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November 29, 2004

VIA HAND DELIVERY

Mr. Todd Doherty
Stream & Lake Protection Section
Colorado Water Conservation Board
1313 Sherman Street, 7th Floor
Denver, Colorado 80203

Re: Request for Instream Flow Appropriation-Eagle River (Water Div. 5)

Dear Mr. Doherty:

We are writing on behalf of the Town of Minturn to recommend and request that the Colorado Water Conservation Board ("CWCB") appropriate a new instream flow water right for the segment of the Eagle River between the confluences of the Eagle River with Cross and Gore Creeks. This segment of the Eagle River, which includes the River as it runs through Minturn, has been the subject in recent years of extensive rehabilitation activities intended to restore the natural environment of the River. While an instream flow water right for this segment was originally appropriated in the 1970s, protection of increased flow levels is now necessary to reasonably preserve the restored natural environment, as recommended in the attached report prepared by Mr. Troy Thompson of Ecological Resource Consultants, Inc. ("ERC"). Pursuant to Rule 5.a. of the CWCB's Instream Flow Program Rules, Minturn recommends that the CWCB appropriate a new instream flow water right for this segment of the Eagle River at the flow levels recommended in Mr. Thompson's report, and that this appropriation be added to the list of instream flow appropriations to be considered by the CWCB in 2005.

The minimum stream flow water right for the Eagle River in the segment from Cross Creek to Gore Creek are currently 20 cfs (October 1 through April 30) and 50 cfs (from May 1 to September 30), pursuant to the decree in Case No. 78CW3796 (Water Division 5.) The basis for the relatively low levels protected by the existing water right is unclear to Minturn, as it is our understanding that the original "R2Cross" calculations and recommendations made by the Colorado Division of Wildlife for this river segment during the process leading up to the application in Case No. 78CW3796 indicated that instream flows of 100 cfs during the low flow season and 290 cfs during the high flow season were necessary to reasonably protect the natural environment.

During late 2003, the Town of Minturn completed channel rehabilitation and restoration work on a 0.8 mile stretch of the Eagle River through Minturn. The restoration work was undertaken to restore the natural form and function of the stream system. Railroad construction along the east bank of the river, development within Minturn and upstream, and upstream mining activities all adversely affected the river over time. The stream channel through Minturn had become straightened and widened, and lost its natural riffle/pool bedform. Land adjacent to the channel had limited native riparian vegetation and high erosion potential. The restoration work was funded in large part by a Natural Resource Damage Fund grant to restore the natural environment of the River. The project remeandered the channel, reshaped the cross section to its natural width and added riffle/pool sequences bringing the stream back to a natural state. Extensive vegetation was also planted on the newly created flood terraces. Similar restoration work is contemplated by Minturn on both upstream and downstream segments of the Eagle River.

As you will see, the enclosed report includes the results of the calculations made by ERC pursuant to the R2Cross methodology concerning the minimum flow levels necessary to preserve to a reasonable degree the natural environment of the restored Eagle River between Cross and Gore Creeks. The R2Cross methodology was utilized because it is Minturn's understanding that it is the methodology generally preferred and recommended by the CWCB for these purposes. ERC's report recommends protection of increased instream flows from 30 to 148 cfs, over four seasonal periods. These recommendations are based on both the R2Cross results, and ERC's evaluation of water availability. An instream flow water right at these levels is necessary to preserve the natural environment to a reasonable degree.

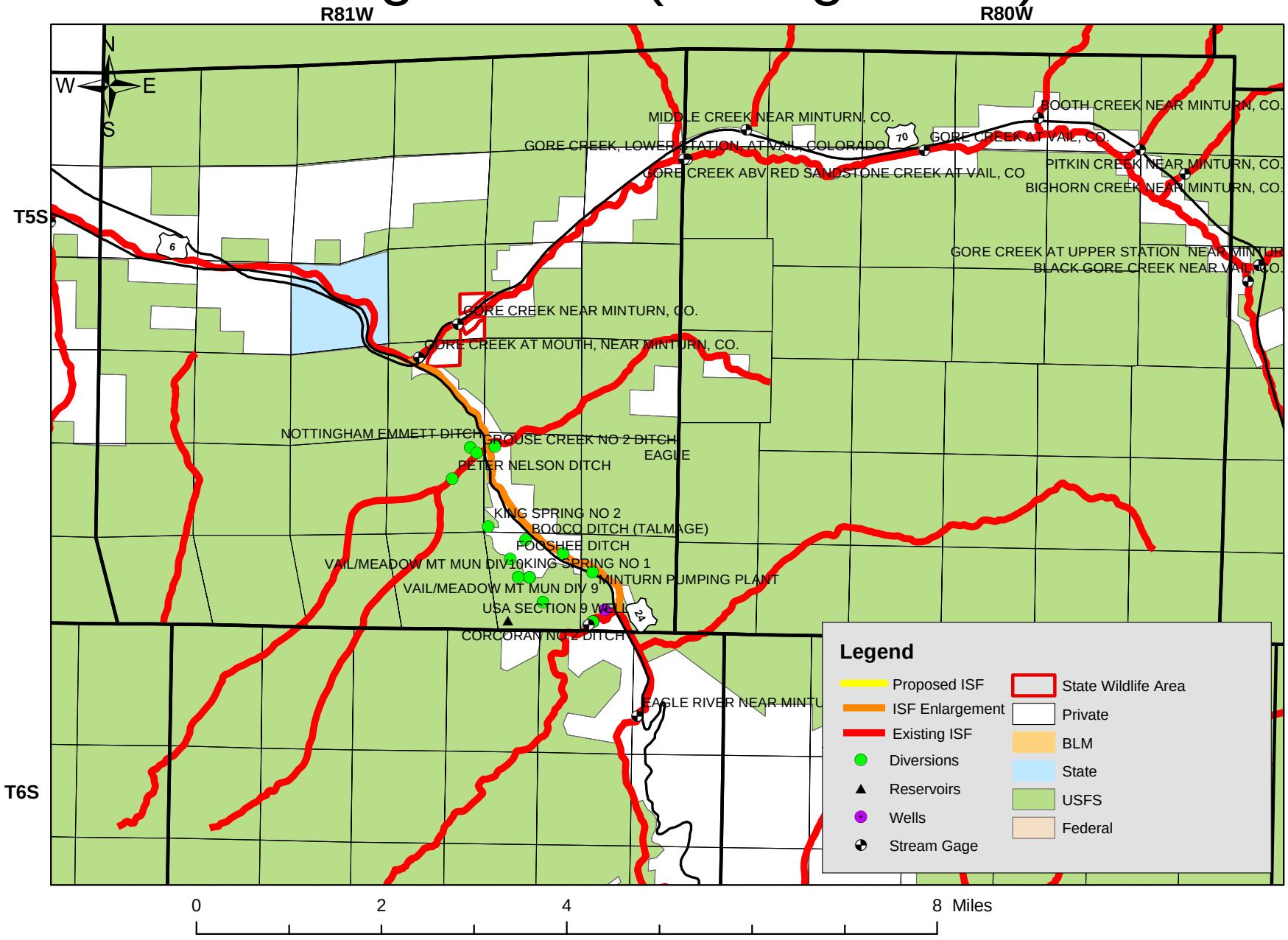
It is our understanding that the CWCB staff will provide a preliminary response to Minturn's request within the next 30 days. In the meantime, we would be pleased to meet with you and other CWCB staff members to discuss and answer any questions you may have concerning the request. Please let us know if you would like to schedule such a meeting. Thank you for your assistance.

Very truly yours,

Anne J. Castle
Christopher L. Thorne
of Holland & Hart LLP

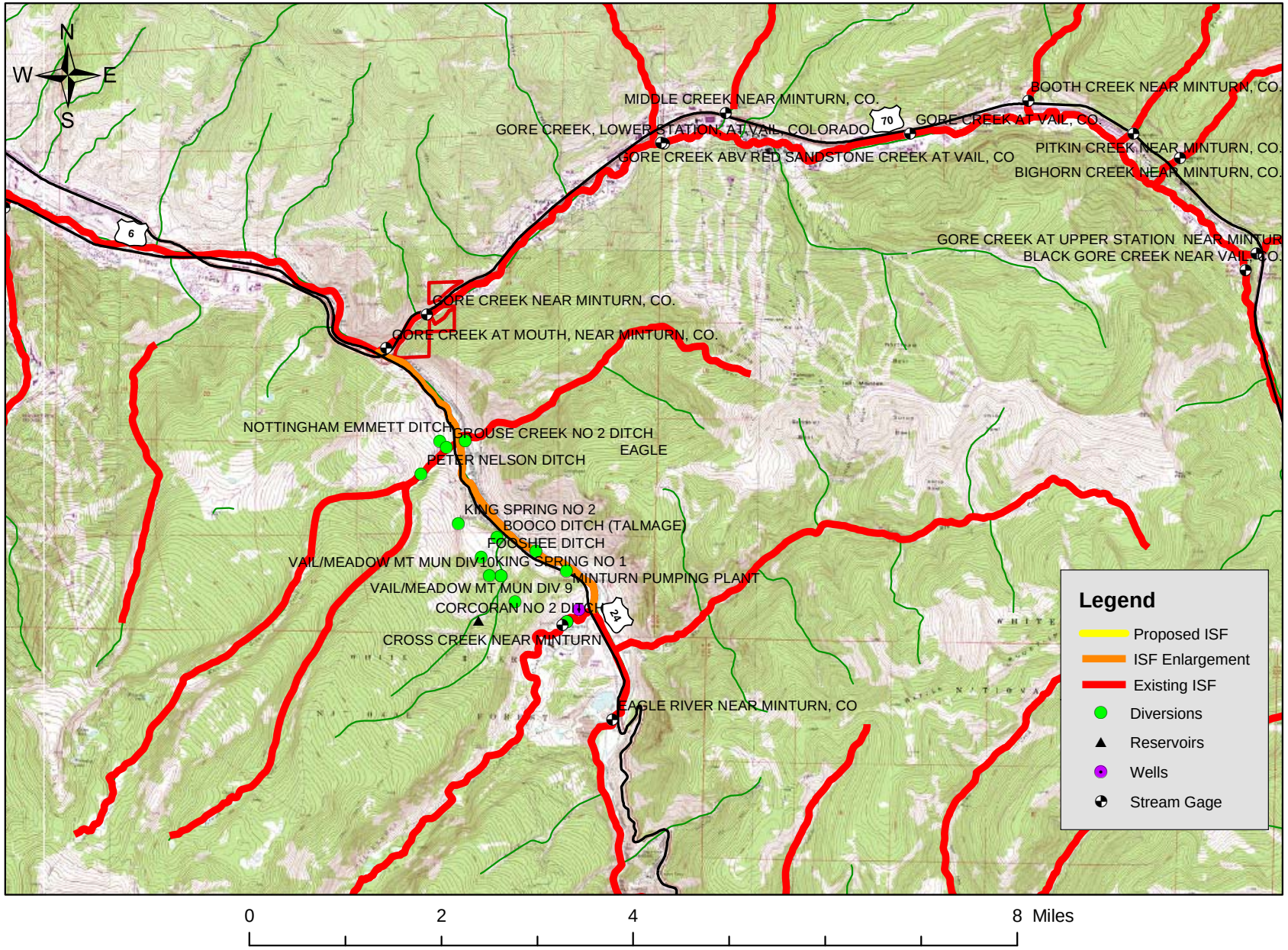
AJC
Enclosure

Eagle River (Enlargement)



The information provided in this report is preliminary and is subject to change

Eagle River (Enlargement)



The information provided in this report is preliminary and is subject to change

cc: Eagle County Board of Commissioners
Colorado Division of Wildlife
Colorado Department of Public Health & Environment
Northwest Colorado Regional Council of Governments
Ms. Ann Capela, Minturn Town Manager
Allen Christenson

3307755_1.DOC

Ecological Resource Consultants, Inc.
Streams~Wetlands~Water Resources
35715 US Hwy. 40, Suite D204 ~ Evergreen, CO 80439 ~ 303.679.4820

Memorandum

Date: November 18, 2004

To: Chris Thorne, Holland & Hart

cc: Ann Capela, Town of Minturn

From: Troy Thompson

Project: Eagle River - Minturn

Re: R2CROSS Evaluation of Rehabilitated Stream Section

On October 31, 2003 Ecological Resource Consultants, Inc. (ERC) submitted results of our R2CROSS instream flow evaluation to Holland & Hart and the Town of Minturn. The analysis was based on conditions in the Eagle River through Minturn immediately following the 2003 stream restoration work.

Holland & Hart requested that ERC conduct additional R2CROSS evaluations based on conditions observed in 2004 to supplement data obtained in 2003. This memo describes work completed, evaluation techniques and reports the findings from this 2004 work and compares results with those obtained in 2003.

Background

During the summer and fall of 2003, the Town of Minturn completed channel work on the rehabilitation of a 0.8 mile stretch of the Eagle River through Town. The work included narrowing the channel and creating natural riffle/pool/glide sequences necessary for good trout habitat and overall stream and riparian health.

The restoration work was undertaken to restore the natural form and function or the stream system. Railroad construction along the east bank of the river, development within the Town and upstream watershed, changes to the natural hydrologic sequence and upstream mining activities all adversely affected the river. The stream channel itself through Town had become channelized (straightened), widened and lost its natural riffle/pool bedform. Land adjacent to the channel had limited native riparian vegetation and high erosion potential. The restoration work was funded in large part by a Natural Resource Damage Fund grant to restore the impacted natural resource. The project remeandered the channel, reshaped the cross section to its natural width and added riffle/pool sequences bringing the stream back to a natural state. Extensive vegetation was also planted on the newly created flood terraces. Similar work is being proposed by the Town of Minturn on both upstream and downstream sections.

Current legal minimum instream flow rights are for 20 cfs during the low flow season and 50 cfs during high flows. Conversations with the Colorado Division of Wildlife (DOW) indicate that R2CROSS calculations were conducted by the DOW on a section of the Eagle River between Cross Creek and Dowd Junction in 1977. Based on the R2CROSS criteria, results indicated required minimum instream flows for aquatic habitat should be approximately 100 cfs and 290 cfs for the low and high flow periods, respectively (Skinner, 2002). The Town is interested in determining whether the existing instream flow water rights are adequate or if additional flows are needed to preserve to a reasonable degree the natural environment restored as part of the restoration work.

Basic Approach

The CWCB's R2CROSS methodology is a habitat-retention model that uses field data and hydraulic modeling to establish minimum instream flow requirements (Espergren, 1998). The method uses data and calculations collected at a single stream riffle section to quantify minimum aquatic flow needs. Espegren presents details of the R2CROSS modeling procedure and interpretation of results in the Evaluation of the Standards and Methods Used for Quantifying Instream Flows in Colorado (Espegren, 1998).

The R2CROSS methodology is sensitive to the physical conditions of the selected cross section including parameters such as bankfull width, longitudinal channel slope and cross sectional geometry. In order to quantify this sensitivity and obtain results that are representative of the multiple riffle sequences that now exist on the restored river section through the Town, ERC performed the procedure on four (4) separate riffle sections instead of a single section. The four sections used for the 2004 analysis are the same sections that were evaluated by ERC in 2003.

The four riffle sections evaluated by ERC for the R2CROSS study are Riffles 11, 9, 7 and 5 of the Eagle River Restoration Plan (ERC, 2003). These particular riffles were selected as they were judged to exhibit a range of physical conditions including different widths, slopes and geometries. Basic geometric data for all 11 created riffles as surveyed in 2003 and 2004 is presented below.

Table 1 – Surveyed Channel Geometries, 2003 and 2004
Eagle River Restoration Project
As-Build Data for 2003 Instream Construction Work

	Station			Elevation			
Structure	Start	End	Length	Start	End	Slope	Pool Depth
Riffle 11	41+25	39+75	150	62.2	59.5	1.8%	5.5
Riffle 10	38+60	37+00	160	60.3	56.3	2.5%	3.5
Riffle 9	33+95	33+00	95	55.5	52.1	3.6%	3.5
Riffle 8	31+25	30+00	125	51.5	49.0	2.0%	4.0
Riffle 7	22+70	21+20	150	40.0	36.8	2.1%	6.0
Riffle 6	19+85	18+75	110	36.4	33.4	2.7%	5.0
Riffle 5	17+10	15+60	150	32.9	29.4	2.3%	6.0
Riffle 4	13+80	12+30	150	28.9	26.3	1.7%	4.5
Riffle 3	10+55	9+05	150	26.0	23.0	2.0%	5.0
Riffle 2	7+15	5+90	125	22.4	19.1	2.6%	4.5

Riffle 1	4+50	3+25	125	18.7	16.4	1.8%	4.5
Average			135			2.3%	4.7
Minimum			95			1.7%	3.5
Maximum			160			3.6%	6.0

2004 Restoration Monitoring Survey

	Station			Elevation			
Structure	**Start**	**End**	**Length**	**Start**	**End**	**Slope**	**Pool Depth**
Riffle 11	41+25	40+10	115	61.8	60.0	1.6%	4.1
Riffle 10	38+60	36+90	170	60.6	56.7	2.3%	2.8
Riffle 9	33+95	33+00	95	55.6	52.0	3.8%	2.1
Riffle 8	31+25	30+05	120	51.4	48.4	2.5%	2.5
Riffle 7	22+70	21+30	140	39.9	36.3	2.6%	3.5
Riffle 6	19+85	18+85	100	36.2	33.4	2.8%	2.6
Riffle 5	17+10	15+50	160	32.8	29.7	1.9%	2.8
Riffle 4	13+80	12+60	120	29.1	26.9	1.8%	2.6
Riffle 3	10+55	8+95	160	26.3	23.3	1.9%	2.1
Riffle 2	7+15	5+85	130	22.6	19.9	2.1%	2.4
Riffle 1	4+50	3+30	120	19.5	17.0	2.1%	2.7
Average			130			2.3%	2.7
Minimum			95			1.6%	2.1
Maximum			170			3.8%	4.1

Survey results shown in Table 1 above indicate that the restored portions of the channel are maintaining. Minor variations in these survey results are inherent from year to year as the survey is completed on the very irregular channel surface. Average riffle lengths and slopes from 2003 to 2004 are almost identical indicating that habitat variety exists. Pool depths have decreased from 2003 to 2004 as was expected as the pools equilibrated with the environment.

Field Work

On October 7, 2004 ERC resurveyed these four riffle cross sections. The resultant stream cross sections are illustrated on **Figures 1-4** below. The figures show the cross sections as surveyed in both 2003 and 2004. Longitudinal slopes through the riffle sections required for the R2CROSS calculations were surveyed by ERC as part of developing a longitudinal profile for the entire restored reach and are denoted on **Table 1** above.

As with the profile, some amounts of shifting in the cross section from year to year is expected. Not only is the channel surface irregular, consisting of varying sized sands, gravels, cobbles and boulders, but natural sediment transport caused minor changes in the cross sections over time.

Figure 1 – Surveyed Cross Section 1 (Riffle #11)

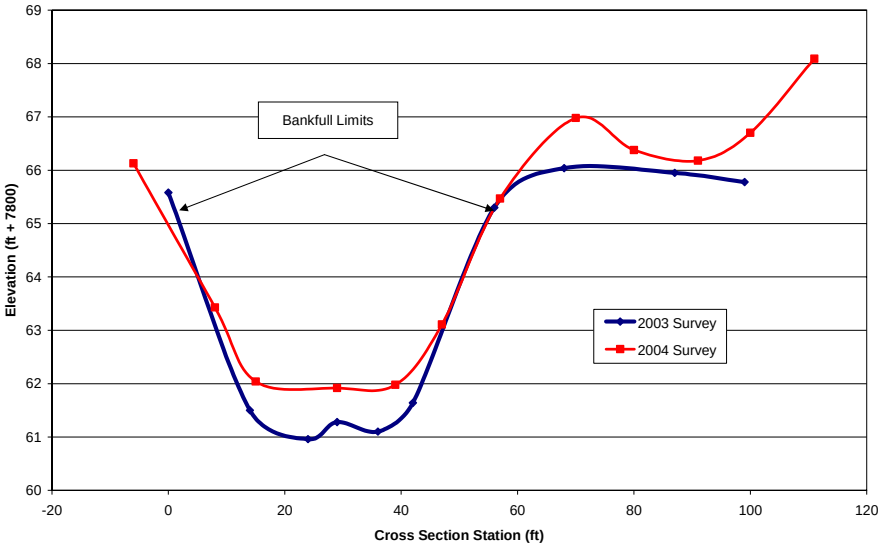


Figure 2 – Surveyed Cross Section 2 (Riffle #9)

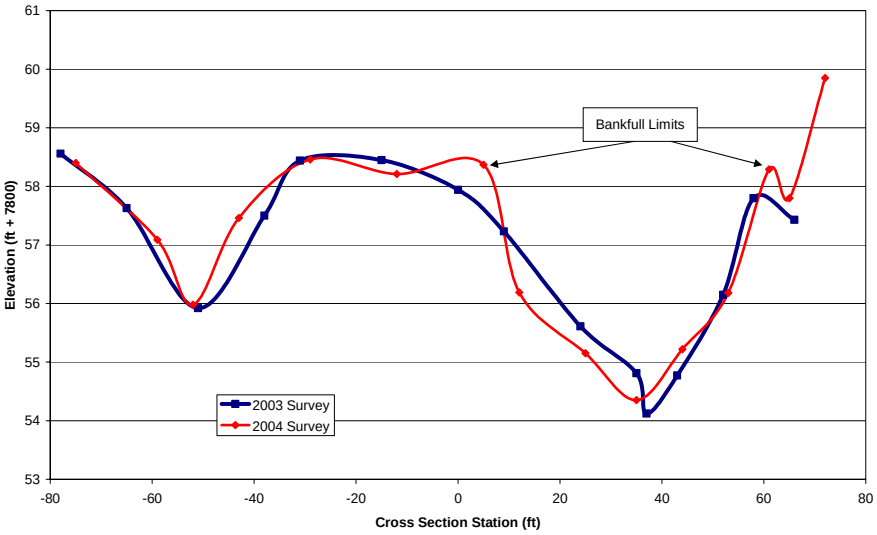


Figure 3 – Surveyed Cross Section 3 (Riffle #7)

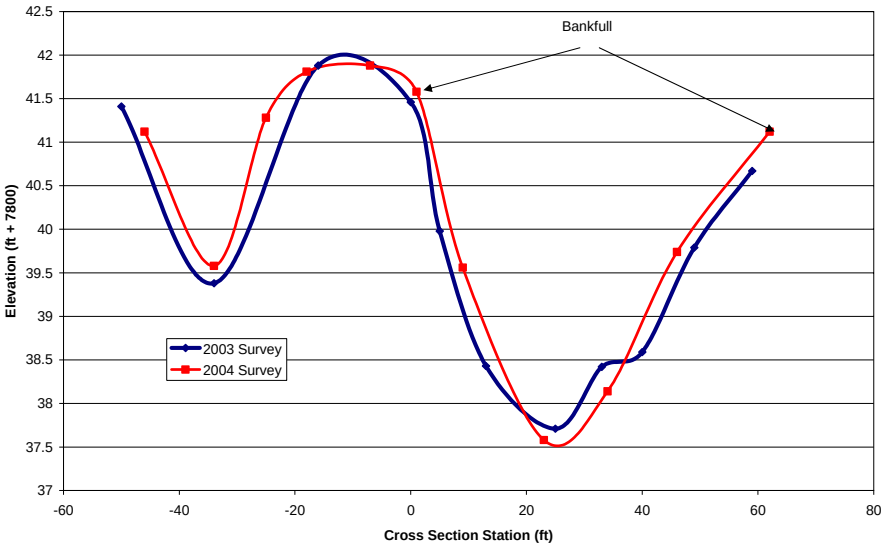
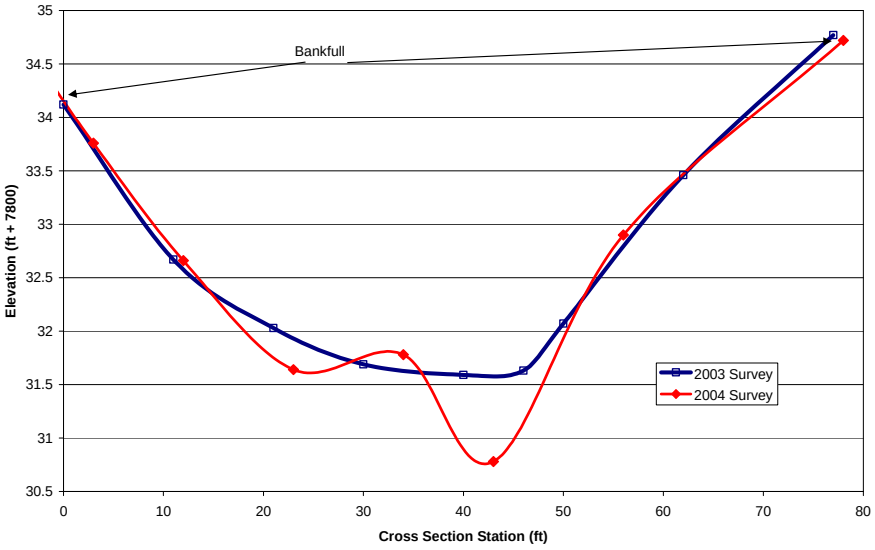


Figure 4 – Surveyed Cross Section 4 (Riffle #5)



It should be noted that the downstream end of the riffle below cross section 4 has been impacted since last year's survey. Several of the rocks have been moved creating a small drop. This work impacts slopes through this section and the resultant calculated R2CROSS flows values.

Calculations

Surveyed cross sectional data and riffle slopes were entered into the hydraulic computer model FlowMaster. This model uses Manning's equation to determine depth, area, wetted perimeter, velocity and top width for a given flow rate and channel geometry. Calculated values were recorded for flow rates of 10 – 500 cfs. A Manning's n value of 0.045 was used for the evaluation based professional experience and observation of bed conditions with standard publicized values.

The calculated bankfull width is an important parameter for R2CROSS calculations. Minimum recommended flow depth and percent of bankfull wetted perimeter are derived based on bankfull width. In order to determine bankfull conditions, FlowMaster was used to calculate the flow that would result in a water surface elevation reaching the points along the surveyed cross section that denoted bankfull flow. This was accomplished by inputting the elevation of the surveyed bankfull points into the model and solving for discharge. In the event the surveyed bankfull elevations differed from the right to the left bank, the lower of the two were selected. This was a conservative assumption as it resulted in lower recommended flows.

There are three (3) calculated parameters of importance in establishing instream flows using the R2CROSS method. They are: average flow depth, average velocity and percent of bankfull wetted perimeter. Average depth is calculated by dividing the flow area by the top width. Average velocity is calculated by dividing the total flow by the flow area. Percent of bankfull wetted perimeter is taken by dividing the perimeter of the wetted channel at a given flow by the perimeter of the wetted channel at bankfull flow.

R2CROSS methodology sets criteria for each of these three parameters based on the bankfull channel width. The recommended minimum instream flows for low flow (October 1 – April 30) occurs when two of the three criteria are met. Recommended minimum instream flows for high flows (May 1 – September 30) is set by the flow at which all three criteria are met.

Results of the R2CROSS modeling at each of the four cross sections are summarized below on **Tables 2-5**.

Table 2 – Hydraulic Modeling and R2CROSS Results
Cross Section 1 - Constructed Riffle No. 11

Flow (cfs)	Flow Area (ft^2)	Top Width (ft)	Avg Depth (ft)	Wetted Perimeter (ft)	Avg Velocity (ft/s)	% WP
10	6.0	26.5	0.23	26.5	1.7	43.9%
20	9.4	28.0	0.34	28.0	2.1	46.4%
30	12.1	29.1	0.42	29.2	2.5	48.4%
40	14.6	30.2	0.48	30.2	2.7	50.1%
50	16.9	31.1	0.54	31.2	3.0	51.7%
60	19.1	31.9	0.60	32.0	3.1	53.1%
70	21.2	32.7	0.65	32.8	3.3	54.4%
80	23.1	33.4	0.69	33.5	3.5	55.6%
90	25.0	34.1	0.73	34.2	3.6	56.7%
100	26.9	34.7	0.77	34.9	3.7	57.8%
125	31.2	36.2	0.86	36.4	4.0	60.3%
150	35.3	37.5	0.94	37.7	4.2	62.5%
175	39.2	38.5	1.02	38.7	4.5	64.1%
200	42.8	39.3	1.09	39.6	4.7	65.6%
250	49.8	40.9	1.22	41.2	5.0	68.3%
300	56.3	42.4	1.33	42.7	5.3	70.8%
400	68.6	45.1	1.52	45.4	5.8	75.3%
500	80.0	47.4	1.69	47.8	6.3	79.3%
1210	149.2	59.6	2.50	60.3	8.1	100.0%

Bankfull Flow Calculated to be 1210 cfs using FlowMaster Model

Bankfull Width (ft)	55
Average Depth for R2CROSS (ft)	0.55
Percent WP for R2CROSS	57.4
Average Velocity for R2CROSS (ft/s)	1.0

Two of three criteria met at approximately **51 cfs**

Three of three criteria met at approximately **96 cfs**

Table 3 – Hydraulic Modeling and R2CROSS Results
Cross Section 2 - Constructed Riffle No. 9

Flow (cfs)	Flow Area (ft^2)	Top Width (ft)	Avg Depth (ft)	Wetted Perimeter (ft)	Avg Velocity (ft/s)	% WP
10	3.6	12.9	0.28	12.9	2.8	22.9%
20	6.1	16.7	0.37	16.8	3.3	29.6%
30	8.3	19.4	0.43	19.5	3.6	34.5%
40	10.2	21.6	0.47	21.6	3.9	38.3%
50	12.1	23.4	0.52	23.5	4.1	41.5%
60	13.8	25.0	0.55	25.0	4.3	44.3%
70	15.5	26.4	0.59	26.5	4.5	46.9%
80	17.2	27.7	0.62	27.8	4.7	49.2%
90	18.7	28.9	0.65	29.0	4.8	51.4%
100	20.3	30.1	0.68	30.2	4.9	53.4%
125	23.9	32.6	0.73	32.8	5.2	58.0%
150	27.4	34.9	0.79	35.1	5.5	62.0%
175	30.8	36.9	0.83	37.1	5.7	65.6%
200	34.0	38.8	0.88	39.0	5.9	68.9%
250	39.9	41.3	0.97	41.5	6.3	73.5%
300	44.9	42.2	1.06	42.4	6.7	75.0%
400	54.1	43.7	1.24	43.9	7.4	77.8%
500	62.6	45.0	1.39	45.3	8.0	80.2%
1647	139.8	55.7	2.51	56.5	11.8	100.0%

Bankfull Flow Calculated to be 1,647 cfs using FlowMaster Model

Bankfull Width (ft)	56
Average Depth for R2CROSS (ft)	0.56
Percent WP for R2CROSS	57.9
Average Velocity for R2CROSS (ft/s)	1.0

Two of three criteria met at approximately **62 cfs**

Three of three criteria met at approximately **124 cfs**

Table 4 – Hydraulic Modeling and R2CROSS Results
Cross Section 3 - Constructed Riffle No. 7

Flow (cfs)	Flow Area (ft^2)	Top Width (ft)	Avg Depth (ft)	Wetted Perimeter (ft)	Avg Velocity (ft/s)	% WP
10	4.3	15.1	0.28	15.2	2.3	25.4%
20	7.0	17.5	0.40	17.5	2.9	29.4%
30	9.2	19.3	0.48	19.4	3.3	32.4%
40	11.3	20.8	0.54	20.9	3.5	35.0%
50	13.3	22.1	0.60	22.2	3.8	37.2%
60	15.1	23.3	0.65	23.4	4.0	39.2%
70	16.9	24.4	0.69	24.5	4.2	41.0%
80	18.6	25.4	0.73	25.5	4.3	42.7%
90	20.2	26.3	0.77	26.4	4.5	44.3%
100	21.8	27.2	0.80	27.3	4.6	45.8%
125	25.7	29.2	0.88	29.3	4.9	49.2%
150	29.3	30.9	0.95	31.1	5.1	52.1%
175	32.8	32.5	1.01	32.8	5.3	54.9%
200	36.2	34.0	1.06	34.2	5.5	57.4%
250	42.5	36.4	1.17	36.7	5.9	61.5%
300	48.5	38.4	1.26	38.7	6.2	64.9%
400	60.2	42.9	1.40	43.3	6.6	72.5%
500	71.3	46.8	1.52	47.1	7.0	79.0%
929	113.6	59.2	1.92	59.7	8.2	100.0%

Bankfull Flow Calculated to be 929 cfs using FlowMaster Model

Bankfull Width (ft)	59
Average Depth for R2CROSS (ft)	0.59
Percent WP for R2CROSS	59.4
Average Velocity for R2CROSS (ft/s)	1.0

Two of three criteria met at approximately **49 cfs**

Three of three criteria met at approximately **225 cfs**

Table 5 – Hydraulic Modeling and R2CROSS Results
Cross Section 4 - Constructed Riffle No. 5

Flow (cfs)	Flow Area (ft^2)	Top Width (ft)	Avg Depth (ft)	Wetted Perimeter (ft)	Avg Velocity (ft/s)	% WP
10	4.0	11.0	0.36	11.1	1.7	14.4%
20	8.7	27.8	0.31	28.0	2.3	36.3%
30	11.3	29.4	0.38	29.5	2.7	38.4%
40	13.7	30.7	0.45	30.9	2.9	40.1%
50	15.9	31.9	0.50	32.1	3.1	41.7%
60	18.0	33.0	0.55	33.2	3.3	43.1%
70	20.0	34.0	0.59	34.2	3.5	44.4%
80	21.9	34.9	0.63	35.1	3.7	45.6%
90	23.7	35.8	0.66	36.0	3.8	46.8%
100	25.5	36.6	0.70	36.9	3.9	47.9%
125	29.8	38.6	0.77	38.8	4.2	50.4%
150	33.8	40.3	0.84	40.5	4.4	52.7%
175	37.7	41.8	0.90	42.1	4.7	54.7%
200	41.3	43.2	0.96	43.5	4.8	56.5%
250	48.2	45.4	1.06	45.7	5.2	59.4%
300	55.0	48.2	1.14	48.5	5.5	63.0%
400	68.2	53.4	1.28	53.7	5.9	69.8%
500	80.5	57.9	1.39	58.3	6.2	75.7%
1092	143.8	76.5	1.88	76.9	7.6	100.0%

Bankfull Flow Calculated to be 1092 cfs using FlowMaster Model

Bankfull Width (ft)	76
Average Depth for R2CROSS (ft)	0.7
Percent WP for R2CROSS	70
Average Velocity for R2CROSS (ft/s)	1.0

Two of three criteria met at approximately **100 cfs**
Three of three criteria met at approximately **403 cfs**

R3CROSS Results and Conclusions

Model results were reviewed to determine the flow at which each of the three R2CROSS criteria were met. The methodology indicates that minimum instream flows for low flow periods is met when two of the three criteria are met and high flow requirements are met when all three criteria are met. Results for the four individual riffle sections are summarized below.

Table 6 – Summary of Results

Cross Section	Minimum Low Flow (cfs)	Minimum High Flow (cfs)
No. 1 – Riffle 11	51	96
No. 2 – Riffle 9	62	124
No. 3 – Riffle 7	49	225
No. 4 – Riffle 5	100	403

The results indicate that the minimum flow for low flow conditions ranges from 49 cfs to 100 cfs with an average value of 66 cfs. The range for high flow periods is 96 cfs to 403 cfs with an average value of 214 cfs. The average low flow value of 66 cfs determined in 2004 is similar to the value of 61 cfs determined in 2003. The high flow value of 214 cfs from 2004 is greater than the value of 131 cfs calculated in 2003. If results from cross section 4, where the riffle has been altered by human activities is excluded from 2004 calculations, average minimum instream flows resulting from the R2CROSS method for low and high flow values are 54 cfs and 148 cfs, respectively.

The results demonstrate how sensitive the R2CROSS methodology is to physical conditions. They also indicate that even with the stream restoration that narrowed the channel and increased flow depths for a given discharge, the current legal minimum instream flows do not satisfy the criteria established by the DOW and the CWCB for instream flows.

Water Availability

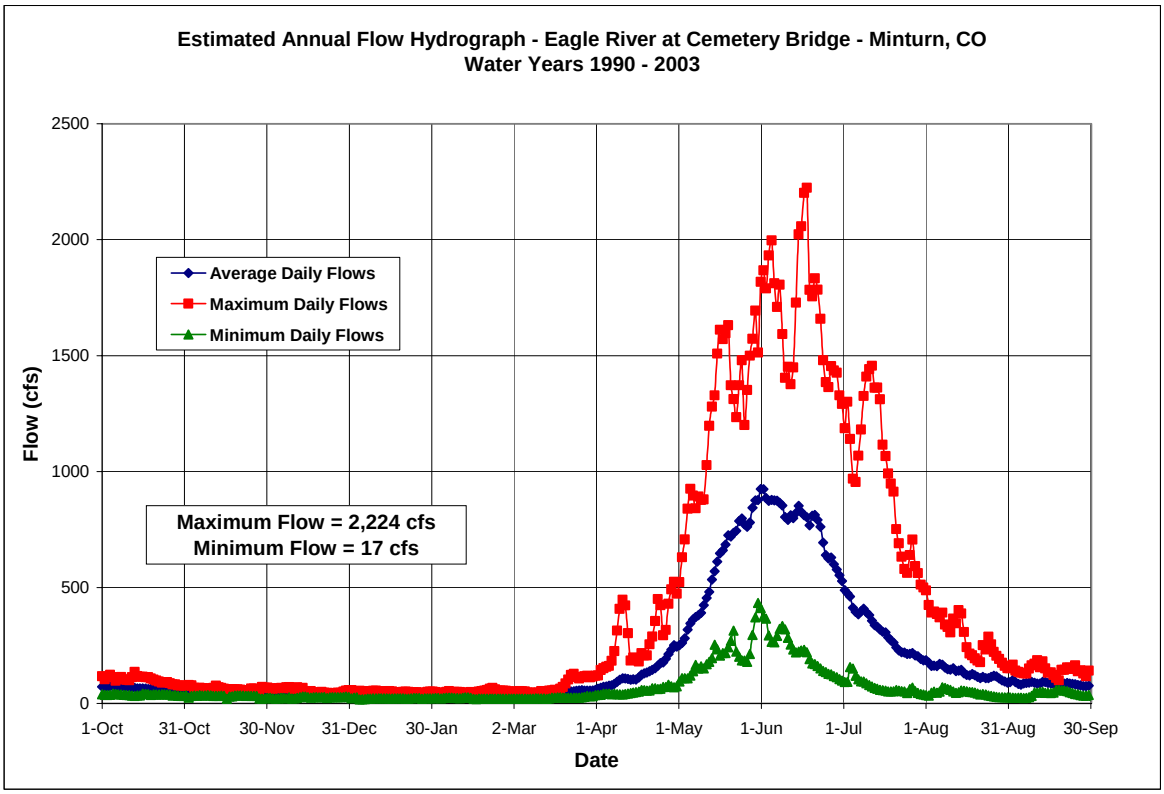
In order to compare computed R2CROSS results with the existing physical supply through the Town, ERC conducted an evaluation of historic stream gage data. Data from two USGS flow gaging stations were utilized in this analysis, Gage 09064600 (Eagle River near Minturn, CO) and Gage 09065100 (Cross Creek near Minturn, CO). Both gages are located upstream of the project reach. Cross Creek joins the Eagle River just downstream from the gages.

In order to estimate daily flows through the restored section of the river, gage data from the two stations were combined. Additionally there are minor tributaries to the Eagle River downstream of Cross Creek and upstream of the restoration work. To account for flows from these drainages the contributing drainage basis at the upstream end of the project was determined (236 square miles) and compared with the areas tributary to the two gage stations (220.2 square miles). This drainage basin comparison indicates the tributary drainage area at the upstream end of the project is seven (7) percent greater than the drainage area tributary to the two gages. Estimated daily average flows through the project reach were taken as the sum of flows measured in the Eagle River and Cross Creek gages plus 7 percent.

Verified gage data is available from the Eagle River station from water year (WY) 1990 through WY 2003. Data is available from the Cross Creek station from WY 1956 to WY 2003. Since the longest concurrent period of record for both stations is WY 1990 – 2003, this data was used in our evaluation.

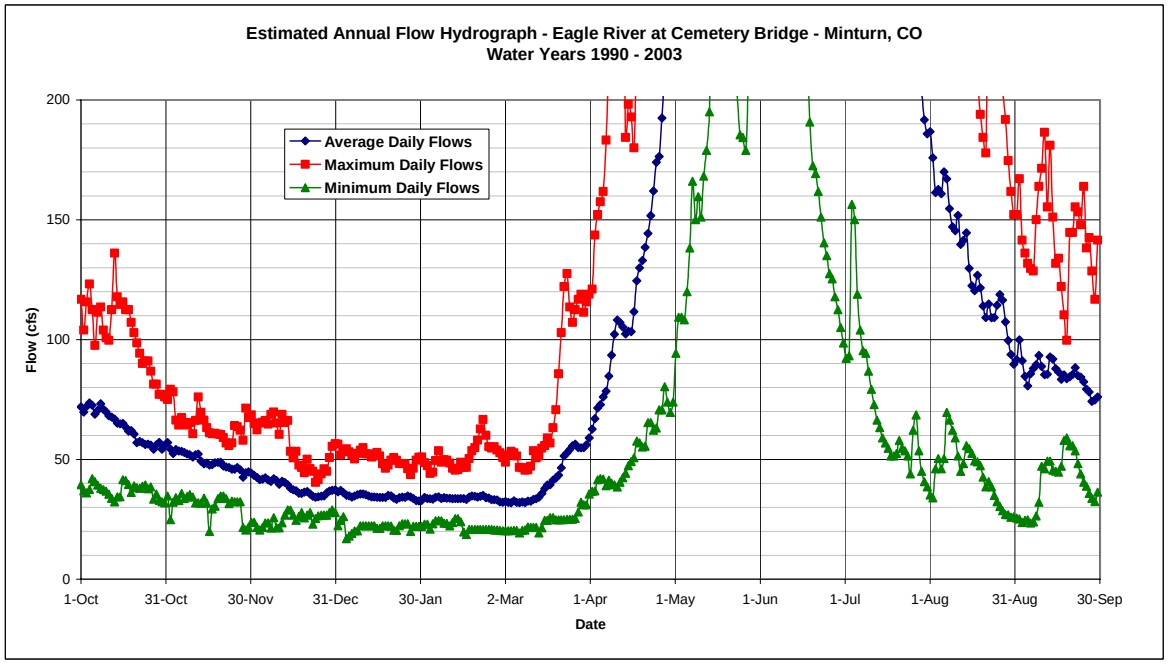
Average, maximum and minimum daily flows were estimated for the project reach per above. Results are shown below.

Figure 5



The red, blue and green lines represent the highest, average and lowest flow readings for each day of the year. Figure 6 below provides a blow up of the above figure and focuses on low flows.

Figure 6



Based on R2CROSS methodology, the low flow period is defined as October 1st through April 30th and the high flow period is May 1st through September 30th. Based on the flow estimates presented above, the average flow through the project reach during the low and high flow periods are 55 cubic feet per second (cfs) and 378 cfs, respectively. During the period of November through March (lowest of the low flow period), the average flow is 40 cfs. During the months of August and September (the lowest flow months in the high flow period) average flows are 110 cfs. On an average standpoint, existing flows are always greater than 30 cfs in the low flow period and 75 cfs in the high flow period.

Results of the evaluation of water availability indicate that the minimum instream flows calculated using the R2CROSS methodology do not exist at all times during an average flow year. The analysis also indicates that in an average year, more water is available in the stream than is currently protected by the minimum instream flow values of 20 cfs in the low flow period and 50 cfs in the high flow period.

Recommendations

When comparing results from R2CROSS analyses and actual water availability, it is evident that insufficient water exists in the stream today to achieve the habitat requirements recommended by R2CROSS. Average recommended low and high flow values of 54 cfs and 148 cfs determined by R2CROSS (using results from the three unimpacted cross sections) are not available at all times, even under average flow conditions.

During the months of May, June and July, average flows exceed the recommended minimum flow of 148 cfs. For the months of August and September average flows were found to always exceed 70 cfs. Review of the hydrograph for the low flow season (October 1 – April 30) indicates that for all months except October, average flows are below the R2CROSS recommended minimum instream flow of 54 cfs. Average flows in October and November are generally higher than the remainder of the low flow period and exceed 40 cfs. For the remaining months of December through April, average flows are found to exceed 30 cfs.

The comparison between R2CROSS results and physical water availability suggests that a tiered minimum instream flow requirement be used. Recommendations below are based on the lesser of the average R2CROSS recommendations and average year flows with months grouped together following typical hydrograph patterns.

Months	Recommended Minimum Instream Flow (cfs)
May - July	148
August - September	70
October - November	40
December - April	30

From an availability standpoint, these values currently exist on an average year through the Town. Actual flows would drop below these recommended minimum values on some individual days in most years but could be achieved a majority of the time. From a habitat standpoint, while these values do not generally achieve the recommended levels based on

R2CROSS, they provide greater flow depths and wetted perimeter when compared with the current legal values of 20 and 50 cfs.

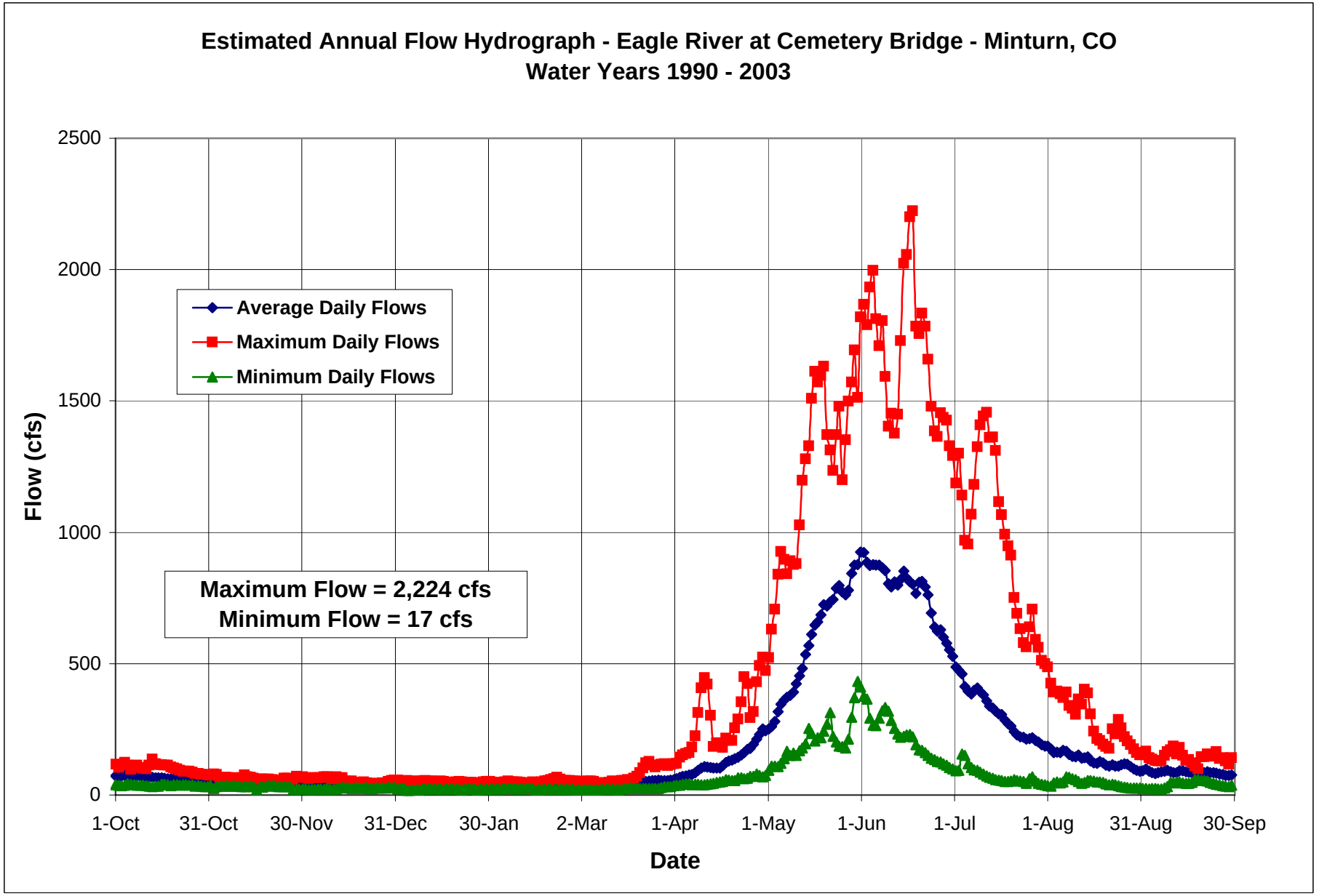
References

Barnes, Harry H. Jr., Roughness Characteristics of Natural Channels, Geological Survey Water-Supply Paper 1849, United States Department of the Interior, Washington, D.C., 1967.

Espegren, Gregory D., Evaluation of the Standards and Methods Used for Quantifying Instream Flows in Colorado, Colorado Water Conservation Board, Denver, CO, 1998.

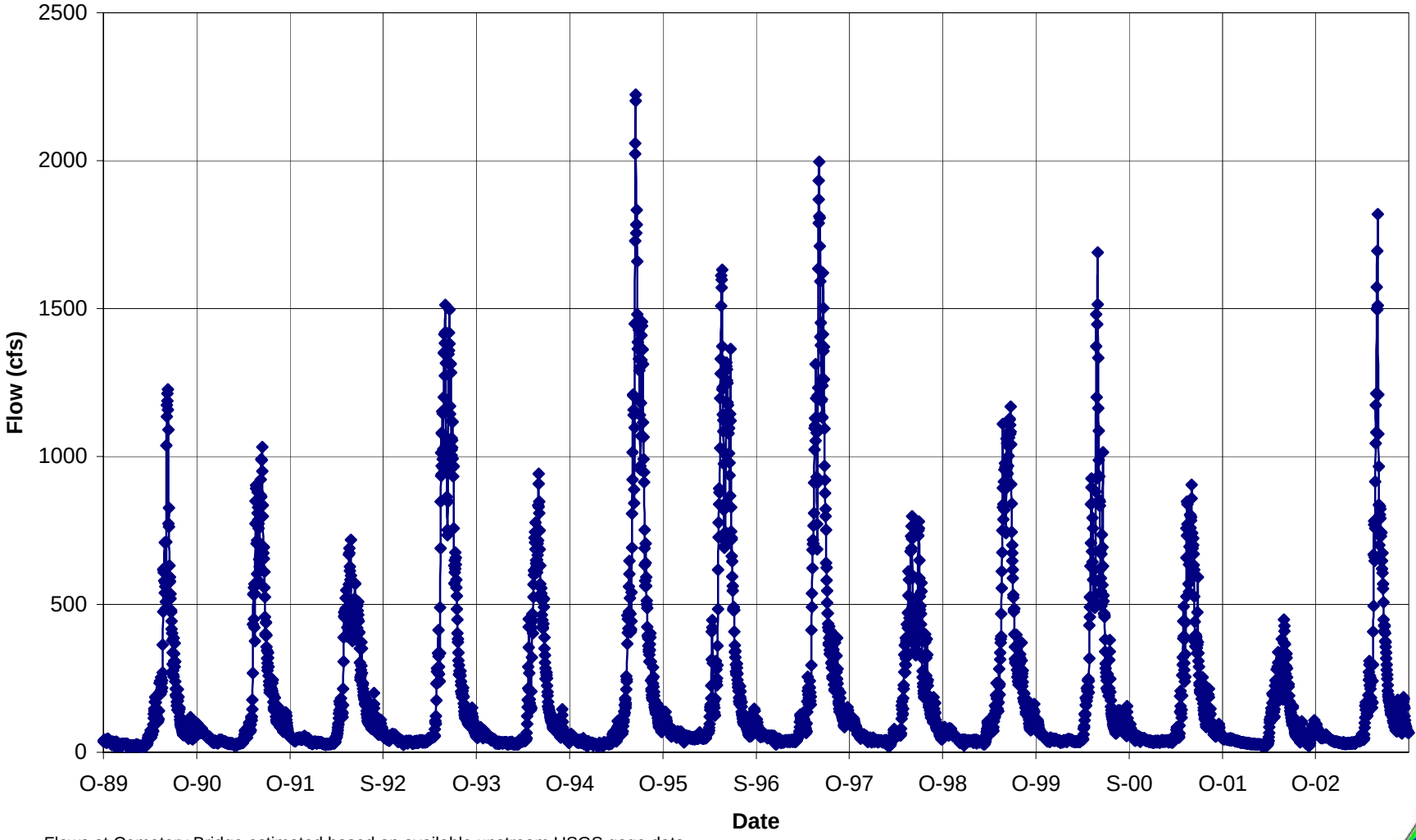
FlowMaster Pro Version 6.0, Haestead Methods, 2000.

Skinner, Jay W., Personal Communications, June 2002.



The information provided in this report is preliminary and is subject to change

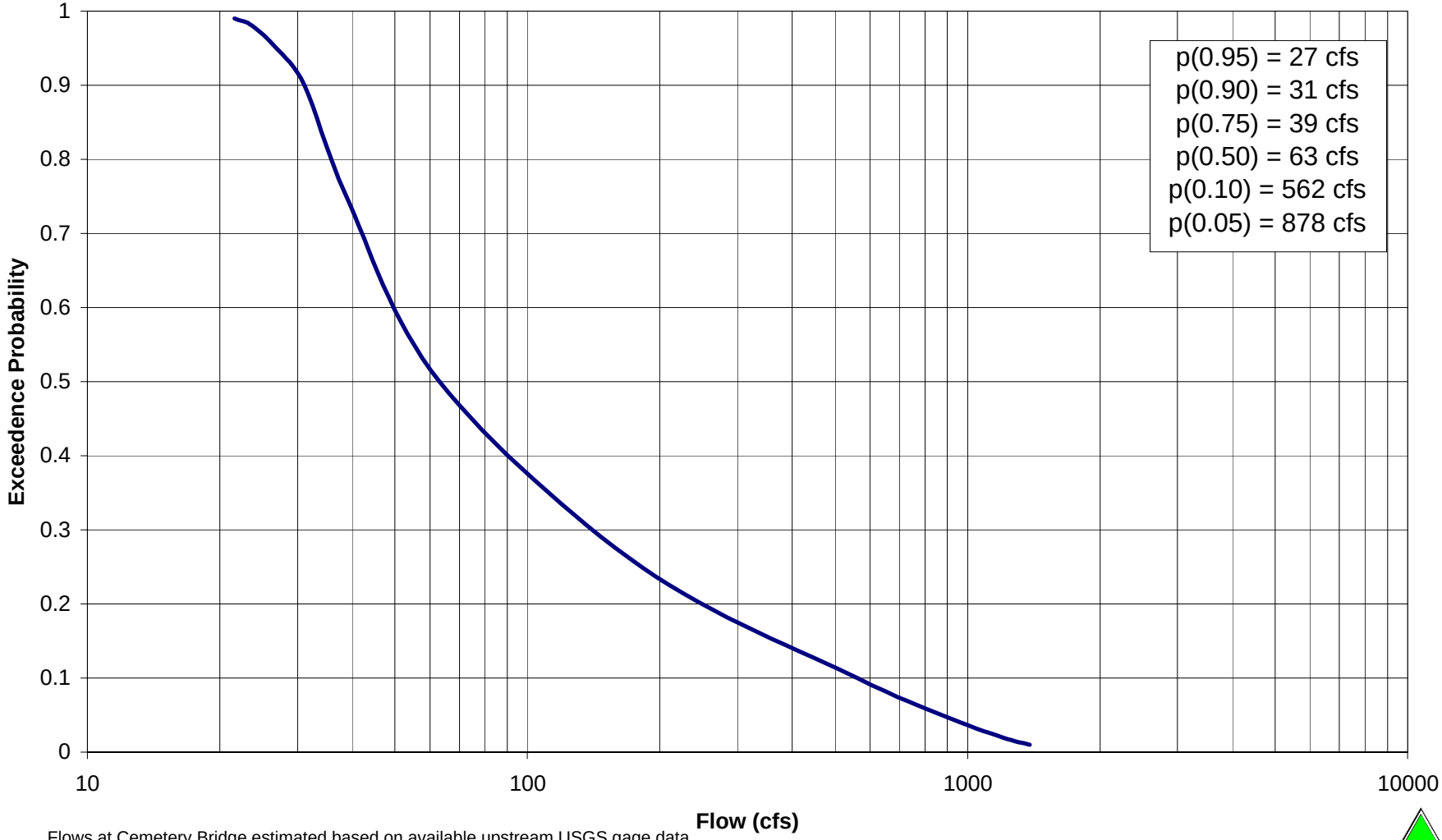
Estimated Daily Flow Values - Eagle River at Cemetery Bridge - Minturn, CO
Water Years 1990 - 2003



Flows at Cemetery Bridge estimated based on available upstream USGS gage data.

The information provided in this report is preliminary and is subject to change

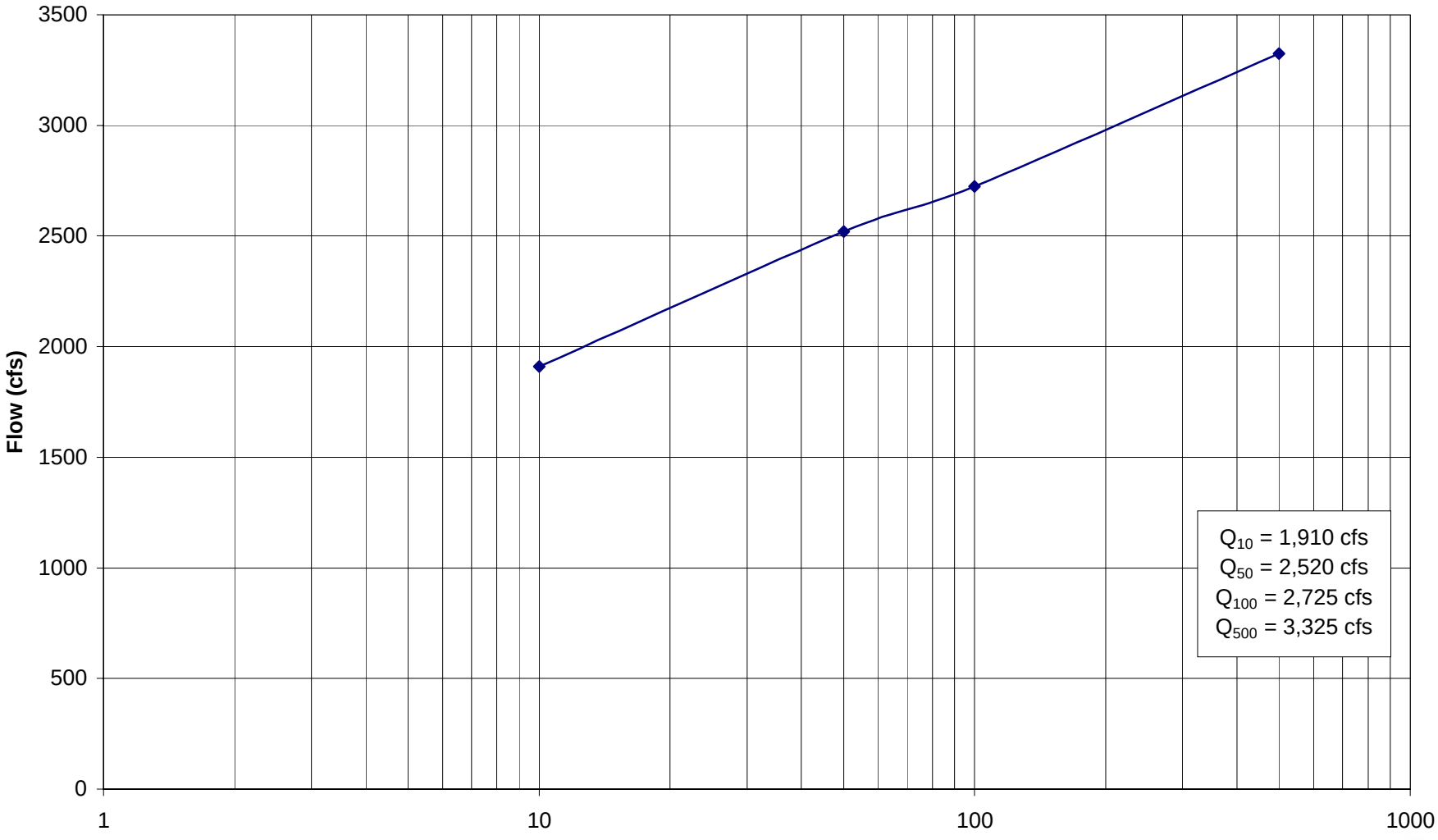
Statistical Summary of Daily Flows - Eagle River at Cemetery Bridge - Minturn, CO
Water Years 1990 - 2002



Flows at Cemetery Bridge estimated based on available upstream USGS gage data.

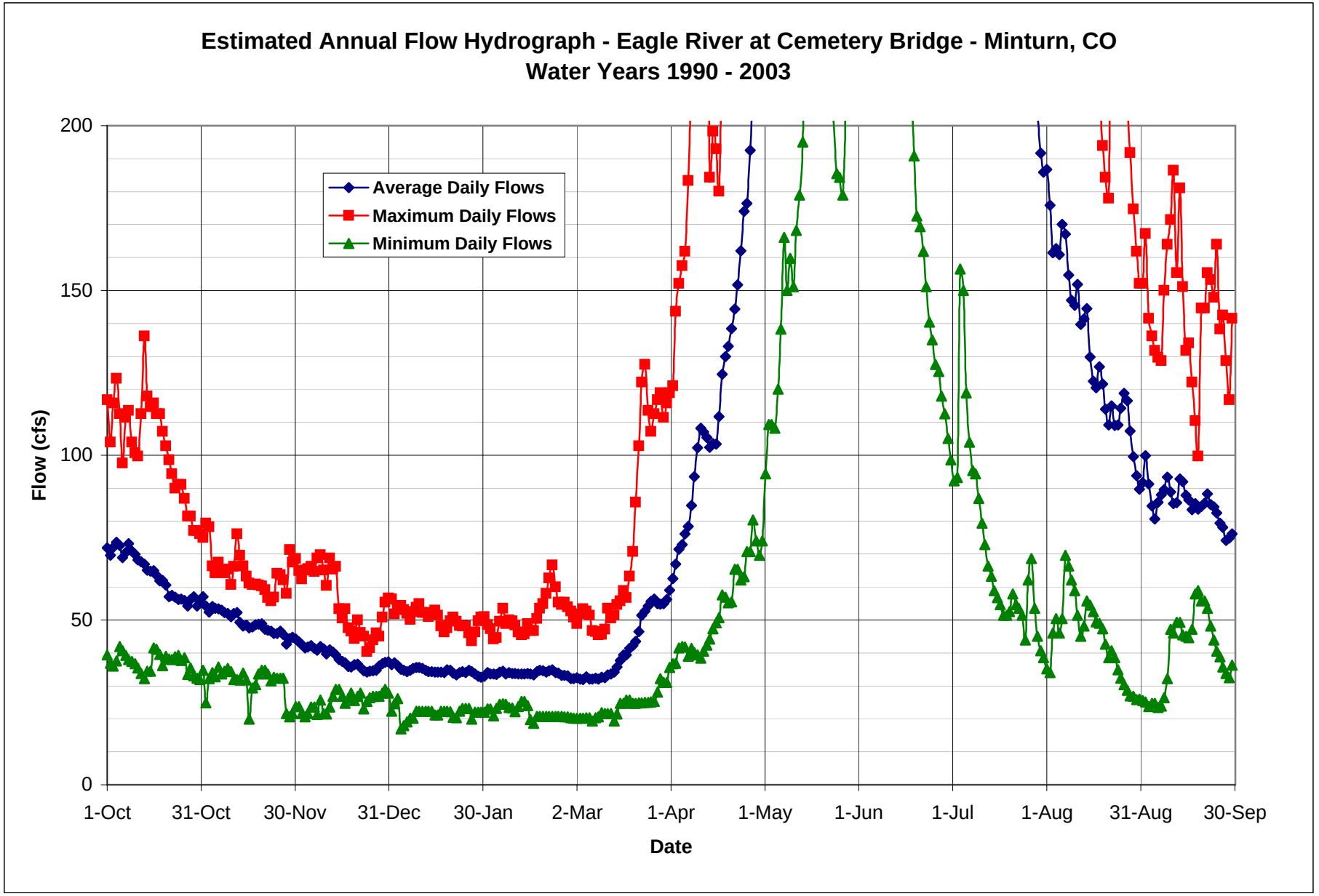
The information provided in this report is preliminary and is subject to change

Flood Flows - Eagle River at Cemetery Bridge - Minturn, CO

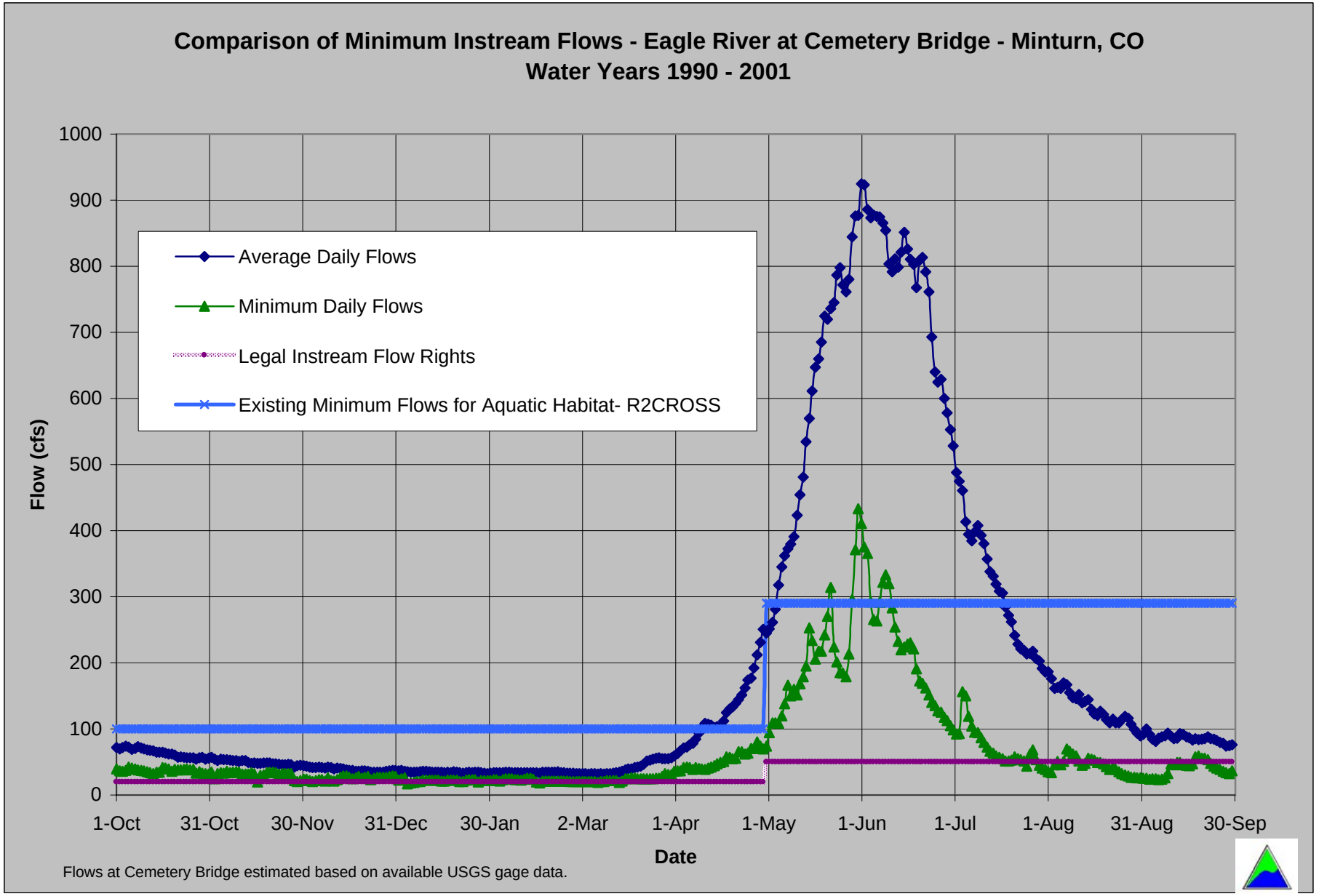


Reference: Town of Minturn, Colorado Flood Insurance Study, 1980.

The information provided in this report is preliminary and is subject to change

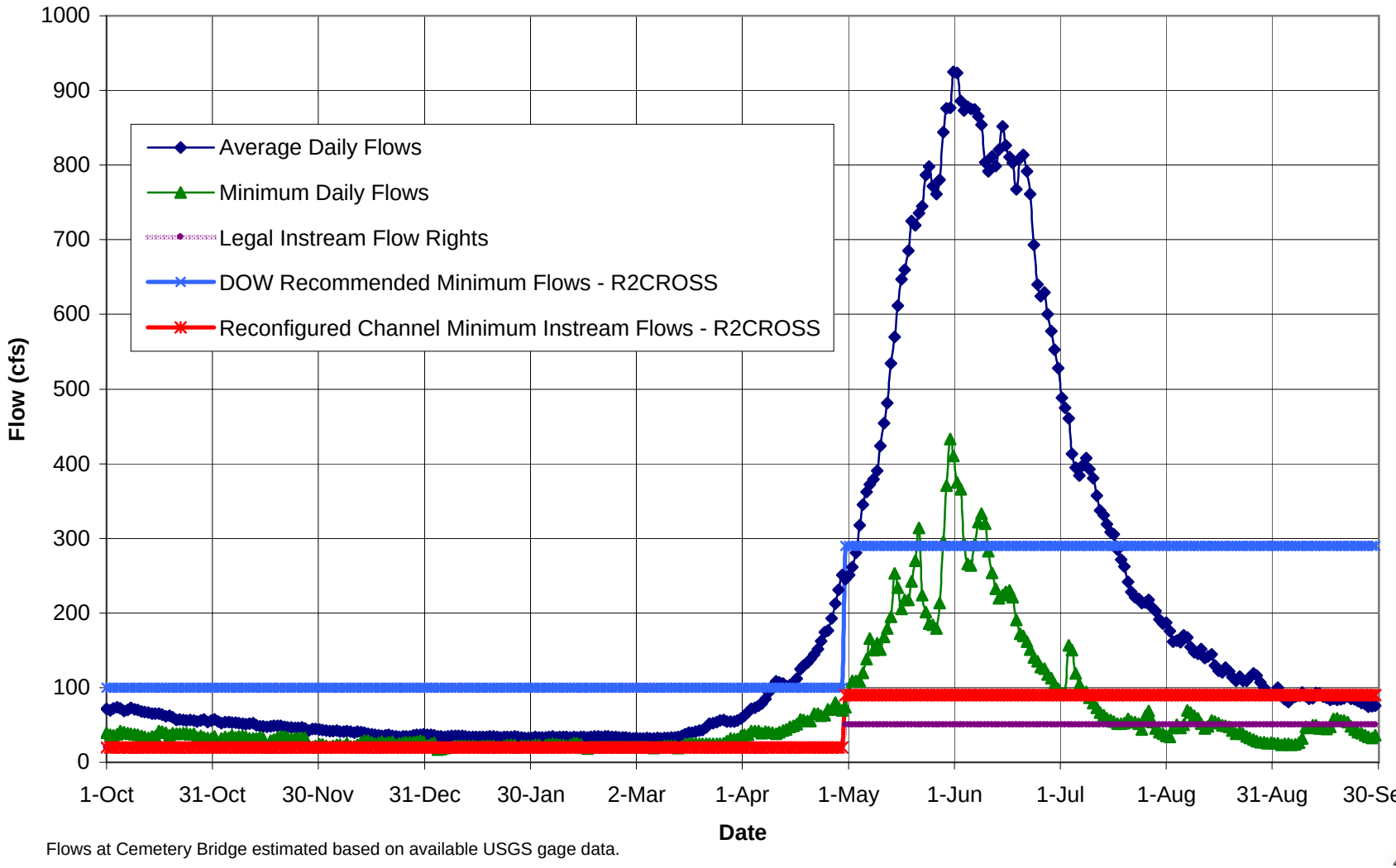


The information provided in this report is preliminary and is subject to change



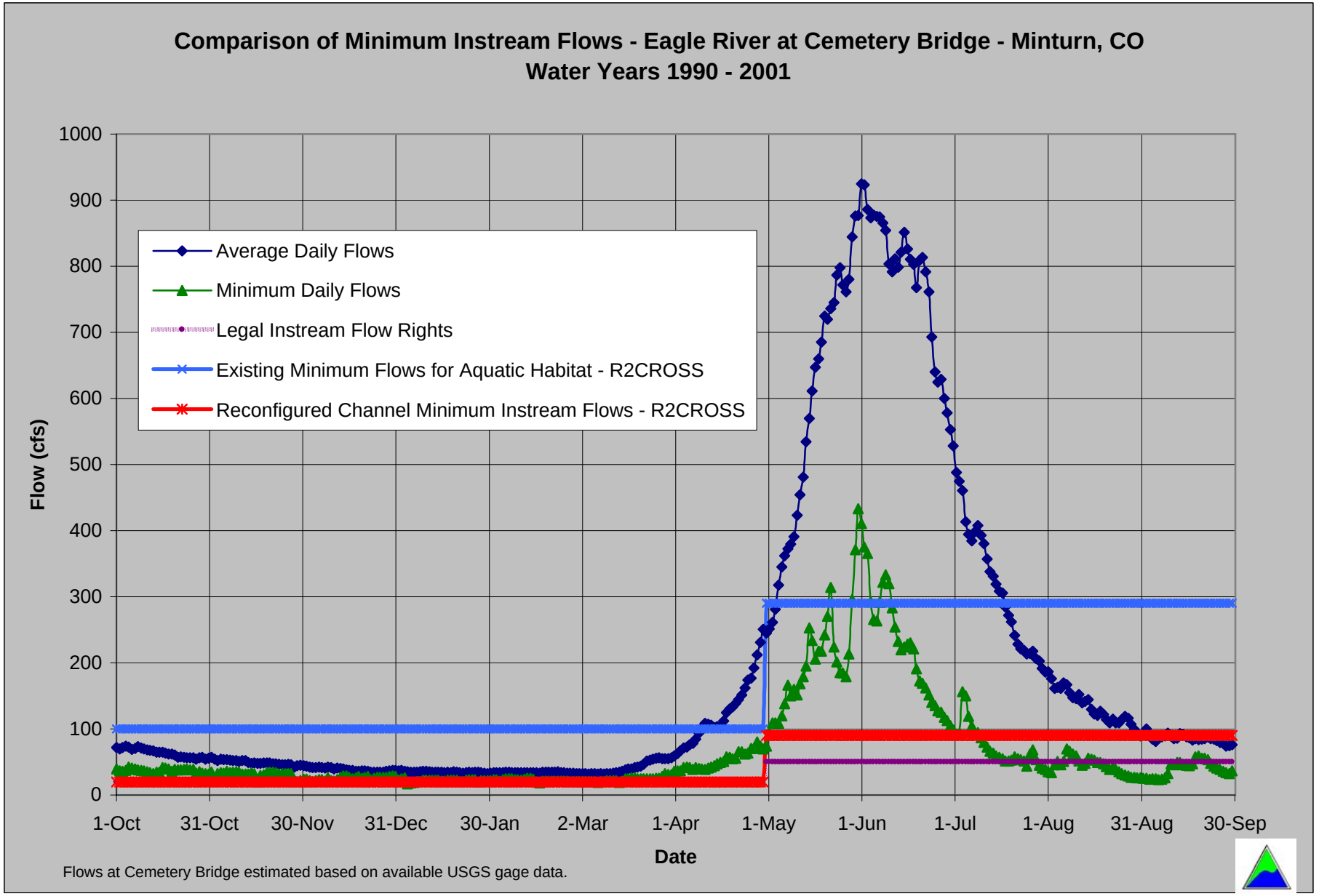
The information provided in this report is preliminary and is subject to change

Comparison of Minimum Instream Flows - Eagle River at Cemetery Bridge - Minturn, CO
Water Years 1990 - 2001



Flows at Cemetery Bridge estimated based on available USGS gage data.

The information provided in this report is preliminary and is subject to change



The information provided in this report is preliminary and is subject to change

Ecological Resource Consultants, Inc.
Streams~Wetlands~Water Resources
35715 US Hwy. 40, Suite D204 ~ Evergreen, CO 80439 ~ 303.679.4820

Memorandum

Date: March 4, 2005

To: Chris Thorne, Holland & Hart

cc: Ann Capela, Town of Minturn

From: Troy Thompson

Project: Eagle River - Minturn

Re: Requested Information for Instream Flow Request

Per the direction of the Town of Minturn, ERC has prepared the flow estimates and photos requested by Holland & Hart.

Flow Information
Cross sectional surveying used in our R2CROSS evaluation was completed by ERC on October 21, 2003 and October 7, 2004. Flow estimates through the Town of Minturn for October 21, 2003 and October 7, 2004 are 40 cfs and 82 cfs, respectively. These flow estimates are based on the combined recorded USGS gage readings from the Eagle River Near Minturn Gage (USGS No. 09064600) and from the Cross Creek Near Minturn Gage (USGS No. 09065100).

ERC is unaware of any diversions between the location of these gages and the Town.

Photos of the Riffles
The following pages contain photographs of the four different riffles that were surveyed and modeled as part of our R2CROSS evaluation. These photos were taken in October of 2003.

Eagle River Restoration Project
Photos of Restored Riffles Used for R2CROSS Evaluation

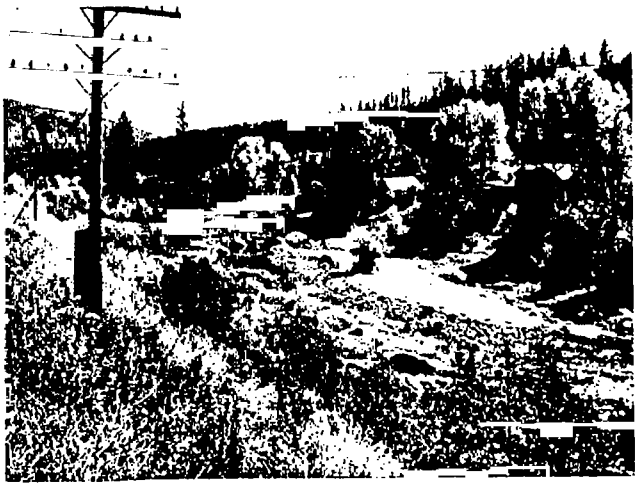
Riffle/Pool/Glide Sequence 5
(R2CROSS Section 4)

Facing Upstream Towards the Riffle from Below

From Upstream End of Riffle Looking D/S

Riffle/Pool/Glide Sequence 7
(R2CROSS Section 3)

Facing Upstream

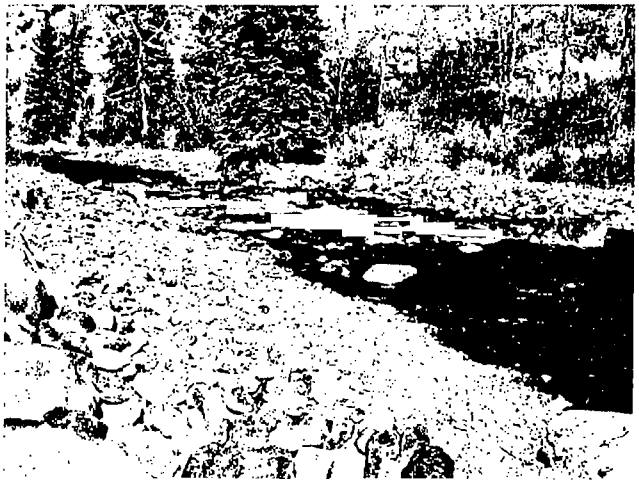


Facing Downstream

Riffle/Pool/Glide Sequence 9
(R2CROSS Section 2)

Facing Upstream Towards the Riffle

Facing Downstream from Terrace



Riffle/Pool/Glide Sequence 11
(R2CROSS Section 1)

Facing Upstream from 100 Below Riffle

Facing Downstream from the Right Bank

Riffle/Pool/Glide Sequence 11
(R2CROSS Section 1)

Facing Upstream from Cemetery Bridge

STATE OF COLORADO

Bill Owens, Governor
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE
AN EQUAL OPPORTUNITY EMPLOYER

Bruce McCloskey, Director
6060 Broadway
Denver, Colorado 80216
Telephone: (303) 297-1192

For Wildlife-
For People

DRAFT

February 15, 2006

Mr. Dan Merriman and Mr. Todd Doherty
Colorado Water Conservation Board
Stream and Lake Protection Section
1313 Sherman Street, Room 723
Denver, Colorado 80203

Re: Town of Minturn's Request for an Enlargement of the Eagle River Instream Flow.

Dear Dan and Todd,

The purpose of this letter is to officially transmit the Colorado Division of Wildlife's (CDOW) support for the Town of Minturn's request for an instream flow enlargement of the CWCB's Eagle River instream flow water right held in Case No. 5-78W3796. The reach of stream covered by this request for enlargement begins at the confluence of Cross Creek and extends downstream to the confluence with Gore Creek, a distance of approximately four miles; this water right is located in Eagle County.

General Background

Colorado's Instream Flow Program (Program) was created in 1973 when the Colorado State Legislature recognized "the need to correlate the activities of mankind with some reasonable preservation of the natural environment" (see §37-92-102 (3) C.R.S.). The statute vests the Colorado Water Conservation Board (CWCB) with the exclusive authority to appropriate and acquire instream flow and natural lake level water rights. In order to encourage other entities to participate in Colorado's Program, the statute directs the CWCB to request instream flow recommendations from other state and federal agencies. The Colorado Division of Wildlife (CDOW), in 1978, recommended this segment of the Eagle River to the CWCB for inclusion into the Program. The Town of Minturn is currently recommending this segment of the Eagle River for an "**instream flow enlargement**". The CWCB currently holds an instream flow water right for 50 cfs, May 1 through September 30, and 20 cfs, October 1 through April 30, Case No. 5-78W3796.

The Town of Minturn is forwarding this stream flow recommendation to the CWCB because this segment of the Eagle River, which includes the river as it runs through Minturn, has been the subject in recent years of extensive rehabilitation activities intended to restore the natural environment of the river.

Mintum believes protection of increased flow levels is now necessary to reasonably preserve the restored natural environment. The Town of Mintum has recommended a 98 cfs enlargement May 1 through July 31, a 20 cfs enlargement August 1 through November 30 and a 10 cfs enlargement December 1 through April 30, based on their data collection. The resulting instream flow would then be as follows:

148 cfs (May 1 – July 31);
70 cfs (August 1 – September 30);
40 cfs (October 1 – November 30); and
20 cfs (December 1 – April 30).

In addition to the Town of Mintum, the Eagle County Board of Commissioners, Northwest Colorado Council of Governments, Trout Unlimited and Colorado Trout Unlimited support the proposed instream flow enlargement. The Eagle County Board of Commissioners believes this enlarged instream flow "*...will ultimately benefit the citizens of Eagle County through the preservation and maintenance of a critical resource.*"

Biological Survey Data
The existence of a natural environment was established by the CWCB in Case Number 5-78W3796. The Eagle River is classified as a river (between 60 to 99 feet wide). Recent aquatic sampling surveys indicate the stream environment of the Eagle River supports self-sustaining populations of Brown trout (*Salmo trutta*), Rainbow trout (*Oncorhynchus mykiss*) and Brook trout (*Salvelinus fontinalis*).

The CDOW has actively monitored the fish and macroinvertebrates of the Eagle River on an annual basis, since 1990. Historically the Eagle River has been affected by toxic metal concentrations from runoff associated with the Eagle Mine Superfund Site. However, due to the continued efforts of the State, the local community and others, the natural environment of the Eagle River has improved significantly over the last 25 years. Since 1990, Brown trout populations have increased from less than 10 fish per acre to over 300 fish per acre at some sample locations (see attached Biological Monitoring Report for the Eagle Mine Superfund Site).

Field Survey Data
Ecological Resource Consultants, Inc. (ERC) used the R2CROSS methodology, and the hydraulic computer model "FlowMaster", to quantify the amount of water required to preserve the natural environment to a reasonable degree. The R2CROSS method requires stream discharge and channel profile data be collected in a riffle stream habitat type. Riffles are most easily visualized, as the stream habitat types that would dry up first should streamflow cease. ERC submitted four different riffle cross-sections and their associated staging tables for review. Surveyed cross-sectional data were entered into the FlowMaster computer program. FlowMaster uses Manning's Equation to calculate the hydraulic parameters average depth (X*d*), average velocity (X*v*) and percent wetted perimeter (%*WP*) for a given flow rate (see attached ERC Report).

Biological Flow Recommendation
The CWCB staff relied upon the biological expertise of the CDOW to interpret the output from the R2CROSS/Flow-Master data collected to develop the initial, biologic instream flow recommendation. This initial recommendation is designed to address the unique biologic requirements of each stream without regard to water availability. Nehring (1979) identified X*d*, X*v* and %*WP* as important indices of coldwater fish habitat. The X*d* and %*WP* criteria are functions of stream top width and grassline-to-grassline wetted perimeter, respectively. DOW has determined that these three parameters are good indices of flow related stream habitat quality and that maintaining these parameters at adequate levels across riffle habitat types will also maintain adequate habitat for most life stages of

The information provided in this report is preliminary and is subject to change

coldwater fish species and aquatic invertebrates. These three critical hydraulic parameters are predicted within an R2CROSS staging table at various levels of discharge (Espegren 1996).

The CDOW has reviewed the data submitted by the Town of Mintum and their consultant ERC regarding their flow recommendation for the Eagle River segment located between the confluences of Cross Creek and Gore Creek. ERC used the three instream flow hydraulic parameters, average depth, percent wetted perimeter, and average velocity to develop their biologic instream flow recommendations. The CDOW has determined that maintaining these three hydraulic parameters at adequate levels across riffle habitat types, aquatic habitat in pools and runs will also be maintained for most life stages of fish and aquatic invertebrates (Nehring 1979; Espegren 1996).

For this segment of stream, 5 data sets were collected, including the original data set collected by the CDOW, with the results shown in Table 1 below. Table 1 shows who collected the data (Party), the date the data was collected, the measured discharge at the time of the survey (Q), the accuracy range of the predicted flows based on Manning's Equation (240% and 40% of Q), the summer flow recommendation based on meeting 3 of 3 hydraulic criteria and the winter flow recommendation based upon 2 of 3 hydraulic criteria.

Table 1: Data

Party	Date	Q	250%-40%	Summer (3/3)	Winter (2/3)
DOW	07/27/1977	195	490 – 78	170	57[1]
ERC	X1		Flow-Master	96	51
ERC	X2		Flow-Master	124	62
ERC	X3		Flow-Master	225	49
ERC	X4		Flow-Master	403[2]	100[2]

ERC = Ecological Resource Consultants DOW = Division of Wildlife
(1) Predicted flow outside of the accuracy range of Manning's Equation. (2) = Values were not included in calculations.

The summer flow recommendations, which met 3 of 3 criteria range from 225 cfs to 96 cfs (See Table 1). The winter flow recommendations, which met 2 of 3 criteria range from 62 cfs to 49 cfs (See Table 1). Averaging the 3 summer flow recommendations collected and used by ERC, results in a 148 cfs recommendation. Averaging the 3 winter flow recommendations collected and used by ERC, results in a 54 cfs recommendation. ERC's data compares favorable with the DOW's original data collection effort in 1977, DOW's data shows a summer flow recommendation of 170 cfs (3 of 3 criteria) and a winter flow recommendation of 57 cfs (2 of 3 criteria).

Historic Data Review

After reviewing the historic data used as the basis for the Eagle River instream flow appropriations, from Homestake Creek to the confluence with the Colorado River, it appears the existing decreed instream flow water rights were based on meeting 2 of 3 hydraulic criteria, in all cases. It is also apparent that the single original year-round flow recommendations were then adjusted downward, assumedly based on some type of water availability analysis or negotiation process. CWCB staff is currently looking into their files for the reason for this downward adjustment.

As stated above, Colorado's Instream Flow Program was created in 1973 when the Colorado State Legislature recognized "...the need to correlate the activities of mankind with some reasonable preservation of the natural environment" (see §37-92-102 (3) C.R.S.). Since that time, the Program along with the science of determining instream flows has continued to evolve. For the Program to be successful, instream flow water rights must be able to balance the ever-changing needs and values of the

public while honoring existing uses. The greatest asset of the Program, to date, has been its ability to evolve and meet those challenges.

In the early years of the Program, the CDOW's instream flow recommendations consisted of only single year-round flow amounts. These single year-round flow amounts were based on meeting only two of the three critical hydraulic criteria identified by Nehring. For the first third of the Program, these initial flow recommendations were not adjusted due to water availability concerns. It was not until the passage of Senate Bill 414 (SB 414) in 1981, that future instream flow appropriations would require an evaluation of the existing physical water supply. It should be noted that all of the Eagle River instream flow water right applications were filed prior to the passage of SB 414 and are some of the oldest decreed instream flow water rights.

In the mid 1980's, to incorporate these new changes to the Program and address other concerns being raised regarding the R2CROSS Model (mainly the tendency of the R2CROSS model to overestimate the Xv criteria), CDOW Biologists modified the original instream flow methodology of recommending single year-round flows and began developing "***seasonal flow recommendations***" which would incorporate all 3 of the identified critical criteria into the flow recommendations.

These seasonal flow recommendations are an attempt to mimic the natural flow regime, granted, on a simplistic and much smaller scale. The CDOW currently believes spring/summer flows require flow recommendations which meet all three of the critical hydraulic criteria and fall/winter flows require flow recommendations which meet two of the three critical hydraulic criteria, whenever possible. CDOW believes the development of these seasonal flow recommendations helps address the full range of hydrologic and hydraulic conditions required to maintain important stream characteristics and its associated aquatic community. Research has shown that single year-round minimum flows, when maintained as a long-term condition, cannot be expected to sustain the same fish populations or aquatic life as a natural flow regime, where low flow conditions occur infrequently and for shorter periods (Stalnaker and Wick 2000). Higher spring and summer flows provide the water and resultant habitat required to maintain the adjacent Riparian Zone, the geomorphology of the stream channel and additional habitat and protection for different life stages of the aquatic community. In addition, protection from increasing recreational uses such as rafting, kayaking, boating, tubing, swimming and fishing is gained during these flow periods. Higher spring and summer flows also provide water quality protection from other outside factors such as effluent discharges, high metal concentrations, excess sedimentation and water temperature increases.

ISF Recommendation

Based on the information and data provided above, the CDOW believes flows which meet 3 of the 3 identified critical hydraulic criteria are necessary to preserve the natural environment during the high flow spring/summer period. The CDOW therefore, supports the proposed recommendation for a 98 cfs enlargement, May 1 through July 31, a 20 cfs enlargement, August 1 through November 30 and a 10 cfs enlargement, December 1 through April 30. The resulting enlarged instream flow would then be as follows:

148 cfs (May 1 – July 31);
70 cfs (August 1 – September 30);
40 cfs (October 1 – November 30); and
20 cfs (December 1 – April 30).

It should be noted that these flows have historically occurred within this reach of the Eagle River, even though they were not protected with the existing instream flow water right.

The CDOW is forwarding this stream flow recommendation to the CWCB to meet the State of Colorado's policy "... that the wildlife and their environment are to be protected, preserved, enhanced, and managed for the use, benefit, and enjoyment of the people of this state and its visitors ... and that, to carry out such program and policy, there shall be a continuous operation of planning, acquisition, and development of wildlife habitats and facilities for wildlife-related opportunities" C.R.S. §33-1-101 (1). The CDOW Strategic Plan states "Healthy aquatic environments are essential to maintain healthy and viable fisheries, and critical for self-sustaining populations. The Division desires to protect and enhance the quality and quantity of aquatic habitats."

Please find attached, copies of the Eagle River fishery information. If you have any questions regarding the above letter, please feel free to contact me at (303)-291-7267.

Sincerely,

DRAFT

Mark Uppendahl
Colorado Division of Wildlife
Instream Flow Program Coordinator

Cc: Jay Skinner, CDOW Water Unit Program Manager – w/o attachments
Sherman Hebein, CDOW Senior Fish Biologist – West Regions – w/o attachments
Bill Atkinson, CDOW Aquatic Biologist – w/o attachments
Pat Tucker, CDOW AWM Area 8 – w/o attachments

OFFICE OF THE
BOARD OF COMMISSIONERS
(970) 328-8605
FAX: (970) 328-8629
TDD (970) 328-8797
Email: eagleadmin@eaglecounty.us
www.eaglecounty.us

EAGLE COUNTY

TOM C. STONE
MICHAEL L. GALLAGHER
ARN M. MENCONI

January 5, 2005

Mayor Hawkeye Flaherty
Town of Minturn
Post Office Box 309
Minturn, CO 81645

Re: Eagle County Support of Minturn Request for Increase in CWDB
In-stream Flow Right on Eagle River

Dear Mayor Flaherty:

The Eagle County Board of County Commissioners understands that the Town of Minturn has requested that the Colorado Water Conservation Board increase its in-stream flow water right for a portion of the Eagle River and has reviewed the Town's detailed correspondence to CWCB in support of that request. The Eagle County Board of County Commissioners strongly supports the Town of Minturn in that request and encourages the effort to increase in-stream flow for the segment of the Eagle River between the confluences of the Eagle River with Cross and Gore Creeks.

The Commissioners recognize the positive and significant work undertaken by the Town of Minturn to restore the channel of the Eagle River as it passes through Minturn. The request to increase the in-stream flow is viewed by Eagle County as one that will help to maintain the restoration and will preserve and enhance the aquatic and riparian environment that Minturn has worked to achieve. The Eagle County Board of County Commissioners views the request to increase the in-stream flow as one that will ultimately benefit the citizens of Eagle County through preservation and maintenance of a critical resource.

Sincerely,
EAGLE COUNTY BOARD OF COUNTY COMMISSIONERS

Tom C. Stone
Chairman

BOCC:dhm

co: Board of County Commissioners
David Hallford
Diane Mauriello
Jack Ingstad

Northwest Colorado Council of Governments

WATER QUALITY / QUANTITY COMMITTEE (QQ)

Post Office Box 2308 • Silverthorne, Colorado 80498
970-468-0295 • Fax 970-468-1208 • email: qqwater@Colorado.net

October 5, 2005

VIA FACSIMILE & U.S. MAIL
Colorado Water Conservation Board
c/o Mr. Todd Doherty
1313 Sherman Street
Room 821
Denver, CO 80203

Re: Northwest Colorado Council of Governments' Support of Minturn's Request for Increased In-Stream Flow Rights on Eagle River

Dear Mr. Doherty:

On behalf of the Northwest Colorado Council of Governments ("NWCCOG"), I am writing with regard to the Town of Minturn's request that the CWCB appropriate increased in-stream flow water rights on the segment of the Eagle River between Cross and Gore Creeks. NWCCOG strongly supports Minturn's request and encourages the CWCB to move forward with the process for appropriating in 2006 the flows identified in Minturn's engineering report.

NWCCOG supports both the CWCB in-stream flow program and Minturn's efforts to provide protection to preserve the Eagle River natural environment to a reasonable degree. NWCCOG is also involved in complimentary initiatives to establish Clean Water Act water quality standards protective of this reach of the Eagle River.

Please do not hesitate to contact me with any questions you have concerning this letter.

Sincerely,

Lane Wyatt

cc: Christopher L. Thorne
NWCCOG QQ Committee

October 13, 2005

Mr. Todd Dougherty
Stream & Lake Protection Division
Colorado Water Conservation Board
1313 Sherman St., 7th Floor
Denver, CO 80203

RE: Minturn's Request for Instream Flow Appopriation on Eagle River, Div. 5

Dear Todd,

Trout Unlimited & Colorado Trout Unlimited (TU) write to support the Town of Minturn's request that the Colorado Water Conservation Board (CWCB) file an application in 2006 for an increased instream flow water right in the Eagle River between Cross and Gore Creeks.

As you know, TU is a long-time advocate for a strong state instream flow program. In fact, we believe that TU may still be the only non-agency to have brought data and a proposal to the CWCB that resulted in a successful application for an instream flow water right (for the South Fork of the South Platte). We are excited to be able to support this new proposal from Minturn.

Now that the parties have completed their CERCLA restoration on the Eagle River, and spent additional natural resource damage award moneys for channel restoration, the Eagle River is a perfect candidate for a CWCB re-evaluation. The CWCB's original instream flow application occurred in 1978, at a time when the river was still under the toxic influence of the up-stream abandoned mine. The River is now a different place. It provides significant value to the local community, and the CWCB can help assure that the town can continue to rely on the river in the future.

We urge you to bring Minturn's request forward to the CWCB with the full support of the staff. Thank you in advance for your consideration.

Sincerely,

Melinda Kassen, Director
Colorado Water Project
Trout Unlimited

David Nickum, Executive Director
Colorado Trout Unlimited

cc: Anne Castle

Porzak Browning & Bushong LLP

Attorneys • at • Law

929 Pearl Street, Suite 300 • Boulder, CO 80302
303 443-6800 • Fax 303 443-6864

Glenn E. Porzak
Michael F. Browning
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Of Counsel

Vail Office:
846 Forest Road
Vail, CO 81657
970-477-5419 Tel.
970-477-5429 Fax.

November 3, 2005

Colorado Water Conservation Board
1313 Sherman, Room 723
Denver, CO 80203

Dear Board Members:

Reference is made to the proposal to enlarge the existing instream flow for the Eagle River decreed in Division No. 5 Case No. 78CW3796. As you are well aware, the CWCB only has statutory authority to appropriate the minimum amount to preserve the natural environment to a reasonable degree. The decree in Case No. 78CW3796 is res adjudicata that the original amounts decreed in that case are the minimum amounts to protect the natural environment to a reasonable degree. Accordingly, any additional amounts beyond those decreed minimums would exceed the CWCB's statutory authority.

The foregoing is confirmed by the deposition testimony of Linda Bassi in a recent Division 5 case in which this very issue was raised regarding the instream flow reach at issue and decreed in Case No. 78CW3796 (the segment of the Eagle River from the confluence with Cross Creek to the confluence with Gore Creek). As evidenced by the enclosed transcript, Ms. Bassi admitted (i) the CWCB has no authority to appropriate more than the minimum amounts; (2) the existing decreed amounts are the minimum amounts; and (3) any greater flow would be more than the minimum amounts.

In view of the foregoing, request is hereby made that the CWCB not pursue any further instream flow on the Eagle River between Cross and Gore Creeks. Should such an enlargement be pursued, my clients will have no alternative but to litigate this legal authority issue. Moreover, any new filing will by necessity constitute a re-opening of the existing decree. Accordingly, any re-opening of the existing decree will need to consider the following issues and conditions:

1. The Eagle River is over appropriated and there is no water available for appropriation.

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2. The new instream flow should be for an appropriate stream reach and reflect the gaining nature of the river. In other words, if an R-2 cross section at the mouth or bottom section of that river is the basis for the instream flow filing, the amount claimed at the location of the R-2 cross section must be proportionately reduced in the upper segment of the stream reach to account for inflow. There is simply no scientific or other basis to claim a fixed amount for an entire stream reach based on measurements taken at the bottom end of a gaining stream.

3. The CWCB must prove that the amount claimed is the minimum amount to protect the natural environment to a reasonable degree. In this regard, the claim must be for no longer than bi-monthly increments to reflect the natural hydrograph, and must provide for daily reductions to reflect diurnal fluxations of the stream. The CWCB must also prove what is reasonable in terms of protecting that natural environment. The issue of reasonableness must take into account the development occurring in the Eagle River basin.

4. The instream flow must account for and be reduced by natural evaporation and transit losses. In other words, if the instream flow at the top end of a stream reach is 20 cfs, the flow at the bottom end would be reduced by the transit loss.

5. The instream flow filing must specify that it will be the CWCB's sole obligation to install measuring devices to enforce an instream flow call and the cost of such devices cannot be shifted to any third party.

6. Any instream flow filing may only be enforced at the point on a stream reach where the CWCB has installed a measuring device at its sole cost and expense, and no more than one measuring device shall be permitted per instream flow reach. This term is necessary to ensure that flow reach is the appropriate stream length.

7. The CWCB should be mindful that it has been asserting in RICD cases that if a call will not produce the full decreed amount, then the call should not be honored. If true for a RICD, it is especially true for an instream flow.

Finally, it should be noted that the basis of the requested enlargement is improvement to the river. The improvement deepened and narrowed the river in a portion of this segment. That improvement decreased the amount of water required to support a cold water fishery.

My clients reserve the right to supplement their objections as the CWCB provides further information regarding this instream flow request. They also intend to assert their right to a full adjudicatory hearing in this matter.

Sincerely,

PORZAK BROWNING & BUSHONG LLP

Glenn E. Porzak
Attorneys for Eagle Park Reservoir Company,
Eagle River Water & Sanitation District,
Upper Eagle Regional Water Authority, and
Vail Associates, Inc.

cc: Board of Directors,
Eagle Park Reservoir Company
Eagle River Water & Sanitation District
Upper Eagle Regional Water Authority
Paul Testwuide, Vail Associates, Inc.
Dennis Gelvin, Manager of Eagle River Water & Sanitation District and
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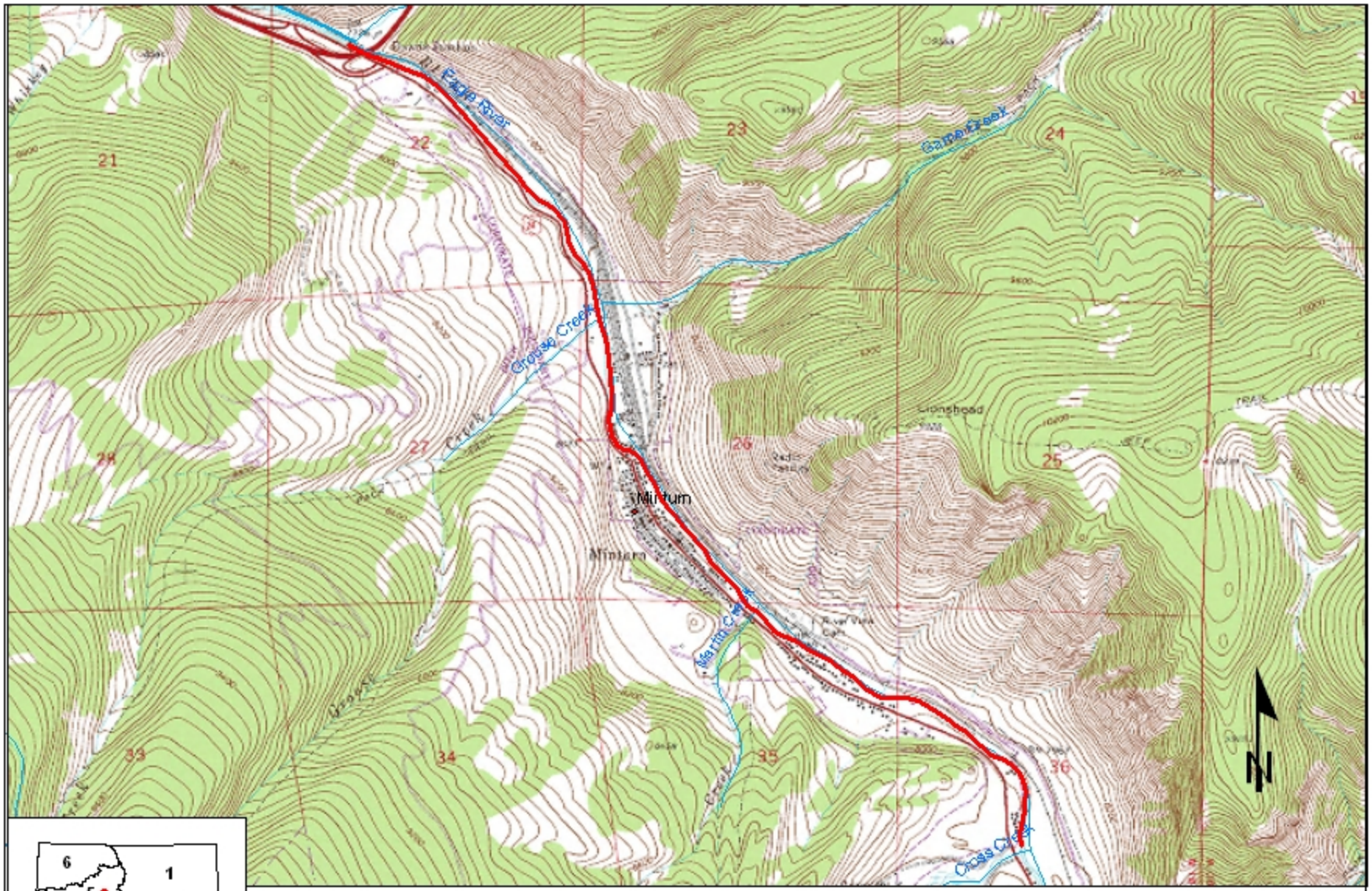
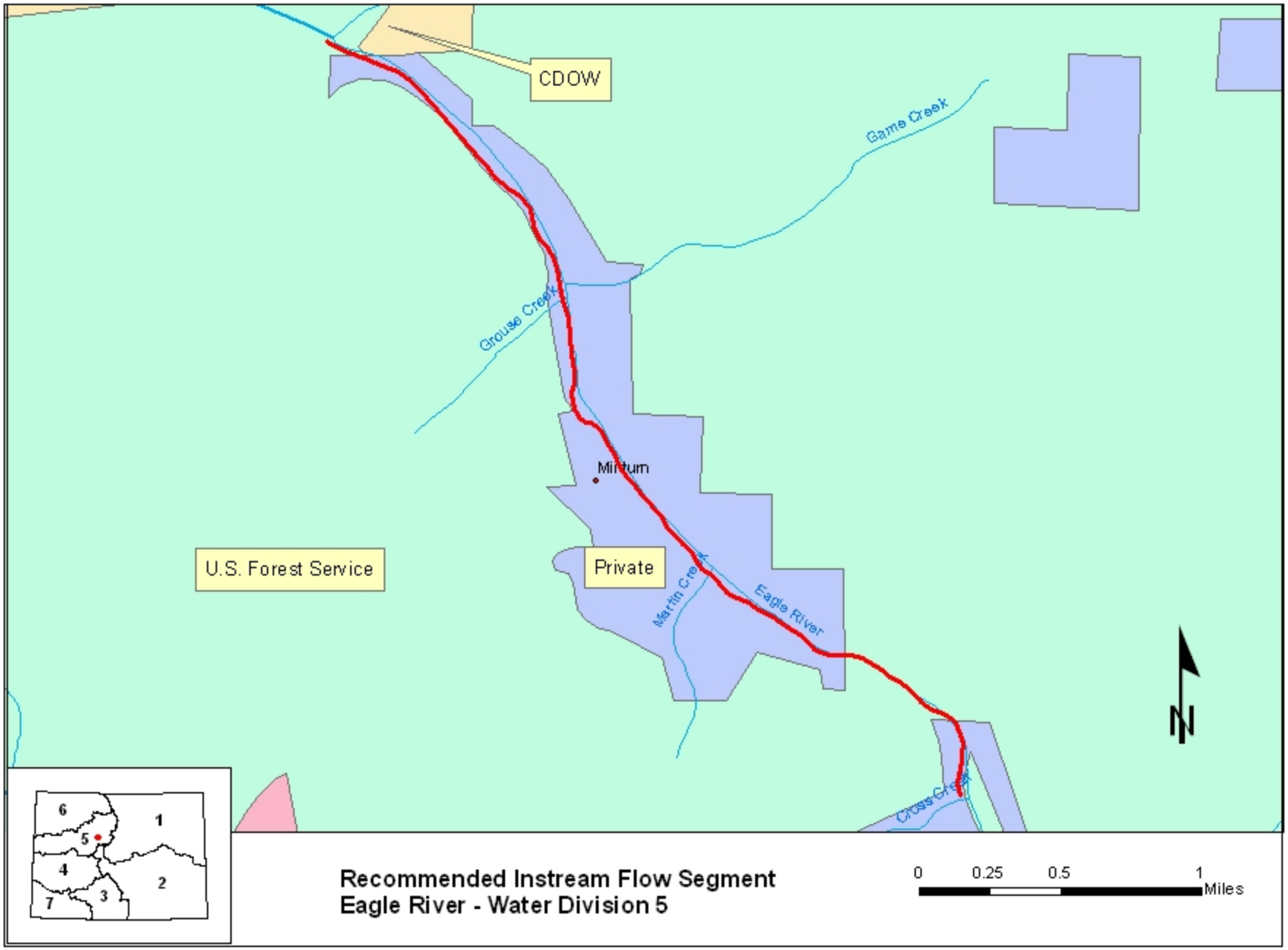
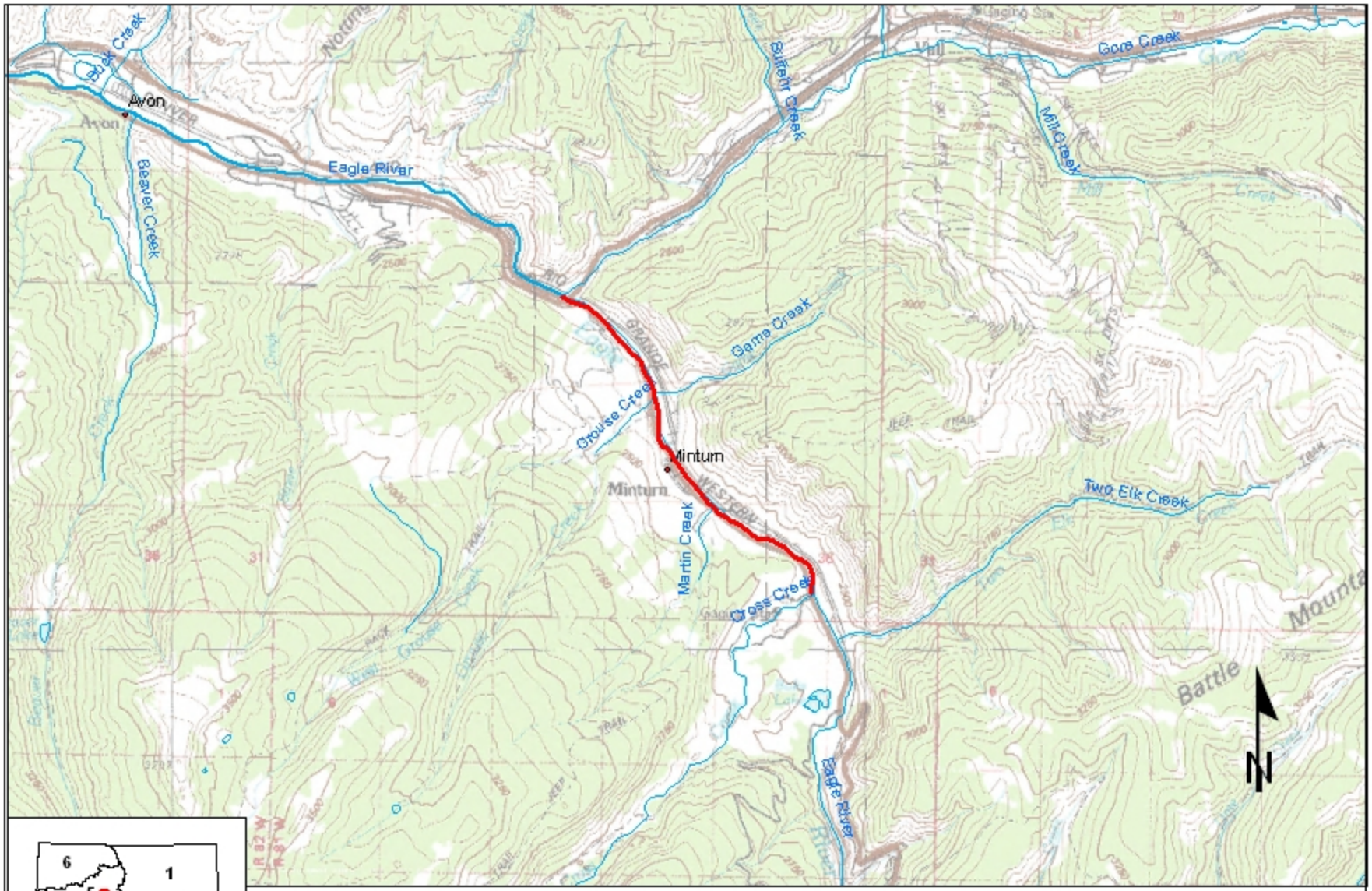


Recommended Instream Flow Segment
Eagle River - Water Division 5

0 0.25 0.5 1 Miles



Recommended Instream Flow Segment
Eagle River - Water Division 5



Recommended Instream Flow Segment
Eagle River - Water Division 5

0 0.5 1 2 Miles