CWCB Staff Recommendation Letter Guidelines

The recommending entities are asked to provide the following information in their recommendation letter for each recommended reach.

Contact Information

1. Recommending agency, entity or individual
2. Contact person
3. Mailing address, phone number and email address

Stream Reach and Location Information

1. Name of stream or natural lake
2. Description of the Upper terminus and lower terminus (i.e. headwaters, confluence with 'ABC' Creek, etc.)
3. Coordinate locations for the upper and lower terminus (UTM is preferred)
4. Approximate segment length in miles
5. County
6. Water division and water district
7. Major drainage basin

Natural Environment

Please provide as much information about the natural environment as possible. Below are examples of some, but not all, stream characteristics that could be included.

1. Physical Information
   - Location: headwaters, plains, mountain, transition
   - Channel pattern: single thread, multiple thread
   - Valley type: unconfined, confined
   - Size: typical width, slope, etc
   - Bed sediment: sand, gravel, boulders, bedrock
   - Stream condition: degraded, eroding banks, pristine, etc.
   - Habitat Description: discussion of pools, riffles, cover, temperature, etc
2. Ecological/Biological Information
   - Fish species: common name, scientific name, age class structure, federal or state conservation status
   - Macro invertebrates: types, abundance, federal or state conservation status
   - Riparian community: species, condition
   - Other species: for example northern leopard frogs, river otter, beavers, etc.

ISF Quantification

It is the recommenders' responsibility to quantify the amount of water necessary to preserve the environment to a reasonable degree. Please provide the following information:

1. Biological Flow Quantification Results

   Most ISF recommendations use R2Cross to quantify the amount of water. Provide R2Cross results for each cross-section. See example letter provided below that shows an example R2Cross results data table. Then, provide a description of the final recommended streamflow rates and the timing. If possible, use the following guidelines for the number of significant digits for the streamflow recommendations:

   If flow rate is >= 10, then no decimal places, for example: 10
   If flow rate is <10 and >1, then 1 decimal place, for example: 9.5
   If flow rate is < 1, then two decimal places, for example: 0.35.

   If R2Cross is not being used, please contact Brandy Logan.

2. Water Availability

   The recommending entity does not need to do a thorough water availability analysis; however, we recommend estimating typical streamflow to help guide the proposed flow rates. In addition, please provide any of the following initial information, if known, to assist CWCB staff:

   1. Water rights in the proposed reach
   2. Major diversions or features, such as reservoirs or transbasin import or exports that alter hydrology
   3. Relevant stream gages
   4. Typical flow rates, water right operations, nature of the hydrology.

Additional Information

Please provide any additional information that should be considered, such as:

1. Federal cooperators
2. Community support
3. Unique characteristics of the stream
4. Resource threats
5. Landowner information
6. Land access issues

Supporting Data

Please submit the following data with your recommendation:

1. Biological survey data
2. Photos
3. R2Cross field notes for each cross-section
4. R2Cross models for each cross-section
5. Other quantification method data and model results if used

Example:

Date: January 1, 2019

Bureau of Streamflow
John Doe
555 River Dr.
Stream, Colorado 80555
(303) xxx-xxxx
John.Doe@BOS.gov

Stream Reach and Location Information

The Bureau of Streamflow recommends Example Creek for an ISF appropriation. The proposed upper terminus is the confluence with No Name Creek and the proposed lower terminus is the headgate of Diversion Ditch. The proposed reach is approximately 3.4 miles in length. Example Creek is located in Routt County, Water Division 6, water district 57, and drains into the Big River. Approximately 80% of the proposed reach is on public lands managed by the US Land Service (USLS).

Natural Environment and Biological Summary

Example Creek is a cool-water, moderate gradient stream in a narrow canyon confined by bedrock. Some portions of the stream are directly adjacent to a major state highway, but most parts of the stream typically have good bank stability and good vegetative cover. Most portions of the stream have recovered from historic overgrazing, and typically have a good mix of riffle and run habitat with large substrate. In areas that have not fully recovered from historic overgrazing, the stream is wider, and has less cover, and less bank stability.

Fishery surveys indicate that Example Creek supports a self-sustaining population of speckled dace in the upper parts of this reach, and a spawning population of flannelmouth sucker, bluehead sucker, and white sucker in the lower parts of the reach. BLS believes that the stream provides an important spawning area for sensitive native fishes that reside in the Gunnison River. The creek also supports a population of northern leopard frog, which is found on BLS's sensitive species list.

The riparian community along Example Creek is robust, providing cover and shading for the stream. The riparian community is comprised mainly of narrowleaf cottonwood, Rio Grande cottonwood, lanced leaf cottonwood and various species of willow.

Table 1. List of species identified in Example Creek.

Species Name	Scientific Name	Status
Speckled dace	*Rhinichthyus osculus*	none
Flannelmouth sucker	*Catostomus latipinnis*	none, part of 3 species agreement
Bluehead sucker	*Catostomus sdiscubulus*	none, part of 3 species agreement
White sucker	*Platygobio gracilus*	none
Northern leopard frog	*Lithobates pipiens*	BLS sensitive species list State Special Concern

ISF Quantification

Biological Flow Quantification Results

Biological instream flow recommendations were developed using the R2CROSS methodology (Espegren, 1996). R2CROSS uses field data that has been collected in riffle habitat type. The field data collection includes a survey of stream channel geometry, a longitudinal slope of the water surface, a streamflow measurement, and a pebble count. This data is used by R2CROSS to model three hydraulic parameters; average depth, average velocity, and percent wetted perimeter. After processing this data with R2CROSS model, flow recommendations are developed based on the flows that meet 2 of the 3 hydraulic criteria and 3 of the 3 hydraulic criteria as described in Nehring (1979) and Espergren (1996).

R2Cross data was collected at two transects for this proposed ISF reach (Table 2). The R2Cross model results in a summer flow of 2.65 cfs, which meets 3 of 3 criteria. The R2Cross model results in a winter flow of 1.73 cfs, which meets 2 of 3 criteria and is within the accuracy range of the R2Cross model.

Table 2. Summary of R2Cross transect measurements and results for Example Creek.

Cross-section #	Date Measured	Discharge (cfs)	Accuracy Range (40% - 250%)	Winter Rate (cfs)	Summer Rate (cfs)
1	5/15/2012	0.94	0.38 – 2.35	1.97	Out of range
2	5/15/2012	0.78	0.31-1.95	1.49	2.65
			Average:	**1.73**	**2.65**

The BLS's analysis of this data indicates that the following flows are needed to protect the fishery and natural environment to a reasonable degree.

2.65 cubic feet per second is recommended for the snowmelt runoff period from March 15 through June 30. The goal of this recommendation is to provide as much spawning habitat as possible during snowmelt runoff, meeting the depth criteria ensures that a sufficient amount of usable habitat is available.

1.73 cubic feet per second is recommended for the base flow period from July 1 to

March 14. This flow rate should maintain pools and prevent icing, which is important for the fish that inhabit the creek on a year-round basis.

Water Availability

Creek Ditch is the first diversion structure on the system. There are no known gages on Example Creek.

Conservation Goals

The BLS land use plan calls for managing this creek to support riparian, wildlife, and water quality values and to continue meeting land health standards. Establishing an instream flow water right would assist in meeting these objectives.

Data sheets, R2Cross output, fishery survey information, and photographs of the cross section are included. If you have any questions regarding our instream flow recommendation, please contact John Doe.

Sincerely,

John Doe
Deputy Instream Flow Director
Bureau of Streamflow