United States Army Corps of Engineers
Albuquerque, Omaha, and Sacramento Districts

Colorado Mitigation Procedures

Version 2.0

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Cover Photo: Colorado Department of Transportation US-36 Wetland Mitigation Area, Boulder County, Colorado (2018)

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1.0 Introduction

Each year, thousands of property owners undertake projects that affect the nation's aquatic resources. In many cases, a permit from the U.S. Army Corps of Engineers (Corps) is required in order to satisfy the requirements of Section 404 of the Clean Water Act (CWA) (33 U.S.C. § 1344) and Section 10 of the Rivers and Harbors Act of 1899 (RHA) (33 U.S.C. § 403). Through the Regulatory Program, the Corps ensures that environmental impacts to aquatic resources from these projects is avoided and minimized to the maximum extent practicable and that any unavoidable losses are offset through compensatory mitigation.

The practice of using compensatory mitigation is an important component of the Regulatory Program. However, the differences in social, economic, and environmental conditions across the country have led to regional and geopolitical variability in approaches to compensatory mitigation. While all of the Corps' policies and procedures are intended to ensure compliance with the regulations, inconsistencies between Corps' districts can result in unpredictability for the permittee. Therefore, the Albuquerque, Omaha, and Sacramento districts have developed the Colorado Mitigation Procedures (COMP) to outline the steps the Corps will take regarding compensatory mitigation evaluations and provide statewide predictability and consistency in the Corps' compensatory mitigation determinations.

Specifically, the COMP is intended to standardize the Corps' compensatory mitigation procedures for quantifying wetland and stream losses (debits) and compensatory mitigation (credits) within the State of Colorado. The COMP will provide the regulated public with non-binding procedures that will aid in selecting appropriate compensatory mitigation sites, preparing mitigation plans, and in implementing successful compensatory mitigation projects.

The COMP *is not* comprehensive and it *does not* address compliance with all laws, regulations, policies, or procedures related to mitigation. Nothing in the COMP should be interpreted as a guarantee that a project will be authorized if it follows the procedures described herein.

2.0 Applicability and Use

The COMP applies to: (1) projects located in aquatic resources where a CWA Section 404 and/or RHA Section 10 permit is required and the Corps determines that compensatory mitigation is necessary to offset unavoidable impacts to aquatic resources associated with the authorization; and (2) all activities that are for the purpose of generating mitigation credits, including mitigation banks, in-lieu fee programs, and permittee responsible mitigation.

The COMP provides prospective Corps permittees with non-binding procedures that outline the steps that the Colorado Corps districts may follow in order to meet obligations under existing laws, regulations, policy, and formal guidance, including, but not limited to, the *404(b)(1) Guidelines* (40 CFR 230) and the *Compensatory Mitigation for Losses of Aquatic Resources* (33 CFR 332 and 40 CFR 230), also known as the *2008 Final Rule*. Nothing in the COMP is meant to abridge or replace any existing laws, regulations, policy, or guidance that the Corps is obliged to follow.

The Corps has incorporated all current Corps policy and guidance that is applicable in Colorado. In the event that there are changes in the Corps' policy or guidance pertaining to mitigation, the Corps may modify this document to reflect those changes. In the event that a discrepancy with relevant Corps policy is discovered, the Corps will review the relevant policy and modify the COMP, as necessary, to resolve the inconsistency. The Corps will maintain the current version of the COMP on the Corps' webpages pertaining to Colorado and will provide notice to the public whenever modifications or updates are published

Finally, it is important to note that there is no "one size fits all" approach to mitigation, and all Corps decisions pertaining to compensatory mitigation are made case-by-case in compliance with 33 CFR 332.3 based on what is appropriate, feasible, and practicable to compensate for the lost aquatic resource functions associated with the permitted activity. For this reason, prospective applicants are encouraged to engage in pre-application consultation with the Corps during project planning. Pre-application consultation provides the applicant and the Corps with the opportunity to determine the best approach to quantifying aquatic resource functions that may be impacted by a project, identify practicable means of avoidance and minimization of impacts to aquatic resources, and discuss potential mitigation measures that may be required to compensate for unavoidable losses.

Questions regarding the applicability of the COMP to a specific project should be addressed to the Corps project manager who is processing the request. All other questions regarding general applicability and use of the COMP may be addressed to any of the Colorado Corps offices (see contact information below).

3.0 General Information

The Corps' regulations require that a Department of the Army (DA) permit application include a statement describing how impacts to aquatic resources are to be avoided and minimized, and a statement describing how impacts to aquatic resources are to be compensated for, or a statement explaining why compensatory mitigation should not be required (33 CFR 325.1(d)(7)). While following the procedures outlined in the COMP will help applicants comply with the Regulatory requirements, all successful mitigation projects require careful planning, detailed design, oversight during construction, a comprehensive adaptive management plan (e.g., invasive species control), and post-construction monitoring.

2008 Final Rule: Section 314 of the National Defense Authorization Act (NDAA) for Fiscal Year 2004 (Section 314) requires the Secretary of the Army, acting through the Chief of Engineers, to issue regulations "establishing performance standards and criteria for the use, consistent with Section 404 of the Clean Water Act (33 U.S.C. § 1344), of on-site, off-site, and in-lieu fee mitigation and mitigation banking as compensation for lost wetlands functions in permits issued by the Secretary of the Army under such section." In response to this directive, the Corps and the U.S. Environmental Protection Agency (USEPA) issued regulations governing compensatory mitigation for activities authorized by DA permits. These regulations, known as the *Compensatory Mitigation for Losses of Aquatic Resources; Final Rule,* can be found at 33 CFR 332 and 40 CFR 230. In compliance with the Final Rule, the Corps requires compensatory mitigation "for significant resource losses which are

specifically identifiable, reasonably likely to occur, and of importance to the human or aquatic environment." When the Corps requires compensatory mitigation, it "will be directly related to the impacts of the proposal, appropriate to the scope and degree of those impacts, and reasonably enforceable" (33 CFR 320.4(r)(2)).

Sequencing: The COMP does not affect sequencing (e.g., avoidance, minimization, and then compensation), nor does it provide guidance on the steps that applicants should take to avoid and minimize impacts to aquatic resources before compensatory mitigation will be required. Instead, the COMP focuses on the tools and procedures that the Corps may rely on to determine the amount and type of compensatory mitigation credits that may be needed to offset resource losses or produced at a mitigation site.

Quantifying Compensatory Mitigation Requirements: In accordance with the general compensatory mitigation requirements found at 33 CFR 332.3(f)(2), the Corps "must require a mitigation ratio greater than one-to-one where necessary to account for (1) the method of compensatory mitigation (e.g., preservation), (2) the likelihood of success, (3) differences between the functions lost at the impact site and the functions expected to be produced by the compensatory mitigation project,(4) temporal losses of aquatic resource functions, (5) the difficulty of restoring or establishing the desired aquatic resource type and functions, and/or (6) the distance between the affected aquatic resource and the compensation site."

In order to standardize the Corps' approach to quantifying compensatory mitigation debits and credits within the State of Colorado, the Albuquerque, Omaha, and Sacramento districts have approved the statewide use of the Quality Management System (QMS) Document *12501: South Pacific Division (SPD) Standard Operating Procedure (SOP) for Determination of Mitigation Ratios*, which includes the *SPD Mitigation Ratio Setting Checklist (MRSC)*. The *MRSC* is a net sum calculator that the Corps uses to document the rationale for determining a mitigation ratio, in accordance with 33 CFR 323.3(f)(2), in order to ensure the mitigation is sufficient to replace the lost aquatic resource functions. The MRSC takes into account the following factors when determining mitigation ratios:

1. Wetland impact area (acres) or stream impact distance (feet);

2. Watershed location of proposed mitigation site relative to the impact site (8-digit Hydrologic Unit Code);

3. Whether the mitigation would offset the net loss of aquatic resource surface area (i.e., establishment and re-establishment vs. rehabilitation, enhancement, or preservation);

4. Comparison of habitat types at both the mitigation and impact sites (e.g., wet meadow, riparian forest, and stream flow duration);

5. Likelihood of success, as determined by risk and uncertainty factors (e.g., permittee-responsible mitigation, degree of legal protection, and difficult-to-replace); and

6. Temporal loss (the time between the loss of aquatic resource functions and the successful completion of mitigation).

Assessment Methods: During the application review process, in accordance with 33 CFR 332.3(f)(2), the Corps will consider the differences between the functions proposed to be lost at the impact site and the functions expected to be produced by the compensatory mitigation project in order to determine the amount of compensation that is necessary to offset the lost functions. In cases where compensatory mitigation may be required, applicants should use a functional or condition assessment method (FCAM) to assist in site selection and pre-project planning (i.e., to assess anticipated project-related impacts to aquatic resources and the ability of mitigation to replace the lost functions). Additionally, whenever compensatory mitigation is required, permittees should use the FCAM during post-construction monitoring to evaluate the success of the mitigation project.

The Albuquerque, Omaha, and Sacramento districts, in collaboration with other federal and state agencies, have developed both wetland and stream FCAMs to better account for the replacement of lost aquatic resource functions. For statewide consistency in documenting wetland functions for consideration when determining mitigation requirements at wetland impact and mitigation sites, the Corps has approved the use of the *Functional Assessment of Colorado Wetlands (FACWet)*. For statewide consistency in calculating compensatory mitigation debits and credits in streams, the Corps has approved the use of the *Colorado Stream Quantification Tool (CSQT)*. The Corps acknowledges that there are other assessment methods and reserves the right to approve the use of other FCAMs, case-by-case, provided that the methods have been developed and calibrated according to the criteria in the *South Pacific Division (SPD) Regional Compensatory Mitigation and Monitoring Guidelines (MMGs)*. In all cases, applicants should consult with the Corps before utilizing any FCAMs to determine whether or not those methods are appropriate for the site and necessary for regulatory compliance.

While all compensatory mitigation proposals should be based on hydrologic, hydraulic, geomorphic, physicochemical, and/or biological functions or conditions, the COMP does not specify which functions/conditions must be documented for a given site. Current and historic land uses at the site and within the watershed or ecoregion will dictate which environmental stressors and site conditions need to be evaluated. Likewise, project-specific considerations, such as activity type and project complexity, will affect the anticipated changes in site conditions that should be assessed and what level of assessment is appropriate for the mitigation plan.

Difficult-to-replace Habitats: In accordance with 33 CFR 332.3(e)(2), the Corps may prefer in-kind rehabilitation, enhancement, or preservation for difficult-to-replace resources because there is greater certainty that these methods of mitigation (compared to establishment and re-establishment) will successfully offset permitted impacts. Difficult-to-replace resources include, but are not limited to, the following:

1. Fens;

2. Kettle ponds;

3. Natural groundwater or snowmelt-fed wet meadows;

4. Wetlands containing threatened & endangered species or state-listed wetland priority species;

5. Natural and intact playas;

6. Springs;

7. Streams;

8. Riparian forests with intact hydrology; and

9. Beaver-influenced riparian shrublands, meadows, and ponds.

Secondary Effects: The Corps may consider, not only the direct effects, but also the indirect and cumulative effects, associated with the restoration of natural stream systems. Regulatory Guidance Letter (RGL) 18-01 provides guidance to Corps on the factors they should consider when determining the amount of mitigation credits that are generated specifically by the removal of obsolete dams or other structures (e.g., to restore fish passage). RGL 18-01 covers aspects of these restoration activities that are not explicitly addressed by the compensatory mitigation regulations. To address this guidance, the Corps may adjust the proposed functional/condition score to calculate an amount of credits where secondary effects exist in the system. The amount of credit adjustment will be determined case-by-case and will vary by project site. There must be a tangible connection to activities within the reach with effects elsewhere that would not occur but for implementation of those activities. Secondary effects cannot be purely speculative.

4.0 Wetland Compensatory Mitigation

The Corps may require compensatory mitigation for projects with permanent adverse effects to wetlands unless the Corps determines either that some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal. As stated above, the Albuquerque, Omaha, and Sacramento districts have approved the statewide use of FACWet, or other regionally approved FCAM, for informing compensatory mitigation requirements to offset the loss of wetland functions. Whenever wetland mitigation is required, the applicant will be required to provide the Corps with a wetland mitigation plan that would offset the functional loss that is anticipated to result from the permitted activity. The mitigation plan should include, but may not be limited to, the following elements in reliance on FACWet or other Corps-approved FCAMs on a case-by-case basis in consideration of site-specific factors:

1. Pre-project planning (i.e., a determination of potential project-related wetland impacts and an assessment of the mitigation plan's ability to replace impacted functions);

2. Site selection and determination of its restoration potential;

3. Measurement of existing conditions (pre-construction) and proposed conditions (post-construction) at both the impact and mitigation sites; and

4. Post-construction monitoring plan for the mitigation site that will evaluate success and identify remedial actions that may be required to meet performance standards and success criteria.

4.1 Wetland Debits

A debit is a unit of measure (i.e., a functional or areal measure or other suitable metric) representing the loss of aquatic resource functions that is proposed at an impact site as a result of a permitted activity (33 CFR 332.2). The amount of debits that would result from the permitted activity is a primary factor in determining the amount of compensation that is required. Wetland debits are calculated based on the impact area (acreage) and the anticipated change in functions between existing and proposed conditions, as well as the duration of the impacts (i.e., temporary or permanent).

Additionally, as stated in Section 3.0 above, the Albuquerque, Omaha, and Sacramento districts have approved the statewide use of the MRSC, which provides regulators with a procedure to determine the amount of debits that require compensation before a project can be authorized. Through the use of the MRSC, the Corps may require a mitigation ratio greater than one-to-one (e.g., to account for temporal loss, uncertainty, distance between the affected resource and the mitigation site) in order to ensure the mitigation is sufficient to replace the lost aquatic resource functions. While the MRSC is a procedure that the Corps uses during the application review process to document the rationale for the required amount of mitigation, the MRSC is also publicly available for prospective applicants to use as a planning tool to estimate Corps compensatory mitigation requirements early in the project design process.

4.2 Wetland Credits

A credit is a unit of measure (i.e., a functional or areal measure or other suitable metric) representing the accrual or attainment of aquatic functions at a compensatory mitigation site. Wetland credits are based on the functions that would be provided by the resource that is being restored, established, enhanced, or preserved, and are calculated based on anticipated functional gains resulting from proposed activities at a mitigation site. As detailed in Section 3.0 above, the Corps calculates wetland credits primarily based on the quantity (acreage) and quality (functions) of resources gained.

FACWet or another case-by-case Corps-approved FCAM should be used for all wetland mitigation sites to document the change in functions that is reasonably likely to occur as a result of the mitigation activities.

Table 1 lists the different methods of mitigation, or mitigation types, as defined at 33 CFR 332.2, and the approximate acreages that would produce one credit. The Corps will adjust these ratios (up

or down) based on a number of factors, such as FCAM scores and likelihood of success, in order to determine final acre-to-credit ratios. In many cases, multiple mitigation methods may be used on a single site, or multiple sites, to best offset the loss of functions at an impact site and within the watershed or ecoregion.

Table 1. Wetland mitigation methods and associated credit values in Colorado before adjusting for other factors (e.g., FACWet scores, likelihood of success) expressed in acres per credit.

Method of Mitigation (Mitigation Type)		Credit Ratio
Establishment (Creation)		1:1 - 2:1
Restoration	Re-establishment	1:1 - 2:1
	Rehabilitation	2:1 - 3:1
Enhancement		3:1 - 5:1
Preservation*	In combination with above activities	5:1 - 10:1
	Alone	case-by-case
Upland buffer enhancement & preservation**		5:1 - 15:1

*The Corps will refer to 33 CFR 332.3(h) in determining when wetland preservation may be appropriate alone or in combination with other methods of mitigation.

**Some amount of upland buffer enhancement and/or preservation is almost always appropriate to protect the wetland mitigation site and, therefore, generally should be incorporated as part of the site protection measures. Buffer enhancement and preservation may generate additional credits to the degree that is necessary to provide adequate protection of the mitigation site. However, the number of upland buffer enhancement and/or preservation credits typically will not exceed 10% of the total number of credits produced by the compensatory mitigation project.

5.0 Stream Compensatory Mitigation

The Corps may require compensatory mitigation for projects that result in permanent adverse impacts to streams unless the Corps determines either that some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal. As stated above, the Albuquerque, Omaha, and Sacramento districts have approved the statewide use of the CSQT for calculating compensatory mitigation requirements to offset the loss of stream functions. Whenever stream mitigation is required, the applicant will be required to provide the Corps with a stream mitigation plan that would offset the functional loss that is anticipated to result from the permitted activity. The mitigation plan should include, but may not be limited to, the following elements in reliance on the CSQT or other case-by-case Corps-approved FCAMs, where appropriate for the site:

1. Pre-project planning (i.e., a determination of potential project-related stream impacts and an assessment of the ability of the mitigation plan to replace impacted functions);

2. Mitigation site selection and determination of its restoration potential;

3. Quantification of existing conditions (pre-construction) and proposed conditions (post-construction) at both the impact and mitigation sites; and

4. Post-construction monitoring plan for the mitigation site that will evaluate success and identify remedial actions that may be required to meet performance standards and/or success criteria.

5.1 Stream Debits

Functional feet (FF) is the primary unit of measurement that is used for calculating the amount of compensation that is required for stream impacts (debits) in Colorado. The Albuquerque, Omaha, and Sacramento districts calculate FF as the product of: (1) the estimated change in functions resulting from the permitted activity; and (2) the quantity (linear feet) of resources impacted. When stream mitigation is required to offset stream impacts, applicants should use the CSQT Debit Calculation Guide or other case-by-case Corps-approved FCAM, where appropriate for the site, to calculate the amount of stream loss that would result from the permitted activity.

As stated in Section 3.0 above, the Albuquerque, Omaha, and Sacramento districts have approved the statewide use of the MRSC, which provides regulators with a standardized procedure to determine the amount of compensation that will be required before impacts to aquatic resources can be authorized. Through the use of the MRSC, the Corps may require a mitigation ratio greater than one-to-one (e.g., to account for temporal loss, uncertainty, distance between the affected resource and the mitigation site) in order to ensure the mitigation is sufficient to replace the lost aquatic resource functions. While the MRSC is a procedure that the Corps uses during the application review process to document the rationale for the required amount of mitigation, the MRSC is also publicly available for prospective applicants to use as a planning tool to estimate Corps compensatory mitigation requirements early in the project design process.

5.2 Stream Credits

Stream credits are based on the functions that would be provided by the resource that is being restored, established, enhanced, or preserved. Stream credits are determined based on the anticipated increase in functions produced at a mitigation site. The CSQT or another case-by-case Corps-approved FCAM should be used for all stream mitigation projects to document the changes that are reasonably likely to occur as a result of the mitigation activities.

Compensatory mitigation for stream impacts may include a combination of stream corridor restoration (re-establishment or rehabilitation), enhancement, establishment, or preservation. However, rehabilitation and enhancement activities typically are preferred because streams are considered to be difficult-to-replace resources, and these methods of mitigation generally will provide greater certainty that permitted impacts will be successfully offset (33 CFR 332.3(e)(3)).

6.0 Summary

The Albuquerque, Omaha, and Sacramento districts developed the COMP to address the challenges associated with consistently implementing existing regulatory requirements and new compensatory mitigation tools and resources.

The COMP provides applicants with non-binding procedures that outline the steps that the Corps will follow in order to ensure compliance with existing agency obligations across all three districts within the State of Colorado. Specifically, the COMP accomplishes the following:

1. Explains how the Corps will calculate compensatory mitigation debits and credits within the State of Colorado;

2. Improves statewide consistency and predictability for projects that involve compensatory mitigation, especially prospective mitigation banks and in-lieu fee programs; and

3. Reduces the administrative burden on the Corps and the applicant caused by the lack of standardization in the Corps' approach to compensatory mitigation.

General questions regarding the content of the COMP may be addressed to:

Albuquerque District

https://www.spa.usace.army.mil/Missions/Regulatory-Program-and-Permits/
Southern Colorado Office
201 West 8th Street, Suite 350
Pueblo, CO 81003
(719) 543-9459

Omaha District

https://www.nwo.usace.army.mil/Missions/Regulatory-Program/Colorado/
Denver Regulatory Office
9307 South Wadsworth Blvd.
Littleton, CO 80128-6901
(303) 979-4120

Sacramento District

https://www.spk.usace.army.mil/Missions/Regulatory/
Grand Junction Office
400 Rood Avenue, Room 224
Grand Junction, CO 81501-2563 (970) 243-1199

7.0 Tools and Resources

1. 12501-SPD Regulatory Program Standard Operating Procedure for Determination of Mitigation Ratios and Mitigation Ratio Setting Checklist: https://www.spd.usace.army.mil/Portals/13/docs/regulatory/qmsref/ratio/12501-SPD.pdf

2. Compensatory Mitigation for Losses of Aquatic Resources; also known as the 2008 Final Rule (33 CFR 332): https://www.epa.gov/sites/production/files/2015-03/documents/2008_04_10_wetlands_wetlands_mitigation_final_rule_4_10_08.pdf

3. 404(b)(1) Guidelines (40 CFR 230): https://www.epa.gov/cwa-404/cwa-section-404b1-guidelines-40-cfr-230

4. Colorado Regulatory Program: http://www.spa.usace.army.mil/reg/Colorado

5. Functional/Condition Assessment Methods approved for statewide use in Colorado – Functional Assessment of Colorado Wetlands (FACWet) and Colorado Stream Quantification Tool (CSQT): https://ribits.ops.usace.army.mil/ords/f?p=107:27:4621717200880::NO::P27_BUTTON_KEY:20

6. General Regulatory Program Requirements: https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/

7. South Pacific Division Regional Compensatory Mitigation and Monitoring Guidelines: http://www.spd.usace.army.mil/Portals/13/docs/regulatory/mitigation/MitMon.pdf