



Omaha District

**United States Army Corps of Engineers
Omaha District
Wyoming Regulatory Office**

**WYOMING STREAM MITIGATION PROCEDURE
(WSMP)**



- February 2013 -

Acknowledgements

This procedure was adapted from similar methodologies used in other Corps Districts that have been in effect for several years. The foundation document is based on the Montana Stream Mitigation Procedure as provided by Todd Tillinger and Christina Schroeder, USACE Montana Regulatory Office.

Interagency WSMP Technical Workgroup:

Paige Wolken - Lead
US Army Corps of Engineers
Wyoming Regulatory Office

Thomas Johnson
US Army Corps of Engineers
Wyoming Regulatory Office

Julia McCarthy
US Environmental Protection Agency
Region 8 Aquatic Resources Protection and Accountability Unit

Jeremy Zumberge
Wyoming Department of Environmental Quality
Water Quality Division

Paul Dey
Wyoming Game and Fish Department
Fish Division

United States Army Corps of Engineers
Omaha District
Wyoming Regulatory Office
2232 Dell Range Boulevard, Suite 210
Cheyenne Wyoming 82009
Ph. (307) 772-2300



Omaha District

WYOMING STREAM MITIGATION PROCEDURE (WSMP) - February 2013 -

OVERVIEW

1. Applicability.

The practice of using compensatory mitigation to minimize unavoidable losses of the aquatic resources is an important component of the U.S. Army Corps of Engineers (Corps) Clean Water Act Section 404 Regulatory Program. As outlined in the 2008 Compensatory Mitigation Rule (22 CFR Parts 325 and 332), compensatory mitigation means the restoration, enhancement, establishment and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved. The Corps considers the need for compensatory mitigation when evaluating potential individual and cumulative adverse impacts to the aquatic environment that may be authorized by Department of Army (DA) Permits, including nationwide permits and standard individual permits. This document describes the method for quantifying stream losses (debits) and the acceptable compensatory mitigation (credits) for DA-permitted projects in Wyoming. It is applicable to Corps regulatory actions requiring compensatory mitigation for stream functional losses where more rigorous, detailed functional assessment techniques are not considered practical or necessary. The following points are noted:

- The Wyoming Regulatory Office (Corps) will consider the need for compensatory mitigation when evaluating unavoidable losses of waters of the United States that may be authorized by DA permits to ensure that the adverse effects to the aquatic environment are minimal. Projects that result in more than minimal stream loss will usually require compensatory mitigation.
- This WSMP does not affect sequencing (e.g., avoidance, minimization, reduction) or any requirements of the Clean Water Act Section 404(b)(1) Guidelines or other applicable documentation. Such requirements shall be evaluated during permit analysis.
- Ephemeral, intermittent, and perennial streams can be evaluated under this WSMP. Losses to streams, termed “debits” in this procedure, are calculated based upon the stream type and inherent functions, quality, and type of loss in combination with overall linear footage. Compensatory mitigation of a stream, termed “credits” in this procedure, is calculated based upon the stream type, inherent functional or quality improvement of linear feet stream, type of protection, timing and location of mitigation.
- The Corps will use this document as the primary means of calculating stream mitigation debits and credits for losses of waters of the U.S. in Wyoming, and as the primary reference when applied to stream mitigation bank establishment. When this WSMP is used in the establishment of a mitigation bank, the Corps, in concert with the Interagency Review Team (IRT), will evaluate the appropriate application and integration of this document with other aspects of the mitigation banking instrument, such as functional assessments, monitoring and performance standards. A similar process applies when evaluating a permittee-responsible mitigation plan.
- Validation of debiting and crediting will be required as special conditions to a permit and in context of a mitigation banking instrument.

- In addition to the requirements set forth in this document, other Federal, State, Tribal, or local agencies within Wyoming may require additional or separate mitigation under their own authorities.
- Other appropriate methods may be used to quantify stream debits and credits in place of this procedure, if prior approval is obtained from the Corps.
- Separate and/or additional procedures may be applied to special resources, standard individual permits, or approved mitigation banks. For example, complex projects that require functional assessments could deviate from this procedure.

2. Purpose.

The intent of this WSMP is to establish a method for calculating compensatory mitigation debits and credits that will provide predictability and consistency. This WSMP is not intended for use as project design criteria.

Nothing in this WSMP should be interpreted as a guarantee that a project that follows the procedure described herein will be approved. Since a particular project may warrant alternative mitigation requirements, each resource and proposed project is evaluated on a case-by-case basis. The Corps will rely on 33 CFR 332.3 when approving mitigation.

3. Corps Regulatory Policy on Stream Mitigation.

This WSMP was adapted from similar methodologies used in other Corps Districts that have been in effect for several years. The intent for this WSMP is to comply with the requirements for mitigation found in 33 CFR Parts 320, 332 and 325.

If there appears to be a conflict between this WSMP and a Corps regulation or policy, users should immediately notify the Corps. The Corps will review and modify this WSMP as necessary.

4. Stream Losses.

This procedure uses the existing condition of the stream and the anticipated functional loss within a given length (reach) of stream caused by the permitted activity, including direct, secondary and cumulative effects to quantify debits. Activities resulting in stream loss may include filling, realignment, excavating, flooding, draining, clearing, channelizing, straightening, shortening, canalizing, incising/entrenching, or other adverse actions that affect the physical, chemical, and biological characteristics of a stream.

5. Mitigation Type.

In general, there are four types of compensatory mitigation that may be available to an applicant (permittee), upon approval by the Corps:

A. **Mitigation Bank Credits:** A mitigation bank is a site where aquatic resources (e.g., wetlands, streams, riparian areas) are restored, established, enhanced, and/or preserved in advance of impacts for the purpose of providing compensatory mitigation for impacts authorized by DA permits. In general, a mitigation bank sells compensatory mitigation credits to permittees whose obligation to provide compensatory mitigation is then transferred to the mitigation bank sponsor. The operation and use of a mitigation bank are governed by a mitigation banking instrument (33 CFR Part 332.2). A permittee may elect to purchase credits from an established stream mitigation bank as long as impacts are within the bank's service area and the bank has appropriate credits available.

To locate a bank in Wyoming, visit the Regional Internet Bank Information Tracking System (RIBITS) link on the Omaha District Mitigation Information website <http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/Mitigation.aspx> , or contact the Wyoming Regulatory Office.

B. In-Lieu Fee Credits: An in-lieu fee program involves the restoration, establishment, enhancement, and/or preservation of aquatic resources through funds paid to a governmental or non-profit natural resources management entity to eventually satisfy compensatory mitigation requirements for DA permits. Similar to a mitigation bank, an in-lieu fee program sells compensatory mitigation credits to permittees whose obligation to provide compensatory mitigation is then transferred to the in-lieu program sponsor. The rules governing the operation and use of in-lieu fee programs are somewhat different from the rules governing operation and use of mitigation banks. The operation and use of an in-lieu fee program are governed by an in-lieu fee program instrument (33 CFR Part 332.2). A permittee may elect to pay a fee to an ILF sponsor who will construct the mitigation site concurrent or after impacts have occurred. As of the implementation date of this document, no in-lieu fee program exists in Wyoming.

C. Permittee-Responsible Mitigation: A permittee may elect to prepare their own mitigation proposal or hire a consultant to prepare a mitigation plan which must be approved by the Corps. There are three sub-categories of permittee-responsible mitigation (33 CFR Section 332.2 (b)(4-6)). Regardless of sub-category, the permittee retains all responsibility for the mitigation obligations.

- Permittee-responsible mitigation under a watershed approach.
- Permittee-responsible mitigation through on-site and in-kind mitigation
- Permittee-responsible mitigation through off-site and/or out of kind mitigation

D. Combination of Above: With Corps approval, the permittee may combine mitigation bank credits, ILF credits, and/or permittee-responsible mitigation to satisfy compensatory mitigation.

6. Mitigation Activities

Permittees are responsible for proposing appropriate compensatory mitigation commensurate with the amount and type of loss associated with a particular DA permit. Compensatory mitigation for stream losses may include a combination of in-stream and riparian restoration (re-establishment or rehabilitation), enhancement, creation or preservation. Preservation will generally only be considered in combination with enhancement and restoration. Because streams are difficult to replace through creation, restoration and enhancement activities will provide greater certainty that permitted impacts will be successfully offset (33 CFR 332.3(e)(3)).

Activities that may constitute restoration or enhancement of stream functions include, but are not limited to: establishment of natural buffers; acquisition of wildlife corridors/crossings; impoundment removal; livestock exclusion; road crossing improvements; removal of invasive vegetation and restoration of appropriate vegetation communities; stream channel restoration of pattern, profile, and dimensions; in-stream habitat recovery; and reconnection of a stream with its flood plain. All restoration and enhancement measures should be designed to improve biological and morphological integrity, habitat, and water quality.

7. Location.

For this WSMP, a watershed is an area within the boundary of an 8-digit Hydrologic Unit Code (HUC). A watershed approach is recommended by the Compensatory Mitigation Rule; thus, mitigation located as close to the impact site as practicable and within the same local sub-watershed (10-digit HUC) or watershed is preferred. Compensatory mitigation outside the watershed is not preferred, but is acceptable within an approved mitigation bank service area. Out of watershed and out of service area mitigation may not be acceptable and must be approved on a case-by-case basis.

8. Timing.

Mitigation should be completed prior to or concurrent with the permitted project impacts. Complete mitigation prior to the impacts is preferred, though, it is recognized that issues such as equipment availability may necessitate mitigation concurrent with the overall project. This is usually acceptable provided the time lag between the impacts and mitigation is minimized and the mitigation is completed within one growing season following commencement of the project impacts. Rationale will need to be provided for schedules showing less than 100% completion of the approved mitigation concurrent with completion of the permitted project. In such cases, the Corps may require additional mitigation to account for temporal losses.

9. Maintenance.

Mitigation areas will be designed to be hydrologically and ecologically self-sustaining with little to no maintenance (33 CFR 332.7). Diligence should be taken to show hydrology is adequately considered since plans requiring extensive maintenance or other substantial ongoing human inputs (water control structures, pumping, etc.) will normally not be accepted.

10. Mitigation Bank Development.

Proposals for mitigation banks must comply with 33 CFR 332.8. Proposals that include use of credits from a mitigation bank must normally comply with the requirements of this WSMP as well as any conditions or restrictions applicable to the bank.

11. Stream Mitigation Costs.

All costs are the responsibility of the permittee (whether conducting the work or purchasing credits from a Corps approved bank). For mitigation banks, the actual cost per credit is determined by the sponsor in consultation with the permittee. For in-lieu fee, a cost per credit will be established in the in-lieu fee agreement, with final approval provided by the Corps. Financial assurances in the form of a bond or other similar binding document may be applied to assure funds will be available to complete mitigation (33 CFR 332.3n).

12. Guidance.

Copies of this document will be made available on the Wyoming Regulatory Office website <http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/Wyoming/Mitigation.aspx> or upon request.

Prospective permittees and their agents are encouraged to seek the advice of this office and other regulatory agencies during the planning and design of mitigation plans. For complex mitigation projects, such consultation may improve the likelihood of mitigation success and reduce permit processing time. Questions regarding use of this policy for specific projects must be addressed to the Project Manager handling the specific permit action. Other general inquiries or comments regarding this document may be addressed to:

Paige Wolken
Wyoming Regulatory Office
U. S. Army Corps of Engineers, Omaha District
2232 Dell Range Boulevard, Suite 210
Cheyenne, Wyoming 82009
Phone (307) 772-2300
Subject: WSMP

13. Document Updates.

This document is subject to periodic review and modification. This document will be reviewed within 2 years after implementation and thereafter, as warranted. Necessary modifications or updates will be

released to the public as a new version of the WSMP. The version of the WSMP utilized for an approved permit, mitigation bank or other 404 mitigation program is the document used for reference and compliance for the life of the required mitigation.

The referenced web links in this document may change over time. Please contact the Wyoming Regulatory Office if a web link is no longer valid.

DEBIT AND CREDIT COMPUTATION TABLES AND INSTRUCTIONS

I. Using the Rating and Calculation Tables

When compensatory mitigation is required, the amount of compensatory mitigation will be determined by using the following rating tables and calculation worksheets. The procedure is intended to establish a clear, understandable, and consistent method to calculate stream debits and credits.

Note: An electronic version of the worksheets is available to aid in the calculations for this procedure.

Step 1. Use Table 1 to rate stream losses. Refer to Section II for definitions of factors used in the tables. Any Multiplier category not selected or applicable will equal zero. It may be helpful to circle the multiplier that applies to each project loss reach.

Table 1. Stream Losses (Debits)

FACTORS	MULTIPLIERS							
	Class 4		Class 3		Class 2		Class 1	
Stream Classification (Pg 8)	B	A	D	C or B	D	C	A, AB or B	
	0.1	0.2	0.6	0.8	1.1	1.3	1.5	
Special Resources (Pg 8)	Red Ribbon 0.6		Conservation 1.0		Blue Ribbon 1.0		Wild & Scenic 1.5	T&E Species 2.0
Existing Condition (Pg 9)	Non-Functional 0.50			Deficient 1.5		Functional 2		
Type of Loss (Pg 10)	Partial Functional Loss 1.0			Functional Loss 4.0		Physical Loss 6.0		
Cumulative Impact (Pg 10)	Multiply total length of all stream disturbances (feet) x 0.005.							

Step 2. In Table 2, calculate debits: Record the multiplier rating of each factor for each Reach. A loss that occurs in a different location (reach) of the same project will be counted separately in Table 2. Add the factor ratings across the table for the total score per factor. Add the factor ratings down the table for the Sum of Factors per Reach. Record the total Linear Feet in which the project impacts occur by Reach. Multiply the Sum of Factors by the Linear Feet to calculate the number of debits for each Reach and for the Total project.

Table 2. Debits Worksheet

FACTORS	Reach 1	Reach 2	Reach 3	Reach 4	Total
Stream Classification					
Special Resources					
Existing Condition					
Type of Loss					
Cumulative Impact					
Sum of Factors (SF _i)					
Linear Feet (LF _i)					
Debits = SF _i X LF _i					

Step 3. Use Table 3 to rate mitigation measures. Refer to Section II for definitions of factors used in the tables. Any Multiplier category not selected or applicable will equal zero. It may be helpful to circle the multiplier that applies to each mitigation type or reach.

Table 3. Mitigation Measures (Credits)

FACTORS	MULTIPLIERS							
	Stream Classification (Pg 8)	Class 4		Class 3		Class 2		
B		A	D	C or B	D	C	A, AB or B	
0.1		0.2	0.6	0.8	1.1	1.3	1.5	2.0
Special Resources (Pg 8)	Red Ribbon 0.6		Conservation 1.0		Blue Ribbon 1.0		Wild & Scenic 1.5	T&E Species 2.0
Riparian Buffer (Pg 11)	Total Width of Riparian Buffers ÷ 1000 (+ 0.3 for both sides)							
Net Riparian Improvement (Pg 11)	Minimal 0.2		Moderate 0.7			Substantial 2.5		
Net Stream Improvement (Pg 11)	Minimal 1.5		Moderate 3.5			Substantial 5.0		
Type of Protection (Pg 12)	Deed Restriction 0.5		Permittee Easement 1.0		Agency Owned 1.0		Conservation Easement 3.0	Fee Title 5.0
Timing (Pg 12)	Schedule 3 -1.5			Schedule 2 0.0			Schedule 1 4.0	
Location (Pg 13)	Outside watershed -1.0			Off-Site HUC 8 0.0		Off-Site HUC 10 0.2		On-Site 0.4
Watershed Approach (Pg 13)	1.5							

Step 4. In Table 4, calculate credits: Record ratings of each factor by Mitigation type or reach. Add the factor ratings across the table for the total score per factor. Add the factor ratings down the table for the Sum of Factors per Mitigation reach. Record the total Linear Feet in which the mitigation occurs by reach. Multiply the Sum of Factors by the Linear Feet to calculate the number of credits for each Mitigation reach and for the Total mitigation.

Table 4. Credits Worksheet

FACTORS	Mitigation 1	Mitigation 2	Mitigation 3	Mitigation 4	Total
Stream Classification					
Special Resources					
Riparian Buffer					
Net Riparian Improvement					
Net Stream Improvement					
Type of Protection					
Timing					
Location					
Watershed Approach					
Sum of Factors (SF _m)					
Linear Feet (LF _m)					
Credits = SF _m x LF _m					

Step 5. Use Table 5 to report credit totals by type of mitigation and to determine if the proposed mitigation will adequately compensate for project losses. Carry forward the appropriate totals from the Debit and Credit Worksheets. For a mitigation proposal to be acceptable, the Proposed Mitigation Credits (item E) must be equal to or greater than the Total Project Loss Debits (item A).

Table 5. Mitigation Summary Worksheet

Total Project Loss Debits		Debits
A		
Mitigation Banking Credit Summary		Credit
B		
In-Lieu Fee Credit Summary		Credit
C		
Permittee-responsible Credit Summary		Credit
D		
Proposed Mitigation Credit Grand Total		Credit
E	E=B+C+D, E must be >A	

II. Definition of Factors Used in Tables

II.1 Stream Loss (Debit) Factors

Stream Classification for Wyoming and this procedure will be conducted according to the Wyoming Department of Environmental Quality (WDEQ) Wyoming Surface Water Classification List which incorporates flow regime and designated uses. The List can be obtained from Chapter 1 of the Wyoming Water Quality Rules and Regulations on the WDEQ website:

<http://deq.state.wy.us/wqd/watershed/surfacestandards/Downloads/Standards/2-3648-doc.pdf>

The List must be referenced to complete Table 1.

Special Resources are stream and riverine systems that provide functions and values of recognized importance. The following information must be referenced to complete Table 1.

Red Ribbon and Blue Ribbon – Statewide and nationally important trout production streams, as designated by the Wyoming Game and Fish Department (WGFD). A list and map of these resources can be found on the WGFD website: <http://wgfd.wyo.gov/web2011/WILDLIFE-1001061.aspx>

Conservation - All waters within HUC 10 local watersheds designated by the WGFD as Aquatic Conservation Areas under the State Wildlife Action Plan. A list and map of these resources can be found on the WGFD website: <http://wgfd.wyo.gov/web2011/WILDLIFE-1001061.aspx>

Wild and Scenic –Wyoming waters receiving designation under the Wild and Scenic Rivers Act can be found on the following website: <http://www.rivers.gov/rivers/wyoming.php>

T&E Species - Threatened and Endangered (T&E) Species as designated under the Endangered Species Act. Note: As of February 2013, there are no streams that would fall under this category. Current information regarding Wyoming T&E species can be found on the U.S. Fish and Wildlife Service website: http://www.fws.gov/wyominges/Pages/Species/Species_Endangered.html

Existing Condition reflects the functional state of a stream before any project impacts occur from an applicant's proposed project; or likewise, reflects the existing and projected functional states in determination of net improvement for compensatory mitigation (see Net Riparian Improvement and Stream Improvement). Existing condition is a measure of a stream's functional elements: its stability and resilience relative to the physical, chemical and biological integrity of the system. In order to determine how much compensatory mitigation is required, the Compensatory Mitigation Rule recommends that condition or functional assessments be completed: one at the impact site to quantify ecological losses and one at the mitigation site to quantify projected ecological gains (33 CFR 332.3(f)(1)). The condition or functional assessment method must be approved by the Corps before use. The same method must be used to assess the project impact site and anticipated stream loss, as well as the mitigation site and anticipated stream improvement. If a permittee utilizes a stream mitigation bank, the assessment method is dictated by the bank's mitigation banking instrument.

The results of each assessment and a summary narrative must be provided to demonstrate that a stream falls into one of the following categories:

Functional means the hydrologic, hydraulic, geomorphic, physiochemical and biologic functions (integral functions) of the stream reach are maintained. For example, the reach is physically stable and has an appropriate stream hydrograph and chemical makeup given the topographic setting and watershed. Stream biota are diverse and unimpaired by excessive anthropogenic inputs.

A functional stream reach is not channelized or impounded; is free of manmade alterations that degrade channel stability, or aquatic habitat quality and connectivity; transports sediment and flows produced by its watershed while maintaining stable dimensions, pattern and profile; shows minimal evidence of human-induced sedimentation or incision; has a functioning vegetated riparian zone; is not on Wyoming's 303(d) list of impaired waters; and supports stream biota comparable to reference conditions.

Deficient means the stream reach has been compromised through *partial loss* of one or more of the integral functions. Stream ecosystem recovery has a moderate probability of occurring naturally.

A deficient stream may have an entrenchment ratio and/or width/depth ratio at bank full discharge that is inappropriate for the expected stream type relative to reference reach data; moderate evidence of human-induced sedimentation or incision; a moderately functioning vegetated riparian zone of deep-rooted or mat of vegetation; or manmade structures that degrade channel stability or aquatic habitat quality and connectivity.

Nonfunctional means that the stream reach has been compromised by *high or total loss* of one or more integral functions. Chemical, biological, or physical degradation alone can characterize a nonfunctional stream. Ecosystem recovery is unlikely to occur naturally.

A nonfunctional stream may be channelized; have extensive human-induced sedimentation or incision; have extensive bank erosion with accelerated lateral channel migration; have little or no vegetated riparian zone with deep-rooted vegetation; have manmade structures that degrade channel stability or aquatic habitat quality and connectivity; be listed on Wyoming's 303(d) list of impaired

waters due to nonsupport of aquatic life uses; or have stream biota that indicate aquatic life impairments.

Tools available to determine existing condition:

A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas, TR 1737-15, 1998, developed and utilized by the Bureau of Land Management, US Forest Service and Natural Resources Conservation Service (NRCS):

<ftp://ftp.blm.gov/pub/nstc/techrefs/Final%20TR%201737-15.pdf>

Stream Visual Assessment Protocol Version 2, 190–VI–NBH, December 2009, developed by the NRCS:

ftp://ftp-fc.sc.egov.usda.gov/NDCSMC/Stream/pubs/NBH_Part_614_Subpart_B_10_Dec_09.pdf

WDEQ's *Integrated 305(b) and 303(d) Report* (<http://deq.state.wy.us/wqd/watershed/#Assess>) or individual water quality assessment reports (<http://deq.state.wy.us/wqd/watershed/index.asp#Mon>) can be consulted to help determine the existing condition of many Wyoming streams. These reports do not assess all waters, and are often not available for smaller streams. The lack of assessment does not imply that the water meets water quality standards or supports its designated aquatic life uses.

EPA's *A Function-Based Framework for Stream Assessment & Restoration Projects* (EPA 843-K-12-006, 2012) can be consulted for general guidance on functional assessments and mitigation planning:

http://water.epa.gov/lawsregs/guidance/wetlands/upload/A_Function-Based_Framework.pdf

Type of Loss refers to the impacts to a stream's functional integrity that will result from the proposed activities. There are three main categories of loss:

Partial Functional Loss means one or more integral functions are degraded and only a portion of the stream reach or channel is affected. For example, installing bank armor (extensive rock or cement riprap or retaining walls) on one bank with little to no incorporation of vegetation may adversely affect flow dynamics, biological habitat and geomorphic resiliency and result in partial functional loss.

Functional Loss means most integral functions are impaired or lost and the entire stream reach or channel is affected. For example, reworking, dredging, channelizing or diverting flow would modify stream elevations and contours and adversely impact the morphology, character and function of the stream channel.

Physical Loss means the stream is physically destroyed and integral functions within the affected reach are lost.

In order to account for the appropriate magnitude of potential functional loss, losses that occur in different locations (reaches) of the same project should be counted as separate losses in Table 2.

Cumulative Impact is an estimate of the total linear feet of stream adversely affected by the project. It is calculated by multiplying the length of stream impacted by a factor of 0.005. This is intended to capture the effect that more than one action may have on an aquatic resource. For example, multiple road crossings may be proposed along several separate reaches of the same stream. Use of the factor will account for the influence of additional road crossings on an already modified stream and will result in more debits than would have otherwise been calculated.

II.2. Credit Factors

Riparian Buffer is land adjacent to streams containing native vegetation that affect or are affected by the presence of water. Appropriate riparian buffer widths are generally 25-50 feet or more depending on the stream, slope, surrounding land use, and the buffers expected contribution to aquatic resource functions. Generally, a buffer should be established on both sides of a stream channel, unless the property is not available. Greater buffer widths provide greater water quality benefits, and better prevent sediment and runoff from entering the stream. *Riparian buffer credit will only be received if the buffer is protected* (see Type of Protection).

Net Riparian Improvement and Net Stream Improvement are measures of the functional lift attributed to the enhancement, restoration and perpetual protection of streamside riparian areas and restored stream channel function. For example, improvements in riparian and in-stream structure and habitat elements relate directly to improvements in stream functions. Restored streams often have proper morphology relative to the physical characteristics of the watershed.

The existing condition or functions at the mitigation site will be assessed in order to quantify ecological gains (net improvement) expected and realized from the mitigation project (33 CFR 332.3(f)(1)). The same assessment method must be used to assess the mitigation site as was used to assess the project impact site. Information about the existing condition of a mitigation site is useful in determining what restoration or enhancement activities would provide the greatest functional lift. For example, if a riparian vegetation functional element scores low in an assessment, vegetative enhancements, such as invasive species removal or native re-vegetation activities, may be prioritized. Successful attainment of projected functional lift would be determined after assessing the net improvement of the stream resource.

In-stream and riparian buffer improvement activities generate separate Net Improvement Credits. Net Improvement Credits are based on the following three categories which reference Existing Condition terms.

An explanation of the specific mitigation activities to be employed and the measurable positive change in condition or function projected is required to justify the category selected.

Substantial enhancement and restoration activities make a Nonfunctional riparian buffer or stream site Functional.

Moderate enhancement and restoration activities *greatly improve a select integral function or generally improve multiple functional elements*; and make a Deficient riparian buffer or stream site Functional, where the riparian and in-stream functions are stable or on a trajectory to functional; or make a Nonfunctional riparian buffer or stream site Deficient, where the riparian and in-stream functions are on a trajectory to Deficient.

Minimal enhancement or limited rehabilitation activities *generally improve a select functional element or nominally improve multiple functional elements*; and bring a Nonfunctional riparian buffer or stream site closer to Deficient; or bring a Deficient riparian buffer or stream site closer to Functional, where the riparian and in-stream functions may continue to be compromised. Minimal net improvement may also be achieved at a site where the riparian buffer or stream site is already Functional and only preservation or site protection were proposed to maintain the site.

Examples of providing moderate or substantial net improvement:

Where a documented problem exists, increasing effective protected riparian buffers by limiting stream access for grazing livestock and re-vegetating with native riparian species may provide moderate functional improvements by addressing bank degradation, sedimentation, and water quality problems.

For a restoration site where the initial condition is considered impaired due to channelization and a low entrenchment ratio, and the stream is not supporting aquatic life uses due to resultant aquatic habitat degradation, substantial net improvement may be achieved by restoring morphological traits such as bankfull width, stream sinuosity, entrenchment ratio, slope and width/depth ratio to expected conditions derived from referenced morphologic data. The functional lift from these activities can be measured and monitored using appropriate hydraulic, geomorphic and biological parameters, and would typically achieve substantial functional improvement. Where relocation of an incised stream and/or modifying the existing channel to create a more sinuous stream channel is impracticable due to belt width constraints, modifying the existing channel and floodplain at its current elevation to create a stable channel may be the most restoration available, but because the stream is not reconnected with the floodplain, the site may only achieve minimal lift.

Type of Protection refers to legally binding real estate instruments that ensure that the land and aquatic resources offered for mitigation have long-term protection, generally in-perpetuity.

This WSMP recognizes five different site protection mechanisms, each offering a different level of protection:

Deed Restriction - A private individual or property owners association attaches a recorded restrictive covenant to the property deed.

Permittee Easement - A permittee obtains a specific easement to establish, maintain and protect a compensatory mitigation site.

Agency Owned - A mitigation site is located on government property. The land is preferably owned or managed by a state or federal natural resource agency where mitigation responsibilities are established through special permit or an interagency agreement. Long-term protection may be provided through an appropriate federal facility management plan or integrated natural resources management plan (33 CFR 332.7).

Conservation Easement - A qualified, experienced, non-profit conservation organization or a government agency holds a conservation easement for the mitigation site. The easement is enforced by the easement holder.

Fee Title - Transfer of complete ownership to a qualified, experienced, non-profit conservation organization or government agency that will protect and manage the area as intended.

Timing means the relative time when the mitigation will be performed in relation to when the resource losses will occur. All credit withdrawals associated with mitigation banks must be able to meet interim success criteria commensurate with the level of credit withdrawal. Related terms include:

Schedule 1 –All mitigation is completed prior to the project impacts and the mitigation site has achieved or demonstrates consistent progress toward meeting performance standards.
Mitigation Banks: Certified credits are available.

Schedule 2 – Permittee-responsible mitigation/In Lieu Fee: mitigation is concurrent with the project impacts. No credit will be given for concurrent timing.
Mitigation Banks: Only pre-certified or non-certified credits are available.

Schedule 3 – Permittee-responsible mitigation/In Lieu Fee: mitigation is constructed after project impacts occur. Negative credits apply due to postponed functional offset.

As previously stated, additional mitigation may be required by the Corps for excessive temporal loss of aquatic resource functions (delayed functional offset).

Location is the relative proximity of the mitigation site to the impact site. For stream mitigation banks, service area will be defined for the bank after an assessment of the banking proposal. Bank credits are calculated far in advance of any known application. The Corps, after consultation with the IRT, will approve a standardized value for this category based on a bank's service area and expected market so that credits can be calculated.

On-Site – The mitigation site is located on the impacted stream within ½ mile upstream or downstream of the project impact site.

Off-Site HUC 10; HUC 8– The mitigation site is greater than ½ mile from the impact site. It may or may not be located on the impacted stream, but it must be within the same (HUC 10) sub-watershed as the impact site; or within the same (HUC 8) watershed as the impact site, respectively.

Outside Watershed - The mitigation site is outside the same watershed as the project impacts, but still within an adjacent watershed or service area within the same Hydrologic Basin (HUC 6). Mitigation sites outside the watershed must first be approved by the Corps, unless they occur within an approved bank service area.

Mitigation outside the same Hydrologic Basin as the impact site or a bank's service area will generally be unacceptable.

Watershed Approach means that the permittee has effectively demonstrated to the Corps that the mitigation location, resources and improvements were strategically selected based on watershed needs and goals (33 CFR 332.2 definition and 332.3(b)). For example, a watershed approach may specifically address an identified priority, resource and location from a watershed plan, regional wildlife action plan, or species recovery plan; or improve a TMDL or known source of water quality impairment.