

MITIGATION AND MONITORING GUIDELINES

U.S. Army Corps of Engineers, Tulsa District
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Introduction

The U.S. Army Corps of Engineers (Corps) has the responsibility under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 to require permits for certain construction activities in “waters of the United States”. Waters of the United States includes rivers, lakes, streams, creeks, natural ponds, and wetlands adjacent to such waters (defined at 33 CFR 328). These “waters of the United States” collectively represent aquatic resources that provide an innumerable set of services for the general public (e.g., water quality improvement, flood damage reduction, storm flow conveyance and storage, maintenance of base flow, spawning and nursery areas for aquatic organisms, and habitat for fish and wildlife, etc.).

The supreme goal of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of this Nation’s waters. The intent of Section 404 is to protect these waters from the indiscriminate discharge of materials capable of causing pollution. The goal of the Rivers and Harbors Act is to protect the navigable capacity of the Nation’s waterways for the movement of interstate commerce.

Construction activities authorized under Department of the Army permits may result in temporary and/or permanent adverse impacts to waters of the United States, including wetlands. The Regulatory Program regulations (33 CFR 320-331 and 40 CFR 230) authorize the Corps to require mitigation for project impacts. The Corps is committed to the protection of the aquatic ecosystem while administering a fair and equitable permit program. The Federal government has established a goal of “no overall net loss” of wetlands and the Corps has adopted this goal to the Regulatory Program.

Mitigation of project impacts to aquatic resources requires the development and consideration of project alternatives. These alternatives must employ three mitigation steps that are to be considered in a sequential manner. First, project impacts must be *avoided* to the extent practicable. Second, unavoidable impacts should be *minimized*. Third, remaining unavoidable impacts should be mitigated through *compensatory actions*. This mitigation policy is more explicitly described in the Memorandum of Agreement between the Environmental Protection Agency and the Department of the Army Concerning the Determination of Mitigation under the Clean Water Act Section 404(b)(1) Guidelines.

Compensatory mitigation may take several forms including restoration, enhancement, creation, or preservation. *Restoration* is the re-establishment of wetland and/or aquatic resource characteristics and function(s) at a site where they have ceased to exist or exist in a substantially degraded state. *Enhancement* is activity(ies) conducted in existing wetlands or aquatic resources that increases or improves one or more aquatic function(s) or characteristic(s). *Creation* is the establishment of a wetland or other aquatic resource where one did not formerly exist (i.e., the conversion of a non-aquatic habitat to aquatic habitat). *Preservation* is the conservation or dedication of ecologically important wetlands or other existing aquatic resources in perpetuity through the implementation of appropriate legal and physical mechanisms to prevent its destruction or degradation in the future.

Restoration of previously degraded or destroyed wetlands or stream corridors is generally preferred over all other forms of compensatory mitigation due to a higher degree of success achievable in these situations. Preservation of existing wetlands or stream channels is generally the least preferred option due to failure to contribute to “no net loss”. While “in-kind” replacement mitigation is generally preferred over “out-of-kind” mitigation, there may be situations where regional aquatic resource needs or priorities tip the balance in favor of “out-of-kind” mitigation. Mitigation may be “on-site” or “off-site”, and a number of considerations may influence the preferred option in this regard.

The balance of this policy is intended to address these issues in a manner which guides permit applicants toward appropriate, viable, meaningful, adequate, and practicable mitigation proposals to successfully replace lost functions and values of the aquatic ecosystem associated with regulated impacts to waters of the United States. Permit applications that are accompanied by an appropriate comprehensive mitigation proposal consistent with the elements of this policy will expedite the administrative review and evaluation of the applicant’s proposal. However, submission of a plan to compensate for remaining unavoidable impacts is no guarantee that a permit will be issued. There are sensitive and high value ecological systems where the appropriate decision on a permit application in such areas is denial of the permit.

Geographic Applicability

This policy applies to all waters of the United States within the Regulatory Boundary of the Tulsa District. For the Regulatory Program authorities, the Tulsa District includes all of Oklahoma, the Texas panhandle and the Red River drainage across northern Texas, and Corps Civil Works Projects within the southern half of Kansas, specifically the watersheds of the Arkansas, Verdigris, and Neosho Rivers (see map at Enclosure 1)

Purpose

The purposes of this policy are: 1) to provide predictability to permit applicants needing to mitigate for anticipated impacts from proposed projects, 2) to improve the success of mitigation implemented by permittees in the Tulsa District, 3) to increase efforts toward mitigation compliance through self-reporting, and 4) ultimately, to meet the goal of “no overall net loss” of wetlands in the Regulatory Program. This would be accomplished through an emphasis on watershed-based mitigation with consideration to regional aquatic resource needs and priorities.

Definitions

Many of the terms used in this policy have been defined within related reference documents. Additional definitions may be included in the final policy as needed.

Mitigation

Dictionaries define “mitigate” as “to make or become less severe or intense”. In the National Environmental Policy Act regulations, the Council on Environmental Quality (40 CFR 1508.20) has further defined mitigation to include:

- a. *avoiding* the impact altogether by not taking a certain action or parts of an action,
- b. *minimizing* impacts by limiting the degree or magnitude of the action and its implementation,
- c. *rectifying* the impact by repairing, rehabilitating, or restoring the affected environment,
- d. *reducing* or eliminating the impact over time by preservation and maintenance operations during the life of the action, and
- e. *compensating* for the impact by replacing or providing substitute resources or environments.

Existing laws, regulations, and policies relating to mitigation and the Department of the Army Permit Program can be found under the “Authorities” section of this document. These documents are incorporated in this document by reference and the reader is advised to be familiar with these existing guiding references. This document is not intended to summarize or revise these authorities and policies, only to clarify them for application in the Tulsa District.

The goal of compensatory mitigation should be the restoration and maintenance of the chemical, physical, and biological integrity of the Nation’s waters by replacing unavoidable losses of wetlands or streams or the unavoidable loss of function in a wetland or stream. While the focus of mitigation must be on aquatic resources, mitigation plans may include as a component the protection of upland areas adjacent to the wetlands or aquatic resource as necessary to ensure protection and integrity of the overall aquatic ecosystem.

The best compensatory mitigation would occur as close to the project impact site as possible. Project proponents should endeavor to incorporate meaningful aquatic resource mitigation in their site plan at the earliest stage of the design process. The designation of mitigation space in a completed site plan as an after-thought generally results in inadequate space, steep or inappropriate slopes, inadequate buffering from adjacent land use influences, no margin for the expected dynamics of a fluctuating aquatic system, and ultimately, poor or valueless mitigation. In some situations it is not practicable to provide appropriate mitigation on-site and project proponents must find and acquire a suitable off-site location. The ratio of mitigation required against the losses incurred by the project will increase the further the mitigation site is located from the impact site.

Impacts to aquatic resources may be permanent or temporary. Compensatory mitigation will generally only be required against permanent aquatic resource impacts. Mitigation through restoration and remediation of the project site following completion of construction is typically adequate for temporary impacts.

Mitigation Site Selection Consideration

Diligent consideration must be involved in selection of a mitigation site, even when proposing to mitigate on-site. The consideration of the following factors will indicate if a site is suitable or unsuitable for development as a mitigation site:

- a. landscape position
- b. cost of acquisition and mitigation development
- c. previous land uses on the potential mitigation site

- d. pre-existing easements, encumbrances, utilities on the site which cannot be vacated
- e. surrounding land uses
- f. opportunities to buffer the mitigation site from influences from surrounding land uses and landforms
- g. reliable natural supply of water (mitigation proposals involving artificial irrigation or highly managed or manipulated water regimes will not be accepted for consideration; hydrology must be passive on the mitigation site)
- h. pre-existing water rights in the area
- i. suitability of the native substrate to contain water on the surface
- j. availability of and ability to utilize native wetland substrate to inoculate mitigation site soils to favor natural regeneration of native wetland plants
- k. ability to provide permanent protection of the mitigation site through deed restriction

Mitigation Strategies

Where avoidance and minimization of project impacts has been maximized to the extent practicable and unavoidable impacts remain, project proponents should consider compensatory actions to counter the aquatic ecosystem losses of the proposed project. As previously stated, compensatory mitigation may take the form of restoration, enhancement, creation, or preservation. The strategy preferred by the Corps and which has the highest rate of success and meaningful accumulation of mitigation credit is restoration of previously degraded or destroyed wetlands or stream channels. All options for restoration of previously degraded aquatic resources in the project vicinity should be examined and exhausted before pursuing alternative strategies.

Enhancement of existing aquatic resources is similar to restoration such that the existing aquatic resource may have been degraded but not completely destroyed and the improvement in value or increase in size or function anticipated from the enhancement activity(ies) is measurable. Simply planting more trees in a healthy wetland forest would not be considered an appropriate enhancement option. Enhancement activities which favor a single faunal species or group of species or which involve hydrologic manipulation(s) should be carefully examined to ensure the enhancement activities are not detrimental to other valuable functions of the existing aquatic resource.

Creation of wetlands in non-wetland areas will be considered a viable mitigation strategy where it does not destroy more valuable uplands and uncertainties regarding hydrology are adequately addressed.

Preservation of existing wetlands or stream channels is the least preferred option. Preservation of an existing quality aquatic resource(s) does not contribute to “no net loss” unless preservation is only a portion of a larger mitigation plan that includes restoration or enhancement activities. Where preservation is included in a multi-feature mitigation plan, the credit assigned to preservation generally should not exceed 50% of the total mitigation package.

The establishment of upland buffers around existing wetland or aquatic resource sites may be suitable as mitigation where there is a discernable negative influence to the aquatic resource that a buffer would address. Buffers may be any width, but to be most effective, must be a minimum of 50-feet wide. For all linear aquatic systems (e.g., streams), a minimum 50-foot buffer should be included on each side where possible for best protection. Buffers widths in excess of 100-feet may be included in a plan. However, credit will generally not be given for the upland portions beyond the 100-foot width.

“In-kind” replacement mitigation is generally preferred over “out-of-kind” mitigation and project proponents are advised to follow this pattern in approaching compensatory mitigation. There are circumstances where the impacted wetland type is difficult to replicate or when regional aquatic resource needs or priorities tip the balance in favor of out-of-kind mitigation. Mitigation proposals involving out-of-kind mitigation will require higher mitigation ratios even when regional aquatic resource needs favor out-of-kind mitigation. Not all wetland and aquatic resource impacts are mitigable; some circumstance will require the denial of a permit to protect a sensitive or high quality aquatic resource rather than the implementation of compensatory mitigation.

Mitigation may be “on-site” or “off-site”, and a number of considerations may influence the preferred and selected option in this regard.

Mitigation Plans

A mitigation plan should be prepared early in the permit application process. For nationwide permit activities, where wetland impacts or substantial stream reach impacts are involved, a detailed mitigation and monitoring plan should be submitted with the request for confirmation of the nationwide permit. For individual permit applications, a preliminary mitigation plan should be prepared and submitted with the permit application. This mitigation plan would then be refined to a final detailed mitigation plan following the public notice comment period and the Tulsa District’s review of the preliminary mitigation plan. The Tulsa District will not grant a permit based on a conceptual mitigation plan.

Mitigation plans shall include the elements listed in the Multi-Agency Compensatory Mitigation Plan Checklist (Enclosure 2). The recommendations contained in “Incorporating the National Research Council’s Mitigation Guidelines into the Clean Water Act Section 404 Program” (Enclosure 3) shall be given due consideration in the mitigation site selection and design process. Failure to appropriately implement these recommendations or justify why these recommendations are not followed will delay final approval of the project.

Mitigation Ratios

If mitigation efforts were always located adjacent to the site of the impact and comprehensively replicated the entire suite of functions provided by the impact site, were consistently successful and achieved immediate ecological function, then one-for-one mitigation might be acceptable. However, mitigation activities have inherent risks against success, delays in achieving ecological function, and often are located in a position where the entire suite of functions cannot be replicated. Therefore, one-for-one mitigation is rarely acceptable. There are a number of factors that influence the ratio of mitigation required against anticipated project-incurred impacts or losses to aquatic

resources. The factors on the following list (not an exhaustive list) generally drive required mitigation ratios upward:

- a. distance of mitigation site from impact site
- b. biological diversity of the impact site
- c. physical complexity of the impact site
- d. ecological uniqueness of the impact site
- e. time necessary to achieve functional maturity at the mitigation site
- f. locating the mitigation site in a different watershed from the impact site
- g. locating the mitigation site in a different ecoregion from the impact site
- h. time lag between construction impacts and completion of mitigation activities
- i. reasonably anticipated negative and detrimental influences on new mitigation sites (human activities, surrounding land uses, natural predation or herbivory, etc.)
- j. inconsistency in the source of hydrology for the mitigation site
- k. pre-existing easements, existing utilities, prior land uses on the mitigation site
- l. necessity of significant soil amendment or soil replacement to make mitigation site viable
- m. reliance on enhancement, creation, or preservation strategies as opposed to restoration
- n. necessity to use out-of-kind mitigation for incurred impacts

The Tulsa District will typically require a minimum mitigation ratio of 1.5 replacement acres to 1.0 acre of impacted aquatic resource (1.5:1). This is the base minimum and this ratio may be increased based on the Corps consideration of the above listed factors relevant to a specific mitigation proposal. While methods exist to measure value of impacts and losses on a functional basis, the expertise required to assess this accurately is not widely available at this time and the Tulsa District will accept acreage as a surrogate measure of functional loss. In the past, the Tulsa District has required mitigation in excess of a 10:1 mitigation ratio for proposals involving the less-preferred mitigation strategies (i.e., preservation).

Wetland Mitigation

The following actions may be considered to achieve wetland mitigation credit (not listed in any priority):

- a. restoration of the hydrology of a former wetland site through the removal of berms or levees, or the plugging or filling of ditches and drainageways

- b. replanting of native vegetation in cleared wetlands or wetlands converted to agriculture
- c. removal of fill material from wetlands and restoration of natural contours
- d. restoration of sheet flow to a flood plain site (dispersion of concentrated flow)
- e. planting of desirable hardwood species in a low quality wooded wetland
- f. designation, installation, planting, or protection of upland buffers around existing wetland sites
- g. aquatic habitat enhancement activities such as the placement of coarse woody debris (stumps, logs, heavy branches, standing snags) in an existing wetland
- h. wildlife enhancement activities such as removal, control, or eradication of undesirable or low-value vegetation species and replacement plantings of greater diversity and desirability
- i. removal and control of exotic or noxious plants
- j. hydrologic enhancement of existing degraded wetlands
- k. erosion and sediment control measures to reduce or eliminate detrimental sediment contributions to a degraded wetland
- l. construction of new wetlands on a non-wetland site
- m. preservation of existing threatened wetlands through acquisition and deed restriction

Stream Mitigation

The following actions may be considered to achieve stream system mitigation credit (not listed in any priority):

- a. restoration of a previously channelized or modified stream channel to appropriate channel geometry including sinuosity, gradient, channel shape, and access to flood plain
- b. enhancement of instream aquatic habitat or restoration of stream bed diversity (substrate, structure, holes, permanent bars and points, permanent coarse woody debris in stream bed)
- c. restoring natural channel features such as riffles and pools appropriate to stream type
- d. restoration, enhancement, establishment, or protection of natural buffers and riparian corridor along a stream
- e. increasing tree canopy and effective shading over a stream
- f. exclusion of livestock from stream corridor

- g. installation of grade control structures in a degrading stream
- h. removal of check dams, weirs, or other man-made structures which block aquatic organism movement or migration, or are contributing to stream bank erosion
- i. removal of impoundments
- j. installation of natural erosion and sediment control measures in eroded areas
- k. reduce or eliminate sediment sources in the immediate watershed
- l. restore the dynamic relationship between a stream and its flood plain

Implementation of Mitigation

Mitigation should be implemented concurrent with project impacts. If construction sequencing does not allow concurrent construction, the mitigation must be implemented reasonably soon thereafter. Monitoring should begin at the end of mitigation construction or installation. In some situations the Corps may require construction monitoring at the mitigation site preceding mitigation monitoring.

Monitoring Requirements

Monitoring will be required on all mitigation plans. The terms of monitoring will be appropriate to the type, size, scope, and complexity of the mitigation actions. The length of monitoring will generally be shortest where the mitigation plan involves restoration of previously degraded wetlands or stream corridors with limited woody plantings and where there is a low opportunity for failure of the mitigation. The monitoring of aquatic resource mitigation will never be less than three (3) years in length, including no less than three (3) full growing seasons. The length of monitoring term will be increased to a minimum of five (5) years where the mitigation plan involves substantial tree planting, construction of wetlands in non-wetland sites, or restoration of a channelized or impaired stream to a historic alignment or condition. Monitoring requirements may be increased up to ten (10) years where the mitigation plan involves high-risk enhancements, bottomland hardwood reforestation, or when activities on surrounding properties warrant longer monitoring.

Monitoring will generally require a minimum of three (3) quarterly site inspections conducted by the permittee or permittee's agent during the growing season. The information gathered during site inspections should focus on the success criteria and performance standards of the subject mitigation plan. Collection of research data or scientific information not directly related to the performance standards and success criteria may occur during site inspections or at other times, but should not be included in the submitted monitoring reports.

Monitoring activities should include assessment of the hydrologic, vegetative, and physical features of the mitigation site. Depending on the vegetative plan for the site and the plans performance standards, herbaceous, shrub, and tree strata will likely require independent assessment. Hydrologic monitoring may include the installation and monitoring of wells or staff gauges, observation and recording of water levels, and documentation of interactions with adjacent aquatic areas (in-flow and out-flow). Vegetative assessment should include identification of dominant plants to the species level, size, density, and condition of growth (health and vigor). Physical feature monitoring includes such aspects as the stability of construction disturbed soils, condition and stability of constructed features, adequacy of soil compaction or preparation, influences from adjoining lands, etc.

Findings from the periodic site inspections should be summarized in an annual report. The Corps reserves the right to require the submission of quarterly monitoring reports during the construction at the mitigation site, or for the first year following the implementation of mitigation actions, or as mitigation risks or needs warrant. Any monitoring report submitted to the Corps should include the following elements:

1. Project name and permit number
2. Project location, map, site drawings, photographic station locations
3. Permittees name, address, phone
4. Report preparer's name, address, phone
5. Purpose and Goals for mitigation site
6. Brief summary of mitigation strategy/actions
7. Date mitigation action commenced
8. Dates of quarterly site inspections
9. Dates of any maintenance activities
10. Summary of observations and measurements

11. Assessment of success toward the performance standards or success criteria
12. Report any observed problems (failure, underperformance, vandalism, erosion, invasive plants, etc.)
13. Implemented or recommended solutions to identified problems
14. Photos from the site inspections, keyed to photographic station locations and date
15. Reports generally should not exceed 10 pages of text.

Authorities

This policy is pertains to the following statutes, regulations, and policies. It is intended to clarify provisions within these existing authorities as pertains to mitigation within the Tulsa District.

1. Clean Water Act Section 404 [33 USC 1344].
<http://www.usace.army.mil/inet/functions/cw/cecwo/reg/sec404.htm>
2. Rivers and Harbors Act of 1899 Section 10 [33 USC 403 et seq.].
<http://www.usace.army.mil/inet/functions/cw/cecwo/reg/rhsec10.htm>
3. Environmental Protection Agency, Section 404(b)(1) Guidelines [40 CFR Part 230].
Guidelines for Specification of Disposal Sites for Dredged or Fill Material.
<http://www.usace.army.mil/inet/functions/cw/cecwo/reg/40cfr230.htm>
4. Department of the Army, Section 404 Permit Regulations [33 CFR Parts 320-331]. Policies for evaluating permit applications to discharge dredged or fill material.
<http://www.usace.army.mil/inet/functions/cw/cecwo/reg/sadmin3.htm>
5. Memorandum of Agreement between the Environmental Protection Agency and the Department of the Army Concerning the Determination of Mitigation under the Clean Water Act Section 404(b)(1) Guidelines [February 6, 1990]
<http://www.usace.army.mil/inet/functions/cw/cecwo/reg/moafe90.htm>
6. Federal Guidance for the Establishment, Use, and Operation of Mitigation Banks [November 28, 1995].
<http://www.usace.army.mil/inet/functions/cw/cecwo/reg/mitbankn.htm>
7. Federal Guidance on the Use of In-Lieu-Fee Arrangements for Compensatory Mitigation under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act [November 7, 2000]
<http://www.usace.army.mil/inet/functions/cw/cecwo/reg/ILFFEDREG.pdf>
8. Guidance on Compensatory Mitigation Projects for Aquatic Resource Impacts Under the Corps Regulatory Program Pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899, Regulatory Guidance Letter (RGL) No. 02-2 [December 24, 2002] <http://www.usace.army.mil/inet/functions/cw/cecwo/reg/RGL2-02.pdf>
9. Title XII of the Food Security Act of 1985 as amended by the Farm Security and Rural Investment Act of 2002 [16 USC 3801 et seq.].
10. National Environmental Policy Act [42 USC 4321 et seq.], including the Council on Environmental Quality's implementing regulations [40 CFR Parts 1500-1508].
11. Fish and Wildlife Coordination Act [16 USC 661 et seq.].
12. Fish and Wildlife Service Mitigation Policy [46 FR pages 7644-7663, 1981].
13. Magnuson Fishery Conservation and Management Act [16 USC 1801 et seq.].
14. National Marine Fisheries Service Habitat Conservation Policy [48 FR pages 53142-53147, 1983].
15. The Transportation Equity Act for the 21st Century (TEA-21)
16. Federal Aviation Administration Advisory Circular on "Hazardous Wildlife Attracts on or near Airports" (AC No: 150/5200-33, 5/1/97)
17. Endangered Species Act of 1973, as amended [16 U.S.C. 1531 et seq.]
18. Migratory Bird Treaty Act [16 U.S.C. 703 et seq.]
19. Issuance of Nationwide Permits [67 FR 2020-2095, January 15, 2002]

Internet Sites and Resources

U.S. Army Corps of Engineers, Tulsa District, Regulatory Permit Program:

<http://www.swt.usace.army.mil/permits/permits.cfm>

U.S. Army Corps of Engineers, Engineering Research and Development Center - Environmental Laboratory (Waterways Experiment Station), Wetlands Programs:

<http://www.wes.army.mil/el/wetlands/wetlands.html>

U.S. Environmental Protection Agency, Office of Wetlands and Watersheds:

<http://www.epa.gov/owow/wetlands/>

An Introduction and User's Guide to Wetland Restoration, Creation, and Enhancement, Developed by the Interagency Workgroup on Wetland Restoration (NOAA, EPA, USACE, USFWS, NRCS):

<http://www.nmfs.noaa.gov/habitat/habitatconservation/publications/index.htm>

or

<http://www.epa.gov/owow/wetlands/finalinfo.html>

U.S. Army Corps of Engineers Wetland Delineation Manual, USACE Waterway Experiment Station, Wetland Research Program Technical Report Y-87-1:

<http://www.wes.army.mil/el/wetlands/pdfs/wlman87.pdf>

Stream Corridor Restoration: Principles, Processes, and Practices, 10/98, by the Federal Interagency Stream Restoration Working Group (FISRWG) (15 Federal agencies of the U.S. Government):

http://www.usda.gov/stream_restoration/newgra.html

Wetlands Management Handbook, ERDC/EL SR-00-16, U.S. Army Engineer Research and Development Center, Vicksburg, MS:

<http://www.swt.usace.army.mil/permits/wetmanage.pdf>

Wetlands Engineering Handbook, ERDC/EL TR-WRP-RE-21, March 2000, U.S. Army Engineer Research and Development Center, Vicksburg, MS:

<http://www.wes.army.mil/el/wetlands/pdfs/wrpre21/wrpre21.pdf>

Compensating for Wetland Losses Under the Clean Water Act, Committee on Mitigating Wetland Losses, National Research Council, National Academy of Science, 2001:

<http://search.nap.edu/books/0309074320/html/>

National Wetlands Mitigation Action Plan, (Six Federal agencies) December 24, 2002:

<http://www.epa.gov/owow/wetlands/guidance/NWMAP122402signed.pdf>

Examples of Performance Standards for Wetland Creation and Restoration in Section 404 Permits and an Approach to Developing Performance Standards, ERDC/EL WG-RS-3.3, U.S. Army Engineer Research and Development Center, Vicksburg, MS:

<http://www.wes.army.mil/el/wrtc/wrp/tnotes/wgrs3-3.pdf>

Appendices /Enclosures

Enclosure 1: **Tulsa District Map**

Enclosure 2: **“Multi-Agency Compensatory Mitigation Plan Checklist and Supplement”**

Enclosure 3: **“Incorporating the National Research Council’s Mitigation Guidelines into the Clean Water Act Section 404 Program”**