Draft February 24, 2009

Ms. Linda Bassi
Colorado Water Conservation Board
1313 Sherman Street, Room 721
Denver, Colorado 80203

Dear Ms. Bassi:

The USDA Forest Service (FS) is writing this letter to formally communicate its instream flow recommendation for North Fork (NF) Tabeguache Creek, located in Water Division 4.

Location and Land Status. The FS is recommending stream flow protection under the CWCB Stream and Lake Protection program for 9 miles of NF Tabeguache Creek starting at the headwaters and terminating at the confluence with Tabeguache Creek. NF Tabeguache Creek is a tributary to Tabeguache Creek, located approximately 15 miles northeast of Nucla, in Montrose County. The stream reach covered by the surveys encompasses the entire NF Tabeguache Creek watershed. The proposed reach is entirely located on NFS lands.

Biological Summary. Fisheries surveys in the watershed indicate that the stream environment supports self-sustaining populations of rainbow trout. Population estimates for rainbow trout were 701 fish/mile in August 2007. NF Tabeguache Creek has been selected as a potential Colorado River cutthroat trout (CRCT) reclamation stream by the CDOW and FS.

Low flows create later summer and winter fish habitat constraints, and may be a limiting factor for fish production and movement during this time. The stream channel provides good pool habitat during summer and winter low flows. Low flows also limit aquatic insect production during this low period as well. Despite these natural flow limitations in the late summer and winter seasons, the stream does support a full-functional riparian community, and suitable fish habitat to support the long-term persistence of rainbow trout.

R2Cross Analysis. Two cross sections were collected on NF Tabeguache Creek in October 1993 and used to quantify instream flow protection using R2Cross procedures outlined by the Colorado Water Conservation Board (CWCB 1996). However, R2Cross failed to provide suitable staging tables from any of the cross sections. Therefore, summer flow recommendations could not be derived using the R2Cross staging tables. One cross section was used to derive a winter flow recommendation for NF Tabeguache Creek. Based FS professional knowledge of the site, the summer flow recommendation was based on the use of Tennant method (1976). The FS chose a narrative flow category of "fair or degrading" as described by Tennant (1976). The FS believes that in the case of NF Tabeguache Creek, that the use of Tennant provides a more accurate instream flow recommendation than R2Cross. Therefore, based on the combination of Tennant method and R2Cross, the data indicates that the following flows are needed to preserve the fishery and natural environment to a reasonable degree.

- A minimum flow of 3.3 cubic feet per second (cfs) is recommended from April 1st to July 31st. 3.3 cfs was derived using the Tennant method (1976) for the category of "fair or degrading" as describe by Tennant. This category protects 30% of the mean annual flow during spring and summer flow regimes. Instream flow protection during

the receding period of the hydrograph during the months of June and July are important for the protection and maintenance of flows during the spawning and incubation periods for rainbow trout, and potentially a future population of CRCT. The FS believes that this level of protection is needed in order to "preserve the native fishery and natural environment to a reasonable degree."

- A minimum flow of 1.0 cfs is recommended from August 1st to March 31st. 1.0 cfs is based on R2Cross outputs required to maintain the two of the three principal hydraulic criteria of average depth, average velocity and percent wetted perimeter. Based on the FS observations of this stream during base flow periods, the protection of flows below 1.0 cfs is needed to protect existing fish habitat, fish migration, and juvenile rearing periods for rainbow and future cutthroat trout. Water use and development during low flow periods would have severe detrimental effects on adult recruitment, summer and fall distribution and migration patterns, and aquatic food abundance in a stream system where these fisheries habitat and food requirements are already strained by naturally occurring low flows.

Water Availability

In the absence of gage data from NF Tabeguache Creek, a hydrograph was constructed using a natural flow estimation model developed by Kircher et al (1985). The southwest regional equation was used to predict annual water yield and mean annual discharge for the basin area of the NF Tabeguache Creek watershed. A review of USGS Tabeguache Creek gage (1946-53) was used to develop monthly streamflow characteristics for NF Tabeguache Creek. Monthly water yield estimates were eventually converted to mean monthly discharge numbers to construct an annual hydrograph (Table 1). Annual yield was estimated at 8,048 acre-feet, with 93% of the annual yield occurring in April-June.

Relationship to Management Plans. The Grand Mesa, Uncompahgre, and Gunnison National Forests (GMUG NF) Land and Resource Management Plan provide land management direction for FS lands located in the NF Tabeguache Creek watershed. Forest Plan direction for Fisheries, Threatened, Endangered, and Sensitive species suggest that land managers should among other things, maintain viable populations of native fish species, improve fish habitat conditions, and cooperate with state agencies to meet minimum flow needs to support fish populations. Additionally, agencies of the Colorado Division of Natural Resources and the Forest Service have signed agreements to assist in the conservation and protection of Colorado River cutthroat trout (CRCT River Cutthroat Trout Task Force 2006), and to work together to solve water issues in Colorado (Colorado DNR/USDA Forest Service MOU on water, 2004).

The NF Tabeguache Creek stream segment is important to the FS because has been identified as a potential CRCT reclamation site. Currently the stream provides important spawning and rearing habitat for a self-sustaining rainbow trout fishery. NF Tabeguache Creek is one of only a few perennial streams in the semi-arid landscape of the Uncompahgre Plateau. The stream is an important source of water for the lower reaches of the San Miguel River, where diversions currently divert a significant source of the summer flows for irrigation and small domestic use. Access into NF Tabeguache Creek is very limited, so fishing pressure, and other land management uses are is minimal, so stream level protection would be an important tool in

maintaining aquatic values in this area of the Uncompahgre Plateau.

The FS requests that the Board recognize that this recommendation is based only upon the minimum flows necessary to support the cold-water fishery values. FS may wish to work with the Board and/or through the Colorado water rights system to appropriate flows to optimally protect fish values and to protect other water-dependent values specified in FS resource management plans.

Table 1. Mean monthly hydrograph for NF Tabeguache Creek developed using southwest regional equations developed by Kircher et al (1985) and intermittent gage from Tabeguache Creek.

Drainage Area (square miles):	17.9
Mean Basin Elevation (ft):	8500
Mean Basin Elev. -5000 ft/1000 ft:	3.5
Mean Annual Flow (cfs):	11.1169
Mean Annual Yield in Acre-Feet (AF):	8048.266

Month	%of flow	AF/Month	AF/Day	Mean Monthly flow (cfs)
January	0.01	55.16	1.78	0.90
February	0.01	76.72	2.65	1.34
March	0.01	114.13	3.68	1.86
April	0.31	2479.22	82.64	41.74
May	0.51	4079.07	131.58	66.46
June	0.11	881.04	29.37	14.83
July	0.01	66.43	2.14	1.08
August	0.01	62.19	2.01	1.01
September	0.01	61.19	2.04	1.03
October	0.01	57.70	1.86	0.94
November	0.01	66.58	2.22	1.12
December	0.01	48.82	1.57	0.80

Data sheets, R2Cross output, fishery survey information, hydrology and water yield techniques, and photographs of the cross section are enclosed to support this recommendation. We thank both the Colorado Division of Wildlife and the Water Conservation Board for their cooperation in this effort.

If you have any questions regarding our instream flow recommendation, please contact Christopher James, Fisheries Biologist, at (970) 240-5421 or John Almy, Forest Hydrologist, at (970) 874-6656.

4 Enclosures

cc: Pauline Adams, GMUG NF, Water Rights Coordinator
Polly Hayes, Regional Office, Water Program Manager
Scott Ludwig, Regional Office, Water Rights Coordinator

Literature Cited

Colorado River Cutthroat Trout Task Force 2006. Conservation Agreement and Strategy for Colorado River cutthroat trout in the states of Colorado Wyoming, and Utah. April 2001, updated June 2006.

Colorado Water Conservation Board 1996. Development of instream flow recommendations in Colorado using R2Cross. By Greg Espegren, Senior Water Resource Specialist. January 1996.

Kircher, J.E., A.F. Choquette, and B.D. Richter, 1985. Estimation of Natural Streamflow Characteristics in Western Colorado. Water Resources Investigations Report 85-4086, 1985. U.S. Geological Survey, Prepared in Coordination with the Bureua of Land Management.

Tennant, D.L. 1976. Instream flow regimes for fish, wildlife, recreation, and related environmental resources. Fisheries, Vol. 1, No. 4.

Tabeguache and Red Canyon 6th Level HUC's