OPPORTUNITY FOR IMPROVED WETLAND MITIGATION IN UTAH—IN-LIEU FEE MITIGATION POTENTIAL IN UTAH

by Diane Menuz and Rebekah Downard

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Cover Photo: *Spring complex near Great Salt Lake in Tooele County, site of a proposed new mitigation bank.*

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SUMMARY

Wetlands play a crucial role in watersheds and provide critical ecosystem functions, most notably, water quality improvement, fish and wildlife habitat, flood attenuation, drought mitigation, and carbon sequestration. Wetlands in Utah are regulated primarily by the federal government under the Clean Water Act (CWA), which requires mitigation to replace ecological services that are lost to permitted activities. Utah House Bill 118 (2022) directed the Utah Geological Survey to explore the potential for an In-Lieu Fee (ILF) mitigation program to improve wetland resources in Utah. An ILF program would allow entities seeking CWA permits to pay a fee to mitigate impacts to streams and wetlands rather than having to develop their own mitigation plans. To research the possible consequences of an ILF, we conducted document research and interviews with mitigation practitioners and wetland stakeholders and analyzed ten years of permit data. Interview participants agreed that an ILF would improve the quality of wetland mitigation projects, which currently are often small, isolated, and overrun with weeds. An ILF would also improve coordination between the various entities involved in natural resource protection, permitting, and restoration. Further, permittees would benefit from an ILF because it would streamline the permitting process. Research and input from current practitioners showcased that there were many options for running an ILF program that can work for Utah, which has few permitted wetland impacts compared to other, less arid states. The most effective way to build an ILF in Utah is to support a full-time ILF administrator to establish the program and develop and maintain strong relationships with regulators, restoration specialists, and those seeking permits. Based on historical permit rates, such a position could be funded by program fees after the program is established. The future of a self-sustaining ILF program is uncertain, however, due to the recent Sackett v. Environmental Protection Agency (EPA) Supreme Court decision which limited the types of wetlands that are regulated by the federal government. The expected reduction in wetland permitting creates a more challenging environment in which to operate an ILF program because permit fees will likely no longer support a full-time ILF administrator's salary. At the same time, ensuring high quality mitigation will be more important than ever because there will be more unpermitted and thus unmitigated wetland impacts, leading to loss in ecological functions. Given these considerations, we recommend establishing a position for a wetland mitigation and restoration coordinator who can explore multiple options to preserve and restore wetlands in Utah, coordinate among agencies, and begin to implement an ILF program at a rate and scale appropriate to the new regulatory conditions. By investing in a wetland mitigation and restoration coordinator, the state can support voluntary restoration measures to increase wetland functions while at the same time improving mitigation outcomes for permittees and projects. Together, these actions will lead to healthier, more resilient wetlands that will protect the quality of life for all Utahns.

INTRODUCTION

Wetland and Stream Protections

Wetlands play a crucial role in watersheds and provide critical ecosystem functions, most notably, water quality improvement, fish and wildlife habitat, flood attenuation, drought mitigation, and carbon sequestration (Mitsch and Gosselink, 2015). Wetlands are often likened to kidneys of the watershed because of their ability to filter out pollutants or to sponges for their ability to hold and slowly release water. Despite their importance, over 50% of the wetlands in the continental United States were lost by the late 20th century to make room for farms, homes, and roads (Dahl, 1990). The U.S. Congress passed the Clean Water Act (CWA) in 1972 to address these losses and other threats to our nation's waters.

Section 404 of the CWA—the Dredge and Fill Permit—requires anyone who drains or fills any aquatic feature that is considered a Water of the United States (WOTUS) to obtain a §404 permit from the Army Corps of Engineers (USACE). Subsequent rule making and litigation continues to define and limit which wetlands, streams, and other aquatic resources are considered WOTUS and thus subject to regulation (box 1). No-Net-Loss is a federal policy articulated in a 1990 Executive Order that states any wetlands lost to CWA permits must be replaced so that in total no wetland area is lost (National Research Council, 2001). Regulatory agency rules have specified the sequence of steps for avoiding and minimizing wetland impacts and the requirements for mitigating impacts that are unavoidable. Wetland mitigation is the term for creating, restoring, enhancing, or preserving wetlands to replace wetland functions that have been lost.

Compensatory Mitigation Options

USACE allows three types of mitigation (in order of preference): purchasing credits in **mitigation banks**, purchasing credits in an **in-lieu fee (ILF) program**, or **permittee-responsible mitigation** (box 2). Mitigation banks are USACE-approved locations where wetlands or streams have been preserved, restored, created, or enhanced to meet compensatory mitigation obligations.

Box 1. *The evolving definition of Waters of the United States (WOTUS).*

Background

Section 404 of CWA regulates dredging and filling in all WOTUS but does not make clear which waterbodies are considered WOTUS beyond navigable waters. Since 1972, the Environmental Protection Agency (EPA) and USACE have used rulemaking to define which waters are considered WOTUS and thus regulated by the CWA. U.S. Supreme Court decisions and federal agency science have continued to change the legal definition of WOTUS in recent years.

Legal vs. Biological Wetland Definitions

Biologically, wetlands are defined by three features: 1) flooding or saturation for sufficient time to create and support 2) hydric soils, and 3) vegetation adapted to flooding. *Legally*, only wetlands that are considered WOTUS are subject to CWA regulation. Legal definitions have focused on questions of degree of permanence, connectivity with adjacent waterbodies, and whether features have a significant influence on the biological, physical, and chemical integrity of adjacent waterbodies. Impacts to wetlands that do not qualify as WOTUS are not subject to wetland permitting and would not be mitigated by an ILF.

Timeline

- 1972 – The CWA regulates pollutant discharge in the U.S. Section 404 applies to navigable waters, giving USACE responsibility for implementation.
- 1985 – The United States v. Riverside Bayview Homes ruled that wetlands adjacent to navigable waters are WOTUS.
- 2001 – Solid Waste Agency of Northern Cook County (SWANCC) v. USACE ruled that isolated wetlands used by migratory birds are outside USACE jurisdiction.
- 2006 – Rapanos v. United States complicated the definition of WOTUS because of a split court decision. One Supreme Court justice defined WOTUS as waters with "significant nexus" to navigable waters, whereas four justices preferred a narrow WOTUS definition as only those with relatively permanent flows or surface connection to relatively permanent water. A plurality of justices ruled that either of the above standards applied.
- 2015 – The Clean Water Rule released by the EPA and USACE was an effort to define the legal term "significant nexus" in practice, based on existing scientific literature. It broadened WOTUS to include isolated waters with a biological or chemical influence on navigable waters as well as traditional navigable waters, tributaries and adjacent waters. This rule was appealed and blocked by courts in 28 states.
- 2020 – Navigable Waters Protection Rule repealed the Clean Water Rule in favor of the narrow WOTUS definition from Rapanos, which requires a relatively permanent surface water connection to navigable waters. USACE and EPA halted implementation of this rule in 2021.
- 2023 – Revised definition of WOTUS defers to pre-2015 standards, the expertise of USACE and EPA, and public comment. This rule has been blocked by courts in 27 states.
- May 2023 – Sackett v. EPA adopted the narrow definition of WOTUS from the Rapanos decision, that only those wetlands and tributaries that are relatively permanent and have a surface connection to relatively permanent navigable waters are subject to CWA jurisdiction.

Box 2. *Common compensatory mitigation terminology.*

§404 Dredge and Fill Permit

Regulates the discharge of dredged or fill material into Waters of the United States. Permit seekers who will have impacts to wetlands and streams must show there are no alternatives to avoid impacts and that they have worked to minimize as many impacts as possible. Unavoidable impacts must be addressed through compensatory mitigation.

Waters of the United States (WOTUS)

Waterbodies that the Clean Water Act is applicable to, also known as jurisdictional waters. The definition of WOTUS changes periodically, but generally it is defined as navigable waterways, waterbodies adjacent to navigable waters, and waterbodies with a significant effect on navigable waters' biological, chemical, or physical integrity. See box 1 for details.

Compensatory Mitigation

Offsetting unavoidable adverse impacts to wetlands and streams through preservation, restoration, creation, or enhancement of wetlands and streams. Mitigation banks, in-lieu fee programs, and permittee-responsible mitigation are the three possible mechanisms for compensatory mitigation.

Mitigation Bank

A site, approved by USACE, where wetlands or streams have been preserved, restored, created, or enhanced to meet compensatory mitigation obligations. Permittees can then purchase credits from the bank to meet their mitigation obligations. Mitigation banks have service areas and can only sell credits to permittees located within that service area. In contrast to other mitigation mechanisms, mitigation bank actions must be completed before they can sell credits.

In-Lieu Fee Program

A program, approved by USACE, that collects fees from permittees to fund restoration, creation, or enhancement to meet compensatory mitigation obligations within a defined service area. The obligation to design and get approval of mitigation projects is transferred to the ILF sponsor.

Permittee-Responsible Mitigation

Restoration, creation, or enhancement undertaken by a permittee to meet their compensatory mitigation obligation.

Permittees can purchase credits from the bank to offset the impacts they are required to offset. Mitigation banks are the preferred route for compensatory mitigation because mitigation has been completed prior to any wetland impacts, so there is no time lag between when wetland functions are lost to permitted activities and when those functions are replaced through mitigation. A mitigation bank has a defined service area and can only sell credits for impacts that occur within that boundary. As of 2023, Utah has one mitigation bank, Machine Lake Mitigation Bank, that sells credits to the public for impacts near Great Salt Lake. Machine Lake only sells credits for wetland, and not stream, impacts. Utah also has two private mitigation banks that sell only to the bank sponsor and no ILF programs. New mitigation banks in high-demand areas like Utah Lake,

Great Salt Lake, and Cache Valley are in various stages of development. Anyone seeking a wetland permit in Utah outside existing mitigation bank service areas must propose their own mitigation project, which is known as permittee-responsible mitigation.

Permittee-responsible mitigation is time-consuming and costly to develop and has a low success rate for creating or restoring high-functioning wetlands (Kissinger, 2008). Permittees must have a mitigation plan in place before USACE approves a permit and they can begin their project. Mitigation requires identifying an appropriate project location, securing access to that site, enacting the project, and monitoring to demonstrate project success. Specific scientific expertise is needed to select a good project that will be sustainable into the future without intensive long-term management. Unfortunately, many permittee-responsible mitigation projects are small and isolated "postage-stamp" wetlands that do not support many wetland functions because they do not have enough water or because weed species like cattails (*Typha* spp.) and Phragmites (*Phragmites australis*) invade the mitigation wetlands (figure 1).

An ILF program bridges the gap between mitigation banks, which have already completed compensatory mitigation, and permittee-responsible mitigation, which is proposed on a case-by-case basis. ILF programs gather fees from multiple permittees and combine them to fund larger, more meaningful projects chosen based on watershed needs and designed by knowledgeable restoration practitioners (Kihslinger and others, 2019). Although there is a temporal lag in wetland functions, as fees are collected before mitigation activities are started, compensatory mitigation is done following an approved planning framework. Once an ILF program has been approved by USACE, the ILF sponsor takes on the burden of getting compensatory mitigation projects approved, easing the burden on permittees. Third-party mitigation sponsors (banks or ILFs) are trusted entities who have gone through an approval process with USACE that allows them to take on the red tape responsibility of getting mitigation projects approved and implemented and the liability for ensuring mitigation success (figure 2).

Figure 1. *An example of an isolated compensatory mitigation project in the Jordan River watershed that is overrun by invasive Phragmites.*

Figure 2. *An example of third-party mitigation with native, high-value plants and secured access to water at the Inland Sea Shorebird Reserve, a private mitigation bank established to serve Rio Tinto Copper–Kennecott.*

HB-118 – Wetland Amendments

Concern over wetland function losses spurred Utah State Representative Casey Snider to propose Utah House Bill 118–Wetland Amendments in the 2022 General Session, directing the Utah Geological Survey (UGS) to study the "viability of an in-lieu fee program for wetland mitigation" and publish wetland permit data. Representative Snider was concerned about wetland loss he has seen around Cache Valley, where he lives, and the poor-quality mitigation projects taking their place. Wetland losses are especially concerning in Utah because wetlands are rare, covering less than one percent of the state.

Dozens of ILFs currently operate in the U.S., providing templates for how one might be established in Utah, but they are concentrated in regions with more wetland resources. One consequence of having fewer wetland resources in Utah is that there are also fewer §404 permits issued compared to other states. The Nature Conservancy of Utah (TNC) explored the possibility of establishing an ILF in the Bear River watershed in Utah but had to expand their proposed program area throughout northern Utah to account for low levels of permit activity. TNC submitted a Prospectus—a document outlining how an ILF would operate in the state—for public review but did not pursue the next step of developing an ILF Program Instrument because of persistent uncertainty about multiple factors that would determine the success of their ILF.

Three issues of feasibility need to be addressed before an ILF is established in Utah. First, will there be enough permits issued to support an ILF, given that fees must be spent within three years of when they are collected and must pay for all costs associated with the program? Related to that, how much of the state could an ILF operate in to allow for financial success? Last, where should an ILF program be placed within state programs to take advantage of existing capacity and operate efficiently?

The initial study for House Bill 118 was delivered to the Utah Legislature Natural Resources, Agriculture, and Environment Interim Committee on May 16, 2023. On May 25, 2023, the U.S. Supreme Court issued a decision in the case of Sackett v. EPA with implications for the feasibility of a new ILF. The ruling adopted a narrow definition of which waters are regulated under the CWA, ruling that WOTUS should only include those wetlands and tributaries that are relatively permanent and have a surface connection to relatively permanent navigable waters. We cannot fully understand the effects of the Sackett ruling for Utah's wetlands until the EPA and USACE develop guidance on how the decision will be carried out in practice. However, the decision will almost certainly reduce the number of wetlands subject to federal regulation in Utah and thus the number of permittees seeking to purchase credits from an ILF program, straining the financial stability of an ILF program. This report is a revision of the original legislative report with updated recommendations.

Introduction Takeaways

→ CWA requires mitigation when federally regulated wetlands and streams are impacted.

→ Mitigation can be done by a mitigation bank, ILF program, or by the permittee; mitigation options in Utah are currently limited.

→ Permittee-responsible mitigation is time-consuming, costly, and often creates small aquatic resources that provide few ecological functions.

→ An ILF program would collect fees from permittees and combine them to create larger, higher-quality mitigation projects.

→ Several important questions regarding fees, costs, and administration need to be addressed before implementing an ILF in Utah. A recent court ruling impacting which wetlands are federally regulated adds to those questions.

STUDY APPROACH

We used a multi-pronged approach to explore opportunities for an ILF in Utah. 1) The first step was to review literature on the legal requirements for an ILF and the structure of existing ILF programs. 2) Once we understood the legal requirements, we sought to understand how ILFs are run in practice through interviews with established ILF programs in other western states and USACE, who approves ILF plans and administers CWA permits. Concurrently, we analyzed ten years of CWA permit data (January 2012–July 2022) gathered through a Freedom of Information Act request to illuminate trends in the permits that could use an ILF. 3) We also spoke with representatives in state natural resource and conservation agencies, federal land and wildlife management agencies, non-profit organizations, and consultants to find the capacity within the region to support an ILF (table 1).

RESULTS

ILF Requirements

An ILF program is an account that collects fees from permittees to spend on compensatory mitigation projects that have more meaningful impacts than single permittees could produce. In 2008, USACE and the EPA finalized the rules for compensatory mitigation of aquatic resources, which set the criteria for how an ILF is run. Unlike a mitigation bank, which can be run by private entities, ILF programs can only be operated or sponsored by government or non-profit natural resource management organizations. To establish an ILF, a **program sponsor** first develops a **Prospectus**, which includes information on threats and conditions in the program area and outlines a strategy for prioritizing projects. Once the Prospectus undergoes a public comment period and is approved by USACE, the sponsor can develop the **Program Instrument**, which includes more details about how the program will run, including financial details and how credits will be determined (box 3). Once the Instrument is approved by USACE, the ILF program can begin collecting fees and planning mitigation projects.

Table 1. *Stakeholders whose expertise informed our estimate of ILF feasibility in Utah.*

Organization	Role
In-Lieu Fee Mitigation Programs and Mitigation Banks	
Arizona Game and Fish Department In-Lieu Fee Mitigation Program	Restoration Program Manager
Bureau of Land Management Southern Nevada District	National Conservation Area Manager
The Nature Conservancy in Maine	Mitigation Program Manager
National Forest Foundation	Vice President, Field Programs
Machine Lake Mitigation Bank	Bank Sponsor Sales Point of Contact
Regulatory Agencies	
U.S. Army Corps of Engineers	Chief, Nevada/Utah Regulatory Section
	Mitigation Banking Specialist
Utah Department of Water Quality	Nonpoint Source Program Coordinator
	Watershed Protection Section Manager
Permit Applicants and Consultants	
Utah Department of Transportation	Senior Landscape Architect
	Environmental Program Manager
	Director of Environmental Services
Utah Division of Water Resources	Director
HDR Consultants	Biology and Environmental Compliance Group Manager
Aquatic Resource Management Agencies	
U.S. Bureau of Land Management	Utah Aquatic Resources—Fisheries and Riparian Lead
U.S. Fish and Wildlife Service	Environmental Contaminants and Restoration Specialist
U.S. Forest Service, Uinta-Wasatch-Cache National Forest	Soil and Water Program Manager
Utah Reclamation Mitigation and Conservation Commission	Project Coordinator
Utah Division of Forestry, Fire and State Lands	Sovereign Lands Program Administrator
Utah Division of Wildlife Resources	Assistant Chief Habitat Section ESMF/UWAP
	Central Region Aquatics Manager
	Central Utah Project Leader
	Habitat Section Chief
	Native Aquatic Species Program Coordinator
	Wildlife Impact Analysis Coordinator
	Wildlife Lands Coordinator
Utah Department of Agriculture and Food	Director, Conservation Division
	Environmental & Water Optimization Program Manager
Utah Department of Natural Resources Watershed Restoration Initiative	Director, Watershed Program
Non-profit organizations	
The Nature Conservancy	Utah Northern Mountains Regional Director
	Director, Stewardship
Ducks Unlimited	Manager of Conservation Programs
	Biologist

Box 3. *ILF terminology.*

Documentation

ILF Prospectus: Proposal for how an ILF will run, submitted to USACE and the IRT for review as well as for a public comment period.

Program Instrument: Governs the operation and use of an ILF, more detailed than the prospectus. Draft and final instruments are submitted to USACE.

Features

Service Area: The geographic area within which impacts can be mitigated through purchase of ILF credits. Compensatory mitigation must follow a watershed approach, which means mitigation activities need to occur within the same watershed as the impacts. An ILF can have multiple service areas.

Credit: A measure of the accrual or attainment of aquatic functions at a compensatory mitigation site. The measure of aquatic functions is based on the resources restored, established, enhanced, or preserved. Credits can be differentiated by resource type like wetlands and streams or specific wetland types like vernal pools.

Organizations

Interagency Review Team (IRT): Group of regulatory and resource agency representatives that reviews documentation and advises USACE on compensatory mitigation projects.

U.S. Army Corps of Engineers (USACE): Responsible for administering permits regulating impacts to aquatic resources.

Environmental Protection Agency (EPA): Provides guidance to USACE on permits that impact aquatic resources.

ILF Sponsor: Government agency or non-profit organization that has been approved to run an ILF program.

Permittee: Landowner or developer seeking a permit who pays into an ILF to meet compensatory mitigation obligation for impacts to aquatic resources.

The 2008 mitigation rule outlines the Watershed Approach, which is an analytical process for strategically selecting mitigation sites to maintain and improve the quality and quantity of wetlands and streams in a watershed. Compensatory mitigation should occur in the same watershed as the permitted impacts whenever possible to support the sustainability of the impacted watershed. The watershed approach is implemented in part through the development of **service areas**. Fees collected by mitigation banks or ILF programs within a particular service area (usually based on watershed boundaries) must be spent on mitigation within that service area.

Once an ILF is established, each mitigation project must be approved by the **Interagency Review Team (IRT)** and should be implemented within three years of collecting fees. Mitigation projects can include protection, enhancement, restoration, or establishment activities, though the number of credits the program receives for a project will depend on the amount and type of mitigation activities being conducted. Preservation projects receive the fewest mitigation credits because they do not add aquatic resource functions or area, whereas restoration or creation projects receive more credits because they create wetland functions. The IRT helps set performance standards by which the project will be evaluated and requires five to ten years of monitoring to evaluate project success. Lands having mitigation projects must be protected in perpetuity through fee title or conservation easements. Projects are ideally self-sustaining, but the project mitigation plan must include a long-term management strategy with an identified responsible party.

ILF programs must set credit prices in a manner that covers the full cost of the program, including project costs (land acquisition, design, labor), administration, contingency costs, and long-term management.

ILF Requirement Takeaways

→ The 2008 Mitigation Rule establishes the guidelines for how an ILF is run, including the watershed approach and time limits for spending funds.

→ USACE, EPA, and the IRT oversee and approve the documentation required for ILF establishment and approve mitigation actions.

The ILF Experience in Arid States

We interviewed representatives from four ILF programs for an in-depth understanding of how an ILF operates in practice. Three programs we spoke with operate in arid states (Arizona, Colorado, and Nevada) where wetland resources and impacts are scarce, much like in Utah. We also interviewed an ILF program in Maine that is run as a partnership program between the state and a non-profit entity to understand alternative ILF administration options.

The Arizona ILF was the most established program we spoke with and shared insights from 20 years of ILF operation, whereas the Colorado ILF is in the initial stages of operation, having been approved by USACE in 2020. The western ILF programs are each sponsored by a different type of organization: a federal land management agency (Nevada), a state wildlife agency (Arizona), and a non-profit organization (Colorado). ILF programs tended to focus on mitigating impacts to different aquatic resources, depending on regional needs. Nevada and Arizona ILF programs almost always mitigate for stream impacts whereas Colorado addresses both stream and wetland impacts. These western state ILF programs also demonstrated the variety of program structures for organizing how work was done: Arizona has five employees with part-time work dedicated to the ILF whereas the Colorado ILF has a single employee and much of the work is done through contracts with other organizations.

The state of Maine has more wetland resources and more aquatic resource regulations than Utah, but the ILF experience there highlights advantages to sharing compensatory mitigation burdens between two organizations. TNC of Maine and the Maine Department of Environmental Protection (MDEP) jointly run a statewide ILF. MDEP collects fees for projects requiring mitigation and bears the financial responsibility for program success and TNC is responsible for all other aspects of program administration. The joint arrangement was selected because MDEP did not have staff who could administer all parts of an ILF program, and the two organizations renew their contract periodically so long as the split management works. Benefits of a non-profit organization administering at least parts of an ILF program include isolating decisions from political change, maintaining expertise within the program because of lower employee turnover rates, and utilizing the existing expertise in conservation agreements and legal issues that some government agencies lack.

Even with the variety of operational strategies within the ILF programs we spoke with, there are key similarities in how these programs operate to be successful in the arid West. First, all three programs located their projects on public lands (state, Bureau of Land Management, or Forest Service properties), which meant the cost of purchasing land was not a part of overall project cost. Without the significant cost of purchasing land, smaller compensatory mitigation projects are more financially feasible. However, working on public lands does require extra work to identify an acceptable legal arrangement for protecting the mitigation sites into perpetuity.

All interviewees said it is important to reach out to potential ILF customers (e.g., mining, development, or flood control organizations) to anticipate credit needs and potential mitigation projects. By maintaining communication with potential customers, ILF programs can avoid accepting fees from service areas that will not generate sufficient funds to support successful restoration projects. ILF programs can also identify potential restoration projects in regions with future mitigation needs, making it more likely that fees will be used within the three-year timeline required by USACE. Furthermore, ILF

sponsors can use these preliminary plans to come up with more accurate and detailed credit price estimates, helping ensure that sufficient fees are collected to fund the mitigation. All programs benefit from strong relationships with USACE and members of the IRT to guarantee support for proposed mitigation projects. Interviewees stressed the importance of building flexibility into the Program Instrument so that it is easier to address unforeseeable issues that come up.

Arid West ILF Takeaways

→ ILF programs can be feasible in the arid West with careful consideration of customer demand.

→ Locating mitigation projects on public lands is an opportunity for Utah to keep costs down but requires additional legal arrangements for long-term protection.

→ Maintaining communication with potential ILF customers, USACE, and the IRT is crucial.

The Current Permitting Environment in Utah

We spoke with regulatory and mitigation banking specialists from USACE to understand the regulatory perspective on an ILF program for Utah. Although Utah has no current ILF programs, the USACE representatives' experience with ILF programs elsewhere in the Sacramento District (which covers Nevada, Utah, and parts of California), with mitigation banks in Utah, and with regional USACE policy were insightful. USACE views a new ILF program as a benefit to regulators as well as to permittees because it gives both sides options for high quality compensatory mitigation. Currently, some permit applicants in Utah abandoned their impact plans because of a lack of suitable mitigation options.

USACE representatives emphasized the importance of creating a strong and consistent relationship between USACE and the ILF program administrator, which would make USACE more comfortable in granting flexibility with deadlines and service area boundaries. In their experience, delayed mitigation while an ILF is accumulating fees is preferable to no or poor-quality compensatory mitigation. Given concerns about the feasibility of an ILF in an arid state, we specifically asked USACE about the State's liability if Utah were to start an ILF program. USACE can cite the ILF for being out of compliance with rules and ask for a resolution, but the State could also elect to shut the program down and hand over remaining funds to USACE. Penalties would not be enacted on a program for failure to expend funding in a timely manner.

After speaking with the regulators (USACE), we sought insight into the permitting environment in Utah by speaking with potential ILF customers, mitigation site managers, and environmental consultants. Utah Department of Transportation (UDOT) staff as well as representatives from the Utah Division of Water Resources (UDWRe) and Utah Department of Agriculture and Food (UDAF) were interviewed to better understand the needs of potential ILF customers. Utah Division of Forestry, Fire and State Lands (FFSL) sovereign lands managers, UDOT planning staff, and private environmental consultants shared their experience with planning and managing compensatory mitigation projects in Utah.

As of 2022, UDWRe does not have a regular need to purchase mitigation credits, though future water development projects like the Lake Powell pipeline and Bear River development will require significant mitigation if they are built. UDAF has local watershed planners who help landowners obtain §404 permits when they are required for agricultural improvement projects. However, most of those projects do not require wetland mitigation and when they do, the mitigation almost always occurs on-site. Because of the rapid growth rate in Utah, which requires expanding transportation infrastructure, UDOT is the agency with the biggest need for compensatory mitigation options like an ILF.

UDOT manages over 50 mitigation sites and recently established the Northern Utah County Mitigation Bank to provide mitigation for UDOT projects in Utah Valley. The agency is unlikely to establish another mitigation bank due to the time and cost of establishment. In fact, UDOT representatives would prefer to pay fees to a trusted entity like an ILF that has specialized expertise in habitat management rather than continuing to handle their own mitigation. Permittee-responsible mitigation and mitigation bank management forces UDOT into a land management role, but they would rather focus on their area of expertise. UDOT anticipates that an ILF program would allow them to move forward on projects more quickly and avoid increased costs from inflation caused by delayed permits. The Wasatch Back, Cache County, and St. George are the areas in Utah with the highest need for transportation-related mitigation options, but UDOT strongly prefers a statewide ILF program rather than one that only serves high-need areas.

FFSL manages two mitigation sites in Utah and staff identified several concerns they have about current compensatory mitigation. In their experience, mitigation wetlands are prone to invasion by Phragmites and lack the reliable water supply needed to sustain wetland functions. FFSL managers are skeptical of the resilience of most compensatory mitigation projects. Because of this, they feel that many areas may not be appropriate for mitigation without substantial investment in long-term intensive management. Consultants with experience obtaining wetland permits suggested that large-scale projects are more successful and recommend focusing on projects between 20 and 100 acres. Clients who hire consultants typically purchase bank credits or change the project scope to avoid mitigation requirements altogether if their impacts are small. Even with large, well-planned mitigation projects, consultants recommend setting aside significant contingency funds to address climate risks, weather events, and other unknowns.

Permittees, land management agencies, and conservation groups often find it challenging to work with the USACE as they pursue permits or compensatory mitigation actions. Decisions are delayed due to understaffing at USACE and once they are made, those decisions can seem inconsistent. Stakeholders expressed frustration with how service areas and credit ratios were decided on by the IRT and USACE. Turnover within USACE and the IRT leave permit seekers and consultants uncertain as to what criteria their permit writer may apply in decisions about how much compensatory mitigation is required, and thus how much their projects will ultimately cost.

Permitting Environment Takeaways

- → Permittees would rather purchase credits in an ILF than propose their own mitigation.
- → Currently some projects never get off the ground due to lack of mitigation options.
- → ILF credit purchases can prevent project delays and lower costs from inflation.
- → Credit prices must be adequate to cover contingency and long-term management costs.
- → A program administrator needs to develop a strong working relationship with USACE to maximize flexibility and minimize inconsistency.

Capacity and Interest in an ILF in Utah

We spoke to stakeholders from state and federal agencies and non-profit organizations to evaluate the existing capacity for running or assisting with an ILF program in Utah and the level of interest for such a program. We asked interviewees about their organization's capacity for identifying compensatory mitigation projects, overseeing or carrying out contract work, holding conservation easements or fee title lands, and taking responsibility for long-term land management.

All stakeholders indicated their organizations were interested and able to help identify mitigation project locations. However, they also noted that their project recommendations would reflect their agency's particular mission. UDAF recommendations would be relevant to projects on private agricultural lands, FFSL would recommend projects on or near sovereign lands, and the Division of Wildlife Resources (UDWR) would recommend projects that benefit wildlife. Several interviewees said their organization would be happy to have a new funding source for restoration projects and are experienced with contracting out, advising on, or overseeing stream restoration projects.

Respondents were not confident that their organizations had the expertise to evaluate or carry out wetland restoration work. Some land management agencies have experience with wetland invasive species treatment and revegetation, but little practical knowledge about enhancing or restoring wetland functions. National conservation organizations that have expertise in wetland restoration in other regions of the country are only beginning to understand Utah ecosystems and are most confident in their knowledge of Great Salt Lake wetlands. However, aquatic biologists with UDWR noted that 20 years ago their agency lacked capacity for stream restoration, but now there is widespread, practical restoration knowledge because they deliberately invested in training (figure 3). Developing comparable knowledge of wetland restoration is possible with investment.

Figure 3. *In recent years as their expertise has increased, UDWR has completed more stream restoration projects, such as this beaver dam analog project near Strawberry Reservoir that has enhanced floodplain hydrologic connectivity.*

Many entities we spoke to have experience writing conservation easements or holding fee title to land but had reservations about adding to the lands they already oversee. If their organization was to hold a conservation easement, it would have to closely align with their mission or existing properties. Easements held by UDWR require public access and a wildlife nexus, FFSL can only agree to easements on land adjacent to sovereign land, TNC can hold easements for land adjacent to existing properties, and UDAF is only able to hold easements on land being used for agriculture. Land trusts tend to be more interested in holding easements than other organizations, but the easement also must be aligned with their mission. The advice from conservation easement experts is that an ILF program should keep flexibility in mind and allow a variety of entities to hold easements. Easements are typically monitored at least once per year to check fence lines and signage and ensure that any requirements written in the easement are being met. Invasive species management is also common on properties. Some organizations prefer holding fee titles to land rather than easements because of the extra legal and monitoring work.

Many people we spoke with were concerned about personnel capacity, both in terms of running and contributing to an ILF program as well as issues with turnover and difficulty in filling open positions. Both federal and state agencies reliably said they had no existing capacity to take on a significant role in a new ILF program. High turnover rates in some positions could make it difficult for an ILF program to build and maintain the partnerships that are necessary for effective compensatory mitigation. Based on organization interest and existing capacity, a new position is needed to administer an ILF program. This lack of overall capacity would not, however, prevent other organizations from being involved in project identification since this would be a high-priority activity.

The Watershed Restoration Initiative (WRI) was frequently held up as a model of a good collaborative process that is effective at prioritizing and implementing restoration projects and building partnerships, and many entities we spoke with have representatives that attend WRI meetings. WRI is a partnership-based program housed in the Utah Department of Natural Resources (DNR) that works to improve watersheds throughout the state. Restoration projects are proposed by many entities and reviewed and ranked by regional teams composed of non-profit, state, and federal partners. WRI provides technical support, contributes funding, tracks partner funds, and oversees the project ranking framework. Though WRI funding does

not focus on a specific resource type, it supports stream channel restoration, invasive species control, and beaver dam analogs—all types of projects that could be pursued by an ILF program.

Utah ILF Capacity Takeaways

- → Non-profit, state, and federal partners strongly support an ILF program for Utah and are particularly eager to be involved in project identification.
- → Each organization we spoke with has limitations on where they can work and the types of projects that they are interested in based on their mission.
- → Enthusiasm for holding easements and long-term management was lower than other aspects of contributing to an ILF program.
- → Staff capacity and turnover are big issues across state and federal agencies; an ILF program would require at least one new position to administer.
- → An ILF program could provide indirect benefits including increasing scientific knowledge about wetland restoration in state agencies and improved coordination between entities.
- → WRI is a highly respected entity with expertise in selecting and helping to implement restoration projects across the state through collaborative focal groups; an ILF program would benefit from close alignment with the WRI process.

PERMIT DATA AND POTENTIAL PROGRAM REVENUE

Permit Data Analysis

We conducted a Freedom of Information Act (FOIA) request to obtain USACE permit data from Utah from January 2012 through July 2022 to better understand where and how much mitigation is required across the state. We received data for 1862 separate projects that involved 4120 stream, wetland, and waterbody impacts and resulted in 287 mitigation actions. A single mitigation action can be used to mitigate for one or more impacts, though most impacts did not require any mitigation, including over 90% of impacts that were temporary, under 0.1 acres in size, or were issued a Regional and Programmatic General Permit (RGP and PGP), two permit types used for common actions with minimal adverse effects. Mitigation was required for 83.2% (292 of 351) of impacts that did not fall into one of the above categories (<0.1 acres, temporary, or regulated with RGP or PGP permits); most of the remaining unmitigated impacts were relatively small (less than 0.5 acres). Our discussions with regulators indicated that mitigation requirements are occasionally waived for small impacts due to a lack of mitigation opportunities.

Impacts in the database are assigned to one or more "work types," which are categories that USACE uses to describe the type of work associated with the impact. Of the projects that required mitigation, transportation projects had the most and the largest impacts as well as the most acres of mitigation and mitigation credits purchased (table 2). The magnitude of road impacts during 2012–2022 was especially high due to the West Davis Corridor project (Federal Highway Administration, Utah Division and Utah Department of Transportation, 2017), the largest project in the permit database, but even without that new highway project, road projects had the most impacts and the most required mitigation. Residential and commercial development projects are the second and third most common work types, respectively, associated with impacts. For these projects, impacts are generally small but overall mitigation is substantial because they are so common. Industrial development projects are uncommon but tend to generate large impacts. Bank stabilization projects are common but require little mitigation relative to other project types.

To understand the distribution of impacts across Utah and estimate compensatory mitigation trends, we analyzed permit data from 2017 to 2021 aggregated within HUC6 watershed boundaries. During that five-year period there were impacts to 195.5 acres of wetlands and 13.6 acres of streams that required mitigation (table 3). Impacts from the West Davis Corridor project accounted for 65.7% of the wetland acres and 22.0% of the stream acres. Both the number of impacts requiring mitigation and the associated acres of impacts are clustered around the Wasatch Front and Wasatch Back (figure 4). After excluding the West Davis Corridor project, 71.8% of stream and 53.8% of wetland impact acres occurred outside the boundary of an existing and accessible mitigation bank. The Weber River watershed experienced the most impacts, the majority of which are within an accessible mitigation

bank boundary and associated with the West Davis Corridor. The Jordan and Lower Green River watersheds had the second and third most impacted area, respectively. Two HUC6 watersheds, Lower Colorado–Lake Mead and Escalante Desert–Sevier Lake, had no impacts that required mitigation after 2017 despite relatively high needs in earlier years of the data.

Utah Permit Data Takeaways

→ Most impacts permitted by USACE do not require compensatory mitigation, typically because they are small or temporary.

→ Between 2017 and 2021, 195.5 wetland acres and 13.6 stream acres were impacted and required mitigation. The West Davis Corridor transportation project accounted for almost two-thirds of total impacts. After transportation projects, residential and commercial development projects have the most impact.

→ Impacts requiring mitigation are clustered around the Wasatch Front and Wasatch Back, particularly in the Weber and Jordan watersheds. Approximately half of the impacts documented (aside from West Davis Corridor) were outside the boundaries of a mitigation bank.

Table 2. *Impacts and associated compensatory mitigation requirements in Utah, 2012–2022, organized by permit work type.*

Work type	# Impacts	Total impacted acres	Acres per impact	Acres of mitigation	Mitigation credits
Transportation	417	216.2	0.5	1291.7	44.3
Residential development	66	14.4	0.2	41.6	11.1
Commercial development	49	18.5	0.4	23.0	16.8
Bank stabilization	36	15.1	0.4	4.5	0
Structures	30	27.9	0.9	13.2	7.0
Dams	19	30.1	1.6	60.4	14.4
Industrial development	12	27.0	2.3	1.8	26.7
Recreational development	12	7.7	0.6	22.1	2.3

Table 3. *Stream and wetland impacts that required mitigation, 2017–2021, by watershed boundary and location in relation to existing accessible mitigation banks. Stream and wetland impacts in italics represent impacts not included in final income estimates (table 5).*

HUC6 Watershed	Stream Impacts (ac)	Wetland Impacts (ac)	Total Impacts (ac)
Outside Mitigation Bank Boundaries			
Great Salt Lake	0.08	0.66	0.74
Jordan	2.12	17.04	19.16
Lower Bear	0.06	0.85	0.91
Lower Colorado–Lake Mead	0.18	2.43	2.61
Lower Green	4.50	11.73	16.23
Upper Colorado–Dirty Devil	0.01	0.19	0.20
Upper Colorado–Dolores	0.07	0.22	0.29
Weber	0.61	2.96	3.57
Total Outside Bank	**7.63**	**36.08**	**43.71**
Inside Mitigation Bank Boundaries			
Jordan	1.48	*15.65*	17.13
Lower Bear	0.00	*1.40*	1.40
Weber	1.51	*13.95*	15.46
Weber–West Davis Corridor	*3.00*	*128.43*	131.43
Total Inside Bank	**5.99**	**159.43**	**165.42**
Total Statewide Impacts	**13.62**	**195.51**	**209.13**

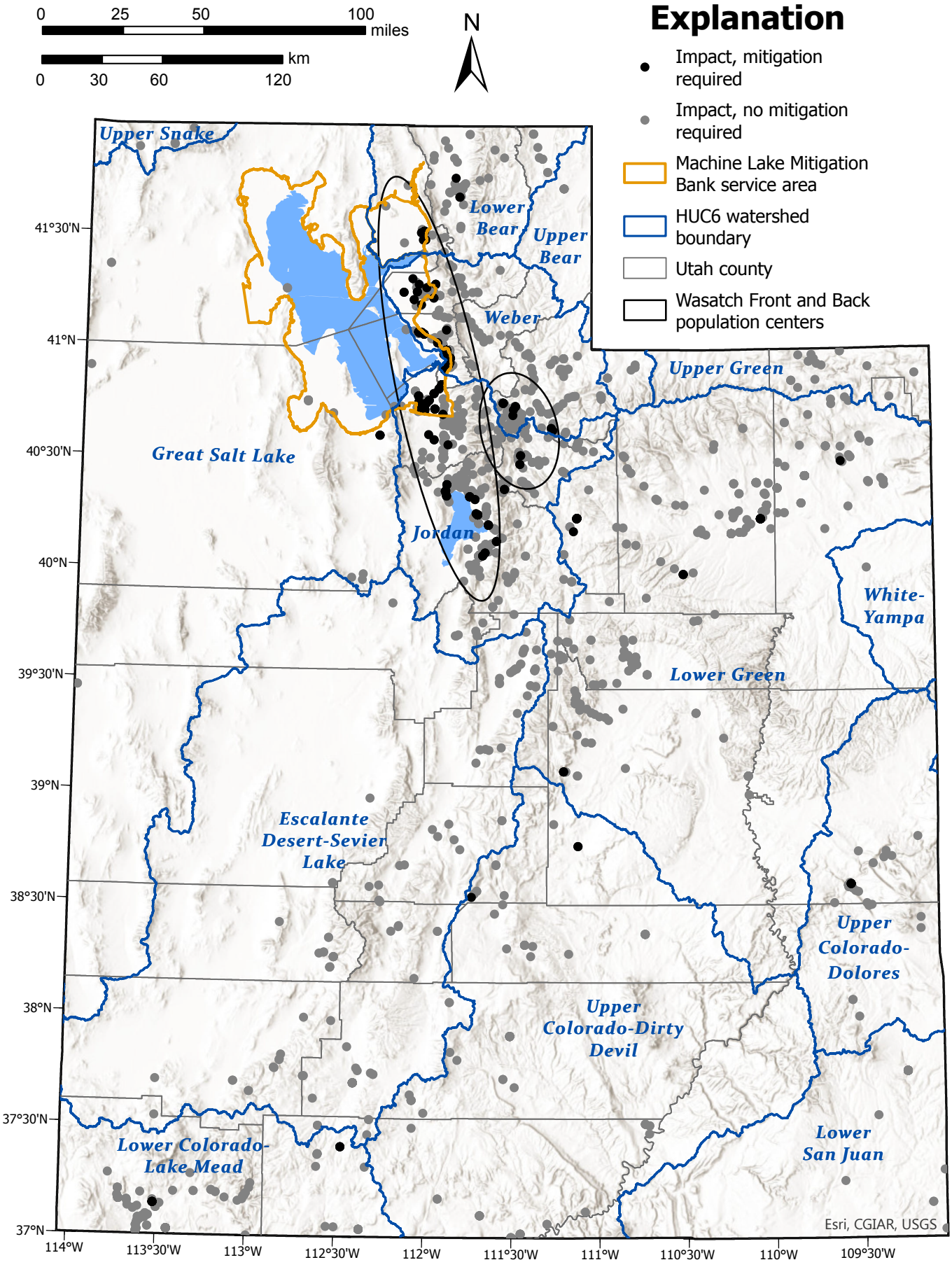

Figure 4. *Permitted aquatic resource impacts in Utah, 2017–2021.*

Common ILF Financial Arrangements

Pricing ILF credits appropriately is a critical consideration in establishing an ILF program. Credit pricing needs to be adequate to cover all costs associated with mitigation, including land or conservation easement purchase, project design and implementation, monitoring, and long-term management. Fees must also incorporate administrative costs and a contingency fund to cover unexpected costs that arise. Adequately priced credits are key for creating successful mitigation projects and not unintentionally encouraging wetland impacts through cheap "subsidized" mitigation. At the same time, if credit prices are too high, applicants may choose to forgo their projects or turn to other mitigation options.

Kihslinger and others (2019) interviewed 41 ILF programs and found two common means for establishing fee schedules: 1) basing fees on costs of previous compensatory mitigation projects, or 2) using data on land appraisals, regional construction costs, and the credit market to assess fees. A third option identified in our ILF program interviews is to set fees by pricing out pre-identified mitigation projects and adjusting credit prices in real time as the project is implemented. Often administrative fees are set as a percentage of the credit price, typically ranging from 5% to 20% and most commonly set at 15% (Kihslinger and others, 2019). Long-term project management and contingency fees are also often set as a percentage of total credit price. An endowment is established for long-term management funds and contingency fees that are not used in a project can be rolled into long-term management funds.

Project scale has a major impact on the financial feasibility of an ILF program. Mitigation projects tend to be more expensive per acre for smaller impacts due to fixed costs required for all projects (e.g., monitoring, reporting, coordination with USACE). Selling credits for smaller impacts is risky for an ILF program because such fees may not be sufficient to implement a high-quality mitigation project after accounting for all other costs. However, small impacts are most common in Utah; 55% of impacts in the permit data were less than one-half of an acre. At least two western ILF programs charge higher contingency or administrative fees for small credit purchases. Montana Aquatic Resources Services, Inc. (2021) adds a flat fee to credit purchases below 1.0 wetland credits and the National Fish and Wildlife Sacramento District California In-Lieu Fee Program (National Fish and Wildlife Foundation, 2022) has six tiers of credit purchases, with higher contingency rates in the low acreage tiers. Pricing fees to address the risk inherent in small credits is more responsive to market needs because it reflects true costs to customers who also pay higher fixed costs per acre if they pursue permittee-responsible mitigation.

Fees charged by ILF programs vary widely based on the region where the program is run, the type of aquatic resource (i.e., wetland or stream) that is impacted, and the local service area within a program boundary. Table 4 is a non-comprehensive list of estimated credit costs for programs in the western United States, compiled from interviews, online information, and Kihslinger and others' (2019) ILF review. The most expensive pricing is in California and Washington, upwards of $500,000 per credit in some services areas. Fee estimates are complicated by mitigation ratios set to compensate for the temporary loss of wetland functions between when impacts occur and mitigation actions. Permittees often must purchase more than one credit from an ILF to compensate for impacts; a ratio of two credits per acre of impact is common for ILF credit purchases whereas mitigation banks often have a lower ratio since mitigation occurs before impacts.

Revenue Estimates

We used impact data from 2017 to 2021 to estimate potential annual ILF program revenue in Utah. We identified impacts likely to use an ILF program as those projects that required mitigation and were not within the boundaries of an existing mitigation bank, including the Machine Lake Mitigation Bank for all wetland impacts within that bank's boundary and UDOT projects within the boundary of the Northern Utah County Mitigation Bank (box 4). USACE regulatory program specialists stated that the typical project with impacts requiring mitigation would almost always use the ILF program if a mitigation bank was not available. However, some impacts, such as those caused by restoration activities, may be mitigated on-site by permittees or require little mitigation in relation to the total impact size. Based on these considerations and feasibility studies in other states (Stanley and others, 2013; Bentley and others, 2017), we used an assumption that 50% of potential customers would buy credits in the ILF. We also assumed that the ILF program would sell credits for all service areas, including ones with low amounts of impact, due to the strong interest in a statewide program and because excluding these low-impact areas would not substantially change overall program estimates. A credit fee of $200,000 per acre of impacts is based on credit cost estimates in regions with similar economies to Utah.

In the 2017–2021 permit data, an average of 9.3 acres of impacts per year required compensatory mitigation, for those impacts that meet the assumptions in box 4. If those trends continue, an ILF program could expect about $930,000 in average annual revenue (table 5). After accounting for administration fees and contributions to a contingency expense fund and

long-term management endowment, $604,500 per year would be available for mitigation project implementation across the watersheds where fees were collected (table 3). However, under the recent Sackett v. EPA ruling, permits are only required for impacts to wetlands and streams that are both flooded relatively permanently and have a continuous surface water connection to a traditional navigable water. It has yet to be seen how USACE and EPA will implement the new WOTUS standard, but it is likely that fewer wetlands and streams in Utah will be considered WOTUS, which will limit the number of §404 permits required for projects with wetland impacts and in turn reduce ILF program revenue.

ILF Financial Takeaways

- → Appropriate credit pricing is critical to ensure that all project and program administration costs can be covered by the fees collected without pricing credits prohibitively high. Credit costs in the western United States vary widely across programs; the most expensive are $500,000 per credit.
- → It is challenging to collect adequate funds to implement high-quality restoration from the sale of small acre credits, so some programs charge higher fees for lower credit purchases.
- → We estimated potential ILF program income assuming 50% of impacted acres outside of mitigation bank boundaries would use the program and a credit fee of $200,000 per acre of impact. If permitting trends continue, an ILF program could bring in $930,000 per year and spend $604,500 on project implementation.
- → The May 2023 Sackett v. EPA ruling will likely reduce the need for wetland and tributary stream permits in Utah, thus reducing potential ILF program income.

Table 4. *Approximate ILF and mitigation bank credit costs for select programs in the western United States.*

State	Bank or ILF	Price per Credit	Source
Arizona			
	Arizona Game and Fish Department ILF Mitigation Program	~ $90,000 to $200,000	Arizona ILF Administrator
	Tucson Audubon Society ILF Program	$85,000	Kihslinger and others (2019)
California			
	Credits in California	~ $150,000 to $500,000	USACE Regulatory Specialist
	National Fish and Wildlife Sacramento District California ILF Program	$400,000+	NFWF (2022)
Colorado			
	Colorado Western Slope In-Lieu Fee Program	~$50,000 to $150,000	Colorado ILF Administrator
	Mitigation banks in Colorado	~$100,000 to $200,000	Colorado ILF Administrator
Montana			
	Montana Aquatic Resources Services, Inc.	$60,000 to $97,500	MARS (2021)
Utah			
	Machine Lake Mitigation Bank	~$60,000	USACE Regulatory Specialists
	Utah Valley Mitigation Bank	$190,000	Bank sponsor
Washington			
	King County Mitigation Reserves Program	$430,000 to $500,000	Kihslinger and others (2019)

Box 4. *ILF financial estimate assumptions and caveats.*

Assumptions

Impact-type

Excluded permitted impacts that did not require mitigation.

Excluded permitted impacts to waterbodies (lakes and ponds) that an ILF would not mitigate for.

Excluded impacts from the West Davis Corridor project, which was an unusually large project that occurred within an approved mitigation bank boundary.

Location

Excluded **wetland** impacts within the boundaries of an approved mitigation bank; the 2008 Mitigation Rule states that banks are preferable to ILF credits if credit types appropriate for the resource (stream or wetland) are available.

Included impacts from all watersheds.

ILF Capture Rate

Set at 50%, this rate represents the estimated percentage of impact acres that would be mitigated through ILF credit purchases rather than permittee-responsible mitigation. See California, Iowa, and Ohio feasibility studies (Stanley and others, 2013; Bentley and others, 2017)

ILF Credit Cost

$200,000 per acre of impact, based on credit costs in states with similar land cost markets as Utah.

Other factors not included in assumptions

Changes in economic conditions increase or decrease the rate of development and thus permitting needs.

Changes in the federal definition of WOTUS increase or decrease the types of wetlands and streams that are subject to USACE permitting, including any changes resulting from the 2023 Sackett v. EPA ruling.

Ending USACE current practice of waiving mitigation for small projects can increase demand for the ILF program.

Table 5. *Annual revenue and expense estimates for a statewide ILF program based on 2017–2021 permit data (table 3) and assumptions in box 4.*

Account Item	Impacts (acres)	Captured impacts	Revenue	Expenses
Stream Impacts	2.12	1.06	$210,000	-
Wetland Impacts	7.22	3.61	$720,000	-
Program Administration (15%)	-	-	-	$139,500
Long-term Endowment & Contingency (20%)	-	-	-	$186,000
Compensatory Mitigation Project Budget	-	-	-	$604,500
Total	9.34	4.67	$930,000	$930,000

IMPLICATIONS

ILF Program Benefits

Our research shows that an ILF program could benefit the people and environment of Utah by creating larger, higher quality mitigation projects that would, in turn, provide more wetland functions and recreational opportunities. A streamlined permit process, where the burden of compensatory mitigation rests with experts rather than with permittees, is a major ILF program benefit identified by regulators, the regulated community, and restoration practitioners. An ILF program can also save time and money for permittees because purchasing credits from an ILF will eliminate project delays created by the development and approval requirements of permittee-responsible mitigation plans.

Our research highlighted an additional and unexpected benefit of an ILF program: building wetland restoration expertise in Utah. Agencies that work in aquatic resource conservation all expressed concern about the lack of wetland restoration expertise in the region. However, that knowledge gap presents an opportunity—the ILF program would work closely with biologists and others to help them identify restoration opportunities, which would in turn help the biologists hone their understanding and knowledge of wetland restoration. Furthermore, by working with so many stakeholders, the ILF program would spur increased collaboration and engagement in wetland protection and watershed planning. With an ILF broadening conservation and communication over wetlands, the state could generate wetland restoration expertise matching the existing river and stream restoration capacity.

ILF Program Structure and Establishment

An ILF program operated by a state agency and overseen by a dedicated administrator is the best option, in part, because of the absence of non-profit organizations with a statewide reach that were interested in running an ILF program. More importantly, operating an ILF program within a state agency creates the opportunity to build restoration capacity in state agencies. A dedicated administrator that can focus on mitigation and restoration issues will have the time necessary to develop a strong and trusting relationship with USACE and to communicate with the regulated community to anticipate future credit needs. The administrator would also be able to work closely with regional biologists and WRI to identify opportunities for mitigation projects (figure 5).

Figure 5. *An invasive Russian Olive removal project on Mill Creek (Moab) is an example of the types of restoration projects WRI supports.*

The ILF program would fit best within an agency having a broad mission to promote a comprehensive approach to wetland mitigation that enhances the full suite of wetland functions, rather than solely wildlife, sovereign lands, agricultural production, or water quality interests. Two DNR entities have such broad missions: WRI and UGS. The WRI is an office in DNR but separate from any division, thus the approach they take to watershed restoration is broad. An ILF office following a similar structure would avoid an overly narrow focus. The UGS's mission is to provide "timely scientific information about Utah's geologic environment, resources, and hazards," including surface and groundwater resources. The UGS has a team of wetland experts that can provide scientific support for the ILF program if it were located within that agency. Regardless of the office it is operated within, the ILF program will require support from DNR for specialized expertise in legal requirements and conservation easements.

ILF program establishment will take up to four years if there is an administrator devoted to the process, longer without a dedicated employee. During this time, the administrator will determine the details of how an ILF is configured and submit two documents—the ILF Prospectus and ILF Program Instrument—to the USACE and to public review. Once the ILF program is approved, it will take several years to become fully operational. Based on the startup costs of existing ILF programs and markets in Utah, establishing a statewide ILF program will require an investment of approximately $1 million. The bulk of the funding would go to personnel costs for a program administrator to develop the program, with the remainder associated with travel, equipment costs, contract costs for legal analysis, and establishing a program database. Once established, the administrator's salary would be paid for by credit fees.

Sackett v. EPA Ruling Considerations

The May 2023 Sackett v. EPA ruling will almost certainly reduce the number of wetlands and streams subject to federal regulation in Utah, though the extent of the reduction is unknown. Our financial analysis, based on the assumptions in box 4, showed that a program would likely bring in enough funds to support the salary for an ILF program administrator, though there would be little remaining funds to cover other administrative expenses. Any reduction in wetland permitting would make it difficult to fully support the administrator position and would threaten the overall viability because program success is partially dependent on efficiencies of scale. At the same time, ensuring high quality mitigation is *more* important under a narrower definition of WOTUS because there will be more unpermitted and thus unmitigated wetland impacts, leading to loss in ecological functions like water quality improvement and flood protection.

Despite this new legal development that challenges the financial estimates we calculated, we still believe an ILF program would be beneficial for Utahns, though perhaps in a more flexible form. Interviews with ILF programs in arid states produced concrete examples of how to ensure adequate funding for mitigation in regions with few wetland permits. Options include utilizing public lands for projects, selectively selling credits where demand is sustainable, and identifying mitigation projects in advance of credit sales. To be successful in the future permitting environments, the ILF program could operate only in service areas with the greatest number of regulated impacts or focus on individual large-impact projects rather than operating statewide. Any reduction in an ILF program's scope will limit program income, but Utahns will benefit from the enhanced wetlands services and decreased red tape in the regions the ILF can serve.

The shifting definition of WOTUS highlighted by the Sackett ruling creates a high degree of uncertainty and inconsistency for all parties involved in wetland regulation. New rules developed under the current federal administration are likely to see additional court challenges or to be modified by subsequent administrations, extending this instability for years to come. Further, WOTUS is a definition based on navigability and assumptions about waterways rooted in the eastern United States that are rarely applicable here in Utah. Both the Supreme Court in their Sackett v. EPA decision and legal analysts reminded readers that individual states can develop definitions and policies specific to the wetlands within their region and consistent between federal administrations. States including Tennessee, California, Kentucky, Florida, Oregon, Rhode Island, and Minnesota all have state or regionally specific wetland alteration rules and permitting programs. State-specific rules and policies would provide an additional benefit of accurately tracking wetland loss trends that cannot be quantified using federal permit data, loss that is expected to accelerate in the future. Outside of regulations, states also have the opportunity to invest in voluntary restoration measures to enhance the functions of extant wetlands.

RECOMMENDATIONS

The most prominent findings in our research were that 1) the State of Utah needs to improve both the quality of wetland mitigation and the experience for permittees; 2) the State needs to invest in wetland restoration knowledge and capacity; and 3) flexibility, scale, and collaboration are essential to address both needs.

Implications Takeaways

→ An ILF program would benefit the people of Utah by producing higher quality wetland and stream mitigation projects and streamlining the permitting process.

→ An ILF program could build statewide expertise in wetland restoration—a knowledge gap identified by this study—and spur increased collaboration in wetland protection and watershed planning.

→ An ILF program should be run by a program with a broad mission; options include UGS or a new DNR office outside of a specific division.

→ ILF program establishment will require an ILF administrator to develop program details and obtain approval from USACE, requiring four years and an initial investment of $1 million.

→ The narrower definition of which wetlands are protected under the Sacket v. EPA ruling will likely make it more challenging to operate an ILF program due to reduced credit needs. However, a program with reduced scope would still benefit the regions where it operates.

→ States can take a larger role in wetland protection to address the reduction in federal regulation by investing more heavily in voluntary restoration or developing their own permit program.

In our report to the legislature, we recommended that the State develop an ILF program led by a full-time ILF administrator whose salary would be funded by program fees once the program was established. The ILF administrator would play an important role in increasing collaboration and building restoration capacity in addition to improving permit-related mitigation in Utah. However, the financial recommendations were based on permitting levels prior to the 2023 Sackett v. EPA court decision, and an ILF program is unlikely to generate enough income to support a full-time administrator's salary under this recent ruling. At the same time, if wetland loss accelerates due to the change in regulations, the administrator's role in increasing collaboration and engaging with restoration practitioners is even more critical.

Given these considerations and needs outlined above, we recommend that Utah:

1. establish a full-time **wetland mitigation and restoration coordinator** position who can explore multiple options to preserve and restore wetlands in Utah and coordinate among agencies, and

2. establish a **statewide ILF program** at a rate and scale appropriate to the new regulatory conditions as one component of the tasks overseen by the wetland mitigation and restoration coordinator.

The wetland mitigation and restoration coordinator position will have a broad mandate to establish coordination among agencies, begin implementing an ILF program, and further evaluate the options to improve wetland resources in Utah. The coordinator's position would be broader than that of an ILF administrator who would focus solely on ILF program needs. Given the current rate of land development in Utah, population growth projections, and the prospect of reduced wetland protection via federal programs, the state should enhance interagency coordination and identify the best practices for wetland mitigation and restoration specific to Utah as soon as possible despite uncertainties at the federal level.

The coordinator's first tasks would be to 1) analyze the impact of the Sackett decision on Utah's wetlands and the appropriate rate and scale of ILF development and 2) identify the organizations with relevant knowledge of, participation in, or need for wetland restoration and start collaboration amongst them. Longer term, the coordinator would develop and run an ILF program and implement other methods to improve mitigation as appropriate. For example, they could coordinate with regulators on a permit-by-permit basis or seek opportunities to develop mitigation banks in high need areas. Simultaneously, the coordinator can increase wetland restoration capacity in the state through training and sharing knowledge across wildlife, land management, environmental quality, and agricultural organizations that play a role in wetland issues. Over time, wetland restoration capacity in Utah could match the current stream restoration capacity, which took many years of concerted effort to build.

The federal government will likely play a smaller role in wetland regulation in the future, which presents an opportunity for state governments to develop their own strategies to protect and enhance wetlands. By investing in a wetland mitigation and restoration coordinator position, the state can support voluntary restoration measures to increase wetland functions while at the same time improving mitigation outcomes for permittees and projects. Together, these actions will lead to healthier, more resilient wetlands that will protect the quality of life for all Utahns.

Recommendation Takeaways

→ We recommend establishing a full-time wetland mitigation and restoration coordinator position to encourage interagency collaboration and knowledge sharing while establishing an ILF program at a scale appropriate to the regulatory environment.

→ The coordinator would have a broad mission to improve wetland resources in Utah independent of federal policies.

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REFERENCES

Bentley, A., Berckes, J., and Maas, R., 2017, In-lieu fee market assessment and alternatives analysis: Iowa Department of Natural Resources, 48 p.

Dahl, T.E., 1990, Wetland losses in the United States 1780s to 1980s: U.S. Department of the Interior, 13 p.

Federal Highway Administration, Utah Division and Utah Department of Transportation, 2017, Record of Decision for the West Davis Corridor Project in Davis and Weber Counties, Utah: UDOT Project No. S-0067(14)0, 98 p.

Kihslinger, R., 2008, Success of wetland mitigation projects: National Wetlands Newsletter, v. 30, no. 2, p. 14–16.

Kihslinger, R., Libre, C., Ma, K.R., Okuno, E., and Gardner, R.C., 2019, In-lieu fee mitigation—review of program instruments and implementation across the country: Environmental Law Institute, 167 p.

Mitsch, William J., and Gosselink, J.G., 2015, Wetlands: John Wiley & Sons.

Montana Aquatic Resources Services, Inc. [MARS], 2021, Montana in-lieu fee program 2020 annual report: Livingston, Montana, report prepared for the U.S. Army Corps of Engineers Helena Regulatory Program, 229 p.

National Fish and Wildlife Foundation, 2022, Advance credit pricing s: Online, https://www.nfwf.org/mitigating-impacts/sacramento-district-california-lieu-fee-program?activeTab=tab-3, accessed April 2023.

National Research Council, 2001, Compensating for wetland losses under the Clean Water Act: National Academies Press, Washington D.C., 348 p.

Stanley, B., Holland, H., Dicintio, T., and Hough, P., 2013, Economic feasibility analysis and service areas webinar recording: Environmental Law Institute, Online, https://www.eli.org/events/economic-feasibility-analysis-and-service-areas, accessed April 2023.