

Streamwater and Wetland Mitigation Banking

In a Nutshell

Originating in 1996, the U.S. Army Corps of Engineers began considering the impact on local streams when granting nationwide permits. The focus of these efforts is to restore streams to their natural and original state. Mitigation is measured in "linear feet" of stream banks "created, enhanced or restored".

The “How To”



Mitigation banking is a very useful tool for stormwater management. When rain overflow, wetlands are capable of either absorbing this additional water or storing it. Wetlands also absorb excess nutrients, sediment, and other pollutants before they reach waterbodies. Wetlands can work to serve as storage for water, filter the water that flows through them, and also serve as an environment for a large number of species of birds, fish, and other wildlife. The mitigation banking process takes place in the four ways specified below.

Restoration

Restoration consists of manipulating the physical, chemical, and biological characteristics of any particular site. The goal of restoration is to return the site to its natural and historic functions. With streams, this includes dam removal, development of in-stream habitat, and stream bank stabilization.

Enhancement

Enhancement consists of manipulating the physical, chemical, and biological characteristics of a site in order to improve specific functions of the stream.

Creation

Creation consists of manipulating an environment in order to develop a wetland where a wetland did not previously exist.

Preservation

Preservation consists of protecting ecologically significant streams through the appropriate legal mechanisms.

Planning & Zoning

Regulations that must be considered for wetland and streamwater mitigation banking include:

1. Clean Water Act, 33 U.S.C. (Section 404)
2. USACE Mitigation Rule
3. USACE Mitigation Guideline Checklist

It would also be useful to consult with the entity that will be serving as the mitigation bank in order to assess

what land is appropriate for mitigation.

Dollars & Cents

Streamwater and wetland mitigation banking can also be referred to as compensatory mitigation. In the United States, this compensatory mitigation system takes the form of a national wetland and stream offsets program which is dictated by following the Clean Water Act (§404) and also on the overall principle of "no net loss" of wetlands or streams. After an applicant follows the mitigation hierarchy, it must offset the impact of the draining, filling, or dredging that the applicant is pursuing by filing for a permit.

Streamwater and wetland offsets are created using restoration, enhancement, creation, and preservation as the techniques. These offsets must be located within the same watershed in which all of the impact will take place. These watershed maps are designated by the USGS (United States Geological Survey) Hydrologic Unit Codes.

Individuals or groups receiving a permit can create their own offsets, which are called permittee-responsible mitigation. They may also pay for offsets via third-party mitigation banks or an in-lieu-fee program. The United States Army Corps of Engineers is responsible for overseeing the agency in charge. The Corps of Engineers interprets and implements regulations at the regional level. When a land developer fills in or impacts a wetland in some other way, they may purchase offsets from a mitigation banker. The mitigation banker then restores, enhances, creates, or preserves an area of wetland in order to generate credits.

The specific number of credits generated from a restoration project is related to the area of the wetland and/or the functional value of the wetland. The credit determination varies by Corps district. In a lot of instances, the number of credits available for sale is less than the number of acres of restored land. A ratio is applied to the mitigation transaction in a typical range of one acre of impacted wetland to somewhere between one and three acres of restored wetland. Ratios increase to one to ten acres for wetland preservation projects that do not create or improve the wetlands.

A mitigation banker is responsible for establishing a wetland bank following the financial and environmental guidelines before credits are released to the bank for sale. The Mitigation Banking Instrument has historically taken between 6 and 18 months to complete and considerably longer in some Army Corps districts. This instrument constitutes the approval in order to restore, enhance, create, or preserve the wetland. The new Mitigation Rule sets a timeframe for steps in the approval process. Agency decisions on mitigation banks should be made within 225 days.

Mitigation is to take place before any impact on the wetland begins to occur. Credits are released to the bank sponsor over the course of a few years after the wetland is planned and authorized and before 5 years of project monitoring concludes. In a lot of instances, up to 15% of the expected credits from a bank can be released before construction is completed.

Nationally, wetland credit prices ranged from \$3000-\$653,000 in 2008. The average price during 2008 was \$74,535. The average price was \$112,449 when tidal or vernal pool credit prices are included. For stream credits, the national range in 2008 was found to be \$15-\$700. The average price during this time was \$260.

The variability in the specific market value of a particular wetland section credits reflect the differences in the availability and price of land that is suitable for bank development, as well as the cost to create an acre of wetland. Some state agencies set in lieu prices that can be paid if mitigation opportunities are not available.

A sample of these in lieu fees include:

- \$24,000 - \$46,000 per acre of non-riparian wetland in North Carolina
- \$36,000 - \$63,000 per acre of riparian wetland in North Carolina
- \$156,000 per acre of coastal wetland in North Carolina
- \$55,000 - \$65,000 per acre of nontidal wetland in Southeast Virginia
- \$125,000 - \$150,000 per acre of nontidal wetland in Northern Virginia
- \$400,000 - \$653,000 per acre of tidal wetland in Virginia
- \$84,500 per acre of wetland in Oregon

Measuring Success

The success of a streamwater and wetland mitigation plan can be measured by analyzing the acreage of wetland and streams within an area over time and specifically in areas of development.

Discover More

More information on how to get involved in protecting wetlands and streamwater can be found [here](#).

Case Studies

Arcata, California Wetland Treatment Facility

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Description

The City of Arcata, California needed to improve its wastewater treatment facility in the mid 1980's. In order to avoid building a new wastewater treatment facility and the resulting sewer rate increase, the city opted to implement an innovative marsh system as an alternative approach. The marsh system was chosen as a cost effective and also environmentally sound solution to the issue. 3 marshes were installed in order to restore wetlands to the area. These marshes served in order to improve the recreational capabilities of the area, the possibility of habitat for wildlife, and also the ability of the marshes to treat water. They serve as tertiary treatment for the water in order to remove any contaminants remaining after primary and also secondary treatment. The overall function of the wastewater treatment facility can be found [here](#).

Cost

The new wetland facility was completed in 1986 at a cost of \$7.1 million, which was financed using 75 percent federal, 12.5 percent state, and 12.5 percent local funds.

Lessons Learned

The marsh approach to the additional wastewater treatment served many purposes for the surrounding area. Not only was the issue of additional wastewater treatment facility resolved, but the additional wetland served a role as a new recreational facility for the area.

Flossmoor, Illinois Mitigation Project

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Description

Approximately 20 years ago, seven communities in the Butterfield Creek watershed began to experience floods. These seven communities then chose to cooperate with local, regional, state, and federal organizations in order to pursue solutions to these flood concerns. A watershed analysis was performed and revealed 3 major issues.

- Existing floodplain maps underestimated flood depth
- Existing detention requirements did not prevent increased flooding
- The watershed had large undeveloped wetland areas which were able to store storm water and many negative consequences would result if development occurred in this area by approximately 500%

In order to address the concerns, a number of actions were taken. As a first measure, the floodplain maps were updated and revised. A model storm water management code was adopted in order to keep construction out of areas which are considered flood-prone. Construction areas were required to have stricter storm water detention methods in construction areas. The new code also required no net loss of natural wetlands due to development. The communities are also implementing wetland restoration projects throughout the watershed which are aimed to increase storage capacity of the wetlands and also protect against future floods.