

Remediation

Project Development and
Environmental Analysis Branch



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Purpose

This procedure discusses the guidelines for coordinating remediation efforts for mitigation sites.

Responsibility

The NEU-EG is responsible for coordinating all remediation activities for Wetland, Stream, Buffer, and Conservation Mitigation sites statewide. This includes investigating and analyzing problem areas on sites based on annual monitoring data and visual inspection. The NEU-EG is responsible for coordinating the development of design plans, coordinating the procurement of any necessary state and federal environmental permits, acquiring construction funding, and implementing the proposed solutions.

Scheduling and Time Constraints

The scheduling and time constraints will be set on a case by case basis.

Procedures

Step 1. Investigation/Analysis

Remediation activities are usually required based on failure of any areas within a site to meet the required success criteria or visual inspection. Common occurrences that require remediation include:

- failure to meet hydrologic success
- failure to meet vegetation success
- excessive erosion problems
- stream instability problems

Close coordination with state and federal environmental regulatory agencies is necessary to determine if the site requires remedial action. While an in-house

assessment is usually sufficient, a consultant analysis can be used if the problem involves a more in-depth study.

Step 2. Site Plans

Once the analysis is complete, a detailed summary of all proposed remediation activities is developed. Site plans are then developed to convey this information. The level of documentation can range from simple schematics to detailed site plans and provisions. The level of detail is based upon the magnitude of the proposed remediation.

The design requirements used to prepare site plans are the same as those outlined in the Onsite Mitigation Design ([future link](#)) procedure. Depending on the extent of the remediation work, all of the outlined design requirements may not be needed. The NEU-EG is responsible for determining the appropriate information that is required in the site plans.

Step 3. Method of Task Completion for Site Plans

Site plans are generally prepared utilizing two different methods:

- NEU “in-house”

The NEU-EG will complete the site assessment and design of the site plans with input from the Hydraulics Unit and ICI Group utilizing the Design Requirements stated in Onsite Mitigation Design ([future link](#)).

- NEU Consultant

An on-call consultant will complete the site assessment and design of the site plans. The scope of work, task list, and cost estimate will be completed as described in Step 4.

Step 4. The consultant, through coordination with the NEU-EG, will develop a scope of work for site remedial assessment, site plan design, and construction oversight. Proceed to Step 5 once the scope of work has been finalized.

Step 5. The consultant and the NEU-EG Project Engineer will prepare independent cost estimates and send them to the Transportation Program Management Unit (TPMU). The cost estimates must be within 5% on man-days and 10% on cost. If the estimates do not meet these criteria, the NEU-EG must negotiate with the consultant to either meet the criteria or revise the task list in the scope of work. Examples of scopes of work and man-day estimates are located in the [Resources and Tools](#) section.

Step 6. Once 60% design plans are complete, develop a list of quantities for the proposed remediation and a corresponding construction estimate. This applies to both in-house and consultant produced design plans.

Step 7. Determine the method of construction in conjunction with the preparation of the estimate, through close coordination with the Division, so that the appropriate funding can be secured for implementation of remedial activities. Generally, there are two options for remediation construction activities: the use of State Forces or Purchase Order Contract (POC). If State Forces are to be utilized for construction, proceed to Step 8. If a POC is to be utilized for construction, proceed to Step 9.

Step 8. Using the 60% complete plans, prepare the following line item estimates:

- Construction performed by State Forces
- Construction performed using a POC

These two estimates are submitted along with the Funding Request Letter to the Program Development Unit Manager.

Upon completion of the final site plans, the NEU-EG will be responsible for verifying quantities and coordinating with Division personnel to insure that the appropriate site plans and special provisions, reforestation plans, and planting details will be developed and included in the final site plan by the Roadside Environmental Unit (REU).

- Step 9.** Using the 60% complete plans, prepare a line item estimate for construction. Submit this estimate along with the Funding Request Letter for POC.

Upon completion of the final site plans, The NEU-EG will develop a Final Engineer's Estimate based on the final quantities. This estimate will be used to compare bids received by the Division from potential contractors. The NEU-EG will be responsible for verifying quantities and coordinating with the Division Design Construction Engineer to insure that the appropriate special provisions and individual bid items are included in the bid contract document. Any necessary erosion control design plans, special provisions, reforestation plans, and planting details will be developed and included in the final site plan by the REU.

- Step 10.** Once remedial construction begins, the NEU-EG provides assistance to the Department's Construction and Maintenance personnel during the remediation construction phase of wetland, stream, buffer, and conservation mitigation sites. This includes periodic site visits during construction of the sites. Staff is available to ensure that the approved design plans and details are installed within the specifications and that there is clear understanding of the goals of the project.

NEU-EG staff is responsible for making alternations and field adjustments as designs are implemented. This includes close coordination with the Division, State, and Federal Environmental Regulatory agencies.

- Step 11.** If additional planting, vegetation sample plots, and monitoring gauges are required due to the remedial work, the NEU-EG will be responsible for coordinating these activities in accordance with the On-site Mitigation Construction procedure.

- Step 12.** A remediation as-built plan is required that fully documents work completed on the mitigation site in accordance with the On-site Mitigation Construction procedure. Upon successful completion of site construction, the NEU-EG coordinates the completion of the as-built package for each mitigation site that is forwarded to the state and federal regulatory agencies, in order to meet the permit requirements.

Background

NCDOT is responsible for the success of the mitigation sites constructed for each project. Monitoring of these sites is required for one to five years depending on the type of mitigation and pinpoints problems that need to be corrected. Additionally, the information from the monitoring of these sites provides valuable information on what methods work best.

Policy, Regulatory, and Legal Requirements

- [US Army Corps of Engineers-Wilmington District - Mitigation](#)

Warnings and Precautions

- None

Resources and Tools

- [Example Scope of Work for Mitigation Site Assessment](#)
- [Example Man-day Estimate for Mitigation Site Assessment](#)
- [Example Scope of Work for Site Design and Plans](#)
- [Example Funding Request for State Forces](#)
- [Example Estimate for State Forces](#)
- [Example Funding Request for Contract Construction](#)
- [Example Estimate for Contract Construction](#)
- [Example Final Engineer's Estimate](#)

Contacts

- For suggestions to change this procedure contact: Karen Capps (919) 431-2003
- For questions about performing this procedure contact: Randy Griffin (919) 431-6529

User Access

- Restricted NCDOT, FHWA, MPO, RPO, Consultants, etc.

Flowchart

- None