

Mitigation Plan Development

Online version at: <http://www.saw.usace.army.mil/wetlands/Mitigation/mitplan.html>

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ii. Preface

Early challenges with compensatory mitigation work stemmed from inexperience and the desire to “cookbook” projects or obtain the cheapest property. Since the late 1980's, the Wilmington District’s Regulatory Division has been involved on a national level with increasing the success rate of mitigation projects. Our studies clearly indicate that the following factors contribute to the failure of most wetland and stream mitigation projects:

- Incorrect elevations/pattern-profile-dimension
- Inadequate provisions for drainage
- Soil compaction
- Erosion
- Human Impacts
- Noxious plant species invasion
- Herbivory
- Changes in adjacent/upstream land use
- Lack of oversight during construction and planting
- No water budget modeling undertaken
- No soil fertility testing undertaken
- Poorly written mitigation plans that lacked specific and measurable goals, target functions and structural elements of the wetland or stream proposal
- Lack of commitment on the part of the permittee

- Lack of communication between the permittee and the regulatory agencies

Any one or a combination of the above factors can greatly compromise the best plans. Wetland and stream mitigation is an expensive undertaking. It behooves anyone attempting such work to pay close attention to all details.

I. The Foundation of a SMART Compensatory Mitigation Plan.

Whether you are writing a mitigation plan or reviewing a plan prepared by someone else, attention to the following will greatly enhance the probability of success of your mitigation project. This holds true for both wetland and stream mitigation work. It is paramount that one ensure that all components of the compensatory mitigation plan are

SMART:

Specific
Measurable
Attainable
Reasonable (practicable)
Trackable

A. Goals. All successful mitigation projects begin with the desired end-state in mind. Accordingly, for a mitigation plan to be approved by the Corps, it must clearly state SMART Goals. These goals must also be specific in terms of the project life (i.e., how long do you plan for the wetland/stream to persist).

B. Target Functions. The 1990 CE/EPA Mitigation MOA requires replacement of aquatic functions unavoidably lost to a permitted activity. This requirement was reinforced by RGL 02-2. Accordingly, for a mitigation plan to be approved by the Corps, it must clearly state the SMART Target Functions. A permittee must consider the aquatic functions lost at the impact area to be able to address the compensatory mitigation requirements. In fact, the target functions actually dictate site selection and the structural elements of a given project. An approved methodology for assessing wetland or stream functions in North Carolina does not exist at this time. The Regulatory Division is currently involved in an interagency initiative to develop wetland and stream function assessment methodologies for use in North Carolina. However, it is likely that even when such methodologies are developed, there may be instances where acreage (wetlands) and linear feet (streams) are used to determine compensatory mitigation requirements. Until such time that these methodologies are developed, tested and approved, the Regulatory Division will continue to utilize the best professional judgment of its project managers and the resource agencies to make mitigation decisions.

C. Structure. For wetlands: vegetation, soils and hydrology. For streams: pattern, profile and dimension. The structural elements of a project are tracked during monitoring and are included in the success criteria.

1. Wetland Structural Elements

a. Hydrophytic Vegetation

- A reference ecosystem and/or its range of successional stages must be analyzed
- Planting stock must be listed to species
- "Local" propagules should be utilized; recommend reputable nursery stock obtained within a range 200 miles north and south of the mitigation site; nursery receipts must be obtained
- Quality Control and supervision of planting crew is extremely important

b. Hydric Soils

- Must consider the physical aspects (texture, permeability)
- Must consider the chemical aspects (fertility, pH)
- Soils testing is recommended for all projects

c. Wetland Hydrology

- A water budget is required for all projects
- Must consider the full range of hydrologic inputs (low, average and high conditions)
- Timing, source, frequency and duration must be considered

II. Wetland Compensatory Mitigation Checklist.

This document lists the primary considerations one must take into account when developing wetland mitigation plans. See web site to download the Wetland Compensatory Mitigation Checklist.

III. Stream Compensatory Mitigation Checklist.

This document lists the primary considerations one must take into account when developing stream mitigation plans. See web site to download the Stream Compensatory Mitigation Checklist.

<http://www.saw.usace.army.mil/wetlands/Mitigation/Documents/AppendixV.pdf>

IV. Success Criteria.

Are defined as easily measurable, external attributes that are established prior to the development of a mitigation site, and subsequently, must be exhibited by the site indicating that the specific mitigation goals have been met. Success criteria for a given project are related to the specific target functions that must be replaced. They are determined on a case-by-case basis and are influenced by what the site can support.

Success criteria must be SMART (specific, measurable, attainable, reasonable and trackable). For wetland mitigation, they are normally addressed in terms of the three parameters (vegetation, soils and hydrology). For stream mitigation they are normally addressed in terms of the maintenance of a specific pattern, profile and dimension. The following information is used to determine the success criteria for a given project:

- Site-specific water budget modeling
- Site-specific hydrogeomorphic conditions
- Structural requirements of the proposed wetland or stream type
- Reference area / reference reach analysis
- Scientific Literature
- Experience

Ultimately, “success” is governed by the mitigation site’s capacity to support the project.

V. Monitoring and Long Term Management.

Compensatory mitigation plans will identify the party responsible for accomplishing, maintaining and monitoring the mitigation project. To ensure that a project meets the prescribed success criteria, monitoring will be required for an adequate period of time, normally 5 to 10 years. In the event of a violation, the Regulatory Division may take enforcement action even after the identified monitoring period has expired.

There are essentially two types of monitoring:

1. Compliance monitoring. This is the type of monitoring that is undertaken in the regulatory context. Simply stated, compliance monitoring entails sampling the structural elements of a mitigation project to determine if the specific success criteria have been met. If the success criteria have been met at the end of the prescribed monitoring period, then the permittee has satisfied his mitigation obligations under the subject permit. If the success criteria have not been met, then the permittee is out of compliance with their permit and enforcement action may be taken.

2. Data Collection. This involves the gathering of information (usually water quality related) at a specific project site that results in large amounts of data specific to that single project. To be useful, this type of monitoring requires the collection of equal amounts of pre-project data.

VI. Stream Monitoring (see Stream Monitoring page on web site) (http://www.saw.usace.army.mil/wetlands/Mitigation/stream_mitigation.html)

VII. Reference Areas.

The study of reference areas assists with site selection and the assessment of target functions. They are also utilized in gaining additional information that is useful in planning mitigation projects. For the purposes of this guidance, it is recommended that all mitigation projects include analysis of suitable reference area(s).

Many challenges exist with locating and securing access to suitable reference areas. Human influences (ditching, logging), access limitations, natural variability between sites in terms of hydrogeomorphology, successional stages, and adjacent land use render direct comparison between the mitigation site and the reference area uncertain at best. Accordingly, reference areas should not be used to directly establish the success criteria for a given mitigation project. That said, there are rare occasions when a reference area may be used to establish success criteria. Generally, this is the case when the mitigation project site is directly connected to a wetland that is suitable for use as a reference area. This is most often the case with creation or restoration projects with homogeneous soil types and a “shared water supply” and/or an “off-line water supply” hydrologic regime. As stated, these instances are rare and are subject to approval by the Corps or MBRT as appropriate.

In the context of compensatory mitigation, "reference area" wetlands should not be confused with “reference standard” wetlands per the Hydrogeomorphic Classification System. Although “reference standard” wetlands, those exhibiting the highest level of functional capacity across the suite of functions performed by a regional wetland subclass, can be useful in evaluating the potential end-state of a mitigation project, within the 5 year monitoring period, most mitigation projects look and act much differently than mature, “reference standard” wetlands. For the purposes of this guidance, it is recommended that when appropriate, a mitigator utilize several reference areas that represent a range of successional stages for the particular wetland type being restored, created, or enhanced.

VIII. Wetland and Stream Function Assessment in North Carolina.

Many different aquatic function assessment methodologies exist across the country. On a national basis, the U.S. Army Corps of Engineers does not recognize any one methodology as the best or most acceptable in all cases. Regulatory Guidance Letter 02-02 states that, "when possible, districts should use a functional assessment by qualified professionals to determine impacts and compensatory mitigation requirements." HQUSACE also recognizes that, in the absence of an acceptable methodology, the collective best professional judgment of the Corps, EPA and resource agencies' representatives will continue to play a vital role in all resource assessments.

The Regulatory Division is currently involved in an interagency initiative to develop wetland and stream function assessment methodologies for use in North Carolina. However, it is likely that even when such methodologies are developed, there may be instances where acreage (wetlands) and linear feet (streams) are used to determine

compensatory mitigation requirements. Until such time that these methodologies are developed, tested and approved, the Regulatory Division will continue to utilize the best professional judgment of its project managers and the resource agencies to make mitigation decisions.

IX. Site Selection.

A suitable mitigation site is one that is hydrogeomorphically suited to sustaining the prescribed wetland/stream system and replacing the aquatic functions lost to the permitted project. Compensatory mitigation plans should describe the factors considered during the site selection process and plan formulation including, but not limited to:

1. Watershed considerations: Mitigation plans should describe how the mitigation work will contribute to the specific aquatic resource needs of the impacted watershed. A compensatory mitigation project, at a minimum, should be located within the 8-digit USGS Hydrologic Unit (HUC) within which the impact is located. Should a distinct break in a physiographic ecoregion exist within a given 8-digit HUC, the Corps, at its discretion, may limit site selection based on the 8-digit HUC and the specific physiographic ecoregion.

2. Practicability: The mitigation plan should describe site selection in terms of cost, logistics and existing technology.

3. Air Traffic: Compensatory mitigation projects that have the potential to attract waterfowl and other bird species that might pose a threat to aircraft will be sited consistent with the Federal Aviation Administration Advisory Circular on Hazardous Wildlife Attractants on or near Airports (AC No: 150/5200-33, 5/1/97).

X. Consideration of Upland Areas.

Under limited circumstances, credit may be given for inclusion of upland areas within a compensatory mitigation project to the degree that the protection and management of such areas is an enhancement of aquatic functions and increases the overall ecological functioning of the mitigation site, or of other aquatic resources within the watershed (see Federal Mitigation Banking Guidance and Nationwide Permit General Condition 19 available on the Wilmington District web site). Such enhancement may be reflected in the amount of credit attributed to the mitigation project. The establishment of buffers in upland areas may only be authorized as mitigation if the Regulatory Division determines that this is best for the aquatic environment on a watershed basis. In making this determination, the Regulatory Division considers whether the wetlands or other aquatic resources being buffered:

1) perform important physical, chemical, or biological functions, the protection and maintenance of which is important to the region where those aquatic resources are located; and

2) are under demonstrable threat of loss of substantial degradation from human activities that might not otherwise be avoided.

XI. Consideration of Riparian Areas.

The Regulatory Division may give credit for inclusion of riparian areas within a compensatory mitigation project to the degree that the protection and management of such areas is an enhancement of aquatic functions and increases the overall ecological functioning of the mitigation site, or of other aquatic resources within the watershed. Such enhancement may be reflected in the amount of credit attributed to the mitigation project. The establishment of buffers in riparian areas may only be authorized as mitigation if the Regulatory Division determines that this is best for the aquatic environment on a watershed basis. In making this determination, the Regulatory Division considers whether the streams or other aquatic resources being buffered: 1) perform important physical, chemical, or biological functions, the protection and maintenance of which is important to the region where those aquatic resources are located; and 2) are under demonstrable threat of loss of substantial degradation from human activities that might not otherwise be avoided.

XII. Site Protection.

Compensatory mitigation plans should include a written description of the legal means for protecting mitigation area(s), and permits will be conditioned accordingly. The wetlands, streams or other aquatic resources (including uplands when appropriate) associated with a mitigation project should be protected in perpetuity with appropriate real estate arrangements. Such arrangements should effectively restrict harmful activities that might otherwise jeopardize the purpose and functioning of the mitigation project. These prohibitions include, but are not limited to: filling; grading; excavating; earth movement of any kind; construction of roads, walkways, buildings, signs, or any other structure; any activity that may alter the drainage patterns on the property; the destruction, mowing, or other alteration of vegetation on the property; disposal or storage of any garbage, trash, or other waste material; or any other activity which would result in the wetlands being adversely impacted or destroyed. Conservation easements are the preferred preservation mechanism. (See Model Conservation Easement, available on Wilmington District web site.)

XIII. Financial Assurances.

Compensatory mitigation plans will identify the party responsible for providing and managing any financial assurances and contingency funds set aside for remedial measures to ensure mitigation success. This includes identifying the party that will provide for long-term management and protection of the mitigation project. Financial assurances should be commensurate with the level of impact and the level of compensatory mitigation required. Financial assurances may be in the form of performance bonds, irrevocable trusts, escrow accounts, casualty insurance, letters of credit, legislatively enacted dedicated funds for government operated banks or other approved instruments. Such assurances may be phased out or reduced once the project

has been demonstrated functionally mature and self-sustaining in accordance with the success criteria.

XIV. Contingency Plans.

Compensatory mitigation plans should include contingency plans for unanticipated site conditions or changes. The Regulatory Division will determine the course of action to be taken in the event of unexpected conditions based on the goals of the mitigation project, the success criteria and the provisions of the contingency plan.

XV. More Information.

See the Regulatory Guidance Letter (RGL) 02-2, available for downloading from the Wilmington District web site

(<http://www.usace.army.mil/inet/functions/cw/cecwo/reg/RGL2-02.pdf>).

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