Iowa Mitigation Banking

Last revised: August 2014

A mitigation bank is a wetland, stream or other aquatic resource area that has been restored, established, enhanced or reserved for the purpose of providing compensation for unavoidable impacts to aquatic resources permitted under Section 404 of the Clean Water Act ("CWA") or a similar state or local wetland regulation. A mitigation bank is created when a government agency, corporation, nonprofit organization or other entity ("Bank Sponsor") undertakes these activities under a formal agreement with a regulatory agency. Mitigation banks are a form of third-party compensatory mitigation, in which the responsibility for implementation and success is assumed by a party other than the permittee. This transfer of liability has been a very attractive feature for Section 404 permit-holders, who would otherwise be responsible for the design, construction, management, monitoring, ecological success and long-term protection of a permittee-responsible mitigation site.

This package contains procedures and information to initiate the development of new mitigation banking proposals or amendments to existing mitigation banks in the state of Iowa. This package also contains a checklist of requirements for submitting a Prospectus or Banking Instrument ("BI"). In Iowa, the review and approval of mitigation banks is a multi-agency process that involves the following federal and state agencies: the U.S. Army Corps of Engineers ("USACE") Rock Island District ("District"), the U.S. Environmental Protection Agency, Region VII ("USEPA"), the U.S. Fish and Wildlife Service, Rock Island Field Office ("USFWS"), Iowa Department of Natural Resources ("IDNR") and Natural Resources Conservation service ("NRCS"). These agencies are referred to jointly as the Interagency Review Team ("IRT"). The information in this package does not reflect USACE or IRT policy and should only serve as a starting point for prospective mitigation banks. The IRT will work with the Bank Sponsor throughout the Mitigation Bank Approval process and decisions will be made based on best available science and site-specific conditions.

A mitigation bank (Bank) must have an approved BI signed by the Bank Sponsor and the District prior to being used to provide compensatory mitigation for Department of the Army (DA) CWA Section 404 permits. To the maximum extent possible, Bank sites must be planned and designed to be self-sustaining over time, but some active management and maintenance may be required to ensure their long-term viability and sustainability. All Banks must comply with the standards in the April 2008 Mitigation Rule ("Mitigation Rule") if they are to be used to provide compensatory mitigation for activities authorized by DA permits, regardless of whether they are sited on public or private lands and whether the Bank Sponsor is a governmental or private entity. The Mitigation Rule can be found at 33 CFR Part 332 (http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/final_mitig_rule.pdf). Although all Banks must comply with the same standards, each BI is tailored to the Bank's site-specific conditions.

The Rock Island District utilizes RIBITS (Regulatory In-lieu Fee and Bank Information Tracking System), a web-based application used to track mitigation banking and in-lieu fee (ILF) sites. RIBITS can be accessed by USACE staff, resource agencies and the public; RIBITS provides information on pending and approved mitigation banks, including BI's, monitoring reports, credit ledgers, contact information, types of credits available and service areas. RIBITS also serves as a repository for information and procedures that relate to mitigation banking. RIBITS provides the necessary tools to track ledger transactions, evaluate and process proposed mitigation banks or ILF instruments and review and document mitigation bank successes and failures with ecological success criteria. Once the Bank is approved and signed, a RIBITS username and password will be assigned to you and further instructions will be sent. RIBITS can be found at the following address: http://ribits.usace.army.mil.

The following steps should be utilized to initiate the Mitigation Bank Approval Process:

1) Check RIBITS to obtain the most current mitigation banking information and templates before beginning the Prospectus or BI preparation
2) Submit a Prospectus for review by the IRT
3) Once the Prospectus has been deemed complete by the IRT, the Prospectus is put out on Public Notice for public comment
4) Check with the IRT Chair for on-site meeting dates and times
5) Upon completion of review of the Prospectus by the IRT and public, the District will coordinate with the IRT and will provide a letter to the Bank Sponsor informing them whether or not they may begin development of the Draft BI.

33 CFR Part 332.8(d) discusses the Timeline for Bank Approval. Prior to submitting a Prospectus, the Bank Sponsor may elect to submit a Draft Prospectus to the IRT agencies for preliminary review. It is intended to identify potential issues early so that the Bank Sponsor may attempt to address those issues prior to the formal review process.

Definitions:

- Draft Prospectus (optional): A brief, concept level proposal submitted when scoping the concept of a mitigation bank, contemplating pursuing a mitigation bank idea or for those new to the mitigation banking process.
- Prospectus (required): A summary of the information regarding the proposed mitigation bank, at a sufficient level of detail to support informed public and IRT comment.
- Draft BI: The complete BI and all Exhibits submitted for IRT review and approval.
- Final BI: The complete BI and all Exhibits, including supporting documentation that explains how the final instrument addresses the comments provided by the IRT.

Please contact Rachel Perrine of the Rock Island District USACE at (309) 794-5329 or Rachel.E.Perrine@usace.army.mil for additional information, questions or concerns.

Iowa Mitigation Banking
Checklist for Proposed Mitigation Bank Sites

☐ Does the site contain existing wetlands or other aquatic resource? Please submit a complete wetland delineation, according to the 1987 Wetland Delineation Manual and Midwest Supplement, or a NRCS wetland determination, if the landowner is a FSA farm program participant. The delineation is not required for the Prospectus phase, but will need to be submitted with the Draft BI. If the site does contain wetlands or other aquatic resources, those areas may be assigned partial credit by the IRT after assessing the quality of the existing aquatic resources and expected enhanced value.

☐ Will there be an effect to federally-listed species (or their habitat) covered under the Endangered Species Act of 1987? To guide you through the proper Threatened and Endangered Species consultation procedure, please see the Section 7(a)(2) Technical Assistance webpage (http://www.fws.gov/midwest/endangered/section7/s7process/index.html). The webpage provides guidance to help you determine what your action area is, whether endangered species may be found within the action area, and if your project and associated actions may affect listed species. You will also find several products on the site that can streamline the consultation process, including up-to-date county-specific species lists for all of the states in USFWS Region 3 and example letters for documenting your findings related to endangered species. For more information, please contact USFWS, Rock Island Field Office, at (309) 757-5800.

☐ Will there be an effect to state-listed threatened or endangered species (or their habitat)? Please request an Environmental Review with the IDNR to determine the potential effect to state-listed species. See attachment: "Environmental Reviews for Iowa's Natural Resources."

☐ Are there affected historic properties under Section 106 of the National Historic Preservation Act? A Phase I archeological survey is often required for Bank sites, which is determined during the Prospectus phase of the Mitigation Bank Approval Process. For additional information see: http://www.iowahistory.org/historic-preservation/review-and-compliance/.

☐ The site must not contain toxins and contaminants (including, but not limited to, lead shot, dump sites, chemical waste, etc). Please provide a detailed account of past land use and anticipated land use. If the site contains or will contain elements or activities other than natural areas (including, but not limited to, hunting, the use of all-terrain vehicles, etc), describe those components in detail.

☐ Are there any geologic or hydrologic factors that would cause the site to be unsuccessful or cause a wetland to drain (sand layers, karst topography, sink holes, etc)? Are there any biological factors, such as existing populations of invasive/aggressive/non-native species, which would prevent the Bank from meeting performance standards?

☐ If there are existing utility easements, right-of-ways or any other protected areas on the site, please be aware that the acreage of those areas may not be eligible to receive credit.

☐ Below are resources the IRT uses to assess the suitability of the site and mitigation work plan:

- NRCS construction standards: See attachments: "Natural Resource Conservation Service Conservation Practice Standard, Wetland Restoration", "Natural Resource Conservation Service Conservation Practice Standard, Wetland Creation" and "Natural Resource Conservation Service Conservation Practice Standard, Wetland Enhancement"
- NRCS seeding calculator: The IRT will require an average coefficient of conservation between 4 and 6. Please see: http://www.nrcs.usda.gov/wps/portal/nrcs/main/ia/technical/ecoscience/bio for the Native Prairie Seeding Calculator worksheet.
- Iowa Soil Surveys: Sites that have existing hydric soils may have a greater chance of success than non-hydric soils. Please see: http://www.nrcs.usda.gov/wps/portal/nrcs/surveylist/soils/survey/state/?stateId=IA and http://icss.agron.iastate.edu/.
- Iowa Plant Community Restoration Tools: Please use this database or a similar (and reliable) method to determine an appropriate seed mix. Please see: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ia/technical/ecoscience/bio.
- Other mapping resources:
  Iowa Geographic Map Survey: http://ortho.gis.iastate.edu/
  LiDAR maps: www.iowadnr.gov/Environment/GeologyMapping/MappingGIS/LiDAR.aspx.
  GIS data: https://programs.iowadnr.gov/nrgislibx/.

Iowa Mitigation Banking
Checklist and Outline for Prospectus

Please refer to the cover sheet for procedures related to the submission of a Bank proposal. Please provide the following information and a copy of this checklist with the submission of a Prospectus:

On a cover sheet:

- ☐ Bank Name – Use a short name based on a geographic feature, if possible, and incorporate "Wetland Mitigation Bank" and/or "Stream Mitigation Bank" (i.e. "Sandy Creek Wetland Mitigation Bank" or "Sandy Creek Stream Mitigation Bank")
- ☐ Bank Location – County/State
- ☐ Date of revision
- ☐ Bank Contacts – name, address, phone number(s) and email for Bank Sponsor, Property Owner and Consultant

In the body of the document:

- ☐ The objectives of the proposed Bank
- ☐ How the Bank will be established and operated
- ☐ The proposed service area(s)
- ☐ The general need for and technical feasibility of the Bank
- ☐ The ownership arrangements and long-term management strategy for the Bank
- ☐ The qualifications of the Bank Sponsor to successfully complete the type(s) of mitigation project(s) proposed, including information describing any past such activities by the Bank Sponsor
- ☐ The ecological suitability of the site to achieve the objectives of the Bank, including the physical, chemical and biological characteristics of the site and how it will support the planned types of aquatic resources and functions
- ☐ Assurance of sufficient water rights and/or sustainability of the hydrologic source to support the long-term sustainability of the Bank
- ☐ Exhibits
    - o General location map
    - o Location of the Bank site on a USGS topographic map
    - o LIDAR map of the site (found at www.iowadnr.gov/Environment/GeologyMapping/MappingGIS/LiDAR.aspx.
    - o Color aerial photographs that reflect current conditions of the Bank site and surrounding properties
    - o Color aerial photographs that include the mitigation work plan for the site
    - o Soil maps
    - o Proposed service area map
    - o Other exhibits, such as NRCS determinations or other relevant documents

Prospectus

Proposed Mitigation Bank Name
County, State
Date

Bank Sponsor Name	Property Owner Name	Consultant Name
Bank Sponsor Address	Property Owner Address	Consultant Address
Bank Sponsor Phone	Property Owner Phone	Consultant Phone
Bank Sponsor E-Mail	Property Owner E-Mail	Consultant E-Mail

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<u>Note</u>: Items I-XI are outlined in the Mitigation Rule as being required for a complete Prospectus. The asterisked items (*) are those that the IRT recommends to be included in the Prospectus in order to begin the discussion of site suitability and sensitive issues early on. The amount of detail required for each section is described below. Items in italics are notes and suggestions only and are not to be included word-for-word in the Prospectus. Items in "Regular" font are requirements for the Prospectus and should be included word-for-word, if applicable.

I. Introduction

This section should explain what type of Bank (i.e. general use, single entity, etc) the Bank Sponsor is creating and who it will service (i.e. land owners, public entities, developers, etc) within the service area. Briefly describe how the credits will be developed (creation, restoration, enhancement, preservation). If the site had a NRCS wetland determination or wetland delineation completed, please include a short summary of that information in this section (i.e. when the investigation was completed and what the results were – resource types and acreages).

Describe the duration of construction (one phase or many) and what the end result will be for creation/restoration, enhancement and preservation acres and the required buffer area. Give a short summary of what types of credits will be generated (emergent, forested, stream, etc).

II. Objectives

The April 10, 2008 Mitigation Rule states the following:

> "The fundamental objective of compensatory mitigation is to offset environmental losses resulting from unavoidable impacts to waters of the United States authorized by DA permits."

The Bank Sponsor has (*number*) objectives for (*Bank name*).

1.
2.
3.
etc.

Environmental objectives must be included in this section (i.e. Support the national goal of no net-loss of wetlands, Enhance or create additional wildlife habitat, Compensate for wetland and/or stream losses in a manner which contributes to the long-term ecological functioning of the watershed within which the Bank is located, Reduce temporal losses of wetland/stream functions, etc). You may also choose to include economic or business objectives (Generate enough income to construct additional phases, Provide affordable and economically efficient opportunities, etc).

III. Establishment and Operation

Please describe baseline conditions and how the Bank will be established and operated.

A. Legal Description of the Bank Site

Please describe the legal description of the site, current ownership and any mortgages or liens that are on the property. If there is a mortgage or lien on the property, a subordination agreement will have to be put into place prior to the approval of the BI. A subordination agreement ensures that the interests of the IRT and BI are above those of the mortgage holder.

B. Site Description

Please describe the current land use, adjacent land uses and baseline information. Include any NRCS wetland determinations, existing wetland delineations, soil information, existing hydrology manipulation, existing natural areas, stream assessment, etc. Describe what the environmental lift of the site will be with the proposed Bank. If the site is currently in crop production or other agricultural activity, baseline information should be sufficient. If the site is currently a natural area (i.e. prairie or deciduous forest), a functional assessment or more detailed information may be necessary to determine site suitability and/or credits.

Please include the language below, ensuring that all is applicable and accurate. Do not just copy and paste; make sure all these items are true for the site. If there are changes to the items below, please let the IRT know so it can be discussed further.

This site is not subject to restoration or enforcement action as a result of an unauthorized activity under Section 404 of the CWA; nor is this site classified as a Converted Wetland under the Wetland Conservation Provisions of the 1985 FSA.

It is our belief that adequate hydrology/natural flow regime relevant to the system under consideration can be restored permanently (*and explain why*).

A thorough examination and inspection of the entire property has been performed with no areas of hazardous concern being found.

The development of this site will not adversely affect federally- or state-listed endangered or threatened species or their habitat or other high quality habitats.

This site does not contain any oak groves, prairies, fens or savannas that would be adversely impacted by the development of this site. (*If the site does include any of these habitats, provide information regarding how they will be protected during the construction and development of the site.*)

This site is not being developed to satisfy local or regional storm water detention requirements.

This site is currently (*insert land use)*. This site is (*distance, i.e. several* miles) away from any development and development in this area is not anticipated in the future (*or explain risk of adjacent development and effect on the Bank, if development is anticipated in the future*).

This site does not contain any hydrologic or water quality protection functions that would adversely affect the source, quality, or seasonal distribution of surface of ground water to important habitats.

This site does not contain any important wetlands according to any USACE Special Area Management Plan, USEPA Advanced Identification process, or any areas identified in the Iowa Natural Areas Inventory.

There are no important breeding, foraging, or nesting areas for migratory birds or other wetland-dependent wildlife on site which would be adversely impacted by the Bank.

The development of this site would not violate any state or federal regulations and would not adversely affect any federally-funded wetland conservation projects.

C. Hydrology Restoration

Please describe the proposed methods of wetland hydrology and/or flow regime restoration.

D. Construction

Please describe the proposed methods of any and all construction (i.e. berms, water control structures, bank stabilization, riffle structures, etc) and the structures themselves.

E. Seeding and Planting

Please describe the proposed methods of seeding and planting. In this section or an appendix, include the proposed seeding list, densities, methods and schedule for IRT review.

F. Development Costs

Please outline development costs (i.e. land acquisition, construction, conservation easement, legal fees, etc).

G. Other Mitigation Bank Establishment Costs

Please describe the "other" Bank establishment costs (i.e. long term maintenance fund).

H. Annual Mitigation Costs

Please describe the annual Bank costs (i.e. wetland delineation, taxes, maintenance, etc).

I. Establishment Timeline

Please describe the anticipated establishment timeline.

J. Financial Assurances

Financial assurances should "ensure a high level of confidence that the compensatory mitigation project will be successfully completed, in accordance with applicable performance standards.." and "…must be based on the size and complexity of the compensatory mitigation project, the degree of completion of the project at the time of project approval, the likelihood of success, the past performance of the project sponsor and any other factors the district engineer deems appropriate."

If all establishment costs are going to be borne by the Bank Sponsor and credits will not be sold prior to the completion of construction, a performance bond for construction will not be necessary. In all other cases, an executed performance bond must be in place prior to the approval of the BI. The performance bond must equal 100% of the proposed construction costs, determined by the bonding entity or another third party, to ensure the anticipated costs are as accurate as possible.

A Long-Term Management Fund (LTMF) equal to at least 125% of the proposed constructions costs will be required, to be used for post-Bank closure management and repairs. The fund must be established immediately following the first credit sale and confirmed by the account holder. Fulfillment of the LTMF will be accomplished as credits are sold, but the LTMF must be fully funded prior to Bank closure. Prior to Bank closure, the success of the plant communities, hydrology, channel stability, etc should be well known and established. The fund will allow for the holder of the conservation easement, with IRT approval, to provide needed maintenance and/or repair if the Bank Sponsor or property owner fails to maintain the restored property under the Conservation Easement. The LTMF will be used for maintenance and repair of the Bank ONLY, and not for payment of salaries, real estate taxes, etc.

In this section, please describe proposed financial assurance arrangements (type of account and proposed easement holder). Although 125% of proposed construction cost is the guideline for the long-term management fund, the IRT will determine what amount is necessary for that fund and what percent of each credit sale will be allocated to that fund.

K. Adaptive Management Plan

This section should describe the adaptive management plans for the Bank, including remedial plans for invasive species, seeding (i.e. cultural burn, chemical control, mechanical control, re-seeding to promote natives and discourage invasives, mowing, armoring, etc) and structure repair. Please include a contingency plan in the event that the mitigation credits need to be re-established at a different location due to site failure. Also include security measures that will limit unauthorized motor vehicle or livestock access. Please incorporate the following into this section:

> "Should any certified credits that have been debited be deemed as failing during the life of the Bank, every effort will be made to repair those areas. If the Bank Sponsor is unable to repair the certified credits that have been debited on-site, an alternative location may be used to replace the failed certified credits that have been debited."

L. Determination of Credits and Credit Release Schedule

Generally, below is the breakdown of wetland credit determination. It can be changed at the discretion of the IRT after reviewing baseline conditions, establishment of the Bank and anticipated environmental lift.

Restored/created wetlands – 1:1 (1 acre of restored/created wetland = 1 bank credit)
Enhanced wetlands – 2:1 (2 acres of enhanced wetland = 1 bank credit)
Buffer – 4:1 (4 acres of buffer = 1 bank credit)

A buffer will be required around the perimeter of the proposed site. The buffer width, a minimum of 50 feet, depends on the topography of the proposed site, surrounding land use and other factors affecting the success of vegetative establishment. This can be changed by the IRT after review of the site.
Preservation may be used only if the resources are under threat of destruction or adverse modification (further requirements outlined in 33 CFR Part 332.3(h)).
The IRT will determine credit value for preserved aquatic resources after reviewing baseline conditions, methods of preservation and anticipated environmental lift.
Stream credits should be determined by an approved assessment method and/or reasonable and science-based techniques.

Generally, below is the credit release schedule for wetland credits. It can be changed at the discretion of the IRT after reviewing anticipated mitigation success and complexity of establishment.

1. Upon Bank Establishment (USACE signing of the BI, recording of an IRT-approved Conservation Easement and acceptable financial assurances as described in the BI), 15% of anticipated credits will be made available for sale.

2. Upon Bank Establishment, USACE approval of as-built drawings (for all construction, structures, and complete seeding of approved species) and confirmation of the establishment of the LTMF from the Account holder, an additional 15% (a cumulative total of 30%) of anticipated credits will be made available for sale.

3. Upon Bank Establishment, USACE approval of as-built drawings, confirmation of the establishment of the LTMF and USACE-approved documentation indicating the presence of wetland hydrology (including full supporting monitoring well data and delineations completed according to the ’87 Manual and its Supplement) for at least one year, an additional 15-20% of anticipated credits (a cumulative total of 45-50%) will be made available for sale.

4. For each following year (beyond the first year that wetland hydrology was documented and approved), when vegetation and hydrology performance standards are met and approved in writing by the USACE, up to 15% of anticipated credits will be approved for sale if unsold, successfully-restored credits are present.

5. After one year has passed from the date of the first credit sale, if wetland hydrology is not present in the majority of years, native plant

communities are not developing or if any performance standards are not met on areas that are of sufficient size to cover sold credits, the USACE will require one or more of the following: adaptive management actions, a decrease of credits available for sale, a suspension of credit sales, termination of the BI and/or utilization of financial assurances.

Generally, below is the credit release schedule for stream credits. It can be changed at the discretion of the IRT after reviewing anticipated mitigation success and complexity of establishment.

1. Upon Bank Establishment (USACE signing of the BI, recording of an IRT-approved Conservation Easement and acceptable financial assurances as described in the BI), 15% of anticipated credits will be made available for sale.

2. Upon Bank Establishment, USACE approval of as-built drawings (for all construction, structures, and complete seeding of approved species) and confirmation of the establishment of the LTMF from the Account holder, an additional 15% (a cumulative total of 30%) of anticipated credits will be made available for sale.

3. For each year following the completion of a stream reach and including one bank full event, when success criteria are met and approved in writing by the USACE, up to 15% of anticipated credits will be approved for sale if unsold, successfully-restored credits are present.

4. After one year has passed from the date of the first credit sale, if the project is not meeting or trending towards performance standards on areas that are of sufficient size to cover sold credits, the USACE will require one or more of the following: adaptive management actions, a decrease of credits available for sale, a suspension of credit sales, termination of the BI and/or utilization of financial assurances.

Credits used by the Bank Sponsor to mitigate any impacts to aquatic resources caused by construction of the Bank must be recorded in the ledger.

IV. Proposed Service Area

Primary and secondary service areas will be decided by the IRT; service areas are determined using 6- and 8-digit Hydrologic Unit Codes (HUC) and Ecological Drainage Units (EDU) and their adjacency to the Bank site. Generally, the primary service area is comprised of the same and directly adjacent HUC 8 watersheds within the same EDU; generally, the secondary service area is comprised of non-adjacent HUC 8 watersheds within the same EDU or adjacent HUC 8 watersheds within a different EDU. Generally, the primary and secondary service areas are within the same HUC 6 watershed as the Bank. If the proposed service area differs from what is described above, the Bank Sponsor must provide justification.

V. Needs Assessment

This section should describe why a Bank is needed in the area and what activities are going on (i.e. farming, commercial development, etc) that would require mitigation.

VI. Technical Feasibility

This section should describe why the proposed site is suitable for mitigation activities. Describe the soils, hydrology, topography, etc. Explain why success is anticipated.

VII. Real Estate Ownership

This section should describe the ownership arrangements at the site and if there are any mortgages or liens on the property, as well as the Conservation Easement holder, if known.

VIII. Long-Term Management

This section should describe the Long-Term Management responsibilities and plan.

IX. Sponsor Qualifications

This section should describe the Bank Sponsor and their qualifications (i.e. technical abilities, past experience, etc).

X. Ecological Suitability of the Site

This section should describe why the proposed site is ecologically suitable and how it fits into the surrounding area, watershed needs and ecosystem functions. Please include information about positive and adverse impacts from the Bank.

XI. Assurance of Sufficient Water Rights

This section should describe the water rights in this area, as well as assurance that the hydrologic source will support the long-term sustainability of the Bank.

XII. Signatures

This section must include the Bank Sponsor's signature(s). If applicable, the property owner and consultant should sign, but it is not required.

XIII. List of Exhibits

Iowa Mitigation Banking
Checklist and Outline for the BI

Please refer to the Cover Sheet for procedures related to the submission of a Bank proposal.

The BI describes, in detail, the physical and legal characteristics of the Bank, including how it will be established, operated and managed. It is from the Draft BI that a Final BI is prepared, incorporating all comments provided by the IRT. The Final BI is the document by which the District determines whether to approve or deny the establishment of the Bank. If the District intends to approve the BI, signatures of IRT agencies will be requested.

Please provide the following information and a copy of this checklist with the submittal of a BI:

On a cover sheet:

- ☐ Bank Name – Use a short name based on a geographic feature, if possible, and incorporate "Wetland Mitigation Bank" and/or "Stream Mitigation Bank" (i.e. "Sandy Creek Wetland Mitigation Bank" or "Sandy Creek Stream Mitigation Bank")
- ☐ Bank Location – County/State
- ☐ Date of revision
- ☐ Bank Contacts – name, address, phone number(s) and email for Bank Sponsor, Property Owner and Consultant

In the body of the document:

- ☐ Objectives of the Bank
- ☐ Site selection
- ☐ Site protection instrument
- ☐ Baseline information
- ☐ Determination of credits and credit release schedule
- ☐ Mitigation work plan
- ☐ Maintenance plan
- ☐ Performance standards
- ☐ Monitoring requirements
- ☐ Long-term management plan
- ☐ Adaptive management plan
- ☐ Financial assurances
- ☐ Proposed service area
- ☐ Accounting procedures
- ☐ A provision stating that legal responsibility for providing the compensatory mitigation lies with the Bank Sponsor once a permittee secures credits
- ☐ Default and closure provisions
- ☐ Reporting protocols

- ☐ Exhibits
    - General location map of the site
    - Current map of the site on USGS topographic maps using 1-foot contours
    - LIDAR map of the site (found at www.iowadnr.gov/Environment/GeologyMapping/MappingGIS/LiDAR.aspx or http://geotree2.geog.uni.edu/lidar)
    - Color aerial photographs that reflect current conditions of the site and surrounding properties
    - Color aerial photographs that reflect the mitigation work plan for the site
    - Soil maps
    - Seeding lists for wetland, buffer, etc
    - Warranty Deed and other Real Estate documents
    - Conservation Easement
    - Proposed service area map
    - Other exhibits, such as NRCS determinations or other relevant documents

Below is a template and additional information for the BI.

When the BI is considered Final, the Bank Sponsor must email an electronic copy and mail a hard copy to the District, with the appropriate signatures (Bank Sponsor, Property Owner and Consultant). The District will then solicit signatures from the IRT.

Mitigation Bank Instrument

Proposed Mitigation Bank Name
County, State
Date

Bank Sponsor Name	Property Owner Name	Consultant Name
Bank Sponsor Address	Property Owner	Consultant Address
Bank Sponsor Phone	Address	Consultant Phone
Bank Sponsor Fax	Property Owner Phone	Consultant Fax
Bank Sponsor E-Mail	Property Owner Fax	Consultant E-Mail
	Property Owner E-Mail	

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XVII. Default and Closure Provisions
XVIII. Reporting Protocols
XIX. Signatures
XX. List of Exhibits

<u>Note</u>: The amount of detail required for each section for the BI is described below. Items in italics are notes and suggestions only and are not to be included word-for-word in the BI. Items in regular font are requirements for the BI and should be included word-for-word, if applicable.

I. Introduction

This section should explain what type of Bank (i.e. general use, single entity, etc) the Bank Sponsor is creating and who it will service (i.e. land owners, public entities, developers, etc) within the service area. Briefly describe how the credits will be developed (creation, restoration, enhancement, preservation). If the site had a NRCS wetland determination or wetland delineation completed, please include a short summary of that information in this section (i.e. when the investigation was completed and what the results were – resource types and acreages).

Describe the duration of construction (one phase or many) and what the end result will be for creation/restoration, enhancement and preservation acres and the required buffer area. Give a short summary of what types of credits will be generated (emergent, forested, stream, etc).

II. Objectives

The April 10, 2008 Mitigation Rule states the following:

> "The fundamental objective of compensatory mitigation is to offset environmental losses resulting from unavoidable impacts to waters of the United States authorized by DA permits."

The Bank Sponsor has (*number*) objectives for (*Bank name*).

1.
2.
3.
etc.

Environmental objectives must be included in this section (i.e. Support the national goal of no net-loss of wetlands, Enhance or create additional wildlife habitat, Compensate for wetland and/or stream losses in a manner which contributes to the long-term ecological functioning of the watershed within which the Bank is located, Reduce temporal losses of wetland/stream functions, etc). You may also choose to include economic or business objectives (Generate enough income to construct additional phases, Provide affordable and economically efficient opportunities, etc). Specific objectives must identify the resource type(s) and amount(s) that will be provided, the method of compensation (i.e. restoration, establishment, enhancement and/or preservation) and the manner in which the resource functions of the Bank will address the needs of the watershed, ecoregion, physiographic province or other geographic area of interest.

III. Site Selection

Banks shall be appropriately sited and designed to ensure that natural hydrology and landscape position will support long-term sustainability and function as a self-sustaining system. This section should describe the factors considered during the site selection process and include consideration of watershed needs and practicability of accomplishing ecologically self-sustaining aquatic resource restoration, establishment, enhancement and/or preservation at the Bank. Discuss how the site is ecologically suitable for providing the desired aquatic resource functions by describing:

a. The hydrological conditions, soil properties, native seed source, and other physical and chemical characteristics.

b. The watershed-scale features such as aquatic habitat diversity, habitat connectivity, existence of threatened or endangered species related to prior habitat loss and other landscape scale functions.

c. The size and the location of the site relative to hydrologic sources and other ecological features.

d. The compatibility with adjacent land uses and any existing watershed management plans.

e. The reasonably foreseeable effects the Bank will have on ecologically important aquatic resources, cultural resources or habitat for federally- or state-listed threatened and endangered species.

f. Other relevant information including potential chemical contamination, impacts from land use changes within the watershed and the proximity to the location of other mitigation banks, ILF mitigation sites or protected conservation areas.

IV. Site Protection Instrument

This section should describe the ownership, legal arrangements and instrument that will be used to ensure the long-term site protection of the Bank. Include the draft real estate instrument as an appendix to the BI. Generally, site protection is accomplished through the use of conservation easements, deed restrictions or restrictive covenants and, where applicable, establishes an appropriate third party (governmental or non-profit resource agency) to enforce site protections and provide the third party the resources necessary to monitor and enforce the site protections.

The long-term site protection instrument must, to the extent appropriate and practicable, prohibit incompatible uses that might jeopardize the objectives of the Bank. The long-term site protection instrument must contain a provision requiring a 60-day advance notification to the district engineer (DE) before any action is taken to void or modify the site protection instrument, including transfer or title or, or establishment or any other legal claims over, the Bank site.

If the site is being held by a mortgage or any liens, a Subordination Agreement will need to be put in place. This will ensure that the interests of the IRT and BI are above that of the mortgage holder. If the land is held free and clear, a Subordination Agreement will not be required.

V. Baseline Information

This section should describe the ecological characteristics of the site, which may include historic and existing plant communities, historic and existing hydrology, existing soil conditions and existing hydro-system connectivity between the aquatic resource and other waters, including tributaries connection to receiving waters. This section should also include a delineation of waters of the United States on the site, using the 1987 USACE Wetland Delineation Manual and Midwest Supplement.

VI. Determination of Credits

This section should describe the number and types of credits to be provided at the Bank with a brief rationale for this determination. Wetland credit types shall be identified to the Cowardin class and, in the absence of a functional assessment method, determined based on a combination of land area and method of compensation. Required upland buffers next to wetlands that provide habitat connectivity and other ecological functions may also general compensatory mitigation credits because of their contribution to the ecological functions of the overall mitigation bank. Generally, below is the breakdown of wetland credit determination. It can be changed at the discretion of the IRT after reviewing baseline conditions, establishment of the Bank and anticipated environmental lift.

Restored/created wetlands – 1:1 (1 acre of restored/created wetland = 1 bank credit)

Enhanced wetlands – 2:1 (2 acres of enhanced wetland = 1 bank credit)

Buffer – 4:1 (4 acres of buffer = 1 bank credit)

A buffer will be required around the perimeter of the proposed site. The buffer width, a minimum of 50 feet, depends on the topography of the proposed site, surrounding land use and other factors affecting the success of vegetative establishment. This can be changed by the IRT after review of the site.

Preservation may be used only if the resources are under threat of destruction or adverse modification (further requirements outlined in 33 CFR Part 332.3(h)). The IRT will determine credit value for preserved aquatic resources after reviewing baseline conditions, methods of preservation and anticipated environmental lift.

Stream credits should be determined by an approved assessment method and/or reasonable and science-based techniques.

VII. Credit Release Schedule

This section describes the credit release schedule, which is tied to achievement of specific milestones.

Generally, below is the credit release schedule for wetland credits. It can be changed at the discretion of the IRT after reviewing Bank success and complexity of establishment.

1. Upon Bank Establishment (USACE signing of the BI, recording of an IRT-approved Conservation Easement and acceptable financial assurances as described in the BI), 15% of anticipated credits will be made available for sale.

2. Upon Bank Establishment, USACE approval of as-built drawings (for all construction, structures, and complete seeding of approved species) and confirmation of the establishment of the Long-Term Management Fund (LTMF) from the Account holder, an additional 15% (a cumulative total of 30%) of anticipated credits will be made available for sale.

3. Upon Bank Establishment, USACE approval of as-built drawings, confirmation of the establishment of the LTMF and USACE-approved documentation indicating the presence of wetland hydrology (including full supporting monitoring well data and delineations completed according to the '87 Manual and its Supplement) for at least one year, an additional 15-20% of anticipated credits (a cumulative total of 45-50%) will be made available for sale.

4. For each following year (beyond the first year that wetland hydrology was documented and approved), when vegetation and hydrology performance standards are met and approved in writing by the USACE, up to 15% of anticipated credits will be approved for sale if unsold, successfully-restored credits are present.

5. After one year has passed from the date of the first credit sale, if wetland hydrology is not present in the majority of years, native plant communities are not developing or if any performance standards are not met on areas that are of sufficient size to cover sold credits, the USACE will require one or more of the following: adaptive management actions, a decrease of credits available for sale, a suspension of credit sales, termination of the BI and/or utilization of financial assurances.

Generally, below is the credit release schedule for stream credits. It can be changed at the discretion of the IRT after reviewing anticipated mitigation success and complexity of establishment.

1. Upon Bank Establishment (USACE signing of the BI, recording of an IRT-approved Conservation Easement and acceptable financial assurances as described in the BI), 15% of anticipated credits will be made available for sale.

2. Upon Bank Establishment, USACE approval of as-built drawings (for all construction, structures, and complete seeding of approved species) and confirmation of the establishment of the LTMF from the Account holder, an

additional 15% (a cumulative total of 30%) of anticipated credits will be made available for sale.

3. For each year following the completion of a stream reach and including one bank full event, when success criteria are met and approved in writing by the USACE, up to 15% of anticipated credits will be approved for sale if unsold, successfully-restored credits are present.

4. After one year has passed from the date of the first credit sale, if the project is not meeting or trending towards performance standards on areas that are of sufficient size to cover sold credits, the USACE will require one or more of the following: adaptive management actions, a decrease of credits available for sale, a suspension of credit sales, termination of the BI and/or utilization of financial assurances.

Credits used by the Bank Sponsor to mitigate any impacts to aquatic resources caused by construction of the Bank must be recorded in the ledger.

VIII. Mitigation Work Plan

This section should include detailed written specifications and work descriptions for the Bank, including, but not limited to, the geographic boundaries of the project, construction methods and sequence, source(s) of water, including connections to existing waters and uplands, methods for establishing the desired plant community, plans to control invasive plant species, the proposed grading plan, soil management and erosion control measures. The following resources can be used in the development of a stream mitigation plan and performance standards: "Natural Stream Channel Design Review Checklist", available at http://water.epa.gov/lawsregs/guidance/wetlands/upload/Natural_Channel_Design_Checklist_5_16_12.pdf*, and "A Function-Based Framework for Stream Assessment & Restoration Projects", available at:* http://water.epa.gov/lawsregs/guidance/wetlands/upload/A_Function-Based_Framework.pdf.

IX. Maintenance Plan

This section should include a description and schedule of maintenance requirements to ensure the continued viability of the Bank once initial construction is completed. Please include the invasive species management plan, maintenance of water control structures, vegetation management methods (i.e. mowing, cultural burns) and other management plans. Also, it must be stated that short-term maintenance and management will be at the Bank Sponsor's expense (since the LTMF specified in the Financial Assurances section is only to be used for long-term management).

X. Performance Standards

This section should describe the ecological, administrative and adaptive management standards that will be used to determine whether the Bank is achieving its objectives. The standards must be based on attributes that are objective and measurable. They must be based on the best available science and able to be measured or assessed in a practicable manner. The standards should take into account the expected stages of the aquatic resource development process in order to allow early detection of potential problems and appropriate adaptive management. The use of reference aquatic resources (least disturbed and exhibits the highest levels of functions in the service area) is encouraged to establish performance standards. This approach can help ensure that the performance standards are reasonably achievable, by reflecting the range of variability exhibited by the regional class of aquatic resources as a result of natural processes and human influences. Generally, below are the performance standards the IRT has approved for various habitats. This list is not inclusive and the following items are flexible, depending on site-specific conditions. If there are additional performance standards that apply to your site, add those in, and if there are items below that do not apply or cannot be accomplished, please discuss with the IRT.

Restored wetlands shall meet the minimum requirements for inundation and/or soil saturation as defined in the '87 Manual and Midwest Supplement. Monitoring of hydrology, as specified below, shall apply to all restored wetland areas. Monitoring of vegetation, as specified below, shall apply to all Bank areas (including buffers and restored wetland areas). If at any point before the Bank is closed, the IRT determines that one or more of the following performance standards are not or will not be met, the IRT will terminate credit sales, reduce credit acreages and/or values, or require adaptive management actions.

A. Hydrology

1. Hydrology shall meet the minimum requirements as defined in the '87 Manual and Midwest Supplement. This requirement includes soil saturation (within 12 inches of ground surface), inundation or a combination of saturation and inundation for at least 14 consecutive days during the growing season in the majority of years. Hydrology will be monitored by the Bank Sponsor, utilizing at least six groundwater monitoring wells and the services of someone trained in the use of the '87 Manual and Midwest Supplement, with data provided to the IRT to establish the acreage of wetlands being restored for the purpose of certifying the credits at the Bank.
2. The groundwater monitoring wells will be placed along the inside edges of the buffer areas and on the highest areas of the site in an attempt to confirm the presence of wetland hydrology at those areas. Additional observation wells may be required if questions arise as to the presence or absence of wetland hydrology in an area.

3. All groundwater monitoring wells will be constructed and installed according to the Corps' "Technical Standard for Water-Table Monitoring of Potential Wetland Sites" technical note (ERDC TN-WRAP-05-2, June 2005).

4. Groundwater hydrology will be strictly determined by the monitoring of groundwater monitoring wells. Wetland credits available for sale will be limited to areas at or below the elevation of the highest well that has confirmed wetland hydrology in the majority of years.

B. Vegetation (*A reference reach representative to the proposed Bank site may be used to sample for vegetation characteristics and utilized for plant species composition and seeding rates, tree and shrub densities and vegetative structure.)*

1. Plant species and cover will be qualitatively and quantitatively measured in each plant community by a trained wetland delineator.

2. Based upon the national List of Plant Species that Occur in Wetlands: North Central Region, more than 50% of the dominant plant species within each vegetative community of the restored wetland areas of the bank for which credit is sought shall be provided by species designated as obligate (OBL), facultative wetland (FACW), or facultative (FAC). Dominance is defined in the '87 Manual and Midwest Supplement.

3. All restored wetlands will be planted with the seed mix and rate shown in Exhibit __. An area is said to be vegetated if aerial coverage of healthy vegetation is at least 50%. Prior to Bank closure, 75% or greater of the aerial coverage shall be dominated by healthy native hydrophytic plants.

4. Each (*acre of emergent wetland/emergent plant community*) must contain at least 15 vegetative species. *(Diversity by acre or plant community will be decided based on topography of the land and mitigation work plan.)*

5. Each acre of forested wetland must contain at least 100 trees with live growth above 5 feet. Each acre must contain 5 species, 3 of which are to be hard mast producing and native and 2 of which are native. Each species must account for at least 10% of the total tree number. (*This may change depending on desired forest type; shrubs may be permissible as well.)*

6. The entire bank site must be enclosed by a ___-foot wide buffer.

7. Buffers must have at least 70% aerial coverage of native perennial species and contain a minimum of 5 species per ½ acre. The buffers will be planted with the seed mix and rate shown in Exhibit __.

8. Non-native, aggressive, invasive species will account for no more than 20% aerial coverage in any 50-foot by 50-foot area. Non-native, aggressive, invasive species include, but are not limited to, reed canarygrass, phragmites, purple loosestrife, garlic mustard, flowering rush, Canada thistle, purple crown vetch, autumn olive, hairy cupgrass, leafy spurge, glossy buckthorn, amur honeysuckle, morrow's honeysuckle, tatarian honeysuckle, bell's honeysuckle, Eurasian water milfoil, Japanese knotweed, common buckthorn, and multiflora rose, or others determined by the IRT. Any 50-foot by 50-foot areas that have more than 20% aerial coverage of non-native, aggressive, invasive species will receive only 50% of the credit otherwise available for that type of wetland or buffer. Once the Banker provides documentation that the non-native, aggressive, invasive species in a previously infested area have been controlled and subsequently make up less than 20% of that area's coverage, The IRT will restore full wetland credits to that area.

9. If the total aerial coverage of non-native, aggressive, invasive species exceeds 5% of the total restored wetland acreage and/or 5% of the total buffer acreage, all credit sales will cease until the non-native, aggressive, invasive species are effectively controlled.

C. Soils. Due to the time lag between the restoration of wetland hydrology and the development of some hydric soil characteristics, no specific soil measurements, beyond saturation and water table, will be used as performance standards. If visible erosion is present that may adversely affect wetland hydrology or vegetation, credit values will be reduced or credit sales will cease until the erosion is repaired.

The following resources can be used in the development of performance standards for a stream restoration project: "Natural Stream Channel Design Review Checklist", available at http://water.epa.gov/lawsregs/guidance/wetlands/upload/Natural_Channel_Design_Checklist_5_16_12.pdf, *and "A Function-Based Framework for Stream Assessment & Restoration Projects", available at:* http://water.epa.gov/lawsregs/guidance/wetlands/upload/A_Function-Based_Framework.pdf.

At a minimum and if applicable, performance standards should be developed for the following components: bank height ratio, entrenchment ratio, large woody debris index, bank full velocity, evolution of channel type, meander width ratio, lateral erosion rate, percent riffle, pool-to-pool spacing ratio, depth variability, bed material composition and riparian vegetation.

XI. Monitoring Requirements

This section should describe the parameters to be monitored and monitoring methods and procedures in order to determine if the Bank is on track to meet performance standards or if adaptive management is needed. A schedule for monitoring and reporting the results to the DE must be included. Monitoring must occur for a period not less than five years after final construction and planting for emergent habitat and ten years for forested habitat. Stream mitigation monitoring must be accomplished annually after a bank full event has occurred; the length of monitoring will depend on the complexity and design of the site. Extending the monitoring period may be required depending on resource type or adaptive management measures occurring after initial site work (i.e. planting of additional trees, adjustments/armoring of berms, etc).

XII. Long-Term Management

This section should describe how the Bank will be managed, after performance standards have been achieved, to ensure the long-term sustainability of the resource, including long-term financing mechanisms and the party responsible for long-term management. If the Bank Sponsor transfers the long-term management responsibilities for the Bank to a land stewardship entity, such as a public agency, non-governmental organization or private land manager, it must be approved by the IRT. The District and IRT prefer that the land stewardship entity be identified in the BI, however, the Mitigation Rule provides the Bank Sponsor flexibility to identify the entity at a later time. In this instance, the Bank Sponsor will be responsible for long-term management until the Bank Sponsor identifies a long-term stewardship entity and that entity is approved by the District and IRT.

XIII. Adaptive Management

This section should describe the management strategy to address unforeseen changes in site conditions or other components of the Bank, including the parties responsible for implementing adaptive management measures. The adaptive management plan should guide decisions for revising mitigation work plans and implementing measures to address both foreseeable and unforeseen circumstances that adversely affect Bank success. Circumstances that may qualify for adaptive management include an inability to construct the Bank in accordance with the approved mitigation work plans, monitoring or other information reveals the Bank is not progressing towards meeting its performance standards, possible remedial measures that result in site modifications, design changes, revisions to maintenance requirement or revised monitoring requirements.

XIV. Financial Assurances

This section should describe financial assurances (for construction and long-term management) to be provided and how they are sufficient to ensure a high level of confidence that the Bank will be successfully completed, in accordance with its performance standards. The amount of financial assurances, approved by the DE, will be determined by the size and the complexity of the Bank site, the degree of completion of the Bank at the time of approval, the likelihood of success, the past performance of the Bank Sponsor and any other factors the USACE deems appropriate. The rationale for determining the amount of the required financial assurances must be documented in the BI and may include planning and engineering, legal fees, mobilization, construction, monitoring and maintenance.

The financial assurances may be in the form of performance bonds, escrow account or other appropriate instruments approved by the DE. The financial assurances must be in the form that ensures the DE will receive notification at least 120 days in advance of any termination or revocation. For performance bonds or letters of credit, a standby trust account must be established. All amounts paid by the financial assurance provider must be paid directly to the standby account for distribution by the account trustee in accordance with USACE instructions.

The BI must clearly specify the conditions under which the financial assurances are to be released to the Bank Sponsor and/or other financial assurance provider.

Generally, the IRT requires that the LTMF equals 125% of proposed construction and management costs (including structures, seeding, invasive species management, etc). Depending on how active or passive the management of the mitigation bank is, 10-15% of each credit sale will be required to be placed into the LTMF until it equals 125% of proposed construction costs.

Please include the following in your BI:

All construction must be completed within one year of the first credit sale. The Bank Sponsor may request a deadline extension for delays that are attributable to acts, events, causes or occurrences not within the Bank Sponsor's control. If the Bank Sponsor fails to complete construction within one year and there has been no deadline extension, the USACE may terminate the BI and/or the Grantee of the Conservation Easement may proceed against the LTMF.

If the Bank Sponsor fails to complete the required maintenance and monitoring in any given year or fails to execute the Adaptive Management Plan (as required), the USACE may curtail the credit sales until the Bank Sponsor provides written evidence of performance of required maintenance and monitoring and the USACE confirms performance. If the Bank Sponsor fails to respond to written USACE notice of deficiencies within 120 days, the IRT may terminate the BI and the Grantee of the Conservation Easement may draw on the LTMF for maintenance and monitoring.

The Bank Sponsor must provide an annual report showing the beginning and ending balances of the LTMF. The report should include information on the amount of required financial assurances and status of those assurances, including their potential expiration.

This report must be submitted to the USACE and IRT on an annual basis as part of the annual report. The report will serve as part of the administrative record for the Bank.

XV. Proposed Service Area

Primary and secondary service areas will be decided by the IRT; service areas are determined using 6- and 8-digit Hydrologic Unit Codes (HUC) and Ecological Drainage Units (EDU) and their adjacency to the Bank site. Generally, the primary service area is comprised of the same and directly adjacent HUC 8 watersheds within the same EDU; generally, the secondary service area is comprised of non-adjacent HUC 8 watersheds within the same EDU or adjacent HUC 8 watersheds within a different EDU. Generally, the primary and secondary service areas are within the same HUC 6 watershed as the Bank. If the proposed service area differs from what is described above, the Bank Sponsor must provide justification.

XVI. Accounting Procedures

This section should describe the accounting procedures for the Bank. For the use of credits, the USACE will determine the number and type(s) of credits required to compensate for the authorized impacts. The BI must contain a provision requiring the Bank Sponsor to establish and maintain a ledger to account for all credit transactions. Each time a credit transaction occurs, the Bank Sponsor must notify the USACE and IDNR and provide them with a copy of the purchase receipt and updated ledger. The Bank Sponsor must also keep the ledger in RIBITS up to date. The Bank Sponsor must compile an annual ledger report showing the beginning and ending balance of available credits and permitted impacts for each resource type, including types of credits debited, all additions and subtractions of credits, and any other changes in credit availability (e.g., additional credits released, credit sales suspended). This ledger report must be submitted to the USACE and IRT on an annual basis as part of the annual report. The ledger report will serve as part of the administrative record for the Bank.

XVII. Default and Closure Provisions

This section describes the default and closure provisions. Please include the following in your BI:

If at any time the IRT determines that one or more of the performance standards are not or will not be met, the Bank Sponsor fails to complete the required maintenance and/or monitoring in any given year, the Bank Sponsor fails to implement the Adaptive Management Plan (as required) or the Bank Sponsor fails to respond to written USACE notice of deficiencies within 120 days, the IRT may terminate the BI and the Grantee of the Conservation Easement may draw on the LTMF for maintenance and monitoring.

If termination of the BI becomes necessary, the Bank Sponsor will continue to be responsible for restoring or creating any credits that have already been sold.

With 120 days notice, the Bank Sponsor can terminate the BI if enough credits have been successfully restored at the Bank site to cover all sold credits.

XVIII. Reporting Protocols

This section should describe the reporting protocols. Information obtained during monitoring of the Bank must be supplied to each member of the IRT to be used for the certification of the credits available in the bank and to assess the restoration success. Please include the following in your BI:

A. The Bank Sponsor and IRT will jointly inspect the site on an annual basis until all the credits are sold or this BI is terminated. During those years in which, a) all or required portions of the site have been determined to have met the required performance standards, and b) the Bank Sponsor has requested certification of credits, the District will prepare a letter stating the credits which are available. This letter will also be used to notify the Bank Sponsor as to the IRT's observations of the site in relation to the performance standards.

B. The Bank Sponsor will prepare a mid-year letter report to each member of the IRT on the status of the bank. This letter report will notify the IRT of any changes to the plan, general status of hydrology and the vegetative communities, and remedial and management measures taken. The mid-year letter report will be submitted to the IRT by July 31 of each year. Photographic documentation at established photo points of the Bank's progress will be provided to the IRT in the mid-year report.

C. The Bank Sponsor will prepare an annual report at the end of each year. This report will be submitted to each member of the IRT by December 31st of each year. This report will detail the results of the vegetative and hydrologic monitoring in each vegetative community, a chart showing year-by-year trends with hydrology and vegetation for each vegetative community, concise and effective presentation of the status of the site in relation to each performance standard, the ratios and acreage of each type of vegetative community on the site, data from the groundwater observation wells, representative photos, maps showing all successfully-restored wetlands and all photo locations, the maintenance actions taken by the Bank Sponsor in the previous growing season, and needed maintenance or actions. The first report will also contain a description and plan of all construction, a one-foot contour topography map, the elevation of each monitoring well, planting lists, explanation of any significant deviations from the original design or planting plan, corrective measures, erosion control measures, a map showing the locations of groundwater observation wells, maps showing all areas proposed for buffers and for wetland restoration, and photographs taken at each photo point. The annual report will be completed utilizing the Rock Island District's Standard Mitigation Monitoring Form and according to Regulatory Guidance Letter 08-03: Minimum Monitoring Requirements for Compensatory Mitigation Projects Involving Restoration,

Establishment, and/or Enhancement of Aquatic Resources, unless superseded by another USACE-approved preferred method.

D. Once credits will no longer be sold, the Bank Sponsor will submit a final report to the IRT as to the status of the bank and include all items required in the annual report, as well as a statement justifying its closure. If at the end of this period the Bank Sponsor desires to shift the long-term management and/or ownership of this site to another entity, the Bank Sponsor will provide the documentation showing that the new entity accepts the receipt of the site and the Conservation Easement. Any change in long-term management and/or ownership must be approved by the IRT and cannot be made without written approval from the USACE.

XIX. Signatures

This section includes signature and date pages for all signatories. Please include the following signature pages (name for each agency will be provided to you), with the Bank name included in a page header:

Bank Sponsor, Property Owner and Consultant
Branch Chief, Regulatory Branch, U.S. Army Corps of Engineers, Rock Island District
Director, Water Wetlands and Pesticides Division, U.S. Environmental Protection Agency
Supervisor, Rock Island Ecological Services Field Office, U.S. Fish and Wildlife Service
State Conservationist, USDA Natural Resources Conservation Service
Director, Iowa Department of Natural Resources

XX. List of Exhibits

ATTACHMENTS

Environmental Reviews for Iowa's Natural Resources

In response to a request for Environmental Review for Natural Resources, the Iowa Department of Natural Resources will search their records for state- and federally-listed endangered or threatened species, rare natural communities, sensitive habitat, and state lands and waters in a proposed project area.

In order to provide a thorough review, a complete request for an environmental review must include:

- ◊ A narrative which describes the proposed project;
- ◊ Current land use details;
- ◊ Legal description (Section, Township, Range) of the project area;
- ◊ A map and/or aerial photo which includes the proposed project area;
- ◊ Additional information such as preliminary plan sets may be helpful in the review process.

To expedite the review of projects with a large physical footprint, such as wind energy developments or pipeline projects, the Iowa Department of Natural Resources recommends that a GIS shape file of the project boundary is included with the request for review. The shape file must be projected in NAD 83, UTM Zone 15N.

The Iowa Department of Natural Resources accepts requests for environmental review via postal mail. Questions about the Environmental Review process may be directed to Ms. Kelly Poole, Program Coordinator, at (515) 281-8967 or Kelly.Poole@dnr.iowa.gov. Information regarding Environmental Reviews can found at: http://www.iowadnr.gov/Environment/ThreatenedEndangered/EnvironmentalReviews.aspx. Please mail the request for an Environmental Review and required information to:

Environmental Review for Natural Resources
Attn: Ms. Kelly Poole
Iowa Department of Natural Resources
502 E. 9th Street
Des Moines, IA 50319-0034

The letter of review does not constitute a permit. Other permits may be required from the Iowa Department of Natural Resources or other state or federal agencies in advance of beginning work on the project.

For more information about state lands and waters, please refer to the Sovereign Lands Construction Permit program webpage at: http://www.iowadnr.gov/InsideDNR/RegulatoryLand/SovereignLandsPermits.aspx.

According to Iowa Administrative Code 481A and 481B, a person shall not take, possess, kill, trap or ensnare, transport, import, export, process, sell or offer for sale, buy or offer to buy, nor shall a common carrier transport or receive for shipment, any species plant or animal on the state list.

NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

WETLAND RESTORATION

(Ac.)

CODE 657

DEFINITION

The return of a wetland and its functions to a close approximation of its original condition as it existed prior to disturbance on a former or degraded wetland site.

PURPOSE

To restore wetland function, value, habitat, diversity, and capacity to a close approximation of the pre-disturbance conditions by restoring:

- Conditions conducive to hydric soil maintenance.
- Wetland hydrology (dominant water source, hydroperiod, and hydrodynamics).
- Native hydrophytic vegetation (including the removal of undesired species, and/or seeding or planting of desired species).
- Original fish and wildlife habitats.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies only to natural wetland sites with hydric soils which have been subject to the degradation of hydrology, vegetation, or soils.

This practice is applicable only where the natural hydrologic conditions can be approximated by actions such as modifying drainage, restoring stream/floodplain connectivity, removing diversions, dikes, and levees, and/or by using a natural or artificial water source to provide conditions similar to the original, natural conditions.

This practice does not apply to:

- The treatment of point and non-point sources of water pollution (Constructed Wetland - 656);
- The rehabilitation of a degraded wetland, the reestablishment of a former wetland, or the modification of an existing wetland, where specific wetland functions are augmented beyond the original natural conditions; possibly at the expense of other functions.(Wetland Enhancement - 659);
- The creation of a wetland on a site location which was historically non-wetland (Wetland Creation - 658).
- The management of fish and wildlife habitat on wetlands restored under this standard.

CRITERIA

General Criteria Applicable to All Purposes

The purpose, goals, and objectives of the restoration shall be clearly defined in the restoration plan, including soils, hydrology, vegetation, and fish and wildlife habitat criteria that are to be met and are appropriate for the site and the project objectives.

These planning steps shall be done with the use of a functional assessment-type procedure, or a state approved equivalent. The objectives will be determined by an analysis of current and historic site functions. They will be based on those functions which can reasonably be supported by current site constraints. Data from historic and recent aerial photography and/or other remotely sensed data, soil maps, topographic maps, stream gage data, intact reference wetlands, and historical records shall be gathered.

The soils, hydrology and vegetative conditions existing on the site, the adjacent landscape, and the contributing watershed shall be documented in the planning process.

The nutrient and pesticide tolerance of the

plant and animal species likely to occur shall be evaluated where known nutrient and pesticide contamination exists. Sites suspected of containing hazardous material shall be tested to identify appropriate remedial measures. If remedial measures are not possible or practicable, the practice shall not be planned.

The availability of sufficient water rights should be reviewed prior to restoration.

Upon completion, the site shall meet soil, hydrology, vegetation and habitat conditions of the wetland that previously existed on the site to the extent practicable.

Where offsite hydrologic alterations or the presence of invasive species impact the site, the design shall compensate for these impacts to the extent practicable.

Invasive species, federal/state listed noxious plant species, and nuisance species (e.g., those whose presence or overpopulation jeopardize the practice) shall be controlled on the site as necessary to restore wetland functions. The establishment and/or use of non-native plant species shall be discouraged.

Criteria for Hydric Soil Restoration

Restoration sites will be located on soils that are hydric.

If the hydric soil is covered by fill, sediment, spoil, or other depositional material, the material covering the hydric soil shall be removed to the extent needed to restore the original soil functions.

Soil hydrodynamic and bio-geochemical properties such as permeability, porosity, pH, or soil organic carbon levels shall be restored to the extent needed to restore hydric soil functions.

Criteria for Hydrology Restoration

The hydroperiod, hydrodynamics, and dominant water source of the restored site shall approximate the conditions that existed before alteration. The restoration plan shall document the adequacy of available water sources based on groundwater investigation, stream gage data, water budgeting, or other appropriate means.

The work associated with the wetland shall not adversely affect adjacent properties or other water users unless agreed to by signed written letter, easement or permit.

Timing and level setting of water control structures, if needed, will be based on the actions needed to maintain a close approximation of the original, natural hydrologic conditions.

The original natural water supply should be used to reestablish the site's hydrology to approximate the hydrologic conditions of the wetland type. If this is not possible, an alternate natural or artificial water supply can be used; however, these sources shall not be diverted from other wetland resources. If the alternate water source requires energy inputs, these shall be estimated and documented in the restoration plan.

To the extent technically feasible reestablish macrotopography and/or microtopography. Use reference sites within the local area to determine desired topographic relief. The location, size, and geometry of earthen structures, if needed, shall match that of the original macrotopographic features to the extent practicable.

Macrotopographic features, including ditch plugs installed in lieu of re-filling surface drainage ditches, shall meet the requirements of other practice standards to which they may apply due to purpose, size, water storage capacity, hazard class, or other parameters. If no other practice standard applies, they shall meet the requirements for Dike – 356 unless there is no potential for damage to the feature or other areas on or off site due to erosion, breaching, or overtopping.

Excavations from within the wetland shall remove sediment to approximate the original topography or establish a water level that will compensate for the sediment that remains.

Water control structures that may impede the movement of target aquatic species or species of concern shall meet the criteria in Fish Passage, Code 396.

Wetland restoration sites that exhibit soil oxidation and/or subsidence, resulting in a lower surface elevation compared to pre-disturbance, shall take into account the appropriate hydrologic regime needed to support the original wetland functions.

Criteria for Vegetative Restoration

Hydrophytic vegetation restoration shall be of species typical for the wetland type(s) being established and the varying hydrologic regimes and soil types within the wetland. Preference shall be given to native wetland plants with localized genetic material.

Where natural colonization of acceptable species can realistically be expected to occur within 5 years, sites may be left to revegetate naturally. If not, the appropriate species will be established by seeding or planting.

Adequate substrate material and site preparation necessary for proper establishment of the selected plant species shall be included in the plan.

Where planting and/or seeding is necessary, the minimum number of native species to be established shall be based on a reference wetland with the type of vegetative communities and species planned on the restoration site:

- Where the dominant vegetation will be herbaceous community types, a subset of the original vegetative community shall be established within 5 years, or a suitable precursor to the original community will be established within 5 years that creates conditions suitable for the establishment of the native community. Species richness shall be addressed in the planning of herbaceous communities. Seeding rates shall be based upon the percentage of pure live seed and labeled with a current seed tag from a registered seed laboratory identifying the germination rate, purity analysis, and other seed statistics.
- Where the dominant vegetation will be forest or woodland community types, vegetation establishment will include a mix of woody species (trees and/or shrubs) adequate to establish the reference wetland community.

CONSIDERATIONS

Soil Considerations

Consider making changes to physical soil properties, including:

- Increasing or decreasing saturated hydraulic conductivity by mechanical compaction or tillage, as appropriate.
- Incorporating soil amendments.
- The effect of construction equipment on soil density, infiltration, and structure.

Consider changes in soil bio-geochemical properties, including:

- Increasing soil organic carbon by incorporating compost.

Increasing or decreasing soil pH with lime, gypsum, or other compounds

Hydrology Considerations

Consider the general hydrologic effects of the restoration, including:

- Impacts on downstream stream hydrographs, volumes of surface runoff, and groundwater resources due to changes of water use and movement created by the restoration.

Consider the impacts of water level management, including:

- Increased predation due to concentrating aquatic organisms, including herptivores, in small pool areas during draw downs
- Increased predation of amphibians due to high water levels that can sustain predators.
- Decreased ability of aquatic organisms to move within the wetland and from the wetland area to adjacent habitats, including fish and amphibians as water levels are decreased.
- Increases in water temperature on-site, and in off-site receiving waters.
- Changes in the quantity and direction of movement of subsurface flows due to increases or decreases in water depth.
- The effect changes in hydrologic regime have on soil bio-geochemical properties, including: oxidation/reduction; maintenance of organic soils; and salinity

increase or decrease on site and on adjacent areas.

Vegetation Considerations

Consider:

- The relative effects of planting density on fish and wildlife habitat versus production rates in woody plantings.
- The potential for vegetative buffers to increase function by trapping sediment, cycling nutrients, and removing pesticides.
- The selection of vegetation for the protection of structural measures that is appropriate for wetland function.
- The potential for invasive or noxious plant species to establish on bare soils after construction and before the planned plant community is established.
- The use of prescribed burning to restore wetland and adjacent upland plant communities.

Fish and Wildlife Habitat Considerations

Consider:

- The addition of coarse woody debris on sites to be restored to woody plant communities for an initial carbon source and fish and wildlife cover.
- The potential to restore habitat capable of supporting fish and wildlife with the ability to control disease vectors such as mosquitoes.
- The potential to establish fish and wildlife corridors to link the site to adjacent landscapes, streams, and water bodies and to increase the sites colonization by native flora.
- The need to provide barriers to passage for unwanted or predatory species.

PLANS AND SPECIFICATIONS

Plans and specifications for this practice shall be prepared for each site. Plans and specifications shall be recorded using approved specifications sheets, job sheets, or other documentation. The plans and specifications for structural features will include, at a minimum, a plan view, quantities, and sufficient profiles and cross-sections to define the location, line, and grade for stakeout and checkout. Plans and specifications shall be reviewed and approved by staff with appropriate job approval authority.

OPERATION AND MAINTENANCE

A separate Operation and Maintenance Plan will be prepared for sites that have structural features. The plan will include specific actions for the normal and repetitive operation of installed structural items, especially water control structures, if included in the project. The plan will also include the maintenance actions necessary to assure that constructed items are maintained for the life of the project. It will include the inspection schedule, a list of items to inspect, a checklist of potential damages to look for, recommended repairs, and procedures for documentation.

Management and monitoring activities needed to ensure the continued success of the wetland functions may be included in the above plan, or in a separate Management and Monitoring Plan. In addition to the monitoring schedule, this plan may include the following:

- The timing and methods for the use of fertilizers, pesticides, prescribed burning, or mechanical treatments.
- Circumstances when the use of biological control of undesirable plant species and pests (e.g. using predator or parasitic species) is appropriate, and the approved methods.
- Actions which specifically address any expected problems from invasive or noxious species.
- The circumstances which require the removal of accumulated sediment.
- Conditions which indicate the need to use haying or grazing as a management tool, including timing and methods.

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NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

WETLAND CREATION

(Ac.)

CODE 658

DEFINITION

The creation of a wetland on a site location that was historically non-wetland.

PURPOSE

To establish wetland hydrology, vegetation, and wildlife habitat functions on soils capable of supporting those functions.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies only to sites where hydric soils do not exist and the objective is to establish specific wetland functions.

This practice does not apply to:

- The treatment of point and non-point sources of water pollution (Constructed Wetland – Code 656).
- The rehabilitation of a degraded wetland or the reestablishment of a former wetland so that soils, hydrology, vegetative community, and habitat are a close approximation of the original natural condition and boundary that existed prior to the modification. (Wetland Restoration – Code 657).
- The rehabilitation of a degraded wetland, the reestablishment of a former wetland, or the modification of an existing wetland, where specific wetland functions are augmented beyond the original natural conditions; possibly at the expense of other functions. (Wetland Enhancement – Code 659).
- The management of fish and wildlife habitat created under this standard.

CRITERIA

General Criteria Applicable to All Purposes

The purpose, goals, and objectives of the creation shall be clearly defined in the creation plan, including soils, hydrology, vegetation and fish and wildlife habitat criteria that are to be met and are appropriate for the site and the project objectives.

The soils, hydrology and vegetative conditions existing on the site, the adjacent landscape, and the contributing watershed shall be documented in the planning process.

The nutrient and pesticide tolerance of the plant and animal species likely to occur shall be considered where known nutrient and pesticide contamination exists. Sites suspected of containing hazardous material shall be tested to identify appropriate remedial measures. If remedial measures are not possible or practicable, the practice shall not be planned.

Water rights, if applicable, shall be assured prior to creation.

Upon completion, the site shall meet the appropriate wetland criteria and provide wetland functions as defined in the project's objectives.

Invasive species, federal/state listed noxious plant species, and nuisance species (e.g., those whose presence or overpopulation jeopardize the practice) shall be controlled on the site. The establishment and/or use of non-native plant species shall be discouraged.

Criteria for Soils

Created wetlands shall be located in landscape positions and soil types capable of supporting the planned wetland functions.

Changes to soil hydrodynamic and bio-geochemical properties such as permeability, porosity, pH, or soil organic carbon levels shall be made as needed to meet the planned objectives.

Criteria for Hydrology

The hydroperiod, hydrodynamics, and dominant water source shall meet the project objectives. The creation plan shall document the adequacy of available water sources based on groundwater investigation, stream gage data, water budgeting, or other appropriate means.

The work associated with the wetland shall not adversely affect adjacent properties or other water users unless agreed to by signed written letter, easement or permit.

Timing and level setting of water control structures required for the establishment and maintenance of vegetation, soil, and wildlife and fish habitat functions shall be determined.

Other structural practices, macrotopography and/or microtopography may be used to meet the planned objectives.

Macrotopographic features, including ditch plugs installed in lieu of re-filling surface drainage ditches, shall meet the requirements of other practice standards to which they may apply due to purpose, size, water storage capacity, hazard class, or other parameters. If no other practice standard applies, they shall meet the requirement s for Dike – Code 356 unless there is no potential for damage to the feature or other areas on or off site due to erosion, breaching, or overtopping.

Water control structures that may impede the movement of target aquatic species or species of concern shall meet the criteria in Fish Passage – Code 396.

Criteria for Vegetation

Hydrophytic vegetation planned to meet the selected wetland functions shall be compatible with the planned soil and hydrologic conditions. Preference shall be given to native wetland plants with localized genetic material.

Where natural colonization of acceptable species can realistically be expected to occur within five years, sites may be left to revegetate naturally. If not, the appropriate species will be established by seeding or planting.

Adequate substrate material and site preparation necessary for proper establishment of the selected plant species shall be included in the plan.

Where planting and/or seeding is necessary, the minimum number of native species to be established shall be based upon the types of vegetative communities present and the vegetation type planned. To achieve habitat diversity and minimize the adverse effects of climate, disease, and other limiting factors, several species adapted to the site will be established. Seeding rates shall be based upon the percentage of pure live seed and labeled with a current seed tag from a registered seed laboratory identifying the germination rate, purity analysis, and other seed statistics.

CONSIDERATIONS

Hydrology Considerations

Consider the general hydrologic effects of the restoration, including:

- Impacts on downstream stream hydrographs, volumes of surface runoff, and groundwater resources due to changes of water use and movement created by the restoration.

Consider the impacts of water level management, including:

- Increased predation due to concentrating aquatic organisms, including herptivores, in small pool areas during drawdowns.
- Increased predation of amphibians due to high water levels that can sustain predators.
- Decreased ability of aquatic organisms to move within the wetland and from the wetland area to adjacent habitats, including anadromous fish and herptivores, as water levels are decreased.
- Increases in water temperature on-site, and in off-site receiving waters.

- Changes in the quantity and direction of movement of subsurface flows due to increases or decreases in water depth.
- The effect changes in hydrologic regime have on soil bio-geochemical properties; including oxidation/reduction, maintenance of organic soils, and salinity increase or decrease on adjacent areas.
- The potential for water control structures, dikes, and macrotopographic to negatively impact aquatic organism passage.

Vegetation Considerations

Consider:

- The relative effects of planting density on wildlife habitat versus production rates in woody plantings.
- The potential for vegetative buffers to increase function by trapping sediment, cycling nutrients, and removing pesticides.
- The selection of vegetation for the protection of structural measures that is appropriate for wetland function.
- The selection of vegetation for the protection of structural measures that is appropriate for wetland function.
- The potential for invasive or noxious plant species to establish on bare soils after construction and before the planned plant community is established.

Soil Considerations

Consider changes of physical soil properties, including:

- Increasing or decreasing saturated hydraulic conductivity by mechanical compaction or tillage, as appropriate.
- Incorporating soil amendments.
- The effect of construction equipment on soil density, infiltration, and structure.

Consider changes in soil bio-geochemical properties, including:

- Increasing soil organic carbon by incorporating compost.
    - Increasing or decreasing soil pH with lime, gypsum, or other compounds.

Wildlife Habitat Considerations

Consider:

- The addition of coarse woody debris on sites to be restored to woody plant communities for an initial carbon source.
- The potential to restore habitat capable of supporting wildlife with the ability to control disease vectors such as mosquitoes.
- The potential to establish fish and wildlife corridors linking the site to adjacent landscapes, streams and waterbodies and to increase the sites colonization by native flora.
- The need to provide barriers to passage for unwanted or predatory wildlife species.

PLANS AND SPECIFICATIONS

Plans and specifications for this practice shall be prepared for each site. Plans and specifications shall be recorded using approved specifications sheets, job sheets, or other documentation. The plans and specifications for structural features will include, at a minimum, a plan view, quantities, and sufficient profiles and cross-sections to define the location, line, and grade for stakeout and checkout. Plans and specifications shall be reviewed and approved by staff with appropriate job approval authority.

OPERATION AND MAINTENANCE

A separate Operation and Maintenance Plan will be prepared for sites that have structural features. The plan will include specific actions for the normal and repetitive operation of installed structural items, especially water control structures, if included in the project. The plan will also include the maintenance actions necessary to assure that constructed items are maintained as constructed for the life of the project. It will include the inspection schedule, a list of items to inspect, a checklist of potential damages to look for, recommended repairs, and procedures for documentation.

Management and monitoring activities needed to ensure the continued success of the wetland functions may be included in the above plan, or in a separate Management and Monitoring Plan. In addition to the monitoring schedule, this plan may include the following:

- The timing and methods for the use of fertilizers, pesticides, prescribed burning, or mechanical treatments
- Circumstances when the use of biological control of undesirable plant species and pests (e.g. using predator or parasitic species) is appropriate, and the approved methods.
- Actions which specifically address any expected problems from invasive or noxious species
- The circumstances which require the removal of accumulated sediment.
- Conditions which indicate the need to use haying or grazing as a management tool, including timing and methods.

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NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

WETLAND ENHANCEMENT

(Ac.)

CODE 659

DEFINITION

The augmentation of wetland functions beyond the original natural conditions on a former, degraded, or naturally functioning wetland site; sometimes at the expense of other functions.

PURPOSE

To increase the capacity of specific wetland functions (such as habitat for targeted species, and recreational and educational opportunities) by enhancing:

- Hydric soil functions (changing soil hydrodynamic and/or bio-geochemical properties).
- Hydrology (dominant water source, hydroperiod, and hydrodynamics).
- Vegetation (including the removal of undesired species, and/or seeding or planting of desired species).
- Enhancing plant and animal habitats.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to any degraded or non-degraded wetland sites with hydric soils, where the objective is to enhance selected wetland functions to conditions different than those that originally existed on the site.

This practice does not apply to:

- The treatment of point and non-point sources of water pollution (Constructed Wetland – Code 656);
- The rehabilitation of a degraded wetland or the reestablishment of a former wetland so that soils, hydrology, vegetative community, and habitat are a close approximation of the original natural condition and boundary that existed prior to the modification (Wetland Restoration – Code 657).
- The creation of a wetland on a site location that was historically non-wetland. (Wetland Creation – Code 658).
- The management of fish and wildlife habitat on wetlands enhanced under this standard.

CRITERIA

General Criteria Applicable to All Purposes

The purpose, goals, and objectives of the enhancement shall be clearly defined in the enhancement plan, including soils, hydrology, vegetation, and fish and wildlife habitat criteria that are to be met and are appropriate for the site and the project objectives.

The planning process will evaluate the impact of this practice on existing non-degraded wetland functions and/or values. The relative increase or decrease in functions will be assessed with the use of a functional assessment procedure or state approved equivalent. The functions to be increased or decreased on wetlands found to be currently functioning at or near a “reference” condition will be documented.

The soils, hydrology, and vegetative conditions existing on the site, the adjacent landscape, and the contributing watershed shall be documented in the planning process.

The nutrient and pesticide tolerance of the plant and animal species likely to occur shall be evaluated where known nutrient and pesticide contamination exists. Sites suspected of containing hazardous material shall be tested to identify appropriate remedial measures. If remedial measures are not possible or practicable, the practice shall not

be planned.

The availability of sufficient water rights should be reviewed prior to enhancement.

Upon completion, the site shall meet the appropriate wetland criteria and provide wetland functions as defined in the project's objectives.

Invasive species, federal/state listed noxious plant species, and nuisance species (e.g., those whose presence or overpopulation jeopardize the practice) shall be controlled on the site as necessary to enhance wetland functions. The establishment and/or use of non-native plant species shall be discouraged.

Criteria for Hydric Soil Enhancement

Enhancement sites will be located on soils that are hydric.

Changes to soil hydrodynamic and bio-geochemical properties such as permeability, porosity, pH, or soil organic carbon levels shall be made as needed to meet the planned objectives.

Criteria for Hydrology Enhancement

The hydroperiod, hydrodynamics, and dominant water source of the enhanced site shall meet the project objectives. The enhancement plan shall document the adequacy of available water sources based on groundwater investigation, stream gage data, water budgeting, or other appropriate means.

The work associated with the wetland shall not adversely affect adjacent properties or other water users unless agreed to by signed written letter, easement or permit.

Timing and level setting of water control structures required for the establishment and maintenance of vegetation, soil, and wildlife and fish habitat functions shall be determined.

Other structural practices, macrotopography and/or microtopography may be used to meet the planned objectives.

Macrotopographic features, including ditch plugs installed in lieu of re-filling surface drainage ditches, shall meet the requirements of other practice standards to which they may apply due to purpose, size, water storage capacity, hazard class, or other parameters. If no other practice standard applies, they shall meet the requirements for Dike – Code 356 unless there is no potential for damage to the feature or other areas on or off site due to erosion, breaching, or overtopping.

Water control structures that may impede the movement of target aquatic species or species of concern shall meet the criteria in Fish Passage – Code 396.

Criteria for Vegetative Enhancement

Hydrophytic vegetation restoration shall be of species typical for the wetland type(s) being established and the varying hydrologic regimes and soil types within the wetland. Preference shall be given to native wetland plants with localized genetic material.

Where natural colonization of acceptable species can realistically be expected to occur within 5 years, sites may be left to re-vegetate naturally. If not, the appropriate species will be established by seeding or planting.

Adequate substrate material and site preparation necessary for proper establishment of the selected plant species shall be included in the plan.

Where planting and/or seeding is necessary, the minimum number of native species to be established shall be based on a reference wetland unless the objectives require a different plant community.

- If the targeted hydrophytic vegetation is predominantly herbaceous, species diversity will be maximized as appropriate to meet the targeted functions. Seeding rates shall be based upon the percentage of pure live seed and labeled with a current seed tag from a registered seed laboratory identifying the germination rate, purity analysis, and other seed statistics.
- Where the dominant vegetation will be forest or woodland community types, vegetation establishment will include a mix of woody species (trees and/or shrubs) adequate to establish the reference wetland community.

CONSIDERATIONS

Soil Considerations

Consider making changes to physical soil properties, including:

- Increasing or decreasing saturated hydraulic conductivity by mechanical compaction or tillage, as appropriate
- Incorporating soil amendments.
- The effect of construction equipment on soil density, infiltration, and structure.

Consider changes in soil bio-geochemical properties, including:

- Increasing soil organic carbon by incorporating compost.
- Increasing or decreasing soil pH with lime, gypsum, or other compounds.

Hydrology Considerations

Consider the general hydrologic effects of the enhancement, including:

- Impacts on downstream stream hydrographs, volumes of surface runoff, and groundwater resources due to changes of water use and movement created by the enhancement.

Consider the impacts of water level management, including:

- Increased predation due to concentrating aquatic organisms, including herptivores, in small pool areas during draw downs.
- Increased predation of amphibians due to high water levels that can sustain predator fish.
- Decreased ability of aquatic organisms to move within the wetland and from the wetland area to adjacent habitats, including fish and amphibians, as water levels are decreased.
- Increases in water temperature on-site, and in off-site receiving waters.
- Changes in the quantity and direction of movement of subsurface flows due to increases or decreases in water depth.
- The effect changes in anaerobic conditions have on soil bio-geochemical properties; including oxidation/reduction, and maintenance of organic soils.
- The potential for water control structures, dikes, and macrotopographic features to negatively impact the movement of non-target aquatic organisms.

Vegetation Considerations

Consider:

- The relative effects of planting density on fish and wildlife habitat versus production rates in woody plantings.
- The potential for vegetative buffers to increase function by trapping sediment, cycling nutrients, and removing pesticides.
- The selection of vegetation for the protection of structural measures that is appropriate for wetland function.
- The potential for invasive or noxious plant species to establish on bare soils after construction and before the planned plant community is established.
- The use of prescribed burning to maintain wetland and adjacent upland plant communities.

Fish and Wildlife Habitat Considerations

Consider:

- The addition of coarse woody debris to provide an initial carbon source and fish and wildlife cover.
- The potential to restore habitat capable of supporting fish and wildlife with the ability to control disease vectors such as mosquitoes.
- The potential to establish fish and wildlife corridors linking the site to adjacent landscapes, streams, and water bodies and to increase the sites colonization by native flora.
- The need to provide barriers to passage for unwanted or predatory fish and wildlife species.

PLANS AND SPECIFICATIONS

Plans and specifications for this practice shall be prepared for each site. Plans and specifications shall be recorded using approved specifications sheets, job sheets, or other documentation. The plans and specifications for structural features will include, at a minimum, a plan view, quantities, and sufficient profiles and cross-sections to

define the location, line, and grade for stakeout and checkout. Plans and specifications shall be reviewed and approved by staff with appropriate job approval authority.

OPERATION AND MAINTENANCE

A separate Operation and Maintenance Plan will be prepared for sites that have structural features. The plan will include specific actions for the normal and repetitive operation of installed structural items, especially water control structures, if included in the project. The plan will also include the actions necessary to assure that constructed items are maintained for the life of the project. It will include the inspection schedule, a list of items to inspect, a checklist of potential damages to look for, recommended repairs, and procedures for documentation.

Management and monitoring activities needed to ensure the continued success of the wetland enhancement objectives may be included in the above plan, or in a separate Management and Monitoring Plan. In addition to the monitoring schedule, this plan may include the following:

- The timing and methods for the use of fertilizers, pesticides, prescribed burning, or mechanical treatments.
- Circumstances when the use of biological control of undesirable plant species and pests (e.g. using predator or parasitic species) is appropriate, and the approved methods.
- Actions which specifically address any expected problems from invasive or noxious species
- The circumstances which require the removal of accumulated sediment.
- Conditions which indicate the need to use haying or grazing as a management tool, including timing and methods.

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