

## ANNUAL PERFORMANCE PROGRESS REPORT (PPR)

BUREAU OF RECLAMATION AGREEMENT NUMBER: N/A

UPPER COLORADO RIVER RECOVERY PROGRAM PROJECT NUMBER: 19b

Project Title: General Hydrology Support - (Grand Junction FWCO contribution)

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Project/Grant Period: Start date (Mo/Day/Yr): N/A  
End date: (Mo/Day/Yr): N/A  
Reporting period end date (Mo/Day/Yr): 9/30/2018  
Is this the final report? Yes \_\_\_\_\_ No X

### Performance:

The work provided is, for the most part, in support of other research projects or activities such as flow delivery, flow quantification, and habitat restoration, all of which have a direct impact on the recovery of the Colorado River endangered fish. Duties for the collection of water temperature data in various reaches of upper basin rivers are divided between the Program Director' (Denver) and the Grand Junction Fish and Wildlife Conservation Office (GJFWCO). The GJFWCO currently collects water temperature data from five sites on the mainstem Colorado River, four sites on the Gunnison River and one site on the Uncompahgre River. These data, along with those collected by the Water Resources staff for the Green, Yampa and Gunnison rivers are assembled into a temperature database for use by Recovery Program researchers.

Temperature data for FY-18 was downloaded in the field during November-December, 2017. Two-hour interval readings were converted to daily means and then sent to Division of Water Resources when the site-specific daily-mean tables were completed (during winter 2017-2018). Temperature data for FY-18 are currently in the process of being downloaded. This work should be completed by the end of December 2018 (i.e., during FY-19). Two-hour interval readings will be converted to daily means and then sent to Division of Water Resources once the site-

specific daily-mean tables are completed (during winter 2018-2019).

Temperature data collection began in 1986 at two Colorado River stations, Palisade (rk 292.8) and Walker (rk 264.7). Over the years other sites have been added: Rulison in 1994 (rk 369.9), Dewey in 1994 (rk 154.5), Gold Bar in 1992 (rk 83.7) and The Slide upstream of the Green River confluence in 2000 (rk 2.9). A site on the Gunnison River at Peeple's Orchard (rk 63.9) was added in 1999; one downstream of the North Fork confluence (rk 117.5) was added in 2007, one at the NPS Never Sink recreation access area (just upstream of the Blue Mesa inflow) was added in 2007, and one just upstream of the confluence with the Uncompahgre River (rk 90.9) was added in fall 2008. These additional Gunnison River sites were added in an effort to provide better data for future temperature modeling efforts for management of Aspinall Unit releases. The Dewey site on the Colorado River was discontinued in 2007 when it was found that USGS had established their own temperature monitoring sensor at their streamflow gauging station.

In previous years, data were recorded using TempMentor (Ryan Instruments, Redmond, Washington) thermographs. These units were later replaced with StowAway brand TidbiT v2 Temp UTBI-001 (Onset Computer Corporation, Bourne, Massachusetts) temperature loggers (accurate to 0.2°C). Loggers are placed in sites where depth and velocity will safeguard against dewatering and shoreline warming. Data are downloaded 1-2 times annually. Mean daily temperatures (MDT) are calculated from readings taken every two hours and reported to the nearest 0.1°C. In recent years, a second, backup logger has been deployed at many sites to try to help ensure data collection when loggers become impossible to retrieve due to being buried in sediment, lost, stolen, or willfully damaged by the public.

Beginning in 2005, annual data were summarized as mean daily temperatures in Excel spreadsheets following the format used by USGS in their Water Resources Data yearbooks. The spreadsheets are forwarded to FWS Water Resources who web enables them and links them to the Riverdata Web Page. The temperature data can be accessed and downloaded from the Riverdata web page at <http://www.r6.fws.gov/riverdata/> or by email request from FWS Division of Water Resources. GPS locations for each thermograph are available by request; for security purposes the exact locations are not provided on the web page.

We recommend continuation of the current data collection efforts at the established sites.