

Moffat Collection System Project Fish and Wildlife Mitigation Plan

Prepared for:
The Colorado Wildlife Commission
In accordance with **CRS 37-60-122.2**

Prepared by:
Denver Water

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Water Collection System

EXECUTIVE SUMMARY

The City and County of Denver, acting by and through its Board of Water Commissioners (Denver Water) is proposing to construct the Moffat Collection System Project (Moffat Project), a project designed to provide 18,000 acre-feet (AF) per year of new water supply to Denver Water's customers. Denver Water proposes to enlarge its existing 42,000-AF Gross Reservoir, which is located in Boulder County, Colorado approximately 35 miles northwest of Denver and 6 miles southwest of the city of Boulder. The purpose of this Fish and Wildlife Mitigation Plan (FWMP) for the Moffat Project is to comply with the requirements of Colorado state law (CRS 37-60-122.2), as implemented by the procedural rules for the Colorado Wildlife Commission.

The Moffat Project must comply with the National Environmental Policy Act (NEPA) by preparing an Environmental Impact Statement (EIS) and the Clean Water Act by applying for a Section 404 Permit from the U.S. Army Corps of Engineers (Corps). Denver Water will also apply to the Federal Energy Regulatory Commission (FERC) to amend its hydropower license for the Gross Reservoir hydroelectric facility.

Denver Water is committed to comply with all mitigation measures in the FWMP, the Corps' Record of Decision and Section 404 Permit, and the FERC license.

Denver Water is also submitting a separate *Fish and Wildlife Enhancement Plan (Enhancement Plan)* in cooperation with the Municipal Subdistrict of the Northern Colorado Water Conservancy District (Subdistrict), proposing to enhance fish and wildlife resources over and above current conditions in the Colorado River below the Windy Gap diversion.

Since the Subdistrict is seeking approval through the state and federal regulatory processes for the WGFP concurrent with Denver Water's Moffat Project, both Denver Water and the Subdistrict have agreed to cooperate in a process of simultaneous development of mitigation and enhancement plans pursuant to CRS 37-60-122.2.

In addition to the required mitigation measures in the FWMP and voluntary enhancements in the *Enhancement Plan*, Denver Water and Grand County have reached a proposed agreement to provide environmental enhancements to benefit the aquatic environment in the Fraser, Williams Fork and Upper Colorado rivers, including participation in the cooperative effort called Learning by Doing (LBD).

Denver Water will mitigate for environmental impacts of the Moffat Project through the measures identified in this FWMP. Additionally, Denver Water is proposing to improve the aquatic and riparian habitat of the Colorado River in Grand County with measures identified in the separate *Enhancement Plan* and the LBD Cooperative Effort. The FWMP, *Enhancement Plan*, and LBD Cooperative Effort are conditioned upon Denver Water improving the reliability of the Moffat Collection System water supplies through successful permitting of the Moffat Project. The LBD Cooperative Effort is only being offered to enhance existing conditions in Grand County and is not intended to reduce the amount of mitigation the U.S. Army Corps of Engineers (Corps) will require to mitigate the identified impacts of the Moffat Project.

1.0 INTRODUCTION

1.1 Project Overview

The City and County of Denver, acting by and through its Board of Water Commissioners (Denver Water) is proposing to construct the Moffat Collection System Project (Moffat Project), a water supply project designed to provide 18,000 acre-feet (AF) per year of new water supply to Denver Water's customers. Denver Water proposes to enlarge its existing 42,000-AF Gross Reservoir, which is located in Boulder County, Colorado approximately 35 miles northwest of Denver and 6 miles southwest of the city of Boulder. Using existing infrastructure, water from the Fraser River, Williams Fork River, and South Boulder Creek would be diverted and delivered to Gross Reservoir during average-to-wet years via the Moffat Tunnel and South Boulder Creek. In order to provide 18,000 AF of new water supply, Gross Dam would be raised 125 feet to provide an additional 72,000 AF of storage capacity. The surface area of the reservoir would increase by 400 acres from 418 to 818 acres. Existing facilities, including the South Boulder Diversion Canal and Conduits 16 and 22, would be used to deliver water from the enlarged Gross Reservoir to the Moffat Water Treatment Plant and raw water customers.

In 2003, Denver Water notified the Corps of their intent to apply for a permit, pursuant to Section 404 of the Clean Water Act (Section 404 Permit), to place fill in jurisdictional waters of the U.S., including wetlands for a water supply project. The Corps determined that an Environmental Impact Statement (EIS) was needed to evaluate the direct and indirect effects of a range of reasonable alternatives. The Corps published their Draft EIS on the Moffat Project in October 2009.

The Draft EIS identified potential environmental impacts of the Moffat Project, including impacts to fish and wildlife resources. Pursuant to CRS 37-60-122.2(1), Denver Water prepared this Fish and Wildlife Mitigation Plan (FWMP) in consultation with the Colorado Division of Wildlife (CDOW) to mitigate fish and wildlife impacts from the Moffat Project identified in the Corps' Draft EIS. If, upon release of the Final EIS for the Moffat Project, impacts to fish and wildlife resources are identified that were not described in the Draft EIS, Denver Water will propose additional mitigation, if needed, for these new impacts. The additional mitigation will be developed in cooperation with the CDOW prior to submittal to the Corp for its consideration as a Section 404 permit condition for the Moffat Project. Denver Water will also reserve funds as an "insurance policy" to mitigate any new Moffat Project impacts to fish and wildlife resources identified in the Final EIS and required by the Corps.

In addition, to address existing stream conditions, Denver Water is submitting to the Colorado Wildlife Commission, pursuant to regulations implementing CRS 37-60-122.2(2), a proposal for enhancing fish and wildlife resources over and above the levels existing without the Moffat Project. Denver Water is also providing a copy of the proposed LBD Cooperative Effort agreement as an information piece for the Wildlife Commission. For an understanding of the environmental enhancements Denver Water is proposing, refer to the document titled, "*Moffat Collection System Project Fish and*

Wildlife Enhancement Plan” (Enhancement Plan), which includes a copy of the proposed LBD Cooperative Effort agreement. The *Enhancement Plan* is being submitted concurrently with the FWMP.

1.2 Regulatory Process

The Moffat Project is subject to numerous permits and approvals that require mitigation to offset environmental effects attributable to the proposed Gross Reservoir enlargement. Some of the key regulatory review processes evaluating fish and wildlife resources include the following:

NEPA/ Section 404: The Corps is the lead federal agency preparing the EIS in accordance with the National Environmental Policy Act (NEPA) and the Corps’ regulations for implementing NEPA (33 CFR 325, Appendix B). The U.S. Environmental Protection Agency (USEPA) and Federal Energy Regulatory Commission (FERC) are cooperating agencies, and Grand County is a consulting agency, in the EIS process. The Corps issued the Draft EIS in October 2009 for an extended agency and public comment period of 138 days. The Corps is currently in the process of responding to comments received. The Final EIS and Record of Decision are anticipated to be released by the Corps near the end of 2011. If the Corps issues a Section 404 permit, it will contain special conditions and mitigation measures to offset environmental effects resulting from unavoidable impacts to aquatic resources as well as special conditions to satisfy public interests.

FERC Hydropower License Amendment: Because Gross Reservoir is a FERC-licensed hydroelectric facility, Denver Water will apply to FERC to amend its hydropower license for Gross Reservoir. A Draft FERC Hydropower License Amendment Application was submitted by Denver Water to stakeholders and FERC in October 2009 for public comment. A final amendment application will be submitted to FERC following the Corps’ release of the Final EIS. In the amended license, FERC may impose license conditions for environmental protection within the Gross Reservoir project area. In addition, license conditions may be imposed by the U.S. Forest Service (USFS) for the protection of USFS lands under Section 4e of the Federal Power Act. The following is a list of license conditions (by associated license article number) that Denver Water currently complies with under its existing FERC license:

- 401: Erosion Control
- 402: Dissolved Oxygen (DO) and Water Temperature Monitoring of South Boulder Creek below Hydroelectric Facility
- 403/404: Ramping Rate Compliance
- 405: Rehabilitation and Restoration Plan (USFS Condition 104)
- 406: Weed Management Plan (USFS Conditions 107 and 108)
- 407: Forest Management Plan
- 410: Plan to Protect Rare and Sensitive Species in the Project Boundary
- 411: Participation in the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin

- 412/413: Participation in the Platte River Endangered Species Recovery Implementation Program
- 414: Visual Resource Protection Plan (USFS Condition 105)
- 415: Archaeological or Historic Sites
- 416/417: Recreation Management Plan (USFS Condition 106)
- 110: Channel Instability and Bank Erosion (USFS Condition 110)

Denver Water will prepare specifications for drainage, erosion control, revegetation, etc. as part of the dam construction plan approval with FERC.

USFWS Section 7 Consultation: The Corps initiated consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7(a) of the Endangered Species Act regarding effects of the Moffat Project on federally listed species and/or designated critical habitat. The USFWS issued a Biological Opinion on July 31, 2009 and determined that proposed depletions to the Colorado River and Platte River would be covered under Denver Water’s existing Recovery Agreement on the Colorado River and continued participation in the South Platte Water-Related Activities Program, Inc. (SPWRAP), respectively. In 2010, based on a review of the Draft EIS, the USFWS recommended that the Corps reinstate Section 7 consultation for the Moffat Project and amend the Biological Assessment to address the greenback lineage populations of cutthroat trout within the Project Area.

State FWMP: CRS 37-60-122.2 requires CDOW and Colorado Water Conservation Board (CWCB) review and input on mitigation for fish and wildlife impacts resulting from a federally approved water project. The rules at Section 1604B. instruct the Wildlife Commission to ensure that “the mitigation plan is economically reasonable and reflects a balance between protecting the fish and wildlife resources and the need to develop the state’s water resources.” Although the procedures for CRS 37-60-122.2 do not require public review and input, Denver Water and CDOW have been involved in extensive efforts to allow for public participation. To date, the Wildlife Commission has provided the following public meetings to solicit input on the potential impacts and mitigation for the Moffat Project:

- Wildlife Commission Workshop, December 9, 2010, Colorado Springs – CDOW presented the potential fish and wildlife impacts of the Moffat Project
- Wildlife Commission Public Meetings (“1313” Meetings), January 18, 2011 in Granby and January 20, 2011 in Boulder – Wildlife Commissioners solicited public comment on the potential fish and wildlife impacts of the Moffat Project
- Public Comment Period on Draft Enhancement and Mitigation Plans, Feb. 10-24, 2011 – CDOW invited public review and comment on the February 9th draft plans. The input was considered by CDOW, Denver Water and the Subdistrict in preparing the April 7th plans.
- Wildlife Commission Meeting, March 10, 2011 – Members of the public provided comments on the February 9th draft plans and review process.
- Wildlife Commission Meeting, May 6, 2011 – Members of the public provided comments on the April 7th plans submitted to the Wildlife Commission.

The FWMP will be reviewed by the Wildlife Commission to ensure that the state's fish and wildlife resources affected by the proposed water project are reasonably protected.

State Fish and Wildlife Enhancement Plan: CRS 37-60-122.2(2) makes a specific distinction between mitigation of impacts caused by the proposed project, and enhancing fish and wildlife resources over and above current conditions. This distinction is further defined in the Procedural Rules for the Wildlife Commission (Chapter 16), and clarified in a memorandum dated December 9, 2010 to the Director of the CDOW and the Wildlife Commission from the First Assistant Attorney General, Natural Resources and Environment Section. Accordingly, this FWMP includes mitigation measures to address the impacts that have been identified in the NEPA process for the proposed project. Denver Water has also prepared a separate *Enhancement Plan*, in accordance with CRS 37-60-122.2(2) to address issues raised by CDOW and other stakeholders regarding the current condition of the aquatic environment in the Colorado River, which includes proposed enhancement measures to enhance fish and wildlife resources over and above levels existing without the Moffat Project.

The Wildlife Commission has provided the following public meetings to solicit input on enhancement suggestions:

- Stakeholder Workshops, January 24-25, 2011, Winter Park – CDOW solicited input on options for fixing the upper Colorado River between Windy Gap and the Kemp-Breeze State Wildlife Area to ensure a functioning river that supports fish and wildlife resources given anticipated future flows.
- Public Comment Period on Draft Enhancement and Mitigation Plans, Feb. 10-24, 2011 – CDOW invited public review and comment on the draft plans. The input was reviewed by CDOW, Denver Water and the Subdistrict while preparing the April 7th plans.
- Wildlife Commission Meeting, March 10, 2011 – Members of the public provided comments on the February 9th draft plans and review process.
- Wildlife Commission Meeting, May 6, 2011 – Members of the public provided comments on the April 7th plans submitted to the Wildlife Commission on April 7, 2011.

1.3 Fish and Wildlife Mitigation Plan Stakeholders

Even before the public participation coordinated by the CDOW, Denver Water has been consulting and conferring with a broad range of federal and state agencies, as well as local governments and environmental groups, to solicit input on appropriate mitigation for the impacts identified in the Moffat Project Draft EIS. Meetings with these entities started in 2008 when Denver Water prepared the applicant's proposed mitigation plan for the Draft EIS. To date, these entities include:

- Federal: Corps, USEPA, FERC, USFS, and USFWS
- State: CDOW and Colorado Department of Public Health and Environment (CDPHE)
- Local: Grand County, Boulder County, cities of Boulder and Lafayette, and Town of Hot Sulphur Springs
- Non-governmental organizations: Trout Unlimited, and landowners along the upper Colorado River and in the Fraser River basin

1.4 Concurrent and Related Activities

Windy Gap Firming Project

The Windy Gap Firming Project (WGFP) is a proposed water supply project that would provide more reliable water deliveries to Front Range and West Slope communities and industries. The Municipal Subdistrict, Northern Colorado Water Conservancy District, acting by and through the WGFP Water Activity Enterprise (Subdistrict) is seeking to construct the project on behalf of the 13 WGFP Participants. Project Participants include the City and County of Broomfield, the towns of Erie and Superior, the cities of Evans, Fort Lupton, Greeley, Lafayette, Longmont, Louisville, Loveland, Little Thompson Water District, Central Weld County Water District, and the Platte River Power Authority.

The proposed WGFP is to add water storage and related facilities to the existing Windy Gap operations capable of delivering a firm annual yield of about 30,000 AF to Project Participants. The Subdistrict's Proposed Action is the construction of Chimney Hollow Reservoir to store Windy Gap Project water. The WGFP Draft EIS was issued by the U.S. Bureau of Reclamation in 2008.

The Moffat Project would increase diversions from the Fraser River Basin upstream of the Windy Gap Project diversion site on the Colorado River and would affect the availability of water for the WGFP. Diversions for the WGFP and Moffat Project would result in changes to flows in the Colorado River below the Windy Gap dam. Denver Water and the Subdistrict have agreed to cooperate with each other and with the Colorado Department of Natural Resources (DNR) and CDOW in concurrent development of the mitigation plans required under CRS 37-60-122.2 for the two projects. They will jointly develop stream temperature monitoring stations as mitigation (refer to Section 3.1.2 of this FWMP). Additionally, Denver Water and the Subdistrict have proposed enhancements with significant resources and funding to improve current conditions in the river. (Refer to the Enhancement Plans prepared by Denver Water and the Subdistrict, which include a discussion of the LBD Cooperative Effort.)

2.0 AVOIDANCE AND MINIMIZATION

The Corps conducted a detailed alternatives analysis, beginning with over 300 alternatives, to determine the range of reasonable alternatives to be analyzed in the EIS to avoid and minimize environmental impacts. The Applicant's preferred alternative to enlarge Gross Reservoir by 72,000 AF has been designed to avoid or minimize direct effects to wetlands and other waters of the U.S. to those that are unavoidable due to dam construction and reservoir inundation. As part of the federal and state permits and approvals, Denver Water will implement a variety of best management practices (BMPs) during and following construction to reduce erosion, protect water quality, suppress dust and noise, revegetate temporarily disturbed areas, and protect or avoid important wildlife habitat. Some of these environmental permits and approvals with BMPs and environmental protection measures include, among others:

- Migratory Bird Treaty Act Compliance
- CDPHE Fugitive Dust Control Plan
- CDPHE Stormwater Management Plan
- CDPHE Section 401 Water Quality Certification

The CDOW has also developed BMPs for the oil and gas industry to minimize adverse impacts to wildlife resources. Denver Water will develop appropriate BMPs when preparing final design and construction plans, and will consult with CDOW to avoid or minimize impacts on wildlife resources.

3.0 FISH AND WILDLIFE MITIGATION

Denver Water and CDOW have worked together, with input from numerous stakeholders, to ensure reasonable mitigation measures are recommended to offset the impacts to fish and wildlife resources identified in the Draft EIS for the Moffat Project. Tables 1- 7 present the proposed impacts of the project identified in the Moffat Project Draft EIS, the proposed mitigation measure and the agency responsible for ensuring compliance with the measure.

Denver Water's collection system is comprised of two major systems: the North System (also known as the Moffat Collection System) and the South System. Refer to the attached figure. The two collection systems are geographically distinct and are not physically connected. Operation of the Moffat Project would affect operations, diversion and stream flow regimes in both of Denver Water's collection systems. Of the 18,000 AF of new water supply to be provided by the Moffat Project, the approximate quantities of water that would be diverted annually from the following river systems are as follows:

- Moffat System (Fraser and Williams Fork rivers) 10,000 AF
- Blue River 5,000 AF
- South Platte River 2,000 AF
- South Boulder Creek 1,000 AF

Under its existing water rights, Denver Water would increase diversions primarily during average and wet years during the runoff months of May, June and July. There would be no additional diversions in dry years because Denver Water already diverts the maximum amount physically and legally available.

The discussion of impacts and mitigation measures are organized as follow:

- West Slope
 - Fraser and Williams Fork rivers
 - Upper Colorado River
 - Blue River
- East Slope
 - Gross Reservoir
 - South Boulder Creek
 - North Fork South Platte River
 - South Platte River

3.1 West Slope

3.1.1 Fraser and Upper Williams Fork Rivers

Operation of the Moffat Project would result in additional diversions in the Fraser River, upper Williams Fork River, and their tributaries. Flows would decrease in average and wet years due to the additional diversions by the Moffat Project. These additional diversions would be concentrated during the runoff months of May, June, and July and from September through April flow changes would be 1 cfs or less. During dry years, there would be no additional diversions. The Draft EIS determined that reductions in flow during runoff could decrease aquatic habitat availability in the Fraser River basin and the four headwater tributaries of the Williams Fork River: Steeleman, Bobtail, Jones and McQueary creeks. The reductions in flow could also result in increasing frequency of approaching or exceeding stream temperature standards at some locations. Temperatures exceeding the standards have occurred in the Fraser River and Ranch Creek in July and August based on data collected by the Grand County Water Information Network (GCWIN) in 2007 and 2008.

Tables 1 and 2 present the impacts and mitigation for the Fraser River and Williams Fork River, respectively.

Mitigation - Colorado River and Greenback Cutthroat Trout Habitat Improvements

One of CDOW's goals for West Slope headwaters is to reestablish a viable fishery for Colorado River cutthroat trout, a state species of special concern and Greenback cutthroat trout, a federally listed threatened species. The CDOW, USFWS and USFS are all signatories to a Conservation Agreement to reduce threats to Colorado River cutthroat trout, to stabilize or enhance its populations, and to maintain its ecosystems. To partially compensate for reduced flows and subsequent potential decrease in aquatic habitat in the Fraser and Williams Fork rivers and tributaries, Denver Water is proposing to construct new habitat for the Colorado River cutthroat trout and Greenback cutthroat trout. CDOW will select a headwater stream in Grand County that currently does not support cutthroat trout, construct a barrier at the downstream end of the habitat area, eradicate all the trout in the stream upstream of the barrier, and then reintroduce a core conservation population of cutthroat trout. Denver Water will provide funding to the CDOW for the habitat creation project and assist the CDOW in constructing the fish passage barrier. CDOW will obtain the necessary permits and approvals to conduct this work in the stream.

Mitigation – Stream Temperature Monitoring and Reductions in Diversions

Denver Water will pay USGS to install, monitor and maintain a real-time temperature monitoring station on Ranch Creek at the existing USGS gaging station near Fraser, CO (USGS gage #09032000). A real-time gaging and temperature station is currently operational on the Fraser River below Crooked Creek near Tabernash, CO (USGS gage #09033300). When specified temperature values are exceeded between July 15 and August 31, Denver Water will forgo up to 250 AF of diversions from its Fraser River Collection System by releasing up to 4 cubic feet per second (cfs) per day. The 250 AF is an estimate of the amount of water that would be diverted by the Moffat Project during

the month of August. The 250 AF will be available in all years except for droughts in Denver Water's Collection System. Since the proposed Moffat Project will not divert water during dry years, the additional 250 AF of bypass flows will not be made when Denver Water places its customers on water use restrictions as part of a drought response.

For the purposes of this mitigation plan, the threshold temperature will be 21.2°C ([70.2° F] Daily Maximum) and 17°C ([62.6° F] Maximum Weekly Average) as measured at the following locations:

1. USGS gage #09032000 – Ranch Creek near Fraser, CO
2. USGS gage #09033300 – Fraser River below Crooked Creek at Tabernash, CO

As stream temperatures approach these two thresholds, coordination will take place between Denver Water and CDOW as to what facilities will be bypassing water. Then, if stream temperature reaches these thresholds, water can be bypassed in an effort to address the temperature concerns. Denver Water will also cooperate with future studies to determine what factors, other than water flow, have effects on water temperatures in the Fraser River and its tributaries below Denver Water diversion structures.

The release of 250 AF of water may be suspended in the event that and at such times as there is no material causal relationship between the Moffat Collection System Project operations and any exceedance of the temperature thresholds at the monitoring stations identified above. For the purposes of this paragraph, a "material causal relationship" is defined as either an actual measurable impact on temperature using readily available monitoring technology or a modeled impact on temperature that is not *de minimus* and is based on a computer model or studies accepted by CDOW.

Denver Water will continue its participation in and support GCWIN to monitor stream temperatures in the Fraser River basin and the Colorado River. The GCWIN stream temperature monitoring program includes 31 monitoring sites in Grand County. Monitoring of stream temperatures in the Fraser River basin will also be a component of the LBD Cooperative Effort to be implemented with Grand County. Refer to the *Enhancement Plan* for details. If the stream temperature monitoring in the Fraser River Basin indicates a need for action, the LBD Cooperative Effort could coordinate the use of the 1,000 AF of bypasses in LBD with the 250 AF described above to address the identified temperature issue in the Fraser Basin or reserve the use of that water for addressing a temperature issue in the Colorado River downstream of the Windy Gap diversion.

Mitigation –Aquatic Habitat Improvements

Denver Water will provide up to \$750,000 for stream habitat restoration to compensate for reduced flows and subsequent potential decrease in aquatic habitat in the Fraser and upper Williams Fork rivers and tributaries. Denver Water will work with the CDOW and participants in the proposed LBD Cooperative Effort to design and implement stream habitat mitigation projects. All parties will work in good faith to ensure the project design and implementation compliments the enhancement efforts in the Basin. CDOW will be responsible for the actual design of the projects in consultation with the

Management Team for LBD and Denver Water will be responsible for permitting, implementing and maintaining the aquatic habitat improvements.

Funds may be used for stream improvements on private lands, but preference will be given to those lands where public access is allowed or on private lands where matching funds are provided. Any stream improvement on private lands will require landowner permission and a permanent easement with Denver Water or CDOW to ensure the mitigation measures remain effective for offsetting identified impacts from the Moffat Project.

3.1.2 Colorado River

Operation of the Moffat Project would cause depletions to the upper Colorado River basin, which may result in elevated stream temperatures on hot summer days. The reductions in flow would indirectly affect four endangered fish species: bonytail chub, Colorado pikeminnow, humpback chub and razorback sucker. Under the Endangered Species Act, the Corps initiated formal Section 7 Consultation with the USFWS regarding the depletion effects on these federally-listed species. The USFWS issued a Biological Opinion (BO) for the Moffat Project in July 2009 determining that the proposed depletions associated with the Moffat Project would be covered under Denver Water's Recovery Agreement as new depletions. Denver Water signed a Recovery Agreement with the USFWS in 2000, which governs consultations under Section 7 of the Endangered Species Act with respect to depletions caused by water users. New depletions of more than 100 AF/yr are assessed a one-time fee to help support the Upper Colorado River Endangered Fish Recovery Program.

Table 3 presents the impacts and mitigation for the Colorado River.

Mitigation - Upper Colorado River Endangered Fish Recovery Program

Denver Water will comply with the BO and make a payment as determined by the USFWS to help support the Upper Colorado River Endangered Fish Recovery Program.

Mitigation - Colorado River Basin Temperature Monitoring and Reductions in Diversions

Denver Water will work with the Subdistrict to install, monitor and maintain two continuous real-time temperature monitoring stations on the Colorado River to be located at the Windy Gap stream gage and upstream of the Williams Fork River confluence. When specified temperature values are exceeded between July 15 and August 31, Denver Water will forgo up to 250 AF of diversions from its Fraser River Collection System by releasing up to 4 cubic feet per second (cfs) per day. The 250 AF is an estimate of the amount of water that would be diverted by the Moffat Project during the month of August. The 250 AF will be available in all years except for droughts in Denver Water's Collection System. Since the proposed Moffat Project will not divert water during dry years, the additional 250 AF of bypass flows will not be made when Denver Water places its customers on water use restrictions as part of a drought response. The total amount of water available for temperature issues on the Fraser River, its tributaries, and the Colorado River shall not exceed 250 AF in any one year.

For the purposes of this mitigation plan, the threshold temperatures will be 23.8°C ([74.8° F] Daily Maximum) and 18.2°C ([64.8° F] Maximum Weekly Average). As stream temperatures approach these two thresholds, coordination will take place between Denver Water and CDOW as to what facilities will be bypassing water. Then, if the stream temperature reaches these thresholds, water can be bypassed in an effort to address temperature concerns. Denver Water will also cooperate with future studies to determine what factors, other than water flow, have effects on water temperatures in the Colorado River below Windy Gap to its confluence with the Blue River.

The release of 250 AF of water may be suspended in the event that and at such times as there is no material causal relationship between the Moffat Collection System Project operations and any exceedance of the temperature thresholds at the monitoring stations identified above. For the purposes of this paragraph, a “material causal relationship” is defined as either an actual measurable impact on temperature using readily available monitoring technology or a modeled impact on temperature that is not *de minimus* and is based on a computer model or studies accepted by CDOW.

3.1.3 Blue River

Flows in the Blue River basin would decrease about 5 percent in average and wet years during summer months, and increase slightly during winter months due to differences in Robert Tunnel diversions and spills at Dillon Reservoir. The Draft EIS identified no adverse effects to the aquatic habitat of the Blue River.

3.2 East Slope

3.2.1 Gross Reservoir

The expansion of Gross Reservoir would cause the loss of 1.95 acres of wetlands (1.84 acres due to reservoir inundation and tree clearing up to elevation 7,410 feet, and 0.11 acre due to the dam construction). These wetlands occur along drainages that are tributary to Gross Reservoir and along the shoreline of the reservoir.

About 4 acres of riparian resources would also be inundated by the expansion of Gross Reservoir. The majority of the riparian impacts would occur around the reservoir shoreline and Forsythe Gulch.

The initial filling of Gross Reservoir may increase organic matter in the reservoir, which could result in a minor short-term decrease in water quality. Once the organic matter has decayed or is removed from the reservoir, water quality should return to pre-construction conditions.

Table 4 presents the impacts and mitigation for Gross Reservoir.

Mitigation – Compensatory Wetlands

The wetland compensatory mitigation rule (*Federal Register*, Vol. 73, No. 70, April 10, 2008, 19670) establishes a priority for the use of wetland mitigation banks to compensate for wetland impacts. Denver Water proposes to purchase sufficient credits from an approved wetland mitigation bank to compensate for the 1.95 acres of lost wetlands.

As an alternative to the purchase of mitigation bank credits, Denver Water could create permittee-responsible mitigation in the South Boulder Creek watershed, including the area around Gross Reservoir. The mitigation areas would provide similar functions and values to the wetlands impacted as required by the Corps' compensatory mitigation rule.

Mitigation – Riparian Habitat Plantings

Similar to the existing riparian resources at Gross Reservoir, it is anticipated that the lost riparian resources would reestablish over time at the upper portions of an expanded Gross Reservoir. Denver Water will determine areas that likely will support riparian vegetation and plant native woody riparian vegetation in these areas to speed the establishment of riparian vegetation. To provide a supportive hydrology for the riparian vegetation, these plantings will occur once an expanded Gross Reservoir is filled.

Denver Water will prepare a riparian vegetation establishment plan for the CDOW and Corps that will:

- Establish a schedule for the proposed plantings
- Identify the areas (location and size) for proposed riparian establishment
- Identify the quantity, size, and species of plant materials
- Establish success criteria and monitoring requirements

Mitigation – Water Quality Monitoring

Denver Water will remove as much of the organic material (i.e., vegetation) as practicable from the inundation area prior to filling the reservoir. CDOW will monitor and evaluate metal levels in fish tissue for five years after the initial fill of the enlargement. In addition, Denver Water will continue its current water quality monitoring program.

3.2.2 South Boulder Creek

Operation of the Moffat Project would generally increase flows in South Boulder Creek upstream of Gross Reservoir, which could result in a minor impact to fish and invertebrates due to a potential reduction in fish habitat availability.

The expansion of Gross Reservoir would permanently impact approximately 8,356 linear feet of streams tributary to the reservoir. Approximately 8,180 linear feet of stream channel would be inundated by the expanded reservoir including:

- South Boulder Creek (2,575 feet)
- Winiger Gulch and a tributary (3,024 feet)
- Forsythe Gulch (1,420 feet)
- Unnamed Tributary (1,160 feet)

Approximately 176 linear feet of stream channel downstream of the dam would be impacted by the expanded dam footprint, including:

- South Boulder Creek (4 feet)
- Advent Gulch, an intermittent drainage (172 feet)

Table 5 presents the impacts and mitigation for South Boulder Creek.

Mitigation – Environmental Pool

Denver Water will compensate for the impacts to aquatic habitat in South Boulder Creek and the loss of stream channel tributary to Gross Reservoir by enhancing low flows in South Boulder Creek downstream of Gross Reservoir. This will be accomplished through a collaborative effort with the cities of Boulder and Lafayette to create an Environmental Pool in the expanded reservoir. Approximately 17 miles of aquatic habitat in South Boulder Creek from Gross Dam to the confluence with Boulder Creek would benefit by the release of water from the Environmental Pool during historic low flow conditions.

Discussions with CDOW, cities of Boulder and Lafayette, Boulder County, and Trout Unlimited indicated that the priority for aquatic habitat improvements on South Boulder Creek is downstream of Gross Reservoir below the South Boulder Diversion Canal. To address this priority, Denver Water would create an additional 5,000 AF Environmental Pool at Gross Reservoir. This additional storage would be filled with water rights owned and provided by the cities of Boulder and Lafayette and released for environmental flows. None of Denver Water's existing or future water supply would be stored in the Environmental Pool. Gross Dam would need to be raised approximately 6 feet, beyond the proposed expansion of the 7,400-foot spillway elevation, to a spillway elevation of 7,406 feet. The additional 5,000 AF of mitigation water stored in Gross Reservoir would be managed under an Intergovernmental Agreement, and released appropriately with the goal of meeting minimum in-stream flows in South Boulder Creek below Gross Reservoir. Denver Water entered into the Environmental Pool arrangement to serve as mitigation for any projected adverse aquatic impacts of the Moffat Project to South Boulder Creek and streams tributary to Gross Reservoir, and to provide the flexibility to enhance aquatic habitats downstream of Gross Reservoir.

Mitigation – Monitoring of Stream Bank Stability

Denver Water currently monitors for channel instability and bank erosion on USFS lands along South Boulder Creek between the Moffat Tunnel and Gross Reservoir. This is a USFS condition within Denver Water's existing FERC license. Denver Water will continue the current monitoring program and, if determined by CDOW, will add an additional monitoring site near the inlet to Gross Reservoir. In the event that localized areas of erosion are detected, Denver Water and the USFS will jointly develop protective measures to be implemented by Denver Water.

3.2.3 North Fork South Platte River

Operation of the Moffat Project would change Denver Water's releases from the Roberts Tunnel into the North Fork South Platte River (North Fork) downstream of the Roberts Tunnel outlet. Flows would generally be lower during winter months and higher during summer months. The lower flows during the winter months are due to a change in the artificial flow regime maintained in the North Fork by the importation of water from the Blue River and are not the result of any changes to the natural hydrology of the North Fork. These flow changes would potentially result in minor decreases in available habitat for brown trout and minor adverse effects to benthic invertebrate populations.

Table 6 presents the impacts and mitigation for North Fork South Platte River.

Mitigation – Aquatic Habitat Improvements

To compensate for reduced flows and subsequent potential decrease in aquatic habitat in the North Fork, Denver Water will implement the following actions:

1. Aquatic Habitat Improvements on the South Platte River. Denver Water will provide up to \$1.5 million for stream habitat improvements. For example, pool habitat could be created by a combination of boulder placement and grade controls. A management committee consisting of Denver Water, CDOW, and USFS will be established to identify locations for improvements. This committee will operate by consensus and make a good faith effort to resolve any conflicts. The committee will also coordinate with the South Platte Enhancement Board to ensure consistency with the South Platte Protection Plan and protection of the Resource Values. CDOW will be responsible for the actual design, permitting, and implementation of aquatic habitat improvements. These funds will be used for stream improvements primarily on public land. Funds may be used for stream restoration on private land, but only where a conservation easement is in place that allows public access. Any restoration activities on private land may be funded by other sources or may be funded through a program of matching private funds with public funds.
2. Bank Stabilization on the North Fork South Platte River. Denver Water will establish a stream bank stability monitoring program at up to five sites on USFS lands along the North Fork to monitor for evidence of bank erosion. If any bank erosion is observed, Denver Water will contribute up to \$250,000 for structural modification projects on USFS lands. These projects will be done in cooperation with the USFS and CDOW.

3.2.4 South Platte River

Operation of the Moffat Project would cause new depletions to the South Platte River, which could indirectly affect threatened or endangered species and associated habitat in the Platte River in Nebraska, including whooping crane, interior least tern, piping plover, pallid sturgeon, and western prairie fringed orchid. Under the Endangered Species Act, the Corps initiated formal Section 7 Consultation with the USFWS regarding the depletion effects on these federally-listed species. The USFWS issued a BO in July 2009 and determined that the proposed depletions associated with the Moffat Project would be covered under Denver Water's participation in the South Platte Water-Related Activities Program, Inc. (SPWRAP), which provides compliance with Section 7 requirements under the Platte River Recovery Implementation Program.

Table 7 presents the impacts and mitigation for South Platte River.

Mitigation – Platte River Recovery Program

Denver Water will continue participating in SPWRAP.

4.0 COST AND SCHEDULE

If permitted in 2011, Moffat Project is anticipated to start construction in 2013/2014. The estimated construction period is 4 years and operation would begin in 2017/2018. A schedule for implementing the mitigation measures will be developed with CDOW and presented in the final FWMP. The following is a summary of the estimated funding Denver Water will provide for the mitigation measures:

River Basin	Proposed Mitigation	Estimated Costs
Fraser River and upper Williams Fork River	--Colorado River Cutthroat Trout Habitat Improvements	--\$72,500
	-- Aquatic Habitat Restoration	--\$750,000
	-- Temperature Monitoring Station	-- \$20,000
Colorado River	--Temperature Monitoring Stations	-- \$50,000
	--BO Compliance	--\$280,000
Gross Reservoir	-- Riparian Vegetation Plantings	--\$40,000
	--Compensatory Wetlands	--\$300,000
	--Water Quality Monitoring	--\$0
South Boulder Creek	--Environmental Pool (total cost \$8 million)	--\$4,000,000 (DW share)
	-- Streambank Monitoring	--\$0
North Fork South Platte River and/or South Platte	--Aquatic habitat Restoration,	--\$1,500,000
	-- North Fork Bank Erosion with Aquatic Habitat Improvements	--\$250,000
	--SPWRAP	--\$0
TOTAL ESTIMATED COST		\$7,262,500

Mitigation Insurance Policy - The mitigation listed above is based on the Draft EIS for the Moffat Collection System Project that was released for public comment in October of 2009. Since that time and based on comments to the Draft EIS, the Corps has conducted additional studies related to the preparation of the Final EIS that in part are designed to further refine the analysis of environmental impacts of the proposed action. If new impacts to fish and wildlife resources are identified in the Final EIS that were not discussed in the Draft EIS and not addressed in this mitigation plan, Denver Water will propose mitigation for these new impacts. The additional mitigation will be developed in cooperation with the CDOW prior to submittal to the Corps for its consideration as a Section 404 Permit condition. Denver Water will reserve \$600,000 for any new impacts to fish and wildlife resources identified by the Final EIS and required by the Corps. If the Corps does not identify new impacts requiring mitigation, Denver Water will have no further obligation to reserve this money.

In addition to the funding identified above, there is significant additional funding in the *Enhancement Plan* for fish and wildlife resources. The goal is to coordinate the actions listed as mitigation and the actions listed as environmental enhancements to assure the environment receives the maximum benefit.

5.0 CONCLUSION

The FWMP presents a broad range of mitigation actions to address the potential fish and wildlife impacts of the Moffat Project. If accepted by the Colorado Wildlife Commission and CWCB, this mitigation plan will represent the official state position on the Moffat Project. Since the state-adopted FWMP is not enforceable by itself, Denver Water anticipates that the Corps and USFS will determine these mitigation measures are adequate and will impose them within their regulatory requirements in the Section 404 Permit and Section 4e conditions of the FERC license, respectively.