

## C O M M E N T S

# Ten Years of the Compensatory Mitigation Rule: Reflections on Progress and Opportunities

by Palmer Hough and Rachel Harrington

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In 2008, the U.S. Army Corps of Engineers (the Corps) and the U.S. Environmental Protection Agency (EPA) overhauled federal policy governing how impacts to wetlands, streams, and other aquatic resources authorized under §404 of the Clean Water Act (CWA)<sup>1</sup> are offset—an action known as compensatory mitigation. The collective efforts of mitigation practitioners, private-sector entrepreneurs, conservation organizations, scientists, and regulators have led to a great deal of progress in improving

*Authors' Note: The mitigation improvements summarized in this Comment would not have been possible without the hard work and dedication of mitigation practitioners, particularly mitigation bank and in-lieu fee (ILF) program sponsors who implement wetland and stream restoration and enhancement projects across the country, and the federal and state agency staff who serve on interagency review teams (IRTs) and work closely with practitioners to ensure that their compensation projects provide meaningful offsets and comply with the regulations. Special recognition goes to U.S. Army Corps of Engineers (the Corps) staff, who provide critical leadership on IRTs and in overseeing mitigation bank and ILF program approval and management, and Corps headquarters and the Corps' Institute for Water Resources for supporting essential training efforts and the Regulatory In-lieu Fee and Bank Information Tracking System database, which tracks important data regarding mitigation banks and ILF programs, and makes that data available to the public. This work was supported in part by an appointment to the Research Participation Program at the U.S. Environmental Protection Agency's (EPA's) Office of Water, and administered by the Oak Ridge Institute for Science and Education through an interagency agreement between the U.S. Department of Energy and EPA. The views expressed here are the authors' own and do not necessarily reflect the views or policies of EPA.*

the nation's approach to offsetting authorized impacts to wetlands and streams. On the 10-year anniversary of the Corps/EPA Compensatory Mitigation Rule,<sup>2</sup> it is important to highlight this progress as well as some potential important work that remains to be done.

The primary objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. To help achieve this objective, §404 of the CWA regulates discharges of dredged or fill material into waters of the United States, including wetlands and streams. Wetlands, streams, and other aquatic resources perform critical ecological functions in the landscape, including protecting water quality, regulating water quantity and flood flows, and providing important habitat for fish and wildlife. Section 404 helps to ensure that discharges to these waters proceed without compromising these important aquatic resource functions.

The Corps and EPA share responsibility for the §404 program. The Corps serves as the permitting authority for regulated activities,<sup>3</sup> and EPA was tasked with, among other duties, developing the substantive environmental criteria that the Corps uses to make its permit decisions. These are known as the Section 404(b)(1) Guidelines and are codified in regulation at 40 C.F.R. Part 230. The mitigation requirements to avoid, minimize, and compensate for permitted impacts originated in these regulations and have been further clarified through subsequent regulations and guidance. The 2008 Compensatory Mitigation Rule

2. 40 C.F.R. §§230.91-.98 (2018); 33 C.F.R. §332 (2018).

3. Under §404(g) of the CWA, states may receive approval from EPA to administer permit programs for sites in certain waters of the United States in lieu of the program administered by the Corps. To date, two states have been approved by EPA to administer §404 permit programs: Michigan and New Jersey.

1. 33 U.S.C. §§1251-1387, §1344, ELR STAT. FWPCA §§101-607.

focuses on the last step of this mitigation sequence—compensatory mitigation.

For the purposes of CWA §404, compensatory mitigation means the restoration, establishment, enhancement, and/or in certain circumstances the preservation of wetlands, streams, and other aquatic resources to offset unavoidable adverse impacts that remain after all appropriate and practicable avoidance and minimization has been achieved.<sup>4</sup> Compensation can be provided in three ways: purchasing credits from a mitigation bank, purchasing credits from an in-lieu fee (ILF) program, or completing a permittee-responsible mitigation project.

- A *mitigation bank* is a wetland, stream, and/or other aquatic resource compensation project that has been set up in advance of permitted impacts. Mitigation banks can be sponsored by private, government, or nonprofit organizations; however, most banks are sponsored by private-sector entrepreneurs. When a §404 permittee uses mitigation bank credits to satisfy its compensation requirements, the bank sponsor assumes responsibility for successfully satisfying those requirements.<sup>5</sup>
- With *ILF mitigation*, the permittee provides funds to an ILF sponsor. The ILF sponsor conducts the wetland, stream, and/or other aquatic resource compensation project when it has collected sufficient funds, and therefore projects are not generally initiated in advance of permitted impacts. When a §404 permittee uses ILF credits to satisfy its compensation requirements, the ILF sponsor assumes responsibility for successfully satisfying those requirements. Sponsorship of ILF programs is restricted to qualified government agencies and nonprofit organizations with a conservation mission.<sup>6</sup>
- With *permittee-responsible mitigation*, the permittee completes a wetland, stream, and/or other aquatic resource compensation project (or hires a contractor) to satisfy its compensation requirements. However, responsibility for successfully satisfying these requirements remains with the permittee.<sup>7</sup> Permittee-responsible mitigation is generally initiated concurrent with or after permitted impacts take place.

There were two primary drivers that prompted the Corps and EPA to develop the 2008 Compensatory Mitigation Rule—concerns about the ecological effectiveness of compensatory mitigation, and concerns about the equivalency of the rule sets governing the three compensatory mitigation

mechanisms.<sup>8</sup> Regarding the former, the National Research Council (NRC) evaluated the effectiveness of §404 compensatory mitigation in its landmark study published in 2001, and raised substantive concerns regarding whether compensatory mitigation was offsetting permitted losses.<sup>9</sup> The report also provided the Corps and EPA with more than two dozen recommendations for improving compensation—a blueprint for the kinds of policy changes necessary to improve the ecological outcomes of compensation.

In addition to concerns regarding the effectiveness of compensation, concerns were also being raised regarding whether the agencies were holding all three types of mitigation (i.e., mitigation banks, ILF programs, and permittee-responsible mitigation) to equivalent standards. Mitigation bankers argued that they were consistently held to higher administrative and ecological standards than the other two forms of compensation—creating an unlevel playing field among competing compensation providers. In response to these concerns, in 2003, the U.S. Congress directed the agencies to develop rules that would set equivalent standards for the use of compensation from all three types of compensation providers.<sup>10</sup> In 2008, the Corps and EPA finalized a rule that accomplished these goals.

It has been 10 years since the Corps and EPA issued the Compensatory Mitigation Rule. The purpose of this Comment is threefold: to (1) review the major policy changes that were a part of the 2008 rule; (2) highlight key areas of progress in compensatory mitigation practice documented under the 2008 rule; and (3) note some potential opportunities for further improvement.

## I. Major Policy Changes in the 2008 Compensatory Mitigation Rule

The 2008 rule put in place a suite of changes governing how CWA §404 compensatory mitigation is done. These changes were designed to improve the ecological outcomes of compensatory mitigation projects and increase transparency, predictability, and consistency in compensatory mitigation decisionmaking.

### A. Equivalent and Effective Standards

One of the most important changes effected by the 2008 rule was the requirement that all compensatory projects—

4. 40 C.F.R. §230.92 (2018); 33 C.F.R. §332.2 (2018).

5. 40 C.F.R. §230.92 (2018); 33 C.F.R. §332.2 (2018).

6. 40 C.F.R. §230.92 (2018); 33 C.F.R. §332.2 (2018).

7. 40 C.F.R. §230.92 (2018); 33 C.F.R. §332.2 (2018).

8. INSTITUTE FOR WATER RESOURCES (IWR), THE CORPS, THE MITIGATION RULE RETROSPECTIVE: A REVIEW OF THE 2008 REGULATIONS GOVERNING COMPENSATORY MITIGATION FOR LOSSES OF AQUATIC RESOURCES (2015) (2015-R-03) [hereinafter *The Corps IWR*], available at [https://www.epa.gov/sites/production/files/2015-11/documents/mitrule\\_report\\_october\\_2015.pdf](https://www.epa.gov/sites/production/files/2015-11/documents/mitrule_report_october_2015.pdf).

9. NRC, COMPENSATING FOR WETLAND LOSSES UNDER THE CLEAN WATER ACT (2001), available at <https://www.nap.edu/read/10134/chapter/1>.

10. National Defense Authorization Act for Fiscal Year 2004, Pub. L. No. 108-136, 117 Stat. 1392, 1431.

whether a bank, an ILF project, or a permittee-responsible project—must have in place a mitigation plan that addresses the following 12 elements<sup>11</sup>:

1. Objectives
2. Site selection factors
3. Site protection instrument
4. Baseline information
5. Credit determination
6. Work plan
7. Maintenance plan
8. Performance standards
9. Monitoring requirements
10. Financial assurances
11. Long-term management plan
12. Adaptive management plan

Requiring these items to be covered in mitigation plans means that all compensatory mitigation projects must, for example, have in place appropriate financial assurances, provide for long-term protection, and commit to monitoring. This ensures that there is a level playing field among providers of compensatory mitigation. Addressing these 12 elements was also envisioned to improve effectiveness because failures of compensation projects in the past were often linked to failure to address one or more of these very planning elements. Inclusion of each of these planning elements was based on several decades of lessons learned in the §404 program. For permit applicants who propose to use mitigation bank or ILF program credits to satisfy their compensatory mitigation requirements, most of these planning elements have already been addressed by the bank or ILF program. For permittee-responsible mitigation, the permit applicant must fully develop this plan and obtain approval from the Corps.<sup>12</sup>

## B. Watershed Approach to Site Selection and Design

The NRC identified site selection as the most important determinant of whether a project would be ecologically successful, and recommended adopting a new approach to reviewing the appropriateness of proposed compensatory mitigation projects.<sup>13</sup> While previous CWA §404 policy assumed that siting offset projects as close to the impact site as possible was the best approach,<sup>14</sup> the NRC recom-

mended instead directing compensatory mitigation projects to those places that most effectively address the most pressing ecological needs in a given watershed. The 2008 rule codified this recommendation—termed the “watershed approach.” The rule requires the use of watershed plans to inform compensation site decisionmaking when appropriate plans are available, and when such plans are not available, the rule identifies the kinds of information and data that should be used to inform compensation project site selection.<sup>15</sup>

## C. Performance Monitoring

Prior to adoption of the rule, performance standards for compensation projects were often absent or unclear, making it difficult to judge whether a project was successful and to enforce against a responsible party when remedial action was necessary. The 2008 rule requires that all projects have objective, measurable, and enforceable ecological performance standards and that those standards be based on the best available science.<sup>16</sup> Monitoring requirements for past projects were often absent or ineffective at supporting evaluation of project success. The 2008 rule made it clear that all projects must have detailed monitoring requirements that lay out the parameters to be measured to determine if the project is meeting its performance standards, who is responsible for conducting the monitoring, and the frequency with which monitoring reports will be submitted.<sup>17</sup>

## D. Permanence and Durability of Compensation Projects

The impacts to wetlands, streams, and other aquatic resources that require compensatory mitigation are largely permanent; accordingly, the preamble to the 2008 rule states that the goal is the permanent protection of compensation sites.<sup>18</sup> To help achieve this goal, the rule requires that each compensation site be protected with a site protection instrument that prohibits actions that are incompatible with maintaining the restored site.<sup>19</sup> Even after a compensation site meets its performance standards, additional land management tasks generally are needed to ensure that conservation values are maintained. The 2008 rule requires that each compensation project have a long-term management plan that identifies what management tasks must be done on that site each year, who is responsible for completing those tasks, and how implementation of those long-term management tasks will be funded.<sup>20</sup>

11. 40 C.F.R. §230.94(c)(2)-(14) (2018); 33 C.F.R. §332.4(c)(2)-(14) (2018).

12. In the case of individual permits, the Corps' approval of the final mitigation plan must occur before permit issuance (40 C.F.R. §230.93(k)(2) (2018) and 33 C.F.R. §332.3(k)(2) (2018)); for general permits, the Corps' approval must occur before activities in waters of the United States commence (40 C.F.R. §230.93(k)(3) (2018) and 33 C.F.R. §332.3(k)(3) (2018)).

13. NRC, *supra* note 9, at 3-5, 140-49.

14. Memorandum of Agreement (MOA) Between the Department of the Army and the Environmental Protection Agency Concerning the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines, 55 Fed. Reg. 9210 (Mar. 12, 1990) (“Compensatory actions (e.g., restoration of existing degraded wetlands or creation of man-made wetlands) should be undertaken when practicable, in areas adjacent or contiguous to the discharge site (on-site compensatory mitigation).”), available at <https://www.epa.gov/cwa-404/memorandum-agreement>. The provisions of this MOA

that concern the amount, type, and location of compensatory mitigation were superseded by the 2008 Compensatory Mitigation Rule (40 C.F.R. §230.91(e)(2) (2018) and 33 C.F.R. §332.1(e)(2) (2018)).

15. 40 C.F.R. §230.93(c) (2018); 33 C.F.R. §332.3(c) (2018).

16. 40 C.F.R. §230.95 (2018); 33 C.F.R. §332.5 (2018).

17. 40 C.F.R. §230.96 (2018); 33 C.F.R. §332.6 (2018).

18. 73 Fed. Reg. 19593, 19642, 19646, 19664 (Apr. 10, 2008).

19. 40 C.F.R. §230.97(a) (2018); 33 C.F.R. §332.7(a) (2018).

20. 40 C.F.R. §230.97(d) (2018); 33 C.F.R. §332.7(d) (2018).

### E. Structured Interagency Review Process for Mitigation Bank and ILF Proposals

Mitigation bank and ILF proposals often involve complex, large-scale aquatic ecosystem restoration and protection projects. Effectively reviewing such projects requires a multidisciplinary team of federal and state resource and regulatory agencies. The NRC's 2001 report on §404 compensatory mitigation specifically identified the interagency review team process, established by the 1995 Federal Mitigation Banking Guidance<sup>21</sup> and used to approve mitigation banks, as one of the advantages that banks had over traditional permittee-responsible mitigation in ensuring effective compensatory mitigation.<sup>22</sup> Accordingly, the 2008 rule codified in regulation the structure and function of these interagency review teams (IRTs), made them applicable to ILF programs as well, identified the Corps as the chair of these IRTs and the final decisionmaker for projects that generate §404 credits, and established time lines for interagency review during each of the four phases of mitigation bank and ILF proposal development, as well as other key oversight decisions such as credit release requests.<sup>23</sup>

There can also be benefits to bank and ILF sponsors in having all the federal and state agencies with project oversight responsibilities working collaboratively. While securing Corps approval is essential for use of a mitigation bank or ILF program in the §404 program, securing buy-in from state agencies and the other federal agencies on the IRT (i.e., EPA, U.S. Fish and Wildlife Service, and National Marine Fisheries Service) provides opportunities for these compensation projects to satisfy §404 mitigation needs<sup>24</sup> as well as those of other state and federal programs.<sup>25</sup> This kind of buy-in is particularly important if the bank or ILF program is providing credits for impacts regulated by these other agencies (e.g., species credits, nutrient credits) and

doing so concurrently supports more efficient and timely project approval.<sup>26</sup>

### F. Preference Hierarchy for Compensation

Another important policy change introduced in the 2008 rule is the preference hierarchy for compensation options.<sup>27</sup> The rule established that credits from mitigation banks and released credits from ILF programs are the preferred option for providing compensation because they were determined to be the least risky compensation options. They are less risky because bank credits and ILF-released credits are based on achievement of performance-based milestones at a compensation site. These milestones include securing a site, securing approval of the mitigation plan, successful construction, hydrologic restoration, and attainment of other ecological standards.

Second on the hierarchy are advance credits from an ILF program. While these credits are not associated with demonstrated performance at a site, they are based on watershed- or landscape-level planning and administered by ILF programs that must meet the more stringent requirements for ILF programs established in the 2008 rule. Last on this risk-based hierarchy is permittee-responsible mitigation, which generally does not benefit from the same level of planning, analysis, and oversight as mitigation banks and ILF programs.

## II. Major Trends Over the Past 10 Years Under the Compensatory Mitigation Rule

### A. Methods

In order to determine major trends under the Compensatory Mitigation Rule, we used publicly available data from the Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS).<sup>28</sup> RIBITS allows users to access information on the types and numbers of mitigation bank and ILF sites proposed and approved nationwide, associated documents, mitigation credit availability, service areas, and information on national and local policies and procedures.<sup>29</sup> Specifically, we sought to document trends in the number of approved mitigation banks and ILF programs,

21. Federal Guidance for the Establishment, Use, and Operation of Mitigation Banks, 60 Fed. Reg. 58605 (Nov. 28, 1995), *available at* <https://www.epa.gov/cwa-404/federal-guidance-establishment-use-and-operation-mitigation-banks>. This guidance was superseded by the 2008 Compensatory Mitigation Rule (40 C.F.R. §230.91(e)(1) (2018) and 33 C.F.R. §332.1(e)(1) (2018)). At the time of the NRC report, the interagency teams reviewing bank proposals were known as Mitigation Bank Review Teams (MBRTs) pursuant to the 1995 Federal Mitigation Banking Guidance.

22. NRC, *supra* note 9, at 9, 82-93, 160-64.

23. 40 C.F.R. §230.98 (2018); 33 C.F.R. §332.8 (2018).

24. Nothing in the 2008 rule limits the ability of IRT agencies, under existing statutes or regulations, to object to the use of mitigation bank or ILF program credits to address the compensation needs of a particular proposed impact (40 C.F.R. §230.98(s) (2018) and 33 C.F.R. §332.8(s) (2018)). Securing the buy-in of IRT agencies on the initial approval of a mitigation bank or ILF program/project helps ensure that these agencies will not object to future credit transactions.

25. CWA §404 mitigation banks and ILF programs may also be used to satisfy the environmental requirements of other programs, such as tribal, state, or local wetlands regulatory programs and other federal programs, consistent with the terms and requirements of these programs (40 C.F.R. §230.93(j) (2018) and 33 C.F.R. §332.3(j) (2018)). Securing the buy-in of IRT agencies on the initial approval of a mitigation bank or ILF program/project helps ensure that the credits they produce can be used to satisfy the environmental requirements of other programs.

26. In cases where a mitigation bank or ILF program is proposed to satisfy the requirements of another federal, tribal, state, or local program, in addition to compensatory mitigation requirements for CWA §404 permits, it may be appropriate for the administering agency to serve as co-chair of the IRT (40 C.F.R. §230.98(b)(1) (2018) and 33 C.F.R. §332.8(b)(1) (2018)).

27. 40 C.F.R. §230.93(b) (2018); 33 C.F.R. §332.3(b) (2018).

28. RIBITS was developed by the Corps with support from EPA, the U.S. Fish and Wildlife Service, the Federal Highway Administration, and the National Marine Fisheries Service, and is available at <https://ribits.usace.army.mil/>.

29. It is important to note that some records and associated data fields in RIBITS are incomplete due to variations in data entry among the 38 Corps district offices and the two states with assumed §404 programs (i.e., Michigan and New Jersey), as well as changes in data entry requirements over time. Further, although data may be continually added and updated in RIBITS, some districts update data periodically; therefore, generated reports may reflect a lag in data entry.

their distribution across the country, and their use in and importance to the §404 regulatory program.

We used data from the interactive “Bank Summary” report to determine the number and distribution of mitigation bank sites.<sup>30</sup> The original set of records contained within the Bank Summary report was reduced by selecting for those records identified as previously approved §404 mitigation banks.<sup>31</sup> This set of records was then screened to remove any demo or testing records, as well as records that reflected transfer credit accounts. With this final set of records, we used the “Bank Approved Date” and “Credit Type List” fields to categorize sites as either pre- or post-2008, by the year they were approved ( $\leq$  1995-2018), and by whether or not they provided stream credits. We used the geographic coordinate data contained within the “Location Centroid” field to plot the geographic location for each of these sites.

We used data from the interactive “ILF Program Summary” report to determine the current number and distribution of ILF programs.<sup>32</sup> The original set of records contained within the ILF Program Summary report was reduced by selecting for those programs with an approved status (i.e., “Program Status” field was filtered to “Approved”). After careful review, this set of records was further reduced and modified to ensure that final records were accurate, complete, and reflected current institutional knowledge. The final list of current ILF programs also reflects the elimination of duplicate records for single ILF programs (some ILF programs maintain separate records for each Corps district and/or credit type), as well as the incorporation of two additional ILF programs that were missing from the RIBITS report but known to be in operation.<sup>33</sup> ILF programs were then categorized by those that were established before the 2008 rule was issued (and have since been reapproved) and those that were established after the 2008 rule was issued.<sup>34</sup>

We used the service area data available in RIBITS to determine the geographic extent of mitigation bank and ILF service areas across the country.<sup>35</sup> Service areas were downloaded for all §404 mitigation bank sites and ILF programs with an approved status.

We used data contained within the “Bank & ILF Credit Tracking” report to determine the number of credit with-

drawal transactions from mitigation bank sites.<sup>36</sup> The original set of records contained within the Bank & ILF Credit Tracking report was reduced by selecting for those records identified as withdrawal transactions of wetland or stream credits from §404 mitigation banks.<sup>37</sup> This set of records was then screened to remove any transaction records from demo or test sites, as well as records of withdrawal transactions for grouped credits that did not include §404 credit types. Using the “Transaction Date” and “Credit Classifications” fields, we categorized transactions by the year in which they occurred (1995-2018), and by §404 credit type (i.e., wetland or stream).

Last, for analyses of average permit processing times and percent use of each compensation mechanism, we relied primarily on permit data presented in the Corps’ Institute for Water Resource’s 2015 *Mitigation Rule Retrospective*.<sup>38</sup> These analyses were supplemented with additional years of data obtained from the Corps’ Operation and Maintenance Business Information Link, Regulatory Module (ORM) database, the Corps’ primary national database for tracking §404 permitting data.<sup>39</sup>

## B. Results

### I. Growth in Number of Mitigation Banks

One of the most notable trends over the past 10 years has been the continued growth in the mitigation banking industry (see Figure 1). In June 2008, a total of 706 mitigation banks with §404 credits had been approved. Between June 2008 and July 2018, an additional 873 mitigation banks with §404 credits were approved—more than a 120% increase. In the 10 years prior to the 2008 rule, the rate of approvals averaged about 56 banks per year (1998-2007). In the 10 years since the 2008 rule, the rate of approvals has averaged about 86 banks per year (2008-2017), a more than 50% increase from the decade before. This growth happened in spite of the fact that this time included a historic downturn in the commercial and residential development market, a significant driver of permit requests and compensatory mitigation demand.<sup>40</sup>

Growth has been particularly strong in the subset of mitigation banks that provide credits to offset impacts to streams (see Figure 2). While mitigating impacts to wetlands has been a primary focus of the §404 program since its earliest years, over the past two decades, greater

30. Data were accessed and downloaded from RIBITS on July 17, 2018.

31. The following fields were filtered accordingly: “Is 404” = “Yes,” “Is ILF” = “No,” and “Bank Status” = “Approved | Sold-Out | Suspended” OR “Is 404” = “Yes,” “Is ILF” = “No,” “Bank Status” = “Terminated,” and “Bank Approved Date” != “-.”

32. Data were accessed and downloaded from RIBITS on November 14, 2018.

33. Personal Communication with Steve Martin, Environmental Scientist, The Corps IWR (Oct. 2018).

34. Based on a combination of information gathered from ENVIRONMENTAL LAW INSTITUTE (ELI), THE STATUS AND CHARACTER OF IN-LIEU FEE MITIGATION IN THE UNITED STATES (2006), available at [https://www.eli.org/sites/default/files/eli-pubs/d16\\_04.pdf](https://www.eli.org/sites/default/files/eli-pubs/d16_04.pdf); Personal Communication with Steve Martin, *supra* note 33; and a review of program instruments and other documents uploaded to RIBITS cyber repository.

35. Data for the contiguous United States were accessed and downloaded from RIBITS on July 17, 2018, and data for the states of Alaska and Hawaii were accessed and downloaded from RIBITS on September 12, 2018.

36. Data were accessed and downloaded from RIBITS on July 17, 2018.

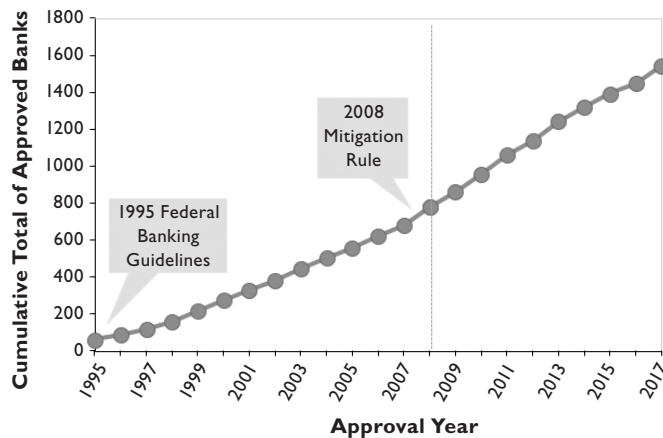
37. The following fields were filtered accordingly: “Is the Corps” = “Yes,” “Is ILF” = “No,” “Transaction Type” = “Wdr,” “Jurisdiction” = “Federal,” and “Credit Type” = “Wetland | Stream | Group.” Group credits are credits that bundle one or more credit types together (e.g., §404 wetlands and Endangered Species Act species).

38. The Corps IWR, *supra* note 8, at 51, 57.

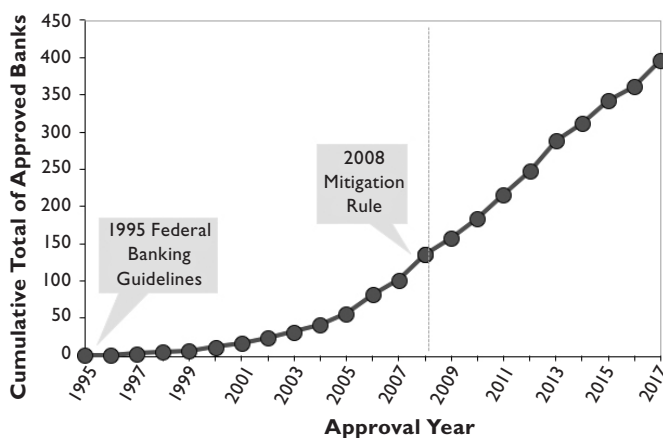
39. Supplemental ORM data obtained through Freedom of Information Act requests (2012-2018).

40. There are a number of factors that affect the volume of permit activity and the corresponding demand for compensatory mitigation; for a more complete discussion of recent trends, see The Corps IWR, *supra* note 8, at 25-35.

**Figure 1. Cumulative total of all mitigation banks with 404 credits, approved over time (from 1995 through 2017)**



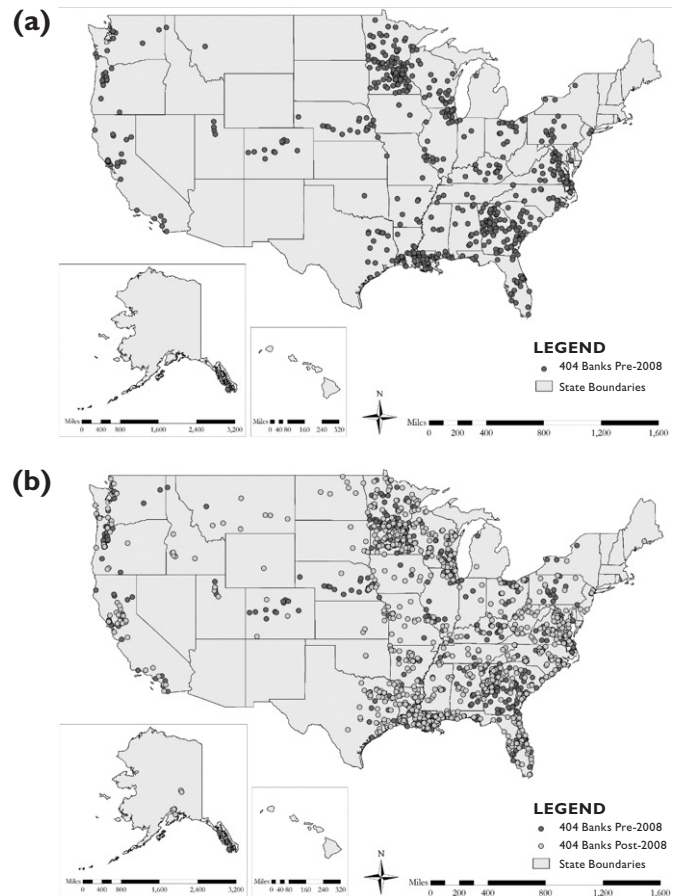
**Figure 2. Cumulative total of the subset of mitigation banks with stream credits, approved over time (from 1995 through 2017)**



understanding of the important functions streams play in the landscape, advancements in stream restoration and enhancement techniques, and clearer regulatory policy regarding impacts to streams have fueled an increase in stream mitigation projects, including stream mitigation banks.<sup>41</sup> In June 2008, a total of 115 mitigation banks with stream credits had been approved. Between June 2008 and July 2018, an additional 300 mitigation banks with stream credits were approved—more than a 260% increase. In the 10 years prior to the 2008 rule, the rate of approvals for banks with stream credits averaged 10 banks per year (1998–2007). In the 10 years since the 2008 rule, the rate of approvals has averaged about 30 banks per year (2008–2017), about a 200% increase from the decade before.

41. For a more detailed discussion of the evolution of the §404 program's approach to streams, see Dave Owen, *Little Streams and Legal Transformations*, 2017 UTAH L. REV. 1 (2017), available at <https://dc.law.utah.edu/cgi/viewcontent.cgi?article=1031&context=ulr>.

**Figure 3. Locations of mitigation banks with 404 credits approved as of (a) June 2008 and (b) July 2018**



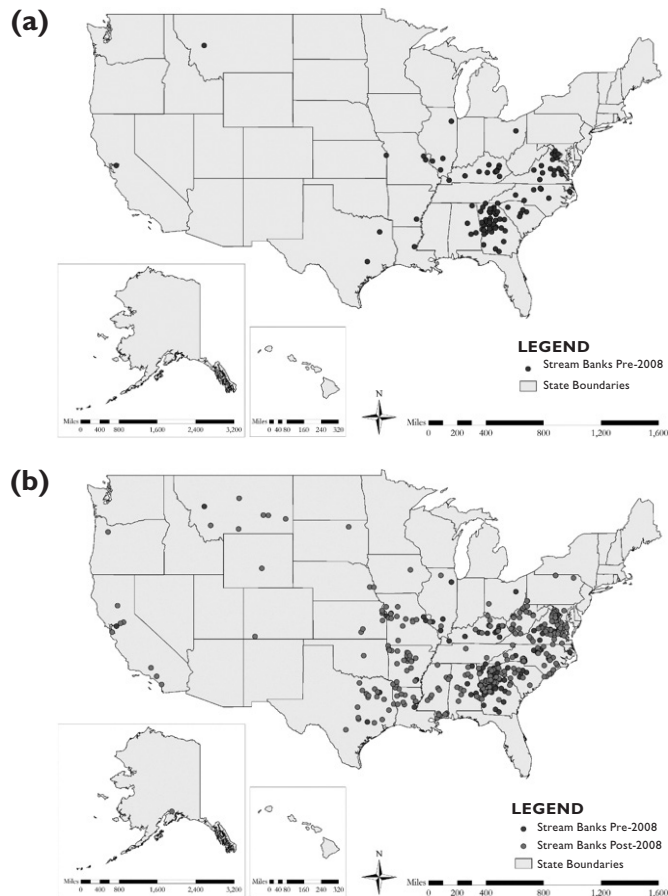
## 2. Expansion in Distribution of Mitigation Banks

In addition to increases in the number of mitigation banks, their distribution across the country has also expanded. Between June 2008 and July 2018, §404 mitigation banks expanded into five new states: Maine, North Dakota, South Dakota, West Virginia, and Wyoming (see Figure 3). Mitigation banks with stream credits expanded into 12 new states during the past 10 years: Alaska, Iowa, Maryland, Mississippi, Nebraska, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, West Virginia, and Wyoming (see Figure 4).

## 3. Status of ILF Programs

In addition to increases in the number of mitigation banks, the number of ILF programs has also increased. According to a report by the Environmental Law Institute, as of May 2006, there were a total of 46 approved ILF programs

**Figure 4. Locations of mitigation banks with stream credits approved as of (a) June 2008 and (b) July 2018**



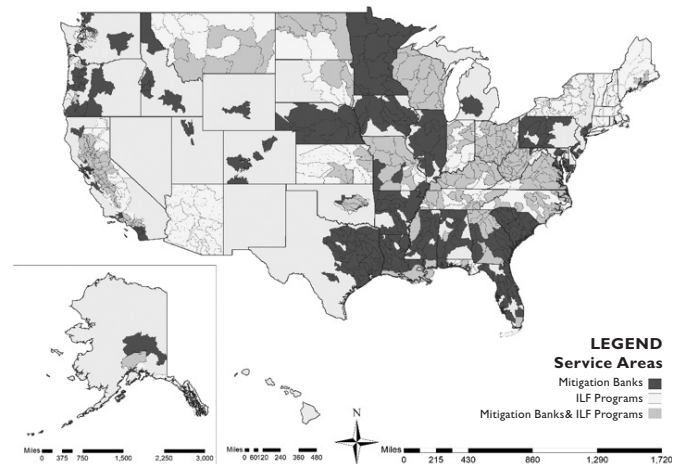
operating across 20 different states.<sup>42</sup> Currently, there are 58 approved ILF programs operating across 31 different states. Of the currently approved ILF programs, a total of 35 have been established since the 2008 rule went into effect. The current geographic distribution of ILF programs reflects the loss of programs in five states—Illinois, Maryland, Pennsylvania, South Carolina, and Texas—as well as the expansion of programs into 12 new states: Alabama, Connecticut, Indiana, Massachusetts, Mississippi, New York, North Dakota, Oklahoma, South Dakota, Vermont, Washington, and Wisconsin.

#### 4. More Compensation Options for Permit Applicants

Currently, all or part of 46 states are covered by the geographic service areas of approved mitigation banks and/or ILF programs (see Figure 5). There are 26 states<sup>43</sup> that have both bank and ILF compensation options in at least

some portions of the state, and 20 states<sup>44</sup> that have either bank or ILF options available in the state. The remaining four states (Hawaii, Nevada, New Mexico, and Rhode Island) have neither bank nor ILF options and must rely solely on permittee-responsible mitigation to satisfy compensation requirements.

**Figure 5. Geographic extent of third-party service areas across the country**



#### 5. Increase in Credit Transactions at Mitigation Banks

Annual credit transactions at all §404 banks have also increased since adoption of the 2008 rule. In the 10 years prior to the rule, average annual credit withdrawal transactions (including stream and wetland credits) were 1,694 per year (1998-2007). In the 10 years since the rule, average annual credit withdrawals were 2,635 per year (2008-2017), a more than 55% increase from the decade before (see Figure 6). Looking just at the subset of transactions from banks with stream credits, in the 10 years prior to the rule, average annual credit withdrawals (stream credits only) were 110 per year (1998-2007). In the 10 years since the rule, average annual credit withdrawals have increased to 371 per year (2008-2017), a more than 230% increase from the decade before (see Figure 7).<sup>45</sup>

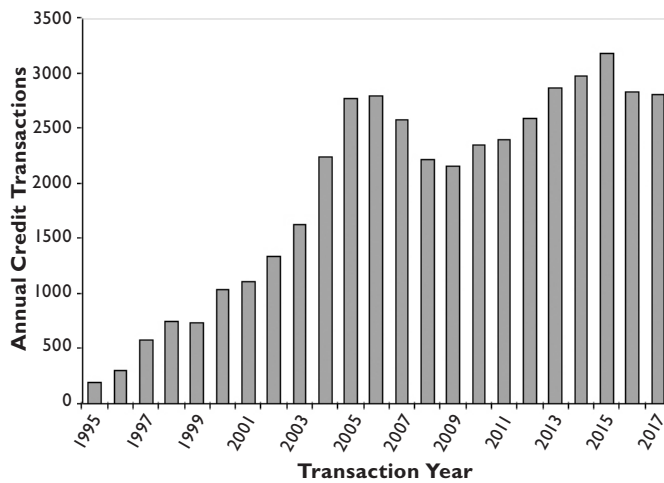
42. ELI, *supra* note 34.

43. This count includes the state of New Jersey, which, using the methods previously described, was identified as one of the 31 states with an approved ILF program. However, records of this ILF program have not been uploaded to the RIBITS database and, therefore, its service area is not depicted in Figure 5.

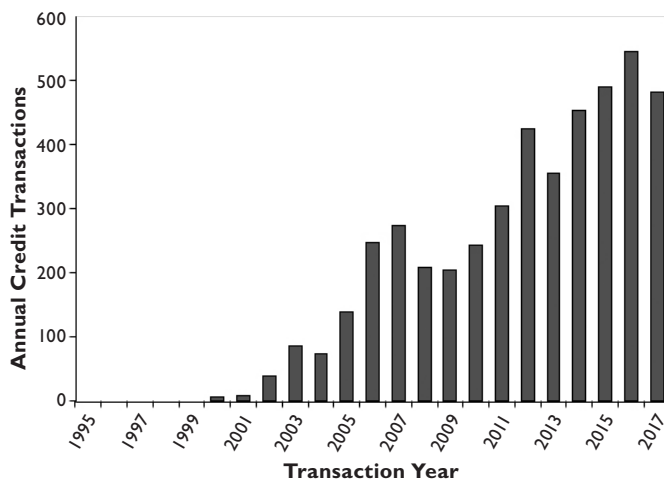
44. This count includes the state of Delaware, which, using the methods previously described, was identified as having a single approved mitigation bank. Although a record of this mitigation bank has been uploaded to the RIBITS database, information pertaining to its service area has not, and, therefore, its service area is not depicted in Figure 5.

45. Due to gaps in ILF transaction data in RIBITS, we were not able to do a similar analysis for ILF credit withdrawal transactions.

**Figure 6. Annual number of 404 credit withdrawal transactions at all mitigation banks (from 1995 to 2017)**



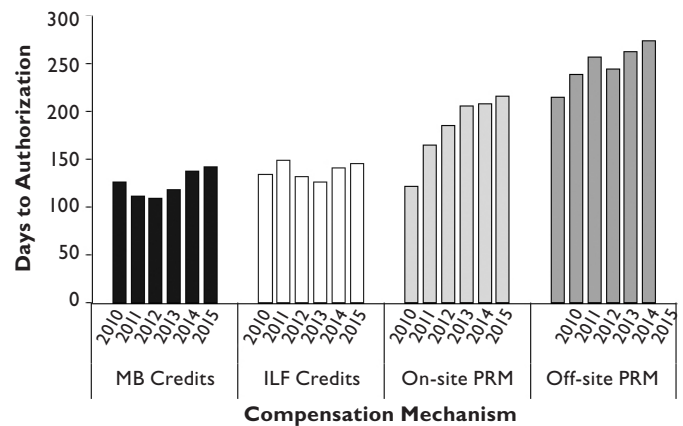
**Figure 7. Annual number of stream credit withdrawal transactions at mitigation banks (from 1995 to 2017)**



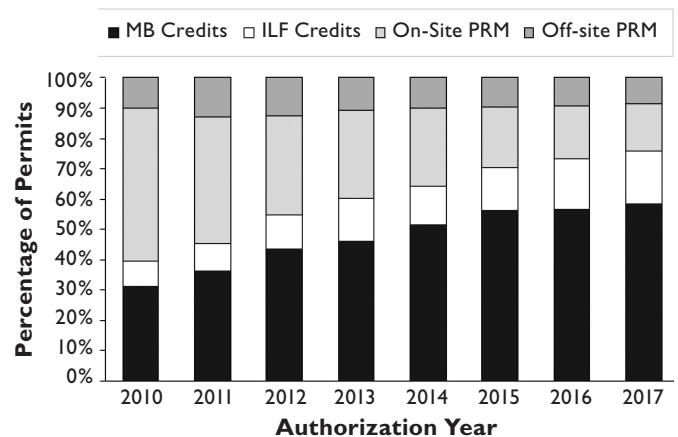
## 6. Use of Mitigation Banks and ILF Programs Saves Time for Permittees

Another important documented trend since issuance of the 2008 rule is the time savings for permit applicants who use mitigation bank and ILF program credits. Figure 8 shows that permit processing times are approximately 50% less when mitigation bank or ILF program credits are used compared to using traditional off-site permittee-responsible mitigation. Mitigation bank and ILF program sponsors have credits pre-approved for potential use by permit applicants. In contrast, with permittee-responsible mitigation, the permittee must identify a compensation project and secure its approval from the regulatory agencies before securing a permit—this generally takes additional time.

**Figure 8. Average processing times for permit authorization, from 2010 through 2015, by compensation mechanism**



**Figure 9. Percent use of compensation mechanisms to satisfy compensation requirements (for years 2010 through 2017)**



## 7. More Permittees Are Using Mitigation Banks and ILF Programs

Use of mitigation bank and ILF program credits, particularly mitigation bank credits, to satisfy compensation needs has increased, while reliance on traditional permittee-responsible mitigation has declined (see Figure 9). In 2017, the percentage of permits using mitigation bank credits and ILF credits was about 60% and 17%, respectively, nearly double the percentage of permits using these mechanisms in 2010 (about 30% and 8%, respectively). In comparison, the use of on-site permittee-responsible mitigation has declined by about two-thirds during this same time period (from about 50% in 2010 to about 15% in 2017). The regulatory preference to use mitigation bank or

ILF program credits over permittee-responsible mitigation, the increased availability of mitigation bank and ILF program credits, and the time savings they provide to permit applicants in the permit review process are all likely contributors to these trends.

### III. Potential Opportunities for Improvement

While much progress has been made in a number of areas identified by the NRC and the agencies over the past 10 years under the 2008 rule, other mitigation studies and mitigation stakeholders have highlighted important unanswered questions and suggested opportunities for further improvement. Some of these opportunities include evaluating whether the requirements of the 2008 rule, particularly the 12 components of a mitigation plan, are being adequately addressed; improving the efficiency of regulatory oversight of mitigation banks and ILF programs; and conducting more thorough evaluations of compensation performance.

#### A. More Effective Implementation of the Requirements in the 2008 Rule

One of the most important policy changes made by the 2008 rule was the requirement that all compensation projects have a mitigation plan in place that addresses the 12 components outlined above (see Section I.A.). Although all compensation projects are required to address each of these components in their mitigation plans, an important question is whether these components are being required by all compensatory mitigation mechanisms and adequately addressed.

Although RIBITS also serves as a repository for mitigation plans and other documents, this information is limited to mitigation banks and ILF programs (no information for permittee-responsible mitigation plans is available), and reviewing the documentation can be time-consuming. We are aware of two different studies that have conducted file reviews of banking instruments to evaluate how different components of the mitigation plan have been addressed and implemented at post-2008 rule mitigation sites.<sup>46</sup>

One study, aimed at assessing how mitigation banks have addressed ecological performance standards, included a file review of mitigation plans and monitoring reports from a random sample of post-2008 rule wetland mitigation banks from four pilot states across the country.<sup>47</sup> Results from this study indicated that bank mitigation plans did all include performance standards and these standards all shared the

following characteristics: (1) incorporated both hydrological and biological indicators, (2) addressed functional goals and objectives, and (3) objectively measured project outcomes as opposed to project actions. However, results also indicated that many performance standards were too vague to be meaningful and enforceable and, often, the associated monitoring requirements and reporting requirements lacked the details necessary to adequately track project development and/or determine project compliance.

Another study examined how long-term stewardship requirements have been implemented by reviewing instruments from a random sample of post-2008 rule wetland and stream banks from four pilot states across the country.<sup>48</sup> Results from this research effort indicated that long-term management funding has become a standard consideration in bank development; however, the results also indicated that there are deficiencies in the critical steps of identifying annual long-term management tasks and estimating long-term management costs, raising questions regarding whether long-term management funding provided will be adequate and sustainable.

Both studies suggest that although key elements of mitigation plans are being included in banking instruments (i.e., performance standards, monitoring requirements, and long-term management), critical aspects of their implementation can be improved, suggesting that additional guidance, training, and other technical resources are needed to help ensure that mitigation plans address each of these required elements more effectively.

#### B. Improving Efficiency of Regulatory Oversight for Mitigation Bank and ILF Programs

Stakeholders have suggested that IRTs are not adhering to the time lines outlined in the 2008 rule,<sup>49</sup> and feel there are opportunities to improve the efficiency with which IRTs provide review, approval, and oversight of mitigation bank, ILF program, and ILF project establishment and operation. For example, the Ecological Restoration Business Association (ERBA)—which represents many of the nation's mitigation providers—has identified a number of recommendations for improving IRT operation.<sup>50</sup> These include:

- Establishing Government Performance and Results Act performance metrics that are based on the time lines in the 2008 rule
- Investing in project management training

46. Similar reviews of ILFs were not done in these two studies because of the limited number of ILF sites that have been completed pursuant to the 2008 rule. The rule gave pre-rule ILF programs up to five years (i.e., until June 2013) to come into compliance with the rule (40 C.F.R. §230.98(v)(2) (2018) and 33 C.F.R. §332.8(v)(2) (2018)).

47. Rachel Harrington, A Review of Ecological Performance Standards at Post-2008 Rule Mitigation Banks, Presentation at the National Mitigation and Ecosystem Banking Conference (May 9, 2018).

48. Jenny Thomas, Long-Term Stewardship: Finances, Presentation at the National Mitigation and Ecosystem Banking Conference (May 2017); Jenny Thomas, *Evaluating Long-Term Stewardship of Compensatory Mitigation Sites: Preliminary Findings From California*, NAT'L WETLANDS NEWSL., Mar.-Apr. 2016, at 6.

49. However, there have not been any independent studies that have compared actual IRT time lines for bank or ILF review to the time lines established for IRTs in the rule.

50. Letter from ERBA, to D. Lee Forsgren Jr., Deputy Assistant Administrator, Office of Water, U.S. EPA (Oct. 8, 2018); Letter from ERBA, to James C. Dalton, Director of Civil Works, Corps Headquarters (June 18, 2018).

- Making ORM data available to the public and improving data entry for RIBITS to allow both mitigation providers and IRT members to more efficiently assess credit supply and demand
- Improving coordination between the IRT and bank sponsors by conducting after-action reviews with sponsors following bank approvals to identify specific areas where the process can be improved
- Adopting, at the Corps district level:
  - Workable, science-based crediting/debiting and service area methodologies for wetlands and streams
  - Standard operating procedures that cover the administrative and procedural aspects of bank review
  - Templates for bank instruments, site protection instruments, financial assurances, and long-term management plans

There has been a great deal of progress by certain Corps districts and states in the development of wetland and stream crediting/debiting methodologies, standard operating procedures for bank review, and templates.<sup>51</sup> Although there has not been any empirical research undertaken to determine whether IRTs with these tools in place have shorter project approval time lines, anecdotal evidence and common sense suggest this is the case. Investment in these kinds of resources and tools therefore can help streamline interagency review and serve as models for the development of similar resources and tools in other districts and states.

### C. Evaluating Compensation Performance

With the adoption of the more comprehensive mitigation standards associated with the 2008 rule and the greater proportion of permit applicants relying on the performance-based credits provided by mitigation banks, the assumption is that the effectiveness of compensatory mitigation projects has improved over the past 10 years.

However, robust independent evaluations of compensation performance have been on the decline, particularly since issuance of the 2008 rule.<sup>52</sup>

This critical gap could be addressed through the development of a long-term strategic approach to compensation performance evaluation—one that is customizable to state needs, is sustainable over very long time horizons, and allows for interpretation of national trends. Key steps of such an approach include adopting an appropriate study design, organizing compensatory mitigation project files in a geospatial database, and conducting a baseline evaluation and subsequent evaluations using the study design at regular intervals (e.g., every five to 10 years).<sup>53</sup> For the past year, EPA has been working with representatives from state and federal agencies to produce a technical document that will help states and other interested parties implement such a long-term approach to compensation performance evaluation and help ensure more regular and robust independent evaluations of compensation projects.<sup>54</sup>

## IV. Conclusion

When asked about the Compensatory Mitigation Rule shortly after its issuance in 2008, Dr. Joy Zedler, the chair of the 2001 NRC Compensatory Mitigation Study Committee, said, “It could be the best of all worlds . . . or it could be the same old same old . . . It’s all in the implementation.”<sup>55</sup> As the rule largely codified many of the committee’s significant recommendations, the Corps and EPA can take some credit for rising to the first of Dr. Zedler’s challenges.

However, Dr. Zedler underscored that sound implementation of the rule is essential to seeing improvements on the ground. Ten years later, significant progress has been made in the nation’s approach to compensatory mitigation, but work remains to ensure an efficient process for wetland, stream, and other aquatic resource compensatory mitigation decisionmaking and to ensure that compensatory mitigation is providing effective ecological outcomes on the ground.

51. The Corps IWR, *supra* note 8.

52. Joseph A. Morgan & Palmer Hough, *Compensatory Mitigation Performance: The State of the Science*, NAT’L WETLANDS NEWSL., Nov.-Dec. 2015, at 9.

53. Brian Topping, *Compensatory Mitigation Performance Evaluation*, Presentation at the Society of Wetland Scientists Annual Meeting (June 7, 2017).

54. This document is entitled *An Integrated Framework for Evaluating Wetland and Stream Compensatory Mitigation*, and it is currently under development and planned for release in 2019. Following release, it will be made available at <https://www.epa.gov/cwa-404/compensatory-mitigation-evaluations-and-reports>.

55. Alice Kenny, *Environmentalists Sound Off on EPA Wetland Regs*, ECOSYSTEM MARKETPLACE, Apr. 27, 2008, available at <http://staging.ecosystemmarketplace.com/articles/environmentalists-sound-off-on-epa-wetland-regs/>.