

# UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

FY 2023 ANNUAL REPORT

PROJECT: 8

## **Project Title**

Basin-Wide Stream Gage Operation & Maintenance

## **Bureau of Reclamation Agreement Numbers:**

R16PG00077 Colorado USGS Contract	End date: 09/30/25
R16PG00079 Utah USGS Contract	End date: 09/30/26
R12AP40009 State of Colorado	End date: 09/30/23

## **Project/Grant Period:**

Start date: 1990

End date: As indicated above for each contract

Reporting period end date: 9/30/2023

Is this the final report? Yes \_\_\_\_\_ No X

## **Principal Investigator:**

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## **Abstract:**

The Upper Colorado River Endangered Fish Recovery Program employs the nation's streamflow measurement expert, the U.S. Geological Survey, to provide data to assist in measuring and protecting streamflow for endangered fishes and other Program partner purposes. It also engages the Colorado State Engineer's Office to measure one streamflow site in the Yampa River basin on a seasonal basis.

The USGS operates and maintains the gages as specified in their Cooperative Agreement with the Bureau of Reclamation. A complete inventory of these sites and the entities supporting operation and maintenance of those sites is provided in the attached table. USGS measures daily streamflows and in many cases other data such as temperature, dissolved oxygen, turbidity, specific conductivity, pH,... which are checked and posted to the internet. USGS near real-time data are available as provisional data at: [USGS | National Water Dashboard](#).

Real-time USGS streamflow data from multiple gages throughout the basin were used daily during the irrigation season to help managers understand flow conditions, operate reservoirs, and administer water to benefit fish habitat while meeting other management and delivery needs. The need for real-time streamflow gaging is highlighted in the Yampa and Colorado River basins, where water managers meet weekly through the latter irrigation season to look at weather reports, streamflow forecasts, and water demands to determine how best to utilize Program and other partners' water supplies to best meet multiple needs. Specifically, the Recovery Program Instream Flow Coordinator requests releases from upstream reservoirs in these basins, and that water can only be tracked and administered by monitoring USGS gage data.

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### **Study Schedule:**

1990 - Ongoing

### **Relationship to RIPRAP:**

Colorado River Action Plan I.A.5: Legally protect in stream flows pursuant to Colorado River PBO;  
Green River Action Plan I.A.3.d Operate Flaming Gorge Dam to provide flows;  
Duchesne River Action Plan; I.A; Identify year-round flow needs for recovery  
Yampa River Action Plan; I.A.1; Identify fish habitat and flow needs.

### **Accomplishment of FY 2022 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:**

A good monsoon summer and fall in 2022 provided antecedent soil moisture conditions in the upper Colorado basin much improved over fall in 2020 and 2021. The basin runoff forecast generally improved throughout the snowpack accumulation season with significant improvements in the upper Colorado basin in March, resulting in above- to well-above average snow water equivalent in every subbasin tributary to the upper Colorado River. In the Colorado River subbasin, significant May and June moisture in the Colorado front range limited front range storage capacity, reduced trans-basin diversions, and western slope reservoirs spilled more water than anticipated resulting in underestimates of total runoff in the upper Colorado and through the 15MR. Overall, runoff conditions in 2023 were significantly improved over 2022.

Operations in WY2023 ran smoothly through the majority of gages, though larger and lengthier peak flows in spring challenged gage operations in some locations due to rafted debris not seen since 2019. The USGS was prompt, responsive and transparent in identifying and rectifying issues as they occurred, and rating of stream gages occurred regularly throughout the network (~8-10 site visits annually, with specific efforts to accurately rate the higher flows that occurred in 2023).

USGS staff also participated regularly throughout the 2023 irrigation season in the weekly Colorado River Historic User Pool (HUP) flow coordination calls (coordinated by the Bureau of Reclamation), and in the weekly lower Yampa River flow coordination calls (coordinated by the Program Director's Office). USGS gages throughout the network (including those funded by entities other than Program Partners) comprise a heavily utilized source of real-time data and information that assist in water administration and that help optimize use and delivery of the storage water used for supplemental flows for endangered fish. The USGS partnership reflected by Project 8 funding and operation is an important component that includes USBR, NWS, UCRBFC, and multiple Recovery Program partners.

Funding for the Myton gage in FY2023 was intended to be transferred to a cost-share between the Central Utah Water Conservancy District in FY2023 (62.2%) and USGS (37.8%), which will occur in FY2024. In addition, the CO River Water Authority of Utah was working on a gage study to better assess flow measurement needs in the upper CO Basin, and this study may inform future changes in Program funding of Utah stream gages.

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## **Additional noteworthy observations:**

None.

## **Recommendations:**

Continue funding operations at these stream gaging locations. Assess whether there is partner capacity for additional cost-sharing or new partners at selected gages. Ongoing discussions are occurring in Water Division 6 in the Yampa River to better assess flow gains (and losses) between the Maybell and Deerlodge gages, both located within designated critical habitat and in a reach receiving Recovery Program water supplies released from Elkhead Reservoir. The late season effects of groundwater contributions from either canyon reaches or potentially, the alluvial aquifer underlying the Little Snake River, are not well understood, but could allow the Program to more efficiently utilize water released from Elkhead Reservoir.

## **Project Status:**

On-track and ongoing. All these gages are operational and the data are available on the Internet in real-time from the USGS Water Resources Division in Colorado and Utah.

## **FY 2023 Budget Status**

UCREFRP FY 2023 Cost	\$157,183* (sum of CO and UT for USGS and Colorado SEO)
Wyoming Contribution	<u>\$ 31,449</u>
Total	\$188,632*

\* These are estimated costs for 2023 (Project 8 Gages O&M SOW FY22-23); practice has been to replace w/ actual expenditures when they are determined.

RIP costs BOR paid to USGS in FY 2023 to USGS Colorado (Grand Junction office): \$45,877 (CO-UT state line gage temperature funding not included). Recovery Program funding for UT-USGS gage operations were \$104,989. The Program contributed \$6,318 to DWR-Colorado to operate the Williams Fork gage (tributary to the Yampa River downstream of Craig), and other partners (City of Craig, CO River District) contributed \$14,278 to operate the Yampa below Craig gage.

The attached Table 1 shows the actual FY2023 costs by gage.

## **Status of Data Submission**

Not applicable; USGS data reside on the internet.

## **Signed:**

David Graf  
Principal Investigator  
January 26, 2024

## **Cooperators:**

### **Colorado USGS gages**

Steven P. Anders  
Western Colorado Data Section Chief

## UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

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### **Utah USGS Gages**

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### **USBR Contract Coordinator**

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**Table 1.**

List of river gage sites, measured parameters, partner cost-share responsibilities, and costs for 2023.

**FY2023 Gage Costs**

FY 2023				Cost-share Responsibilities						FY2023 Cost Share		
ID	Site	Parameter	FY2023 Cost (Total)	Recovery Program	State of WY	CWCB	CRWCD + City of Craig	USBR	USGS	Recovery Program Share	State of WY share	CWCB share
<b>Yampa River Basin</b>												
CO WMFKMHCO	Williams Fork near Hamilton, CO	Flow	6,318	100%		0%				\$ 6,318	\$ -	\$ -
USGS #09244490	Yampa River above Elkhead Creek, CO	Flow	19,237	50%	50%					\$ 9,619	\$ 9,619	\$ -
USGS #09247600	Yampa River below Craig, CO	Flow	19,237		25%		75%			\$ -	\$ 4,809	\$ -
USGS #09260050	Yampa River at Deerlodge Park, CO	Flow	19,237	50%	50%					\$ 9,619	\$ 9,619	\$ -
USGS #09260050	Yampa River at Deerlodge Park, CO	Temperature	4,935	25%	75%					\$ 1,234	\$ 3,701	\$ -
<b>Mainstem Colorado River</b>												
USGS #09106150	Colorado River near Palisade, CO	Flow	19,237	100%						\$ 19,237	\$ -	\$ -
USGS #09163500	Colorado River at Colo-Utah State Line	Temperature	4,935	100%					0%	\$ 4,935	\$ -	\$ -
<b>Green River</b>												
404417108524900	Green River above Gates of Ladore, CO	Temperature	4,935	25%	75%					\$ 1,234	\$ 3,701	\$ -
USGS #09261000	Green River near Jensen, UT	Flow	17,136	0%					100%	\$ -	\$ -	\$ -
USGS #09261000	Green River near Jensen, UT	Temperature	5,814	100%						\$ 5,814	\$ -	\$ -
USGS #09272400	Green River at Ouray, UT	Flow	17,564	100%						\$ 17,564	\$ -	\$ -
<b>Duchesne River</b>												
USGS #09295100	Duchesne River abv Uinta R nr Randlett, UT	Flow	17,564	100%						\$ 17,564	\$ -	\$ -
USGS #09295100	Duchesne River abv Uinta R nr Randlett, UT	Temp	---	100%						-	-	-
USGS #09301500	Uinta River nr Randlett, UT	Flow	17,564	100%						\$ 17,564	\$ -	\$ -
USGS #09302000	Duchesne River near Randlett, UT	Flow	17,564	100%						\$ 17,564	\$ -	\$ -
USGS #09302000	Duchesne River near Randlett, UT	Temp	5,814	50%				50%		\$ 2,907	\$ -	\$ -
USGS #09302000	Duchesne River near Randlett, UT	Conductance		0%				100%		\$ -	\$ -	\$ -
<b>Other</b>												
USGS #09314500	Price River near Woodside, UT	Flow	23,103	100%						\$ 23,103	\$ -	\$ -
USGS #09314500	Price River near Woodside, UT	Temp	5,814	50%				50%		\$ 2,907	\$ -	\$ -
USGS #09314500	Price River near Woodside, UT	Conductance		0%						\$ -	\$ -	\$ -
<b>TOTALS</b>										<b>\$ 157,183 \$ 31,449 \$ -</b>		

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**ANNUAL PERFORMANCE PROGRESS REPORT (PPR)**

BUREAU OF RECLAMATION AGREEMENT NUMBERS:

**Utah** USGS Contract: R16PG00079

End date: 9/30/26

UPPER COLORADO RIVER RECOVERY PROGRAM PROJECT NUMBER:   8  

Project Title: Basin Wide Stream Gage Operation & Maintenance

Principal Investigator:

David Graf

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Phone: (720) 441-7114

Project/Grant Period:           Period of performance: FY2023 these gages are funded year round and this activity is ongoing.

Performance: All partners are very helpful and this project ran smoothly in 2023

**USGS:** In both Utah and Colorado the USGS runs the listed stream gages year-round during all types of weather and flow conditions. The USGS is the nation's expert in collecting and reporting stream flow data. Keeping gages operating accurately through high peak flows in 2023 was challenging, and though not as pronounced as in 2022, a decent monsoon signature resulted in significant streamflow variability on tributaries to the Green and Colorado rivers, mostly during the Aug-October time period. Low flow rating curve calibration occurred later in 2023 than 2022 due to a prolonged high flow season, but there was also an emphasis on high-flow rating during runoff. Water accounting and administration continues to rely on USGS gages, so their continued operation remains critical for managing Recovery Program flows.

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End date: 09/30/25

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