

SWAMP MONEY: THE OPPORTUNITY AND UNCERTAINTY OF INVESTING IN WETLAND MITIGATION BANKING

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ABSTRACT—In recent years, the wetland mitigation banking program has emerged as a favored mechanism for protecting the nation’s aquatic resources while allowing for economically beneficial development projects to proceed. Mitigation banks generate wetland credits, which in turn can be sold at a profit to developers who need them to offset wetland impacts. The number of mitigation banks has grown significantly in recent years, and the market has seen an influx of institutional investment. However, investors face significant risks and uncertainty, and many prospective investors lack access to information about wetland credit prices—which are neither reported to the regulatory authorities nor made available to the general public—and are therefore deterred from entering the market.

This Note proposes that the market for wetland mitigation credits would be more efficient if bank sponsors were required to report credit price information to regulatory authorities and if this information were made publicly available. Transparency of credit price information would incentivize both greater entry into the wetland mitigation banking market and improved planning on the part of prospective bank sponsors and developers alike. Moreover, by encouraging the establishment of more mitigation banks, regulatory authorities would have greater ability to ensure wetland credits purchased by developers more accurately match the type and functional values of the wetlands impacted.

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INTRODUCTION

Risk and uncertainty feature prominently in many investment decisions. An individual purchasing a rental property bears the risks that she may be unable to rent out the property and that the resale value may decline or fail to grow as expected. A financial institution extending credit faces the possibility that a borrower may be unable to repay the borrowed funds. Actors generally consult available information to reduce some of the sources of uncertainty associated with such investment decisions. For instance, an individual may confine her purchase to neighborhoods with low vacancy rates and above-average historical home price appreciation; likewise, to account for risk of default, a financial institution may price a loan based on the borrower’s known income sources and credit history. A deep pool of available information guides these actors’ investment decisions.

In the last few decades, wetland mitigation banking has emerged as a new form of land investment that offers attractive returns, yet is characterized by a general lack of available information to guide investment

decisions.¹ The wetland mitigation banking program arises from federal wetland protections governed by Section 404 of the Clean Water Act (CWA).² In geographic markets with appropriate credit demand from development activity,³ the program allows an investor who adheres to specified guidelines to become a sponsor of a wetland mitigation bank—a physical land site that generates wetland credits that can be used to offset wetland impacts within the same ecological region.⁴ The bank sponsor creates the mitigation bank by restoring wetland ecological functions to previously destroyed or degraded wetlands, enhancing or preserving existing wetlands, or creating new wetlands.⁵ The U.S. Army Corps of Engineers (the Corps), in concert with the Environmental Protection Agency (EPA) and various other regulatory agencies, administers the program,⁶ based on a set of ecological performance goals to which the bank sponsor and the regulatory agencies agree.⁷ As the site achieves these goals, the local Corps district overseeing the mitigation bank releases credit to the bank.⁸ The bank sponsor can then sell these credits to developers responsible for causing impacts on wetlands that require offsets under the CWA and its

¹ See J. B. Ruhl & James Salzman, *The Effects of Wetland Mitigation Banking on People*, NAT'L WETLANDS NEWSL., Mar.–Apr. 2006, at 1, 9 (discussing the “data vacuum” around wetland mitigation banking and noting that, while wetland mitigation “credit prices are not publicly available, they are reported to vary widely [and] average well into the tens of thousands of dollars per credit”); see also *Mitigation Credit Price Report (MCPR)*, EASL, <http://www.easillc.com/mitigation-credit-price-report-mcpr> [<https://perma.cc/ZX4C-AS2D>] (advertising a privately managed information database for mitigation banking and explaining that “[m]arket transparency has been low and credit price volatility has been high”). Credits are the units of transaction used in wetland mitigation banking, which is discussed throughout this Note.

² See 33 U.S.C. § 1344 (2012) (authorizing the U.S. Army Corps of Engineers to “issue permits . . . for the discharge of dredged or fill material into . . . navigable waters”).

³ Any development activity that requires the dredging or filling of wetlands can create demand for wetland credits. See PATRICK W. HOOK & SPENSER T. SHADLE, *NAVIGATING WETLAND MITIGATION MARKETS: A STUDY OF RISKS FACING ENTREPRENEURS AND REGULATORS* 5 (2013), <https://www.cbd.int/financial/offsets/usa-offsetmitigationrisks.pdf> [<https://perma.cc/HKB3-8FVP>]. Examples of development projects giving rise to demand for credits include transportation infrastructure such as roads and bridges, residential and commercial real estate development, utility lines, and gas pipelines. *Id.*

⁴ See *Mitigation Banking Factsheet*, U.S. EPA, <https://www.epa.gov/cwa-404/mitigation-banking-factsheet> [<https://perma.cc/J968-K36H>]; *Wetland Mitigation Banks: An Option to Consider*, TERRACON (Sept. 4, 2014), <https://www.terracon.com/2014/09/04/wetland-mitigation-banks-an-option-to-consider> [<https://perma.cc/2RUW-W5EH>] (“Wetland mitigation banking is a form of environmental market trading. Property owners can, at their own expense, restore, enhance, or construct a wetland, which creates wetland credits. Wetland credits can be sold to other developers who are facing expenses and delays that can be associated with impacting jurisdictional [wetlands].”).

⁵ See *Mitigation Banking Factsheet*, *supra* note 4.

⁶ See *infra* notes 74–75 and accompanying text.

⁷ See *Mitigation Banking Factsheet*, *supra* note 4.

⁸ See *id.*

implementing regulations.⁹ Depending on the amount and type of demand for credits and the competing credit supply from other banks in the geographic market, these credits can be incredibly valuable and can provide a generous return on the bank sponsor's initial investment.¹⁰ The investment community has taken notice of this significant opportunity: one private equity firm that specializes in the management of mitigation banking sites recently closed a third round of investment exceeding \$300 million in capital commitments.¹¹

While investment in wetland mitigation banking can be lucrative, there are many sources of risk and uncertainty that accompany the decision to invest in a mitigation bank. The regulatory approval process required to operate a mitigation bank can stretch over several years,¹² during which time a prospective bank sponsor may face considerable uncertainty with respect to the amount of credits a proposed bank site can generate, the timing of credit releases to the bank, and the geographic region in which the bank sponsor can sell credits.¹³ Moreover, throughout the permitting process, a bank sponsor may lack a clear understanding of what prices these credits can generate.¹⁴ There is currently no requirement for bank sponsors to report the prices of credits sold to developers.¹⁵ Without such historical price information, an otherwise willing mitigation bank sponsor may elect not to enter the market, hamstringing the ability of developers to secure credits needed to pursue economically beneficial projects.

While a significant amount of academic scholarship examines wetlands regulation and the regulatory framework around the mitigation banking

⁹ See, e.g., WASH. STATE DEP'T OF ECOLOGY & U.S. ARMY CORPS OF ENG'RS, PUB. NO. 12-06-014, CREDIT GUIDE FOR WETLAND MITIGATION BANKS 2 (2013) [hereinafter WASH. CREDIT GUIDE] ("Credits are periodically released . . . throughout the establishment period of a bank, which typically lasts for 10 to 12 years, as performance standards are met. Once a potential credit is released . . . it becomes an available credit." (emphasis omitted)).

¹⁰ Tegan Wendland, *Restoration Work Profitable for 'Mitigation Banks,'* WWNO (Nov. 23, 2015), <http://wwno.org/post/restoration-work-profitable-mitigation-banks> [<https://perma.cc/Q6EV-AM5Y>] (characterizing mitigation banking as "pretty lucrative" and reporting that one industry participant estimated that an acre of marsh he is restoring "could sell for between \$35,000 and \$150,000").

¹¹ *EIP Closes Fund III with Capital Commitment of \$303 Million*, ECOSYSTEM INV. PARTNERS (Feb. 16, 2016), <https://ecosystempartners.com/2016/02/16/eip-closes-fund-iii-with-capital-commitment-of-303-million> [<https://perma.cc/E55v-2E66>].

¹² See Leonard Shabman & Paul Scodari, *The Future of Wetlands Mitigation Banking*, 20 CHOICES 65, 66 (2005).

¹³ See HOOK & SHADLE, *supra* note 3, at 11; see also *infra* text accompanying notes 160–63 (describing regulatory risks facing prospective bank sponsors).

¹⁴ See *infra* Section IV.B.

¹⁵ See *infra* Section IV.B.

program,¹⁶ there has been little focus on the specific decision-making of investors who are considering entrance into the market as bank sponsors. This Note attempts to begin the discussion concerning how improvements to the regulatory framework can encourage entry into the market. At bottom, the market for wetland mitigation credits would be better served if bank sponsors were required to report the sale price of credits to the Corps, and if the Corps then made this information publicly available for those considering entering the market as sponsors of wetland mitigation banks. The CWA and its regulations permit regulatory authorities to require the reporting of credit price information, and this information could be collected within the Corps's existing reporting framework for credit sales.¹⁷ Public availability of historical credit price information would encourage greater entry into the market on the part of both bank sponsors and developers, thereby facilitating a more competitive marketplace for wetland credits, and ultimately leading to more economically beneficial investment in land development and wetland protection.

This Note proceeds in four parts. Part I provides background on the historical treatment of wetlands in the United States, the emergence of the current regulatory regime, and the origins and explosive growth of wetland mitigation banking activity since the EPA and the Corps promulgated regulations in 2008 establishing a preference for mitigation banking. Part II considers and addresses the arguments of scholars and environmentalists who question whether improving the efficiency of the compensatory offset regime is desirable and whether mitigation banking should be explicitly favored over other options. Next, Part III analyzes the costs and risks that accompany development of a wetland mitigation bank within the current regulatory framework. Finally, Part IV discusses the benefits of credit price transparency in the wetland mitigation banking market, and then argues that the mitigation banking program would be improved by changing the credit transaction reporting process to require bank sponsors to report the price of credit sales to the Corps, which would then publish the price information.

I. EVOLUTION IN WETLAND REGULATION AND THE EMERGENCE OF THE WETLAND MITIGATION BANKING PROGRAM

The treatment of wetlands in the United States has undergone significant changes throughout the country's history. Once seen as a scourge on society and a public health risk, wetlands began to receive recognition for

¹⁶ For a review of this academic scholarship and the debates around wetland regulation and the mitigation banking program, see *infra* Part II.

¹⁷ See *infra* Section IV.C.

their environmental benefits in the middle of the twentieth century, paving the way for the enactment of wetland protection legislation in the 1970s.¹⁸ Since then, the regulatory environment has shifted toward one that favors mitigation banking over other approaches and has spurred rapid growth in both the number of mitigation banks and the volume of investment in mitigation banks. This Part describes the evolution in wetland protection and provides context for why mitigation banking has become a more important and favored approach for wetland protection in the United States.

A. Early Treatment of Wetlands in the United States

From the Colonial Era up until the latter half of the twentieth century, the general view toward wetlands in the United States was one that encouraged their destruction. Early European settlers in the United States brought with them views from their home countries toward wetlands as a source of diseases such as malaria.¹⁹ In 1900, the Supreme Court condemned wetlands as “the cause of malarial and malignant fevers” and opined that “the police power is never more legitimately exercised than in removing such nuisances.”²⁰ The general view of wetlands as “disease-ridden wastelands”—and the accompanying view that they should be filled and drained as a matter of public health—thus prevailed prior to the 1960s.²¹

In the 1980s, the U.S. Fish and Wildlife Service (FWS) commissioned a study on the historical rates and trends in wetland loss in the United States.²² According to the FWS study, more than 50% of the country’s original 221 million acres of wetlands had been destroyed during the 200 years between the Colonial Era and the mid-1980s, and most of this acreage loss could be directly attributed to human activity.²³ In addition to draining for disease control, a large source of wetland loss in the United States took the form of drainage to facilitate agricultural production.²⁴ The study also

¹⁸ See Lori A. Sutter et al., *Science and Policy of U.S. Wetlands*, 29 TUL. ENVTL. L.J. 31, 42–50 (2015) (discussing the history of wetland losses in the United States and the emergence of wetland protective legislation).

¹⁹ See *id.* at 44. Indeed, wetlands can cause the spread of water- and vector-borne diseases. *Id.*

²⁰ *Leovy v. United States*, 177 U.S. 621, 636 (1900).

²¹ Sutter et al., *supra* note 18, at 32.

²² THOMAS E. DAHL & CRAIG E. JOHNSON, U.S. DEP’T OF THE INTERIOR, FISH AND WILDLIFE SERV., WETLANDS: STATUS AND TRENDS IN THE CONTERMINOUS UNITED STATES, MID-1970’S TO MID-1980’S, at iii (1991).

²³ *Id.* at 3.

²⁴ *Id.* at 12. As discussed later in this Note, previously drained wetlands represent ideal sites for the establishment of wetland mitigation banks. See *infra* note 145 and accompanying text. Because many large agricultural tracts were previously drained wetlands, owners of such farmland may benefit from the opportunity to convert parts of these parcels into successful wetland mitigation banks by engaging in wetland restoration projects. *Id.*

found that between the mid-1950s and the mid-1970s, agricultural activity was the cause of 87% of wetland conversions to upland land uses.²⁵

In recent decades, scientific advancement has spurred greater national attention to the benefits that wetlands provide to the ecosystem—also known as “ecosystem services.” University of Georgia research scientist Lori Sutter and her coauthors organize the value²⁶ of wetlands into three general categories: water quality, hydrology, and habitat.²⁷ First, wetlands improve water quality by capturing sediments and other particulates as they move across the landscape and by facilitating microbially mediated chemical reactions.²⁸ Second, the ability of wetlands to slow and retain water contributes to flood abatement and erosion control.²⁹ Finally, wetlands provide habitat for a wide range of plants and animals.³⁰ It is in part the greater recognition of these benefits that gave rise to the enactment of federal wetland protection legislation in the latter half of the twentieth century.³¹

B. Wetland Regulation: The Clean Water Act and No Net Loss

Following decades of programs designed to encourage the draining of wetlands for agriculture and other purposes, Congress amended preexisting federal law governing water pollution by enacting the Federal Water Pollution Control Act Amendments of 1972 to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”³² Congress again amended the law in the Clean Water Act of 1977 (CWA), motivated in part by the desire to establish the Corps’s authority to regulate activities involving impacts on wetlands.³³ Congressional debate leading up to the passage of the 1977 Amendments reflected the increased focus on the

²⁵ See DAHL & JOHNSON, *supra* note 22, at 12.

²⁶ Since wetland systems are generally not bought or sold, techniques have been developed to assign economic value to wetlands; this value can vary based on the specific individual or society making this valuation. See Sutter et al., *supra* note 18, at 32–33.

²⁷ See *id.* at 33–34.

²⁸ See *id.* at 34–38.

²⁹ See *id.* at 38–40.

³⁰ See *id.* at 40–42.

³¹ See *id.* at 32. Doctor Sutter and her coauthors argue that the passage of the Federal Clean Water Act of 1972, providing “limited wetland protection,” was “recognition of humankind’s valuation of wetland functions.” *Id.* at 32–33.

³² Federal Water Pollution Control Act Amendments of 1972, Pub. L. 92-500, 86 Stat. 816 (codified as amended at 33 U.S.C. §§ 1251–1387 (2012)). Among the goals established by the Amendments was the “national goal that the discharge of pollutants into the navigable waters be eliminated by 1985.” *Id.*

³³ Clean Water Act of 1977, Pub. L. 95-217, 91 Stat. 1566 (codified as amended at 33 U.S.C. §§ 1251–1387 (2012)); James R. Curtiss, Note, *The Clean Water Act of 1977: Midcourse Corrections in the Section 404 Program*, 57 NEB. L. REV. 1092, 1107–09 (1978) (describing Congress’s “efforts to amend the section 404 program and, in the process, to redefine the Corps’[s] jurisdiction over dredge and fill operations”).

value of aquatic ecosystems such as wetlands and the need for their protection from the harms of human activity. As Senator Edmund Muskie of Maine explained:

There is no question that man's activities have radically altered receiving water ecosystems in this country and that alteration is continuing at an accelerated pace in many areas. Restoration of aquatic ecosystems which existed prior to the introduction of pollution from man's activities is an important element of the restoration and maintenance of the biological, physical, and chemical integrity of receiving waters. It is an essential aspect of assuring that future generations will have an adequate supply of basic life support resources.³⁴

The CWA was thus viewed as an important tool to fight the trend of losses in aquatic ecosystems that had characterized the nation's environmental policy throughout history.

Section 301 of the CWA contains the crux of the protection of aquatic ecosystems by making “the discharge of any pollutant by any person . . . unlawful.”³⁵ This prohibition covers activities that involve dredging or filling jurisdictional wetlands.³⁶ Section 404 of the Act, however, provides an exception to the Section 301 prohibition by granting the Corps authority to

³⁴ 123 CONG. REC. 39,179 (1977) (statement of Sen. Edmund Muskie).

³⁵ 33 U.S.C. § 1311(a) (2012).

³⁶ The Act defines jurisdictional wetlands as “the waters of the United States.” *Id.* § 1362(7). The exact meaning of this term, which has been the subject of a trilogy of Supreme Court cases, remains unsettled. *See United States v. Riverside Bayview Homes, Inc.*, 474 U.S. 121, 132 (1985) (finding that “legislative history and underlying policies of [the Corps’s] statutory grants of authority . . . support the reasonableness of the Corps’[s] approach of defining adjacent wetlands as ‘waters [of the United States]’ within the meaning of § 404(a)” of the CWA); *Solid Waste Agency of N. Cook Cty. v. U.S. Army Corps of Eng’rs*, 531 U.S. 159 (2001) (holding that the Corps’s jurisdiction under the CWA does not extend to isolated wetlands that lack a “significant nexus” to navigable waters); *see also Rapanos v. United States*, 547 U.S. 715 (2006) (vacating judgments against petitioners—who filled wetlands without permits—with no majority opinion, but laying out alternative bases: either that wetlands that lack “continuous surface connection to bodies that are ‘waters of the United States’ in their own right” (under Justice Scalia’s standard), or that the lower court misapplied the “significant nexus” test from *Solid Waste Agency of Northern Cook County* (under Justice Kennedy’s standard)). The definition currently used by federal agencies is the 1986/1988 Regulatory Definition promulgated by the EPA, which was implemented consistent with these Supreme Court decisions and EPA guidance documents. *See U.S. EPA, ABOUT WATERS OF THE UNITED STATES* (2018), <https://www.epa.gov/wotus-rule/about-waters-united-states> [<https://perma.cc/25G9-68DU>]; *see also* Clean Water Rule: Definition of “Waters of the United States,” 80 Fed. Reg. 37,054, 37,116 (June 29, 2015) (codified as amended at 40 C.F.R. § 230.3) (listing the complex set of waterbodies included in and excluded from the definition). Agencies currently exert jurisdiction only over wetlands that are navigable or have a significant nexus to a traditionally navigable body of water. *See Sutter et al.*, *supra* note 18, at 47. Despite the fact that changes in federal jurisdiction of wetlands—whether driven by Congress, the courts, or executive agencies—could impact demand for wetland mitigation credits, the exact jurisdiction of the Act does not impact the thrust of this Note’s argument, which focuses on the opacity of credit price information. *See infra* Part IV.

issue permits for dredge-and-fill activities in wetlands.³⁷ While the Corps is directly responsible for administering the Section 404 Permit Program, it must follow EPA-promulgated standards under Section 404(b)(1) when issuing permits.³⁸ Under the Act, a developer is typically required to secure a Section 404 permit prior to engaging in a land development project that requires the dredging or filling of regulated wetlands.³⁹

In the late 1980s, the National Wetlands Policy Forum, a stakeholder panel focused on wetland conservation, developed the goal of “no net loss” of wetlands.⁴⁰ The Forum’s goal referred to preserving both the total wetland acreage in the country and the functions and values that the wetlands provided.⁴¹ Then-presidential candidate George H.W. Bush incorporated this

³⁷ See 33 U.S.C. § 1344(a) (2012) (“The Secretary [of the Army] may issue permits . . . for the discharge of dredged or fill material into the navigable waters at specified disposal sites.”). During passage of the 1977 Amendments, some in Congress viewed aspects of the Section 404 permitting process as harmful to the goal of wetland protection. For example, Representative Jerome Ambro of New York expressed skepticism about the Corps’s authority under the Act to issue a “general” permit on a state, regional, or nationwide basis giving a state control over jurisdictional wetlands, explaining: “Without close supervision from either the corps or the Environmental Protection Agency, we will almost certainly see economically expedient activities, such as construction, development, and even some dumping, take precedent over the preservation of the ecological sensitive and valuable wetlands.” 123 CONG. REC. 38,994 (statement of Rep. Jerome Ambro). Senator Robert Stafford of Vermont lamented the Act’s exemption of congressionally authorized projects from Section 404 permitting requirements, arguing that “all projects . . . ought to measure up to the standards designed to protect vital and often irreplaceable wetlands and marine environments from the devastation of pollution and the total obliteration by development or altered land use.” *Id.* at 39,192 (statement of Sen. Robert Stafford).

³⁸ 33 U.S.C. § 1344(b) (“[E]ach . . . disposal site shall be specified for each such permit by the Secretary [of the Corps] . . . through the application of guidelines developed by the Administrator [of the EPA]”); see also J.B. Ruhl et al., *Implementing the New Ecosystem Services Mandate of the Section 404 Compensatory Mitigation Program—A Catalyst for Advancing Science and Policy*, 38 STETSON L. REV. 251, 252–53 (2009). Section 404(c) also provides that the EPA may veto a permit issued by the Corps. See 33 U.S.C. § 1344(c).

³⁹ U.S. EPA, SECTION 404 OF THE CLEAN WATER ACT: SECTION 404 PERMIT PROGRAM (2017), <https://www.epa.gov/cwa-404/section-404-permit-program> [<https://perma.cc/8TMW-5UCR>].

⁴⁰ See JULIE M. SIBBING, NAT’L WILDLIFE FED’N, NOWHERE NEAR NO-NET-LOSS 1, https://www.nwf.org/~media/PDFs/Wildlife/Nowhere_Near_No-Net-Loss.pdf [<https://perma.cc/UND6-BJE8>]. See generally U.S. EPA, WATER QUALITY STANDARDS FOR WETLANDS: NATIONAL GUIDANCE (1990), <https://nepis.epa.gov/Exe/ZyPDF.cgi/00001PW6.PDF?Dockey=00001PW6.PDF> [<https://perma.cc/LE73-7KGC>].

⁴¹ See SIBBING, *supra* note 40, at 1.

goal into his 1988 presidential campaign,⁴² and by 1990, the EPA and the Corps had formally adopted the goal as Bush administration policy.⁴³

Under EPA regulations, a developer applying for a Section 404 permit is required to offset any unavoidable impacts caused by the developer in order to prevent a net loss of wetlands.⁴⁴ In order to receive a permit, the developer must follow an exact sequence of steps: first, avoid impacts on aquatic resources; second, minimize the extent of unavoidable ecological damage; and finally, compensate for unavoidable damages.⁴⁵ This compensatory mitigation requirement can be achieved through “restoration of a previously-existing wetland or other aquatic site, the enhancement of an existing aquatic site’s functions, the establishment (i.e., creation) of a new aquatic site, or the preservation of an existing aquatic site.”⁴⁶ Moreover, under the no net loss policy, the compensatory mitigation requirement is set

⁴² Keith Schneider, *The Nation: The Environmental Impact of President Bush*, N.Y. TIMES (Aug. 25, 1991), <https://www.nytimes.com/1991/08/25/weekinreview/the-nation-the-environmental-impact-of-president-bush.html> [<https://perma.cc/X7CF-DMCU>]. President Bush maintained his stance on the no net loss policy once in office, stating to members of the conservation group Ducks Unlimited in a 1989 address:

I want to ask you today what the generations to follow will say of us 40 years from now. It could be they’ll report the loss of many million acres more, the extinction of species, the disappearance of wilderness and wildlife; or they could report something else. They could report that sometime around 1989 things began to change and that we began to hold on to our parks and refuges and that we protected our species and that in that year the seeds of a new policy about our valuable wetlands were sown, a policy summed up in three simple words: “No net loss.”

President George Bush, Address to Ducks Unlimited (June 8, 1989), as reprinted in Morgan M. Robertson, *No Net Loss: Wetland Restoration and the Incomplete Capitalization of Nature*, 32 ANTIPODE 463, 463 (2000).

⁴³ U.S. EPA & U.S. DEP’T OF THE ARMY, MEMORANDUM OF AGREEMENT BETWEEN THE ENVIRONMENTAL PROTECTION AGENCY AND THE DEPARTMENT OF THE ARMY CONCERNING THE DETERMINATION OF MITIGATION UNDER THE CLEAN WATER ACT SECTION 404(B)(1) GUIDELINES 2 (1990) [hereinafter 1990 MEMORANDUM OF AGREEMENT] (“[I]t is recognized that no net loss of wetlands functions and values may not be achieved in each and every permit action. However, it remains a goal of the Section 404 regulatory program to contribute to the national goal of no overall net loss of the nation’s remaining wetlands base.”).

⁴⁴ See 40 C.F.R. § 230.93(a)(1) (2017) (“Permit applicants are responsible for proposing an appropriate compensatory mitigation option to offset unavoidable impacts.”); see also Adrienne M. Sakyi, Note, *Mitigation Banking: Is State Assumption of Permitting Authority More Effective?*, 34 WM. & MARY ENVTL. L. & POL’Y REV. 1027, 1029 (2010) (“When a developer’s negative impact on wetlands is unavoidable, compensatory mitigation is required to offset the harmful impacts on function and losses of aquatic resources that result from the authorized activity in order to prevent a net loss of wetlands.”).

⁴⁵ See 40 C.F.R. § 230.91(c). While compensatory mitigation is intended to be a choice of last resort used only to compensate for unavoidable wetland impacts, in practice the sequencing requirement is not faithfully followed—in fact, the Corps typically denies less than one percent of all permits applied for, and it grants the majority of permits under an expedited general permit process. See Murphy et al., *New Mitigation Rule Promises More of the Same: Why the New Corps and EPA Mitigation Rule Will Fail to Protect Our Aquatic Resources Adequately*, 38 STETSON L. REV. 311, 315 (2009).

⁴⁶ Compensatory Mitigation for Losses of Aquatic Resources; Final Rule, 73 Fed. Reg. 19,594, 19,594 (Apr. 10, 2008) (codified at 33 C.F.R. §§ 325, 332, and 40 C.F.R. § 230) (emphasis omitted).

by the Corps such that a development project requiring a Section 404 permit should not result in an overall decrease in the total acreage of wetlands. For instance, between 1993 and 2000, the Corps issued permits for approximately 24,000 acres of wetlands per year to be filled, and required 42,000 acres of compensatory mitigation for these impacts—an average of 1.8 acres of compensatory mitigation for every acre of wetland impact.⁴⁷

Federal regulations provide three different options by which a permit applicant can provide compensatory mitigation.⁴⁸ The first and most common form is permittee-responsible mitigation (PRM), whereby the permit applicant is responsible for ensuring that ecological performance standards are met to satisfy the mitigation requirements.⁴⁹ PRM can occur either at the site of impact or at an adjacent site.⁵⁰ The permittee generally seeks the help of outside consultants to develop a mitigation site, and the permittee arranges for any necessary conservation easements to encumber the land that hosts the site.⁵¹

The second option is participation in an in-lieu fee (ILF) program. Under this option, the permittee pays a fee to a government agency or a nonprofit organization that operates a separate ILF mitigation site.⁵² The ILF operator can pool money from multiple permittees to develop larger, more comprehensive mitigation sites compared to PRM sites.⁵³ Typically, the mitigation work performed by ILF operators occurs after the permittee has already received a permit to impact wetlands.⁵⁴

The final option allows the permittee to purchase an appropriate number of credits, as determined by the Corps, from an approved wetland mitigation bank, which may be operated by for-profit companies, nonprofit

⁴⁷ See COMM. ON MITIGATING WETLAND LOSSES, NAT'L RESEARCH COUNCIL, COMPENSATING FOR WETLAND LOSSES UNDER THE CLEAN WATER ACT 3 (2001). *But see* R. Eugene Turner et al., *Count It by Acre or Function—Mitigation Adds Up to Net Loss of Wetlands*, NAT'L WETLANDS NEWSL., Nov.–Dec. 2001, at 5, 15 (explaining that because not all mitigation projects are implemented in compliance with permitting requirements, “the actual amount of wetland impacts offset is only about 20 percent, meaning that the section 404 permitting program has been fostering an 80 percent net loss of wetlands”).

⁴⁸ See Compensatory Mitigation for Losses of Aquatic Resources; Final Rule, 73 Fed. Reg. at 19,594 (“There are three mechanisms for providing compensatory mitigation: permittee-responsible . . . mitigation, mitigation banks and in-lieu fee mitigation.” (emphasis omitted)).

⁴⁹ See *id.*; Sakyi, *supra* note 44, at 1030; Philip Womble & Martin Doyle, *The Geography of Trading Ecosystem Services: A Case Study of Wetland and Stream Compensatory Mitigation Markets*, 36 HARV. ENVTL. L. REV. 229, 249 (2012).

⁵⁰ See Sakyi, *supra* note 44, at 1030; Womble & Doyle, *supra* note 49, at 249.

⁵¹ See Jessica Owley, *The Increasing Privatization of Environmental Permitting*, 46 AKRON L. REV. 1091, 1097 (2013).

⁵² See Compensatory Mitigation for Losses of Aquatic Resources; Final Rule, 73 Fed. Reg. at 19,594–95; Owley, *supra* note 51, at 1098.

⁵³ See Owley, *supra* note 51, at 1098.

⁵⁴ See Murphy et al., *supra* note 45, at 317 n.28.

organizations, or state agencies.⁵⁵ Mitigation banks generate compensatory mitigation credits issued by the Corps, which are generally based on the “ecological gains” as measured by factors such as the acreage and functional value of the wetlands or other aquatic resources generated on the site.⁵⁶ A permittee can then purchase credits from the bank—at a price determined by the sponsor (i.e., operator) of the bank and agreeable to the permittee—to satisfy the permittee’s Section 404 compensation requirements.⁵⁷ The credit transaction includes a transfer of liability for performance at the compensation site from the permittee to the bank sponsor.⁵⁸ Unlike for ILF sites and PRM projects, the mitigation activity that occurs at a mitigation bank typically occurs before any corresponding credit is issued to the bank for sale to permittees; therefore, at the time a permittee purchases credit to satisfy the compensatory requirement for securing a Section 404 permit, the corresponding mitigation activity has already occurred.⁵⁹

C. *The Rise of Entrepreneurial Mitigation Banking and the 2008 Final Rule*

The first mitigation banks appeared in the early 1980s.⁶⁰ Rather than operating as entrepreneurial sites seeking to profit from credit sales to third parties, the initial banks were single-user sites developed by Section 404 permittees themselves.⁶¹ The banks provided advance compensation to satisfy the permittees’ significant anticipated compensatory mitigation requirements.⁶² A 1988 U.S. Fish and Wildlife Service (FWS) study identified thirteen banks with FWS involvement: ten were operated by and for the use of port authorities and state departments of transportation; the others involved oil and gas exploration and industrial development.⁶³ In 1986, a mitigation bank in Louisiana that was predominantly established to

⁵⁵ See Compensatory Mitigation for Losses of Aquatic Resources; Final Rule, 73 Fed. Reg. at 19,594–95; Owley, *supra* note 51, at 1098. Privately held bank sites must be encumbered by a conservation easement ensuring that the lands remain undeveloped and protected as an aquatic resource. See *id.* at 1109.

⁵⁶ See, e.g., WASH. CREDIT GUIDE, *supra* note 9, at 2.

⁵⁷ See Womble & Doyle, *supra* note 49, at 249.

⁵⁸ *Id.*

⁵⁹ *Id.* (“Mitigation banks are . . . temporally preferable to PRM and ILF programs, as compensation is generally initiated in advance of credit transactions.”). But see Murphy et al., *supra* note 45, at 317 (“[I]n practice, nearly all credits are sold before restoration is considered complete and successful, and many are sold before restoration even begins.”).

⁶⁰ Womble & Doyle, *supra* note 49, at 249.

⁶¹ *Id.*

⁶² *Id.*

⁶³ CATHLEEN SHORT, MITIGATION BANKING 39 (U.S. Fish & Wildlife Serv., Biological Report 88(41), 1988).

serve the bank sponsor's own internal demand arranged for the first third-party transaction for Section 404 compensatory mitigation credits.⁶⁴

Despite its early usage by some large permittees, mitigation banking enjoyed limited prominence throughout the 1980s and early 1990s.⁶⁵ During this period, a loose patchwork of regulations and guidance documents governed the mitigation banking program, creating a disjointed regulatory regime.⁶⁶ A 1990 Memorandum of Understanding between the Corps and the EPA established a regulatory preference that “[c]ompensatory actions . . . be undertaken, when practicable, in areas adjacent or contiguous to the discharge site.”⁶⁷ This preference for on-site mitigation made necessarily off-site mitigation banking impracticable for many permittees. Moreover, mitigation banks had higher technological standards and were more expensive compared to PRM projects.⁶⁸ As a result, most developers preferred doing PRM projects to utilizing mitigation banks.⁶⁹

The 1990s, however, saw the beginning of a shift toward mitigation banking activity along with the emergence of entrepreneurial mitigation banking. In 1992, a mitigation bank in Georgia received the first permit for the operation of a purely entrepreneurial wetland mitigation bank,⁷⁰ and in 1994, the first mitigation banking instrument (MBI)⁷¹ was issued to a for-profit mitigation bank in Illinois.⁷² Then, in 1995, the Corps and the EPA, in concert with other federal agencies, issued regulatory guidance stating that the “agencies’ preference for on-site mitigation . . . should not preclude the

⁶⁴ Womble & Doyle, *supra* note 49, at 250.

⁶⁵ LEONARD SHABMAN & PAUL SCODARI, INST. FOR WATER RESOURCES, NATIONAL WETLAND MITIGATION BANKING STUDY, at vii–viii (U.S. Army Corps of Eng’rs, IWR Report 94-WMB-3, 1994), https://librarydocs.s3-us-gov-west-1.amazonaws.com/17d6ea60-f244-4ab8-8b35-781817ff446e__94-WMB-3.pdf?AWSAccessKeyId=AKIAKATYSROTDPIXLBQA&Expires=1536440015&Signature=AZEVu92iTEvnguxFggJ343yDsR4%3D [https://perma.cc/MXB2-CEAB] (“Despite the potential of off-site mitigation banking to increase the efficiency and effectiveness of wetland regulation, its use to date has been very limited. This is because traditional single-user banking arrangements are necessarily limited to those large public and private developers that routinely undertake many independent or linear development projects and can afford a substantial up-front investment in compensatory mitigation.”).

⁶⁶ See Sakyi, *supra* note 44, at 1031.

⁶⁷ 1990 MEMORANDUM OF AGREEMENT, *supra* note 43, at 4.

⁶⁸ See Sakyi, *supra* note 44, at 1031.

⁶⁹ See *id.*

⁷⁰ ENVTL. LAW INST., NATIONAL FORUM ON SYNERGIES BETWEEN WATER QUALITY TRADING AND WETLAND MITIGATION BANKING: FORUM REPORT 6 (2005), https://www.eli.org/sites/default/files/eli-pubs/d16_01.pdf [https://perma.cc/UE3M-24QT] [hereinafter ELI FORUM REPORT].

⁷¹ The mitigation banking instrument is the “legal document for the establishment, operation, and use of a mitigation bank.” 33 C.F.R. § 332.2 (2017). The instrument establishes the legal duties the bank sponsor must meet in order to sell credits. See ELI FORUM REPORT, *supra* note 70, at 29.

⁷² ELI FORUM REPORT, *supra* note 70, at 6.

use of a mitigation bank when there is no practicable opportunity for on-site compensation, or when use of a bank is environmentally preferable to on-site compensation.”⁷³ The guidance also established that, as a requirement of selling mitigation credits, banks were required to first receive approval from an interagency review team (IRT)⁷⁴ consisting of representatives from the Corps, EPA, and concerned federal, state, tribal, and local authorities, with the local Corps district engineer generally serving as the IRT chair.⁷⁵ The participating agencies become signatories of the MBIs, with the goal of achieving consensus on the MBIs’ terms and conditions.⁷⁶ Investors interpreted the guidance as sanctioning private mitigation banking, and entrepreneurial investment in the nascent industry increased.⁷⁷

As mitigation banking gained prominence in the late 1990s and early 2000s, the benefits of compensatory mitigation in general—which continued to consist predominantly of PRM projects⁷⁸—began to raise concerns from the environmental community.⁷⁹ At the request of the EPA, the National Research Council (NRC) conducted a detailed study, which found that the “goal of no net loss of wetlands is not being met for wetland functions by the mitigation program, despite progress in the last 20 years.”⁸⁰ The NRC report

⁷³ Federal Guidance for the Establishment, Use and Operation of Mitigation Banks, 60 Fed. Reg. 58,605, 58,611 (Nov. 28, 1995).

⁷⁴ The guidance referred to this as the Mitigation Bank Review Team (MBRT). *Id.* at 58,610. The concept is identical to what current regulations define as the IRT. *Compare id.* (“Collectively, the signatory agencies to the banking instrument will comprise the Mitigation Bank Review Team (MBRT). Representatives from the Corps, EPA, FWS, National Marine Fisheries Service (NMFS) and [National Resources Conservation Service], as appropriate given the projected use for the bank, should typically comprise the MBRT. In addition, it is appropriate for representatives from state, tribal and local regulatory and resource agencies to participate where an agency has authorities and/or mandates directly affecting or affected by the establishment, use or operation of a bank.”), with 33 C.F.R. § 332.2 (“Interagency Review Team (IRT) means an interagency group of federal, tribal, state, and/or local regulatory and resource agency representatives that reviews documentation for, and advises the district engineer on, the establishment and management of a mitigation bank” (emphasis omitted)).

⁷⁵ Federal Guidance for the Establishment, Use and Operation of Mitigation Banks, 60 Fed. Reg. at 58,610.

⁷⁶ *Id.*

⁷⁷ Womble & Doyle, *supra* note 49, at 250.

⁷⁸ “In Fiscal Year 2003, an estimated 60 percent of the compensatory mitigation was provided through permittee-responsible compensatory mitigation, 33 percent was provided by mitigation banks, and 7 percent was provided by in-lieu fee programs.” U.S. ARMY CORPS OF ENG’RS, DEP’T OF THE ARMY, FINAL ENVIRONMENTAL ASSESSMENT, FINDING OF NO SIGNIFICANT IMPACT, AND REGULATORY ANALYSIS FOR THE COMPENSATORY MITIGATION REGULATION, at vi (2008) [hereinafter USACE FINAL ENVIRONMENTAL ASSESSMENT].

⁷⁹ See Ruhl et al., *supra* note 38, at 256–57 (discussing how, starting in the late 1990s, researchers began publishing a series of articles questioning whether the Section 404 program was adequately taking into account how the economics of compensatory mitigation resulted in a translocation of ecological functions from urban to rural areas).

⁸⁰ COMM. ON MITIGATING WETLAND LOSSES, *supra* note 47, at 2.

acknowledged the benefits of mitigation banking as compared to PRM, including the mitigation activity performed in advance of wetland impacts, the pooling of financial resources and scientific expertise for development of larger project sites, and the consolidation of compliance monitoring efforts.⁸¹ In contrast to the benefits of mitigation banking, the report found that PRM sites often lacked legal and financial mechanisms for assuring the long-term protection of the sites,⁸² and were less ecologically successful than mitigation bank sites.⁸³ While the report did not explicitly announce a favored approach, it concluded that “[t]hird-party compensation approaches . . . offer some advantages over [PRM].”⁸⁴ The report recommended that “institutional systems be modified to provide third-party compensatory mitigation with all of the following attributes: timely and assured compensation for all permitted activities, watershed integration, and assurances of long-term sustainability and stewardship for the compensatory wetlands.”⁸⁵

In 2008, the EPA and the Corps jointly issued a Final Rule endorsing many of the recommendations from the NRC report.⁸⁶ The Rule replaced the various guidance letters and memoranda governing the compensatory mitigation framework with a uniform set of regulations.⁸⁷ It further applied equivalent standards to PRM projects, ILF programs, and mitigation banks; for instance, under the Rule, detailed mitigation plans with a consistent set of required components must be submitted for all types of mitigation projects.⁸⁸ Acknowledging the benefits of mitigation banks,⁸⁹ the Rule

⁸¹ See *id.* at 67–69.

⁸² See *id.* at 6.

⁸³ See *id.* at 115–16. On-site PRM projects have been challenged as ecologically unsuccessful due to the fragmentation and isolation of the wetland sites—with no attempt to link the wetlands to broader wetland ecosystems—along with design and engineering failures. See Travis E. Booth, Comment, *Compensatory Mitigation: What is the Best Approach?*, 11 U. BALT. J. ENVTL. L. 205, 212–13 (2004) (describing the functional defects of on-site mitigation).

⁸⁴ COMM. ON MITIGATING WETLAND LOSSES, *supra* note 47, at 9.

⁸⁵ *Id.* at 164.

⁸⁶ Compensatory Mitigation for Losses of Aquatic Resources; Final Rule, 73 Fed. Reg. 19,594 (Apr. 10, 2008) (codified at 33 C.F.R. §§ 325, 332, and 40 C.F.R. § 230).

⁸⁷ See Sakyi, *supra* note 44, at 1034.

⁸⁸ See Compensatory Mitigation for Losses of Aquatic Resources; Final Rule, 73 Fed. Reg. at 19,597. For a more detailed discussion of the mitigation plans required for mitigation banks, see *infra* Section III.A.

⁸⁹ See Compensatory Mitigation for Losses of Aquatic Resources; Final Rule, 73 Fed. Reg. at 19,604 (“In many cases, the environmentally preferable compensatory mitigation will be provided through mitigation banks . . . because they typically involve consolidating compensatory mitigation projects and resources, and providing financial planning and scientific expertise.”).

established a hierarchy of preferences for compensatory offset methods, with mitigation banking credits first, ILF programs second, and PRM last.⁹⁰

In response to the shift in the regulatory regime toward an environment that explicitly favors mitigation banking, the number of mitigation banks in operation or undergoing the permitting process has increased dramatically over the last decade and a half.⁹¹ A 2005 Corps inventory estimated there were 450 approved mitigation banks in operation;⁹² by 2010, that number had grown to more than 950.⁹³ In August 2013, there were 1800 approved mitigation banks listed in the Corps's Regulatory In Lieu Fee and Bank Information Tracking System (RIBITS),⁹⁴ and by 2015, this number had grown to over 2000.⁹⁵

As Corps district offices have continued to implement the Final Rule—and as the number of mitigation banks in geographic markets across the country has grown—permittees have shifted away from PRM and toward the use of mitigation banks and ILF options to provide compensatory offsets.⁹⁶ For instance, in the Corps's Norfolk District, the percentage of unavoidable

⁹⁰ See *id.* at 19,673–74.

⁹¹ See Sutter et al., *supra* note 18, at 49.

⁹² Eric T. Olsen, *Wetland Mitigation Banking: An Innovative Practice Grows to a Major Industry and Provides an Additional Land Revenue Option*, TRENDS, Sept./Oct. 2015, at 13, 14.

⁹³ Owley, *supra* note 51, at 1108.

⁹⁴ HOOK & SHADLE, *supra* note 3, at 6. RIBITS is a publicly accessible database that tracks information for approved mitigation banks throughout the United States, including their locations, permitting documents, existing credit supplies, and transaction histories. See *infra* notes 181–82 and accompanying text.

⁹⁵ Olsen, *supra* note 92, at 14. These figures include banks that provide stream mitigation credits. See *Mitigation Concepts for All USACE Districts*, U.S. ARMY CORPS OF ENG'RS, https://ribits.usace.army.mil/ribits_apex/f?p=107:27:31538576013038::NO::P27_BUTTON_KEY:0 [<https://perma.cc/U3Y5-PW6V>] (defining a mitigation bank as “a site where 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 Department of the Army permits”). Stream mitigation is analogous to wetland mitigation, with ecological impact of development activity and required compensatory offsets generally measured in stream linear feet as opposed to acres. See THE ENVTL. LAW INST. & LAND TR. ALL., WETLAND AND STREAM MITIGATION: A HANDBOOK FOR LAND TRUSTS 17 (2012), https://www.eli.org/sites/default/files/eli-pubs/d22_04.pdf [<https://perma.cc/Q7SB-7PKF>] (“In instances where [more sophisticated assessment methods are unavailable], the Corps often use acres (e.g., for wetlands) or linear feet (e.g., for streams) as the tool to quantify or measure potential losses at the impact site and potential benefits at the compensation site.”).

⁹⁶ Compare USACE FINAL ENVIRONMENTAL ASSESSMENT, *supra* note 78, at vi (finding that, in Fiscal Year 2003, mitigation banks and ILF collectively accounted for a total of 40% of compensatory mitigation activity), with INST. FOR WATER RES., THE MITIGATION RULE RETROSPECTIVE: A REVIEW OF THE 2008 REGULATIONS GOVERNING COMPENSATORY MITIGATION FOR LOSSES OF AQUATIC RESOURCES 11 (2015), https://www.epa.gov/sites/production/files/2015-11/documents/mitrule_report_october_2015.pdf [<https://perma.cc/SZVA-VTCX>] (finding that, between 2010 and 2014, these approaches accounted for 52% of mitigation activity).

impacts for which permittees provided compensatory offsets in the form of mitigation credits increased from 26% in 2012 to 74% in 2016.⁹⁷

An influx of capital investment into bank development has fueled the growth of mitigation banking activity, as investors and entrepreneurs have flocked to the market with hopes of capturing a share of the estimated \$1.3–\$2.2 billion annual market for wetland mitigation credits.⁹⁸ Large institutional investors are among the significant players in the mitigation banking space. For instance, between 2008 and 2015, the New Mexico Educational Retirement Board, the pension fund for the state’s public-school employees, made capital commitments of over \$100 million to mitigation bank investment funds,⁹⁹ and in 2014 the fund revised its natural resources investment policy to include an allocation to mitigation banking.¹⁰⁰ In 2016, Ecosystem Investment Partners (EIP), a private equity firm focused on investments in environmental offset markets, closed a third round of investment for the establishment of mitigation banks with over \$300 million in capital commitments.¹⁰¹ EIP anticipates the fund will consist of ten to fifteen investments on properties ranging in size from 1000 to 30,000 acres.¹⁰² In support of the growing industry, various trade organizations have been formed to advocate on behalf of market participants, including investors, bank sponsors, consultants, engineers, landowners, and others.¹⁰³

⁹⁷ *Mitigation Banks & Banking*, TROUT HEADWATERS, INC. (2018), <https://create.piktochart.com/output/26541638-%E2%80%A2mitigation-banks-and-ecosystem-banking> [<https://perma.cc/AZ9C-737M>].

⁹⁸ See Olsen, *supra* note 92, at 14.

⁹⁹ See N.M. EDUC. RET. BD., MINUTES OF THE NEW MEXICO EDUCATIONAL RETIREMENT BOARD INVESTMENT COMMITTEE 8–11 (2008); N.M. EDUC. RET. BD., MINUTES OF THE NEW MEXICO EDUCATIONAL RETIREMENT BOARD INVESTMENT COMMITTEE 8–13 (2010); N.M. EDUC. RET. BD., ACTION SUMMARY: INVESTMENT COMMITTEE 6–8 (2015) [hereinafter N.M. ERB 2015 MINUTES].

¹⁰⁰ See N.M. EDUC. RET. BD., NATURAL RESOURCES INVESTMENT POLICY & PROCEDURES 3–4 (2014).

¹⁰¹ See *EIP Closes Fund III with Capital Commitment of \$303 Million*, *supra* note 11. The New Mexico Educational Retirement Board approved a capital commitment of \$50 million to the fund. See N.M. ERB 2015 MINUTES, *supra* note 99.

¹⁰² See *EIP Closes Fund III with Capital Commitment of \$303 Million*, *supra* note 11.

¹⁰³ See Kelli Barrett, *Big Mitigation Bankers Embrace Role as “Ecological Restoration Businesses”, but Smaller Players Feel Sidelined*, FOREST TRENDS (June 7, 2017), https://www.forest-trends.org/ecosystem_marketplace/big-mitigation-bankers-embrace-role-ecological-restoration-businesses-smaller-players-feel-sidelined [<https://perma.cc/YL3T-ECNX>]. Two major industry groups include the Ecological Restoration Business Association—formerly known as the National Mitigation Banking Association—and the National Environmental Banking Association. See *id.*

II. THE DEBATE OVER COMPENSATORY OFFSETS AND THE MITIGATION BANKING MARKET

By issuing the 2008 Final Rule, the agencies charged with overseeing federal wetland protection have firmly backed the mitigation banking approach to providing compensatory offsets for wetland impacts.¹⁰⁴ Many scholars and environmentalists, however, remain critical of the desirability of promoting efficiency in markets for compensatory offsets,¹⁰⁵ and remain skeptical of the endorsement of wetland mitigation banking over other approaches.¹⁰⁶ This Part briefly discusses the arguments that feature prominently in these debates, and proposes that a robust, highly developed wetland mitigation banking program could address critics' concerns, making mitigation banking a preferred option over other compensatory mitigation alternatives.

A. The Desirability of Promoting Efficiency in Compensatory Offset Markets

Compensatory offsets under the Section 404 regime allow developers to move forward with economically beneficial activities, while also providing a framework under which the regulatory authorities can ensure that overall wetland functionality is not lost as a result of such development. The traditional view from the regulatory standpoint is that markets for compensatory offsets represent a “win-win”: the market determines a fair price that allows for development activity while generating financial returns for mitigation activity, and regulatory oversight and the no net loss policy ensure that ecological functions are preserved.¹⁰⁷

However, there are numerous challenges to ensuring that the functional value of the wetland replacement is commensurate with the wetlands destroyed. First, there are large variations in wetland types—the physical nature and the species supported can vary significantly, even over short distances between coastal and inland areas.¹⁰⁸ Moreover, the functions that wetlands provide are diverse and dissimilar, making it difficult and expensive to make comparisons and evaluate tradeoffs.¹⁰⁹ Many mitigation

¹⁰⁴ See *supra* Section I.C.

¹⁰⁵ See, e.g., *infra* notes 108–10 and accompanying text (describing the difficulty of ensuring that such offsets adequately replace the destroyed wetland function of the impact area).

¹⁰⁶ See, e.g., *infra* notes 119–34 and accompanying text (calling into question the benefits of mitigation banking).

¹⁰⁷ See Murphy et al., *supra* note 45, at 317.

¹⁰⁸ See ENVTL. LAW INST., WETLAND MITIGATION BANKING 25 (1993), <https://www.eli.org/sites/default/files/eli-pubs/wetland-mitigation-banking.pdf> [<https://perma.cc/XEB5-AB2B>] [hereinafter ELI REPORT].

¹⁰⁹ *Id.* at 25–26.

banks rely on simple acre-based counting or a narrow accounting of the functional value of wetlands, and such approaches cannot capture the true tradeoffs between varying types of wetlands.¹¹⁰

The thrust of these criticisms is that encouraging greater efficiency in the use of offset markets results in a net depletion of aquatic resources and the functional values they provide. But some of these concerns could be reduced as the Corps develops techniques that less expensively and more accurately capture the functional value of wetland sites. Moreover, if a greater number of wetland banks are established that represent a more diverse set of wetland types, the Corps could require permittees to purchase credits from mitigation banks with available credits that more accurately match the types of wetlands impacted and the watershed functions they serve.

B. Evaluating Regulatory Favored Status for Mitigation Banks

Another point of contention is whether regulatory authorities should explicitly favor mitigation banking over other options for providing compensatory offsets, including the traditional PRM approach. Professor Royal Gardner, a prolific scholar in the area of wetland law and policy, articulates numerous reasons for why mitigation banking is environmentally attractive compared to PRM.¹¹¹ First, because mitigation activity generally occurs in advance of the Corps issuing credit to a mitigation bank,¹¹² there is less concern from the standpoint of regulators over whether the project will be environmentally successful.¹¹³ Next, because bank sites consolidate both technical and financial resources, a bank sponsor can more easily bring together the necessary components to implement a successful mitigation project.¹¹⁴ Finally, larger bank sites may provide more ecological value as compared to mitigation provided on a project-by-project basis.¹¹⁵

Environmental law practitioners Robert Sokolove and Pamela Huang also point to the practical considerations of regulating compensatory offsets

¹¹⁰ Dustin J. Edwards, Comment, *Wetland Mitigation Banking: Is the Current System Beyond Repair?*, 16 TUL. ENVTL. L.J. 445, 458–59 (2003) (discussing the inadequacy of the acre-based and functional assessment methods for valuing wetlands and arguing for the development of a “refined currency” that “accurately pinpoint[s] the value sought to be measured”).

¹¹¹ See Royal C. Gardner, *Money for Nothing? The Rise of Wetland Fee Mitigation*, 19 VA. ENVTL. L.J. 1, 5–13 (2000).

¹¹² See *supra* note 59 and accompanying text.

¹¹³ See Gardner, *supra* note 111, at 9.

¹¹⁴ See *id.* at 9–10.

¹¹⁵ See *id.* at 10.

in favoring the use of large wetland bank sites.¹¹⁶ Specifically, “the development of larger regional mitigation banks provides the opportunity for the environmental community and regulatory agencies to focus their review efforts on fewer, less scattered wetland projects.”¹¹⁷ In response to claims that “a large bank ‘failure’ will have a greater impact than the loss of smaller, dispersed wetlands created for mitigation purposes,” they suggest that such critics overestimate the likelihood of such failures in light of the ability of regulatory agencies to consolidate their oversight efforts.¹¹⁸

These arguments notwithstanding, some critics argue that some of the theoretical benefits of mitigation banking are not fully realized in practice. For instance, attorneys for the National Wildlife Federation point out that mitigation banks sell nearly all their credits before wetland restoration is considered complete and successful, and many credits are sold before restoration even begins, thereby negating part of the temporal benefit of wetland banks.¹¹⁹ Releasing some credits before wetland restoration is complete may be unavoidable in order to incentivize investment;¹²⁰ however, Corps districts could enforce more stringent rules around the timing of credit releases relative to restoration, or at least relative to the recording of a conservation easement that ensures the land will be protected in perpetuity, regardless of the successful implementation of a mitigation site.¹²¹ Moreover, because most credit releases are contingent upon achievement of successful site construction¹²² and achievement of performance goals,¹²³ mitigation banking continues to offer the temporal benefit that PRM and ILF approaches lack.¹²⁴

¹¹⁶ See Robert D. Sokolove & Pamela D. Huang, *Privatization of Wetland Mitigation Banking*, 7 NAT. RESOURCES & ENV'T 36 (1992).

¹¹⁷ *Id.* at 38.

¹¹⁸ See *id.*

¹¹⁹ Murphy et al., *supra* note 45, at 317; see also WASH. CREDIT GUIDE, *supra* note 9, at 8 n.9 (stating that “up to 14% of the total potential credits for the bank may be released at pre-construction”).

¹²⁰ See HOOK & SHADLE, *supra* note 3, at 9 (describing how “as much as 75 to 93 percent of total costs for a bank—including costs for land acquisition, legal work, and bank construction and design”—is required “years in advance of realizing any returns,” and suggesting that bank sponsors should mitigate this risk by “seek[ing] to permit the mitigation bank and begin[ning] to sell credits after recording of a conservation easement”).

¹²¹ See *id.* at 20.

¹²² See WASH. CREDIT GUIDE, *supra* note 9, at 8 n.10 (stating that “up to 30% of the total potential credits for the bank may be released when the bank is constructed and the IRT approve the as-built”).

¹²³ See *id.* at 8 n.11 (stating that “up to 50% of the total potential credits for the bank may be released when the hydrologic performance standard(s) has been attained”).

¹²⁴ See HOOK & SHADLE, *supra* note 3, at 20 (“Some entrepreneurs argue that a partial issuance of credits at the early stages of a bank is still superior to the greater temporal loss that would occur through ILF and PRM mitigation methods.”).

Another argument against mitigation banks—and in favor of PRM—is that off-site banks cannot match the ecological value compared to on-site mitigation projects.¹²⁵ The location of a wetland is integral to the value it provides; for instance, a wetland may provide effective habitat for bird migration or flood control for a nearby community in part because of its location.¹²⁶ Developers engaging in PRM projects may perform mitigation work “on-site,”¹²⁷ meaning the mitigation activity occurs on “an area located on the same parcel of land as the impact site, or on a parcel of land contiguous to the impact site.”¹²⁸ In contrast, mitigation banks provide off-site mitigation,¹²⁹ meaning the mitigation activity is “neither located on the same parcel of land as the impact site, nor on a parcel of land contiguous to the parcel containing the impact site.”¹³⁰

University of Maryland researcher Curtis Bohlen argues that reliance on mitigation banks would “lead to an altered spatial distribution of wetlands across the landscape,” and that “an on-site bias . . . makes eminent sense.”¹³¹ However, because development activity may alter hydrological conditions at the impact site, the effectiveness of on-site mitigation may be weakened.¹³² It is for this reason the National Research Council rejected an automatic preference for on-site mitigation and instead favored a “watershed” approach that considers compensation for wetland functions across larger, hydrologically defined geographical areas.¹³³ A mitigation banking program that adheres to such a watershed approach can therefore be more effective in compensating for losses of wetland functions than on-site PRM projects.

In summary, while critics have raised important arguments against mitigation banking, an appropriately administered mitigation banking regime offers more regulatory certainty of successful ecological uplift to compensate for development activity compared to the alternatives. Moreover, by encouraging the creation of more mitigation banks, regulators can enforce stricter rules with respect to the type and location of permissible offsets, ensuring that the credits that developers purchase truly represent an uplift that provides ecological value of a similar type and location compared to the development activity.

¹²⁵ See Murphy et al., *supra* note 45, at 317–18; CURTIS C. BOHLEN, LANDSCAPE CHANGE AND THE ECOLOGICAL EFFECTS OF MITIGATION BANKS 10–11 (EPA Publication No. 230-R-96-008, 1996).

¹²⁶ ELI REPORT, *supra* note 108, at 30.

¹²⁷ 33 C.F.R. § 332.3(b)(5) (2017).

¹²⁸ *Id.* § 332.2.

¹²⁹ See COMM. ON MITIGATING WETLAND LOSSES, *supra* note 47, at 67.

¹³⁰ 33 C.F.R. § 332.2.

¹³¹ BOHLEN, *supra* note 125, at 10–11.

¹³² See COMM. ON MITIGATING WETLAND LOSSES, *supra* note 47, at 4.

¹³³ See *id.* at 67.

III. COSTS AND RISKS OF INVESTING IN WETLAND MITIGATION BANKS

According to a 1993 report by the Environmental Law Institute (ELI), “[c]ost and uncertainty appear to be the biggest impediments to widespread use of mitigation banks.”¹³⁴ Although the regulatory regime has evolved significantly in the twenty-five years since the ELI published its report, this statement still rings true today. An investor who decides to enter the mitigation banking market must balance the potential for lucrative credit sales against the high costs associated with establishing a mitigation banking site—and the sources of risk that accompany the unique form of investment. Additionally, due to the peculiar structure of the market and the regulatory regime, even a sophisticated investor who has performed significant research and analysis may lack important pieces of information when making upfront investment decisions, such as acquiring control of a parcel of land for hosting a bank site and engaging resources to develop detailed mitigation plans. This Part describes the costs and risks associated with investing in a wetland mitigation banking site.

A. *Costs of Establishing a Wetland Mitigation Bank*

The costs required to enter the mitigation banking market, even on a small parcel of land, can be quite significant. Time and effort are required to perform upfront due diligence on geographic market and site suitability,¹³⁵ and scientific expertise is required for developing detailed site mitigation plans.¹³⁶ Bank sponsors must engage in a lengthy negotiation process with regulatory authorities to secure the mitigation banking instrument (MBI) required to operate the bank.¹³⁷ Labor and materials are also needed to construct the mitigation site. Finally, the bank sponsor must provide for ongoing monitoring and maintenance and must establish financial assurances to ensure the site’s long-term viability for providing wetland functions.¹³⁸

¹³⁴ ELI REPORT, *supra* note 108, at 23.

¹³⁵ See HOOK & SHADLE, *supra* note 3, at 8.

¹³⁶ See *id.* at 16; see also *Starting a Wetland Mitigation Bank: What You Need to Know*, WIS. DEP’T OF NAT. RES., <http://dnr.wi.gov/topic/Wetlands/documents/mitigation/StartingAWetlandMitigationBank.pdf> [https://perma.cc/9XDX-7CJN] (“[Bank sponsors] typically work with a qualified consultant knowledgeable in wetland ecology and restoration to plan and implement restoration activities.”).

¹³⁷ See *id.* (“The timeline from submitting a [proposal document] to having an approved MBI often takes 1 to 2 years.”).

¹³⁸ The initial capital outlay for land acquisition, permitting, design, and construction may be as much as 75%–93% of the total costs of the bank. HOOK & SHADLE, *supra* note 3, at 9. However, some Corps districts provide credit releases prior to the start of physical construction as certain administrative hurdles, such as the signing of the MBI, are cleared. See, e.g., WASH. CREDIT GUIDE, *supra* note 9, at 8. Bank sponsors can use the proceeds from these early credit releases to fund site construction activity, and all

To start the planning process, a prospective bank sponsor must first identify if a specific geographic market is appropriate for market entry. Under the 2008 Final Rule, mitigation banks may only sell credits to permittees causing wetland impacts within defined geographic service areas.¹³⁹ These service areas may take the form of Hydrologic Unit Code (HUC) watersheds, the boundaries of which are defined by the U.S. Geological Survey.¹⁴⁰ The prospective bank sponsor must analyze the amount of anticipated Section 404 permitting activity within the service area—a function of not only the service area’s size and existing wetland stock, but also the amount of anticipated development activity, such as the building of roads and bridges, residential communities, retail stores, utility lines, and gas pipelines¹⁴¹—expected to cause unavoidable wetland impacts.¹⁴² Additionally, the prospective bank sponsor must determine whether the price she can expect to receive from the credit sales supports the significant investment—while some market entrants may be able to rely on relationships with industry participants to ascertain market price information,¹⁴³ such information may be inaccessible to others or only available for purchase from a limited commercial database.¹⁴⁴

Once a market is deemed suitable, the prospective bank sponsor must locate a parcel of land (if she does not already control one) and perform due

credit sales can fund ongoing monitoring and maintenance activities in addition to providing required financial assurances. See Mark Laska, *12 Steps to Successful Wetlands Mitigation Banking*, ENVTL. PROTECTION (Apr. 18, 2008), <https://eponline.com/Articles/2008/04/18/12-Steps-to-Successful-Wetlands-Mitigation-Banking> [<https://perma.cc/56C3-KBPQ>]. Moreover, bank sponsors can complete bank construction over various phases—receiving credits from the completed portions as they achieve performance standards—and then use proceeds from the sales of these initially released credits to fund construction of the bank’s subsequent phases. See HOOK & SHADLE, *supra* note 3, at 9.

¹³⁹ Compensatory Mitigation for Losses of Aquatic Resources; Final Rule, 73 Fed. Reg. 19,594, 19,682 (Apr. 10, 2008) (codified at 33 C.F.R. §§ 325, 332, and 40 C.F.R. § 230) (“The service area must be appropriately sized to ensure that the aquatic resources provided will effectively compensate for adverse environmental impacts across the entire service area.”).

¹⁴⁰ The HUC classification system divides the country into numeric drainage areas that become increasingly more specific and spatially narrow as digits are added. See Womble & Doyle, *supra* note 49, at 268–79. The most commonly used definition of a mitigation bank’s service area bank is an eight-digit HUC (HUC-8), a classification used by twenty-five of thirty-eight Corps districts. See *id.* at 281. Some Corps districts allow permittees to buy mitigation credits from so-called “secondary service areas”—generally adjacent HUC-6 or HUC-8 watersheds—if no credits are available in the immediate watershed. See *id.*

¹⁴¹ See HOOK & SHADLE, *supra* note 3, at 5.

¹⁴² For a more detailed discussion of determination of geographic service areas and implications for mitigation banking activity, see Womble & Doyle, *supra* note 49, at 268–79.

¹⁴³ See HOOK & SHADLE, *supra* note 3, at 13.

¹⁴⁴ See, e.g., *Mitigation Credit Price Report (MCPR)*, *supra* note 1 (offering paid access to a “Mitigation Credit Price Report” (MCPR) providing sales price records for wetland credits, among other types of compensatory mitigation credits, in various regions across the United States).

diligence to ensure the site is suitable for development of a wetland mitigation bank. Formerly drained or degraded wetlands often serve as effective sites for wetland restoration—such land generally has characteristics that can support wetland functions, and proven techniques utilized for wetland restoration projects generally have higher success rates compared to wetland creation and enhancement projects.¹⁴⁵ The amount of credits a bank receives is generally a function of the amount of ecological uplift the bank sponsor is able to create at the bank site.¹⁴⁶ The process of evaluating site suitability may involve engaging environmental consultants and engineers to perform an analysis of the existing and historic wetland classifications and of soil types to determine if a prospective mitigation project stands a significant chance of generating ecological uplift that will result in credits.¹⁴⁷

Under the Rule, a bank sponsor must generate a detailed mitigation plan that contains twelve fundamental components: “objectives; site selection criteria; site protection instruments (e.g., conservation easements); baseline information . . . ; credit determination methodology; mitigation work plan; maintenance plan; ecological performance standards; monitoring requirements; long-term management plan; adaptive management plan; and financial assurances.”¹⁴⁸ These mitigation plans generally involve detailed descriptions of the design and engineering work that will be required to construct the site—such as land-moving, planting, and building structures for habitat—and developing these plans generally requires the help of experts.¹⁴⁹ The plans then undergo rigorous evaluation by the Interagency

¹⁴⁵ See MITIGATION BANKING: THEORY AND PRACTICE 264 (Lindell L. Marsh et al. eds., 1996); see also *Wetland Mitigation Banks: An Option to Consider*, *supra* note 4 (“Historically, many wetlands have been drained through the installation of ditches and tiles and converted to farmlands. Such farmlands make ideal wetland mitigation banks because they are typically large enough to justify the effort, and hydrology can be restored to its natural state.”).

¹⁴⁶ See, e.g., WASH. CREDIT GUIDE, *supra* note 9, at 2 (“Credits are the trading medium that is used to represent the ecological gains at a bank site. The gains are typically considered in terms of the lift in functions for wetlands . . . that are expected to result from the types of activities implemented at the bank site.”).

¹⁴⁷ While expensive on-site inspections may be required, there is an increasing number of online resources in the form of geospatial tools that allow this analysis to be performed remotely and more cheaply. See, e.g., *Tools for Evaluating Feasibility of Restoration*, ENVTL. LAW INST., <https://www.eli.org/freshwater-ocean/tools-evaluating-feasibility-restoration> [<https://perma.cc/Z6TL-GTDK>] (listing several such tools).

¹⁴⁸ Compensatory Mitigation for Losses of Aquatic Resources; Final Rule, 73 Fed. Reg. 19,594, 19,616 (Apr. 10, 2008) (codified at 33 C.F.R. §§ 325, 332, and 40 C.F.R. § 230).

¹⁴⁹ Laska, *supra* note 138.

Review Team (IRT), a process that can take several years.¹⁵⁰ The IRT has the authority to negotiate the terms and grant final approval of the MBI.¹⁵¹

The MBI outlines, among other information, the number of credits a proposed bank site is eligible to generate, the performance standards the bank needs to meet before credits will be released to the bank for sale to developers, and the geographic service area for which credits generated by the bank can be sold.¹⁵² Performance standards typically include factors such as wetland hydrology and acreage, vegetation coverage and density, and wildlife habitat.¹⁵³ Guidance documents from some Corps district offices indicate that it typically takes ten to twelve years before all available credits are released to a bank.¹⁵⁴

Once the IRT-participating agencies sign the MBI, the bank sponsor performs the construction activity necessary to create the wetland site in accordance with the plan set forth in the MBI. Construction work often involves grading work such as moving soils and fill material, planting native species sourced from local seed stock, and building structures to create habitat for local wildlife.¹⁵⁵ After construction is complete, the bank sponsor must continue to maintain and monitor the site to ensure that it meets the ecological performance goals as defined in the MBI.¹⁵⁶ After the bank meets all performance criteria and receives and sells all available wetland credits, the bank sponsor must transfer the land, along with a long-term management fund, to a steward—often a nonprofit conservancy—which assumes responsibility for the long-term management of the bank site.¹⁵⁷

B. Sources of Risk

In addition to the significant costs, prospective bank sponsors face myriad risks in the successful implementation and operation of a wetland

¹⁵⁰ See Compensatory Mitigation for Losses of Aquatic Resources; Final Rule, 73 Fed. Reg. at 19,698; *supra* note 137 and accompanying text; see also HOOK & SHADLE, *supra* note 3, at 11.

¹⁵¹ See *supra* note 74 and accompanying text.

¹⁵² See Laska, *supra* note 138; Olsen, *supra* note 92, at 13.

¹⁵³ See WASH. CREDIT GUIDE, *supra* note 9, at 8. Credits may also be released to the bank as certain administrative hurdles are passed, such as the signing of the MBI itself, the recording of a conservation easement encumbering the land, and the posting of financial assurances. See *id.*

¹⁵⁴ See *id.* at 2.

¹⁵⁵ Laska, *supra* note 138.

¹⁵⁶ See generally Sherry Teresa, *Perpetual Stewardship Considerations for Compensatory Mitigation and Mitigation Banks*, 38 STETSON L. REV. 337 (2009) (describing the long-term stewardship responsibilities associated with mitigation banks and explaining that “[u]nder the new Mitigation Rules, all compensatory mitigation projects and banks must have a long-term funding mechanism to ensure minimal compliance with the long-term protection instrument and an annual reporting of the financial assurances and account balances”).

¹⁵⁷ See WASH. CREDIT GUIDE, *supra* note 9, at 9.

mitigation bank. These risks can be classified into four categories: legal, regulatory, performance, and market risks.

First, legal risks are those posed by potential changes to the Clean Water Act and its jurisdiction that could dismantle or significantly undermine the compensatory mitigation program overall. For instance, Congress could do away with or substantially alter the Section 404 permitting process so as to disallow off-site compensatory offsets for wetland impacts. Alternatively, Congress, the courts, or executive agencies could significantly narrow the jurisdictional reach of the “waters of the United States” under the CWA, thus drying up a significant amount of credit demand.¹⁵⁸ However, as the mitigation banking market matures and large investors enter the mitigation banking space, it may become less likely that such major policy changes will occur—one regulator even suggested that there likely will not be a rule change as dramatic as the Final Rule again.¹⁵⁹

Second, regulatory risks involve the possibility that a mitigation bank could face delays or underperformance due to the actions of the local Corps office or other members of the IRT in permitting or overseeing the bank. Bank sponsors may encounter delays in the permitting process due to the ongoing negotiation with IRT members.¹⁶⁰ These negotiations could result in a bank being awarded fewer credits, a slower credit release schedule, or a smaller geographic service area compared to what the bank sponsor initially anticipated when deciding to pursue the mitigation project.¹⁶¹ Moreover, not all Corps districts have fully implemented the Final Rule evenly—a 2013 report indicated that several Corps districts allow or prefer PRM or ILF alternatives to mitigation bank credits, or require a permittee purchasing credits from a mitigation bank to account for more compensatory mitigation acres per acre of wetland loss compared to using other options, making mitigation banking less attractive to the permittee.¹⁶² Such actions could weaken the demand for credits, thereby depressing the financial returns a bank sponsor receives on her investment in the mitigation bank.¹⁶³

Third, there are performance risks related to the achievement of the bank. The bank site itself may fail to develop the hydrological or biological functions as anticipated in the MBI, and natural disasters may cause damage

¹⁵⁸ See *supra* note 36 and accompanying text.

¹⁵⁹ See HOOK & SHADLE, *supra* note 3, at 13.

¹⁶⁰ See *id.* at 10–11.

¹⁶¹ See *id.* at 11.

¹⁶² See *id.* at 12.

¹⁶³ Notably, should a Corps district require a permittee to account for more compensatory mitigation when choosing the mitigation banking option, and the permittee proceeds with purchasing the credits over the PRM and ILF options, this could *increase* the demand for credits and could enhance the bank sponsor’s financial returns.

to the bank site, leading to delays in the achievement of performance standards.¹⁶⁴ There could also be failures in the design, construction, or project management of the bank site.¹⁶⁵ Such occurrences could result in a failure of the bank to receive credits on the timeline or of the volume initially anticipated, thus depressing financial returns.

Finally, market risks include the possibility that a bank sponsor will be unable to successfully market the credits to permittees or capture the credit prices she anticipated in funding the bank development project. The risk of credit prices deviating from expectations is one of the most significant risks a bank sponsor faces.¹⁶⁶ Deviations in credit price forecasts could be caused by changes in the local demand or supply of credits: worsening macroeconomic conditions could lead to a slowing of development activity, or a competing bank may open within the same watershed, resulting in unanticipated price competition for credits.¹⁶⁷ While this form of market risk is not unique to mitigation banking, the risk is magnified by the fact that there are fewer historical credit transactions off of which to base prices,¹⁶⁸ and, as will be discussed in the next Part, credit price information is generally opaque. Therefore, prospective bank sponsors often lack a clear understanding of the financial returns they could receive for establishing a mitigation bank in a geographic service area for which they lack first-hand knowledge of historical credit transactions.

While strategies exist for mitigating several of the risks described in this Section,¹⁶⁹ access to credit price information, which forms the basis for predicting revenues from credit sales, is critical for addressing market risk. For some large investors, a plausible solution for mitigating this risk would be to partner with active market participants¹⁷⁰ who have better access to

¹⁶⁴ See HOOK & SHADLE, *supra* note 3, at 16–17.

¹⁶⁵ See *id.* at 16.

¹⁶⁶ See *id.* at 13.

¹⁶⁷ As discussed in Section IV.B, *infra*, a prospective bank sponsor can research information about competing banks using the Corps's RIBITS database. However, the database can take up to twenty-four months to list information about new mitigation bank projects. See HOOK & SHADLE, *supra* note 3, at 14. This lapse in time contributes to the risk that a prospective bank sponsor could underestimate the competition for wetland credits in a given service area.

¹⁶⁸ See HOOK & SHADLE, *supra* note 3, at 14.

¹⁶⁹ See *id.* at 18 (summarizing risks to the bank sponsor and mitigants).

¹⁷⁰ An example would be the New Mexico Educational Retirement Board's capital commitments of over \$100 million to mitigation bank investment funds managed by Ecosystem Investment Partners (EIP) between 2008 and 2015. See *supra* note 99 and accompanying text. EIP is a leading private equity firm in the wetland mitigation banking space. *Aligning Ecological & Financial Returns*, ECOSYSTEM INV. PARTNERS, <https://ecosystempartners.com/about-our-environmental-investing-and-mitigation-credits> [https://perma.cc/GQ6K-FTJT]. EIP's website boasts 28,975 acres of wetland restoration experience as of 2018. *Id.*

market price information¹⁷¹—this strategy, along with the possibility for significant financial returns, could explain the substantial influx of institutional investment in the mitigation banking space in recent years.¹⁷² However, for some prospective bank sponsors who lack such sources of information, the uncertainty associated with credit prices may be so great that they may be dissuaded from entering the market altogether. The next Part discusses how public reporting of credit prices could reduce the market risk for prospective bank sponsors, thereby encouraging more market entry and leading to a more efficient market for wetland credits.

IV. THE IMPORTANCE OF CREDIT PRICE INFORMATION IN CREATING MORE EFFICIENT MARKETS FOR WETLAND CREDITS

Improvements can be made to the administration of the mitigation banking program so that prospective bank sponsors are able to make more informed investment decisions. Specifically, transparency of credit prices would reduce the uncertainty prospective bank sponsors face concerning entry into the mitigation banking market, which would encourage more market entry. Historical credit price information, however, is generally not reported; many prospective bank sponsors who lack requisite connections within the local market are forced to engage in cloak-and-dagger tactics to ascertain the information from existing banks operating within the service area—and even then, such information may be unreliable.¹⁷³ This Part first discusses the importance of access to credit price information and the deficiencies in how the Corps currently handles credit price information, and then argues that the Corps should collect and publish credit price information.

A. Credit Price Transparency and Market Entry

Credit prices send important signals to the market for wetland compensatory mitigation. Adam Davis, a conservation finance consultant,

¹⁷¹ See *supra* note 143 and accompanying text.

¹⁷² See *supra* notes 98–103 and accompanying text.

¹⁷³ Many mitigation banks do not publicly advertise the prices of their available credits. See, e.g., *Mitigation to Help Restore & Protect Louisiana's Wetlands*, CALCASIEU PINE SAVANNA WETLAND MITIGATION BANK, <http://calcasieubank.com> [<https://perma.cc/A6NV-65RV>] (advertising credits for a Louisiana mitigation bank owned and operated by EIP and providing contact information to purchase credits). Because an active mitigation bank would be unlikely to voluntarily divulge credit price information to a potential competitor, a prospective bank sponsor may have to falsely present herself to an existing mitigation bank as a potential developer (i.e., a purchaser of credits) in order to get a credit price quote. Moreover, without offering credible evidence that she is a potential developer, the prospective bank sponsor may receive inaccurate or misleading price information from the existing mitigation bank.

argues that for developers, the price of compensatory mitigation represents the true cost that the impact poses by depriving the local environment of the ecological functions the wetlands provide.¹⁷⁴ Using credit price information, developers can incorporate the cost of unavoidable impacts to wetlands into project economics to determine whether to move forward or to consider alternative sites.¹⁷⁵ Extrapolating from Davis's argument, a lower credit price could indicate that wetland resources within the watershed are abundant—perhaps because multiple mitigation banks with available credit are operating, and these sites have restored or created the desired ecological benefits—and the developer can proceed with the contemplated project less expensively. On the other hand, a higher credit price could indicate that wetland resources within the watershed are scarce, and the developer should consider relocating the project to a watershed where credit prices are lower.

Likewise, Davis argues that, from the perspective of a prospective bank sponsor, wetland credit prices offer information regarding the benefit that a unit of protection and restoration provides.¹⁷⁶ Following Davis's argument, a high credit price relative to the cost of restoration activity¹⁷⁷ indicates that the watershed is in need of a greater amount of restoration activity, thereby encouraging a prospective bank sponsor to proceed with the establishment of a bank site. A low credit price relative to restoration costs, on the other hand, indicates that the level of existing wetland protection is sufficient and that the prospective bank sponsor should seek a different geographic market in which to pursue the restoration activity.

This logic extends to landowners who are considering entering the mitigation banking market. For instance, consider a landowner of a large agricultural tract, a portion of which has soils that render it poor for agricultural production. The landowner may make decisions regarding land use based on credit price information. If prevailing prices for mitigation credits are high, the opportunity for the landowner to become a bank sponsor by converting the unproductive portion of the tract into a wetland mitigation bank site becomes more attractive. On the other hand, a lower credit price could indicate that the landowner should maintain that portion of the tract in agricultural production or should seek an alternative land use altogether. The

¹⁷⁴ See Adam I. Davis, *Ecosystem Services and the Value of Land*, 20 DUKE ENVTL. L. & POL'Y F. 339, 351 (2010). Davis is also a managing partner for Ecosystem Investment Partners, a private equity firm active in the mitigation banking space. *The Environmental Investment A-Team*, ECOSYSTEM INV. PARTNERS, <https://ecosystempartners.com/team> [<https://perma.cc/43HX-JH6Q>].

¹⁷⁵ See Davis, *supra* note 174, at 351.

¹⁷⁶ See *id.*

¹⁷⁷ For a discussion of the costs of creating a wetland mitigation bank site and generating credits, see *supra* Section III.A.

price allows the landowner to make a more informed decision regarding market entry.

Access to price information could allow for more productive negotiations amongst market participants. Using information of credit prices from different mitigation banks within a given area, developers could negotiate more effectively with existing bank sponsors. Additionally, this information would allow a prospective bank sponsor to “pre-sell” credits to developers with future anticipated credit needs; having such agreements in place would allow the prospective bank sponsor to plan bank development more effectively.¹⁷⁸

Aside from simply knowing the prevailing price, historical credit price information can be valuable to both developers and prospective bank sponsors to understand market trends. Historical prices could allow developers to perform more robust due diligence to understand in which markets development is becoming more or less expensive, which could be important in industries that feature phased development projects. Potential bank sponsors would be able to identify historical price trends of credits in specific regions and could use this information to construct more accurate predictions of future credit prices on which to base their own financial projections.

Historical price information does not determine future prices, and due to the time lag between permitting a bank and the sale of credits, bank sponsors would still be required to forecast future credit prices. Historical price information, however, still provides prospective bank sponsors with a valuable starting point for modeling financial returns, and therefore reduces some uncertainty associated with market entry. This encourages more market entry by prospective bank sponsors, particularly those who otherwise lack partnerships with established players. With more mitigation banks opening, a higher volume of available credits could further reduce market risk by making prices more predictable and less volatile.¹⁷⁹

B. Opacity of Credit Price Information

One of the peculiar features of the mitigation banking market is that, although understanding credit prices is essential to choosing an appropriate

¹⁷⁸ See HOOK & SHADLE, *supra* note 3, at 14 (“A mitigant to the risk of forecasting future prices incorrectly is to pre-sell credits in advance of project development and entitlement. As one regulator indicated, while such pre-selling occurs, regulators have no influence on the practice, as any risk of the bank failing entitlement that would thus negate any pre-sold credits, is borne by entrepreneurs and buyers of advance credits.”).

¹⁷⁹ See *supra* note 1 and accompanying text.

market for entry,¹⁸⁰ credit price information is incredibly difficult to ascertain for those not involved in or well-connected to the existing market. The primary resource that prospective bank sponsors use to research markets is the Corps's RIBITS database.¹⁸¹ Within RIBITS, prospective bank sponsors can locate existing banks sited within various watersheds, access their mitigation banking instruments (MBIs) and other permitting documents, analyze their existing credit supplies, and review their transaction histories.¹⁸² But one of the most important pieces of information relevant to prospective bank sponsors and developers is missing—the prices at which the existing banks sold their credits in the past.

A review of mitigation banking policies from Corps district offices demonstrates that price information is generally not even collected from bank sponsors within the existing reporting process. For instance, guidance from the Corps's Seattle District office lists information that bank sponsors must report when credits are sold.¹⁸³ This information includes the person or organization making the credit purchase, the location of impact, and the number of credits sold. Price information, however, is not collected. Instead, the guidance indicates that “[a]pplicants interested in purchasing credits should speak directly to the bank sponsor to determine credit price and sale process.”¹⁸⁴ An interagency coordination agreement from the Corps's Chicago District office requires that a bank sponsor complete and submit a credit sales form confirming each transaction made to qualified buyers of mitigation credits, and maintain an accurate ledger of available credits.¹⁸⁵ However, neither the form nor the ledger includes fields for reporting price information.¹⁸⁶

Because credit price information is neither collected nor published, only direct participants—that is, current sponsors of mitigation banks and permittees who purchased credits from them—generally know actual credit prices in a given service area.¹⁸⁷ As part of their due diligence efforts, prospective bank sponsors can rely on relationships with industry

¹⁸⁰ See *supra* Section IV.A.

¹⁸¹ See *RIBITS: Regulatory In-lieu Fee and Bank Information Tracking System*, U.S. ARMY CORPS OF ENG'RS, <https://ribits.usace.army.mil> [<https://perma.cc/AX9J-64A4>].

¹⁸² *Id.*

¹⁸³ See WASH. CREDIT GUIDE, *supra* note 9, at 13.

¹⁸⁴ See *id.* at 12.

¹⁸⁵ See U.S. ARMY CORPS OF ENG'RS, INTERAGENCY COORDINATION AGREEMENT ON MITIGATION BANKING WITHIN REGULATORY BOUNDARIES OF CHICAGO DISTRICT 19–20 (2008).

¹⁸⁶ See *id.* at 36–37.

¹⁸⁷ See HOOK & SHADLE, *supra* note 3, at 13.

participants,¹⁸⁸ a circumstance that naturally favors those who are already connected to the mitigation banking industry. Another option would be for a prospective bank sponsor to masquerade as a potential permittee and inquire about prices from an existing banker—however, unless a potential permittee puts forth sufficient evidence of being a credible buyer, an existing bank sponsor may be naturally incentivized to underquote the actual price to stave off potential competition. As a result, prospective bank sponsors who do not have industry connections often lack vital information needed to make an informed decision of whether to enter the market.

Because mitigation banking is an effective way of providing compensatory offsets for wetland impacts,¹⁸⁹ the Corps should encourage more participation in the mitigation banking market by collecting credit price information and publishing it. This information would encourage more market entry—particularly by prospective bank sponsors who lack connections to the market—and would lead to a deeper pool of active mitigation banks.¹⁹⁰

It is true that there are numerous other markets with opaque pricing for which no government entity collects and provides price information. However, two important characteristics make the market for wetland mitigation credits unique and underscore the desirability of increasing market transparency: (1) the government’s role in overseeing the market and the credit transactions, and (2) a market structure that stands to benefit from increased participation of landowners in diverse geographies.

First, the existence of the wetland mitigation banking market—in particular, the supply and demand of credits—is entirely the creation of wetland protection legislation and its implementing regulations.¹⁹¹ While laws and regulations give rise to other markets as well,¹⁹² the government has a unique hand in overseeing individual credit transactions, which are intended to satisfy Section 404 permitting requirements.¹⁹³ Because of the government’s unique role and its interest in administering the wetland mitigation banking regime, the government should play a greater role in improving market efficiency by collecting price information and publishing it.

¹⁸⁸ *See id.* (“Credits prices in the present can be estimated through due diligence efforts, such as relying on relationships with industry participants in a given region.”).

¹⁸⁹ *See supra* Part II.

¹⁹⁰ *See supra* Section IV.A.

¹⁹¹ *See supra* Part I.

¹⁹² To name just a few examples, criminal statutes give rise to markets for legal defense services, and the tax code creates demand for accounting services.

¹⁹³ *See supra* Part I; *see also infra* Section IV.C (discussing how the Final Rule requires bank sponsors to notify the Corps of credit transactions).

Second, the mitigation banking market, which becomes more efficient as the number of mitigation banks increases,¹⁹⁴ stands to benefit from participation by landowners in diverse geographies who, in the absence of mandatory price reporting, may lack access to price information. Many other opaque markets, such as markets for professional services (e.g., consulting, legal, and accounting work), are only realistically available for market entry by a relatively small number of highly sophisticated actors—there is thus a plausible economic argument that the ability to accurately determine market prices for such services is a proxy for the ability to perform the services themselves. In contrast, the mitigation banking market features geographic limitations on selling credits, and operation of a mitigation bank is inextricably tied to individual pieces of land. These market features make it particularly desirable that mitigation banking occurs in varied places by different landowners—many of whom may lack connections to active market participants with price information. Therefore, it is particularly important that price information is available to inform market entry by smaller, geographically dispersed players.

Some might argue that revealing credit price information would harm certain parties, and thus it should not be disclosed. For example, current mitigation banks may have made the decision to enter the market under the assumption that they would not have to reveal credit prices; by forcing them to disclose credit prices, these parties would likely face more price competition from parties entering the market. Consequently, falling credit prices may result in a lower return on investment than they initially anticipated.¹⁹⁵ However, because it would likely take bank sponsors entering the market several years to operationalize new mitigation banks,¹⁹⁶ existing bank sponsors would continue to enjoy a relatively undisturbed market for credits for some time.

C. Regulatory Authority and Burden

In order for credit price information to be made available to the public, local Corps districts overseeing mitigation banks would have to begin collecting such information from bank sponsors. This would be permissible under the current law and regulations, as neither the text of Section 404 of the CWA nor the language of the 2008 Final Rule precludes the collection and reporting of credit prices. First, Section 404 references “all the

¹⁹⁴ See *supra* Section II.B.

¹⁹⁵ In fact, the presence of industry groups advocating on behalf of bank sponsors—and the influence these groups exert on the regulatory community—could plausibly explain why the market has remained rather opaque with respect to credit price information.

¹⁹⁶ See *supra* note 150 and accompanying text.

information required to complete an application for a permit,” but does not provide any details as to what information is required.¹⁹⁷ Instead, the statute leaves permitting conditions subject to “guidelines developed by the Administrator [of the EPA], in conjunction with the Secretary [of the Army, acting through the Chief of the Corps].”¹⁹⁸ In other words, the statute leaves conditions of receiving a permit, including the information that must be reported, to the discretion of the EPA and the Corps. Notably, while they do have the discretion, either the EPA or the Corps would need to actively exercise it—possibly against the will of the existing market players and lobbying interests—to begin collecting such information.

The Final Rule lays out basic reporting requirements for mitigation banks that may be heightened by individual Corps districts. The Rule requires that “[e]ach time an approved credit transaction occurs, the sponsor must notify the district engineer.”¹⁹⁹ The Rule also requires bank sponsors to maintain and submit to the district engineer an annual ledger showing the balance of available credits and all additions and subtractions of credits.²⁰⁰ Additionally, the Rule notes that it “addresses the minimum requirements for ledgers,” and that “[d]istrict engineers can develop ledger templates for use in their districts.”²⁰¹ Since the Rule only lays out the minimum requirements, credit price information could be included.

In summary, nothing in the language of Section 404 or the Final Rule would prohibit individual Corps district offices from requiring bank sponsors to report credit prices at the time of the transaction, along with the notification already required by the Rule. Alternatively, the Corps district offices could require that prices be incorporated into the annual ledger, as the Rule leaves it to the discretion of district engineers to develop the ledger template. At the same time, the Rule does not provide any language that would make the collection and reporting of credit price information mandatory across Corps districts. Without an amendment to the Rule,²⁰² it would be left up to the individual Corps district offices to determine whether to require this information from bank sponsors by inserting price reporting requirements into MBIs.

¹⁹⁷ 33 U.S.C. § 1344(a) (2012).

¹⁹⁸ *Id.* § 1344(b).

¹⁹⁹ Compensatory Mitigation for Losses of Aquatic Resources; Final Rule, 73 Fed. Reg. 19,594, 19,686 (Apr. 10, 2008) (codified at 33 C.F.R. §§ 325, 332, and 40 C.F.R. § 230).

²⁰⁰ *Id.*

²⁰¹ *Id.* at 19,663.

²⁰² Such an amendment would require a public notice and comment period under the Administrative Procedure Act. *See* 5 U.S.C. § 553 (2012).

Some may be concerned about the burden that the collection of credit prices would impose on local Corps districts. After all, local Corps districts have been characterized as “grossly understaffed.”²⁰³ As previously noted, however, bank sponsors are already required to submit notification of all credit sales to the Corps and maintain annual ledgers with accounting information to be made available to the IRT.²⁰⁴ The forms and ledgers associated with these reporting functions could simply be amended to add fields for credit prices. Moreover, the Corps already has a robust reporting platform in the RIBITS database,²⁰⁵ allowing users access to the complete transaction history for mitigation banks across the country. The information in the database could be modified to provide users with historical information about credits both for individual banks and in the aggregate across watersheds. Overall, it stands to reason that there would be only incremental, if any, administrative burden to collect credit price information from bank sponsors and to publish this information going forward.

CONCLUSION

Mitigation banking represents an innovative solution to the complex problem of how we allow for beneficial economic development while also protecting the ecological value that wetlands provide. Rooted in the idea that environmental markets can improve social outcomes, the mitigation banking program would enjoy greater efficiency and more market participation if the U.S. Army Corps of Engineers made reporting credit prices mandatory and made the information available to the public. The benefits of this market efficiency accrue exponentially because, with greater market participation and a wider array of mitigation banks offering credits, the Corps can be more selective in determining which credits satisfy offset requirements based on the type and functionality of the impacted wetlands. This change would improve outcomes not only for entrepreneurs who seek profitable investment opportunities and developers who aim to purchase wetland credits, but also for environmentalists and others who look to the Corps and other regulatory agencies for the implementation of the nation’s wetland protection laws.

²⁰³ Letter from Laura Hendricks, Director, Coalition to Protect Puget Sound and Puget Sound Habitat, to Karen Urelius, U.S. Army Corps of Eng’rs (Aug. 18, 2016), <http://www.nws.usace.army.mil/Portals/27/docs/regulatory/160913-Comments%20Received%20on%20NWS%20Proposed%20Regional%20Conditions%20for%202017%20NWPs/Coalition%20to%20Protect%20Puget%20Sound/Coalition%20to%20Protect%20Puget%20Sound.pdf> [https://perma.cc/63FW-E3UC] (commenting on the Corps’s operation of a permitting program for shellfish aquaculture).

²⁰⁴ See *supra* notes 195–201 and accompanying text.

²⁰⁵ See *supra* notes 181–82 and accompanying text.

