

Compensatory Mitigation on Federal Lands

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Summary

As compensatory wetland and stream mitigation expands, particularly in the western United States, the availability and prominence of federal lands will become increasingly relevant in affecting the execution of mitigation. Moreover, as land management agencies face constrained economic conditions there will be growing interest in alternative forms of revenue and sources of money for restoration. Thus, it is realistic to expect the question of compensatory mitigation on federal lands to become increasingly relevant across land management and regulatory agencies. This raises the question: if federal land management agencies are going to create policies to formalize mitigation on their lands, what major considerations do they need to take into account, and what alternatives need to be acknowledged?

This report represents an examination of compensatory mitigation of aquatic resources (i.e., streams and wetlands) on U.S. federal lands through an examination of case studies and a review of the legal landscape in which such mitigation takes place. While the authors neither promote nor discourage mitigation on federal lands at this time, we do present a series of considerations and recommendations that should be taken into account as federal agencies begin formalizing policies regarding compensatory mitigation on their lands. While our review of existing federal lands mitigation projects was not comprehensive, it draws on learnings from significant cases that were highlighted by individuals deeply involved in these processes—federal agency members, nonprofit employees, and private mitigation bankers. Some of the issues identified with compensatory mitigation on federal lands drawn from case studies presented here may represent outliers, but are nevertheless important to emphasize so that, as policies for these processes are institutionalized, such issues can be addressed accordingly.

Key Findings from Case Studies

Finding 1. Federal agencies are moving toward formalizing compensatory mitigation on federal lands for impacts that occur both on federal and private lands.

Finding 2. Additionality criteria for compensatory mitigation on federal lands are not always fully considered by resource management agencies

Finding 3. Durability for compensatory mitigation on federal lands may not be consistently implemented to its full extent through federal lands planning and use laws.

Finding 4. Full costs for compensatory mitigation are often not being recovered by federal agencies when federal lands are used for compensatory mitigation.

Finding 5. For impacts to private lands, differences between federal land and private land-based compensatory mitigation, as currently practiced, may undermine private land-based compensatory mitigation and reduce its prevalence in regions where federal land use for compensatory mitigation becomes more common.

Finding 6. There are no commercial or private mitigation banks which use federal land-based compensatory mitigation to offset impacts which occur on private lands.

Policy Considerations and Recommendations

Recommendation 1. Compensatory mitigation projects on federal lands should aim to provide the greatest environmental benefit possible and limit risks that these benefits will be lost over time, as is required for private lands. To do this, federal land management agencies need to clarify how additionality and durability requirements are managed for compensatory mitigation projects taking place on federal lands.

Recommendation 2. Federal land management agencies should ensure goals of the 2008 Mitigation Rule are achieved by requiring to the maximum extent possible that mitigation on their lands occurs in advance of or concurrent with impacts.

Recommendation 3. Federal resource agencies should aim to recover the full value of their lands as well as their monitoring and maintenance costs, so that they can support additional restoration of aquatic habitats and reduce risks of restoration failure. There are limits to agency authority for capturing revenue directly, but compensation ratios may provide a path forward to address land value, and third-party organizations may be a method for managing funds for monitoring and maintenance costs. Recovering the full costs for mitigation would limit any unintentional subsidy of aquatic resource impacts by taxpayers.

Recommendation 4. To meet equivalency requirements, federal lands should set comparable requirements for private, nonprofit, and public sponsors to engage in compensatory mitigation on federal lands.

INTRODUCTION

Compensatory Mitigation

When designing construction and development projects it can be difficult to avoid impacts to natural resources because of the overlapping spatial distribution of resources and development activities (e.g., oil/gas or minerals deposits). Ideally, development activities would avoid impacts to natural resources, particularly for critical natural resources such as wetlands or rare species habitat. However, rather than prohibiting resource-impacting development altogether, the federal government allows developers to *mitigate* their resource impacts. Mitigation policy typically follows the mitigation hierarchy, where project developers must first avoid and minimize impacts, and then compensate for unavoidable impacts (40 CFR 1508.20). *Compensatory mitigation* is defined as an action that results in the restoration, establishment, enhancement, and/or preservation of resources in order to address a residual impact to a resource elsewhere (3 CFR part 332.2/40 CFR 230.92). There are a variety of mechanisms for accomplishing wetland and stream compensatory mitigation (Box 1) including Permittee Responsible Mitigation (PRM), Mitigation Banks, and In Lieu Fee (ILF) Programs; we refer to these generally as “compensatory mitigation” or “mitigation” recognizing that there are important differences (distinctions are articulated more fully in Doyle, 2019).

Compensatory mitigation for aquatic resources—most notably wetlands and streams—has become a relatively common practice, used to address impacts to aquatic resources regulated under the Clean Water Act; this is typically referred to as “wetlands mitigation.” Because of the prevalence and widespread geography of wetlands mitigation across the entire United States, a federal rule was promulgated

Box 1. Compensatory Mitigation Mechanisms

There are a variety of different forms compensatory mitigation can take, all of which are possible on federal lands. They differ in the sponsor of the mitigation, who holds the liability, how the mitigation project is funded.

Permittee Responsible Mitigation (PRM)/Land-User Responsible Compensatory Mitigation—mitigation is paid for and liability is held for the purpose of compensating for residual effects to resources from the permittee’s impacts.

Mitigation Banks—an arrangement where a third party who will hold liability takes actions to restore, establish, enhance, and/or preserve resources in a defined geographic area for the purpose of eventually compensating for resource impacts elsewhere by others. Banks generate credits that can be sold to permittees that make impacts to natural resources. Mitigation banks allow mitigation to be put in place in advance of impacts.

In Lieu Fee (ILF) Mitigation/Mitigation Fund—an arrangement where compensatory mitigation actions are conducted in a defined geographic area by pooling funds from single or multiple permittees, for the purpose of compensating for residual effects to resources. In general, a mitigation fund’s responsible party accepts funds for compensatory mitigation from permittees, whose obligation to provide compensatory mitigation is then transferred to the mitigation fund’s responsible party (which is responsible for securing that mitigation obligation on the ground). Importantly, ILF programs cannot be sponsored or administered by the private sector; they must be sponsored by a local/state government agency or an NGO.

in 2008 (the “2008 Mitigation Rule”) by the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency that provides a regulatory framework for compensatory mitigation. While the 2008 rule provides fairly comprehensive guidance for robust compensatory mitigation, it allows for significant agency discretion in matters concerning compensatory mitigation on public lands. This has led to variability in policies across jurisdictions as well as inconsistent implementation strategies which are mostly determined by districts and interagency review teams (IRTs). There is therefore significant need for additional guidance and policy from resource agencies that will reduce existing ambiguity.

Impacts to wetlands and streams occur on both public and private land, although these impacts to date have been substantially on private land. Likewise, compensatory mitigation can, and has, occurred on both public and private land, although most mitigation has been sited on private lands to date. When compensatory mitigation has occurred on public lands, it has been on both federal (e.g., national parks, national forests, Department of Defense (DOD) lands) and nonfederal public lands (e.g., municipal or county parks, public university campuses); this paper addresses issues mainly pertinent to federal lands mitigation policy and practice.

Land Availability for Compensatory Mitigation and Role of Public Agencies

Compensatory mitigation must occur within some approved geographic area so as to ensure that the impacts are appropriately offset by the restoration or conservation activity. Under current rules for wetlands and streams, all program types must use a watershed approach for compensation (33 CFR 332.3(c)(1)). For banks and ILF programs, mitigation must occur within a predetermined Geographic Service Area, which is typically set as the watershed within which the impacts occurred, or in an adjacent watershed. The intent is for there to be geographic proximity and thus functional similarity between the impacted and compensation sites (Womble and Doyle 2012). Land is needed for the compensation site and affiliated restoration activities in most cases, and this land must typically have some type of conservation easement or long-term protection mechanism, which constrains its future use so as to not undermine the restoration that occurred as part of the compensatory mitigation project. In some cases, the easement restricts most types of uses or development opportunities in perpetuity, while in others, the land can be used for only a small set of activities that are conducive to ecological functionality (e.g., specific types of hunting or fishing).

Thus, a constraint for any compensatory mitigation project is the availability of land with owners amenable to constrained future uses. To date most compensatory aquatic resource mitigation has occurred on private lands. However, for some geographies, private land availability can be constraining. Most notably, in some regions of the western U.S., much of the land is publicly owned, whether by the federal, state, or local government. And, in dense urban areas, there can be very limited undeveloped private land available for mitigation, making the limited land available prohibitively expensive for siting a mitigation project. In either case, mitigation projects must either use public lands for their project sites or constrain their projects to the very limited private land options, which come at much higher costs based on availability limitations. Development and construction impacts can also occur on federal lands, and in these cases, land managers typically use adjacent federal lands to implement compensatory mitigation projects.

To date, there is not a clear standard for how compensatory mitigation projects on federal lands should occur, nor clear policies for how, or whether, to treat mitigation projects on federal lands differently from those occurring on private lands. Federal land management agencies will be increasingly faced with decisions related to how to engage with compensatory mitigation. Their decisions will, of course, affect their own land and associated resources, and must thus be consistent with their own agency missions, mandates, and goals. However, compensatory mitigation also affects private land development (i.e., permittees in search of low-cost compensatory mitigation) and compensatory mitigation participants—those organizations (private, public, or NGO) engaged in conservation activities and thus in search of available land for siting projects. Thus, the policies and practices of land management agencies have far-reaching implications for the compensatory mitigation industry and practice writ large.

Scope and Process of Study

This paper explores the rationale and legal authorities for compensatory mitigation on federal lands with particular consideration of how federal agency decisions can affect the health of our nation's aquatic systems. We also touch on implications for compensatory mitigation objectives given the potential for a reduced cost of aquatic impacts on private lands and the potential reduction in additional protection for aquatic habitats.

We first explore the rationale for using federal lands as potential sites for compensatory mitigation, including what the authorities explicitly allow, and what flexibility exists in application. We also consider critical functional features of mitigation such as *additionality* and *durability*, which can affect the environmental risks and benefits achieved.

In addition to reviewing the rationale and the legal background associated with compensatory mitigation on federal lands, we draw heavily from a number of case studies that demonstrate common issues and considerations for mitigation on federal lands. We conducted a series of 16 interviews with 19 interviewees, as some interviews were with multiple participants. These included people working in the private mitigation banking sector (5), federal agency representatives (13), and an NGO employee (1) who work on public lands mitigation issues. The majority of interviews were conducted over the phone, however a few interview subjects preferred to answer a set of written questions via email. We identified interview subjects using a snowball technique, identifying key informants and asking for suggestions of additional sources of information.¹ In some cases, these interviews were conducted regarding a specific case study, but in others, interviewees were asked about federal-lands mitigation more generally. Appendix B and Table 2 (see below) supply details on case study mitigation projects, but common themes and interesting findings extracted from cases and interviews are included as part of our analysis in the report. In some cases, there is a distinction between perceptions of the mitigation landscape and reality of what is legal or possible based on existing law and policy. Some interview content summarized here represents perceptions of the mitigation situation by individuals interviewed; we include descriptions of those perceptions, as they are important to consider when creating guidance for conducting compensatory mitigation on federal lands.

¹ It should be noted that report authors M.D., T.B., and L.O. have been working on stream and wetland mitigation issues for many years, and thus had knowledge of a first round of key informants for pursuing the question of mitigation on federal lands.

Finally, we include policy considerations and recommendations for federal agencies as they consider moving forward with compensatory mitigation on federal lands.

RATIONALE FOR COMPENSATORY MITIGATION ON FEDERAL LANDS

There are several reasons why federal agencies might accept compensatory mitigation occurring on their lands. These include:

- (1) From the perspective of land management agencies—increased potential for restoration on public lands
- (2) From the perspective of regulatory agencies—avoiding unpermitted impacts due to limited availability of private land

Increased Potential for Restoration on Public Lands

There are a number of reasons for using federal lands as sites for mitigation. From the land management agency perspective, compensatory mitigation provides ecosystem restoration that may not be available otherwise, particularly given the backlog of deferred maintenance by federal agencies; the Federal Land Management Agencies had a combined deferred maintenance backlog of around \$18.5 billion for FY2017 (Table 1; Hoover 2019). With such a backlog for basic maintenance (much of Table 1 is for roads, trails, and bridges), there is limited opportunity for direct funding for restoration of streams and wetlands on federal lands. Similarly, in the wake of Hurricane Katrina, there is a significant need for restoring coastal wetlands of southern Louisiana including lands managed by the Fish and Wildlife Service (FWS) like National Wildlife Refuges (NWR), yet resources are limited for such work. The majority of the case studies we reviewed (in Appendix B) discuss restoration work on federal lands that only occurred because mitigation funding was available.

Table 1. Deferred Maintenance Backlog by Agency FY2017

Agency	Backlog (\$)
National Park Service (NPS)	\$11.2 billion
U.S. Fish & Wildlife Service (FWS)	\$1.4 billion
Bureau of Land Management (BLM)	\$0.8 billion
U.S. Forest Service (FS)	\$5.0 billion

Source: Hoover (2019).

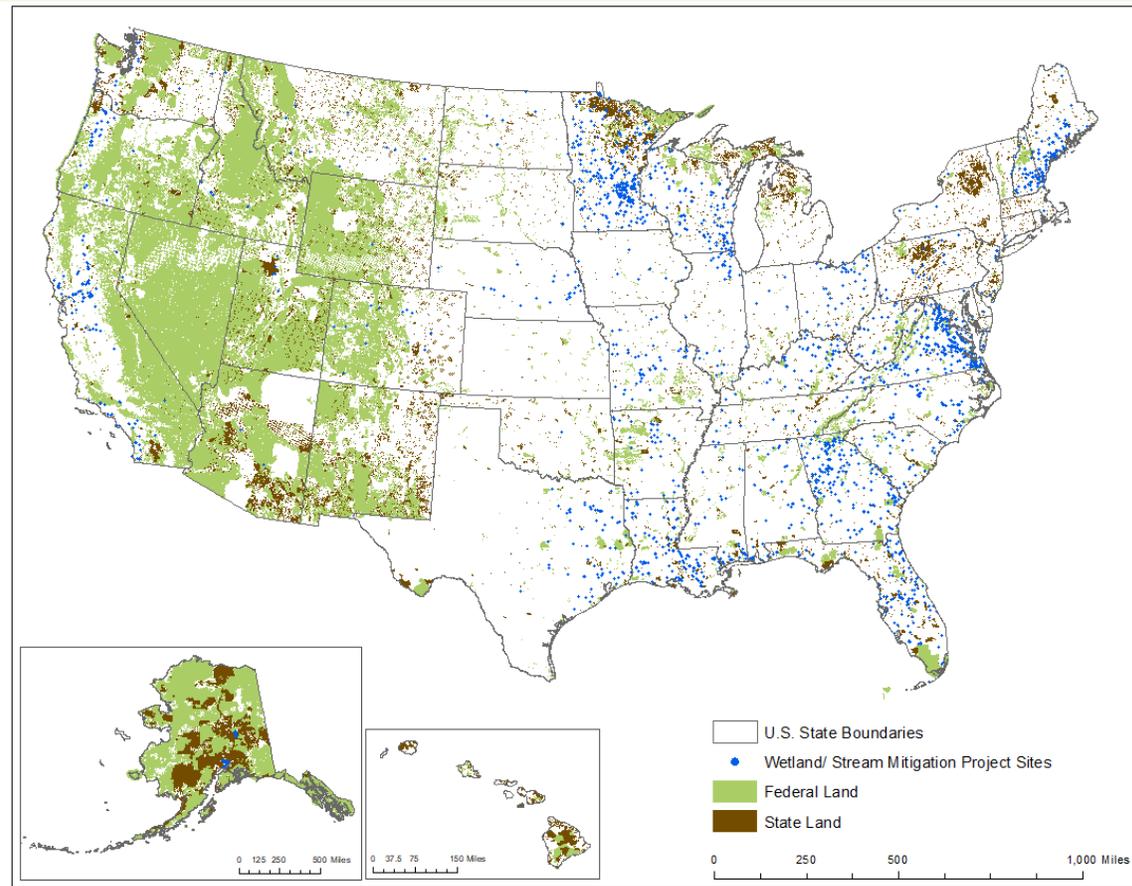
When impacts occur on federal lands—and are also compensated through restoration projects on federal lands—agencies appear to implement the restoration projects themselves, but sometimes on federal lands managed by other agencies (e.g., Big Branch NWR and Superior National Forest; Appendix B.1 and B.6). However, if federal lands are used for compensatory mitigation of impacts that occurred due to development on nonfederal land, then an outside, nonfederal organization would finance the restoration project, thus alleviating some, or even all, of the needs for federal funding of restoration projects. These outside organizations can, in theory, be private mitigation

bankers, nonprofit organizations, or individual permittees (often conducted by third-party private sector firms). However, based on our review of available information, case studies, and interviews, we found no examples of a private commercial mitigation bank on federal lands, to date; however, the NPS is currently working to pilot such a mitigation bank. Restoring streams and wetlands on federal lands for compensatory mitigation creates an opportunity for private capital to finance restoration of ecosystems on federal lands, and thus restore ecosystems that might not otherwise be restored in the foreseeable future given the lack of federal funding for such work. In this sense, compensatory mitigation using federal lands could be considered a public-private-partnership (or public-NGO partnership if via an In-Lieu Fee program).

Avoiding Unpermitted Impacts Due To Limited Availability of Private Land

An additional driver for mitigation on federal lands is to avoid unpermitted impacts or poor performing compensation by providing an alternative when there is very limited private land available in the area for restoration. Experience shows that limited land for mitigation can lead to flawed mitigation projects (Robertson 2006; BenDor et al. 2007; Robertson and Hayden 2008). Restoration in the western US raises this issue because of the ubiquity of public lands (federal and state managed lands) and the commensurate lack of private lands (e.g., 80% of Nevada is federal land; 63% of Utah, and 62% of Idaho belong to the five major federal land agencies as of 2015 (Vincent et al. 2017)). For mitigation to be practicable in such landscapes, it is possible (or even likely) that some use of federal lands will be needed for economic or availability issues. For example, Appendix B.1 discusses a case where the Army Corps chose to place mitigation on a National Wildlife Refuge, despite their existing, stated preference for mitigating on private lands, because the agency could not identify private parcels large enough to meet their mitigation needs.

Densely populated and highly developed urban and suburban landscapes present similar challenges. In highly developed landscapes, identifying restoration opportunities can be either difficult or prohibitively expensive. Stream and wetland restoration, for example, requires buffers surrounding the project. This means that any restoration project for mitigation will require land that can meet regulatory requirements (e.g., no buildings, conservation easements). While urban or suburban riparian landowners may be amenable to their stream being restored, they may not be as amenable to removing structures, modifying land use, or providing permanent conservation easements for buffers, which encumbers future land use (and thus reduces potential land value). When multiplied by a large number of landowners along streams or around wetlands, the problem is multiplied many times over, as a mitigation project developer would need to negotiate with each relevant landowner for the necessary easements. Federal lands present an unusual opportunity requiring negotiation with only a single landowner (federal agency), as well as ecosystems that may be degraded but have readily available buffer areas for easements due to the relatively limited development activities on public lands compared to private lands.



Box 2. Public Lands in the United States and Locations of Stream and Wetland Mitigation Projects

Federal and state lands are extensive in the U.S., especially in the American West (including Alaska and Hawaii). These lands present opportunities for stream and wetland mitigation projects, especially where public lands are not widely available. Existing stream and wetland mitigation bank and ILF projects are shown, according to 2015 RIBITS data—these projects are currently concentrated on private lands. [PRM sites are not included in this data.]

The federal government owns roughly 640 million acres of land (28% of the U.S.). The largest federal land owners are:

- Bureau of Land Management (BLM): 248.3 million acres
- Fish and Wildlife Service (FWS): 89.1 million acres
- National Parks Service (NPS): 79.8 million acres
- Forest Service (FS): 192.9 million acres

Data Sources: PAD US, EnviroAtlas, Vincent et al. (2017).

LEGAL AUTHORITY FOR COMPENSATORY MITIGATION ON FEDERAL LANDS

In order for compensatory mitigation to occur on federal lands, a federal agency must have legal authorization to allow such activities to occur; this raises the question of how compensatory mitigation can make use of federal lands regardless of the project sponsor. There are also more general questions as to how federal lands can be used by private entities. To answer these and related questions, we review the legal and regulatory context for compensatory mitigation and the use of federal lands.

Consideration of Federal Lands in 2008 Mitigation Rule

The 2008 Mitigation Rule explicitly permits compensatory mitigation on public lands.² According to the section of the 2008 Mitigation Rule that discusses legal instruments for protecting restoration sites (“Long-Term Protection Provision”), **compensatory mitigation project** “must be provided long-term protection through real estate **instruments** or *other available mechanisms, as appropriate.*”³ The Long-Term Protection Provision adds that “[f]or government property, long-term protection *may* be provided through federal facility management plans or integrated natural resources management plans [emphasis added].”⁴ As the Long-Term Protection Provision later clarifies, “government property” includes “compensatory mitigation projects on public lands.”⁵ Note that the 2008 Mitigation Rule discusses “long-term” protection and not “permanent” or “perpetual” protection.

The use of “long-term” language is especially salient in relation to protective legal instruments: When a compensatory mitigation project occurs on private lands, several real-estate instruments could be applied to ensure protection of the site such as conservation easements, title transfers, and restrictive covenants.⁶ Such legal protections are unavailable for projects occurring on public lands (Wood and Martin 2016).⁷ To guarantee durable management of compensatory mitigation sites on federal lands, the Long-Term Protection Provision suggests the alternative of including protective language in federal facility management plans (“FMPs”) or integrated natural resources management plans (“INRMPs”). FMPs are plans created by a federal agency that “identifies lands that are to be conserved and suitable uses of those lands. The plan is periodically reviewed and may be revised” (e.g., a forest management plan) (USACE 2017). INRMPs are conservation and rehabilitation plans prepared by the DOD for natural resources on military installations.

The language of the Long-Term Protection Provision states that protection on public lands “may” be provided through FMPs and IRMPs, but that “*other available mechanisms,*” could be used “*as appropriate.*” The Corps recognizes an additional legal instrument that may be used in compensatory mitigation on public lands—the Conservation Land Use Agreement (“CLUA”).

² See 33 C.F.R. § 332.3 (a)(3) “Compensatory mitigation projects may be sited on public or private lands.”

³ 33 C.F.R. § 332.7(a)(1)

⁴ 33 C.F.R. § 332.7(a)(1)

⁵ 33 C.F.R. § 332.7(a)(4)

⁶ 33 C.F.R. § 332.7(a)(1).

⁷ Wood and Martin (2016) at 9 (noting that “Federal agencies including the Department of Defense, the U.S. Forest Service, and Bureau of Land Management are typically precluded by law from recording easements or restrictive covenants on their lands.”)

CLUAs are “agreements to conserve property while allowing certain compatible uses but restricting other uses that are incompatible with compensatory mitigation” (Wood and Martin 2016, p. 9).⁸ Other mechanisms that may play a short term role as part of the overall mechanism used to provide layers of legal protection include special use authorizations, leases, permits, licenses, right-of-way authorizations, etc.

According to the 2008 Mitigation Rule, when changes in statute, policy, or regulation result in incompatible uses that may harm a protected compensatory mitigation site, the public agency responsible for the site must provide alternative compensation.⁹ To account for the temporal loss of ecosystem services and the impacts to mature or maturing resources, the Corps usually requires that impacts to compensatory mitigation be compensated at a higher mitigation ratio than 1:1 (The Nature Conservancy, 2014, p. 12). Sufficient compensation is required to offset permitted losses, and additional compensation may be required to address temporal losses or impacts to high quality resources. For example, the Corps may require three times as much new habitat be restored for every one unit impacted (a 3:1 ratio)

The Additionality Requirement

The 2008 Mitigation Rule determines that “[c]redits for compensatory mitigation projects on public land must be based solely on aquatic resource functions provided by the compensatory mitigation project, *over and above* those provided by public programs already planned or in place [emphasis added].”¹⁰ Thus, before approving a compensatory mitigation project on public lands, the Corps must verify that the area was not pre-designated for restoration using funds and programs other than compensatory mitigation subject to Section 404.

Environmentally Preferable Options

When evaluating available compensatory mitigation options, the Corps must consider what option would be environmentally preferable. This determination must be based on “the likelihood for ecological success and sustainability, the location of the compensation site relative to the impact site and their significance within the watershed, and the costs of the compensatory mitigation project.”¹¹ “Ecological success and sustainability” could be read to include better prospects for *permanent* protection. Therefore, the Corps *might* have legal grounds for preferring mitigation on private lands over public lands when private mitigation is available. Moreover, even if the Corps does not read “ecological success and sustainability” as creating a preference for permanent protection, such an interpretation could be advanced by environmental NGOs in courts. Federal agencies should therefore be aware of the potential risk of litigation associated with a narrow reading of “ecological success and sustainability.”

⁸ It could be argued that because the sole mission of the NPS is conservation, the agency is exempted from providing long-term guarantees for protection of compensatory mitigation sites. This issue is discussed at length below.

⁹ 33 C.F.R. § 332.7(a)(4).

¹⁰ 33 C.F.R. § 332.3(a)(3)

¹¹ 33 C.F.R. § 332.3(a)(1)

Legal Authorities for Hosting Mitigation on Federal Lands

Authorities for the U.S. Forest Service

The Organic Administration Act of 1897 (OAA)¹² entrusts the Forest Service with authority to “make such rules and regulations” as necessary to regulate the “occupancy and use” of the national forests and to preserve them from destruction.¹³ According to the OAA, the Forest Service must manage national forests as to guarantee, “favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States” (“USFS General Purpose”).¹⁴ The Multiple–Use Sustained–Yield Act of 1960 (MUSYA)¹⁵ adds “outdoor recreation, range, timber, watershed, and wildlife and fish purposes” to the list of Forest Service management objectives with a clarification that these objectives are “supplemental to, but not in derogation of [USFS General Purpose].”¹⁶ The National Forest Management Act of 1976 (NFMA)¹⁷ incorporates MUSYA’s management framework while reiterating Congress’ commitment to the continued provision of “watershed,” “wildlife,” and “fish” services by the National Forest system.¹⁸

The NFMA also recognizes the “fundamental need to protect and, where appropriate, improve the quality of soil, water, and air resources.”¹⁹ This commitment receives practical support in NFMA’s provisions requiring the Forest Service to ensure that timber harvested from National Forests only where “soil, slope, or other watershed conditions will not be irreversibly damaged.”²⁰ The NFMA also provides for protection to waterbodies from degradation, sedimentation, and other forms of impairment.²¹

The administrative regulations implementing the NFMA provide that Forest Plans must have the “capacity to provide people and communities with ecosystem services and multiple uses that provide a range of social, economic, and ecological benefits ... includ[ing] clean air and water; habitat for fish, wildlife, and plant communities.”²² Courts have consistently held that the Forest Service has broad authority to manage Forest Service lands for a variety of purposes the Forest Service deems proper to meet the multiple use mandate and the OAA objectives, with hardly any “concrete limits” on its discretion.²³ The Forest Service therefore has clear legislative and executive authority to engage in site-specific mitigation projects for the continued provision of water, wildlife, and fish outputs, including restoration and enhancement of these and other ecosystem services.

¹² 16 U.S.C. § 475.

¹³ 16 U.S.C. § 551.

¹⁴ 16 U.S.C. § 475.

¹⁵ 16 U.S.C. §§ 528 et seq.

¹⁶ 16 U.S.C.A. § 528.

¹⁷ 16 U.S.C. § 1604(a)

¹⁸ 16 U.S.C. §§ 1604(e)(1), 1604(g)(3)(A), 1604(g)(3)(F)(v), 1607, and see specifically § 1604(m)(2) discussing “wildlife habitat.”

¹⁹ 16 U.S.C. § 1602.

²⁰ 16 U.S.C. § 1604(g)(3)(E)(i).

²¹ 16 U.S.C. § 1604(g)(3)(E)(iii).

²² 36 C.F.R. § 219.1(c).

²³ *Wyoming v. U.S. Dep’t of Agric.*, 661 F.3d 1209, 1235 (10th Cir. 2011) (and references therein).

When the permittee is a third party, restoration and related activities will require the issuance of a special use permit.²⁴ Forest Service regulations determine that any use or occupancy of National Forest System lands, improvements, and resources, require a special use permit.²⁵ The regulations governing special use permits discuss fourteen legislative authorities for uses that would be permissible under a special use permit. The most pertinent authority for issuing special use permits concerning compensatory mitigation is that granted under the OAA. According to 36 C.F.R. § 251.53(a), the Forest Service may issue permits “governing occupancy and use” under Section 551 of the OAA.²⁶ The language of section 551 of the OAA confers general authority on the Secretary of Agriculture to make rules and regulations to ensure the objects of the National Forest System, “namely, to regulate their occupancy and use and to preserve the forests thereon from destruction.”²⁷ Courts have construed this language as providing broad discretion “to issue revocable permits for *all* purposes”²⁸ and regulate the national forests, “including for conservation purposes.”²⁹ The Forest Service therefore has authority to issue special use permits to third party permittees to engage in compensatory mitigation activities on Forest Service lands pursuant to the OAA.³⁰

As further discussed below, any activity or legal instrument related to National Forests must be consistent with the Forest Plan in place. Thus, special use permits issued pursuant to 36 C.F.R. § 251.53 must comply with the pertinent Forest Plan provisions providing long-term protection to compensatory mitigation projects.³¹ Moreover, the broad discretion provided to the Forest Service under the OAA extends not only to the promulgation of regulations concerning issuance of use permits, but also to the setting of “such terms and conditions [the Forest Service] may deem proper” to attach to any specific use permit.³² The Forest Service may therefore impose preconditions to issuance of compensatory mitigation use permits, including conditions to guarantee protection and maintenance of the restoration site. One such example is requiring the permit holder to provide mitigation security, that is, financial assurances to guarantee that an adequate level of funding is available to implement and properly maintain the mitigation measures.³³

²⁴ *Forest Serv. Employees for Env'tl. Ethics v. U.S. Forest Serv.*, 689 F. Supp. 2d 891, 900–01 (W.D. Ky. 2010).

²⁵ Except those authorized by specific regulations governing the disposal of timber, disposal of minerals, and the grazing of livestock, 36 C.F.R. §§ 251.50, 251.53.

²⁶ “Pursuant to 16 U.S.C. § 551 above quoted, the Secretary has promulgated certain regulations concerning the national forests. Among them are the following, authorizing the Forest Service to issue special-use permits and establish fees therefore.” *Mountain States Tel. & Tel. Co. v. United States*, 499 F.2d 611, 614–15 (Ct. Cl. 1974).

²⁷ 16 U.S.C. § 551.

²⁸ *Wilson v. Block*, 708 F.2d 735, 758 (D.C.Cir.1983). See also *United States v. Hymans*, 463 F.2d 615, 617 (10th Cir.1972) (discussing the broad authority delegated to the Forest Service under the Organic Act) (citing *McMichael v. United States*, 355 F.2d 283 (9th Cir.1965)); *Burlison v. United States*, 533 F.3d 419, 435 (6th Cir.2008) (“Congress has given the Forest Service broad power [under the Organic Act] to regulate Forest System land.” (citation and internal quotation marks omitted)); *Mountain States Tel. & Tel. Co. v. United States*, 499 F.2d 611, 614 (Ct.Cl.1974) (stating that the Organic Act “reveals a clear intent of Congress to commit regulation of the national forests to the discretion of the Secretary [of Agriculture]”).

²⁹ *Wyoming v. U.S. Dep’t of Agric.*, 661 F.3d 1209, 1234 (10th Cir. 2011).

³⁰ See *United States v. Weiss*, 642 F.2d 296, 298 (9th Cir.1981) (“The authority of the Secretary [of Agriculture] to regulate activity on national forest land pursuant to [16 U.S.C. § 551] has been upheld in a variety of ... instances.”).

³¹ See also 16 U.S.C. § 1604, 36 C.F.R. § 219.15.

³² *Sabin v. Butz*, 515 F.2d 1061, 1066 (10th Cir. 1975).

³³ Federal Agencies lack statutory authority to accept, retain, and draw upon financial assurances, such as performance bonds, to ensure compliance with permit conditions. These limitations are a result of the Miscellaneous Receipts Act (31 U.S.C. § 3302(b)). If the Forest Service or the Corps were to accept, retain, and draw upon those funds, the monies would be categorized

FLPMA determines that the Federal Government must “receive fair market value of the use of the public lands and their resources unless otherwise provided for by statute.”³⁴ In line with this statement, federal regulations require the Forest Service to charge a fee for the issuance of special use authorizations. According to the regulations, the fee “shall be based on the fair market value of the rights and privileges authorized.”³⁵ Fair market value is to be determined “by appraisal or other sound business management principles.”³⁶ The requirement to charge fair market value is grounded in the Forest Service position as an organ of the US government and representative of the “interest of all the people.”³⁷ Because of the Miscellaneous Receipts Act funds received by federal agencies from third parties are to be deposited with the Treasury. Thus, unless a statutory exemption is provided, fees paid by special use applicants will be deposited with the Treasury.

Authorities for the National Park Service

The National Park Service Organic Act determines the purpose of the NPS as to “conserve the scenery, natural and historic objects, and wild life in the System units” and establishes the Park Service mandate to “promote and regulate the use of the National Park System by means and measures that conform [to the purpose of the NPS].”³⁸ The legislative authority to “promote and regulate” the use of the National Park System was interpreted by courts as vesting in the NPS the prerogative to “determine what use of park resources are appropriate public uses, and what proportion of a park’s limited resources are available for such use.”³⁹ The NPS therefore enjoys broad discretion in “determining what actions are best calculated to protect park or public land resources”⁴⁰ and similar broad discretion in promulgating “such rules for use and management of national parks.”⁴¹ Pursuant to this authority, the Secretary of the Interior, acting through the NPS, has promulgated regulations for the protection and conservation of park resources and for the enhancement of public enjoyment of parks.⁴² The regulations implement the substantive duty to prevent impairment to the integrity of park resources by prohibiting human uses that may threaten park natural, cultural, archeological, and wildlife resources.⁴³ The regulations authorize the NPS to permit otherwise prohibited or restricted activities by issuing a use permit or a use limit, providing that the authorized activity shall not adversely impact the resources and values protected under the mandate of the Park Service.⁴⁴ The NPS therefore has the authority to engage

as a “miscellaneous receipt” under the Miscellaneous Receipts Act and would be deposited in the U.S. Treasury without being used to ensure permit compliance. To avoid this difficulty, the 2008 Rule added paragraph (6) to 33 C.F.R. § 332.3(n) to state that financial assurance monies are to be payable at the direction of the Corps District Engineer to his designee or to a standby trust agreement. In cases where a standby trust is used, all amounts paid by the financial assurance provider are to be directly deposited into the standby trust fund for distribution by the trustee in accordance with the district engineer’s instructions. Still, the forest service or the Corps District Engineer cannot accept directly, retain, or draw upon those funds.

³⁴ 43 U.S.C. § 1701(9).

³⁵ 36 C.F.R. § 251.57 and *see also* Mountain States Tel. & Tel. Co. v. United States, 499 F.2d 611, 615–16 (Ct. Cl. 1974).

³⁶ 36 C.F.R. § 251.57.

³⁷ Sabin v. Berglund, 585 F.2d 955, 957 (10th Cir. 1978).

³⁸ 54 U.S.C. § 100101 (2014).

³⁹ Eiseman v. Andrus, 433 F. Supp. 1103, 1106 (D. Ariz. 1977), *aff’d sub nom. Wilderness Pub. Rights Fund v. Kleppe*, 608 F.2d 1250 (9th Cir. 1979) (referring to 16 USCA 3, codified and revised as 54 U.S.C. § 100101).

⁴⁰ Sierra Club v. Andrus, D.C.D.C.1980, 487 F.Supp. 443, *affirmed* 659 F.2d 203, 212 U.S.App.D.C. 157; Nat’l Wildlife Fed’n v. Nat’l Park Serv., 669 F. Supp. 384, 391 (D. Wyo. 1987) and references therein.

⁴¹ Wilkinson v. Department of Interior of U.S., D.Colo.1986, 634 F.Supp. 1265.

⁴² 36 C.F.R. § 1.1.

⁴³ 36 C.F.R. §§ 2.1-2.2.

⁴⁴ 36 C.F.R. § 1.6.

in and permit third parties to perform restoration activities that will conserve and enhance National Park System resources.

Authorities for the Fish and Wildlife Service

According to the National Wildlife Refuge System Improvement Act of 1997 (“NWRISA”), in administering the National Wildlife Refuge System (“NWRS”), the FWS must “provide for the conservation of fish, wildlife, and plants, and their habitats” in a manner that will ensure “the biological integrity, diversity, and environmental health of the [units of NWRS].”⁴⁵ Restoration and conservation of aquatic habitats are therefore inherent to FWS mission and responsibilities. Moreover, NWRISA explicitly states that to fulfill the mission of NWRS and the purpose of each refuge, FWS must pursue activities that will guarantee “adequate water quantity and water quality,”⁴⁶ clarifying FWS authority to engage in water-related restoration activities such as compensatory mitigation on their lands.

On September 10, 1999, the FWS issued Final Policy on the National Wildlife Refuge System and Compensatory Mitigation Under the Section 10/404 Program (1999 FWS Rule).⁴⁷ In its policy, the FWS announced that in general, the FWS will not allow compensatory mitigation to take place on NWRS lands. The FWS justified this policy based on the explanation that NWRS lands “are already targeted for restoration.” Therefore, according to the FWS, any compensatory mitigation that will occur on NWRS lands,” would not replace the off-Refuge wetland functions and values that are lost to permitted development.” The FWS clarified that compensatory mitigation could take place on NWRS lands in exceptional circumstances and under limited conditions. The criteria for considering compensatory mitigation on NWRS lands, as set by FWS, are: (a) consistency with Section 404 Guidelines and FWS Mitigation Policy in force, (b) consistency with the general mission of the FWS and the purpose for which the pertinent refuge was established, (c) Consistency with an approved CCP, (d) when compared to alternative options for off-site mitigation, the proposed mitigation project would result in “significantly increased natural resource benefits,” and (e) The mitigation plan will not impose on FWS a duty to allow additional compensatory mitigation on NWRS in the future.⁴⁸ According to the FWS, FWS will not allow use of NWRS lands for mitigation banks, but may accept mitigation banks as additions to the NWRS System, under certain limited conditions.⁴⁹

Practical Implementation Pathways

Forest Plans, Park Service General Management Plans (“GMP”) and NWRS Comprehensive Conservation Plans (“CCPs”) fall under the definition of “federal facility management plans” in the 2008 Mitigation Rule. They are therefore the regulatory preferable instrument for providing long-term legal protections for compensatory mitigation projects. Forest Plans, GMPs, and CCPs, however, are revisable. To guarantee long-term protection, the pertinent agency should include instructions in its federal facility management plan mandating that policy or regulatory changes that result in net loss to constructed/restored habitats or wetlands (acreage/services) would

⁴⁵ 16 U.S.C. §§ 668dd(a)4(A)-(B) (2012).

⁴⁶ 16 U.S.C. § 668dd(a)4(F)

⁴⁷ 64 FR 49229 (1999)

⁴⁸ See *id.* at 49233. The requirements for compensatory mitigation for direct effects on NWRS lands are different and detailed therein.

⁴⁹ *Id.*

require adequate compensation (compensation for compensation). Similar requirements could also be incorporated into a Conservation Land Use Agreement to be signed between the pertinent agency and the Corps as was done in the case of the Francis Marion and Sumter National Forests in South Carolina (more detail in Appendix B.5).

Specifically, with regard to the National Park System (NPS), it could be asserted that because the NPS is not a multiple-use agency,⁵⁰ the NPS is exempted from providing legal guarantees for long-term protection.⁵¹ This is indeed the position of the NPS as presented to the authors in NPS personnel interviews. However, while it is correct that the laws and policies governing the management of the NPS system state a clear preference for conservation over public use and enjoyment, NPS has at times engaged in activities that unlawfully harm park resources in derogation of its mandate. This occurs when the NPS fails to adequately balance public use and enjoyment with its conservation mandate.⁵² Since the tension between public use and enjoyment and conservation persists in all units of the NPS system, this report advises providing long-term protection through special designations in the pertinent park's GMP.⁵³

WHAT COMPENSATORY MITIGATION ON PUBLIC LANDS LOOKS LIKE

Compensatory mitigation rules, policies, and guidance include provision for siting mitigation on public or private lands. However, different types of mitigation may rely on different types of land disproportionately. Mitigation banks, to date, have relied heavily on private land and non-federal public lands.⁵⁴ ILF programs use private land, but have also used public lands for mitigation, including local, state, and federal lands. Federal agencies may also rely on federal lands to site their mitigation. For example, National Aeronautics and Space Administration (NASA) has used NASA land to site mitigation, and the Corps of Engineers has proposed to use an FWS-National Wildlife Refuge for the site of a project to mitigate the impacts of levee building (i.e., Permittee Responsible Mitigation (PRM) projects).

⁵⁰ *Sierra Club v. United States Dep't of the Interior*, 899 F.3d 260, 292 (4th Cir. 2018).

⁵¹ See e.g., George Cameron Coggins, *The Developing Law of Land Use Planning on the Federal Lands*, 61 U. Colo. L. Rev. 307, 310 (1990) (explaining that “[t]he general statutory prohibition against economic resource development in national parks avoids many of the major conflicts with commodity uses routinely encountered in the other federal land management systems.”)

⁵² See e.g., *Defs. of Wildlife v. Salazar*, 877 F. Supp. 2d 1271 (M.D. Fla. 2012); *Greater Yellowstone Coal. v. Kempthorne*, 577 F. Supp. 2d 183 (D.D.C. 2008); *Friends of Yosemite Valley v. Scarlett*, 439 F. Supp. 2d 1074, 1100 (E.D. Cal. 2006), *aff'd sub nom. Friends of Yosemite Valley v. Kempthorne*, 520 F.3d 1024 (9th Cir. 2008). For a more thorough discussion, including a detailed account of the impact of recreation on NPS System resources, see Dennis J. Herman, *Loving Them to Death: Legal Controls on the Type and Scale of Development in the National Parks*, 11 Stan. Env'tl. L.J. 3 (1992).

⁵³ It should be noted that it is not entirely clear that GMPs are binding on the discretion of the NPS: “Although logically there would be little point in requiring plan preparation unless the plans were to guide management decisions, Congress neglected to make plans binding, as it did with the BLM and the Forest Service.” George Cameron Coggins and Robert L. Glicksman, *Public Natural Resources Law* § 16:4 Planning for individual park system units (2nd ed., 2019). According to the D.C. Circuit, “Whether the Park Service is bound by its Management Policies turns on the agency’s intent to be bound.” *Davis v. Latschar*, 202 F.3d 359, 366 FN 4 (D.C. Cir. 2000) reiterated in *The Wilderness Soc’y v. Norton*, No. CIV.A.03-64 RMC, 2005 WL 3294006, at *10 (D.D.C. Jan. 10, 2005). Thus, it might be that the NPS is only bound by its GMPs if it expresses a clear intent for a GMP to be binding. But cf. “NPS must adhere to its Management Policies unless those policies are waived by the Secretary of the Interior, the Assistant Secretary, or the Director of the Park Service.” *Sierra Club v. Lujan*, 716 F. Supp. 1289, 1293 (D. Ariz. 1989). It is therefore advisable that the NPS explicitly state that provisions in a GMP concerning protection of restoration sites are binding.

⁵⁴ According to data in RIBITS approximately 20–25% of banks are single-user banks (for state or local governments) and are located on nonfederal public lands. Another 5% of commercial banks are located on public lands (nonfederal).

To our knowledge, there are very few, if any cases when private mitigation banks have used federal lands for a restoration project; in fact, in our review of literature and in our interviews (described in Appendices), there were no known private mitigation banks which made use of federal lands. There are at least two cases in which private mitigation banks have used tribal lands, although these should not be considered “public” or “federal” in the same way as those lands managed by federal agencies. There is also a growing number of proposals to use federal lands for both ILF programs and for mitigation banking (see list in Appendix A and Appendix B case studies). Appendix B and Table 2 supply details on case study mitigation projects, but common themes and interesting findings extracted from cases and interviews are summarized here. In some cases, there is a distinction between perceptions of the mitigation landscape and reality of what is legal or possible, based on existing law and policy. Some interview content summarized here represents perceptions of the mitigation situation by individuals interviewed; we include descriptions of those perceptions, as they are important to consider when creating guidance for doing public lands mitigation.

Findings from Case Studies

Finding 1: Federal agencies are moving toward formalizing compensatory mitigation on federal lands for impacts that occur both on federal and private lands. Until recently, compensatory mitigation projects on federal lands have mostly been ad hoc, but land management agencies are now considering mitigation as a way to achieve restoration goals when limited appropriations are available. In most cases, agency staff are working to take considerations and perspectives of multiple stakeholders into account and to learn from past projects.

Finding 2: Additionality criteria for compensatory mitigation on federal lands should be examined more closely. For a number of the cases we reviewed, additionality was considered fulfilled because restoration funding would not have become available otherwise, and thus restoration would not have occurred. While this is sufficient to meet current regulations specifying that the function of aquatic resources needs be increased, it does not address the issue of how these restored aquatic resources will be protected long term. For some types of federal lands such as national wildlife refuges, compatibility of land use and long-term protection is more likely than for others, like BLM or USFS, which have multi-use mandates. Given this variability, it is important to clarify how these restored aquatic resources will be protected. For commercial mitigation banks on private lands, new land protection (often in the form of a conservation easement) is typically required, resulting in additional land being set aside and fully protected. To sustain aquatic function in cases where federal lands are used for mitigation, it should be required that the federal lands meet some minimum standard of protection from potentially damaging uses such as mining, grazing, water extraction, etc.

When protected federal lands are used in places where mitigation on private lands is a reasonable alternative, there might be a risk that less overall land is being protected (e.g., fewer new easements or less protected federal land). In cases where federal lands facing degradation from use (e.g., mining, grazing) or where private lands are used for mitigation then donated to federal agencies, this potential risk would be avoided.

Finding 3. Durability for compensatory mitigation on federal lands should be more fully considered. In many instances, the “long-term protection” dimension of durability for federal lands mitigation projects is assumed through management plans created by the agency overseeing the land. For most agencies, management plans can be altered in the future, which creates a risk for nondurable projects. If there is risk, implicit assumptions of compensation for any mitigation projects which are damaged or lost through a change in management plans should be made explicit through new policy or other mechanisms such as Conservation Land Use Agreements (discussed below) to ensure environmental benefits are not lost.

A number of the federal lands mitigation cases we reviewed covered monitoring and maintenance costs for 5 years, but it appears that such expenses may fall to the federal land owner after that. Financial assurance resources for longer term needs are typically required for private commercial mitigation banks. Providing more certainty that such funding is set aside by the permittee for use by the federal lands hosting projects would help reduce risk that aquatic benefits are lost. This would also reduce the likelihood that the long-term responsibility of managing compensation projects on public lands are borne by tax payers rather than permittees.

Finding 4: Full costs for mitigation are often not being recovered by federal agencies when federal lands are used for compensatory mitigation. Current limitations to federal authorities make direct compensation difficult (e.g., collection of fees, compensation for value of land). Thus, resource management agencies that are hosting mitigation projects linked to private impacts may not be recovering the full value of their lands. As a result, these costs and the undervaluation of the lands are borne by taxpayers rather than permittees. Taxpayers, therefore, could be subsidizing private land impacts in derogation of FLPMA’s mandate that “the United States receive fair market value of the use of the public lands and their resources.” If resource agencies could capture the full value of their lands and the costs of mitigation, they could potentially restore more lands and avoid legal exposure for failing to comply with FLPMA. See this reports’ recommendations section for some ideas for how to implement such a practice.

Multiple agencies reported that using a fee structure would be complicated, given existing agency policy and regulations. According to interviews, some agency personnel believe that it is risky to start generating revenue from mitigation projects, as it is perceived that such fees could be used as rationale to reduce appropriations to that particular unit. In contrast, one interviewee stated that this was an unfounded concern; any revenue collected from mitigation projects would go to the U.S. Treasury and would not be directly accessible by the unit where the mitigation took place unless special circumstances were arranged through a partnership with a non-governmental organization who could funnel the funds to particular restoration projects.

Finding 5: Differences between federal land and private land-based compensatory mitigation (for impacts to private lands), as currently practiced, may undermine private land-based mitigation and reduce its prevalence in regions where federal land use for mitigation becomes more common. Current practice for compensatory mitigation on federal lands appears to be less costly than similar projects on private lands given that costs for the land and financial assurances are often not fully recovered. As a result, mitigation using private lands (banks, ILF, and PRM) might become less competitive in mitigation credit markets where use of federal lands

is prevalent. If we see federal lands-based mitigation moving into regions previously using private land-based mitigation, we might expect to see less additional private land protected through easements.

Finding 6. There are no commercial or private mitigation banks on federal lands that address private lands impacts to aquatic resources. To date, all compensatory mitigation for private land impacts that takes place on federal lands has been via In Lieu Fee (ILF) programs or Permittee Responsible Mitigation (PRM). It is unclear what the causes of this difference in mitigation sponsorship might be, but the uncertainty and time it takes to navigate the National Environmental Policy Act, environmental impact assessment process, which is required for federal lands, might be one. Single user banks have been used on federal lands where federal agencies (DOD, NASA, USFS) are mitigating their own impacts.

Table 2. Federal Land Mitigation Case Study Summary Table (See Appendix B for More Detail)

Project site and associated land management agency	Mitigation type (mechanism; mitigated habitat)	Impact source and impact location	Project status	Mechanism for additionality accounting	Mechanism for durability provision
Smoky Mountain National Park (NPS)	ILF program operated by Tennessee Wildlife Resources Foundation; stream	ILF programs mitigate both public and private land impacts	Project has been completed; 4,613-foot section of Chilogatee Stream was restored	Restoration unlikely without ILF funds	No formal mechanism, though credits approved by inter-agency review team who deemed the project durable
Daniel Boone National Forest (USFS)	ILF program managed by KY Dep't of Fish and Wildlife Resources; stream	ILF programs mitigate both public and private land impacts	3 projects have been completed and are in the monitoring stage with an expansion of one project proposed	No FS budget for restoration	Forest management plan
Everglades National Park (NPS)	Originally a bank, now an ILF managed by the National Park Foundation; wetland	Primarily private sector development impacts on private lands	As of 2018 5,328 acres of wetland have been restored, with 972 still planned for restoration	Unknown	Long-term financial assurance
Superior National Forest (USFS)	Bank managed by the Superior National Forest	FS impacts on FS lands	Initial bank has restored 4.2 acres of wetland, with plans to expand	Unclear. Additionality was not taken into consideration during the creation of the bank.	Forest management plan

Project site and associated land management agency	Mitigation type (mechanism; mitigated habitat)	Impact source and impact location	Project status	Mechanism for additionality accounting	Mechanism for durability provision
Sumter and Francis Marion National Forests (USFS)	PRM by Duke Energy, Boeing, and City of Charleston; stream and wetland	Public (city of Charleston) and private (Boeing and Duke Energy) impacts on public and private lands	Projects are underway that are restoring 6,000 acres of wetland and 20 miles of streams	PRM funds were required to accomplish these large restoration projects.	Conservation Land Use Agreement
Big Branch National Wildlife Refuge (FWS)	PRM by Corps of Engineers	Corps of Engineers mitigation for levee construction	Project is in the construction phase; it has been postponed due to budget issues, technical difficulties, and a lawsuit. Plan to create 365 acres of wetland.	This was a wetland creation project—there was no plan to create wetland at the site prior to PRM activity.	National Wildlife Refuge protections, as well as an agreement by the state of LA as a cosponsor to provide funds to maintain the site.

Note: These cases are representative of the federal lands stream and wetland mitigation projects that were identified by agency member interviews and inquiries but are not necessarily a representative sample of all federal lands mitigation projects. There is potential bias in this list based on the agency representatives initially engaged. Cases of mitigation on other public lands (e.g., state-owned lands) and federally recognized lands (e.g., tribal lands) were also identified but are not discussed here.

HOW USE OF FEDERAL LANDS AFFECTS THE CORNERSTONES OF MITIGATION

The three key cornerstones of mitigation are *additionality*, *durability*, and *equivalency* (see Box 3). Because compensatory mitigation arose largely out of mitigation on private lands, such mitigation can be a baseline against which new mechanisms of mitigation can be compared. Durability on private lands is achieved through encumbering private land with substantial use restrictions such as conservation easements in perpetuity and by requiring financial assurances that will cover any necessary maintenance of a restoration site. Additionality is also achieved through the land encumbrance

Box 3. Definitions

Additionality—a compensatory mitigation measure is additional when the benefits of the measure improve upon the baseline conditions of the impacted resources and their values, services, and functions in a manner that is demonstrably new and would not have occurred without the compensatory mitigation measure

Durability—A mitigation measure is durable when the effectiveness of the measure is sustained for the duration for the associated impacts of the action, including direct and indirect impacts

Equivalency—Mitigation measures are equivalent when standards for establishing, permitting, and evaluating those measures are identical regardless of the mechanism used to provide compensatory mitigation (i.e., mitigation bank vs. ILF vs. PRM).

(i.e., changing the future potential land disposition) along with restorative work, while equivalency is achieved through ensuring that mechanisms of mitigation (i.e., PRM, ILF, and banking) are held to the same standards, including requirements of durability and additionality. Mitigation on federal lands (or other public lands) introduces complexities, particularly for durability and additionality, which should receive attention before an agency adopts policies that allow and practices that encourage mitigation on public lands.

Durability

One of the requirements for mitigation after the 2008 Rule is that a mechanism for long term protection of the land (e.g., permanent conservation easement, title transfer.) is placed on the project site. As discussed earlier, federal lands cannot use easements, and instead must rely on facility management plans, which may not infer the same level of permanence. As a result, agency rules regarding mitigation on their lands may need a mechanism, though CLUA or a similar mechanism, to require replacement of any compensatory mitigation sites that are later disrupted or destroyed.

Another durability requirement for compensatory mitigation on private lands by private sponsors is for financial assurances—money set aside to address any failure of a mitigation project to meet its performance standards and ensure a fully functional wetland or stream, along with long-term funding for project management to ensure the aquatic function persists. These financial assurances and long-term management funds represent a significant cost. In the projects on federal lands that we reviewed, we found a couple of cases with monitoring and maintenance covered for 5 years, but had no indication of longer-term assurance funding. In other cases such funding has been provided (e.g., Big Branch NWR and Everglades; Appendix B.1 and B.3). It is important to ensure that the project sponsor cover the costs of any project failures or management requirements, to reduce the risk assumed by the federal government for project failure.

One explanation why federal agencies avoid financial assurances and long-term management funds is the complexity of available mechanisms for accepting them from private parties. Federal Agencies lack statutory authority to accept, retain, and draw upon financial assurances, such as performance bonds, to ensure compliance with permit conditions. These limitations are a result of the Miscellaneous Receipts Act.⁵⁵ If a federal agency were to accept, retain, and execute a financial assurance or other funding, the monies would be categorized as a “miscellaneous receipt” under the Miscellaneous Receipts Act and would be deposited in the U.S. Treasury without being used to ensure compliance. To avoid this difficulty, the 2008 Mitigation Rule added a paragraph to state that financial assurance monies are to be payable at the direction of the Corps District Engineer to his/her designee or to a standby trust agreement.⁴¹ In cases where a standby trust is used, all amounts paid by the financial assurance provider are to be directly deposited into the standby trust fund for distribution by the trustee in accordance with the District Engineer’s instructions. This arrangement adds a layer of complexity to compensatory mitigation plans on federal lands but has been used and should be used more consistently for mitigation on federal lands. It should also be expended for inclusion of management funding.

⁵⁵ 31 U.S.C. § 3302(b).

Additionality

Additionality is the requirement that mitigation increase the ecological performance of the project site beyond what would have existed or occurred otherwise. The actual, on-the-ground earthwork, planting, and related activities are sources of additionality, which regulatory agencies would consider for credit determination in any compensatory mitigation project, regardless of location. Providing for permanent conservation/preservation of a site is also a key factor in determining additionality; when mitigation is conducted on private lands, there is the potential for significant additionality through encumbering private (i.e., developable) land with permanent conservation easement real estate instruments. Federal lands will not always have similar “threats” of development in the future, and so they may not have the same opportunity for additionality via land protection and conservation. This can make otherwise similar restoration projects on private vs federal lands dis-similar in terms of their potential additionality.

Equivalency: Does Private Sector Have Equal Access?

There are examples of private sector mitigation on federal lands through PRM and ILF mechanisms, but for CWA mitigation, we are unaware of any private commercial mitigation banks which have used federal lands. There have been recent inquiries from private commercial mitigation banks to use NPS, USFS, and BLM lands. We were unable to determine if any have been permitted or approved.

One potential explanation for the lack of use of federal lands by private mitigation banks is that this is rational economic choice: because many federal lands are in regions with little demand for credits, and thus, there is limited potential for marketing such credits by private bankers. Another possibility is that projects on federal lands have to navigate through the National Environmental Policy Act (NEPA) environmental impact assessment process, which can take a long time and add additional cost to establishing a mitigation project or bank. Alternatively, the lack of use of federal lands could be driven by private mitigation bankers not being able to use those lands either due to mitigation regulatory practices, or because land management agencies have not allowed private banks to operate on their lands. Mitigation banking (and ILF Programs) have made use of public, nonfederal lands for many years. In order to ensure equivalency, federal lands should be equally available to all forms of mitigation and all types of mitigation sponsors (i.e., private mitigation banking, PRM, and ILF). If there are barriers for commercial, private banks conducting mitigation on federal lands this is an issue that should be explored further.

Full Cost Recovery

It is important to note that the financial requirements associated with encumbering land to meet durability (and additionality) requirements, such as permanent conservation easements and financial assurances, are a significant cost in mitigation on private lands. This cost is avoided when performing mitigation on federal lands if the regulatory and resource agencies do not require comparable compensation for use of land or do not require comparable financial assurances for project performance. This undervalues the land and services provided by federal agencies, reducing the benefits (additional restoration) they could potentially receive and perhaps even costing them money to address failing restoration or maintenance needs, while reducing the cost of (and thus subsidizing) development impacts to aquatic habitats.

Implications for Mitigation on Private Lands

If our reviewed cases of mitigation on federal lands is representative, current implementation of existing policies, rules, and practices for compensatory mitigation on federal lands is likely to cost less than comparable compensatory mitigation on private lands. Thus, the basics of project costs will favor mitigation on federal lands, in addition to the potential for regulatory preference for mitigation on federal lands.⁵⁶ While the amount of land being restored may be comparable on federal and private lands, the amount of land set aside for protection could decrease, since many federal lands are already protected. However, if the federal lands used are at risk of significant impact from activities (e.g., timber harvest, mining, grazing or water withdrawals), this would be more comparable to private lands protection.

Implications for the Private Mitigation Banking Industry

A shift toward mitigation on federal lands, rather than private lands in some areas may also have a significant effect on the private mitigation banking industry. If there are barriers for private mitigation banks to build projects on federal lands, and mitigation on federal lands remains lower cost because it does not incorporate the cost of the land, this may leave only more costly mitigation on private lands available. This could reduce their willingness to develop entrepreneurial mitigation banks.

Another important issue is the effect that new mitigation projects on federal lands would have on already existing commercial mitigation banks, particularly when mitigation on federal lands was previously unforeseen. In some cases, large mitigation banks were developed based on the expected market (i.e. credit demand) that could be anticipated based on future development, and the profit margins that could be expected given the likely competition. Thus, a private bank may be willing to risk significant capital for a sustained period of time if they were fairly confident that (a) few competing mitigation banks would be developed in an area,⁵⁷ and (b) that banks which were developed would face similar or even higher costs for credit generation (e.g., rising land prices). The pivot toward using federal lands for mitigation (at potentially lower costs) creates new, unanticipated competition for existing bank credits.

For example, if a third party, such as an ILF program, is conducting restoration on federal lands at lower cost than could be accomplished on private lands where they would otherwise pay for the land or easement, the ILF program is either able to sell those credits at prices comparable to what is charged for mitigation on private lands, generating increased revenue, or the program could charge below-market prices, ensuring that their full inventory can be sold. As an example, the Everglades National Park has an existing ILF program which incorporates newly acquired land into the park once mitigation is completed on that land. There have been consistent criticisms that this ILF program sells credits into the Dade County private development market at significantly less than the broader market price (see Appendix B.3 for case study).

⁵⁶ There is also the real potential for regulatory bias; mitigation projects must be approved by Interagency Review Teams (IRTs), which are comprised of members of regulatory agencies. Mitigation bankers have asserted IRTs favor agency-sponsored mitigation projects. If agency-sponsored mitigation projects (ILFs) are on public lands, then public lands also gain a regulatory preference/bias in addition to a financial bias.

⁵⁷ Or alternative forms of competing provision of compensatory mitigation, e.g., ILF Programs.

CURRENT PRACTICE AND RECOMMENDATIONS FOR MOVING FORWARD

Current Practices of Mitigation on Federal Lands

As compensatory wetland and stream mitigation expands in the western United States, the availability and prominence of federal lands will become increasingly relevant in affecting the execution of mitigation. Moreover, as land management agencies face constrained economic conditions there will be growing interest in alternative approaches to support restoration. Thus, it is realistic to expect the question of mitigation on federal lands to become increasingly relevant across agencies. This raises the question: **if agencies are going to create policies to formalize mitigation on their lands, what are the major considerations, and what alternatives need to be acknowledged?**

Based on our review of cases, it appears that to date, wetland and stream mitigation occurring on federal lands tends both to occur through one-off arrangements without clear standards of practice and to undervalue the use of federal lands for mitigation, which could undercut equivalency with mitigation taking place on private lands. Mitigation projects on federal lands compensating for private lands impacts have largely not paid for the costs of land acquisition, are may not be consistently covering longer term costs of assurance and maintenance. When coverage of these costs by the permittee is not required, they by default are provided by federal lands and agencies (and public funds). As a result, mitigation derived from federal lands is likely to be less expensive than mitigation from private land projects, undervaluing the federal land contribution, subsidizing impacts to aquatic resources, and potentially undercutting mitigation on private lands.

Most projects we identified on federal lands—whether ILF or PRM—were under the auspices of government or NGO programs. Private mitigation banks are not using federal lands for mitigation, although there was at least one instance of a private sector sponsored PRM using federal lands. This project took place on private land (and now being transferred to federal land ownership), and therefore included the costs of obtaining the private lands. Our interviews suggest that private sector mitigation providers are not gaining, or making use of, the same opportunities to use federal lands for mitigation as those who run ILF programs.

Policy Considerations and Recommendations

Given the evidence collected on the current practice of mitigation on federal lands described above, we convey our recommendations to help federal agencies achieve their goals for mitigation occurring on federal lands in line with the 2008 Mitigation Rule. These goals include, increasing restoration on federal lands, and avoiding unpermitted impacts due to limited availability of land, ideally all while maintaining high quality mitigation and environmental benefit.

Recommendation 1. Compensatory mitigation projects on federal lands should aim to provide the greatest environmental benefit possible and limit risks that these benefits will be lost over time, as is required for private lands. To do this, federal land management agencies need to clarify how additionality and durability requirements are managed for compensatory mitigation projects taking place on federal lands.

Any expansion of mitigation on federal lands can take pressure off regions with limited private lands and reduce the risk of unpermitted impacts. However, allowing mitigation through programs that have lack of clarity on additionality requirements could lead to less additional environmental benefit (amount of area protected from future impacts) as compared to mitigation on private lands. It might also undermine permanence of restoration if clear guidance is not provided on how to handle mitigation projects on lands where management changes undermine a project.

Recommendation 2. Federal land management agencies should ensure goals of the 2008 Mitigation Rule are achieved by requiring to the maximum extent possible that mitigation on their lands occurs in advance of or concurrent with impacts.

One of the primary ecological advantages encouraged by the 2008 rule is that some minimum portion of the compensatory mitigation work is accomplished prior to credit release and associated impact compensation. Sustaining a preference for advance mitigation is a strong advantage of encouraging compensatory mitigation via banking, or potentially PRM mitigation with similar advance mitigation requirements.

Recommendation 3. Federal resource agencies should aim to recover the full value of their lands as well as long term maintenance costs, so that they can support additional restoration of aquatic habitats and reduce risks of restoration failure. There are limits to agency authority for capturing revenue direction, but compensation ratios may provide a path forward to address land value, and third-party organizations may be a method for managing funds for long term maintenance costs. If this is implemented, the transacted cost for mitigation on federal lands would then reflect the true cost to the taxpayer and limit any unintentional subsidy caused by lowering the costs of impacting aquatic habitats in areas with significant federal land mitigation. Allowing mitigation on federal lands should not open the door for public resources to subsidize private development impacts.

To our knowledge, land management agencies have not required or requested payments for use of federal lands for mitigation of impacts occurring on private lands. There are a number of reasons for this. First, all access, permit, or leasing fees an agency might require for mitigation, would not be retained by that unit, but would be returned to the U.S. Treasury. This results in limited incentive for agencies to ask for payment for land or services. Second, because agencies want this restoration to happen, they want to make it as easy as possible for it to move forward, which gives them an incentive to reduce all barriers (including costs) for access to their lands. Third, it is difficult to determine what reasonable compensation is for access and long-term use of federal lands. But there are significant reasons for the land management unit to ensure that they consider the full costs for mitigation occurring on their lands including costs.

The following discussion suggests mechanisms to cover costs for federal land use and other costs federal agencies might need to cover for mitigation on federal lands. Ideally, agencies would not be taking on additional maintenance and monitoring for mitigation projects; these costs would be covered by the project developer. The agreement needs to ensure practices that externalize all costs and liability associated with mitigation through appropriate contracts that divest the agency

of all responsibilities associated with mitigation (e.g., permitting, design, restoration activities, maintenance and monitoring).⁵⁸ However, as some of these costs are not covered directly, any mitigation project developer (banker, ILF, or PRM) using federal lands should pay a fee sufficient to recoup the time and resources necessary for agency personnel to manage the project. As well, the costs should reflect the O&M necessary to sustain those lands in public use and in their restored conditions, as well as necessary financial assurances. In summary, a best practice could be that if mitigation for impacts to private lands is conducted on federal lands, then the agency provides no services that are explicitly required as part of mitigation success criteria (e.g., monitoring and maintenance) unless directly compensated for those services.

There are a few different options for agencies to consider for compensation for the value of their land and any assurances and long-term management costs they are expected to cover.

Option 1. Require compensation for land and services (O&M) through leasing and concession models commonly used by federal agencies. This will increase revenues coming into the federal government (to the Treasury). However, because the unit involved in mitigation does not receive the revenue, there is no incentive to negotiate a fair price. If a fair price could be guaranteed, there would be greater revenue for the government but not necessarily for restoration.

There are several ways that prices could be set for land access/rights:

- (3) *A bid/auction process* – this would be the most effective way to generate revenue for the Treasury. It would also ensure more even competition with private land mitigation which if present can provide greater environmental benefits by protecting new wetlands. This would not be an effective mechanism if there is only one entity interested. This process will also increase the transactions costs for mitigation, and there are limited incentives for agencies to negotiate for a fair price.
- (4) *Recouping federal investments* – this would require estimating the built-in/embedded costs that exist on any federal land. That is, what federal investments have been made and accrued in that particular land existing in its current condition. This approach would reduce the concerns about additionality in that it would effectively be paying off the costs of the lands, and thus be (potentially) providing for the full financial benefits of the mitigation. The drawback of this approach is that it would likely be difficult to derive the embedded cost of the land, and that embedded cost would likely be high, thus reducing the incentive for using the public land for mitigation.
- (5) *Setting price comparable to surrounding land market* – this would require assessing what the market value is of land access for similar types of work in the project vicinity. The benefit of this approach is that it would make mitigation on federal land comparable in cost to mitigation on private land, and thus not incentivize mitigation on federal lands because it is free, but because it is the best location for mitigation.

⁵⁸ Note that taking this approach will likely result in agencies not being able to sponsor ILF programs. Their lands could be locations for projects, but they would not be sponsors of programs using their own lands, resources, or personnel.

Option 2: Work with a third party to keep revenue at the unit where mitigation is occurring.

Building on option 1, instead of a transaction directly between the project developer and the federal agency with cost for land access going directly to the treasury, a congressionally chartered third party (i.e., nonprofit) can play a role as keeper of the permittee funds and feed these back to the federal land unit where the mitigation is taking place. As discussed earlier, because of the Miscellaneous Receipts Act, funds accepted from mitigation applicants for compensatory mitigation credits are to be deposited with the Treasury. However, there are certain nonprofit organizations that are designated by law to receive funds for conservation projects occurring on federal lands (e.g., National Parks Foundation, National Forest Foundation, National Fish and Wildlife Foundation). These entities may receive and administer contributions from private parties made for restoration activities occurring on NPS, USFS, and NWR lands, including compensatory mitigation activities. Thus, a mitigation applicant could “contribute” funds to these entities to be utilized for compensatory mitigation which will entitle the contributor to receive the mitigation credits created by the restoration project (e.g., as done in the Everglades National Park ILF program using the National Parks Foundation; see Appendix B.3). This helps to fully cover the value of the use of federal lands and any costs (e.g., assurances, management, maintenance) associated with mitigation. This approach keeps the funding at the unit doing the mitigation so increases the incentive to negotiate for fair compensation and can contribute to equivalency if the cost for access to the land is included. Payment cannot exceed actual cost of mitigation activities; overpayment would go to the Treasury and there is a risk that the arrangement would be challenged by a Miscellaneous Receipts Act action.

Option 3: Use credit ratios to address cost of land access.

Projects on federal lands could be required to have a credit ratio greater (perhaps double) the ratio applied on private lands to help address the costs of land access and any other assurance risk, or costs of management or monitoring that the agencies are taking on. This would increase restoration on federal lands. Meeting increased restoration needs aligns with the goals of the federal land units helping to align incentives for negotiation between the project developer and federal land host. It would also avoid concerns that federal lands are being used to subsidize aquatic impacts on private lands. The greater credit ratio is another way of achieving some form of equivalency across mitigation mechanisms (ILF, Banks, PRM) and sponsor types (private or public), which will help maintain incentives for private investment in conservation on private lands.

Recommendation 4: To meet equivalency requirements federal lands should set comparable requirements for private, nonprofit, and public sponsors to engage compensatory mitigation on federal lands.

If federal lands are available for mitigation to any actor, all actors should be required to pursue access to such lands through the public bid process. In addition to facilitating equivalency amongst mitigation providers, this also ensures that the land management agency gets the best return or greatest restoration investment for making their land available.

We recommend maintaining strict equivalency into any standards developed for mitigation on federal lands. Equivalency of requirements across all mitigation providers, mechanisms and projects will help agencies achieve a goal of high-quality projects.

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APPENDIX A: VARIANTS OF APPROACHES ON GENERATION AND USE OF REVENUE FROM MITIGATION

There has been, and will continue to be, differences in how land management agencies use mitigation for agency purposes. Here we provide hypothetical examples of different approaches to mitigation on federal lands. While this could apply to all mitigation on public lands, we use wetland mitigation on National Wildlife Refuge (NWR) lands as the example. Though we refer to the Fish and Wildlife Service (FWS) as the federal actor in these examples, other land management agencies could be easily substituted:

- **ILF + Free restoration approach.** The FWS allows a state-agency-sponsored ILF program to use NWR lands as sites for stream and wetland mitigation. The ILF program captures all the revenue from the fees collected; the FWS gets free restoration of NWR ecosystems.
- **ILF + Revenue approach.** The FWS allows a state-agency-sponsored ILF to use NWR lands as sites for stream and wetland mitigation. The ILF captures most of the revenue from fees collected, but the FWS charges a fee to the ILF for the use of NWR lands for mitigation. The FWS thus receives free restoration as well as some revenue stream. We are unclear if federal lands managers have used this approach as a mechanism for revenue generation.
- **Private mitigation bank + Free restoration approach.** The FWS allows a private mitigation banker to use NWR lands as sites for stream and wetland mitigation. The private banker captures all the revenue from the sale of credits generated; the FWS gets free restoration of NWR ecosystems. We do not know if this approach has ever been used with the exception of tribal lands.
- **Private mitigation bank + Revenue approach.** The FWS allows a private mitigation banker to use NWR lands as sites for stream and wetland mitigation. The private banker and the FWS both share in the revenue from the sale of credits generated; the FWS gets free restoration of NWR ecosystems. We do not know if this approach has ever been used, but we know that it is being considered and discussed.
- **PRM + Free restoration approach.** The FWS establishes an agreement with an entity (the permittee) that needs to perform mitigation. The permittee pays a contractor to complete restoration activities on NWR lands, but only pays for restoration associated activities, no fee is paid for use of the land. The FWS gets free restoration of NWR ecosystems. This approach has been used sparingly, but agencies are looking to expand this type of restoration agreement.
- **PRM + Revenue approach.** The FWS establishes an agreement with an entity (the permittee) that needs to perform mitigation. The permittee pays a contractor to complete restoration activities on NWR lands and pays for restoration associated activities as well as a fee for using NWR lands. The FWS gets free restoration of NWR ecosystems and generates revenue from the land fee. We do not believe that this approach has ever been used.

APPENDIX B: CASE STUDIES

A note on the case studies. The majority of the information below was obtained through the interviews discussed in this paper. Interviewees were provided a set of questions and responded either in person (over phone) or in writing. The cases described below represent information provided by the interviewee with minor additional detail provided by secondary sources (additional sources for each case are listed within their respective sections).

Question

B.1: Big Branch National Wildlife Refuge

Project Overview: After Hurricane Katrina struck New Orleans in 2005, the U.S. Army Corps of Engineers needed to update the city's levee system. The levee update process impacted wetlands in and around the city, including impacts to wetlands on Bayou Sauvage National Wildlife Refuge, which required subsequent mitigation of these activities. The Army Corps purchased available bank credits, but still required additional mitigation. The Corps could not find sufficient private lands for mitigation, and thus chose to mitigate wetland impacts on nearby national wildlife refuge land, calling the project New Zydeco Ridge. The project has not yet been completed and is currently in the construction phase.

Project Justification: What was the justification for doing mitigation on federal lands? Sufficient private lands/ private credits could not be identified.

How was the **additionality requirement** fulfilled? This project turned a shallow open water area into wetland—there had been no plans for wetland creation at the site prior to the Army Corps sponsored project.

Did the mitigation help the agency fulfill their **natural resource objectives**? Unclear—FWS would not talk to us about the project since it is ongoing.

What was the mitigation for? Wetland impacts during levee construction/reconstruction.

What was the type of mitigation? Permittee Responsible Mitigation.

Who performed mitigation activities? Army Corps of Engineers, mitigating for their own activities.

Any additional important context about that company or program? The Army Corps stated that their first choice for mitigation was to use existing bank credits, but that they purchased all available credits and still required additional mitigation. There was a long mitigation site prioritization process, but because of an agreement with the state to work on large scale restoration (>50 acres), the difficulty of finding available private lands for mitigation, and the Corps' inability to use credits that have not yet been released, it was determined that doing PRM on federal lands was the best option.

Who made the development impact? The Army Corps of Engineers.

What was the purpose of development? New Orleans' levee system required updates after Hurricane Katrina, and these updates affected wetlands in the region.

Where was mitigation performed? Big Branch National Wildlife Refuge.

What is the history of the land? The area of the New Zydeco Ridge project was on a parcel that had previously been shallow open water (it was classified as "low swamp") and is being transformed into wetland during the mitigation process.

Project Details: The project is still in the construction phase but is working to create a 365-acre wetland area. The wetland, when completed, is planned to consist of both bottomland hardwood and marsh wetland areas. The wetland creation process involves building an earthen dike, pumping in fill from Lake Pontchartrain, and planting wetland plant species. Details are not available, but a new invitation for bid is planned, and the New Zydeco Ridge project area is expected to expand.

What was the fee structure for use of public land? As far as we know, no fee was collected by the Fish and Wildlife Service for mitigation performed on their refuge.

What legal authorities allowed this project to occur?

What kind of permitting was required to perform mitigation on public lands for this case? The ACE got "Right of Entry" from the FWS to assess and plan for mitigation.

What part of the permitting/legal authority **helped ensure durability of the project?** Federal protections on the Wildlife Refuge constitute the durability assurances for this project. The state is a cosponsor of this project and has set up an agreement with the National Wildlife Refuge to maintain the site after construction is finished.

Were there any notable conflicts related to this case of mitigation on public lands?

If yes, **who objected and why?** Local mitigation bankers would prefer if the ACE purchased credits from them, rather than doing mitigation on federal lands. The ACE states that they purchased all available credits at the time of solicitation for this project and were unable to accept unreleased credits from local banks in case those credits failed or were never released.

It appears this conflict was significant: it resulted in a court case brought against the Army Corps. A private mitigation banking company sued the ACE and their contractor, claiming that the Corps' decision to mitigate on the National Wildlife Refuge rather than use existing bank credits constituted an unfair injury to the banking firm, and that there was no cause for the permits for New Zydeco Ridge to have been approved when there were already available credits. The case was dismissed on a technicality, related to the banking firm's inability to bring suit against the ACE on the basis of a NEPA violation, however the existence of a court case implies that the bankers were upset enough by the Army Corp's decisions to bring legal action, likely at great expense to the private firm.

There has also recently been some tension with the local community, who fear the New Zydeco Ridge project will decrease the resiliency and increase the likelihood of flooding in their neighborhoods. Though ACE reports that they have done everything to inform and receive input from the public, it seems that many of the residents were not aware of the project until August 2018. The ACE claims it is now collecting data from previous studies to address the property owners' concerns.

Would the party responsible for mitigation continue to mitigate on public land? Yes, the Army Corps stated that they have other projects on federal lands in this district because of the difficulty of finding private lands available for mitigation and the desire to do large scale projects.

Would relevant public land managers continue to allow mitigation on the land they manage? This information is not available—FWS declined to communicate with us about this project since it is still in progress.

What is the status of the mitigation project? It is currently in the construction phase. The project began 12 years ago (in 2006) and has not yet been completed. There have been delays due to permitting and construction setbacks.

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B.2: Daniel Boone National Forest

Project Overview: There are multiple stream mitigation projects in Daniel Boone National Forest; some completed under the ILF program run by the Kentucky Department of Fish and Wildlife Resources and some as permittee responsible mitigation (PRM) projects for the KY Transportation Cabinet. Three projects have been completed, and an extension of one project has been proposed.

Mitigation projects on the Daniel Boone National Forest originated through a collaborative Kentucky stream restoration working group including academic and state agency partners. When members of the working group from the Forest described some of their unrestored streams, working group members from the ILF program got involved and identified these sites as new mitigation opportunities.

Project Justification: This was a way to get restoration projects in the ground that would not have been possible without additional funding.

How was the **additionality requirement** fulfilled? The restoration project would not have taken place without the funds provided by the ILF program.

What was the mitigation for? Stream.

What was the type of mitigation? Multiple: ILF mitigation managed by the KY DFWR and PRM for the KY Transportation Cabinet.

Who performed mitigation activities? KY Department of Fish and Wildlife Resources (DFWR) and the Transportation Cabinet contracted out design and construction.

Where was mitigation performed? Daniel Boone National Forest.

Project Details: There have been three stream mitigation projects on the Daniel Boone National Forest. 1) Stonecoal/Slabcamp project was started in 2009 through the ILF program. It restored almost 17,000 feet of stream. This project has been extended once already, restoring another 11,000 feet, and a third phase has been proposed. The second and third phases of this project are PRM by the state Transportation Cabinet. 2) The Elisha Creek project was begun in 2012 and restored 5,000 feet of stream. 3) The East Fork Indian Creek project, initiated in 2015, restored 4,500 feet of stream. Projects 2 and 3 were both ILF program projects. As of 2018, 7.2 miles of stream have been restored through mitigation projects in the forest.

What was the fee structure for use of public land? No fee was collected by the National Forest for completing restoration on USFS land. However, the Forest did accept some funds from one of the projects to complete vegetation monitoring at the site.

What legal authorities allowed this project to occur?

What kind of permitting was required to perform mitigation on public lands for this case? Legal authority for the project: 33 CFR part 332; Section 404 of the Clean Water Act. The USFS granted KDFWR Right of Entry (ROE) to access the restoration site during design, construction, and monitoring.

What part of the permitting/legal authority **helped ensure durability of the project?** Durability is established in the Forest Management Plan for Daniel Boone National Forest—the management plan protects the restored areas from impacts by timber harvest, mineral, or other resource extractions. The ILF program is responsible for five years of disturbance maintenance on their project sites, and after that the forest becomes responsible.

Were there any notable conflicts related to this case of mitigation on public lands? No. The Forest reports they received nothing but support—even from people and organizations who have been critical of their restoration projects in the past. The Forest also reports that during the NEPA review process they received uniformly positive comments for these projects.

Were there any unique challenges to performing mitigation on public land?

Contractors have struggled some with getting the permits through, however the total permitting time for these projects did not differ greatly from nearby non-adjacent federal lands projects.

The Federal NEPA process is a bit more time consuming than a NEPA process for private lands.

One additional challenge noted by the Forest was related to their role during restoration project design. Because the ILF program and the permittee oversee contracting for design and implementation, the USFS in essence becomes a landowner simply providing the area for restoration work to be accomplished. However, the FS sees itself more than just an ordinary landowner; USFS employees have informed ideas for how they want restoration to be implemented, and this can create tension between contractors and the forest if contractors design restoration in ways that contradicts how the forest might have completed it.

Would relevant public land managers continue to allow mitigation on the land they manage?

Yes, the Forest is currently working on a new project.

What is the status of the mitigation project? Three projects have been completed, and a new one is under consideration. All projects on the forest are still in the monitoring stage.

Are there any important outcomes of this public lands mitigation that would be important to note? Were there any important lessons learned from this case? Members of the Forest Service involved in these projects point out that there are many mitigation opportunities on federal lands; these lands can represent a good place to experiment with different restoration techniques. These experimentations are harder on private land, as few landowners want to test new methods for restoration. Federal lands mitigation experiments can be seen to advancing the science of restoration, as long as research dollars are available to study these sites and new techniques are shared transparently. One of the restorations was on the Daniel Boone NF was more experimental, and the USFS is now doing studies to examine its effectiveness.

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B.3: Everglades National Park

Project Overview: Large parcels of land contained in Everglades National Park were farmed until 1975 when the farms were abandoned, leaving 6,000 acres of degraded land. These lands were overtaken by invasive plant species. Everglades National Park, the National Park Foundation, and Miami Dade County cooperatively set up the Everglades National Park ILF program to help fund restoration of these degraded agricultural lands.

Project Justification: The park receives private sector funding to restore degraded wetlands.

How was the **additionality requirement** fulfilled? It is not clear that these projects are additional.

What was the mitigation for? Wetlands.

What was the type of mitigation? This project was originally set up as a mitigation bank through a 1993 memorandum of agreement between the National Parks Service and the National Park Foundation, but transitioned to operations under an ILF program managed by the National Park Foundation in 2015.

Who made the development impact? Primarily private developers in the region; as they build and impact wetlands, they are required to mitigate.

Where was mitigation performed? Everglades National Park.

Project Details: There is a potential to generate 1,150 palustrine emergent compensatory mitigation credits at the project site, though not all restoration has been done yet. This translates to 6,300 acres of wetland restoration. As of 2018, 5,328 acres of wetland have been restored with 972 acres still planned for restoration.

What was the fee structure for use of public land? Fees are collected in amounts that only cover the cost of restoration projects, and no additional fee is collected by the national park.

What legal authorities and permitting allowed this project to occur? The ILF Program was created under Section 404 of the Clean Water Act.

What part of the permitting/legal authority **helped ensure durability of the project?** A long-term financial assurance was approved by the ACE to help ensure durability of the projects funded by the ILF program. This assurance fund generates income for maintenance, monitoring, and other needed activities. The ILF program also set up a long-term management plan that provides details for how restoration sites will be managed.

Were there any notable conflicts related to this case of mitigation on public lands? Possibly. The research team was made aware of possible equivalency issues related to this project, in which there was concern that the ILF program had the ability to undercut the price of credits coming from private banks. The ILF program's fees are reportedly lowered because the program doesn't have to purchase private land to restore and less money is required for long term operations and monitoring than what is required for private banks. However, some interviewees directly involved

in the project were not aware of these issues and refuted the claim that maintenance funds are lower. Credit sales in the service area of the Everglades ILF also indicate that private bank credits are easily selling. According to RIBITS, there were (at the time of this writing) four operational banks whose service areas overlapped with part of the Everglades NP ILF service area and share the same credit classification. Since 2000, there were > 400 credit transactions from these banks and the ILF Program and 46 transactions were from the Everglades NP ILF. However, limited credits being released from the Everglades ILF site could explain how private credits are still selling, even if the price is higher.

Were there any unique challenges to performing mitigation on public land? Permitting time was a challenge—more than a decade of development, planning, and permitting took place before the program went into effect.

What is the status of the mitigation project? Ongoing since 1993.

Are there any important outcomes of this public lands mitigation that would be important to note? Equivalency of mitigation types need to be taken into account when designing a mitigation program (see the above sections on conflicts/challenges). There is a concern by private bankers that mitigation performed on federal lands is cheaper than mitigation performed on private lands, and that in markets where federal lands mitigation is expanding private banks (and their credits) will be pushed out of the market.

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B.4: Great Smoky Mountain National Park

Project Overview: Chilogatee Stream had been severely degraded due to clearing of riparian forest, channel relocations, and unrestricted livestock access to the stream before the property where the stream lies was incorporated into the National Park.

Project Justification: The project was initiated because the National Park saw it as a way to accomplish stream restoration using resources that would have been otherwise unavailable.

How was the **additionality requirement** fulfilled? The stream restoration was unscheduled to occur without the addition of funds by the ILF program.

What was the mitigation for? Stream restoration.

What was the type of mitigation? ILF program managed by the Tennessee Stream Mitigation Program (TSMP). When active, this program was overseen by a nonprofit foundation, but TSMP voluntarily suspended activity in 2016 and was officially shut down by the ACE in many of its service areas in 2018 due to collection of insufficient fees to meet the program's credit liability.

Who performed mitigation activities? Mitigation activities were completed in a collaboration between TSMP and the NPS, with stream restoration designed by Wolf Creek Engineering and constructed by KCI Environmental Technologies and Construction.

Who made the development impact? The ILF program was able to mitigate for public and private impacts, collecting fees from any agency or organization that was impacting streams.

Where was mitigation performed? Great Smoky Mountain National Park

What is the history of the land? The parcel where Chilogatee Stream lies was not always incorporated into the National Park. Most of the damage to the stream occurred before the parcel was acquired by the park.

Project Details: 3,236 stream credits were created. This translates to 4,613 feet of stream restored (744 feet of which are actually inside Great Smoky Mountain National Park).

What was the fee structure for use of public land? ILF and free restoration—the park will not be receiving any revenue from credit sales.

What legal authorities allowed this project to occur? The legal authority cited in the MOU for the project is: Title 43 CFR 24; Title 36 CFR 1.1(a); 16 U.S.C. 1a-2(1).

What is the status of the mitigation project? The project was completed in 2015.

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B.5: Francis Marion and Sumter National Forests

Project Overview: Restoration in the Francis Marion and Sumter National Forests mitigated multiple public and private development impacts on streams and wetlands. Multiple restoration projects were included in the overall mitigation and included multiple wetland restoration sites and cumulatively 20 miles of restored stream.

Project Justification: The mitigation projects meet Forest Service goals to restore and enhance stream habitat and aquatic communities. These restoration projects are seen to help Sumter and Francis Marion National Forests accomplish multiple goals outlined in their Land Management Plans.

How was the **additionality requirement** fulfilled? There was not sufficient funding to accomplish restoration at this scale on the National Forests, and these PRM projects completed/will be completing restoration much sooner than would previously have been possible.

What was the mitigation for? The mitigation was for wetlands (including salt marshes) and streams.

What was the type of mitigation? PRM.

Who made the development impact? These PRM projects were funded by multiple sources doing different types of development projects:

- Duke Energy was building a new drought contingency reservoir for the proposed Lee Nuclear Station in Cherokee County, SC, that impacted streams.
- Boeing was expanding a facility that impacted wetlands.
- City of Charleston was completing a pump station that impacted salt marshes.

Where was mitigation performed? Francis Marion and Sumter National Forests. Some restoration was done on existing FS lands, and some of the mitigation was accomplished through adjacent wetland acquisition (i.e., wetlands adjacent to the forests were purchased and being placed under the jurisdiction of the Forest Service). The Nature Conservancy and the Open Space Institute are collaborating on these projects by holding adjacent lands during the restoration process and will donate them to the Forests once restoration is complete.

Project Details: There are five PRM projects underway in/adjacent to the Francis Marion and Sumter National Forests that will result in \$20 million worth of restoration on 6,000 acres. At least 50 acres of saltmarsh and 20 miles of streams are being restored.

PRM on FS lands in SC was initiated when Duke Energy approached the Forests about its need to find lands where they could do stream restoration. The agreement for Duke Energy to do PRM projects on FS (or FS adjacent) land was put in place at the same time that Boeing and City of Charleston also needed wetland and saltmarsh credits and replicated the Duke Energy Agreement. Since those first agreements, the SC State Ports Authority, Mercedes, and Volvo have also funded wetland restoration on private lands that are planned for donation to the FS in SC.

What was the fee structure for use of public land? No fees are being collected by the Forest Service for mitigation performed on their lands, but there are requirements for the permittees to pay for certain maintenance services. The permittees were required to pay for EIS and restoration costs, and the USFS collected funds for personnel time to consult, approve, and monitor the restoration planning and work.

What legal authorities and permitting allowed this project to occur? This project was done under the authority of Section 404 of the Clean Water Act.

What part of the permitting/legal authority helped ensure durability of the project? The Army Corps of Engineers Charleston District and the Francis Marion and Sumter National Forests signed a Conservation Land Use Agreement (CLUA), and the Forests developed a Land Adjustment Strategy linked to the CLUA. These two documents provided a foundational framework for these mitigation opportunities. The CLUA deems the Forest Service Management Plans for these National Forests adequate for ensuring the durability of the mitigation projects.

Were there any unique challenges to performing mitigation on public land? There was a federal requirement for a NEPA process, which was an additional expense that wouldn't have been required on private lands (a consideration for the permittees). There was no guarantee that the mitigation projects would be approved until all analysis, public notice, and comment periods had been finalized. This is another risk that permittees have to consider when choosing to do mitigation on public lands.

Would the party responsible for mitigation continue to mitigate on public land? Unknown—since many of these projects have not yet been completed it is unclear whether these companies would engage in future similar projects.

What is the status of the mitigation project? Currently underway.

Are there any important outcomes of this public lands mitigation that would be important to note? Any lessons learned?

The Forest Service is interested in replicating this type of mitigation in other forests.

NGOs can be valuable partners in these types of projects—they are able to hold property and transfer ownership to an agency when mitigation is complete (this creates NEPA efficiencies).

The USFS takes a risk when it agrees to manage restoration projects that took place on private lands by taking title to the land. This is a benefit to the impacting party but must be considered carefully by the USFS.

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B.6: Superior National Forest

Project Overview: Administrative and management activities carried out by the Forest Service in Superior National Forest impact wetlands and streams. These Forest Service activities require mitigation and were previously mitigated by purchasing offsite mitigation credits. The Forest Service created the Superior Mitigation Bank to establish an internal supply of stream and wetland credits to accomplish advanced mitigation and to achieve restoration on-site rather than outside of the Forest.

Project Justification: The Forest is able to achieve restoration goals within Forest boundaries as well as offset its administrative activities. Superior National Forest contains many wetlands that have been historically impacted by logging and other human activities. This was an opportunity to restore damaged wetlands on the Forest.

How was the **additionality requirement** fulfilled? It is not clear that this project was additional or that additionality was taken into consideration during the creation of the bank. Documentation from the project indicates that the restoration was already going to be taking place prior to the approval of the wetland bank agreement.

What was the mitigation for? Wetlands and streams.

What was the type of mitigation? Mitigation bank managed by the U.S. Forest Service.

Who performed mitigation activities? U.S. Forest Service.

Who made the development impact? The U.S. Forest Service.

Where was mitigation performed? Superior National Forest.

Project Details: The initial bank has restored 4.2 acres, and there is potential for this to expand for additional credit creation. There are several restoration projects in the planning stage, and one currently going through NEPA review.

What was the fee structure for use of public land? Since the Forest is creating mitigation credits for itself, the transactions are internal, and no fees are collected. The Forest is considering selling credits to outside buyers in the future, contingent on future credit release by the ACE. Funds collected from these credit sales would be put towards additional restoration. However, it should be noted that a mechanism for selling these credits to outside buyers has not yet been identified.

What part of the permitting/legal authority **helped ensure durability of the project?** The ACE approved the bank for durability based on the Superior National Forest Land and Resource Management Plan. (40 CFR 230.97 (a)(1) allows that government property may be protected through federal facility management plans or integrated natural resource management plans). Monitoring of the bank site is ongoing to ensure that restoration goals are being met.

Would relevant public land managers continue to allow mitigation on the land they manage?

Yes, the Forest is interested in continuing to do wetland mitigation through additional restoration projects.

What is the status of the mitigation project? Existing, the mitigation bank was established in 2015. There is a potential for the bank to expand.

Are there any important outcomes of this public lands mitigation that would be important to note?

The creation of the Superior National Forest mitigation bank has been an effective way to keep restoration funds within the Forest. It has been successful for advanced mitigation, as well as reducing permitting time.

The SNF Bank project was presented at a recent regional FS meeting and generated a lot of interest and many questions. Other forests are taking note and interested in developing their own banks if this project continues to go well.

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Review

This report was reviewed by Steve Martin, Krystel Bell, and David Olsen (US ACE); Palmer Hough (EPA); Adam Rigsbee (River Bank mitigation provider); Doug Wheeler (Hogan Lovells law firm); Chris Hartley (OEM USDA); and one anonymous reviewer (NPS). The paper has undergone significant revisions after two rounds of review.

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