type for the mitigation area.

VEGETATIVE TYPE	**Rating**
Crops, hay, or other intensely managed communities	0.1
Monotypic herbaceous communities[24] supporting ≤ 2 dominant native plant species.	0.3
Herbaceous plant communities supporting 3-4 dominant native species.	0.7
Herbaceous plant communities supporting > 4 dominant native species.	1.0

[21] Managed, as used here, includes periodic mowing or treatment of herbicides. Control of woody vegetation only falls into the *without active management* category.
[22] Managed intensively as a monoculture stand with wood production as the primary purpose (e.g., loblolly pine plantations and tree farms).
[23] This includes all lands (open or wooded) where livestock have indiscriminate access.
[24] These communities are mostly herbaceous but can support some woody species.

Apply the following to a converted wetland supporting woody vegetation five years prior to the conversion, and to the associated mitigation site(s).	
Communities dominated by woody species ≤ 10 years old and < 20% of the canopy or stems are hard mast species.	0.1
Communities dominated by woody species ≤ 10 years old and ≥ 20 % of the canopy or stems are hard-mast species	0.3
Communities dominated by woody species > 10 years old and < 40 years old, with < 20% of the canopy or stems being hard-mast species; or pine plantations[25] of any age class.	0.5
Communities dominated by woody species > 10 years old and < 40 years old, with ≥ 20% of the canopy or stems being hard-mast species	0.7
Communities dominated by woody species ≥ 40 years old, with < 20% of the canopy or stems being hard-mast species.	0.8
Communities dominated by woody species ≥ 40 years old and ≥ 20% of the canopy or stems being hard-mast species	1.0

— Connectivity **(**V^c**)**: Wetlands do not function in isolation, but rather in association with the landcover of the surrounding area. This is particularly true for mobile, wetland-dependent wildlife and species using wetlands for only a portion of their life cycle. Connectivity is measured by visually estimating the percent of the land within ¼ mile (1320 feet) of the SP that is available for wildlife use. For this purpose, land that is cropland, hayland or pastureland, as well as developed land, farmsteads, etc. are not counted towards connectivity. The exception is that all wetlands (e.g., FW, FWP, W, and AW) count towards connectivity regardless of the land use. The WAAs that are proposed to be converted or are already converted, as well as WAAs at the proposed mitigation areas, shall not be considered as contributing to connectivity. One year of imagery acquired within the five years prior to the conversion action or mitigation plan development will be used to estimate connectivity.

CONNECTIVITY	**Rating**
< 5%	0.1
6% - 15%	0.3
16%-33%	0.7
> 33%	1.0

— Proximity **(**V^p**)**: Replacing lost wetland functions on the site that was converted is preferable to compensatory mitigation (offsite mitigation). Similarly, using a compensatory mitigation site near the converted wetland is preferable to a site located far from the converted wetland. When selecting a rating, use the highest rating for which the

[25] Any southern yellow pine species where the primary management goal is production of forest products.

project qualifies. For example, if within a bank service area but also within 2 miles, use a 0.8 rating.

PROXIMITY	Rating
Within the state	0.1
Within an adjacent HUC or 50 miles	0.3
Within the 8-digit HUC or a bank service area	0.6
Within 2 miles of the sampling point	0.8
Onsite mitigation (restoration of the CW)	1.0

- HGM Classification **(V^{hgm})**: Replacing lost wetland functions within the same HGM Classification System[26] better ensures lost functions are replaced with similar functions.

HGM Classification	Rating
Mitigation site is a different HGM Class than the converted wetland.	0.2
Mitigation site is the same HGM Class, but different subclass or regional subclass.	0.4
Mitigation provides the same HGM class, subclass, and regional subclass, but a different modifier.	0.8
Mitigation provides the same HGM class, subclass, regional subclass, and modifier as the converted wetland	1.0

FUNCTIONAL CAPACITY INDEX

The FCI and FCU are calculated differently for the converted wetland than the mitigation site. Variable ratings are used in an equation to calculate the FCI for each function. NRCS utilizes weighted averages based on the importance of each variable to the function being assessed. For example, land use is critical to wildlife habitat quality (46% weighting), is of lesser importance to water quality (25% weighting), and of no importance to floodwater storage (land use is not used for the floodwater function). The FCI for each function is determined and then multiplied by the acres to determine the FCU for each variable.

Converted Wetland: The formulas used to determine the FCI for each wetland function at the converted wetland are provided below:

- Function 1: Wetland Wildlife Habitat: Wetlands provide critical habitat for wetland dependent wildlife. Accordingly, NRCS has identified wetland wildlife habitat as having significant ecological and societal value. The following equation will be used to determine the FCI for wetland wildlife habitat.

$$\underline{3V^{pd} + V^{mt} + 2V^{use} + 6V^{vt} + V^{c}}$$

[26] NRCS Technical Note No. 190-8-76. Note that the Ten-year rule does not apply to the HGM value, as persons cannot change an HGM class. The value is based on the HGM classification of the mitigation site at the time of site selection.

$$\frac{13}{}$$

- Function 2: Sequestration of Sediments, Elements, and Compounds: Wetlands sequester sediments, elements, and compounds. With the historic loss of wetlands in agricultural landscapes, the sequestration of sediments, elements, and compounds is identified as a significant ecological and societal value. The following equation will be used to determine the FCI for the sequestration of sediments, elements, and compounds.

$$\frac{3V^{pd} + V^{use}}{4}$$

- Function 3: Floodwater Storage: Wetlands store floodwater. With the historic loss of wetlands in agricultural landscapes, NRCS has identified floodwater storage as a significant ecological and societal value. The ponding variable (V^{pd}) will be used to determine the FCI for flood water storage.

Mitigation Site: The formulas used to determine the FCI for each wetland function at the mitigation site are as follows:

- Function 1: Wetland Wildlife Habitat: The following equation will be used to determine the FCI for wetland wildlife habitat at the mitigation site.

$$\frac{3V^{pd} + V^{mt} + 2V^{use} + 6V^{vt} + V^{c} + V^{p}}{14}$$

- Function 2: Sequestration of Sediments, Elements, and Compounds: The following equation will be used to determine the FCI for the sequestration of sediments, elements, and compounds at the mitigation site.

$$\frac{3V^{pd} + V^{use} + V^{p} + V^{hgm}}{6}$$

- Function 3: Floodwater Storage: The following equation will be used to determine the FCI for flood water storage at the mitigation site.

$$\frac{4V^{pd} + 2V^{p} + V^{hgm}}{7}$$

Mitigation Ratio Calculations and Determining Acres Required to Mitigate for Lost Wetland Functions: At the converted wetland, determine the FCI for each function within each WAA. Similarly, determine the FCI for each function and within each WAA at the mitigation site. When the mitigation site is a PC or NW, the before FCI at the mitigation site is 0.00. The

mitigation ratios are determined by following a three-step process explained in the examples provided below.

As a reminder, the variable ratings and resulting FCI score for the mitigation site are based on the anticipated conditions that would occur 10 years following the full implementation of the mitigation plan. Similarly, when conversion actions have already occurred, the ratings and resulting FCI score at the converted wetland are based on predicted conditions occurring at the converted wetland five years prior to making production possible.

- Rounding Rule: As presented earlier, when determining final mitigation acres required, the calculations are rounded to the nearest 0.10 acre. FCI and FCU are rounded to the nearest 0.01 index or acre.
- Onsite vs Offsite Mitigation: To encourage onsite mitigation (restoration), a 1:1 ratio will be accepted for any project demonstrating a ratio of ≤ 1.3:1 where onsite mitigation is utilized.
- Good Faith Waivers: In cases where (i) the person is granted a good faith waiver[27] per 7 CFR 12.5(b)(5), and (ii) where the person elects to use onsite mitigation, but the mitigation ratio does not meet the 1.3:1 threshold above, the ratio will not exceed a 1:1 if the FCI score, after implementation of the plan (using the 10-year rule), scores a 0.70 or above for all three wetland functions.

EXAMPLES

Example 1: A single WAA at the converted wetland and a single WAA at the mitigation site.

For projects where there is a single WAA at the converted wetland and a single WAA at the mitigation site, the calculations to determine mitigation ratios are straightforward and, as such, do not require a determination of FCUs.

In this example, the converted wetland WAA is 0.60 acres.

- **Step 1: Determine FCI for WAA at the converted wetland:** Using the formulas for each function, calculate the FCI for the WAA at the converted wetland based on the predicted conditions that occurred at the converted wetland five years prior to the beginning of the conversion action.

- **Step 2: Determine FCI for the WAA at the mitigation Site**: Using the formulas for each function, calculate the FCI for the WAA at the mitigation site based on the anticipated conditions that will occur 10 years following full implementation of the mitigation actions.

[27] The statutory authority for the Good Faith Waiver is provided in U.S.C. 3822 Section 1222 (h). This exemption has different conditions than the mitigation exemption (Section 1222(f)).

The FCI for each function is documented for the converted wetland and the mitigation site.

	Functions	FCI
WAA 1 (Converted Wetland)	Wildlife	0.65
	Water Quality	0.54
	Floodwater Storage	0.61
WAA 1 (Mitigation Action)	Wildlife	0.72
	Water Quality	0.57
	Floodwater Storage	0.63

— **Step 3: Determine mitigation ratios and acres needed**: The FCI score determined in Steps 1 and 2 for each function at the converted wetland is divided by the FCI for each function after mitigation. In this example, the wildlife FCI is 0.65 at the converted wetland and 0.72 FCI after mitigation; thus, the mitigation ratio for the wildlife function is 0.90 (0.65 FCI at the converted wetland ÷ 0.72 FCI at mitigation site = 0.90). As demonstrated in the third column below, 0.54 acres are required to replace lost functions for wildlife on the 0.60-acre converted wetland (0.60 acres converted X 0.90 = 0.54 acres). Even though the highest ratio requires only 0.57 acres (water quality and floodwater storage), the mitigation acres must be 0.60 acres because the statute and regulations require that lost wetland acres must be replaced for all mitigation actions, and NRCS policy requires a minimum 1:1 ratio.

Functions	Mitigation Ratios	Acres to Replace Lost Function	Acres to Replace Lost Acres
Wildlife	0.65 ÷ 0.72 = 0.90	0.60 X 0.90 = 0.54	0.6
Water Quality	0.54 ÷ 0.57 = 0.95	0.60 X 0.95 = 0.57	0.6
Floodwater Storage	0.61 ÷ 0.63 = 0.95	0.60 X 0.95 = 0.57	0.6

Example 2: More than one WAA at a wetland proposed for conversion and at the mitigation site.

When the converted wetland or the mitigation site has more than one WAA, the total FCU lost at both WAAs must be determined for each function. In this example, a 1.4-acre converted wetland had two WAAs. One (WAA 1) was 0.80 acres and the other (WAA 2) was 0.60 acres.

— **Step 1: Calculate the functional loss at the converted wetland (WAA 1 and WAA 2):** FCIs are determined separately for each of the 3 functions at the two WAAs at the converted wetland. Then the FCUs are determined for each function at each WAA. Below is the tabular example of the calculations.

	Function	FCI		Acres		FCU Lost
	Wildlife	0.65	X	0.8	=	0.52
WAA 1	Water Quality	0.54	X	0.8	=	0.43
	Floodwater Storage	0.61	X	0.8	=	0.49
	Wildlife	0.83	X	0.6	=	0.50
WAA 2	Water Quality	0.54	X	0.6	=	0.32
	Floodwater Storage	0.62	X	0.6	=	0.37

The total FCUs lost from the conversion action is then determined by adding the FCU lost from each WAA for each function. A tabular example is provided below.

Functions	WAA 1 FCU Lost		WAA 2 FCU Lost		Total FCU Lost
Wildlife	0.52	+	0.50	=	**1.02**
Water Quality	0.43	+	0.32	=	**0.75**
Floodwater Storage	0.49	+	0.37	=	**0.86**

The weighted average FCI at the converted wetland is calculated from the total FCUs lost. This is accomplished by dividing the FCU lost by the acres converted. The tabular example, provided below, finds the weighted average FCI for wildlife at the converted wetland is 0.73.

Total FCU Lost		Converted Acres		Weighted Average FCI
1.02	÷	1.4	=	0.73
0.75	÷	1.4	=	0.54
0.86	÷	1.4	=	0.61

— **Step 2: Determine FCI at the Mitigation Site**.

Because the mitigation site in this example has only one WAA, the FCI determinations for the mitigation site do not require weighted averages. Below are the findings for this example.

MITIGATION SITE (functional gains after mitigation)	
Function	**FCI Mitigation Site**
Wildlife	0.65
Water Quality	0.62
Floodwater Storage	0.63

— **Step 3: Determine ratios and acres needed**: To determine the ratios for each function, the weighted average FCI at the converted wetland is divided by the FCI at the mitigation site. Those ratios for each function are then multiplied by the converted wetland acres. Below are the calculations for this example.

Replacing the lost wetland acres occurs because 1.57 acres is larger than the 1.40 acres converted.

MITIGATION SITE (functional gains after mitigation)									
Function	**Weighted Average FCI CW Site**		**FCI Mitigation Site**		**Ratio**		**Acres Converted**		**Acres Required to Replace Lost Function**
Wildlife	0.73	÷	0.65	=	1.12	X	1.40	=	1.57
Water Quality	0.54	÷	0.62	=	0.87	X	1.40	=	1.22
Floodwater Storage	0.61	÷	0.63	=	0.97	X	1.40	=	1.36

As mentioned previously, to encourage onsite mitigation, a 1:1 ratio will be accepted for any project demonstrating (i) a ratio of ≤ 1.3, where onsite mitigation is utilized, or (ii) as explained in the Good Faith Waivers discussion. In the second example provided above, because the ratio (1.12) is less than 1.3, a mitigation ratio of 1:1 (1.4 acres) would be allowed if onsite mitigation is used (restoration of the converted wetland).

If compensatory mitigation is selected in example 2, full mitigation of all wetland functions would require 1.57 acres at the mitigation site, rounded to 1.60 acres per the rounding rule. Most commonly, the mitigation site will be expanded in size to account for the remaining wildlife function not replaced with a 1:1 ratio.

However, situations can occur where the primary mitigation site is used to replace lost acres, but the FCU are insufficient to replace all the lost functions. When this occurs, the use of a secondary mitigation site can be used to replace the deficient FCUs not fully replaced at the primary mitigation site. The secondary mitigation site can be a non-wetland (NW or PC) or a wetland (e.g., FW, FWP, or W) enhanced to replace the deficient FCUs. If a wetland is used as a secondary mitigation site, the process is similar to what has been described with one difference. When the secondary mitigation site is a wetland, the baseline FCI are not 0.00 as they are when

the mitigation site is a PC or NW. Rather, the agency compares the functional levels (FCIs) between the secondary mitigation site's current conditions[28] and the after-mitigation conditions (predictive conditions that would occur 10 years after implementation of the mitigation plan). The functional lift resulting from the mitigation actions at the secondary mitigation site is used to determine additional acres required to replace the deficient FCUs.

SUMMARY

At 7 CFR §12.30(a)(3), the Secretary of Agriculture allocated to NRCS the responsibility to make or approve wetland functional assessments to be used in the administration of the mitigation exemption and the mitigation requirement associated with good faith waivers. In situations where wetland mitigation is required to maintain or regain eligibility, a person must mitigate for lost wetland acres, functions, and values. The application of the FAM procedures ensures these requirements are met. These procedures are unique to wetland mitigation and will not be used for minimal effect determinations.

REFERENCES

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USDA NRCS. 2008. Hydrogeomorphic Wetland Classification System: An Overview and Modification to Better Meet the Need of the Natural Resources Conservation Service. Technical Note No. 190-8-76.

[28] When an existing wetland is used to provide functional lift needed to replace the remaining lost function, the current conditions are used, not the 5-year prior conditions rule.