



Ohio Interagency Review Team (IRT)

Guidelines for Wetland Mitigation Banking and In-Lieu Fee Programs in Ohio

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SECTION 1: PURPOSE AND GOALS

On April 10, 2008, the United States (U.S.) Army Corps of Engineers (Corps) and the U.S. Environmental Protection Agency (USEPA) published the “Compensatory Mitigation for Losses of Aquatic Resources; Final Rule,” (Final Mitigation Rule) in the April 10, 2008, Federal Register, Vol. 73, No. 70, Pages 19594-19705 (33 CFR Part 332), which established regulations governing compensatory mitigation for activities impacting waters of the U.S. authorized by Department of the Army (DA) permits issued pursuant to Section 404 of the Clean Water Act (Section 404) and/or Sections 9 and 10 of the Rivers and Harbors Act of 1899 (Sections 9 and 10).

The Ohio Environmental Protection Agency (Ohio EPA) enforces wetland compensatory mitigation rules for Water Quality Certifications required under Section 401 of the Clean Water Act (Section 401) and pursuant to Ohio Administrative Code 3745-1-50 to 54. The State Legislature developed Ohio’s Isolated Wetland Statute in 2001 (Ohio Revised Code 6111.02 to 6111.029), which regulates compensatory mitigation for impacts to isolated wetlands. The aforementioned Ohio Codes are collectively referred to as Ohio Rule throughout this document.

Both the Corps and the Ohio EPA’s mitigation rules emphasize the need to use a watershed approach when making decisions for replacing aquatic resource functions lost due to unavoidable impacts authorized pursuant to Sections 404 and 401, Sections 9 and 10, and the Ohio’s Isolated Wetland Statute. Both the State and federal rules stress the importance of locating mitigation on sites that are ecologically appropriate and where aquatic resource restoration will have the highest probability of successfully replacing lost functions and ecological services.

The Ohio Interagency Review Team (IRT) is responsible for facilitating the establishment of mitigation banks and in-lieu fee (ILF) programs within the State of Ohio. It is composed of representatives from the Buffalo, Huntington and Pittsburgh Districts of the Corps, USEPA Region 5, the U.S. Fish and Wildlife Service, the Natural Resources Conservation Service (NRCS), the Ohio EPA, and the Ohio Department of Natural Resources. The following wetland mitigation guidelines are a product of the Ohio IRT. They provide those interested in wetland mitigation banking and ILF wetland mitigation with a statewide guide for establishing mitigation projects within the State of Ohio in compliance with the Final Mitigation Rule and with the greatest likelihood of ecological success. In addition, these guidelines provide equivalent mitigation recommendations applicable to all forms of compensatory mitigation (i.e. mitigation banks, ILF programs, and permittee-responsible mitigation). Alternatives to these recommendations may be proposed, but require approval from the Corps, in consultation with the Ohio IRT. Third party compensatory mitigation projects may be eligible for use for other programs if approved by the Corps, in consultation with the Ohio IRT.

These guidelines are based on regulations that contain legally binding requirements. They are not a substitute for those regulations, do not create legally binding requirements, and are not a regulation themselves.

SECTION 2: DEFINITIONS

The Final Mitigation Rule definitions should be used in all mitigation bank and ILF program submittals. Where the definitions in Ohio Rule differ from the federal rule, both definitions are provided in this section. In the remainder of the Guidelines, the Final Mitigation Rule definitions are used. Additional definitions adapted from the Final Mitigation Rule and the federal and state resources are included herein for clarity.

1. Adaptive Management: The development of a management strategy that anticipates likely challenges associated with compensatory mitigation projects and provides for the implementation of actions to address those challenges, as well as unforeseen changes to those projects. It requires consideration of the risk, uncertainty, and dynamic nature of compensatory mitigation projects and guides modification of those projects to optimize performance. It includes the selection of appropriate measures that will ensure that the aquatic resource functions are provided and involves analysis of monitoring results to identify potential problems of a compensatory mitigation project and the identification and implementation of measures to rectify those problems.
2. Advance Credits: Any credits of an approved ILF program that are available for sale prior to being fulfilled in accordance with an approved mitigation project plan. Advance credit sales require an approved ILF program instrument that meets all applicable requirements including a specific allocation of advance credits, by service area where applicable. The instrument must also contain a schedule for fulfillment of advance credit sales.
3. Buffer: An upland, wetland, and/or riparian area that protects and/or enhances aquatic resource functions associated with wetlands, rivers, streams, lakes, marine, and estuarine systems from disturbances associated with adjacent land uses.

Ohio Rule definition – “Upland Buffer” means land surrounding the jurisdictional edge of a wetland that consists of upland prairie, old field, shrub, or forest vegetation that is maintained in a natural state through passive or active management. This does not include lawns, mowed roadsides, fields where crops are grown or animals pastured, and other similar land uses.

4. Compensatory Mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Ohio Rule definition - “Compensatory mitigation” refers to the final step in the alternatives analysis and means re-establishment (restoration), establishment (creation), rehabilitation (enhancement) or, in certain circumstances preservation of wetlands for the purpose of compensating for unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization have been achieved.

5. Compensatory Mitigation Project: Compensatory mitigation implemented by the permittee as a requirement of a DA permit (i.e. permittee-responsible mitigation), or by a mitigation bank or an ILF program.

6. Condition: The relative ability of an aquatic resource to support and maintain a community of organisms having a species composition, diversity, and functional organization comparable to reference aquatic resources in the region.

7. Credit: A unit of measure (e.g., a functional or areal measure or other suitable metric) representing the accrual or attainment of aquatic functions at a compensatory mitigation site. The measure of aquatic functions is based on the resources restored, established, enhanced, or preserved.

8. Cryptogenic species: A species that is not demonstrably native or introduced.

9. Days: Calendar days.

10. Debit: A unit of measure (e.g., a functional or areal measure or other suitable metric) representing the loss of aquatic functions at an impact or project site. The measure of aquatic functions is based on the resources impacted by the authorized activity.

11. Deepwater aquatic habitats: areas that are permanently inundated at mean annual water depths >6.6 feet or permanently inundated areas ≤6.6 feet in depth that do not support rooted-emergent or woody plant species. Deepwater aquatic habitats have the following diagnostic environmental characteristics:

- a. *Vegetation*: No rooted-emergent or woody plant species are present in these permanently inundated areas.
- b. *Soil*: The substrate technically is not defined as a soil if the mean water depth is >6.6 feet or if it will not support rooted emergent or woody plants.
- c. *Hydrology*: The area is permanently inundated at mean water depths >6.6 feet.

12. Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s) but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Ohio Rule definition - “Rehabilitation (Enhancement)” means the manipulation of the physical, chemical, or biological characteristics of existing wetlands to heighten, intensify, or improve existing or historic natural wetland functions of a wetland.

13. Establishment (Creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area and functions.

Ohio Rule definition - “Establishment (Creation)” means the manipulation of the physical, chemical, or biological characteristics present to establish a wetland where one (1) did not formerly exist at an upland site.

14. Fulfillment of advance credit sales of an ILF program: Application of credits released in accordance with a credit release schedule in an approved mitigation project plan to satisfy the mitigation requirements represented by the advance credits. Only after any advance credit sales within a service area have been fulfilled through the application of released credits from an ILF project (in accordance with the credit release schedule for an approved mitigation project plan), may additional released credits from that project be sold or transferred to permittees. When advance credits are fulfilled, an equal number of new advance credits is restored to the program sponsor for sale or transfer to permit applicants.

15. Functional Capacity: The degree to which an area of aquatic resource performs a specific function.

16. Functions: The physical, chemical, and biological processes that occur in ecosystems.

17. Impact: Adverse effect.

18. In-kind: A resource of a similar structural and functional type to the impacted resource.

19. Invasive plant species: Plant species that are not native to this state whose introduction causes or is likely to cause economic or environmental harm or harm to human health as determined by scientific studies.

20. ILF program: A program involving the restoration, establishment, enhancement and/or preservation of aquatic resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation requirements for DA permits. Similar to a mitigation bank, an ILF program sells compensatory mitigation credits to permittees whose obligation to provide compensatory mitigation is then transferred to the ILF program sponsor. However, the rules governing the operation and use of ILF programs are somewhat different from the rules governing operation and use of mitigation banks. The operation and use of an ILF program are governed by an ILF program instrument.

21. ILF program instrument: The legal document for the establishment, operation and use of an ILF program.

22. Instrument: Means mitigation banking instrument or ILF program instrument.

23. Interagency Review Team: An interagency group of federal, tribal, state, and/or local regulatory and resource agency representatives that reviews documentation for, and advises the Corps on, the establishment and management of a mitigation bank or an ILF program.

24. Ledger: Document to be used in the accounting of credits and debits. A ledger will be maintained by the bank sponsor and audited by the appropriate Corps District on an annual basis.

25. Management: Actions taken within a mitigation bank to establish and maintain desired habitat conditions. Representative management actions include, but are not limited to, water level manipulations, herbicide use, mechanical plant removal, and prescribed burning.

26. Mitigation Bank: A site, or suite of sites, where aquatic resources (e.g., wetlands, streams, riparian areas) are restored, established, enhanced and/or preserved for the purpose of providing compensatory mitigation for impacts authorized by DA permits. In general, a mitigation bank sells compensatory mitigation credits to permittees whose obligation to provide compensatory mitigation is then transferred to the mitigation bank sponsor. The operation and use of a mitigation bank are governed by a mitigation banking instrument.

Ohio Rule definition - "Mitigation bank" means a site that has been approved in accordance with 33 CFR 332.8, where aquatic resources have been re-established (restored), established (created), rehabilitated (enhanced) or preserved expressly for the purpose of providing compensatory mitigation for authorized impacts.

27. Mitigation Bank Credits: The unit of measure (e.g., a functional or areal measure or other suitable metric) representing the accrual or attainment of aquatic functions at a compensatory mitigation site. The measure of aquatic functions is based on the aquatic resources restored, established, enhanced, or preserved.

28. Mitigation Bank Instrument: The legal document for the establishment, operation and use of a mitigation bank.

29. Mitigation Plan: A detailed plan which describes how the mitigation bank or ILF project will be established and operated. The mitigation plan must include the following 12 items: objectives of the bank; site selection; site protection instrument; baseline information; determination of credits; mitigation work plan; maintenance plan; performance standards; monitoring requirements; long-term management plan; adaptive management plan; and financial assurances. The mitigation plan will be incorporated into the instrument. (For a more detailed description of these 12 items see Appendix 1 of this document.)

30. Monitoring: A specific program of data collection which documents the physical, chemical and biological characteristics of the mitigation bank or ILF project, for the purpose of determining compliance with performance standards.

31. Native species: A species which, by scientific evidence, was present in Ohio just prior to European exploration and settlement.

32. Non-native species: A species which, by scientific evidence, was not present in Ohio just prior to European exploration and settlement.

33. Out-of-kind: A resource of a different structural and functional type from the impacted resource.

34. Performance standards: Observable or measurable physical (including hydrological), chemical and/or biological attributes that are used to determine if a compensatory mitigation project meets its objectives.

35. Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Ohio Rule definition - "Preservation" means the removal of a threat to, or preventing the decline of ecologically important aquatic resources through the implementation of appropriate legal mechanisms to prevent harm to the wetland. Preservation may include protection of adjacent upland areas as necessary to ensure protection of a wetland.

36. Prospectus: A plan for a compensatory mitigation bank prepared by a potential bank sponsor and submitted for consideration to the IRT. The prospectus provides full discussion of the proposed mitigation bank and serves as the basis for the public and interagency review comments.

37. Reference aquatic resources: A set of aquatic resources that represent the full range of variability exhibited by a regional class of aquatic resources as a result of natural processes and anthropogenic disturbances.

38. Release of credits: A determination by the Corps, in consultation with the IRT, that credits associated with an approved mitigation plan are available for sale or transfer, or in the case of an ILF program, for fulfillment of advance credit sales. A proportion of projected credits for a specific mitigation bank or ILF project may be released upon approval of the mitigation plan, with additional credits released as milestones specified in the credit release schedule are achieved.

39. Restoration: The manipulation of the physical, chemical or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two (2) categories:

- a. Re-establishment: The manipulation of the physical, chemical or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area.

b. Rehabilitation: The manipulation of the physical, chemical or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Ohio Rule definition - "Re-establishment (Restoration)" means the manipulation of the physical, chemical or biological characteristics of a site with the goal of returning natural or historic functions to a former or degraded aquatic resource.

40. Riparian areas: Lands adjacent to streams, rivers, lakes, and estuarine-marine shorelines. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality.

41. Service Area: The geographic area within which impacts can be mitigated at a specific mitigation bank or an ILF program, as designated in its instrument.

Ohio Rule definition - "Service area" means the geographic area within which impacts can be mitigated at a specific mitigation bank or an ILF program, as designated in its instrument.

42. Sponsor: Any public or private entity responsible for establishing, and in most circumstances, operating a compensatory mitigation bank or ILF program.

43. Temporal loss: The time lag between the loss of aquatic resource functions caused by the permitted impacts and the replacement of aquatic resource functions at the compensatory mitigation site. Higher compensation ratios may be required to compensate for temporal loss. When the compensatory mitigation project is initiated prior to, or concurrent with, the permitted impacts, the Corps may determine that compensation for temporal loss is not necessary, unless the resource has a long development time.

44. Vegetated Shallows: Areas ≤ 6.6 feet mean annual depth that support only submergent aquatic plants.

45. Watershed: A land area that drains to a common waterway, such as a stream, lake, estuary, wetland, or ultimately the ocean.

Ohio Rule definition - "Watershed" means a common surface drainage area corresponding to one (1) from the list of 37 adapted from the 44 cataloging units as depicted on the hydrologic unit map of Ohio, U.S. geological survey, 1988, and as described in paragraph (G) of rule 3745-1-54 of the Administrative Code or as otherwise shown on appendix 1 to rule 3745-1-54 of the Administrative Code. Watersheds are limited to those parts of the cataloging units that geographically lie within the borders of the state of Ohio.

46. Watershed Approach: An analytical process for making compensatory mitigation decisions that support the sustainability or improvement of aquatic resources in a

watershed. It involves consideration of watershed needs, and how locations and types of compensatory mitigation projects address those needs. A landscape perspective is used to identify the types and locations of compensatory mitigation projects that will benefit the watershed and offset losses of aquatic resource functions and services caused by activities authorized by DA permits. The watershed approach may involve consideration of landscape scale, historic and potential aquatic resource conditions, past and projected aquatic resource impacts in the watershed, and terrestrial connections between aquatic resources when determining compensatory mitigation requirements for DA permits.

47. Watershed Plan: A plan developed by federal, tribal, state and/or local government agencies or appropriate non-governmental organizations, in consultation with relevant stakeholders, for the specific goal of aquatic resource restoration, establishment, enhancement, or preservation. A watershed plan addresses aquatic resource conditions in the watershed, multiple stakeholder interests, and land uses. Watershed plans may also identify priority sites for aquatic resource restoration and protection. Examples of watershed plans include special area management plans, advance identification programs, and aquatic resource management plans.

SECTION 3: REVIEW PROCESS

The mitigation bank and ILF program review process detailed in 33 CFR 332.8(d) occurs in three (3) mandatory steps with an optional additional step. This section outlines the prescribed process for a single site mitigation bank and then briefly discusses how umbrella mitigation banking instruments (UMBI) and banks proposed under them, ILF programs, and ILF project sites conform or differ from that basic process.

Checklists for the items to be included in each of the steps are located in the appendices of this document. The items required are detailed in 33 CFR 332.8(d); the Ohio IRT has added supplemental requirements to best facilitate the evaluation process. Additional items may be provided earlier in the process if the sponsor chooses. However, completeness reviews will be based on the specific required information for each step.

Mitigation Banks

Step 1: Draft Prospectus (optional) – While the Final Mitigation Rule does not require a draft prospectus, it is highly recommended for mitigation banking proposals in the State of Ohio.

To initiate preliminary coordination under this step, a brief concept-level proposal should be submitted when initially scoping the concept of a bank, contemplating pursuing a bank idea, or for those new to the banking process. The preliminary review process allows the IRT the opportunity to let the prospective sponsor know if the proposed site has the potential to be an appropriate candidate for a mitigation bank. The draft prospectus should include, at a minimum, all items listed in Appendix 3 of this document. The sponsor may elect to give a presentation on the proposed site to the IRT prior to submitting a draft prospectus. After review of the draft prospectus by the IRT, comments will be provided to the sponsor. A site visit may be scheduled at this time if the IRT considers the proposed site to have potential based on the initial information. The site visit may be conducted either before or after the submittal of comments on the draft prospectus, depending on seasonal timing, staff availability, and other factors. If a site visit does not occur at this stage, one (1) will be conducted at a later point in the process.

Step 2: Prospectus – To initiate the formal review process, a complete prospectus must be submitted by the sponsor. A public notice advertising the mitigation bank prospectus will then be issued by the Corps. Therefore, figures provided in the prospectus should be legible and submitted on 8.5 x 11-inch paper. Duplicates of larger size may be provided for legibility/clarity. The prospectus must provide a summary of the information regarding the proposed mitigation bank at a sufficient level of detail to support informed public and IRT comment. The information required to be included in the prospectus is detailed in 33 CFR 332.8(d)(2), and the Ohio IRT recommends the prospectus should include, at a minimum, all items listed in Appendix 4 of this document. One hardcopy and an

electronic version of the prospectus should be provided to the Corps on a compact disc (CD) or via an accessible file sharing website. At the end of the comment period, the Corps will provide to the sponsor a written initial evaluation as to the potential of the proposed mitigation bank to provide successful compensatory mitigation. If the Corps determines that the proposed mitigation bank has potential for providing appropriate compensatory mitigation, the Corps will inform the sponsor that he/she may proceed with preparation of a draft bank instrument.

Step 3: Draft Instrument – After considering comments from the Corps, the IRT, and the public, if the sponsor chooses to proceed with the establishment of the mitigation bank, the sponsor must submit a complete draft instrument to the Corps. The draft instrument must be based on the prospectus and must describe in detail the physical and legal characteristics of the mitigation bank and how it will be established and operated. The information required to be included in the draft instrument is detailed in 33 CFR 332.8(d)(6), and the Ohio IRT recommends the Draft Instrument should include, at a minimum, all items listed in Appendix 5. The document will be distributed to the IRT for review and comment. At the end of the comment period, comments will be discussed with the IRT and the sponsor in an effort to resolve any issues. The Corps will inform the sponsor whether the draft instrument is generally acceptable and what changes, if any, are required. If there are significant unresolved concerns that may lead to a formal objection from one (1) or more IRT members to the final instrument or amendment, the Corps will inform the sponsor of the nature of those concerns. For ease of review and consistency, the format in Appendix 12 should be followed for bank instrument submittals.

Step 4: Final Instrument – To establish a mitigation bank, a final bank instrument must be submitted for approval. This final bank instrument submittal must include supporting documentation that explains how the final instrument addresses the comments provided by the IRT. It is recommended the sponsor provide a separate summary explaining how each comment was addressed. The sponsor must provide the final instrument directly to all members of the IRT. The Corps will notify the IRT members whether or not they intend to approve the instrument. If no IRT member objects, the sponsor will be notified of the final decision. If the instrument is approved, arrangements will be made for it to be signed by the appropriate parties. If any IRT member initiates the dispute resolution process as described in 33 CFR 332.8(e), the Corps will notify the sponsor. Following conclusion of the dispute resolution process, the Corps will notify the sponsor of the final decision. If the instrument is approved, the Corps will arrange for it to be signed by the appropriate parties. The sponsor should provide the Corps a hardcopy and an electronic version of the bank instrument on a CD or via an accessible file sharing website.

Umbrella Mitigation Banking Instruments:

Proposals to establish an UMBI to provide for authorization of multiple mitigation bank sites will follow the above steps for the initial proposal, which must include at least one (1) actual mitigation bank site. The addition of other mitigation bank sites will proceed along analogous steps, with a draft mitigation plan (Step 1), mitigation plan (Step 2), draft amendment (Step 3), and final amendment (Step 4) constituting the instrument modification, which will occur through adding that plan to the UMBI.

ILF Programs:

Proposals to establish an ILF program also follow the above mitigation bank process, though the prospectus and instrument require (per 33 CFR 332.8(d)(viii)) a watershed centered analysis known as the Compensation Planning Framework described in 33 CFR 332.8(c) and a description of how funds accumulated by the program will be tracked, held, and managed. The prospectus and instrument for an ILF program should not include any actual mitigation sites. For ease of review and consistency, the format in Appendix 13 should be followed for ILF program instrument submittals.

ILF Mitigation Sites:

Proposal and review of mitigation sites by ILF program sponsors to fulfill their mitigation obligations will follow the procedures outlined in 33 CFR 332.8(j), which includes the requirement for the submittal of a mitigation plan including all applicable items in 33 CFR 332.4(c)(2) through (14) and a credit release schedule consistent with 33 CFR 332.8(o)(8). The addition of ILF mitigation sites will occur by way of an instrument modification which will formally incorporate the plan into the ILF program instrument. ILF mitigation sites will proceed along analogous steps to 33 CFR 332.8(d), with a draft mitigation plan (Step 1), mitigation plan (Step 2), draft amendment (Step 3), and final amendment (Step 4) constituting the instrument modification. In accordance with 33 CFR 332.8(i)(2), disbursements from the ILF program account may only be made upon receipt of written acknowledgement from the Corps, in consultation with the Ohio IRT. Therefore, each submittal for each step in the review process should include a specific amount of the ILF program account to be utilized. The amount should be based on the activities required to successfully implement the next step in the review process; a detailed budget must be provided to justify the amount. The budget should increase in complexity as the project progresses through the review process.

It is the policy of federal agencies to make records available to the public to the greatest extent possible, in keeping with the spirit of the Freedom of Information Act (FOIA), 5 U.S.C. § 552, while at the same time protecting sensitive information. The FOIA

provides exemptions to protect sensitive information in Part 552(b), including Exemption 4, which protects "trade secrets and commercial or financial information obtained from a person [that is] privileged or confidential." This exemption is intended to afford protection to those required to furnish commercial or financial information to the government by safeguarding them from the competitive disadvantages that could result from disclosure.

SECTION 4: SITE SELECTION

Selection of appropriate sites is critical to maximizing the effectiveness of compensatory wetland mitigation and ensuring its long-term ecological sustainability. ILF mitigation sites must comply with the requirements of the ILF program's Compensatory Planning Framework. In general, wetland mitigation sites should contain features that make the site conducive to the development of wetlands that:

- provide in-kind habitat replacement;
- are of high ecological quality/integrity;
- provide multiple functions;
- are appropriate in the landscape;
- result in conditions comparable to reference aquatic resources in the watershed;
- are compatible with surrounding land uses; and
- require minimal management (i.e., are self-sustaining).

The IRT evaluates potential mitigation sites including, but not limited to, the considerations below. Sponsors should evaluate the ability of a proposed site to meet these considerations prior to submitting any information to the IRT. The sponsor should address these considerations as early in the process as possible (e.g., Draft Prospectus).

Existing Wetlands: The amount, type and location of existing wetlands on-site will influence the credit generating potential of a mitigation site. The 1987 Corps of Engineers Wetlands Delineation Manual (1987 Manual), the relevant regional supplement, and any subsequent versions/updates must be followed when conducting delineations. Some wetlands can be difficult to identify because wetland indicators may be missing due to natural processes or recent disturbances.

Problem area wetlands are naturally occurring wetland types that lack indicators of hydrophytic vegetation, hydric soil, or wetland hydrology periodically due to normal seasonal or annual variability, or permanently due to the nature of the soils or plant species on the site. Procedures described in Section G (Problem Areas) of the 1987 Manual must be employed in problem areas including, but not limited to, wetlands on drumlins, seasonal wetlands, prairie potholes, and vegetated flats.

Atypical situations are wetlands in which vegetation, soil, and/or hydrology indicators are absent due to recent human activities or natural events. Procedures pursuant to Section F (Atypical Situations) of the 1987 Manual must be employed when dealing with atypical situations which include unauthorized activities, natural events, and/or man-induced wetlands.

Chapter 5 of the relevant regional supplement must be followed when delineating difficult wetland situations including, but not limited to, lands used for agriculture and silviculture, problematic hydrophytic vegetation, problematic hydric soils, wetlands that periodically lack indicators of wetland hydrology, and wetland/non-wetland mosaics.

Lands used for agriculture may provide wetland mitigation opportunities. Therefore, the Ohio IRT requests sponsors proposing wetland mitigation activities on lands used for agriculture submit a delineation of waters of the U.S. that employs the procedures for agricultural lands prescribed in Chapter 5 of the relevant regional supplement as early as possible in the review process (e.g., Draft Prospectus) to accurately document the baseline conditions of the site in accordance with 33 CFR 332.4(c)(3) and (5).

Site Control: The proposed site control arrangements for the mitigation site should be provided in the prospectus. The mitigation site should be legally protected with a site protection instrument acceptable to the Corps by the time the bank instrument, or instrument modification, is signed. Sponsors and prospective sponsors are encouraged to review the July 2016 *Compensatory Mitigation Site Protection Instrument Handbook for the Corps Regulatory Program*, and any subsequent versions/updates, developed by the Corps, Institute for Water Resources, for development of appropriate site protection instruments. Should the sponsor not own the property in fee simple, documentation of ownership should be provided in the form of a deed or agreement between the sponsor and the legal owner of the property regarding use of the property and long-term protection.

The IRT may not consider sites with some property rights/interests that are outside the control of the sponsor (e.g., flowage easements, gas/oil rights, mineral rights and other easements, etc.). Therefore, a preliminary title report is recommended to be submitted with the prospectus. The IRT may consider sites where it can be demonstrated that failure to control these rights would not negatively impact the ability of the site to be developed and managed as a high-quality wetland. In these scenarios, sufficient documentation, such as remoteness reports, should be provided.

Private lands enrolled in publicly-funded conservation programs should not be considered for sites as long as the land is still under contract, easement, or similar agreement which limits the use of the land. If a property was purchased using public grant money, the sponsor is responsible for providing documentation from the grantor showing that a compensatory mitigation project is compatible with the grant agreement. Credits for compensatory mitigation projects on public land must be based solely on aquatic resource functions provided by the compensatory mitigation project, over and above those provided by public programs already planned or in place.

Relationship to other Programs: Except for projects undertaken by federal agencies, and/or where federal funding is specifically authorized to provide compensatory mitigation, federally-funded aquatic resource restoration or conservation projects undertaken for purposes other than compensatory mitigation, such as the Wetlands Reserve Program, Conservation Reserve Program, and Partners for Wildlife Program activities, cannot be used for the purpose of generating compensatory mitigation credits for activities authorized by the Corps and/or Ohio EPA permits. However, mitigation credits may be generated by activities undertaken in conjunction with, but supplemental to, such programs in order to maximize the overall ecological benefits of the restoration

or conservation project. In this situation, only those wetland mitigation activities specifically funded by the mitigation bank or ILF program account would receive credit.

Soils: Areas targeted for wetland re-establishment or rehabilitation should contain a predominance of hydric soils. Areas targeted for establishment should not contain a predominance of hydric soils. The presence and extent of hydric soils within hydric and non-hydric soil map units should be field verified based on the most recently published version of NRCS' publication, Field Indicators of Hydric Soils of the U.S., or the NRCS' Hydric Soils Technical Standard. It is the responsibility of the sponsor to use the most current version of the Field Indicators of Hydric Soils of the U.S. and to apply only those indicators applicable to the USDA Land Resource Region in which the mitigation site is located. Soil mapping information from the NRCS Web Soil Survey (<http://websoilsurvey.nrcs.usda.gov/>) is the most up-to-date and serves as the official soil survey information. NRCS Web Soil Survey data and interpretations are subject to annual updates, and collected field data should be given preference over remote sensing methods.

Soils that may have been altered through activities such as tillage, oxidation of organic soils from drainage, or burial under sediment deposits should be documented. For altered soils, determine their potential effect on wetland restoration/establishment/enhancement and provide a strategy to rehabilitate the soil. If earthen structures are to be built as part of the plan, the soils must be clean and suitable for use as fill material. Soil fill material from unknown sources is not suitable. Berms should be designed and constructed so that they are structurally sound and to minimize damage by burrowing wildlife. Berms and structures should also be designed to function passively such that active management is not required in the short- or long-term.

Hydrology: The hydrology of the site (whether natural or altered) should be conducive to developing the appropriate conditions for the desired wetland type. Sites with existing hydrologic alteration such as surface ditches, subsurface tiles, diversions, levees, etc. are preferred as they provide the best opportunity for re-establishment of appropriate hydrology. The source of hydrology for the site must be documented and be sufficient to provide the desired duration, depth and timing of hydrology, as determined via reference wetland hydrology conditions. Typically, detailed water budgets are not necessary to determine whether sufficient water quantity exists if simple hydrology restoration techniques are used. More complex hydrology enhancements may require development of data or modelling to support the predicted hydrology. Processes requiring large amounts of water movement, such as pumping or diversions, should be avoided because of high operation and maintenance requirements; projects should be designed to be self-sustaining to the maximum extent practicable. In addition, the quality of water to drive the hydrology should be examined. Water sources that could introduce unacceptable levels of pollutants (nutrients, pesticides, etc.), sediment, or non-native or cryptogenic species should not be used.

Existing Vegetation: To fully demonstrate an increase in wetland functions on the site, existing vegetation should be dominated by non-wetland plant communities in areas

proposed for establishment and re-establishment. For preservation, rehabilitation, or enhancement sites, a wetland plant community may exist on the site; however, the extent will be based on verified wetland delineations. The presence and extent of non-native or cryptogenic plant species should be recorded. Significant coverage by non-native or cryptogenic plants may make a site unsuitable. If eradication of non-native or cryptogenic plants in wetlands is the basis for enhancement credits, a plan outlining the short- and long-term methods should be developed for control of the plants.

Unique Features: The presence of unique features such as federally or state-listed endangered species, rare plant communities, dedicated natural areas, and archaeologically or culturally significant sites should be documented. Special attention should be placed on unique or high-quality wetlands on the site. If any such features are present, the development of the site must not adversely affect these features. However, if protected, the presence of these features may improve the value of the site for compensatory mitigation. It is recommended the sponsor initiate early coordination with the appropriate resource agencies where unique features have been identified, as appropriate.

Hazardous Substances: The site should be free of all state and federal listed hazardous wastes and substances, including, but not limited to, underground storage tanks, pesticides, petroleum spills, commercial/industrial wastes, or illegal dumps. This determination will be confirmed by the completion of an approved environmental assessment, such as ASTM E1527 - 05 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, conducted by a qualified professional. Documentation of the completion of the approved environmental assessment should be provided by the sponsor.

Adjacent Land Use: Adjacent land uses may impact a site's ability to develop high quality wetlands by impeding or negatively influencing wetland hydrology, plant assemblages, and/or wildlife habitat. Both current and projected land uses should be considered by the sponsor. Sites with adjacent land uses that will adversely impact mitigation success are discouraged unless there are means to offset these impacts. Perimeter buffers of adequate size (i.e. minimum 100 feet, measured inward from the boundaries of the mitigation project) and composition should be included to reduce adverse impacts from adjacent land uses. Adjacent land use may also make a site more desirable. Sites that expand or improve the quality of adjacent aquatic resources and wildlife habitats are preferred; this is particularly beneficial if the adjacent land is publicly owned and managed for conservation values, or under a conservation easement. A perimeter buffer may not be required along adjacent lands with documented long-term protection compatible with the goals and objectives of the mitigation site.

Inclusion in Land Use Plan: Preference should be given to sites that have been identified for wetland conservation as part of an approved plan. These plans may include watershed plans, conservancy districts, open space plans, habitat restoration plans, or other local or regional land use plans. It is important to note that 33 CFR 332.3(c)(1) states, "where a watershed plan is available, the district engineer will determine whether the plan is appropriate for use in the watershed approach for compensatory mitigation."

Service Area Considerations: When selecting a bank or ILF project site, the sponsor should consider applicable state and federal rules which specify that mitigation should be located where it is most likely to successfully replace lost functions and services using the watershed approach.

Mitigation Banks

Each approved mitigation bank instrument is required to include a defined geographical service area (33 CFR 332.8(d)(6)(ii)). All impacts and compensatory mitigation must be accounted for by the service area, and service areas must be appropriately sized to ensure that aquatic resources provided will effectively compensate for adverse environmental impacts across the entire service area. The basis for the mitigation bank’s service area is proposed by the sponsor, must be documented in the mitigation bank instrument, and must be approved by the Ohio IRT.

The Ohio IRT has evaluated and agreed upon service area recommendations for mitigation banks within the State of Ohio, as follows:

The Ohio portion of the Corps District in which the bank is located is identified as a service area for isolated Category 1 wetlands of the State of any size in accordance with Ohio Rule. For all other wetlands, the service area is defined by a single 8-digit Hydrologic Unit Code (HUC) watershed unless the Ohio Wetland Water Quality Standards have combined multiple 8-digit HUCs into a single watershed (see Appendix 2). Use of the bank to offset impacts outside the service area may be approved on a case-by-case basis as determined by the Corps and/or Ohio EPA project manager, unless for example, a more environmentally preferable compensatory mitigation option is available.

Service areas that would consist of more than one (1) 8-digit HUC include:

04100001, 04100002, 04100009	Ottawa, Raisin, Lower Maumee
04100003, 04100005	St. Joseph, Upper Maumee
0411003 (minus the Chagrin River watershed), 04120101	Ashtabula, Conneaut
05080002, 05080003, 05090203	Lower Great Miami, Whitewater, Middle Ohio-Laughery
05120101, 05120103	Upper Wabash, Mississinewa

ILF Programs

Approved ILF programs must have a geographic service area defined in the approved ILF program instrument (33 CFR 332.8(d)(6)(ii) and (iv)). The geographic service area is the watershed, ecoregion, physiographic province, and/or other geographic area within which the ILF program is authorized to provide compensatory mitigation. All impacts and compensatory mitigation must be accounted for by the service area; service areas must be appropriately sized to ensure that aquatic resources provided will effectively compensate for adverse environmental impacts across the entire service area. An ILF program’s

service area is the location where advance credits are sold to compensate for impacts authorized within the same service area. The basis for the ILF program's service area is proposed by the sponsor and must be documented in the ILF program instrument, and must be approved by the Ohio IRT.

The Ohio IRT has evaluated and agreed upon the service area recommendation for ILF programs for the State of Ohio, as follows:

The service area for the wetland ILF programs in Ohio is a single 8-digit HUC unless the Ohio Wetland Water Quality Standards have combined multiple 8-digit HUCs into a single watershed. Use of the ILF program to offset impacts outside the service area may be approved on a case-by-case basis as determined by the Corps and/or Ohio EPA project manager, unless for example, a more environmentally preferable compensatory mitigation option is available.

ILF Project Sites

ILF project sites may generate credits in excess of those required to fulfill advance credits sold in accordance with 33 CFR 332.8(n)(4). These excess released credits would be comparable to mitigation bank credits. Therefore, the Ohio IRT has evaluated and agreed upon the service area recommendation for ILF project sites for the State of Ohio, as follows:

When an ILF project has developed released credits, the Ohio portion of the Corps District in which the ILF project site is located is identified as a service area for isolated Category 1 wetlands of the State of any size in accordance with Ohio Rule. For all other wetlands, the service area is defined by a single 8-digit HUC watershed unless the Ohio Wetland Water Quality Standards have combined multiple 8-digit HUCs into a single watershed. Use of the ILF project site to offset impacts outside the service area may be approved on a case-by-case basis as determined by the Corps and/or Ohio EPA project manager, unless for example, a more environmentally preferable compensatory mitigation option is available.

Relation of Bank and ILF Program Service Areas to Other Regulatory Criteria:

Compensatory mitigation located within the same service area where the impacts are located is generally preferred. Acceptability of credits from a particular bank or ILF program/project site for use in offsetting particular impacts is at the discretion of the Clean Water Act Section 404 and 401 reviewers of those regulatory actions.

SECTION 5: FINANCIAL ASSURANCES

Financial assurances are mechanisms that ensure a sufficient amount of money will be available for use to complete or replace a mitigation provider's obligations to implement a required mitigation project and meet specified ecological performance standards in the event the mitigation provider proves unable or unwilling to meet those obligations. They are distinct from financial resources set aside for the long-term management of the compensation site, commonly referred to as long-term stewardship funds. They are also distinct from funds used for maintenance and adaptive management.

Sufficient financial assurances are required to ensure a high level of confidence that the compensatory mitigation project will be successfully completed, in accordance with its performance standards. The amount of required financial assurances must be determined by the Corps, in consultation with the sponsor and the Ohio IRT. The amount must be based on the size and complexity of the project, the degree of completion of the project at the time of approval, the likelihood of success, the past performance of the sponsor, and any other factors deemed appropriate by the Corps. The rationale for determining the amount of the required financial assurances must be documented. Detailed cost estimates must be presented by the sponsor. Estimates must cover costs for providing replacement mitigation, planning and engineering, site control (e.g. land acquisition), legal fees, mobilization, construction (e.g. grading, re-grading contingency, best management practices, planting, and replanting contingency), maintenance (e.g. vegetation control), and monitoring for all mitigation areas generating credits.

In cases where an alternative mechanism is available to ensure a high level of confidence that the compensatory mitigation will be provided and maintained (e.g. a formal, documented commitment from a governmental agency or public entity), financial assurances may not be necessary. However, taxpayer dollars should not be utilized to subsidize the cost of financial assurances. In addition, not all of the component costs listed above may be applicable in every case. For example, land cost may or may not be relevant for determining financial assurance amounts. If it is believed that on-site mitigation project remediation would be desirable and likely successful, then component costs for land purchase would not need to be included in determining financial assurance amounts.

Financial assurances may be in the form of performance bonds, escrow accounts, casualty insurance, letters of credit, or other appropriate instruments. Financial assurances should avoid all foreseeable conflicts of interest. Once deposited, the funds may not be used or withdrawn by the sponsor unless approved by the Corps, in consultation with the IRT. Sufficient financial sureties must be maintained until all performance standards have been met, all credits have been sold or released, and management of the site has been transferred to the long-term manager. Funds may be phased out incrementally as performance standards are met but will be forfeited by the sponsor in the event of default (see Section 13: Default Plan). A proposed schedule for release of the financial surety following completion of specific performance standards associated with the establishment of the site should be included in the instrument. It is recommended this

proposed schedule be included with and linked to the credit release schedule and accomplishment of interim performance standards for ease of tracking. Financial assurances must be in a form that ensures that the Corps will receive notification at least 120 days in advance of any termination or revocation. For third party assurance providers, this may take the form of a contractual requirement for the assurance provider to notify the Corps at least 120 days before the assurance is revoked or terminated.

The Miscellaneous Receipts Statute (31 USC 3302(b)) requires that funds obtained by any federal agency that does not have statutory authority to collect or use those funds must be deposited in the U.S. Treasury. Therefore, the Corps cannot accept directly, retain, or draw upon financial assurances. In addition, the Corps cannot play too great of a role in directing the use of financial assurance funds to be viewed as being in “constructive receipt” of the funds. This statutory restriction can be addressed either by ensuring that financial assurance payouts are made payable to a standby trust or to a third party acceptable to the Corps who agrees to complete the project or provide alternative mitigation. Sponsors and prospective sponsors are encouraged to review the March 2016 *Implementing Financial Assurance for Mitigation Project Success* report developed by the Corps, Institute for Water Resources, and any subsequent versions/updates, for development of appropriate financial assurances.

Providing financial resources for long-term management of the bank or ILF project site (i.e. long-term stewardship funds) is also the responsibility of the sponsor. For information on long-term stewardship funds, please see Section 6: Long-term Management.

Annual Reporting: Documented proof of financial assurances shall be submitted to the Corps and the IRT by December 31 of each calendar year, or by another date approved in the instrument or instrument modification. Annual documentation must show beginning and ending balances including deposits into and any withdrawals from the accounts providing funds for financial assurances. Failure to comply with the requirements of this Section may be grounds for suspension and/or revocation of the instrument. The annual reports should also include information on the amount of required financial assurances and the status of those assurances, including their potential expiration.

SECTION 6: LONG-TERM MANAGEMENT

Wetland mitigation bank and ILF project sites represent a consolidation of wetland mitigation into a single location. Thus, a single mitigation bank or ILF project site can represent the loss of multiple acres of wetland functions from across the approved service area. It is with this in mind that the IRT believes special provisions need to be made to help ensure a bank/ILF project site's long-term functionality. A long-term management plan must be provided that describes how the project will be managed after performance standards have been achieved and the mitigation bank/ILF project site has been closed to ensure the long-term sustainability of the resource. It is important that a long-term management plan address roles, objectives, goals, tasks, and funding.

The instrument must identify the party responsible for ownership and long-term management of the compensatory mitigation project. The instrument may contain provisions allowing the sponsor to transfer the long-term management responsibilities of the compensatory mitigation project site to a land stewardship entity, such as a public agency, non-governmental organization, or private land manager, after review and approval by the Corps, in consultation with the IRT. The land stewardship entity need not be identified in the original instrument, as long as the future transfer of long-term management responsibility is approved by the Corps, in consultation with the IRT.

A major factor in a wetland bank/ILF project site remaining viable as high-quality habitat is the selection of an adequate long-term manager of the site. Special consideration must be given to the entity which will assume long-term management and maintenance responsibility of wetland mitigation bank/ILF project sites. It is strongly encouraged that wetland sponsors develop a partnership with a federal, state or local governmental conservation entity with long-term viability and a proven track record in wetland habitat management to provide for the long-term management and maintenance of the site. Non-governmental conservation organizations (NGOs) will be considered and approved on a case-by-case basis. NGOs proposed as long-term managers will be evaluated on their previous record of wetland habitat management, future plans for the site, proximity to the site, and organizational long-term viability. Proposed ownership arrangements and a long-term management strategy should be identified at the time the prospectus is submitted to the Corps. This includes information documenting the agreement between the sponsor and the long-term manager. It is strongly encouraged that the long-term manager be a signatory to the banking instrument or ILF program instrument modification. The long-term manager is also strongly encouraged to be an active participant throughout the design and approval process.

A long-term management plan identifying the party responsible for long-term management in the instrument is a requirement. Therefore, modifications to the long-term management plan, including replacing the long-term manager should the initial long-term manager become defunct or abandon their responsibilities, require approval from the Corps, in consultation with the IRT.

The bank/ILF program sponsor must provide adequate long-term stewardship funds for long-term management of the mitigation site to the long-term manager at the time of transfer. A wide range of factors can dramatically affect the cost of maintaining a wetland, especially one (1) that relies on dikes and water control structures for its functionality. Examples of these factors include, but are not limited to, muskrat and beaver damage, flood damage, water control structure failure, vandalism, and non-native or cryptogenic species control. Long-term management needs must be described in the mitigation banking instrument/ILF program amendment as along with annual cost estimates for those needs. The sponsor must identify the financing mechanism that will be utilized to meet the needs and describe how the funds will be provided to the long-term manager. The instrument must contain a detailed description of how the funds will be generated to provide sufficient long-term management funding, including inflationary and other contingencies. For mitigation banks, the long-term stewardship financing mechanism may be funded fully upon project approval or incrementally as credit sales occur, but must at all points be sufficient in size to guarantee long-term sustainability of the mitigation responsibilities assumed via credit sales to that point. For ILF projects, the long-term stewardship financing mechanism should be fully funded upon project approval. Documentation of proof of long-term stewardship funding must be provided. Transfer of long-term stewardship funds in case of default must be addressed in the agreement between the sponsor and long-term manager.

Providing long-term stewardship funds is the responsibility of the bank/ILF program sponsor, including when long-term management responsibility is transferred to a public entity. The agreement must document that such funds will only be used for management of the mitigation site in accordance with the approved long-term management plan.

Annual Reporting: Documented proof of long-term stewardship funds shall be submitted to the Corps and the IRT by December 31 of each calendar year, or by another date approved in the instrument or instrument modification. Annual documentation must show beginning and ending balances including deposits into and any withdrawals from the accounts providing long-term stewardship funds. Failure to comply with the requirements of this Section may be grounds for suspension and/or revocation of the instrument. The annual reports should also include information on the amount of required long-term stewardship funds and the status of those funds, including their potential expiration.

SECTION 7: MAINTENANCE AND ADAPTIVE MANAGEMENT PLANS

Maintenance Plan: A maintenance plan is a description and schedule of maintenance requirements to ensure the continued viability of the resource(s) once initial construction is completed. The maintenance plan must be included in the instrument and/or mitigation plan to address those items anticipated to require regular action such as berm maintenance, fence repair, structure maintenance, invasive species control, etc. The sponsor should include the following as part of their maintenance plan:

1. Responsible Party - identify the party or parties responsible for performing monitoring and maintenance activities;
2. Maintenance Items - identify what items will be regularly monitored and maintained after construction;
3. Monitoring - describe the monitoring schedule for identification of required maintenance; and
4. Corrective Action - identify specific and measurable steps that will be taken to address the identified maintenance needs.

Adaptive Management Plan: An Adaptive Management Plan (AMP) must be included in the instrument and/or mitigation plan for the purpose of addressing challenges that are likely to occur with compensatory mitigation projects and addressing unforeseen changes to those projects. The AMP also provides for the implementation of actions to address those potential challenges/changes to the mitigation project. Examples of such challenges may include failure to achieve appropriate hydrology, poor survival of planted stock, and the excessive spread of non-native or cryptogenic species. Examples of factors contributing to these challenges may include fire, natural disaster, flawed project design, or poor planting practices. Potential adaptive management actions to correct these issues include replacing dead or dying plants, modifying hydrology, controlling erosion, repairing and/or maintaining structures, and removing non-native or cryptogenic species.

The ultimate goal of adaptive management is to ensure the long-term viability of the mitigation site during active monitoring. The AMP should consider the risk, uncertainty, and dynamic nature of the mitigation project and guide modification of those projects to optimize performance. All potential challenges/changes and proposed solutions identified in the AMP should be related directly to achieving performance standards and maintaining long term viability of the bank or ILF site.

A certain amount of responsiveness to conditions on the ground should be built into the mitigation plan's maintenance plan. Before considering any adaptive management proposal, the IRT will consider whether such actions will help ensure the continued viability of a mitigation site. Therefore, the sponsor should include the following as part of their AMP:

1. Project Background - state the project objectives, performance standards, and any quality assurance and quality control measures developed to preemptively address challenges/changes to the mitigation site;
2. Responsible Party - identify the party or parties responsible for implementing the AMP;
3. Challenges - identify the potential challenges/changes that pose a risk to the mitigation site success;
4. Monitoring - describe the monitoring schedule for identification of potential challenges/changes;
5. Problem Identification - discuss how potential challenges/changes will be identified. Explain how the monitoring data will be used for interpretation and reporting. Discuss how the site is not meeting the performance criteria and why it would not likely meet the performance criteria unless corrective action is taken; and
6. Corrective Action - identify specific and measurable steps that will be taken to correct identified problems (in step 5), as well as time frame for implementing and monitoring the corrective actions. Additional steps to refine corrective actions should also be discussed.

If the sponsor or Corps, in consultation with the IRT, identify specific problems at the bank or ILF site that have not been addressed in the mitigation plan, the sponsor will take immediate action to work with the Corps and IRT to receive written approval to implement the appropriate adaptive management actions. The proposed adaptive management measures should be submitted to the IRT in a timely manner to avoid exacerbation of the identified problem(s). The Corps will provide written acceptance of the submitted plan or request the sponsor provide a modified plan acceptable to the IRT in a timely manner. Once approved, the adaptive management measures should be implemented as soon as practicable (e.g. in the next appropriate season).

If a natural disaster causes deficiencies in a compensatory mitigation project, the IRT will evaluate the circumstances and determine whether it would be appropriate and practicable to require adaptive management actions to address those deficiencies.

SECTION 8: PERFORMANCE STANDARDS

The following performance standards are recommended and should be met by the end of the monitoring period for the bank or ILF project to be deemed successful and released from future additional monitoring.

Wetland Performance Standard: Wetlands will meet all wetland criteria pursuant to the 1987 Manual, the relevant regional supplement, and any subsequent versions/updates thereto. In addition to delineating exterior wetland boundaries, non-wetland features (e.g., deepwater habitat, vegetated shallows, streams, and uplands) will be identified.

Hydrology Performance Standard: Wetlands will meet the Corps' Technical Standard for Water-Table Monitoring of Potential Wetland Sites:

Established and restored wetlands available for credit release must be inundated (flooded or ponded) or the water table is ≤ 12 inches below the soil surface for ≥ 14 consecutive days during the growing season at a minimum frequency of 5 years in 10 ($\geq 50\%$ probability). Any combination of inundation or shallow water table is acceptable in meeting the 14-day minimum requirement. Short-term monitoring data may be used to address the frequency requirement if the normality of rainfall occurring prior to and during the monitoring period each year is considered.

A target hydroperiod corresponding to reference wetland conditions of the same hydrogeomorphic class and plant community types should be proposed. The use of conceptual scientific literature-based target hydroperiods may be considered on a case-by-case basis. This can be demonstrated using detailed monitoring well data. In order to properly characterize water level changes over time, a sufficient number of monitoring wells should be distributed throughout the site. Automated monitoring wells are recommended, but other methods may be proposed. These data should be graphed versus time. Hydrology data should be taken at intervals at the same time each day to account for diurnal fluctuation.

Ecological Condition (IBI Score) Performance Standard: All re-establishment or establishment wetland areas will meet or exceed a Vegetation Index of Biotic Integrity – Floristic Quality (VIBI-FQ) score of 40 by the end of the monitoring period.

Wetland areas proposed for rehabilitation or vegetation enhancement credit will have baseline vegetation assessments conducted using the VIBI-FQ. The resulting VIBI-FQ scores will be used to establish the performance standards for the rehabilitation or vegetation enhancement credits. The performance standards for areas proposed for rehabilitation or vegetation enhancement credit are as follows:

- Will meet VIBI-FQ score of 40 or increase VIBI-FQ score 10 points from baseline score, whichever is higher. For wetlands containing 80% non-native or cryptogenic species, or sites which have historical agricultural use up to the

present resulting in little or no hydrophytic vegetation, baseline VIBI-FQ may not be required. The VIBI-FQ goal will be 40 for these wetlands. The requirement for baseline VIBI-FQ is at the discretion of the IRT.

Plant Establishment Performance Standard: Wetlands will have a composition of at least 75% relative cover of native perennial hydrophytes (FAC, FACW and OBL) as indicated in *The National Wetland Plant List* (Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. *The National Wetland Plant List: 2016 wetland ratings*. Phytoneuron 2016-30:1-17. Published 28 April 2016. ISSN 2153 733X) and successor documents. In the event of a dispute over the native status of a perennial hydrophyte, the IRT will consult appropriate scientific resources, will consider any information submitted by the sponsor, and will make a final determination based upon all available resources.

VIBI-FQ field data should be used to demonstrate whether or not this goal is being met. Updated Excel scoring sheets developed by the Ohio EPA include the calculation of this parameter automatically (http://epa.ohio.gov/Portals/35/401/VIBI_DATA_TEMPLATE_v2016-03-18.zip).

While VIBI-FQ is preferred, the traditional VIBI may be used for ecological condition assessment. If using VIBI, the site should meet or exceed the “Wetland Habitat” VIBI score for an emergent plant community for the appropriate hydrogeomorphic class for the ecoregion where the mitigation bank resides. This score should be determined from the column labeled “WLH (Category 2)” on Table 7 (page 35) of the report entitled *Integrated Wetland Assessment Program. Part 9: Field Manual for the Vegetation Index of Biotic Integrity for Wetlands v. 1.5* or subsequent updates. Data should be entered in the automated scoring spreadsheet developed by the Ohio EPA. If performing traditional VIBI, focus plots must be placed according to the previously mentioned manual or subsequent updates. The Ohio IRT may use VIBI in conjunction with VIBI-FQ scores to evaluate ecological condition.

Native Species Performance Standard: Wetland and upland areas will have a minimum 80% relative cover native plant species by the end of the monitoring period.

Invasive Species Performance Standard: Wetland and upland areas will have less than 5% relative cover of all non-*Typha* invasive plant species listed in Appendix 16 of this document. Due to the difficulty of distinguishing the three (3) species of cattails (*Typha latifolia*, *Typha angustifolia*, and *Typha x glauca*), as well as the likelihood that at least one (1) of these will be present in many types of Ohio wetlands, the total relative cover of all invasive species, including *Typha* spp., will be less than 10%. After the first monitoring event, the Ohio IRT will consider non-native or cryptogenic species to be invasive if it comprises 10% or more relative cover of the mitigation site. Plants that meet this definition will be considered invasive for the remainder of site management.

In order to demonstrate these goals are being met, for each VIBI-FQ 20m x 50m plot, percent relative cover of non-native or cryptogenic species must be calculated. Additionally, the required bank site map will include all areas which exceed 0.1 acre that

are dominated by invasive, non-native, or cryptogenic species (i.e., >50% cover based on visual observation). See Appendix 15 of this document for an example calculation and sampling methods for a mitigation site.

VIBI-FQ field data used to demonstrate whether or not this goal is being met should use the updated Excel scoring sheets developed by the Ohio EPA to calculate these parameters (http://epa.ohio.gov/Portals/35/401/VIBI_DATA_TEMPLATE_v2016-03-18.zip).

Forested Habitats Performance Standard: It is anticipated that as the forested areas within any given project develop over time, the community composition will shift to those species best adapted to the site conditions. Natural recruitment of native woody species, including shrubs, is also expected to occur. It is not the intention of the IRT to have these volunteer species eradicated. Therefore, the only specific numeric performance goal that will be met for developing forested wetland and upland areas is:

- A minimum of 400 native, live and healthy (disease and pest free) woody plants per acre (of which at least 200 are tree species at least 3 inches in diameter at breast height ((DBH) (i.e. 55 inches))), will be present at the end of the monitoring period. These woody plants will be distributed evenly throughout all areas of the bank targeted for forested (wetland and upland) credits.

The goal of this performance standard is to develop healthy trees above the herbaceous layer. Alternative performance standards may be proposed to meet this goal and will be considered on a case-by-case basis.

In order to provide the forested habitat with an adequate diversity of species, the following planting guidelines should be followed:

1. a minimum of 200 native, free standing, live and healthy (disease and pest free) trees per acre;
2. a minimum of 8 native tree species are planted within the forested areas, and each of these 8 species represents at least 5% of the overall tree count (at least 10 of each species out of the total 200);
3. a minimum of 25% of all live trees planted consist of at least 4 species having coefficient of conservatism values from 5 to 10. Coefficient of conservatism values can be found on the internet at:
http://www.epa.ohio.gov/Portals/35/401/LU_Veg_Species.html;
4. a minimum of 200 native, free standing, live and healthy (disease and pest free) shrubs/sub-canopy tree species per acre;
5. a minimum of 8 native shrub/sub-canopy species are planted within the forested areas, and each of these 8 species represents at least 5% of the overall shrub/sub-canopy tree count (at least 10 of each species out of the total 200); and
6. a minimum of 25% of all live shrubs/sub-canopy trees planted consist of at least 4 species having coefficient of conservatism values from 5 to 10 (http://www.epa.ohio.gov/Portals/35/401/LU_Veg_Species.html).

Lists of species to be planted should be provided with each submittal and require the approval of the IRT. Only species considered to be native within the same Level IV ecoregion as the location of the bank should be included in the planting and seeding plan (Woods, A.J., J.M. Omernik, C.S. Brockman, T.D. Gerber, W.D. Hosteter, and S.H. Azevedo. 1998. Ecoregions of Indiana and Ohio [2 sided color poster with map, descriptive text, summary tables, and photographs]. U.S. Geological Survey, Reston, VA. Scale 1:500,000). County maps and plant botanical texts may also be used to determine plant distributions.

Performance standards targeting additional or alternative wetland functions and services (e.g. nutrient reduction) may be proposed and will be evaluated on a case-by-case basis. These performance standards should be site specific and based on reference aquatic resource data. If the site is not demonstrated to be trending toward meeting one (1) or more of the specific performance standards identified in the instrument, the sponsor may propose to modify the instrument to replace a performance standard with a new, comparable performance standard tracking similar functions based on reference aquatic resource data. Whether or not this modification will be accepted is strictly at the discretion of the IRT.

SECTION 9: MONITORING AND REPORTING

Sponsors must present a monitoring plan to the IRT that will provide the information necessary to determine if credit releases should be authorized and if and where remedial actions are required. The information collected during monitoring events must be presented in the monitoring reports in a format that will allow ease of those determinations. In addition, monitoring reports must include previous reported sampling results. Regulatory Guidance Letter (RGL) 08-03 provides guidance on minimum monitoring requirements for compensatory mitigation projects, which is applicable to mitigation banks and ILF projects. RGL 08-03 states, “If a compensatory mitigation project has met its performance standards in less than five (5) years, the monitoring period length can be reduced, if there are at least two (2) consecutive monitoring reports that demonstrate that success.” In addition, the Ohio IRT recommends the following for bank and ILF monitoring:

Performance Standards

Monitoring and reporting of mitigation sites must occur in a manner that allows the data collected to specifically verify whether the performance standards and other requirements (e.g. financial assurances) of the bank or ILF project are being met. This data should be presented, in part, as a table or graph including all current and past monitoring data for the project site.

Site Mapping

Each annual report must include a detailed site map identifying dominant plant community types, such as areas of developing forested, scrub-shrub, and emergent wetland habitats. Additional required elements of the map will include deepwater habitat, vegetated shallows, uplands, and any zones dominated by non-native or cryptogenic plant species (>50% cover), along with VIBI-FQ plots, monitoring wells, and fixed photo sequence locations. Since determination of the number of acres of wetland present is critical, wetland delineations must be carried out using the methods described in the 1987 Manual and the relevant regional supplement (including any subsequent versions/changes thereto) to define the areas displayed on the map. Wetland and non-wetland habitat types must be clearly delineated to allow an accurate determination of which areas are meeting wetland criteria. Precise wetland boundaries are also important for determining upland credits and areas of deepwater habitat or vegetated shallows. A table indicating the acreage of each major habitat element delineated and its associated mitigation type must be included in each annual monitoring report to help determine precise credit availability. In addition, these areas must be clearly depicted on a map of the mitigation site.

Vegetation

The ecological condition assessment of each bank and ILF project will be established through the generation of VIBI-FQ scores. The VIBI-FQ is a streamlined version of the VIBI which was recently developed by the Ohio EPA to reduce the amount of field work

and analysis required to conduct the assessment, and to simplify the interpretation of results (http://epa.ohio.gov/Portals/35/401/VIBI_FQ_FINAL.pdf; http://epa.ohio.gov/portals/35/wetlands/Part9_field_manual_v1_5rev15aug15.pdf). In addition to obtaining an overall score, entering VIBI-FQ field data into the automated scoring spreadsheet developed by the Ohio EPA (http://epa.ohio.gov/Portals/35/401/VIBI_DATA_TEMPLATE_v2016-03-18.zip) allows for additional vegetation parameters to be calculated, including percent relative cover of native perennial hydrophytes and percent relative cover of non-native or cryptogenic species.

It is important to include an adequate number of sample plots to provide an accurate characterization of the entire range of conditions generated by the project. Since most of these sites are large, it should be understood that capturing the variation across the bank or ILF project site will require multiple vegetation sampling locations. More sample plots are required for sites that are larger, have a diversity of wetland plant communities, or have similar communities in different levels of development or of varying quality.

A rough guide for the number of VIBI-FQ monitoring plots that should be established at a bank or ILF project is one (1) focus plot (20 meter x 50 meter) for every 10-20 acres of each mapped plant community type. The number of VIBI-FQ monitoring plots required will be determined using the most current detailed site map. These sample plots should be randomly placed within each of the mapped dominant plant communities. Plots should not cross plant community boundaries. Since data collected from these VIBI-FQ monitoring plots is representative of larger mapped plant communities, and these communities may change as the site develops, the randomly selected location of plots may be revised each year that VIBI-FQ monitoring is required (i.e. plots may be randomly placed again within the plant community). The number of VIBI-FQ focus plots may be revised if the wetland size changes significantly over the monitoring period. Appendix 15 of this document includes a detailed example for monitoring a mitigation project using VIBI-FQ.

Forested credits (including wetland and upland areas) will only be released when it can be demonstrated to the satisfaction of the IRT that these areas are developing into a forested habitat. This demonstration should be made in two (2) ways: 1) graphing woody DBH from within the VIBI-FQ plots for each individual species, as well as all species together, against time; and 2) visual observation of the temporal photo sequence from fixed locations, required as part of each annual monitoring report. Alternative measurements corresponding to an alternative performance standard may be proposed to demonstrate development of forested credits.

Hydrology

The amount and duration of inundation and saturation are critical factors in developing the amounts and types of wetlands desired. The IRT recommends that automatic recorders be used to provide information on surface and ground water elevations. Other hydrology measurement devices may be considered. At least one (1) automatic recorder

should be placed within each wetland habitat type at the bank or ILF project site. Automatic recorders should typically be located near the perimeter of the wetland, where they can provide data on both surface and ground water levels without being overtopped during periods of maximum inundation. In some instances, it may be more practical to install two (2) automatic recorders in each wetland area. One recorder should be placed at the location of deepest inundation and attached to a stake so it just touches the wetland substrates to record surface water levels and another should be placed at or near the perimeter, two (2) to three (3) feet into the substrate, to record ground water levels. It is recommended that readings be taken twice a day and the data be presented as hydrographs (water depths versus dates). The mitigation plan should include a site plan which shows where all hydrological monitoring wells will be established.

Temporal Sequence of Photographs

Each year a sequence of photographs should be taken during the middle of the growing season (~June – August) to chart the progress of plant community development. The mitigation plan should include a site plan which shows where all fixed temporal photo sequence locations will be established. There is no required number of locations to be included. However, the more images submitted for the temporal sequence, the easier it will be for the IRT to make an informed decision regarding the development of the bank or ILF project site. At a minimum, each mapped habitat type should have photos included which have been taken in each cardinal direction. The photos must be taken from precise locations and height, and at a camera angle which is perpendicular to the ground surface. Each photo should include a standard height measurement in the view, such as a meter stick, to provide a visual reference that can be evaluated throughout the monitoring period and help to clearly verify whether or not the plant community is developing as desired. It is important that the annual iteration of photos be taken at approximately the same time each year (+/- a few weeks) to ensure that the temporal comparison is valid.

Though not required, another recommended element to the photographic monitoring of a bank or ILF project would be the inclusion of periodic high-resolution overview shots collected using drone technology or best available online aerial imagery. Providing a sequence of “bird’s eye” photos of the site is an extremely valuable piece of visual evidence that would allow the IRT to evaluate project development effectively.

Other Biological Monitoring

Some bank or ILF project sites may include monitoring of breeding birds, pond breeding amphibians, or sensitive reptile species within the project area. Species which have sensitive habitat requirements and generally only breed in wetland ecosystems with specific characteristics required for their survival include, but are not limited to:

Birds-sedge wren, marsh wren, sandhill crane, osprey, bald eagle, prothonotary warbler, Virginia rail, king rail, sora rail, and least bittern;

Amphibians-four-toed Salamanders, spotted Salamanders, Jefferson salamanders, blue-spotted salamanders, tiger salamanders, and wood frogs. For amphibian sampling, refer to the Ohio EPA report "Integrated Wetland Assessment Program. Part 7: Amphibian Index of Biotic Integrity (AmphIBI) for Ohio Wetlands"; and

Reptiles- spotted turtles, Blanding's turtles, copperbelly watersnakes, Eastern massasauga rattlesnakes, and Kirtland's snakes.

Evidence that one (1) or more of these species is regularly breeding within the areas of the bank or ILF project site may be used to support a request to modify the instrument to reduce the native species and/or VIBI-FQ performance standard(s).

For example, a particular mitigation bank may be meeting most performance standards, but the native species percentage seems to have plateaued at 75% towards the end of the monitoring period (performance standard = 80%). Documentation indicating that a population of blue-spotted Salamanders is regularly breeding in the bank could be used as justification for allowing the modification of this performance standard to 75%, as this is a more sensitive wetland species, and ongoing vegetation management (e.g. herbicidal spraying) could adversely affect the breeding population.

It is important to note that this demonstration is optional and the IRT has sole discretion to accept or reject any submitted proposal to modify performance standards. Under no circumstances may this provision be used if any specific performance standard indicates that a given bank or ILF project is performing at a Category 1 level.

Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS)

RIBITS is an interactive website designed to track the status of mitigation banks and ILF programs by Corps Districts; it provides up-to-date banking and ILF program information to sponsors and applicants. The sponsor should provide receipts of all credit transactions to the Corps, or update credit ledgers in RIBITS, if approved, to provide accurate, real-time accounting. The sponsor must track all credit transaction data to successfully complete all required fields in RIBITS. Visit www.ribits.usace.army.mil to view required RIBITS fields. In addition, the sponsor should provide credit ledgers to the IRT quarterly.

Monitoring Schedule

The table below gives the recommended wetland monitoring items and a time scale of when and how often they should occur and be reported during the ten-year monitoring period. Some data may not be collected annually; therefore, some annual monitoring reports may include sections with previous years' data for continuity.

Some banks and ILF project sites, will have additional monitoring requirements, depending on established performance standards including, but not limited to AmphIBI scores, measuring specific ecological services/functions the mitigation wetlands are performing, or other wetland assessments.

Table 1. Recommended 10 Year Monitoring and Reporting Schedule											
	Years										
Monitoring activity	0	1	2	3	4	5	6	7	8	9	10
+Delineation		X		X		X		X		X	X
Hydrologic Monitoring		X	X	X	X	X	X	X	X	X	X
Native/Woody Monitoring		X		X		X		X			X
VIBI-FQ				X		X		X			X
*Amphibian Sampling				X		X		X			X
*Reptile Monitoring				X		X		X			X
Temporal Photo Sequence		X	X	X	X	X	X	X	X	X	X
*Breeding Bird Monitoring		X		X		X		X		X	X
Detailed Site Mapping		X		X		X		X		X	X
◆ Drone Overview Photo As-built report	X	X		X		X		X		X	
Annual report		X	X	X	X	X	X	X	X	X	X

+ The 1987 Manual, the relevant regional supplement, and any subsequent versions/updates must be followed when conducting delineations.

*Optional. ◆ Recommended, but not required

Reporting Monitoring Data

The sponsor must demonstrate to the satisfaction of the Ohio IRT that the site is meeting performance standards in order to be eligible for credit releases. All monitoring data should be presented in a clear and concise manner. The Ohio IRT has developed a monitoring report checklist (see Appendix 14), which should be followed for all monitoring reports.

SECTION 10: CREDIT RELEASE SCHEDULE

Credit releases apply to mitigation banks and ILF project sites. All credit releases, including the first release, must be authorized in writing by the Corps to the sponsor before any credits may be sold. Under no circumstance should credits be sold prior to this written authorization. In addition, credits must be sold in the habitat type released (e.g. forested or non-forested wetland credits). Failure to comply (including over-selling), may result in consequences including but not limited to: decrease of credit sales, suspension of future credits, etc. [see 33 CFR 332.8(o)(10)]. All credit releases will be uploaded into RIBITS by the Corps.

The following credit release schedule is recommended. Alternative credit release schedules may be proposed (e.g. per RGL 19-01) and will be considered on a case-by-case basis.

The First Release of Credits: An initial release of a percentage of total credits projected at mitigation bank or ILF project site may occur, provided the following conditions are satisfied:

- the instrument and mitigation plan have been approved (signed by the sponsor and the Corps). Other Ohio IRT member agencies may sign to approve the instrument and mitigation plan for use under their respective programs;
- the mitigation bank or ILF project site has been secured (e.g. the site protection instrument has been recorded);
- appropriate financial assurances have been established; and
- any other requirements determined to be necessary by the Corps have been fulfilled (see 33 CFR 332.8(m)).

All preservation credits, up to 30% of the total anticipated re-establishment credits, and up to 15% of the total anticipated rehabilitation and enhancement credits will be released once the conditions for the first release of credits are satisfied. Establishment credits are not eligible for an initial credit release. Construction, including all proposed initial plantings, must be completed within one (1) year of the initial release. In order to assure the integrity of the final bank or ILF plan, no construction activities should commence prior to the signing of the instrument, which indicates the plan is approved by the IRT. If construction does occur on any part of the plan prior to signing, the instrument will not be effective, and no credits will be released, until the IRT certifies in writing that such construction is in compliance with the final plan.

Annual field monitoring of the bank or ILF site shall commence only once all of the following criteria have been met:

1. The bank instrument and/or ILF project site has been approved; and
2. One complete growing season has elapsed since the bank was constructed (including seeding and planting of woody and herbaceous plants). In cases where

all plantings are not going to occur in the initial year, monitoring and credit release schedules will be adjusted accordingly.

Additional Credit Releases: Additional credits may be released at any time following the 1st post-construction full growing season, in an amount up to the 25% final release holdback, when interim and/or final performance standards specified in the signed instrument are being met. The mitigation bank or ILF project will be evaluated as a whole when determining credit release eligibility. Credits generated will be based on the delineated resources present on-site at the time the release is requested by the sponsor. If the mitigation bank or ILF project site is developing as desired, but does not meet these final goals, the sponsor may request interim credit releases, according to the following schedule:

Interim Credit Release 1: Following the successful construction of the wetland habitat, up to 15% of the total re-establishment, rehabilitation and enhancement credits and 30% of the total anticipated establishment credits may be released if all of the following conditions are met:

- All wetland mitigation areas, including wetland preservation areas, must meet wetland criteria based on a recent delineation verified by the Corps;
- The wetland areas are inundated (flooded or ponded) or the water table is ≤ 12 inches below the soil surface for ≥ 14 consecutive days during the growing season (based on hydrologic sampling);
- At least 80% of the wetland areas are covered with hydrophytic vegetation;
- The project site has less or equal to 15% relative cover of invasive plant species; and
- For all forested wetland and upland areas, it can be demonstrated that a minimum of 200 native, live and healthy (disease and pest free) woody plants per acre (of which at least 100 are tree species) is present following initial planting.

Interim Credit Release 2: If all necessary requirements described above are still met, up to 30% of the total establishment, 15% of the total re-establishment credits and 30% of the total anticipated rehabilitation and enhancement credits may be requested for release if all of the following conditions are met:

- The project site has 70% relative cover of native plant species;
- The project site has less than or equal to 12.5% relative cover of invasive plant species;
- Established or re-established wetland areas meet an interim VIBI-FQ score of 30;
- Rehabilitation or enhancement wetland areas meet an interim VIBI-FQ score of 30 or an increase of 5 points, as applicable; and
- For all forested wetland and upland areas, it can be demonstrated that a minimum of 300 native, live and healthy (disease and pest free) woody plants per acre (of which at least 150 are tree species) is present following initial planting, and the temporal photographic sequence indicates the site is maturing and a canopy is becoming established.

Interim Credit Release 3: If all necessary requirements described above are still met, up to 15% of the total re-establishment, rehabilitation, and enhancement credits and 15% of the total anticipated establishment credits may be requested for release if all of the following conditions are met:

- The wetland areas are inundated (flooded or ponded) or the water table is ≤ 12 inches below the soil surface for ≥ 14 consecutive days for four (4) growing seasons (based on hydrologic sampling);
- The project site has 75% total relative cover of native species;
- The project site has less than or equal to 10% relative cover of invasive species. This can consist of less than or equal to 5% relative cover of all non-*Typha* invasive plant species, but not more than 10% total relative cover of invasive plant species including *Typha* species;
- The same wetland areas have at least 65% relative cover of native perennial hydrophytes (FAC, FACW, OBL);
- The established or re-established wetland areas meet an interim VIBI-FQ score of 35;
- Rehabilitation or enhancement wetland areas meet an interim VIBI-FQ score of 35 or an increase of 7 points, as applicable; and
- For all forested wetland and upland areas, it can be demonstrated that a minimum of 400 native, live and healthy (disease and pest free) woody plants per acre (of which at least 200 are tree species), are present and healthy following initial planting, and the temporal photographic sequence indicates that site is maturing and a canopy is establishing.

The Final Release of Credits: A minimum of 25% of the total establishment, re-establishment and rehabilitation credits at a site should be withheld until the final monitoring report has been submitted and evaluated by the IRT. If all performance standards have been met, the final 25% of credits may be released. Credits will not be released until a final delineation acceptable to the Corps has been submitted and approved. The Corps will consult with the IRT regarding the final credit release. Monitoring periods may be shortened if performance standards are met before the end of the monitoring period or extended if all performance standards have not been met. See 33 CFR 332.6(b) for further information. The table below summarizes the recommended credit release schedule described above.

Table 2. Recommended credit release schedule					
	Preservation	Establishment	Re-establishment	Rehabilitation	Enhancement
Initial Release	100%	0%	30%	15%	15%
Interim Release 1	0%	30%	15%	15%	15%
Interim Release 2	0%	30%	15%	30%	30%
Interim Release 3	0%	15%	15%	15%	15%
Final Release	0%	25%	25%	25%	25%

Release Conditions: Credit releases for mitigation banks and ILF projects must be approved by the Corps in accordance with 33 CFR 332.8(o)(9).

SECTION 11: ILF ADVANCE CREDIT FULFILLMENT

In accordance with the Final Mitigation Rule, the IRT recognizes the intent of an ILF program is to identify and establish ILF project sites within three (3) years of advance credit sales within a geographical service area. An ILF project site provides compensatory mitigation within the geographical service area where the advance credits have been sold. ILF project sites must be proposed based on the approved ILF program instrument and its Compensation Planning Framework.

In certain circumstances, an ILF program may be unable to identify and/or secure adequate ILF project sites for the fulfillment of advance credit sales (e.g. due to low sale watersheds or no properties available meeting the Compensation Planning Framework) within three (3) years of the first sale in a service area. If this occurs, the IRT may consider granting a waiver including but not limited to the following options:

- Approval of a time extension sufficient to complete advance credit fulfillment within the service area;
- Allowing proceeds from the sale of advance credits in two (2) or more abutting service areas within the same 6-digit HUC to be pooled to fund establishment of an ILF project site (must be ecologically beneficial);
- Fulfillment of advance credits, consistent with the Compensation Planning Framework, through the hierarchy of mitigation options listed in 33 CFR 332.3(b)(2) through (b)(6); or
- In rare circumstances, fulfillment of advance credits sold in one (1) service area with released credits from a different service area.

As outlined above, the intent of an ILF program is to identify and establish ILF project sites. Requests for waivers to fulfill advance credits must include clear documentation of the sponsor's completed due diligence to identify and secure an ILF project site within three (3) years. Waiver requests without this information will not be considered by the IRT. Provided the sponsor has submitted their completed due diligence documentation, the IRT would determine on a case-by-case basis whether a waiver would be granted. Additional compensation may be required to account for temporal loss.

All proposals to fulfill sold advance credits via an alternative mechanism must include a comprehensive, up-to-date ledger for all advance credit sales completed through the approved ILF program within the service area. The ledger must clearly outline which specific advance credit sales would be fulfilled. In addition, a justified estimation must be provided for when the next group of advance credits sold must be fulfilled in accordance with 33 CFR 332.8(n)(4).

In accordance with 33 CFR 332.8(i)(2), the Corps has the authority to direct identification and development of alternative compensatory mitigation projects in cases where the sponsor does not provide compensatory mitigation in accordance with the time frame specified in paragraph 33 CFR 332.8(n)(4).

In problematic service areas (i.e. continuously low credit sales or persistent lack of available sites), the sponsor should consider resolutions including, but not limited to, permanently closing or temporarily suspending sales within the problematic service area(s) until such a time that conditions are more conducive to operating an ILF program in said service area(s). Formal notice of these actions must be provided by the sponsor to the IRT, because some actions may require formal modification to the ILF program instrument.

SECTION 12: CREDIT CALCULATION

The IRT will be the final decision maker on all credit ratios for assigned activities for mitigation banks and ILF project sites. The tables in this section establish recommended ratios for:

- wetland mitigation activities,
- interior upland mitigation activities, and
- wetland and upland perimeter buffer mitigation activities.

In order to qualify for the recommended ratios, adequate justification must be provided that supports the proposed activity meets the definitions and expectations of the mitigation activities described herein.

Wetland Mitigation Activity Type	Credit Ratio
Wetland Establishment	1:1
Wetland Re-establishment	1:1
Wetland Rehabilitation	1:2
Wetland Enhancement	1:4
Wetland Preservation	1:10

***Notes:**

- Wetland re-establishment is the preferred method for compensatory wetland mitigation. Wetland establishment is the less preferred than re-establishment, because its baseline conditions pose a risk of not developing into wetlands.
- In most cases, impacts associated with individual projects that propose to use credits are permanent. Therefore, only enhancement activities that would result in a permanent increase of wetland functions and services should be considered for credit generation in Ohio.
- Wetland preservation may be proposed when the following criteria are met by the resource: provide important physical, chemical, or biological functions for the watershed; contribute significantly to the ecological sustainability of the watershed; and are under a demonstrable threat. Credit up to 1:6 may be considered on a case-by-case basis where an ecologically compelling reason is presented such as wetlands of state ecological significance, wetlands with exceptional ecological significance within the watershed, and/or wetlands containing or providing rare or exceptional habitat. The determination that a wetland meets Category 3 alone does not automatically qualify it for preservation credit above a 1:10 ratio.
- Mitigation projects should consist of no more than 35% of preservation and upland credits, cumulatively, per site. Proposals exceeding this recommendation may be considered on a case-by-case basis.

- Wetland rehabilitation and enhancement may be granted lower ratios commensurate with the functional lift proposed.

Table 4. Credit ratios for interior upland mitigation activities⁺	
Interior Upland Mitigation Activity Type	Credit Ratio
Upland Re-establishment	1:4
Upland Rehabilitation	1:8
Upland Enhancement	1:16
Upland Preservation	1:20

⁺Notes:

- Upland area greater than 100-feet from wetland boundaries may not be eligible for credits if it would not provide a functional benefit to the associated wetland.
- It is expected that upland re-establishment and rehabilitation will be aimed towards forested habitat development.
- Upland preservation will only be granted where an ecologically compelling reason can be documented.
- Mitigation projects should consist of no more than 35% of preservation and upland credits, cumulatively, per site. Proposals exceeding this recommendation may be considered on a case-by-case basis.
- Deepwater and/or vegetated shallows habitat areas may be incorporated into site design, if appropriate, on a case-by-case basis when they are part of a well-integrated complex. The sponsor should provide adequate, site-specific justification for the inclusion of this habitat type. It should be limited in size (e.g. no greater than 10% of the total wetland area) and credited similarly to uplands.

Table 5. Credit ratios for wetland and upland perimeter buffer mitigation activities[^]	
Perimeter Buffer Mitigation Activity Type	Credit Ratio
Perimeter Buffer Wetland Establishment	1:2
Perimeter Buffer Wetland Re-establishment	1:2
Perimeter Buffer Wetland Rehabilitation	1:4
Perimeter Buffer Wetland Enhancement	1:8
Perimeter Buffer Wetland Preservation	1:15
Perimeter Buffer Upland Re-establishment	1:4
Perimeter Buffer Upland Rehabilitation	1:8
Perimeter Buffer Upland Enhancement	1:16
Perimeter Buffer Upland Preservation	1:20

- To ensure long-term viability of wetland resources, 100-foot minimum perimeter buffers (measured inward from the boundaries of the mitigation project) should be

established to protect interior wetlands from potential threats from surrounding, incompatible present or reasonably foreseeable future land uses. The 100-foot perimeter buffer should be afforded the same level of protection as the rest of the mitigation site. Wetlands may be located in the perimeter buffer in some cases. If due to site constraints (e.g. property boundaries), the establishment of a 100-foot perimeter buffer would result in greater than 20 percent of the mitigation project site area consist of perimeter buffer, a reduced perimeter buffer width and/or alternate ratios may be considered by the IRT on a case-by-case basis. In addition, the sponsor may propose reducing or increasing (i.e. scaling) the 100-foot minimum perimeter buffer during the review and monitoring period. Proposed reductions or increases to the perimeter buffer must be accompanied by adequate, site specific justification to demonstrate the relationship between the risk to the site from surrounding land uses and the size of the perimeter buffer.

- Upland area greater than 100-feet from wetland boundaries may not be eligible for credits if the upland area is not providing a functional benefit to the associated wetland.
- In most cases, impacts associated with individual projects that propose to use credits are permanent. Therefore, only buffer enhancement activities that would result in a permanent increase of functions and services should be considered for credit generation in Ohio.
- Wetland preservation may be used when all of the following criteria are met by the resource located within buffers: provide important physical, chemical, or biological functions for the watershed; contribute significantly to the ecological sustainability of the watershed; and are under a demonstrable threat. Credits above 1:15 may be considered on a case-by-case basis where an ecologically compelling reason is presented such as wetlands of state ecological significance, wetlands with exceptional ecological significance within the watershed, and/or wetlands containing or providing rare or exceptional habitat. The determination that a wetland meets Category 3 alone does not automatically qualify it for preservation credit above a 1:15 ratio.
- Mitigation projects should consist of no more than 35% of preservation and upland credits, cumulatively, per site. Proposals exceeding this recommendation may be considered on a case-by-case basis.
- No area of buffer may be credited under more than one (1) buffer type.
- Deepwater and/or vegetated shallows habitat areas may be incorporated into site design, if appropriate, on a case-by-case basis when they are part of a well-integrated complex. The sponsor should provide adequate, site-specific justification for the inclusion of this habitat type. It should be limited in size (e.g. no greater than 10% of the total wetland area) and credited similarly to uplands.

SECTION 13: DEFAULT PLAN

Should the IRT determine that the Sponsor is in default of any provision of the Instrument (including mitigation plans), the Corps, in consultation with the IRT, may notify the Sponsor that the sale or transfer of any credits will be suspended until the appropriate deficiencies have been remedied. Upon notice of such suspension, the Sponsor will immediately cease all sale or transfer of mitigation credits until the Corps informs the Sponsor in writing that sales or transfers may be resumed. Should the Sponsor remain in default, the Corps, in consultation with the IRT, may terminate the instrument and any subsequent operations. Upon termination, the Sponsor agrees to perform and fulfill all obligations under the instrument relating to credits that were sold or transferred prior to termination. Should a bank or ILF site default, sufficient financial assurances to correct any material default may be called upon.

In the cases of noncompliance and/or default, the district engineer (i.e. Corps) may take the following actions:

- i. identify potential options the sponsor could implement to address program, service area, or project default;
- ii. suspend credit sales;
- iii. decrease the available credits;
- iv. terminate the instrument;
- v. terminate the ILF program or bank within a specific service area;
- vi. require/direct adaptive management actions at a mitigation site, which may include the use of program account funds;
- vii. modify the credit release schedule for a mitigation project;
- viii. approve the funds to alternative mitigation (e.g., buying credits from a bank or funding another compensatory mitigation project); and/or
- ix. treat the instrument or mitigation project as in non-compliance.

SECTION 14: CLOSURE CRITERIA

Prior to closure of a bank or ILF site, the IRT will perform a final compliance inspection to evaluate whether all performance standards and other requirements of the instrument have been met. In consultation with the IRT and the Sponsor, the Corps will determine whether closure is appropriate for a bank or ILF site when:

- i. all applicable performance standards have been achieved;
- ii. all available credits for that bank or ILF site have been debited, or the sponsor has acknowledged that any remaining positive credit balance will be forfeited;
- iii. the Sponsor has prepared a Long-Term Management and Maintenance Plan, that has been approved by the IRT;
- iv. the Sponsor has prepared and submitted to the IRT a GIS shapefile or similar exhibit depicting the location and extent of the mitigation bank or ILF site;
- v. the Sponsor has either: (i) assumed responsibilities for accomplishing the Long-Term Management Plan, in which case the Sponsor will fulfill the role of Long-Term Manager, or (ii) has transferred those responsibilities to another Long-Term Manager;
- vi. the Long-Term Management Fund has been fully funded, and annual disbursements to the Long-Term Manager are possible; and
- vii. the bank or ILF site has complied with all other requirements of the Instrument.

Upon closure, no further credit transfer may occur and the period of long-term management/protection will commence. In addition, the Corps will issue a written certification of site closure to the Sponsor and the holder(s) of financial surety to facilitate the release of remaining financial assurances to the sponsor, if applicable.

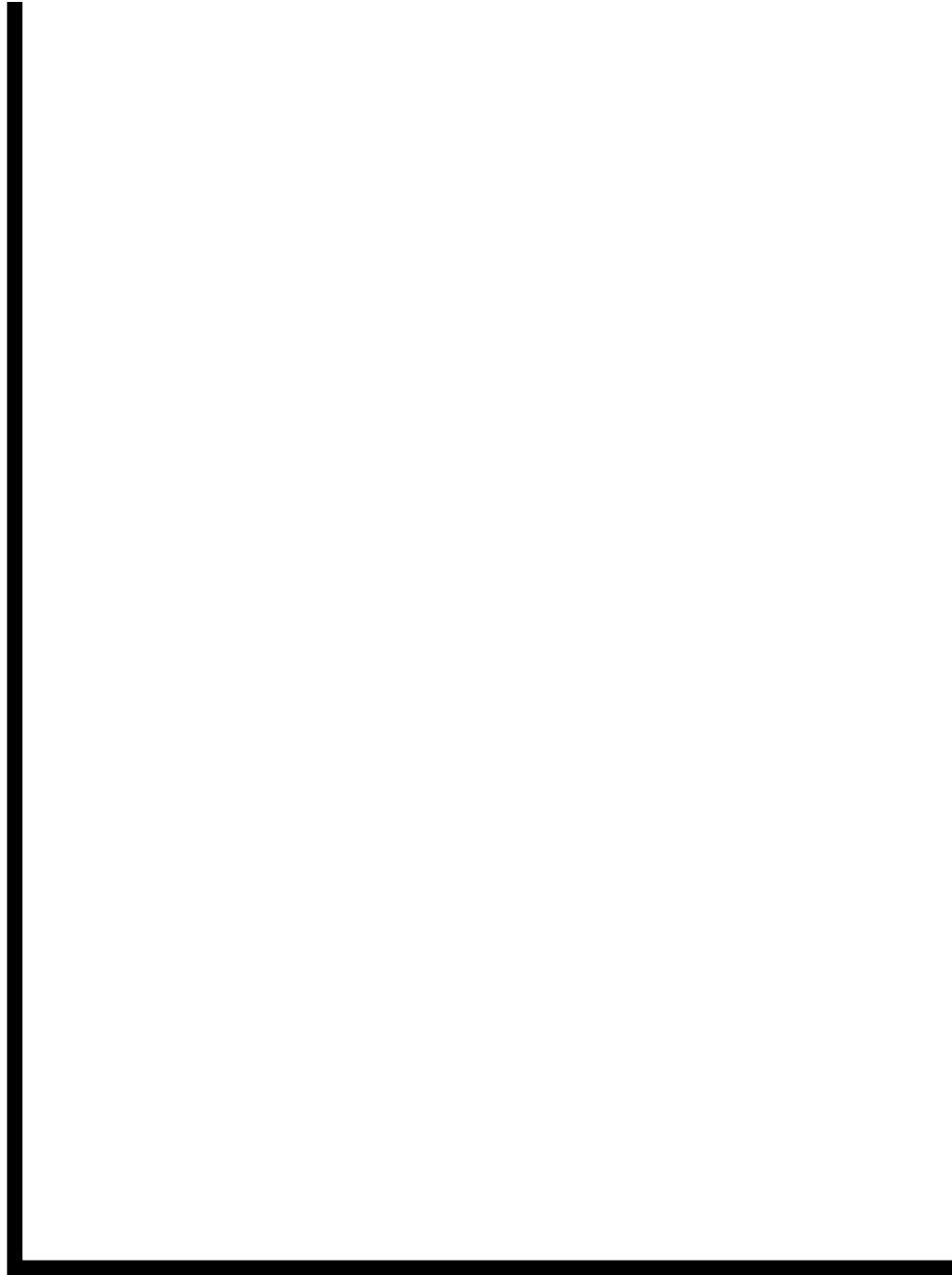
APPENDIX 1: COMPONENTS OF A COMPENSATORY MITIGATION PLAN

Mitigation banks and ILF sites must prepare a mitigation plan including the 12 Components of a Compensatory Mitigation Plan (listed in 33 CFR 332.4 (c)(2) through (14)):

1. Objectives. A description of the resource type(s) and amount(s) that will be provided, the method of compensation (restoration, establishment, preservation etc.), and how the anticipated functions of the mitigation project will address watershed needs.
2. Site selection. A description of the factors considered during the site selection process. This should include consideration of watershed needs, on-site alternatives where applicable, and practicability of accomplishing ecologically self-sustaining aquatic resource restoration, establishment, enhancement, and/or preservation at the mitigation project site.
3. Site protection instrument. A description of the legal arrangements and instrument, including site ownership, which will be used to ensure the long-term protection of the mitigation project site.
4. Baseline information. A description of the ecological characteristics of the proposed mitigation project site (and in the case of an associated application for a DA permit, the impact site). This may include descriptions of historic and existing plant communities, historic and existing hydrology, soil conditions, a map showing the locations of the mitigation site(s) or the geographic coordinates for those site(s), and other characteristics appropriate to the type of resource proposed as compensation. The baseline information should include a delineation of waters of the U.S. on the proposed mitigation project site.
5. Determination of credits. A description of the number of credits to be generated including a brief explanation of the rationale for this determination.
6. Mitigation work plan. Detailed written specifications and work descriptions for the mitigation project at the bank, including: the geographic boundaries of the project at the bank site; construction methods, timing, and sequence; source(s) of water; methods for establishing the desired plant community; plans to control non-native or cryptogenic plant species; proposed grading plan; soil management; and erosion control measures.
7. Maintenance plan. A description and schedule of maintenance requirements to ensure the continued viability of the resource once initial construction is completed.

8. Performance standards. Ecologically-based specific and measurable standards that will be used to determine whether the project is achieving its objectives.
9. Monitoring requirements. A description of parameters monitored to determine whether the bank is on track to meet performance standards and if adaptive management is needed. A schedule for monitoring and reporting monitoring results to the Corps must be included. The monitoring plan should include a site plan which shows where all hydrological monitoring wells and plant sampling locations will be established.
10. Long-term management plan. A description of 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.
11. Adaptive management plan. A management strategy to address unforeseen changes in site conditions or other components of the project, including the party or parties responsible for implementing adaptive management measures.
12. Financial assurances. A description of financial assurances that will be provided and how they are sufficient to ensure a high level of confidence that the mitigation project at the bank will be successfully completed, in accordance with its performance standards.
13. Other information. The Corps may require additional information as necessary to determine the appropriateness, feasibility and practicability of the mitigation bank or ILF project.

**APPENDIX 2: WATERSHEDS FOR OHIO WETLAND
WATER QUALITY STANDARDS**



APPENDIX 3: MITIGATION BANK DRAFT PROSPECTUS CHECKLIST

Please provide the following information and checklist with the submittal of a Draft Prospectus (see 33 CFR 332.8(d)(3) for additional information):

- A. Proposed Bank Name - Use a short name based on a geographic feature if possible; include “Mitigation Bank” in the name
- B. Bank contacts – include the name, address, phone, fax, email, and role in project for at least one (1) contact: the contact may be the Bank Sponsor, Land Owner, Consultant, etc.
- C. General location map, address, and center coordinates of the proposed bank property
- D. The proposed bank property boundaries depicted on a 7.5 minute USGS map
- E. Aerial photo of the bank site and surrounding properties
- F. Soils map of the bank site and surrounding properties
- G. Map of the proposed bank service area
- H. Current site conditions description including
 - potential wildlife habitats and species known or potentially present
 - photos of the site
 - description of potential wetlands and waters present on site
 - hydrology description
 - approximate acreage of existing wetlands and waters to be restored
 - site history including past land uses
 - surrounding land uses and zoning
 - anticipated reasonably foreseeable future development in the area
 - description of any known encumbrances on the property (i.e. above and below ground mineral rights, utility easements, water easements, etc.)
- I. Conceptual site plan

APPENDIX 4: MITIGATION BANK PROSPECTUS CHECKLIST

Please provide the following information and checklist with the submittal of a Prospectus (see 33 CFR 332.8(d)(2) for additional information):

- A. Proposed Bank Name - Use a short name based on a geographic feature if possible; include “Mitigation Bank” in the name
- B. Bank contacts – Include the name, address, phone, fax, email, and role in project for: bank sponsor, land owner if different, consultants, etc.
- C. The qualifications of the sponsor to successfully complete the type(s) of mitigation project(s) proposed, including information describing any past such activities by the sponsor, in addition to any written agreement(s) between two (2) or more parties collectively acting as the sponsor
- D. General location map, address, and center coordinates of the proposed bank property
- E. The proposed bank property boundaries depicted on a 7.5 minute USGS map
- F. Aerial photo of the site and surrounding properties
- G. Map of the proposed bank service area
- H. Objectives of the proposed mitigation bank
- I. How the mitigation bank will be established and operated
- J. The general need for and technical feasibility of the proposed mitigation bank
- K. The proposed ownership arrangements and long-term management strategy for the mitigation bank site
- L. Site conditions description. This must describe the ecological suitability of the site to achieve the objectives of the proposed mitigation bank, including the physical, chemical, and biological characteristics of the bank site and how that site will support the planned types of aquatic resources and functions and should include: site conditions and habitats, photos of the site, description of wetlands and waters present on site, hydrology description, number of acres of existing wetlands and waters and what is proposed for re-establishment, rehabilitation, etc., site history including past land uses, surrounding land uses and zoning along with the anticipated reasonably foreseeable future development in the area

- M. Assurance of sufficient water rights to support the long-term sustainability of the mitigation bank
- N. Proposed number and kind of credits (and acres) on the property
- O. Proposed credit release schedule
- P. Delineation of all on-site aquatic resources
- Q. Preliminary plans including a description of reference site conditions upon which the plans are based
- R. Preliminary title report indicating any easements or other encumbrances. Note, any liens and easements on the property that may affect a bank's viability will need to be resolved before a bank can be approved. Provide a written assessment of all easements and encumbrances along with a discussion on how they may affect the bank operation or habitat values
- S. Any other restrictions on the property
- T. A list of the names and addresses of all adjacent property owners

APPENDIX 5: DRAFT AND FINAL MITIGATION BANK INSTRUMENT CHECKLIST

Please provide the following information and checklist with the submittal of a Bank Instrument (see 33 CFR 332.8(d)(6) and (8) and 332.4(c)(2) – (14) for additional information):

- Table of Contents
- Introduction including
 - Mitigation bank name
 - Mitigation bank sponsor and other contact information
 - Mitigation bank location
- Mitigation bank objectives
- Site selection factors considered
- Proposed service area
- Sponsor's legal responsibility for providing mitigation
- Site Conditions including
 - Ownership
 - Relationship to other programs
 - Soils
 - Hydrology
 - Existing vegetation
 - Existing aquatic resources
 - Unique features
 - Hazardous substances
 - Adjacent land use
 - Watershed plan (if any)
- Mitigation work plan – detailed written specifications and work descriptions for the site including a description of reference site conditions upon which the plan is based
- Determination of number and types of credits
- Site protection instrument
- Financial assurances including the cost of providing replacement mitigation, including costs for:
 - Land acquisition
 - Planning and engineering

- Legal fees
 - Mobilization
 - Construction
 - Monitoring
- Performance standards – ecologically based standards used to determine whether the project is achieving its objectives
 - Monitoring and reporting plan
 - Site plan which shows where all fixed temporal photo sequence locations will be established
 - Credit release schedule and criteria tied to specific milestones
 - Accounting procedures
 - Maintenance plan – description and schedule of maintenance requirements
 - Adaptive management plan – a management strategy to address unforeseen changes in site conditions or other aspects of the project
 - Long-term management plan – description of mitigation site management after meeting all performance standards to ensure long-term sustainability of the site
 - The long-term management plan should include a description of the long-term management funding mechanism and amount based on itemized estimations
 - Default provisions
 - Bank closure plan
 - Definitions
 - Signature page
 - Service Area Map
 - Mitigation Plan (with 12 required components; refer to Appendix 1)
 - Credit Ledger
 - Pre-construction notification or individual permit application, if applicable.

- Schedule upon which the instrument would be reevaluated for potential modification (i.e. every five (5) years, upon request by any signatory, upon change in statutory authorities, etc.). This typically applies to ILF program instruments, UMBIs, and phased mitigation banks.

APPENDIX 6: ILF PROGRAM DRAFT PROSPECTUS CHECKLIST

Please provide the following information and checklist with the submittal of a ILF Program Draft Prospectus (see 33 CFR 332.8(d)(3) for additional information):

- Proposed ILF Program Name - Use a short name based on a geographic area if possible; include “ILF Program” in the name
- ILF Program contacts – include the name, address, phone, fax, email, and role in project for at least one (1) contact: the contact may be the ILF program sponsor, land owner, consultants, etc.
- The qualifications of the sponsor to successfully complete the type(s) of mitigation project(s) proposed, including information describing any past such activities by the sponsor
- Map and description of the proposed ILF program service area(s)
- A description of the general need for the ILF program and the need for advance credits within the proposed service area(s)
- Proposed number and type of advance credits

APPENDIX 7: ILF PROGRAM PROSPECTUS CHECKLIST

Please provide the following information and checklist with the submittal of a ILF Program Prospectus (see 33 CFR 332.8(d)(2) for additional information):

- The objectives of the proposed ILF program
- How the ILF program will be established and operated
- The proposed service area
- The general need for and technical feasibility of the proposed ILF program
- The proposed ownership arrangements and long-term management strategy for the ILF project sites
- The qualifications of the sponsor to successfully complete the type(s) of mitigation project(s) proposed, including information describing any past such activities by the sponsor, in addition to any written agreement(s) between two (2) or more parties collectively acting as the sponsor
- A description of the need for advance credits within the proposed service area(s)
- Proposed number and type of advance credits
- Compensation planning framework:* (1) The approved instrument for an ILF program must include a compensation planning framework that will be used to select, secure, and implement aquatic resource restoration, establishment, enhancement, and/or preservation activities. The compensation planning framework must support a watershed approach to compensatory mitigation. All specific projects used to provide compensation for DA permits must be consistent with the approved compensation planning framework. Modifications to the framework must be approved as a significant modification to the instrument by the Corps, after consultation with the IRT. (2) The compensation planning framework must contain the following elements:
 - (i) The geographic service area(s), including a watershed-based rationale for the delineation of each service area
 - (ii) A description of the threats to aquatic resources in the service area(s), including how the ILF program will help offset impacts resulting from those threats
 - (iii) An analysis of historic aquatic resource loss in the service area(s)

- (iv) An analysis of current aquatic resource conditions in the service area(s), supported by an appropriate level of field documentation
- (v) A statement of aquatic resource goals and objectives for each service area, including a description of the general amounts, types and locations of aquatic resources the program will seek to provide
- (vi) A prioritization strategy for selecting and implementing compensatory mitigation activities
- (vii) An explanation of how any preservation objectives identified in paragraph (c)(2)(v) of this section and addressed in the prioritization strategy in paragraph (c)(2)(vi) satisfy the criteria for use of preservation in §332.3(h)
- (viii) A description of any public and private stakeholder involvement in plan development and implementation, including, where appropriate, coordination with federal, state, tribal and local aquatic resource management and regulatory authorities
- (ix) A description of the long-term protection and management strategies for activities conducted by the ILF program sponsor
- (x) A strategy for periodic evaluation and reporting on the progress of the program in achieving the goals and objectives in paragraph (c)(2)(v) of this section, including a process for revising the planning framework as necessary
- (xi) Any other information deemed necessary for effective compensation planning by the Corps

- A description of the ILF program account required by 33 CFR 332.8(i).

APPENDIX 8: DRAFT AND FINAL ILF PROGRAM INSTRUMENT CHECKLIST

Please provide the following information and checklist with the submittal of an ILF Program Instrument (see 33 CFR 332.8(d)(6) and (8) for additional information):

- Table of Contents
- Definitions
- Introduction including
 - ILF Program name
 - ILF Program sponsor and other contact information
 - ILF Program service area(s)
- Service Area description and map
- Accounting procedures
- A provision stating that legal responsibility for providing the compensatory mitigation lies with the sponsor once a permittee secures credits from the sponsor
- Default provisions
- Closure provisions
- Reporting protocols
- Specification of the initial allocation of advance credits (see 33 CFR 332.8(n)) and a fee schedule for these credits, by service area, including an explanation of the basis for the allocation and draft fee schedule
- The compensation planning framework
- A methodology for determining future project-specific credits and fees
- A description of the ILF program account required by 33 CFR 332.8(i);
- Signature page
- Credit Ledger
- A description of how the ILF projects will be implemented
- Provisions for audit of the ILF program account and operations

- Schedule upon which the instrument would be reevaluated for potential modification (i.e. every five (5) years, upon request by any signatory, upon change in statutory authorities, etc.)

APPENDIX 9: ILF PROJECT SITE DRAFT MITIGATION PLAN CHECKLIST

Please provide the following information and checklist with the submittal of an ILF Project Site Draft Mitigation Plan:

- A. Proposed ILF Project Name - Use a short name based on a geographic feature if possible; include “ILF Project Site” in the name
- B. ILF Project contacts – include the name, address, phone, fax, email, and role in project for at least one (1) contact: the contact may be the ILF program sponsor, land owner, consultants, etc.
- C. General location map and address of the proposed ILF project property
- D. The proposed bank property boundaries depicted on a 7.5 minute USGS map
- E. Aerial photo of the ILF project site and surrounding properties
- F. Soils map of the ILF project site and surrounding properties
- G. Map and description of the proposed ILF project service area
- H. Current ILF project site conditions description including:
 - potential wildlife habitats and species known or potentially present
 - photos of the site
 - description of potential wetlands and waters present on site
 - hydrology description
 - approximate acreage of aquatic resources
 - site history including past land uses
 - surrounding land uses and zoning
 - anticipated reasonably foreseeable future development in the area
 - description of any known encumbrances on the property (i.e. above and below ground mineral rights, utility easements, water easements, etc.)
- I. Conceptual site plan
- J. Preliminary Project Budget including, but not limited to:
 - Site Control
 - Pre-Construction Activities
 - Construction Activities
 - Maintenance Activities
 - Financial Assurance(s)
 - Long-term Management Funding
 - Potential Credit Generation Estimate

APPENDIX 10: ILF PROJECT SITE MITIGATION PLAN CHECKLIST

Please provide the following information and checklist with the submittal of an ILF Project Site Mitigation Plan (see 33 CFR 332.8(j) for additional information):

- Proposed ILF Project Name - Use a short name based on a geographic feature if possible; include “ILF Project” in the name
- ILF Project contacts – Include the name, address, phone, fax, email, and role in project for: ILF Program sponsor, land owner if different, consultants, etc.
- General location map and address of the proposed ILF project property
- The proposed bank property boundaries depicted on a 7.5 minute USGS map
- Aerial photo of the ILF project site and surrounding properties
- Map and description of the proposed ILF project service area
- The proposed site control (e.g. ownership) arrangements for the site
- Objectives - A description of the resource type(s) and amount(s) that will be provided, the method of compensation (e.g. restoration, establishment, preservation, etc.), and how the anticipated functions of the ILF project will address watershed needs
- Site selection - A description of the factors considered during the site selection process. This should include consideration of watershed needs, on-site alternatives where applicable, and practicability of accomplishing ecologically self-sustaining aquatic resource restoration, establishment, enhancement, and/or preservation at the ILF project site
- Site protection instrument - A description of the legal arrangements and instrument, including site ownership, which will be used to ensure the long-term protection of the ILF project site
- Baseline information - A description of the ecological characteristics of the proposed ILF project site. This may include descriptions of historic and existing plant communities, historic and existing hydrology, soil conditions, a map showing the locations of the ILF project site or the geographic coordinates for the site, and other characteristics appropriate to the type of resource proposed as mitigation. The baseline information should include a delineation of waters of the U.S. on the proposed ILF project site

Site conditions description - This must describe the ecological suitability of the site to achieve the objectives of the proposed ILF project, including the physical, chemical, and biological characteristics of the ILF project site and how that site will support the planned types of aquatic resources and functions and should include: site conditions and habitats, photos of the site, description of wetlands and waters present on site, hydrology description, number of acres of existing wetlands and waters and what is proposed for re-establishment, rehabilitation, etc., site history including past land uses, surrounding land uses and zoning along with the anticipated reasonably foreseeable future development in the area

Determination of credits - A description of the number of credits to be generated including a brief explanation of the rationale for this determination

Proposals to fulfill sold advance credits must include a comprehensive, up-to-date ledger for all advance credit sales completed through the approved ILF program within the service area. The ledger must clearly outline which specific advance credit sales would be fulfilled. In addition, a justified estimation must be provided for when the next group of advance credits sold must be fulfilled in accordance with 33 CFR 332.8(n)(4)

Mitigation work plan - Detailed written specifications and work descriptions for the ILF project, including: the geographic boundaries of the ILF project; construction methods, timing, and sequence; source(s) of water; methods for establishing the desired plant community; plans to control non-native or cryptogenic plant species; proposed grading plan; soil management; and erosion control measures

Maintenance plan - A description and schedule of maintenance requirements to ensure the continued viability of the resource once initial construction is completed

Performance standards - Ecologically-based specific and measurable standards that will be used to determine whether the project is achieving its objectives

Monitoring requirements - A description of parameters monitored to determine whether the ILF project is on track to meet performance standards and if adaptive management is needed. A schedule for monitoring and reporting monitoring results to the Corps must be included. The monitoring plan should include a site plan which shows where all hydrological monitoring wells and plant sampling locations will be established

Long-term management plan - A description of how the ILF project 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

- Adaptive management plan - A management strategy to address unforeseen changes in site conditions or other components of the ILF project, including the party or parties responsible for implementing adaptive management measures;
- Financial assurances - A description of financial assurances that will be provided and how they are sufficient to ensure a high level of confidence that the mitigation project will be successfully completed, in accordance with its performance standards
- Proposed credit release schedule
- A list of the names and addresses of all adjacent property owners
- A description of how the proposed ILF project meets the ILF program instrument and its Compensation Planning Framework
- A Proposed ILF project budget, including, but not limited to:
 - Site Control
 - Property Purchase Cost or Lease Agreement Amount
 - Title Search
 - Site Protection Instrument
 - Pre-Construction Activities
 - Baseline Ecological Assessment
 - Design Engineering
 - Site Survey
 - Construction Activities
 - Maintenance Activities
 - Financial Assurance(s)
 - Itemized Justification
 - Long-term Management Funding
 - Itemized Justification
 - Proposed Credit Generation Estimate
- Assurance of sufficient water rights to support the long-term sustainability of the ILF project
- Preliminary title report indicating any easements or other encumbrances. Note, any liens and easements on the property that may affect an ILF project's viability will need to be resolved before an ILF project can be approved. Provide a written assessment of all easements and encumbrances describing the easement and how it may affect an ILF project operation or its habitat values
- Any other restrictions on the property
- Other information - The Corps may require additional information as necessary to determine the appropriateness, feasibility, and practicability of the ILF project.

APPENDIX 11: ILF PROJECT DRAFT AND FINAL AMENDMENT CHECKLIST

The ILF Project Draft and Final Amendments will include the required information for the ILF project site mitigation plan with revisions to address comments generated by the IRT through the review process at 33 CFR 332.8(d). In addition, please provide the following information and checklist with the submittal of an ILF Draft and Final Amendment:

- Documentation explaining how the comments provided by the IRT through the review process at 33 CFR 332.8(d) were addressed
- Table of Contents
- Definitions
- Default provisions
- Bank closure plan
- Signature page
- Draft site protection instrument
- Credit Ledger Template
- A site plan which shows where all fixed temporal photo sequence locations will be established
- Credit release schedule tied to specific milestones
- Pre-construction notification or individual permit application, if applicable

APPENDIX 12: MITIGATION BANK INSTRUMENT FORMAT

The body of the Instrument is intended to provide concise narrative details and descriptions of each component of the Instrument. Full details and plans should be included as appendices in the following format:

Table of Contents

Introduction

- A. Mitigation Bank Name
- B. Sponsor
- C. Location
- D. Legal Authorities

Section I: Mitigation Bank Overview

- A. Mitigation Bank Objectives
- B. Site Selection Factors Considered
- C. Proposed Service Area
- D. Legal Responsibility for Providing Mitigation
- E. Site Conditions
 - 1. Ownership
 - 2. Relationship to Other Programs
 - 3. Soils
 - 4. Hydrology
 - 5. Existing Vegetation
 - 6. Existing Aquatic Resources
 - 7. Unique Features
 - 8. Hazardous Substances
 - 9. Adjacent Land Use
 - 10. Watershed Plan (if any)

Section II: Mitigation Bank Establishment

- A. Mitigation Work Plan/Bank Development Plan
- B. Enforceability
- C. Determination of Number and Types of Credits
- D. Site Protection

Section III: Mitigation Bank Operation

- A. Financial Assurances
 - 1. Construction
 - 2. Monitoring and Maintenance
- B. Performance Standards
- C. Monitoring and Reporting Plan
- D. Credit Release Schedule and Criteria
- E. Accounting Procedures

- F. Maintenance Plan
- G. Adaptive Management Plan
- H. Long-term Management Plan and Funding
- I. Default Provisions
- J. Bank Closure Plan

Section IV: Definitions

Signature Page

Appendices:

- A. Service Area Map
- B. Mitigation Plan
 - 1. Objectives
 - 2. Site Selection
 - 3. Site Protection Instrument
 - 4. Baseline Information (including a delineation of waters of the U.S.)
 - 5. Determination of Credits
 - 6. Mitigation Work Plan
 - 7. Maintenance Plan
 - 8. Performance Standards
 - 9. Monitoring Requirements
 - 10. Long-term Management Plan and Funding
 - 11. Adaptive Management Plan
 - 12. Financial Assurances
- C. Credit Ledger

APPENDIX 13: ILF PROGRAM INSTRUMENT FORMAT

The body of the Instrument is intended to provide concise narrative details and descriptions of each component of the Instrument. Full details and plans should be included as appendices in the following format:

Table of Contents

Introduction

- A. ILF Program Name
- B. Sponsor
- C. Legal Authorities

Section I: ILF Program Overview

- A. ILF Program Objectives
- B. Proposed Service Area(s)
- C. Legal Responsibility for Providing Mitigation

Section II: ILF Program Establishment and Operation

- A. Sponsor Qualifications
- B. Need and Technical Feasibility of the ILF Program
- C. Enforceability
- D. Specification of the initial allocation of advance credits (see 33 CFR 332.8(n)) and a fee schedule for these credits, by service area, including an explanation of the basis for the allocation and draft fee schedule
- E. The proposed ownership arrangements and long-term management strategy for ILF project sites
- F. Description of ILF Program Account and Accounting Procedures
- G. Default Provisions
- H. Closure Provisions
- I. Reporting Protocols

Section III: Compensation Planning Framework

- A. The geographic service area(s), including a watershed-based rationale for the delineation of each service area
- B. A description of the threats to aquatic resources in the service area(s), including how the ILF program will help offset impacts resulting from those threats
- C. An analysis of historic aquatic resource loss in the service area(s)
- D. An analysis of current aquatic resource conditions in the service area(s) supported by an appropriate level of field documentation
- E. A statement of aquatic resource goals and objectives for each service area, including a description of the general amounts, types and locations of aquatic resources the program will seek to provide
- F. A prioritization strategy for selecting and implementing compensatory mitigation activities

- G. An explanation of how any preservation objectives identified in paragraph (c)(2)(v) of this section and addressed in the prioritization strategy in paragraph (c)(2)(vi) satisfy the criteria for use of preservation in §332.3(h)
- H. A description of any public and private stakeholder involvement in plan development and implementation, including, where appropriate, coordination with federal, state, tribal and local aquatic resource management and regulatory authorities
- I. A description of the long-term protection and management strategies for activities conducted by the ILF program sponsor
- J. A strategy for periodic evaluation and reporting on the progress of the program in achieving the goals and objectives in paragraph (c)(2)(v) of this section, including a process for revising the planning framework as necessary
- K. Any other information deemed necessary for effective compensation planning by the Corps.

Section IV: Definitions

Signature Page

Appendices:

- A. Service Area Map
- B. Credit Ledger

APPENDIX 14: MONITORING REPORT CHECKLIST

The Draft and Final Mitigation Bank Instrument or ILF Project Draft and Final Amendments will prescribe the required monitoring elements and frequency of submittal. Monitoring reports should be concise and effectively provide the information necessary to assess the status of the Mitigation Bank or ILF Project. Reports should provide information necessary to describe the site conditions and whether the Mitigation Bank or ILF Project is meeting its performance standards. Please provide the following information and checklist with the submittal of each required monitoring report.

- Table of Contents
- Name of the Mitigation Bank or ILF Project
- Name of party responsible for conducting the monitoring and the date(s) the inspection was conducted
- A brief paragraph describing the purpose of the Mitigation Bank or ILF Project authorized to compensate for aquatic impacts
- Written description of the location, any identifiable landmarks of the Mitigation Bank or ILF Project including information to locate the site perimeter(s), and coordinates of the Mitigation Bank or ILF Project (expressed as latitude, longitudes, UTM's, state plane coordinate system, etc.)
- Dates the Mitigation Bank or ILF Project construction commenced and/or was completed
- Monitoring Report Narrative that provides an overview of site conditions and functions
- Dates of any recent corrective or maintenance activities conducted since the previous report submission
- List the monitoring requirements and performance standards, as specified in the approved Mitigation Bank Instrument or ILF Project
 - Provide the results of the required monitoring elements. A table of summary data is a recommended option for comparing the performance standards to the conditions and status of the developing mitigation site as well as to substantiate the success and/or potential challenges associated with the compensatory mitigation project. This may include resubmittal of previously reported data depending on the monitoring year requirements. This may also include, but is not limited to, the following items:
 - A table displaying VIBI-FQ monitoring data for each wetland plant community;

- Individual VIBI-FQ plot data, with a screen capture of the “plot info” and “species summary” tabs for each, along with a digital copy of the Excel spreadsheets used to score each plot (http://epa.ohio.gov/Portals/35/401/VIBI_DATA_TEMPLATE_v2016-03-18.zip);
- Percent relative cover of native perennial hydrophytes;
- Percent relative cover of non-native species throughout the site;
- Description and map and of all areas greater than 0.1 acre in size dominated by non-native or cryptogenic species (>50% cover) and species/percentage of non-native species present;
- Hydrographs illustrating the detailed hydroperiod recorded from each monitoring well installed at the bank or ILF project;
- Additionally, for forested habitats:
 - Number of native, free standing, live and healthy (disease and pest free) trees per acre;
 - List of tree species, their coefficient of conservatism, and what percentage each species comprises of the overall tree count;
 - Number of native, free standing, live and healthy (disease and pest free) shrubs/sub-canopy trees per acre;
 - List of shrub/sub-canopy species, their coefficient of conservatism, and what percentage each species comprises of the overall tree shrub/sub-canopy count. It is anticipated that as the forested areas within any given project develop over time, the community composition will shift to those species best adapted to the site conditions; and
 - Perceived or measured tree/shrub/sub-canopy tree growth.

- Provide an evaluation as to whether the compensatory mitigation project site is successfully achieving the approved performance standards or trending towards success
- If performance standards are not being met or the Mitigation Bank or ILF Project is not trending toward success, provide an explanation of the difficulties
- Provide specific recommendations for any additional corrective or remedial actions, including a timetable
- Maps should be provided to show the location of the Mitigation Bank or ILF Project relative to other landscape features, habitat types, locations of photographic reference points, transects, sampling data points, and/or other features pertinent to the Mitigation Bank Instrument or ILF Project plan. In addition, the submitted maps and plans should clearly delineate the Mitigation Bank or ILF Project perimeter(s), which will assist in locating the mitigation area(s) during subsequent site inspections. Each map or diagram should be formatted to print on a standard 8.5” x 11” piece of paper and include a legend and the location of any photos submitted for review. As-built plans may be included.

- An aquatic resource delineation map and associated wetland delineation data sheets should be provided. The map should identify dominant plant community types (forested, scrub-shrub, emergent, deepwater habitat), wetland acreages (by dominant community type), any other on-site aquatic resources (tributaries, ponds, etc.), and any other on-site resources of note

- Photo documentation should be provided to support the findings and recommendations referenced in the monitoring report and to assist in assessing whether the compensatory mitigation project is meeting applicable performance standards for that monitoring period. Submitted photos should be formatted to print on a standard 8 ½” x 11” piece of paper, dated, and clearly labeled with the direction from which the photo was taken. A site plan which shows where all fixed temporal photo sequence locations will be established and provided. If optional drone overview shots collected, these should also be displayed in conjunction with all earlier drone photos.

- Any additional specific monitoring requirements not contained herein but prescribed by the Final Mitigation Bank Instrument or ILF Project Draft and Final Amendments.

APPENDIX 15: EXAMPLE VEGETATION ANALYSIS FOR A MITIGATION SITE

In this example, the bank is bisected by a railroad track which represents a hydrologic break in the site. Surrounding the aquatic resources located within each half of the bank is an upland perimeter buffer measuring 100 to 200 feet in width. This perimeter buffer has been planted with a diversity of woody species adapted to drier conditions. On the east side of the tracks, two (2) different plant communities have been targeted (forested and emergent), while the west side has three (3) different wetland plant communities (emergent, scrub-shrub, and forested). A VIBI-FQ target score of 40 has been set as a performance standard for each of these wetland areas. Other final performance standards related to VIBI-FQ are as follows:

- $\geq 75\%$ native perennial hydrophytes
- $\geq 80\%$ native plant species
- $\leq 10\%$ invasive species with no more than 5% relative cover of non-Typha invasive species as defined in Section 8

In order to qualify for Interim Credit Release 2, the bank must meet the following criteria:

- The project site has 70% relative cover of native plant species;
- The project site has $\leq 12.5\%$ relative cover of invasive plant species;
- Established or re-established wetland areas meet an interim VIBI-FQ score of 30;
- Rehabilitation or enhancement wetland areas meet interim VIBI-FQ score of 30 or an increase of 5 points, as applicable; and
- For all forested wetland and upland areas, it can be demonstrated that a minimum of 300 native, live and healthy (disease and pest free) woody plants per acre (of which at least 150 are tree species) is present following initial planting, and the temporal photographic sequence indicates the site is maturing and a canopy is becoming established.

The figure below provides a simple site layout, indicating the various wetland sub-areas, along with the location of VIBI-FQ plots scattered throughout the bank site. As can be seen on the map, an area of reed canary grass (*Phalaris arundinacea*) was identified on the west side of the bank and was mapped using GPS technology. Identifying and mapping the area, even though none of the VIBI-FQ plots fall within its boundary, will allow the sponsor to eradicate this patch and re-plant with native hydrophytes before the problem becomes much worse. It also provides data that would not have been reported otherwise and ensures that areas clearly dominated by non-native or cryptogenic species are included in invasive species calculations.

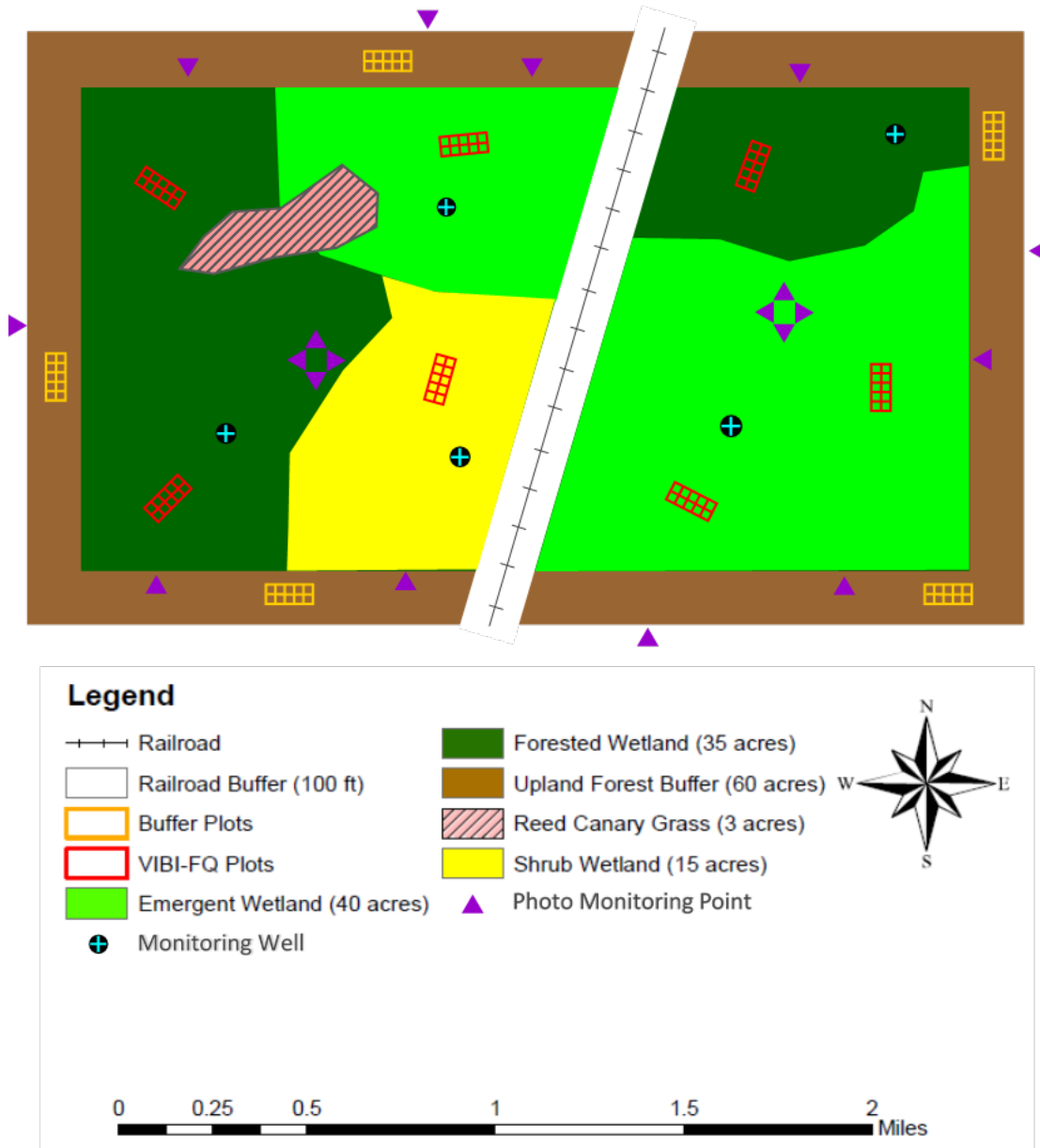
The table below shows the data analysis for the bank. As can be seen from this analysis, wetland areas east of the railroad are just meeting all interim performance goals. This side of the bank appears to be developing more slowly than the western portion. The

sponsor should determine what maintenance or adaptive management measures are necessary to improve conditions for this side of the bank. On the western portion of the bank, the *Phalaris arundinacea* patch, having been identified correctly, will be addressed with the appropriate eradication methods. The remaining emergent, scrub-shrub, and forested wetland areas on this half of the bank are all meeting the interim VIBI-FQ performance goals and appear to be developing well. Percent invasive and percent native species have been calculated for each VIBI-FQ plot by summing relative cover of species listed in Appendix 16 for percent invasive species cover, and summing species listed as native (in the VIBI-FQ spreadsheet) for percent native species cover. For total percentages, it is recommended that percent invasive species is calculated as a weighted average for the entire site. This is done by multiplying the acreage of the vegetation community represented by the VIBI-FQ plot(s) by the percent invasive species calculated from VIBI-FQ plot data. These values should be summed and then divided by total wetland acreage. The following is the recommended formula:

$$I = (\sum (v_a \times i))/w_a$$

Where I is total percent invasive species cover, v_a is the acreage of the vegetation community represented by the VIBI-FQ plot(s), i is percent invasive species for each associated VIBI-FQ plot, and w_a is total wetland acreage of the mitigation site. It is recommended that native species be calculated in the same way, using percent native species in place of invasive. Again, calculations should also include areas dominated (>50%) by invasive, non-native or cryptogenic species using estimated percent invasive and/or native species cover. The table below shows the vegetation data for the wetland areas of this site, calculated using the above formula. As upland and buffer areas have different performance timelines, these areas should be calculated separately from wetland areas and have not been included in the calculations in the table below. The total invasive species cover has been demonstrated by the sponsor that it is below 12.5% (i.e. 12.44%) and total native species cover is greater than 70% (i.e. 74.35%). As all interim VIBI-FQ goals have been met, the sponsor is eligible for Interim Credit Release 2 if all other interim performance goals are also met.

**APPENDIX 15 FIGURE: EXAMPLE SITE MAP,
INDICATING DIFFERENT PLANT COMMUNITY TYPES,
MONITORING WELLS, FIXED TEMPORAL PHOTO
SEQUENCE POINTS, AND 20M X 50M VIBI-FQ PLOTS**



APPENDIX 15 TABLE: YEAR 5 MONITORING DATA

VIBI-FQ Plot Area	Area (Acres)	Anticipated Credits	Up Front Credit Release (30%)	Met Interim 1 Goals?	Interim 1 Credit Release	VIBI-FQ Plots	Mean VIBI-FQ Score	% Invasive Species	% Native Species	Woody stems per acre***	Interim 2 Credit Release	Remaining Credits
Emergent Wetland (Plot 1,2)	23	23	6.9	Yes	3.45	2	30.9	12	65.4	N/A	3.45	9.2
Forested Wetland (Plot 3)	10	10	3	Yes	1.5	1	32.2	25	58.3	275	1.5	4
Emergent Wetland (Plot 4)	17	17	5.1	Yes	2.55	1	55	7.2	76	N/A	2.55	6.8
Forested Wetland (Plot 5,6)	25	25	7.5	Yes	3.75	2	53	5.3	90	322	3.75	10
Shrub Wetland (Plot 7)	15	15	4.5	Yes	2.25	1	70	7.1	85.5	412	2.25	6
<i>Reed Canary Grass</i>	3	3	0.9	Yes	0.45	NA	NA	90	1	N/A	0.45	1.2
Upland Forested Buffer	60	15	4.5	Yes	2.25	5**	NA	3.90	90	392	2.25	6
Totals	153	108	32.4		16.2	7*		12.44*	74.35*	339*	16.2	43.2

* Does not include buffer plots

**Used for calculating woody stem density and % invasive species relative cover only.

***Calculated from plot data.

APPENDIX 16: INVASIVE PLANT LIST FOR OHIO

Scientific Name	Common Name
<i>Acer platanoides</i>	Norway Maple
<i>Ailanthus altissima</i>	Tree-of-Heaven
<i>Alliaria petiolata</i>	Garlic Mustard
<i>Alnus glutinosa</i>	European Alder
<i>Berberis thunbergii</i>	Japanese Barberry
<i>Butomus umbellatus</i>	Flowering-rush
<i>Catalpa speciosa</i>	Northern Catalpa
<i>Celastrus orbiculatus</i>	Asian Bittersweet
<i>Cirsium arvense</i>	Canada Thistle
<i>Conium maculatum</i>	Poison Hemlock
<i>Coronilla varia</i>	Crown Vetch
<i>Dipsacus fullonum</i>	Common Teasel
<i>Dipsacus laciniatus</i>	Cut-leaved Teasel
<i>Elaeagnus angustifolia</i>	Russian Olive
<i>Elaeagnus umbellata</i>	Autumn Olive
<i>Epilobium hirsutum</i>	Hairy Willow-herb
<i>Epilobium parviflorum</i>	Small-flowered Willow-herb
<i>Euonymus alatus</i>	Winged Euonymus
<i>Euonymus fortunei</i>	Wintercreeper
<i>Hydrocharis morsus-ranae</i>	Common Frog-bit
<i>Iris pseudacorus</i>	Yellow Flag
<i>Ligustrum vulgare</i>	Common Privet
<i>Lonicera japonica</i>	Japanese Honeysuckle
<i>Lonicera maackii</i>	Amur Honeysuckle
<i>Lonicera morrowii</i>	Morrow Honeysuckle
<i>Lonicera tartarica</i>	Tartarian Honeysuckle
<i>Lythrum salicaria</i>	Purple Loosestrife
<i>Maclura pomifera</i>	Osage Orange
<i>Microstegium vimineum</i>	Japanese Stilt Grass
<i>Myriophyllum spicatum</i>	Eurasian Water-milfoil
<i>Najas minor</i>	Lesser Naiad
<i>Nasturtium officinale</i>	Watercress
<i>Phalaris arundinacea</i>	Reed Canary Grass
<i>Phragmites australis</i>	Common Reed
<i>Polygonum cuspidatum</i>	Japanese Knotweed
<i>Potamogeton crispus</i>	Curly Pondweed
<i>Pyrus calleryana</i>	Bradford Pear
<i>Ranunculus ficaria</i>	Lesser Celandine
<i>Rhamnus cathartica</i>	Common Buckthorn
<i>Rhamnus frangula</i>	Glossy Buckthorn
<i>Rosa multiflora</i>	Multiflora Rose
<i>Schoenoplectus mucronatus</i>	Bog Bulrush

Scientific Name	Common Name
<i>Sorghum halepense</i>	Johnson Grass
<i>Typha angustifolia</i>	Narrow-Leaved Cattail
<i>Typha x glauca</i>	Hybrid Cattail
<i>Viburnum opulus var. opulus</i>	European Cranberry-Bush
<i>Vinca minor</i>	Periwinkle

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