Montana Fish, Wildlife & Parks

December 2003

Environmental Quality Council
Legislative Services Division
P.O. Box 201704
Helena, MT 59620-1704

Dear EQC Members and Staff:

Enclosed is the fourteenth annual FWP water leasing report, as required under 85-2-436(3)(a), MCA. It includes responses to the specific statutory reporting requirements, as well as background information on the leasing program, highlights of the 2003 leasing year, and goals for 2004.

We hope you find this submittal to not only fulfill the substantive statutory reporting requirements, but to be interesting and informative regarding how water leasing at FWP is progressing. As always, we appreciate your interest in and support of the program.

We also wish to mention that flow leasing with FWP is only one tool available to Montanans to help maintain and enhance streamflows. Our staff continue to pursue and assist others in drought planning, water permit review, temporary conversions to instream flow, enhancing available flow information, inter-basin communication, water purchases, understanding of flow implications for fish, and other means to achieve fish habitat objectives related to streamflows and lake levels.

I would be pleased to address any questions or suggestions you may have regarding the information in this report, or the leasing program in general. Feel free to contact me at 406-994-6824 at any time.

Sincerely,

Kathleen Williams
Water Resources Program Manager

encl.

cc: FWP Commission
DNRC (J. Stults)

Water Program, Fisheries Division, 1400 South 19th, Bozeman, MT 59718 – phone: 406-994-6824

2003 FWP ANNUAL PROGRESS REPORT
- WATER LEASING STUDY -

Submitted to:

Montana Environmental Quality Council
Montana Department of Natural Resources and Conservation
and
Montana Fish, Wildlife & Parks Commission

Submitted by:

Montana Fish, Wildlife and Parks
Fisheries Division

December 2003

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I. INTRODUCTION

According to 85-2-436(3)(a), MCA, the Department of Fish, Wildlife, and Parks must complete and submit to the Department of Natural Resources and Conservation (DNRC), the Fish and Wildlife Commission (Commission), and the Environmental Quality Council (EQC) an annual water leasing study progress report. The report must include specific information for each lease including:

- **(i) the length of the stream reach and how it is determined;**
- **(ii) technical methods and data used to determine critical streamflow or volume needed to preserve fisheries;**
- **(iii) legal standards and technical data used to determine and substantiate the amount of water available for instream flows through leasing of existing rights;**
- **(iv) contractual parameters, conditions, and other steps taken to ensure that each lease in no way harms other appropriators, particularly if the stream is one that experiences natural dewatering; and**
- **(v) methods and technical means used to monitor use of water under each lease.** (85-2-436(1)(a), MCA)

One new FWP lease agreement was signed in 2003 - on Cedar Creek in the upper Yellowstone River basin. The DNRC Change Authorization for this is expected in January 2004. An agreement for two additional leases (both on Trail Creek in the Clearwater basin) is close to being finalized.

The progress report must also contain a summary of stream reaches designated by DNRC for study (pursuant to 85-2-437), and a summary of leasing activity on all designated streams. If no new leases have been obtained in the reporting year, FWP must "provide compelling justification for that fact" in the report. The remainder of this report has been divided into six sections and associated appendices, described as follows:

Section II -- background on the creation of the leasing program;
Section III – our review of the 2003 leasing year, including new lease agreements, and general issues and opportunities noticed or arising in 2003.
Section IV – additional detail on the 2003 leasing activity, including the statutorily-required reporting elements for each;
Section V – the statutorily-required reporting on the streams designated, so far, for study and potential leasing under FWP's leasing program; and
Section VI – a selection of program goals for 2004.

Appendix A lists our leasing objectives, which is what we currently use to evaluate leasing offers, as well as actively seek additional lease opportunities.
Appendix B provides a sample FWP lease evaluation, showing what information FWP needs and uses to evaluate lease offers under the criteria provided in Appendix A.
Appendix C is a copy of a media story on FWP's instream flow lease on Locke Creek (finalized in 2002).
Appendix D contains copies of FWP's 2003 input to NRCS as we were discussing with them the incorporation of an instream flow leasing element to their 2003 EQIP (Farm Bill program) implementation.
Appendix E provides monitoring information for FWP's existing leases/conversions.

II. WATER RIGHTS AND THE FWP WATER LEASING PROGRAM

Traditional water law in Montana focuses on the rights and procedures associated with removing water from streams and lakes (appropriating) and putting that water to a beneficial use (e.g., irrigation, fish and wildlife, domestic, mining, etc.) away from the source. Persons who appropriate water from a stream must have a right or permit to do so. A right or permit specifies how much water can be diverted, for what purpose, during what time period, at what point on the stream, the location of the use of the water, and has a "priority date" assigned to it. The priority date determines who gets the water first; if there isn't enough to go around, the earliest date has the first claim (hence, the "first in time, first in right" maxim).

Except in basins that are closed to new appropriation, Montana's water law allows the Department of Natural Resources and Conservation (DNRC) to issue new permits to divert water if the applicant can show (among other things) that water is reasonably available for the use proposed and that there is a means to ensure persons with senior rights can get the water to which they are entitled. Montana's Water Use Act encourages "*the water resources of the state ... be protected and conserved to assure adequate supplies for public recreational purposes and for the conservation of wildlife and aquatic life*" (85-1-1-1(5), MCA). It also seeks to "*provide for the wise utilization, development, and conservation of the waters of the state for the maximum benefit of its people with the least possible degradation of the natural aquatic ecosystems*" 85-2-101(3), MCA. However, the Act also requires the DNRC to issue water use permits if certain criteria are met. There is no flow level where new appropriations are no longer granted, nor does it specifically matter the extent to which there are other rights on the stream. If water can reasonably be expected to be available (even 1 in 10 years or less), a permit can be issued. The historic system, then, encourages maximum diversion and use of water from Montana's streams.

In the 1970s and 1980s, tools began to be developed to address public goals for retaining some water in certain streams to benefit the fishery. FWP was authorized to apply for instream "reservations" to support fishery values, and some instream flow rights were granted on streams then designated as blue-ribbon trout streams. FWP pursued the authority to reserve water, and was granted a series of reservations in the Yellowstone basin (1978 priority date), the Missouri River basin above and below Ft. Peck (1985 priority date), and the Little Missouri basin (1989 priority date). Although the reservations are a valuable management tool, they do not provide much assistance in drought conditions, due to their very junior priority status.

In 1988, areas of Montana suffered severe drought conditions, under which the level of diversion typically done in a normal year exacted severe tolls on several fisheries. Photos of fish kills due to stream dewatering hit the front pages of many Montana newspapers. These conditions spurred the 1989 Legislature to consider additional tools and incentives for water users to protect fishery values. The idea of allowing FWP on a temporary basis, to investigate the potential to lease formerly diverted water from a willing seller, to dedicate to instream flows under certain conditions, created a public policy controversy seldom seen in the halls of the Capitol. The concept was narrowly enacted, and since then FWP has pursued attractive leasing opportunities

with willing lessors, in streams where dewatering issues significantly limit priority fisheries. These leases have rewatered streams that traditionally had gone dry due to depletions, with most of these streams now making major contributions to area fisheries.

FWP's temporary instream flow leasing statutes, having been tweaked and extended over the years, were set to expire in 1989. The statutes required the preparation by FWP of a "Final" Report of the leasing program. That report was to be adopted by the FWP Commission and DNRC and submitted to the EQC, for their (EQC's) "completion" by December 1, 1998. Recognizing the role envisioned in the statutes for the EQC in the evaluation of 10 years of the leasing program, the EQC's Water Policy Subcommittee included a review of the program and related statutes in its 1997-98 Interim. The Subcommittee conducted public review of the progress and acceptance of the program, and considered various potential changes to the statutes, to be proposed to the 1999 Legislature. The legislation eventually proposed by the EQC renewed the FWP leasing statutes for 10 years, increased the "cap" on the number of streams from which FWP could lease, increased the maximum lease period for certain leases, required another "Final" Report in 2008, and allowed other leasing programs to lease salvaged (i.e., "conserved") water. Though the EQC received encouragement to be more aggressive in the changes it proposed (i.e., making the program permanent, removing the DNRC study stream approval requirement, etc.), it was the strategy of the Council to propose the minimum necessary bill, to ensure that the whole program wasn't "lost" (i.e., allowed to terminate) because of a too-aggressive starting point. The EQC encouraged others during the 1999 Legislative Session "to use the legislative committee hearing and amendment process to further test the waters on additional changes to the DFWP's water leasing statutes" (EQC, 1998). The bill, as drafted, received overwhelming support in both houses, and was signed by the Governor on March 19, 1999. The EQC deserves credit for its long-term support of this program.

III. A REVIEW OF THE 2003 LEASING YEAR

Drought conditions continued in much of Montana in 2003. In drought years, FWP water program staff must spend much of their time managing FWP's instream flow water rights and reservations, and participating in the FWP's drought response reporting and coordination, rather than pursuing additional instream flow water leases – the program, and FWP's fisheries biologists, shift into "emergency" mode under drought conditions, unfortunately.

2003 reminded Montanans that the leases we had in place were critical in times like these and that leasing and other water quantity planning tools continued to be critical for our state's valuable fisheries. A summary of FWP's leasing history is provided in Figure 1. Notable elements of the 2003 leasing year are described following the graphic.

Figure 1. FWP Instream Flow Leasing History, as of November 2003

SOURCE	LESSOR	LEASE TERM/EXP.	PRIORITY OF RIGHT	QUANTITY LEASED	PERIOD OF USE	COST
Mill Creek	Mill Creek Water and Sewer District	10 years Aug. 1, 2003-expired; being considered for renewal	95 rights with various priorities	41.4 cfs	48-60 hours in Aug. Diversion shut off after 10-day notice from FWP	$12, 750 per year[1]
Mill Creek	Individual	10 years April 1, 2003-expired; a portion available (and being considered for) renewal	June 30, 1880; June 1, 1903	2.0 cfs (1880) and 4.13 cfs (1903) (salvaged water)	May 1 -October 4	$7,500 per year
Blanchard Creek	Individual	10-year renewal June 20, 2009	May 11, 1913 (first right on stream)	3.0 cfs	April 15 -October 15	$2,000 per year
Tin Cup Creek	Six individuals	5-year renewal March 28, 2005	August 1, 1883 (first right on stream)	2.28 cfs April 1-April 14 4.32 cfs April 15-April 30 4.72 cfs May 1-October 19	April 1- November 4	$6,260 per year
Cedar Creek	US Forest Service	10 years Sep. 20, 2005	April 1, 1890; April 1, 1893; April 1898; April 1, 1904; April 7, 1972 (high water rights only)	6.77 cfs May 1-July 15[2] 6.39 cfs July 16-July 31 9.64 cfs August 1-August 31 6.39 cfs Sept 1 - October 15	May 1-October 15	$1.00 per year
Hells Canyon Creek	Three individuals	20 years Apr. 1, 2016	December 31, 1884 (1st right on stream), August 23, 1889; August 29, 1912	1.12 cfs (salvaged water)	April 1- November 4	$45,000 - One-time payment
Mill Creek	Individual	10 years May 1, 2006	June 1, 1891	2.64 cfs (salvaged water)	May 1-October 19	$4,200 per year
Chamberlain Creek	Individual	10 years Apr. 1, 2007	October 10, 1911	½ the flow up to 25 cfs	April 1 - October 31	$1.00 per year
Pearson Creek	Individual	10 years Apr. 1, 2007	October 10, 1911	Up to 8 cfs	April 1 - October 31	$1.00 per year
Cottonwood Creek	FWP[3]	9 years June 30, 2005	May 1, 1884	14.0 cfs April , 37.0 cfs May 1-June 30, 32.0 cfs July, 9.0 cfs August, 6.0 cfs Sept., 9.0 cfs Oct., 8.0 cfs November (salvaged water)	April 1- November 4	None
Mol Heron Creek	Private ranch	20 years Dec. 31, 2018	July 15, 1884; May 7, 1885; June 15, 1893; January 1, 1900; March 2, 1903; June 5, 1905; August 5, 1920; April 15, 1967	5.0 cfs to 27.0 cfs	April 15 - October 19	$100,000 - one-time payment
Big Creek	Two private ranches[4]	20 years April 15, 2020	March 12, 1883; June 30, 1901; May 31, 1909; May 15, 1910; May 15, 1910	1.0 – 16.0 cfs (rights dedicated to a land trust in perpetuity)	April 15 - October 15	$228,640 - one-time payment

Figure 1 (cont.). FWP Instream Flow Leasing History, as of November 2003

SOURCE	LESSOR	LEASE TERM/EXP.	PRIORITY OF RIGHT	QUANTITY LEASED	PERIOD OF USE	COST
Big Creek	Private ranch	10 years May 1, 2009	June 30, 1873 (1st right on stream)	10.0 cfs	May 1 - November 1	$8,000 per year
Rock Creek	Private ranch	20 years	March 23, 1881; May 15, 1881; June 1, 1892; May 1, 1898; September 29, 1904; May 10, 1907	5.0 - 27.22 cfs	April 15 - October 31	$138,346 - one-time payment
Locke Creek	Private ranch	30 years; December 14, 2031	March 6, 1915	7.5 cfs	April 20 – October 24	$45,000 – one-time payment
Cedar Creek	Private ranch	30 years: June 9, 2033	May 29, 1894 (4th right on stream; other high-priority rights already leased by FWP); June 11, 1971 (high water right); April 7, 1972 (high water right)	3.25 cfs 3.76 cfs (high water)	April 1 – November 4	$40,000 – one-time payment

[1]Lessor pays for water commissioner and the installation of measuring devices on all on-farm turnouts from the pipeline.
[2]These rights are used to maintain a flow of 1.3 cfs at the mouth of Cedar Creek, eliminating effects on other water users.
[3]FWP converted its own water rights to instream flow under 85-2-439, MCA.
[4]Ranches transferred their rights to the Montana Land Reliance, who is the lessor.

- **One new water lease agreement.** A lease agreement for supplemental instream water in Cedar Creek (upper Yellowstone), where we already hold a lease, was signed in 2003. This project replaces Cedar Creek as an irrigation source by helping to fund the construction of a small water storage reservoir on an alternate creek with minimal fishery values. In exchange, a one-mile ditch will be moth-balled, and all of this ranch's water rights will be dedicated to instream flow for a period of 30 years (maximum period allowed by statute). The current lease on Cedar Creek is benefiting the Yellowstone fishery; this additional water eases current water administration issues on the Creek, provides more reliable flows for Yellowstone cutthroat spawning and rearing, allows for better fish ascent of a degraded culvert structure, and eliminates entrainment problems with the associated ditch.

- **Agreement nearly signed for two more leases.** FWP has been assisting two disputing parties regarding water rights on Trail Creek. The parties hold rights in common, and the senior right on the creek. One party wishes to see water dedicated to instream flow, the other has been diverting large amounts of water for golf course irrigation. The ditch leading to the irrigation water storage site is very pervious. FWP is helping fund a pipeline and infiltration gallery to replace a non-fish friendly and high maintenance diversion structure and pervious ditch. The three-way agreement will provide for more efficient golf course irrigation, a commitment to reduce irrigation in dry years, and more flow in all years in Trail Creek. Both parties are leasing portions of their water rights to FWP for instream flow.

- **Significant progress on additional instream flow enhancement projects.** FWP Water Program staff are assisting a water right holder convert his water to instream flow in Therriault Creek (tributary to the Tobacco River). This instream flow enhancement is associated with a stream restoration project; the water right holder preferred to administer the rights, rather than FWP doing so. Water Program staff also worked hard on an irrigation efficiency project that will free up water for instream in the Dearborn and South Fork Dearborn. The Lease Agreement and Change Application are drafted and ready for finalization, and we are waiting for the owner to return from out-of-state to determine next steps.

- **Seven additional water conservation projects approved through FWP's Future Fisheries program.** In the 2003 funding cycle (January and July, with a drought-related special streamflow-only application window in April), seven water conservation projects were funded through FWP's Future Fisheries Improvement program. (FFI projects that have resulted in leases described elsewhere in this report are not included in the list below.)

  Brackett Creek FWP committed funding to assist with the restoration of about 4 miles of stream and removal of irrigation diversion that were barriers to fish passage. The owner abandoned one diversion and is reportedly working on a lease (to another party) or conversion to instream flow of related water.

  Dry Creek – FWP committed funding to assist in the removal of two diversion structures that will open up an additional 0.3 miles of spawning habitat on the stream. The source for water will be switched from the Creek to the Broadwater Canal, making the former water available for leasing or conversion to instream flow.

  McKee Spring Creek – FWP committed funding to assist in the restoration of over 2 miles of spring creek channel, associated with a wetland restoration project. The project would also result in water conservation and related instream flow benefits.

Jefferson River – FWP contributed funds for a reapplication and additional focused sealing of the largest irrigation supply canal on the Jefferson River; a similar treatment last year saved approximately 6 cfs. Reapplication is expected to save at least the same amount of water this year and help refine techniques for use of the sealant.
Sun River – FWP contributed funds to another canal sealing project, along 1 mile of one of the two major water supply canals from Gibson Reservoir. Between the two long canals, they are estimated to lose 400 cfs. This will be a test case that will hopefully result in water conserved in Gibson Reservoir, and subsequent additional interest and commitments to canal sealing in the area.
Blackfoot River – FWP contributed funds to assist in replacing the Blackfoot as a stockwater source with a well for fall livestock watering.
North Fridley Creek – FWP contributed funds to help reconnect Fridley Creek (interrupted by the Park Branch Canal and affected by dewatering) to the Yellowstone River. The project involves building a culvert under the Canal and enhancing streamflow by replacing a surface diversion with a well. Staff of Trout Unlimited are helping the water right holder with a water right conversion of saved water to instream flow.

Readers interested in details of FFI projects are referred to the FFI portion of FWP's Website - http://fwp.state.mt.us/habitat/futurefisheries/content.asp.

- **Potential future FWP leases.** Word is getting out about FWP's instream flow leasing program. We received many inquiries in 2003, yielding several excellent lease opportunities. We continue to investigate leasing opportunities on Little Prickly Pear and Tenmile creeks (Middle Missouri basin), Bear Creek (Madison basin), Mill Creek (Upper Yellowstone), Rock Creek (Middle Clark Fork), and several others that are in the early stages. We hope to report next year on leasing success in these and other areas, provided drought conditions subside, and staff can dedicate additional time to such projects.

- **Two Mill Creek leases allowed to lapse while other instream water sought.** Both nostalgic, disappointing, but also symbolic of program success was FWP's decision to allow two leases to expire on Mill Creek (upper Yellowstone) while we looked for more water at less cost for the Creek. One of these leases was the first ever obtained by FWP and we are exceedingly appreciative of the water right holder, who, in the early 90's, stepped forward to be the first lessor of instream water in Montana. Prior to the expiration, FWP held three leases on Mill Creek, two for minimum base flows, and one for an annual flushing flow. The base flow leases were hoped to be sufficient to keep water in the lower reaches of the creek for incubation and emergence of fry; we knew they were not sufficient to provide passage flow to the Yellowstone River for rearing and maturation. The flushing flow was intended to "flush" the Mill Creek fry to the River. The combined leases (See Figure 1) cost over $25,000 per year and near that amount in annual monitoring. The results of the monitoring (see past FWP annual lease reports for monitoring of expired leases) showed that fry production (and therefore recruitment to the Yellowstone) was good in high-flow years but poor in low flow years. The poor showing was a combination of commissioner difficulty in keeping the instream water flowing, the need for additional water to create a margin of safety above the absolute minimum flow, and the nature of administering water in that flows can fall below the lease level, but (even with quick action) the time to get flow restored to the lower river can prove lethal to eggs and fry. With good production in high-flow years (when the leases didn't need to be enforced) and low-production in low-flow years, it became clear

that the leases weren't serving their purpose. In addition, recent leases have provided more reliable fishery benefits for less cost. And, the lessors had committed part of their water right (that had been leased by FWP) to another party, meaning we would have even less instream base flow if we renewed under the current arrangement.

As the Mill Creek leases approached expiration, high community and agency interest arose as to whether FWP would renew them. Many people had worked extremely hard to get these in place; there had been many issues and finger-pointing by people who cared about the fishery as to why there wasn't more flow there; and the leases had high profile because they were the first in the state. In February, FWP initiated a gathering amongst many parties to discuss the performance of the leases and to seek suggestions on how their cost-effectiveness could be improved. Attendees included the water commissioner, and representatives of water lessors, NRCS, FWP, DNRC, Trout Unlimited, Park County Conservation District, and others. The group discussed the history of the project (both the pipeline that was supposed to create the "extra" water and FWP's leases) and fishery monitoring results. The conclusion of the group was that the leases were not fulfilling their intended purpose for Mill Creek.

FWP is currently pursing the idea of additional water for Mill Creek, and renewal may still be an option, but not likely at past rates. At the same time, we are pursing and supporting reconnection of other Yellowstone spawning tributaries (e.g., see reference to Fridley Creek FFI project above) to enhance the Yellowstone fishery. FWP very much appreciates all the past work and counsel related to rewatering Mill Creek; the experience there was educational and symbolic for instream flow enhancement in Montana.

- **Thanks to Trout Unlimited!** One of the projects that was discussed in last year's report as a potential FWP instream lease turned into a water right conversion and needed attention at a time that FWP staff were quite committed to other projects. Stan Bradshaw of Trout Unlimited's Western Water Project handled the water right aspects of this project, which were completed this year. We very much appreciate the opportunity to partner with other leasing entities and expertise on instream flow projects.

- **Leasing as an element of federal Farm Bill (EQIP) Implementation.** As many may know, extensive funding opportunities arose with passage of the 2002 federal Farm Bill. This legislation created new resources conservation incentive programs, and also provided significant funding for current such programs, including the Environmental Quality Incentives Program (EQIP). One element of EQIP can be the use of federal dollars to cost-share large proportions of producer costs to install water saving devices such as sprinklers, pipelines, etc. Potentially in part due to the discussions of the potential advantages that would have accrued had the water savings from the Mill Creek pipeline (a federal cost-share project) been "secured" instream, discussions began regarding including the securing of conserved water instream as a potential element of Farm Bill implementation. Instream flow advocates, including the Montana Water Trust and Trout Unlimited, were also instrumental in getting this topic to the EQIP discussion table (and supporting its continued discussion). FWP served as the conduit for suggestions on how instream leasing could be included in the EQIP program, which it was. And conversions were included in another Farm Bill cost-share

program (Surface and Groundwater conservation). So, in 2003, certain applicants to NRCS for federal EQIP cost-share funds could get extra points in the rating if they obtained a commitment from a leasing entity to secure the saved water for instream use. They could not expand acreage, and the period of the instream commitment was the life of the project. These applicants could get 40 extra points for streams on FWP's Dewatered Streams List, and 30 points for other streams. In addition to the points, successful applicants can receive an "incentive payment" for $7,550 to cover the costs of the water right and hydrological work required to navigate the Change process at DNRC.

FWP is hopeful this program element will be continued in 2004, and we look forward to continuing to work with NRCS and the leasing entities on its refinement. NRCS should be congratulated for a unique and proactive effort, which, as we understand, is unique in the nation. (See Appendix D for the FWP correspondence related to this work.)

- **Getting the word out...** We have developed several versatile sets of informational tools that can easily be transferred and adapted to a variety of informational events and situations. Our "Water for Fish+" display has hit the road often, and the associated "fishpads" ("Water for Fish+" – by species – notepads) are a popular token of FWP's appreciation to our cooperators. Water Program staff developed a PowerPoint program, which includes a primer on water rights and a discussion of water quantity planning tools (including leasing) available to Montana communities. This presentation has been modified and presented to watershed groups, universities, non-profits, and agency- or association-sponsored training sessions. Information on instream leasing and conversions has been incorporated into the DNRC "Water Rights in Montana" booklets and DNRC-sponsored water commissioner trainings. All these informational resources, developed in the last four years, have built FWP's capacity to inform and publicize the opportunities associated with instream flow protection and enhancement, whether through leasing with FWP or otherwise.

- **Improved coordination with other agencies and groups.** Whereas in the past, FWP pursued its leasing opportunities relatively independently, we are working more broadly with other agencies and programs (e.g., Natural Resources Conservation Service (NRCS), U.S. Fish and Wildlife Service "Partners" program, Montana Land Reliance, Conservation Districts, the newly-created Montana Water Trust, Trout Unlimited, etc.). The result is greater collaboration and a broader spectrum of entities contributing to Montana's water conservation goals.

- **Supporting leasing/conversion by others.** FWP continues to assist water right holders interested in leasing to other parties, or converting their rights to instream flow. Such assistance includes potential funding throught our Future Fisheries Improvement grant program, technical assistance with project planning, and information on water rights and the conversion process. FWP staff have also assisted applicants and DNRC with documentation that a conversion will benefit the fishery (required by statute).

- **FWP leases and water reservations available on the Web.** FWP GIS staff have loaded all of FWP's instream flow information into the Montana Fisheries Information System

(MFISH), managed by the Natural Resource Information System (NRIS) at the State Library. It is included in a feature entitled the Montana Rivers Information System, and provides a searchable database of leases and reservations. The user can search for instream flow protection statewide, or by county, waterway, or otherwise, and map the results if desired. The site can be accessed at: http://nris.state.mt.us/scripts/esrimap.dll?name=MFISH&Cmd=INST. This has proven extremely helpful to our field staff who must answer questions about water rights, as well as the public interested in where FWP has instream rights or reservations.

- **Questions/Limitations posed by temporary nature of leases.** An interesting element of the 2002 leasing year that continued into 2003 was the proportion of inquiries related to potential permanent dedication of water to instream flow.

  Example from 2002. A ranch manager in the Bitterroot drainage expressed interested in permanently acquiring the flow FWP currently leases in Tin Cup Creek, to ensure that water will be flowing in the stream for ecological purposes, help with the administration issues we often have with our instream right, and potentially benefit the fulfillment of a diversionary right held by the ranch. FWPs Tin Cup instream flow lease has been renewed once, the maximum allowed under statute, and will expire in 2005. The water right holders from whom we lease this #1-priority right are interested in selling the right after lease expiration, which would likely result in an upstream diversionary use and subsequent total dewatering of the stream adjacent to the ranch. Senior dewatering upstream would mean the ranch's (junior) permit would not be satisfied. If the ranch purchased the right, they could ensure more reliable enforcement and use and they could potentially change a portion of it to supplement their small junior diversionary right. In this case, both parties appear to be interested in a permanent exchange of the water right. A permanent exchange can be done, but the water could not be used for instream flow on a long-term basis under current statutory limitations. For this reason, the worth of the water to the noted rancher is much lower than it would be to a diverter who could use it on a long-term basis, thereby automatically biasing a potential transaction in favor of diversionary use.

  Another interesting limitation of the temporary nature of water leases arises in state or federal (Superfund) reclamation areas. Both state and federal programs, as well as Montana's Natural Resource Damage program in the Upper Clark Fork, require long-term restoration of damaged resources. However, the temporary nature of Montana's instream flow laws is not consistent with these long-term restoration requirements. The question is very real and very pertinent, as instream flow enhancement opportunities exist in both the Tenmile Creek watershed (EPA Superfund site) and the Upper Clark Fork watershed (Montana Natural Resource Damage program). The Legislature may wish to consider a narrow revision to state law that would allow for permanent instream flow dedications/purchases in areas associated with these restorations. It would be helpful to address this statutory inconsistency before a water right holder hopeful for financial assistance in exchange for dedication of his/her water right is told "no" after a lengthy planning process. As we work with EPA and the City of Helena in their work to restore the upper Tenmile drainage, discussions have turned from the potential for seasonal and small flow enhancement in the upper drainage, to the City potentially using their backup source as their main source, allowing the lease of the #1 right on the stream and potential restoration of that Creek for a significant portion of its length. The community and the parties involved are significantly interested in knowing that this restoration, if it can be attained, be a permanent solution.

Another possible argument in favor of the opportunity to acquire/dedicate rights in perpetuity is that some callers have reported concerns that tax benefits are not available to them for water right dedications, unless the dedication is in perpetuity. FWP staff are not accountants, and have not researched this issue, but it has been mentioned more than once.

It is also likely that larger amounts of funding would be available for acquisitions in perpetuity, allowing Montana water users to more successfully diversify their incomes while the state moves forward in solving (not merely deferring) dewatering problems. Such a change would help to satisfy the increasing economic (and intrinsic) demand for flowing streams and the values they provide. Other states (e.g., Washington, Oregon, Wyoming, Colorado, etc.) have enacted such authority and could be contacted for information regarding how it has worked. (For Washington, see http://www.ecy.wa.gov/programs/wr/instream-flows/wacq.html; for Colorado, see http://www.cwcb.state.co.us/isf/Programs/donate.htm.)

These suggestions are not intended to diminish the importance of our present leasing authority FWP now has, nor the creative approaches the Legislature has invoked to address instream flow needs in Montana. We are merely communicating that this question has been repeatedly and increasingly asked over the last few years.

Need to accommodate increasing concerns about "salvage" projects into the leasing program. As reported here in 2002, one of the attractive means to generate leasable water is for FWP to assist a landowner with a water conservation project. Such projects allow for a 30-year lease of water (otherwise 10 years is the maximum on the initial term), can convert water use levels to as little as 10% of the formerly diverted flow amount. Such projects enhance crop production, reduce labor requirements, and result in less pollutants being washed into surface or subsurface water sources. In theory, a landowner could even put more acres under irrigation (allowed under 85-2-419, MCA), and still have flow left over to dedicate to the stream.

Such projects have been implemented in Montana, many which dedicate the saved water to additional acres under the "salvage" law. That law requires additional acreage to be approved by DNRC. We are not familiar with the criteria used by DNRC to evaluate salvage proposals, but it has recently come to FWP's attention that straight cfs-for-cfs calculations associated with salvage projects may oversimplify the situation, and not account for changes that could be detrimental to downstream water users (and streamflows in general). For example, an irrigator has a right for 7 cfs that has traditionally been used for flood irrigation on 100 acres. By converting to sprinklers, the same 100 acres could be irrigated using, say, 1 cfs. So, traditional interpretation of the salvage law has been that the irrigator can then add acreage to the point that the additional 6 cfs can be put to use. We have been told that many water users add acreage without applying for approval from DNRC.

This issue is complex because sprinkler irrigation is more efficient, resulting in crops being better able to put water to use in terms of crop usage, but less of what is applied returns as surface flow or groundwater recharge. Sprinklers also provide more even coverage of the crop area than typical flood irrigation, thus more individual plants are able to benefit and at

an optimum rate – also potentially consuming more water overall. When acres are added to those historically irrigated, the potential effects are compounded. Sprinklers also typically operate continuously, where flood irrigation is intermittent (albeit at a higher diversion rate) and sprinklers are subject to increased evaporative loss.

FWP has only recently begun to consider these potential additional complications associated with leasing salvaged water. Many public programs have encouraged these increased efficiency projects, and they definitely provide a variety of benefits. In response to the concerns that are beginning to be expressed, and being sensitive to our responsibility to plan and implement the best flow enhancement projects possible, FWP is experimenting with analytical tools that will help us better evaluate the tradeoffs of leasing "salvaged" water, and how to better quantify the flow and volume that may truly be available for lease after such factors are considered. And we are encouraging interagency (FWP, DNRC, NRCS) discussions of these issues and related opportunities for coordination/improvement.

- **Additional staff dedicated to leasing.** In the past, FWP's Water Program (housed in the Fisheries Division) had two staff. When both staff members retired, staffing was scaled back to one person. With recent demands and opportunities (and drought), FWP administrators have restored the second Program position, and hired a Water Rights/Instream Flow specialist, housed in Helena. This reinstated position will increase our capacity to complete new leases, as well as implement other water conservation measures administered by the Water Program.

IV. 2003 NEW LEASE

FWP and lessors finalized one new lease agreement in 2003. An agreement for two others may be signed by the end of 2003. Only information for the Cedar Creek lease is provided below and in Figure 2.

Cedar Creek

An irrigator who diverts water from Cedar Creek to irrigate approximately 53 acres replaced Cedar Creek as a water source with a small storage reservoir constructed on Slip and Slide Creek, a nearby tributary to the Yellowstone River. Stored water can then be passed downstream to an existing reservoir on Slip and Slide Creek and then carried in a gravity-flow pipeline to feed the existing sprinkler system that serves the irrigated acres. In addition, a new well will supplement the irrigation water supply in times of surface water shortage. Cedar Creek water will no longer be diverted by this irrigator; the headgate will be closed; the approximate one-mile-long ditch will be moth-balled; and all of this irrigator's Cedar Creek water has been leased to FWP for instream flow for 30 years. One of the rights to be leased is the 4th priority right on the Creek. Based on flow monitoring since 1996, water should be in sufficient supply in the creek to satisfy the 4th priority right (and therefore make a contribution to instream flow) in all but extremely dry years (such as 2001).

As noted above, the upper Yellowstone River, a highly valued sport fishery, supports brown, rainbow and Yellowstone cutthroat trout. Several small tributaries to the Yellowstone River are the only documented spawning sites for the river population of Yellowstone cutthroat trout – a Species of Special Concern. Dewatering of the lower segments of these tributaries during the irrigation season adversely affects the reproductive success of the Yellowstone cutthroat trout and limits recruitment to the river fishery. Studies by FWP and others show that tributary dewatering is a major factor regulating numbers of adult cutthroat in the Yellowstone River.

Cedar Creek is one of the better cutthroat spawning tributaries to the Yellowstone River. Cutthroat begin entering Cedar Creek in late June, spawning in early July. Cutthroat eggs incubate in the spawning gravel for about 30 days before emerging as fry. Fry begin to out-migrate to the Yellowstone River shortly after emerging. By the end of August, most fry have entered the main river. Some fry remain in Cedar Creek throughout the winter.

Prior to 1996, a series of four private irrigation diversions in the lower ½ mile of Cedar Creek took much of the flow during the summer irrigation season, thus limiting the capacity of the Creek to produce cutthroat. Since 1996, when FWP's existing Cedar Creek instream lease was initiated, up to 26,000 out-migrating fry have been sampled annually. Additional water (and the cessation of active use of the ditch) will further enhance spawning and rearing opportunities, particularly during dry years, and will also resolve other fishery- and water-related issues on the Creek. Slip and Slide Creek already has two reservoirs in place and does not support native fish. This new diversion will not significantly impact Slip and Slide Creek's, or the Yellowstone River's, aquatic resources.

Figure 2. Specific Statutorily-Required Information for 2003 New FWP Instream Flow Lease (Cedar Creek)

Statutorily-Required Reporting Element (abbreviated, see p.1 for full text of reporting requirement)	**Response**
length of stream reach and how determined	Cedar Creek is approximately 8 miles in length. The flow contribution, and elimination of active and sustained use of the ditch, will most directly affect the lower ½ mile of stream, but benefit the stream in general, as fish that will now be able to ascend the creek can take full advantage of available and accessible habitat above the former diversion.
technical methods and data used to determine fishery needs	According to redd studies in 1988, 1989, and 1996, the current lease level (1.3 cfs) is the minimum water required to cover approximately 95% of all redds surveyed in those years, which were affected by irrigation withdrawals. An increase in flow would likely increase redd abundance and success, leading to higher annual recruitment. An application of the wetted perimeter inflection point (WET-P) instream flow quantification method confirmed that additional water would be beneficial, documenting a recommended flow to appropriately support the Cedar Creek fishery of approximately 3 cfs. This supplemental lease would add up to 3.25 cfs to the underlying leased amount, thereby meeting and surpassing the WET-P-recommended threshold.
determining and substantiating the amount of water available for lease	As with Locke Creek, the USGS provided monthly percentile flow estimates for Cedar Creek, which will be used to supplement actual flow measurements taken since 1996. This information was combined with other climatological and hydro-geologic information to quantify the amount available for leasing, and the historically-consumed portion that can realistically be protected downstream of the diversion.
ensuring no adverse impact to other appropriators	The Change Application for this project is likely to be issued for public notice soon. This process includes the opportunity for other water right holders to object to the proposed lease. However, FWP has forwarded notice of the project to nearby water right holders (via our Environmental Assessment); most comments favored the project, and issues raised have been addressed. One of the downstream water users is the administrator of FWP's current lease on Cedar Creek; he administers all water below the diversion to be closed, and is in favor of the lease.
monitoring water use under lease	A staff gauge is already installed in Cedar Creek to monitor FWP's current lease on the creek. The final "protectable" lease amount will be added to the 1.3 cfs that is currently tracked downstream, with the change in amount being the only needed change in current administration and monitoring.

V. DESIGNATED STUDY STREAMS

Montana statutes require FWP to obtain approval of the commission and DNRC to study a stream for leasing (and thereby lease from it). Figure 2 lists the study streams approved to date, their relevant basins, the status of the approval, and the status of leasing on them. Statutory revisions in 1999 increased the allowed number of study streams from 20 to 40.

Figure 3. Status of Designated Study Streams and Leasing

Study Stream	Basin	Status of Request	Status of Leasing in Reach
1. Swamp Creek	Big Hole River	Final approval 3/5/90	No lease; FWP and right holder could not reach agreement on price for lease
2. Big Creek	Yellowstone River	Final approval 3/5/90	Two leases finalized in 1999
3. Mill Creek	Yellowstone River	Final approval 11/9/90	Three leases; two expired, with potential for renewal
4. Cedar Creek	Yellowstone River	Final approval 1/6/92	One lease in place; additional lease agreement finalized in 2003
5. Blanchard Creek	Blackfoot River	Final approval 9/25/92	Lease
6. Hells Canyon Creek	Jefferson River	Final approval 9/25/92	Lease
7. Tin Cup Creek	Bitterroot River	Final approval 10/30/92	Lease; renewal finalized in 2000
8. Rattlesnake Creek	Clark Fork	Final approval 5/25/95	No lease; negotiations on hold
9. Mol Heron Creek	Yellowstone River	Final approval 11/28/95	Lease
10. Rock Creek	Blackfoot River	Final approval 11/28/95	TU lease negotiations on hold, past FWP negotiation information being used in efforts by Trout Unlimited
11. Chamberlain Creek	Blackfoot River	Final approval 1/3/96	Lease
12. Pearson Creek	Blackfoot River	Final approval 1/3/96	Lease
13. Rock Creek, near Garrison	Clark Fork River	Final approval 7/15/98	Lease
14. Locke Creek	Yellowstone River	Final approval 6/18/02	Lease

VI. GOALS FOR 2004

In looking forward to 2004, we hope Montana experiences at least normal precipitation and climatic conditions, such that this dry trend can be reversed, and the emphasis on emergency flow-related actions can shift back to long-term flow protection and enhancement efforts. In addition, we have specific and continued goals we hope to achieve in 2004, described below. Our ability to achieve these goals, again, will depend on whether climatic conditions keep us in "emergency response" mode or not.

- **New leases.** We hope we can report to you on several more leases completed in 2004. It should be noted that good lease opportunities are rare (from a water right perspective), and that FWP has found this tool to be most cost-effective for the re-watering of regularly dewatered streams that provide a major benefit to priority fisheries. Water typically offered is small, junior, and not currently being used. (See Appendices A and B for information on FWP's Leasing Criteria.)

- **A more proactive and systematic approach.** With five consecutive years of drought and limited staff to manage drought response and all other Water Program elements, our leasing approach has been fairly reactive in nature ("reacting" to the occasional lease offer). With the recent reinstated program staff position (and hopefully a break in drought conditions!), we hope to take a more proactive and strategic approach to leasing, using our Dewatered Streams List to help research and identify priority leasing streams, then market the concept and related tools (e.g., EQIP points) to water right holders in those areas.

- **More coordination.** We look forward to continued and enhanced coordination with NRCS, the U.S. Fish and Wildlife Service, Conservation Districts, Trout Unlimited, the new Montana Water Trust, and others to enhance understanding of the program state-wide, and the integration of this tool into planning and restoration efforts by others.

- **Support continued and additional independent effort by individuals and DNRC on addressing instream flow issues.** FWP leasing should not be considered the only mechanism to achieve the fishery and recreational goals of the Water Use Act (see discussion in the Introduction to this report). We strongly encourage the use of the "private party leasing/conversion" statutes as yet another tool, and we promote such tools (along with many others) whenever provided the opportunity. We know of at least five "conversions" of water to instream flow, and we continue to encourage these types of actions, when leasing with FWP is not the appropriate tool for the water right holder or the Department. We are of the strong opinion that leasing, in and of itself, cannot address the full spectrum of fishery flow needs in Montana, nor should it be depended upon as the only appropriate tool for such purposes.

- **Continued public dialogue on the role of instream flow in Montana public policy.** FWP looks forward to continued dialogue on how Montana wishes to treat instream flow, including how to best achieve the related goals in parts 1 and 2 of the Water Use Act. There are many creative ideas at the state, local, and national level on how to balance the important values water provides to the economy and culture of Montana. It is our hope that such a dialogue can be productive and civil, with the results spurring additions to the water policy foresight and creativity for which Montana is known. We believe Montana's fish and wildlife values are playing an ever-increasing role in the health and diversification of Montana's economy; it is a continuing challenge to adapt our water policy to match Montanans' desires related to these resources. As always, FWP staff look forward to being productive participants in this dialogue.

- **A better FWP "pricing" mechanism.** FWP currently uses the criteria listed in Appendix A as the basis for our evaluation of leasing offers. We conduct a detailed review and evaluation of attractive offers within the framework of these criteria (see Appendix B), with very few offers scoring incredibly well in all areas. We are often asked what we pay "per cfs or acre foot" of water, when what we are truly evaluating is the potential for increased priority fish species production vs. the cost in time and resources (financial and staff time, both to secure the lease and in the long run) for a given likelihood that a certain amount of water can actually be kept instream. As the matrix included in Figure 1 gets wider and wider distribution, we find potential lessors focusing on the maximums we have previously paid as their starting point for negotiation. We are attempting to expand the matrix to include descriptions of how well the leases met FWP's criteria, and seeing if the dollar values we have paid can be used to back-calculate a better pricing structure for FWP leases. We look forward to reporting on our potential success in this area. We feel such effort could also assist others that are entering or increasing their activity in Montana's fledgling "water for fish" market.

APPENDICES

Appendix A. FWP Instream Flow Lease Objectives
(a.k.a. "maximizing the 4 'A's")

- **A**dvantageous to the fishery

  Attractive leasing opportunities are those that address a stream flow problem that significantly limits potential fishery values.

- **A**ctual water dedicated to instream flows

  Leases must involve valid water rights, and quantities leased should be large enough to benefit the stream.

- **A**dministrable by the Department or other appropriate entity

  Leases should involve a reasonable combination of water right seniority and advantageous location so that the instream flow contribution can be ensured and defended through the lease period. Decreed streams and/or an existing water commissioner are an added plus.

- **A**ffordable

  Do the benefits to the fishery justify the cost of the lease or the project creating the leasing opportunity?

For more information on instream flow leasing, contact Bill Schenk 406-444-3364 (for waters in FWP Regions 1, 2, 4 and 6) or Kathleen Williams 406-994-6824 (for waters in FWP regions 3, 5, and 7). See http://www.fwp.state.mt.us/hunting/plan/chooseRegion.asp for FWP Regions.

Appendix B – A Sample Lease Evaluation

Review of Potential Water Lease

Little Prickly Pear Creek -- Lewis and Clark County

Prepared for: [redacted]
December, 1999

The following is a preliminary review of an instream flow lease proposal. It includes 1) a description of the proposal; 2) the results of a cursory review of the associated water rights, their relation to other rights in the watershed, and available information on water flow patterns; 3) a description of the fishery; and 4) a preliminary evaluation of the lease offer according to FWP's informal lease evaluation criteria.

Additional information, insights, and/or corrections to this preliminary review are welcome and can be incorporated into a revised review.

Background on Proposal

According to our recent conversation, the rights you are interested in leasing are the potential salvaged portions of the rights listed below.

Right Number (Diversion Point)	Purpose	Quantified Flow (cfs)/ Acres/ Volume	Priority Date	Relative Priority on Source (of 70)	Claims Senior to Offered Rights
41QJ-W- 097583 NWNENW20T13NR4W	Irrigation	none/ 8 acres/ 32 AF	5/18/1877	28th	100.09 cfs (all upstream)
41QJ-W-097581 NENENE25T13NR5W	Irrigation	12.00 cfs/ 50 acres/ 200 AF	4/1/1882	34th	additional 17.76 cfs
41QJ-W-097582 NWSWNE19T13NR4W	Irrigation	25.00 cfs/ 58 acres/ 232 AF	3/15/1902	61st	additional 110+ cfs
Total		**35+ cfs/ 116 acres/ 464 AF**			

You are proposing to convert from two informal diversions (and associated lengthy ditches for flood irrigation) to one diversion point for a sprinkler system to irrigate close to the same acreage. One diversion point is shared with another right. The diversion point for your most senior right (without quantified flow) appears to be near the access road to your home, near the approximate location of your proposed pump house.

Your estimate of water need under your new system is 2 cfs, leaving the consumed (non-return-flow) portion of the remainder instream under a lease with FWP. The claims associated with these rights

appear to presume an irrigation need of 4 acre feet (AF)/acre irrigated under the current regime, hence the total allowed volume listed above.

A sprinkler system will reduce both the flow and overall volume needed. Presuming a 70%-efficient sprinkler system in your climatic zone, a liberal estimate of overall irrigation need for grass hay is about 2.5 AF/acre, or 290 AF for the acreage you currently irrigate. Thus a rough estimate of salvage water generated would be a flow up to about 33 cfs, up to 174 AF in volume. This rate of flow, if run constantly, would reach this volume limit in about 2.5 days. A flow rate of 5 cfs would reach this limit in about 17.5 days. The quantity of flow in this calculation is attractive. However, the small relative volume may limit the duration this right could be enforced, if challenged. (There are examples of sprinkler systems using much less volume, so the 2.5 AF/acre figure may be high, but enough volume should be assured to meet crop needs.)

Patty noted that the creek downstream from your second diversion was dry this year from about August 4th to August 20th, until that diversion was shut off. There was also discussion that water shortages upstream spurred water users to hire a ditch rider, but that in most years some water reliably makes it to your upper two diversion points. Without further conversations with nearby water users, or reviewing aerial photos, we have limited additional information on the reliability of flows to and/or beyond your diversion points. Additional information of this type would be necessary to pursue lease negotiations and coordination with other users.

You are willing to administer the instream right (i.e. check measuring devices to ensure it stays instream), and are willing to lease the salvaged water for the maximum FWP lease period allowed under state law (30 years). The cost of the proposed improvements is $86,000. You are interested in funding assistance for this project through the Future Fisheries Improvement program or otherwise. You suggested a wier for the shared diversion might address the split right issue, and a measuring device in the Seiben diversion could be incorporated into project design for improvements to that diversion.

The Rights and the Watershed

As shown above, according to the state's water rights database, your quantified rights total 37 cfs. There are 27 claims senior to your highwater right; 6 more senior to your 1887 right; and another 27 senior to your 1902 right. There are 9 upstream rights on the mainstem of Little Prickly Pear Creek (adding to about 9 cfs) that are junior to your 1902 right. Information from the Montana Water Court indicates that no claims in your basin (#41QJ – Missouri River, from Holter to Sun River) have been examined in the state adjudication process, so the legitimacy of other listed claims is currently unknown. We are unaware of any prior decrees in your area.

Little Prickly Pear Creek is mapped on USGS maps as intermittent upstream of its confluence with Canyon Creek, then perennial from there to its terminus at the Missouri River. Your diversions are located near where Sheep Creek meets Little Prickly Pear Creek. There are seven tributary streams between your property and the town of Wolf Creek. Five of these tributaries are intermittent (go dry at some time in a typical year). The two others, Lyons Creek and Wolf Creek, are considered perennial.

Given that Canyon Creek may be a more reliable provider of flow to Little Prickly Pear in your area, we also looked into how your rights related to rights upstream on Canyon Creek. Interestingly, your high-water right is senior to all but 6 rights on Canyon Creek (totaling 7.9 senior cfs); your 1882 right

would rank 10th in priority, and your 1902 right would rank 16th in priority for Canyon Creek water. Approximately 9.3 claimed Canyon Creek cfs are senior to your 1882 right and about 32 cfs are senior to your 1902 right. Although making a call for water can be a controversial move, we do consider your ability to do so in evaluating rights being considered for lease. A USGS gauge which operated on Canyon Creek in 1921-23 shows a peak flow of 270 cfs (1922) and a minimum summer flow (1921) around 10 cfs. Water use may have changed a good deal since then, but your rights have a much better seniority situation in Canyon Creek than in upper Little Prickly Pear.

Regarding downstream flows, U.S. Geological Survey (USGS) flow records are available for a 5-year period (from 1962-67) for a site just upstream of Clark Creek confluence. During this period, the minimum recorded flow was 6.2 cfs for four days in August of 1963. (At the gauge discussed below, flows were between 19 and 20 cfs on the same days.) Monthly minimums were not calculated for this review. A variety of miscellaneous flow measurements from this time period (conducted for a study of the effects of Interstate construction) also exist, but were not evaluated for this review.

Currently, there is one operating USGS real-time stream gauge on Little Prickly Pear Creek, located about ½ mile downstream from the confluence of Wolf Creek, just downstream of the I-15 access road bridge. This gauge has operated intermittently; from May 1962 to September 1967, and again from October 1991 to present. Streamflow information for this approximate 15-year period of record is provided below.

	Jan	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Monthly Average (cfs)	46.9	69.4	70.1	150	276	235	95.0	51.6	56.8	57.5	58.3	53.7
Monthly Minimum (cfs)	30.8	29.9	43.9	66.6	35.5	25.5	23.8	17.0	20.4	29.5	31.5	31.2

The lowest flow recorded at this gauge during the period of record is 9.9 cfs on August 13, 1992. In 1997 and 1998, the lowest flows at the gauge were in mid-January, with flows of 22 cfs and 25 cfs respectively. The lowest flow in the 1999 water year was 34 cfs in September (1 cfs lower than the minimum July and August flows for 1999). What this tells us is that, despite the number of claims upstream and the relative seniority of those claims, water is making it downstream, and the lower river (at the gauge) has not gone dry during the period of record, even in low flow years.

There are 10 junior mainstem water right claims (6 owners) downstream of your lowest diversion point. The closest downstream junior claims are two Sieben points of diversion (totaling 11.25 cfs), located just downstream of your access road. After Sieben, the next junior user is roughly 5 miles downstream (two small rights totaling 70 claimed gpm). Beginning roughly another 5 miles downstream of that is a series of two (Robert) Wirth diversions (totaling 13.5 claimed cfs), the town of Wolf Creek, then the of Sentinel/Lahti diversions (totaling 67.5 claimed cfs) just before the mouth.

In dry years, FWP staff have confirmed that a one-mile reach of the Creek (approximate) located immediately downstream of the Sieben diversion becomes severely dewatered. Groundwater inflows on the Sieben Ranch recharge the Creek before it enters the head of Wolf Creek Canyon. If water can be passed by the Sieben diversion, at least a portion of leased rights could provide benefits to this

section (potentially up to your middle diversion), and this water feasibly could be protected for about 10 miles downstream. However, the ability to realistically bypass water beyond the Sieben diversion remains unknown. (Although Sieben rights are junior to two of yours, it would be practical to analyze Sieben's water needs and use in relation to the amount of water typically in the stream.)

The Fishery

The portion of Little Prickly Pear between Canyon Creek and Clark Creek supports resident brown trout, rainbow trout, brook trout, and mountain whitefish. According to studies done in the 1980s, brown trout were the most abundant salmonid species, comprising about 52% of the game fish population in this reach. Next most common were rainbow (36%), then brook trout (10%), and whitefish (2%). Longnose and white suckers were abundant in the slower portions of the stream, primarily in the meadow zones. The stream sections altered by man-caused activities supported fewer trout than the natural, unaltered sections.

Recent radio-tagging studies have revealed that rainbow trout from the Missouri River migrate to, and spawn in, the reach of Creek located upstream of the Sieben diversion. Although not documented, we assume that brown trout from the Missouri River also do the same. The extent of beaver dam development in the Creek greatly influences the ability of rainbow trout and brown trout to migrate upstream. Beaver dams commonly are found throughout the drainage, but are especially concentrated on the Sieben Ranch. Because of the low stream flows that commonly occur in the fall, beaver dams likely hinder movement by fall spawning brown trout more than movement by spring spawning rainbow trout.

Several brown trout redds (fish nests) were observed near the lower diversion during our recent site visit in November. It is unknown whether these spawners were resident fish or persistent migrants from the Missouri River that managed to make it through the beaver dam gauntlet.

Whirling disease has been documented to occur extensively in Little Prickly Pear Creek, including the reach of stream located above the Sieben diversion. Recent studies have revealed that the disease is causing major problems with rainbow trout reproduction in the Creek. Brown trout, however, are much less affected by the disease. Because of passage problems during the fall, a water lease in the upper drainage provides greater benefits to rainbow trout than to brown trout.

The Canyon Creek-Clark Creek section of Little Prickly Pear is bordered entirely by private land. The stretch is moderately popular with local anglers.

FWP requested and was granted a 22-cfs instream flow reservation on this section of Little Prickly Pear Creek. The request was based on the need to maintain the existing resident trout populations; to provide spawning and rearing habitat for rainbow and brown trout from the Missouri River; and to help protect the habitat of those wildlife species which depend upon the stream and its associated riparian zone for food, water, and shelter. The priority date for the reservation is 1985, and the period of use is year-round. The official reservation monitoring location for this reach is on Sieben Ranch near the confluence of Clark Creek. The slight amount of flow information we have for this area shows that this instream flow reservation is likely not always achieved, especially during summer/fall depletion periods.

Evaluation

Montana Fish, Wildlife & Parks uses the following general criteria to organize their evaluations of instream flow lease inquiries – we attempt to "maximize the 4 'A's", as described below. (These criteria continue to be evaluated and improved as more lease inquiries are reviewed – suggestions are welcome!)

1) Advantageous to the Fishery -- Does the leasing opportunity address a stream flow problem that significantly limits potential fishery values?

At this point, FWP Helena staff feel that a potential lease of the above rights would provide a **low to moderate** benefit to the fishery. Streamflow within this reach of Little Prickly Pear Creek does not appear to be a major limiting factor to the fishery. Our conclusions are base on:

- Severe and regular dewatering appears to be limited to the relatively short segment of stream from the Sieben diversion to the head of Wolf Creek canyon.

- Resident fish populations in stream reaches that remain relatively unaltered (with good riparian vegetation and natural meanders) appear healthy.

- Migrant brown trout spawners from the Missouri River likely are limited more by barriers created by beaver dams than low water. Rainbow trout, both residents and migrants, currently are severely limited by the presence of whirling disease. A potential lease would not resolve the impacts created by either beaver activity or whirling disease.

However, a lease potentially would provide water to the reach of stream between your diversion and the head of Wolf Creek Canyon and could supplement flows downstream. The salvage project would also eliminate the need to berm the stream channel to obtain water and eliminate the possible entrainment of fish in at least the middle diversion. The upper ditch likely would remain operational due to the shared water rights associated with the ditch.

2) Actual water dedicated to instream flows

The rate of streamflow potentially generated by the proposed salvage project could be substantial (possibly up to a maximum of 33 cfs, or 1,320 miners inches). However, with the rights as claimed and some rough calculations, the potential volume of salvaged water is relatively small (about 174 acre feet). As a result, the small volume potentially could severely limit the duration that salvaged water could be protected from other appropriators. Unless the claims are amended, we consider this a **significant limitation** associated with this leasing opportunity.

If the volume issue were made less constraining, and depending on the portions of the rights regularly used, this lease would likely add some streamflow to Little Prickly Pear in periods and in a location where dewatering is limiting to fish. The dewatered section of creek is relatively short (less than 2 miles?). Downstream, where complete dewatering is less frequent, added water would provide low-flow "insurance" to both the fishery and other water users, as well as enhance the likelihood that FWP's instream reservation would be regularly met.

Field measurements (or additional engineering information), and discussions with nearby water users, would be necessary to further quantify the amount that could realistically be expected to be added (in comparison to recent use) to the stream. Calculations and/or measurements to address the volume limitation could also assist in further determining actual water that would be dedicated to instream flow.

3) Administrable by the Department or other appropriate entity – Does the lease opportunity involve a reasonable combination of water right seniority and advantageous location so that the instream flow contribution can be ensured and defended through the lease period? (Decreed streams and/or an existing water commissioner are an added plus.)

The water rights in questions are relatively senior to some upstream users, thus there is a mechanism (i.e. making a call on upstream juniors) to bring water downstream to meet irrigation and lease needs. In addition, the rights are relatively senior to users within about 10 miles downstream, but there is a major diversion just downstream from the proposed pumping location. We do not have sufficient information on the reliability of flows (and the related flow levels) to your diversions and beyond to determine how realistic the passing of water beyond the Sieben diversion might be. Only the 12 cfs claim (and the high-water right) is senior to Sieben; thus, only the historically "consumed" portion of this claim could legally be bypassed. The 25 cfs claim is junior to Sieben. It is likely that the installation of a measuring device in the Sieben diversion would be necessary to administer a lease. We do not know if Sieben would be amenable to such a device, nor do we currently know what level of investment would be necessary to install such a device.

The upper diversion (associated with 1882 offered right) is shared with another water user, eliminating the opportunity to "mothball' this diversion, and potentially requiring some oversight of the use of this diversion during the lease period.

FWP prefers leases that have a low potential that a call would be necessary to ensure flows to the leasing stretch, and we prefer situations where there are none or few downstream appropriators. Although you have offered to be actively involved in the administration of a potential lease, this lease offer is less than the "self-administering" situations we prefer. There is no decree, nor is there a water commissioner (or talk of one) assigned to this stream reach. Therefore, with what we know now, we consider this offer to be **moderately** administrable.

4) Affordable – Do the benefits to the fishery justify the cost of the lease or the project creating the leasing opportunity?

We do not feel the benefits to the fishery justify the requested FWP investment of $86,000. However, there are potential benefits, and FWP is willing to be a partner in assisting towards achieving those benefits.

Conclusion

FWP greatly appreciates your approaching us with this lease offer. We feel that the project would provide fishery benefits, but that those benefits will be localized, species-specific, and address issues that are only somewhat limiting to the fishery of Little Prickly Pear Creek. We also feel there are several important unanswered questions associated with the water right and flows.

We therefore recommend and can support a funding request to the Future Fisheries Program of $15,000. This amount assumes that: the volume restriction would be addressed so as to be less constraining on a potential lease; that additional secured funding sources would be documented in the Future Fisheries application; and that the project would include the lease elements as discussed herein.

Thank you for your interest in the program. Please contact Kathleen Williams, Water Resources Program Manager (406-444-3888), if you have questions or concerns about the information in this review.

Appendix C. Media Story on Locke Creek Lease

INDEPENDENT RECORD
HELENA, MT 59604
DAILY, 13,390 SUN., 14,330

JUL 0 8 2001
SUPERIOR CLIPPING SERVICE
GLENDIVE, MT 406-365-6612

Pure cutthroats

Fish predicament spawns united effort between landowner, agency

LIVINGSTON (AP) — The creeks meandering through Charlie Pierson's ranch are teeming with fish.

But these aren't just any fish, scientists have excitedly discovered over the last 10 years. They are genetically pure cutthroat trout.

Somehow, rainbow trout, a nonnative fish which tends to dominate and interbreed with the Yellowstone River's native cutthroats, haven't found their way into Locke Creek, which crosses Pierson's property. The tiny tributary is a spawning haven for a fish species striving to keep a stronghold in its indigenous waters.

The discovery has led to a unique partnership between Pierson and the state Department of Fish, Wildlife and Parks. FWP fisheries biologist Brad Shepard said hopefully the project will encourage even more cutthroats to spawn in Locke Creek.

Pierson will get a better irrigation source. Cutthroats will get what might be a first-class spawning ground.

Pierson's ranch, the Highland Livestock Co., has long used Locke Creek to water about 600 acres by pump and flood irrigation. However, a study by a Montana State University graduate student found the lower the water levels on Locke Creek, the lower the numbers of cutthroat fingerlings making it to the Yellowstone.

Shepard said the FWP therefore became interested in keeping water levels as high as possible in Locke Creek. Also, three cement head gates block fish access to the creek. The FWP wanted to remove them in hopes of giving cutthroat more room to spawn.

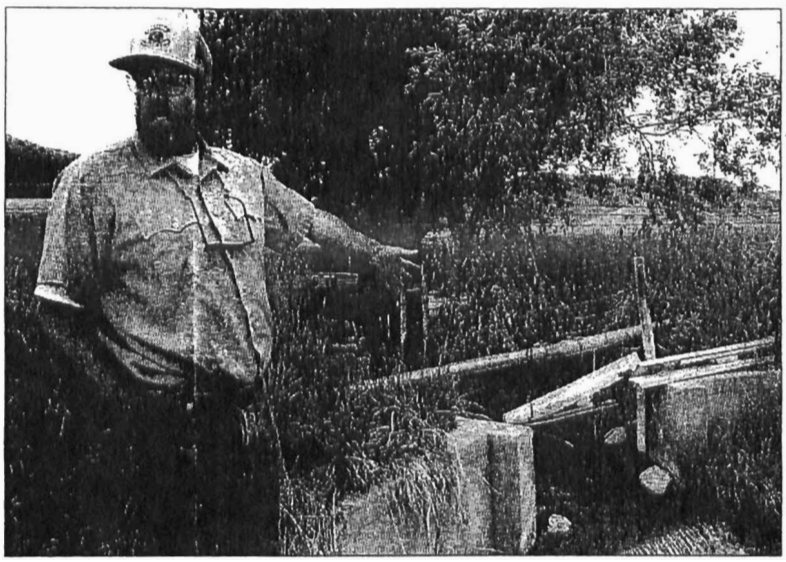
"Up until now, the fish have only been able to spawn in the lower part of the creek," Shepard said.

Pierson came up with an idea. "I thought maybe we can replace the water in Locke Creek with a well," he said.

FWP agreed. So the agency, through its Future Fisheries Program, will soon complete a 30-year lease on Pierson's water rights to Locke Creek.

In exchange, FWP will pay Pierson $45,000. The money goes toward drilling a well into the aquifer, buying a pump to get the water out and buying a windmill to power the ranch.

"I think this is good deal for everyone," Shepard said. "Charlie gets what he needs, we get what we want and hopefully the fish get what they want."



AP photo

STATE DEPARTMENT OF FISH WILDLIFE and Parks fisheries biologist Brad Shepard talks last month about one of the head gates located on Charlie Pierson's ranch east of Livingston, Mont. The agency will remove the gates to give the genetically pure cutthroat trout in Locke Creek more room to spawn.

water source. The well, installed in April, pumps 300 gallons a minute and is just 40 feet deep. "It's better because the creek may be dry before the summer is out," he said.

Installing the electricity-generating windmill was especially attractive to FWP, Shepard said. Electricity prices might rise drastically, but Pierson's ranch will be self-sufficient. Therefore, Highland Livestock Co. will still be able to afford the power to pump water and not revert to flood irrigation.

As for fish, they will have more room to spawn.

The MSU study found that in a good water year about 3,000 to 5,000 cutthroat fingerlings in Locke Creek, which translates into 400 to 500 adult fish. Shepard said he hopes the changes will mean 5,000 to 10,000 fingerlings, or 500 to 1,000 adult fish.

And cutthroats' tendency to return to their birthplace to spawn is extremely high, Shepard said. Those additional fish will likely use the tributary in the future.

The reason rainbows haven't invaded Locke Creek remains a mystery. But both men have their theories.

Pierson believes he trapped cutthroats in part of Locke Creek when he ago. The head gate presents a three-foot concrete barrier to fish.

Therefore, rainbows can't get up the creek. But high waters wash small cutthroats out and down to the Yellowstone.

FWP plans to keep in the upper head gate for now in case Pierson's theory proves true and rainbows begin using Locke Creek.

Shepard's theory relies on the water levels of the Yellowstone. He said cutthroats generally spawn earlier in the year than rainbows.

There is a culvert on Locke Creek beneath the railroad tracks, not far from the main river. Shepard thinks the Yellowstone is higher at the same time cutthroats want to spawn — high enough to get beyond the railroad culvert. But the culvert might be impassible by the time the rainbows want to spawn, which is often two to four weeks after the cutthroats.

Biologists will monitor the creek next year to determine if rainbows invade. All sides hope the project proves beneficial to cutthroats.

"We're really concerned about the possibility of rainbows moving in," Shepard said. "These are genetically

Appendix D – FWP Input to NRCS EQIP Leasing Element

Montana Fish, Wildlife & Parks

January 28, 2003

Mr. Dave White
NRCS
Federal Building, Room 443
10 E. Babcock
Bozeman, MT 59715-4704

Dear Dave:

Thanks for the opportunity to discuss and provide input to NRCS on a potential instream flow enhancement element of your new EQIP project application criteria. As discussed in person with representatives of NRCS, FWP, Trout Unlimited (TU) and the Montana Water Trust (MWT), the opportunities this concept brings for more win-win projects for irrigators and Montana streams is exciting. As I recall, you requested input regarding:

- the proposed EQIP "Water Quality and Water Quantity – Irrigation Efficiency (Structural)" **checklist** (12/09/02 version) and point amounts/distribution;
- wording of the **bonus point** element; and
- ideas on wording and content of an **incentive payment** addition that would help with the procedures necessary to lease/convert water to instream flow.

Although you requested the official comment from FWP, this discussion has included TU and MWT (the other current water leasing entities in Montana). I have consulted with them in the development of this letter. They have chosen to write a separate letter to you, in order to outline some slightly different ideas than those included here. Between the two, however, I think you find mostly similarities.

FWP's suggestions are divided by topic below. I also provided some process suggestions, since that may be the greatest challenge for both NRCS and the entities available to assist with instream flow protection/enhancement.

Background/Goals

As I understand, NRCS proposes to develop EQIP criteria associated with a selection of natural resource "concerns". The NRCS regions would then identify which concerns are most relevant to their region, and proposals would be accepted according to the criteria for those concerns. FWP is providing input to the "Water Quantity and Quality (Structural)" concern.

FWP, MWT and TU discussed what we thought were our mutual goals, summarized as follows:

NRCS:

- implement the intent of the 2002 Farm Bill
- provide a voluntary process for landowners willing to transfer conserved water to instream use
- minimize additional responsibilities for District Conservationists

- provide a straightforward program interface for applicants
- get real results

Leasing entities (FWP, MWT, TU):

- get real results (enhanced streamflow)
- maximize the effectiveness of leasing entity participation (i.e. best use of limited entity resources)
- foster incorporation of streamflow enhancement into Farm Bill programs
- create additional success stories of how agricultural productivity and healthy streams can exist together.

The suggestions in this letter are provided in the spirit of achieving these goals. If there are others that should be considered, please let me know.

Checklist

I would be interested in additional information regarding whether the project scale typically generates a similar level of water conservation as indicated by the point structure. Might points be better awarded by the percent (or percentage category?) of efficiency improvement? NRCS staff are the experts here, I'm merely curious what went into the proposed scheme for structural improvements.

I appreciate what appears to be incorporation of return flow issues into this Concern. FWP has been trying to incorporate these concerns into our leasing program and related Change Applications. We note that the term we have heard most often as to where these concerns are concentrated are "intermountain alluvial aquifers". Your reference to "high-mountain floodplains" is similar, but some of these problems occur in relatively low-lying areas (for Montana). I would be very interested to hear your proposals as to where you have defined these areas.

Bonus Point Wording

The wording in the 12/09 version implies that an applicant would get some type of commitment from a leasing entity in order to obtain the bonus points. We discussed our concern that leasing entities might not be able to generate a commitment in as timely a manner as an applicant would like. Also, with limited resources, FWP could likely only commit to a few per year, given informational and permitting requirements. Another issue is that, without a timeframe that applies to when the requests are made, leasing entities could "fill up" with less than optimal projects, and miss an opportunity for a great one that made contact later than the others. We also would be requesting information from each caller that could easily be provided in an application format, saving us significant time without an undue burden on the applicant.

As an alternative, as we discussed a bit at our meeting, incorporation of some flow enhancement information and evaluation in the EQIP process would work better. We suggest the following:

> Points will be awarded to an applicant who transfers all water conserved from an irrigation efficiency project to instream use as follows:
>
> a) 40 points for a project that will enhance streamflow on a stream listed in FWP's "dewatered streams list" (available on internet)
> b) 30 points for a project that will enhance streamflow on any other stream

FWP suggests the term "all water conserved" be interpreted as only a negligible allowed increase in acres irrigated (e.g. less than a 5% increase from current irrigated acres). We also suggest (as we discussed) that there be confirmation that a lessor cannot seek additional remuneration for the water conserved. There was no mention of the timeframe over which the applicant would convert their water to instream flow, so FWP assumes NRCS would require the maximum term (30 years for water "created" via a conservation project, or the life of the project, whichever is less). Last, it would seem that a sliding scale (i.e., "up to" 40 or 30 points) would help better differentiate between applications, if necessary.

In order to evaluate the applications, there should be some minimum submittal information required. FWP and TU/MWT came up with slightly different suggestions in this regard. FWP's suggestions are as follows:

> To be eligible for these bonus points, please provide written responses to each of the following (refer to accompanying material for help and examples):
> i) How will your project enhance streamflows?
> ii) How much would it contribute, and for what length of stream? (please provide the relevant water right(s) numbers)
> iii) Please describe the priority date of your water right claim and its relatively seniority on the stream?
> iv) Might anyone be adversely affected by your streamflow project? How so? (That will not necessarily eliminate your project from consideration.)

This wording assumes some informational materials will be available to applicants, as discussed later in this letter. These questions assume that NRCS will need some assistance from the leasing entities to evaluate applications. FWP is willing to consult with NRCS staff, and/or help review and rank applications, given enough notice.

Incentive Payment

This is a great idea, given the procedural hoops (and specialized expertise) necessary to convert diversionary water to instream flow. I do not have any sample wording from past NRCS incentive payment programs, so will just provide my thoughts, with the hope someone can craft them into the appropriate format.

> Incentive payments should be available to pay specialists for the following activities:
> 1) Water right and hydrological investigations for purposes of generating lease agreements and obtaining the necessary Change Authorization from DNRC;
> 2) Analysis and/or review of fishery benefit (mandated by statute)
> 3) Installation of streamflow monitoring/measurement devices to fulfill DNRC/lease measurement requirements.
> 4) Preparation of, and filing fee, for Change Application to DNRC.

If FWP's expertise in the leasing/Change process can assist NRCS with additional assistance with this element, please let us know. The Montana Water Trust is very interested in building organizational capacity to assist EQIP participants in transferring saved water to instream use, so this discussion is very timely in that regard.

Other Suggestions

We have discussed our willingness to offer training programs/seminars to NRCS staff that wish to learn more about water rights, instream flow tools, fisheries flow needs, etc. We reiterate our

willingness to do so, and to incorporate process information relevant to decisions made on the criteria and incentive payments.

The leasing entities have discussed their willingness to generate some sample answers to the questions posed above, for the benefit of applicants. We are also willing to contribute to or develop a fact sheet or other generalized handout or Web posting to assist potential applicants in understanding and applying for the streamflow bonus points.

Conclusion

We hope these suggestions are helpful in NRCS' further consideration of means to incorporate streamflow enhancement into the EQIP program, thereby providing your characteristic "leadership in a partnership effort to help people conserve maintain, and improve our natural resources and environment."

Please contact me, Laura or John with any questions you might have, or to get together again to discuss these proposals or needed refinements. Thank you for the opportunity to comment.

Sincerely,

Kathleen Williams
Water Resources Program Manager

c: L. Ziemer, Trout Unlimited
J. Ferguson, Montana Water Trust

Montana Fish, Wildlife & Parks

Ms. Carrie Mosley
NRCS
Federal Building, Room 443
10 E. Babcock Street
Bozeman, MT 59715

May 7, 2003

Dear Carrie:

Thank you for the opportunity to provide input to NRCS on an incentive payment for EQIP applicants who agree to transfer all conserved water from irrigation efficiency projects to instream use. Laura Ziemer, John Ferguson and I met and discussed such a payment. Here are our suggestions on how to structure the payment to account for the estimated procedural and technical costs to producers for converting their water rights to instream use. The list below breaks down the tasks mentioned in our January 28, 2003, letter to NRCS on the EQIP/instream use topic and assigns an estimated number of hours (or fee cost) to the task.

1a) Water right investigations for the purposes of generating lease agreements and/or obtaining the Change Authorization from DNRC to instream flow:

- Review DNRC's water rights database
- Evaluate Seniority of Water Right
- Prepare Maps: location of property, diversion points, irrigated acreage (ortho maps), and other necessary information
- Consider potential for objectors

Estimated Hours: 10

1b) Hydrological investigations for the purposes of generating lease agreements and/or obtaining the Change Authorization from DNRC to instream flow:

- Historic water consumption analysis
- Compile and analyze existing flow data and/or use hydrologic model
- On-site streamflow measurements/investigations (e.g., ditch conveyance losses, whether protected stream reach is a gaining or losing reach, base flow measurements of protected reach, etc.)

Estimated Hours: 40

2) Analysis and/or review of fishery benefit (statutory mandate):

- Compile and analyze FWP fisheries data
- Draft letter of support for signature by FWP biologist or other fisheries biologist

Estimated Hours: 5

3) Installation and maintenance of streamflow monitoring/measurement devices (statutory mandate):

- Purchase staff gauge: $100

- Install staff gauge, and take at least three streamflow measurements the first year to create rating curve for the staff gauge.
- Recalibrate staff gauge every 5 years, and make annual flow measurement check on staff gauge accuracy.

Estimated Hours: 66 (includes travel time)

4) Preparation of and filing fee for Change Application to be submitted to DNRC:
   - Filing Fee: $200
   - Preparation of Change Application

Estimated Hours: 30

Total Number of Hours– 151

TOTAL INCENTIVE PAYMENT - **$7,550** (assumes an average hourly consultant rate of $50)

The above outline is our estimate of the total hours necessary for converting conserved water to an instream water right and reflects the average conversion project. However, some conversions may be more complicated than others and would require substantially more hours to complete. Our initial approach is simple. However, if the NRCS is interested in structuring the incentive payment to more accurately reflect the costs to producers for converting conserved water to instream water rights, we would be more than happy to provide additional input on how to account for the easy, moderate, and difficult conversions.

We also suggest that the incentive payments be awarded only to those producers who are willing to convert the conserved water to instream use for the "expected life of project" or 30 years, whichever is less (statutory language). By awarding the incentive payments to these producers, the NRCS will ensure that its EQIP-funded irrigation efficiency projects result in long-term benefits to fisheries and reflect the investment necessary to achieve efficient water use.

As we discussed on the phone, I hope you will add "in critical low-flow periods" to the 40-point EQIP criterion. Conversion to instream use in high-flow periods (even on a stream that is on our Dewatered Streams list) would not be as helpful as during low flows. We are doing our 2003 update of our Dewatered Streams List and can provide you an updated version upon request. Also, we reiterate our willingness to assist the NRCS in developing and implementing a simple and efficient application and evaluation process for determining which applicants should receive the instream points under the ranking criteria.

We hope that the above outline is helpful in structuring an incentive payment to be awarded to successful applicants. Please contact us if you have questions. Thank you for the opportunity to comment.

Sincerely,

Kathleen Williams
Water Resources Program Manager

c: J. Ferguson – Montana Water Trust
L. Ziemer – TU's Western Water Project
K. McDonald – FWP, Helena

Appendix E. Monitoring Summary for FWP's Existing Leases/Conversions

The attached pages provide information on how FWP's leases are functioning, for those interested in the implementation phases of these agreements. The order of the attachments is as follows:

Blackfoot River Tributaries (Cottonwood (conversion), Pearson/Chamberlain)
Hell's Canyon (tributary to Jefferson River)
Locke Creek (Yellowstone tributary near Springdale)
Mill Creek (Upper Yellowstone)
Rock Creek (Upper Clark Fork, near Garrison)
Tin Cup Creek (tributary to Bitterroot River)
Other Upper Yellowstone basin leases – Big, Cedar, and Mol Heron

Notes:

1. The newest Cedar Creek lease is still in the final stages of the Change Authorization process, so monitoring there does not yet include this additional lease.

Questions regarding the monitoring information may be directed to Kathleen Williams, Water Resources Program Manager, at 406-994-6824, or kawilliams@montana.edu.

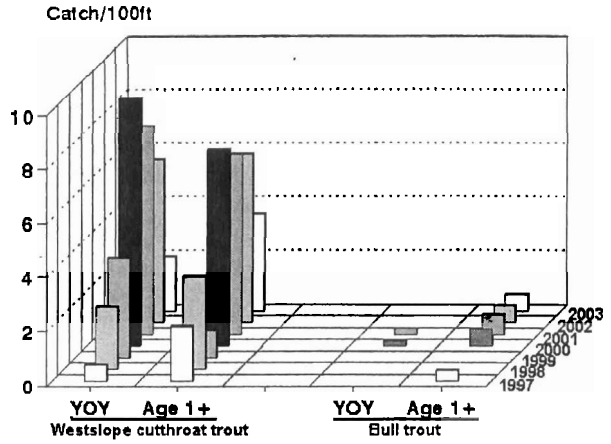
2003 Blackfoot River Tributary – Water Lease Monitoring Report

Cottonwood Creek

Restoration objectives: improve degraded habitat; eliminate fish losses to irrigation ditches and restore migration corridors for native fish.

Project Summary

Cottonwood Creek, a large tributary to the middle Blackfoot River, begins near Cottonwood Lakes and flows 16-miles to its junction with the Blackfoot River at river mile 43. Cottonwood Creek supports bull trout, WSCT, rainbow trout, brown trout and brook trout. Rainbow trout inhabit the lower mile of stream while brook trout and brown trout dominate middle stream reaches. WSCT and bull trout dominate the headwaters.



CPUE for native fish following irrigation upgrades at the Dryer Diversion (mile 12.0), Cottonwood Creek, 1997-2003.

Impacts to fish populations and their habitats were present throughout the Cottonwood Creek drainage, although most of the identified private land problems were corrected during the decade of the 1990s. Completed restoration measures include water conservation and water leasing, upgrading irrigation diversions with fish ladders, screening fish from all diversion points and implementation of riparian grazing systems along Cottonwood Creek. Cottonwood Creek also supports a high-grade whirling disease infection in the lower stream reaches. In 2002 the last open irrigation ditch was closed with a flood-to-sprinkler irrigation conversion. In 2003, corrected deficiencies at the Dreyer Diversion, by replacing the existing diversion with a cross-vane diversion.

Project Monitoring

In 2002-03, we continued to monitor fish populations in Cottonwood Creek in the area of a water lease, downstream of the Dreyer Diversion. Before 1997 when the water lease took effect, Cottonwood Creek below the Dreyer diversion was completely dewatered during the irrigation season.

The Dreyer ditch diverts water from Cottonwood Creek at stream mile 12.1. The 2002 fish population data show densities of westslope cutthroat trout have stabilized at much higher densities (Figure 2). By 2003, densities of westslope cutthroat trout had declined, presumably due to low flows resulting from extended drought.

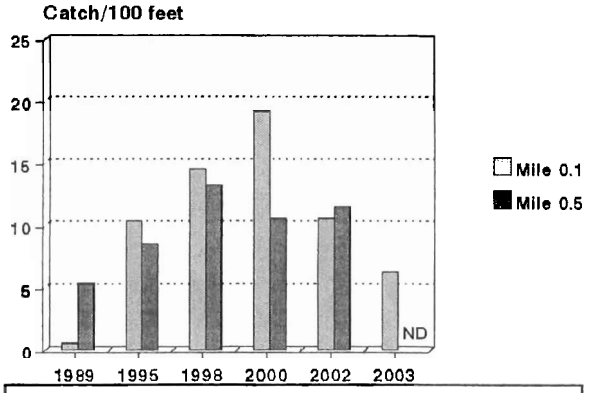
Chamberlain Creek

Restoration objectives: improve access spawning and rearing conditions for WSCT; improve recruitment of WSCT to the river; provide thermal refuge and rearing opportunities for fluvial bull trout.

Project Summary

Sections of lower Chamberlain Creek were severely altered, leading to historic declines in westslope cutthroat trout densities. Adverse changes to stream habitat included channelization, loss of instream wood, dewatering, excessive riparian livestock access, road encroachment and elevated instream sediment from road drainage. Other problems included fish losses to irrigation ditches and impaired fish passage.

Since 1990, Chamberlain Creek has been the focus of a comprehensive fisheries restoration effort. Projects include road drainage repairs, riparian livestock management changes, fish habitat restoration, irrigation upgrades (consolidate ditches, water conservation, eliminate fish losses to ditches, install a fish ladder on a diversion) and improved stream flows through water leasing. Restoration occurred throughout the drainage but focus mostly in the lower mile of stream.



CPUE for WSCT (fish>4.0") in two sections of lower Chamberlain Creek, 1989-2003.

Fish Populations

Chamberlain Creek supports a migration of fluvial WSCT from the Blackfoot River. Fluvial spawning occurs throughout the mainstem and extends into Pearson Creek and the East Fork of Chamberlain Creek. Beginning in 1997, we found low numbers of bull trout using the stream in areas affected by restoration.

In 2002-03, we continued to assess fish populations in the areas (two locations) influenced by water leasing (Figure 3). In 2003, we continued to sample Chamberlain Creek at stream mile 0.1 to assess population response to drought and whirling disease. These surveys indicate declining densities in the lower-most portion of Chamberlain.

Pearson Creek

Restoration objectives: restore the stream to its original channel; improve stream flows, access and condition of historical fluvial WSCT spawning site.

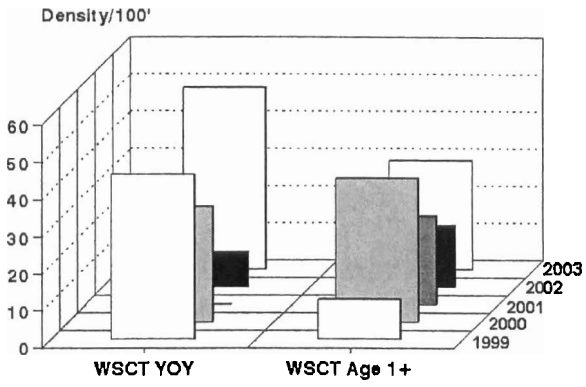
Project Summary

Pearson Creek is a small tributary to Chamberlain Creek with a base-flow of approximately one cfs. Pearson Creek has a history of channel alterations, adverse irrigation and riparian land management practices in its lower 2 miles of channel. The Pearson Creek restoration effort includes conservation easements, water leasing, channel reconstruction, riparian habitat restoration and improved riparian grazing management.

Fish Populations

In September 2002 and 2003, we re-sampled fish populations in a Pearson Creek section (mile 1.1). This sampling site is located in a stream reach influenced by a water lease and related riparian improvements (riparian fencing and habitat restoration). In part, we attribute lower densities of 2001-02 to drought and two years of excessive livestock access to the riparian area. In late 2002, the cooperating landowner addressed riparian grazing problems. In 2003, we

recorded a significant density increase in YOY, plus and increase age 1+ WSCT compared to densities of the previous two years.



Estimated densities of westslope cutthroat trout in lower Pearson Creek (mile 1.1), 1999-2003.

2003 Hells Canyon Creek – Water Lease Monitoring Report

The Hell's Canyon Creek water lease was monitored during 2003 to determine effectiveness and compliance of the lease agreement with landowners operating the Hell's Canyon Creek Gravity Pipeline. The pipeline was installed and the water lease implemented in 1996. Monitoring of pipeline withdrawal and stream flow from 1996 through 1999 did not observe problems with meeting guaranteed minimum flows in Hell's Canyon Creek because each of these years provided average or above average stream flow in the vicinity of Hell's Canyon Creek.

During the extremely dry conditions experienced in 2003, however, the stream flow of Hell's Canyon Creek was critically low throughout the summer period, and the stream would have most certainly gone dry if the pipeline system and the associated water lease was not in place. Although the terms of the water lease were met during 2003, the low flows resulted in marginal conditions in the lower 2 miles of stream below the pipeline system. The guaranteed minimum flows for Hell's Canyon Creek established in the lease agreement were:

Time Period	Minimum Flow (cfs)	Purpose
April 1 – July 15	1.60 cfs	maintain rainbow trout egg incubation
July 16 – Nov. 4	0.25 cfs	provide fry migration to avoid stranding

As in previous years, discharge of Hell's Canyon Creek exceeded the minimum flow value of 1.60 cfs prior to 15 July 2003. On July 16 the flow had dropped to 2.1 cfs, which was relatively close to the minimum of 1.6 cfs. On July 18, the flow dropped to 1.6 cfs and streamflow remained at critically low levels for the remainder of the irrigation season. The stream flow of Hell's Canyon Creek was not substantially higher than the guaranteed minimum of 0.25 cfs between 16 July and September of 2003 (Table 1). Flow in Hell's Canyon Creek was frequently less than 2 cfs during the summer period, and reached a low of 0.18 cfs on 3 September and 16 September. Stream flow measured at the mouth of Hells Canyon was observed at slightly less than the guaranteed minimum of 0.25 cfs during late August and early September 2003. Although measurements were not taken at the headgate where water is returned to the stream to meet the 0.25 cfs lease requirement, it appeared that 0.25 cfs was provided by water users at the point of diversion and only 0.18 cfs was reaching the mouth of Hells Canyon Creek. Water users reduced their water use during the critical period of August and September and generally did not run the pipeline at capacity, only using 400 to 750 gpm of water during the period. When the pipeline was turned-off on 30 September, the flow at the mouth of Hells Canyon Creek was measured at 2.5 cfs.

Flow monitoring was supplemented by installing an Aqua-Rod near the mouth of Hells Canyon Creek during August of 2003. These data allow monitoring of stage at 1 hour intervals, and provide insight into the operation of the gravity pipeline system and

document pulses of water released into the stream on a daily basis. A more detailed summary of the Aqua-Rod readings will be presented in a future report.

Similar to the years 2000 , 2001, and 2001, there is no question that Hell's Canyon Creek would have been completely dewatered downstream of the diversion during 2003 if the water lease was not in place. Several days during August experienced stream flow of less than 3 cfs ABOVE the point irrigation withdrawal. Considering that the combined water rights for Carroll, Allen and Humphrey summed to over 6 cfs prior to implementing the water lease, the benefits of the pipeline and lease is significant. Despite the low flows downstream of the diversion (frequently less than 1 cfs during July and August, the water remained relatively cool and hundreds of trout fry could be observed rearing in the leased waters of Hell's Canyon Creek below the diversion.

In addition to flow monitoring, FWP monitored trout fry migrations at the fish screen bypass to provide documentation of the effectiveness of the fish screen at the head of the gravity pipeline. Based on fish trapping conducted between 7/1/03 and 9/30/03, an estimated 10,000 rainbow trout young-of-the-year were screened from the pipeline inlet during 2003. The peak of trout movement occurred in late July when several hundred fish per day were captured at the fish screen bypass. Fish movement was minimal during late August and early September, but sufficient flow was available to prevent stranding loss of fry in Hells Canyon Creek.

Table E-1. Flow measurements taken by FWP and USGS near the mouth of Hell's Canyon Creek during 2003.

Date	Discharge	Gauge Height
4/25/03	8.69	1.90
5/29/03	2.39	33.3
6/24/03	8.96	2.03
7/15/03	1.85	1.78
8/06/03	0.93	1.76
8/13/03	2.79	1.84
9/03/03	0.24	1.65

* Note the unusually low flow during spring and fall measurements when irrigation withdrawals were minimal. Flow was so low during November 2003 that migrant brown trout did not enter Hell's Canyon Creek for spawning.

2003 Locke Creek – Water Lease Monitoring Report

Locke Creek was checked on fifteen occasions between April 13 and September 10, 2003 (see table). Recorded gage heights ranged from a low of 0.12 (August 27th and September 10th) to a high of 1.01 on May 26th when the river level was high enough to inundate the gage. A thermograph was deployed from 4/21 until 9/10 in the creek approximately 15 meters upstream of the railroad bridge.

The creek was accessible to fish from the first visit on 4/13 through the remainder of the year. On eight occasions, the creek was walked from the frontage road upstream to the reconstructed channel area. The creek was also checked downstream of the frontage road on several occasions. The water turbidity often obscured visibility of the entirety of the stream substrate on several occasions. One unidentified fish was observed, on 4/13. No other fish were seen. One potential redd was noted on 6/20 and 6/25. Based on later observations this feature was thought to have solely been created by stream hydraulics.

Some work to remove particularly problematic beaver-caused obstructions was completed last calendar year.

Summary of field notes for Locke Creek visits in 2003.

Date	Comment
4/13/2003	gh 0.35, mouth of creek is accessible to fish to at least above railroad bridge
4/21/2003	thermograph placed in creek
4/30/2003	gh 0.30 +/- 0.01, creek fully accessible to fish, has been for weeks, walked from mouth upto the second culvert, saw 1 fish (only saw a flash and unable to tell what it was) walked from frontage road upto the driveway of house, no fish or redds observed
5/14/2003	gh 0.30 +/- 0.02, creek is accessible
5/15/2003	walked from frontage road to the house, no fish seen
5/26/2003	gh 1.01 +/- 0.01 (river level is up above the concrete platform), creek above the railroad bridge is flowing about the same as last week, water slightly more turbid, walked creek from frontage road to the house, no fish seen
6/9/2003	gh 0.26, walked from frontage road upto diversion dam, water is more turbid (~ 1 foot visibility) than previous weeks, gravels are visible but deep pools are not, did not see any fish or redds
6/12/2003	gh 0.27, turbid (~6 inches visibility), walked from mouth to second culvert and then from frontage road to the constructed channel (with Brad), was able to see shallow gravels, no fish seen
6/20/2003	gh 0.24 +/- 0.01, walked from frontage road to the reconstructed channel project, no fish, one potential redd, water clarity better than last week but visibility limited by overcast sky
6/25/2003	**gh 0.24, water color chalky, but better clarity than the past few weeks,** no fish seen, maybe one potential redd (in field stretch), walked up to diversion dam
7/7/2003	gh 0.24 +/- 0.01, water fairly turbid, could see most gravels, walked in creek from frontage road to the constructed channel, no fish and no definite redds
7/19/2003	gh 0.20
8/1/2003	gh 0.18, good depth and flow past thermograph
8/27/2003	gh 0.12, thermograph still watered
9/10/2003	gh 0.12, sluggish flow past thermograph, some silt built up around pipe casing on downstream side, thermograph retrieved

2003 Mill Creek – Water Lease Monitoring Report

Summary

Fish were trapped moving downstream in Mill Creek at two locations during 2003 to help evaluate the effects of: 1) not renewing two of the three Mill Creek water leases, and 2) the Mill Creek Water and Sewer District (MCWSD) pipeline project on recruitment of trout to the Yellowstone River. Flows and water temperatures were also monitored. Flows declined rapidly in Mill Creek from early to late July, despite the near normal snowpack recorded in the upper Yellowstone basin for 2003 (98% of average). By the end of July the portion of Mill Creek below the River Road bridge had been totally dewatered. Flows in the vicinity of the Allen-Sexton Diversion had dropped so low by mid-August that all flow in Mill Creek at this point was being diverted into the ditch. By the end of August Mill Creek was dry from about one km above this diversion down to the mouth of Mill Creek.

Eleven Yellowstone cutthroat trout (nine adults and two juveniles), one juvenile rainbow trout, one juvenile brown trout and two adult mountain whitefish were captured moving downstream at the two trap sites with only one of these fish, a 328 mm long Yellowstone cutthroat trout, captured at the upper sites. Numerous trout were found stranded in isolated pools located in lower Mill Creek near the end of July when this portion of the stream went dry. A total of 22 rainbow trout and one Yellowstone cutthroat trout fry were captured in the fry trap placed in lower Mill Creek. Eighty-five rainbow trout and 120 Yellowstone cutthroat trout fry were captured in the fry trap set above the Allen-Sexton diversion. Five rainbow trout fry, one juvenile trout identified as a likely rainbow-cutthroat trout hybrid cross, and 121 Yellowstone cutthroat trout fry were captured within the Allen-Sexton ditch from August 3 to August 13. Rainbow trout fry were captured prior to July 28, while all cutthroat trout fry were captured after July 30.

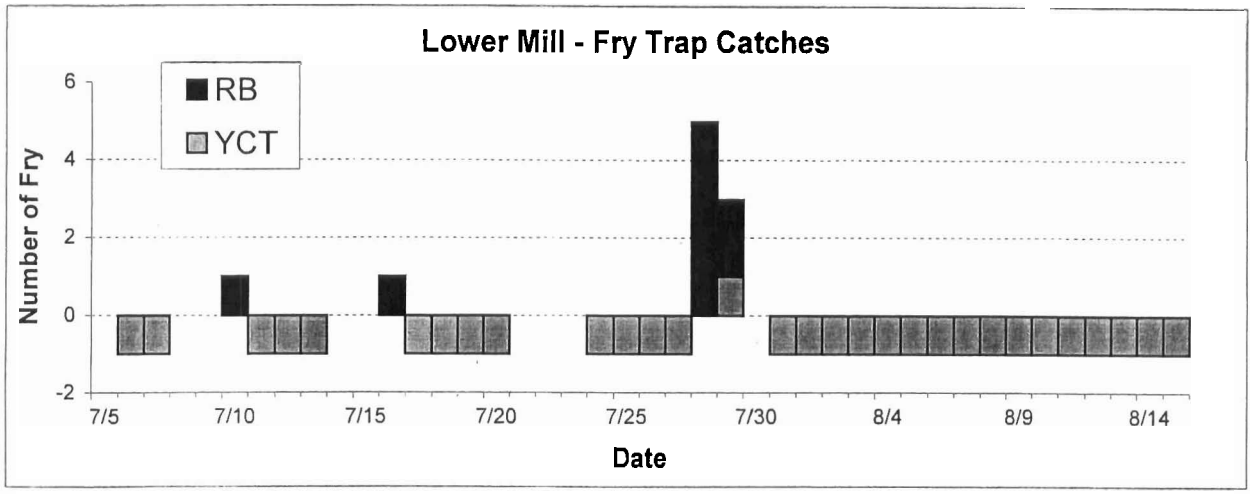
Lower Mill Creek went dry immediately after the first Yellowstone cutthroat trout fry was captured in the trap located at this site. Peaks in fry emigration were around July 22 for rainbow trout and August 4 for cutthroat trout. No fry that had been fin-clipped at the upper trap site were recaptured at the lower trap site. These data suggest that recruitment of trout, especially Yellowstone cutthroat trout, is dependent upon maintaining flows throughout lower Mill Creek. The data further indicate that MCSWD pipeline project has not resulted in enough flow augmentation for lower Mill Creek to benefit in recruitment of Yellowstone cutthroat trout without some lease-guaranteed flows.

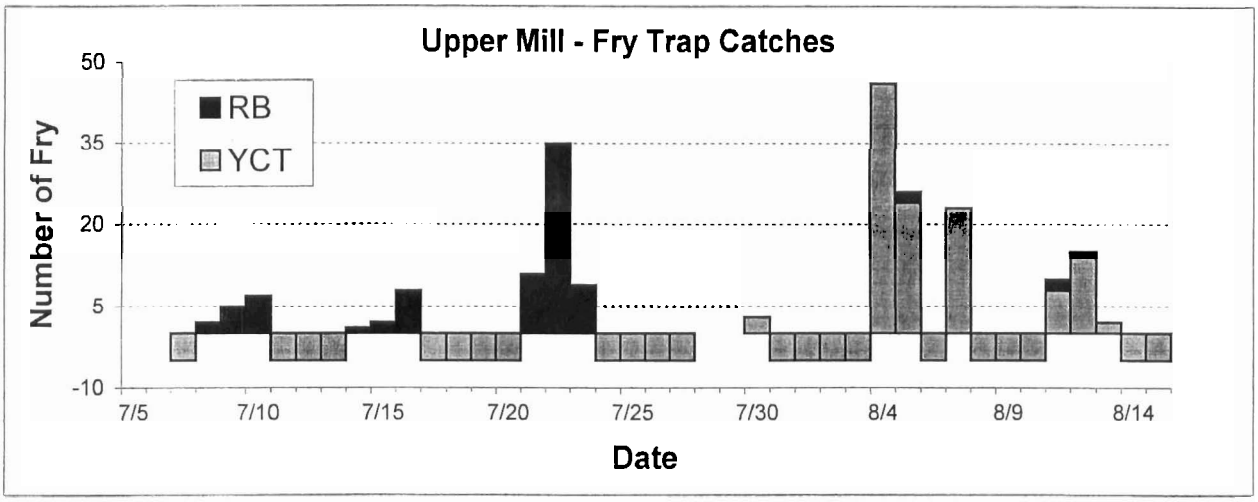
Other FWP staff trapped adult fish in spring in Mill Creek, confirming its use by adult rainbow and cutthroat trout. This work also confirmed 1+-year outmigration of fingerlings and a resulted in a surprising discovery of a spring run of mountain whitefish into Mill Creek from the Yellowstone River. FWP's field biologist feels that continuing to use angler dollars for the expired leases would not be not cost-effective.

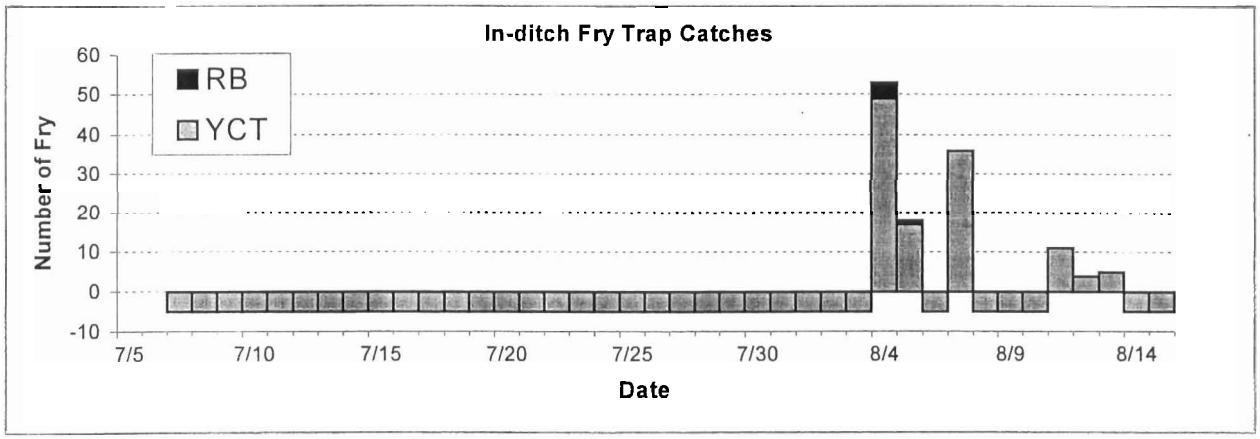
Specific Summer Fry Trapping Results

Total and relative catches (catch per trap day) of Yellowstone cutthroat trout fry in fry traps located in lower Mill Creek have steadily declined since 1997 (Hennessey 1998; Roulson 1998; 1999; 2001; 2002; and Joel Tohtz, personal communication, Montana FWP, Livingston, MT; Figure 3). The trapping location was moved about 300 m upstream from the time period 1998-2001 to 2002-2003; however, this location difference should not have unduly influenced trap catches.

While water supply from snow was nearly normal for the Yellowstone River basin above Livingston in 2003, the cumulative impacts from four years of drought conditions have likely reduced stream flows in Mill Creek. Precipitation during the summer was also much lower than normal which contributed to low flow conditions. In spite of these facts, it was clear that the termination of the two water leases (one of 6.13 cfs from an individual and the other 48 hour "flushing flow" from the MCWSD) in 2003 led to lower Mill Creek being dewatered earlier, for a longer time period, and over a longer reach of channel than when these leases were in effect. However, as Roulson (2002) pointed out it was extremely difficult to maintain leased flows at the lease quantification point even when these leases were in effect.



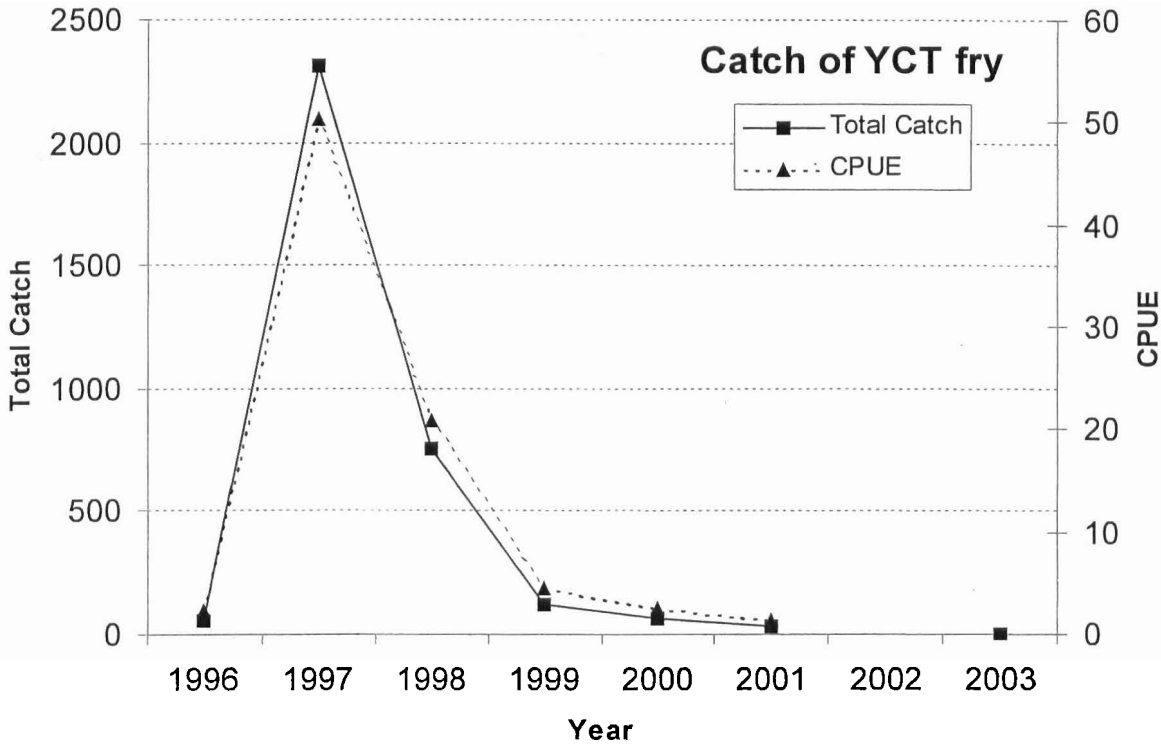




Daily catches of rainbow (RB) and Yellowstone cutthroat (YCT) trout fry at three locations in the Mill Creek drainage during 2003. Negative values indicate days the traps were not set. The Lower Mill site went dry on July 30.

Overall Fry Production over the Terms of the Leases

The figure below provides a cumulative picture of documented fry production in Mill Creek since 1996. Production dropped severely in dry years.



Total catches and catch per unit effort (CPUE; number per trap day) of Yellowstone cutthroat trout fry captured in fry traps located in lower Mill Creek (River Road down to its mouth) from 1996 to 2003. Data for 1996 through 2001 provided by Hennessey (1998) and Roulson (1998; 1999; 2001; 2002; and data for 2002 provided by Joel Tohtz (personal communication, Montana FWP, Livingston, MT).

References

Hennessey, L. E. 1998. An evaluation of Yellowstone cutthroat trout fry recruitment related to water leases on four tributaries of the Yellowstone River. Master's Thesis, Montana State University, Bozeman, Montana.

Roulson, L.H. 1998. An evaluation of Yellowstone cutthroat trout fry outmigration from four tributaries of the upper Yellowstone River during a low water year. Montana Department of Fish, Wildlife and Parks, Bozeman.

Roulson, L.H. 1999. Water leases and Yellowstone cutthroat trout fry outmigration from four tributaries of the upper Yellowstone River. Garcia and Associates. Prepared for Montana Department of Fish, Wildlife and Parks, Helena.

Roulson, L.H. 2001. Water leases and Yellowstone cutthroat trout fry outmigration from four tributaries of the Upper Yellowstone River, Project Year 2000. Garcia and Associates. Prepared for Montana Fish, Wildlife and Parks, Bozeman, Montana.

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2003 Rock Creek (Garrison) – Water Lease Monitoring Report

The Rock Creek (Garrison) Instream Flow and Habitat Improvement project was designed to improve fish and wildlife habitat and assist with riparian management on a degraded reach of Rock Creek. Rock Creek was dewatered, over-grazed, channelized, unstable and contained virtually no pool habitat within the lower 2.5 miles, reducing its potential as a spawning tributary and contributing excessive nutrients and sediment to the Clark Fork River. The project improved fisheries and wildlife habitat in both Rock Creek and the Clark Fork River through instream flow, nutrient and sediment reduction, habitat improvement, channel stabilization, and removal of fish passage barriers. It also provided spawning, rearing and overwintering salmonid habitat, increasing wild trout recruitment to the Clark Fork River. The Rock Creek project improved fish and wildlife habitat, while maintaining historical ranching traditions and building positive partnerships between landowners, government agencies and conservation groups.

The Rock Creek (Garrison) Instream Flow and Habitat Improvement project designed and installed an irrigation system to provide instream flows, as well as improved habitat, stabilized channel reaches and assisted with riparian management. The Project converted the ranch's flood irrigated pastures to sprinkler irrigation and all salvaged water was donated for instream flow (5-27 cfs). The lower 2.5 miles of Rock Creek had been annually dewatered for the past 35 years. In the 2 years of monitoring, instream flows were never recorded below 7 cfs, even through the drought years of 2000 and 2001. Although dewatering was the most significant cause of habitat loss in lower Rock Creek, the channel still lacked pool habitats. Less than one pool per 300 feet was suitable for overwintering habitat in the lower 7,820 feet of channel. Above this reach pool densities increase to approximately 3-7 pools per 300 feet. Channelization and removal of large woody debris have created insufficient habitat complexity. The project restored four meanders (bank stabilization and channel reconstruction), created 46 new pools and 16 new overhead cover areas. The habitat improvements, along with the instream flow water lease, generated new spawning opportunities for Clark Fork River trout and created excellent habitat for resident salmonids.

Fisheries investigations for the Rock Creek (Garrison) Instream Flow and Habitat Improvement Project included redd counts and electrofishing population estimates. In fall 2000, 2001 and 2002, brown trout redds were counted for the lower 2.5 miles of Rock Creek. Redds were counted three times with at least once week between counts. In 2000, the surveys found 4 definite redds, 9 probable redds and 4 test digs. In fall 2001, the number of redds increased to 16 definite and 4 probable. In fall 2002, the number of redds increased to 28 definite, 8 probable and 3 test digs.

Electrofishing estimates were conducted in fall 2001 and 2002. In 2001, the lower channel (historically dewatered reach), the survey found 29 brown trout per 100 yards and 46 brown trout per 100 yards in the upper project area (9 fish > 10" and
15 fish > 10", respectively). In 2002, the lower channel (historically dewatered reach), the survey found 30 brown trout per 100 yards and 71 brown trout per 100 yards in the upper project area (18 fish > 10" and 25 fish > 10", respectively). The number of adult brown trout has almost doubled since the 2001 sampling, many of which may be spawning adults from the Clark Fork River. Westslope cutthroat trout were also sampled in the upper reach, indicating that they may

be pioneering the area of restored habitat. Prior to project completion, the channel had been dewatered for the past 35 years. The redd counts and population estimates indicate that brown trout and westslope cutthroat trout are using the restored reaches of Rock Creek.

Stream flows were recorded during the 2003 irrigation season on Rock Creek. Velocity was recorded using a Marsh/Mcberny velocity meter. If no pivots were in operation, then flow was either recorded only upstream of the headgate or it was not measured. If any pivots were in operation, then discharge was recorded above the headgate and below the return flow (fish bypass) pipe. Discharge locations were selected to provide uniform velocities and always recorded at the same locations each month. No site visit was conducted in May, and therefore no data exists for that month.

Date	Number of operating pivots	Discharge (cfs)	
		Above headgate	Below headgate
8 April 2003	0	68.3	Not recorded
May – No site visit	---	---	---
30 June 2003	1	12.5	11.7
31 July 2003	0	23.4	Not recorded
29 August 2003	2	9.3	5.4
24 September 2003	0	Not recorded	Not recorded
21 October 2003	0	Not recorded	Not recorded

2003 Tin Cup Creek – Water Lease Monitoring Report

This lease provides some instream flow in lower Tincup Creek during the summer and early fall seasons. Originally, the water was leased with the goal of providing out-migrating rainbow trout fry with passage water to the Bitterroot River. We later learned that fluvial westslope cutthroat were spawning in upper Tincup Creek and most likely also need additional summer instream flows for juvenile passage to the river.

This year FWP monitoring was focused on lease compliance. Staff generally measure flows in Tincup Creek as it recedes in mid-July and plot a curve to identify our target elevation (stage). This year, the lease stage was 1.58 feet on the staff gage. FWP staff are able to check the staff gage fairly regularly through the summer as they pass by the area often. By early fall, staff do not travel that way as often, therefore take fewer readings. The table below illustrates how well instream flows were sustained – basically a "mixed bag", similar to past years. The water commissioner was responsive to our calls for water and did a better job of keeping our water near the target elevation this year than in others.

Per the lease agreement, the lessor committed to check stage readings and contact local FWP staff with readings. The lessors complied with this lease element only three times over the late-June to mid-October period. We could have greatly benefited from increased diligence on their part, especially in September, as staff monitoring capability declined.

Tin Cup Lease Compliance Monitoring Results

Date Checked	Stage	Dates Monitoring Info provided by Lessors
24-Jul	1.54	
28-Jul	1.5	
30-Jul	1.54	
4-Aug	1.6	
6-Aug	1.62	
11-Aug	1.54	
14-Aug	1.56	
18-Aug	1.58	
20-Aug	1.59	
25-Aug	1.6	
27-Aug	1.6	c
28-Aug	1.58	
5-Sep	1.5	c
5-Sep	1.44	
9-Sep	1.6	
10-Sep	1.54	

11-Sep	1.58	c
5-Oct	1.58	
14-Oct	1.66	
Target lease level = 1.58		

No biological monitoring was conducted on this lease in 2003. FWP staff know that some cutthroat fry enter ditches during the summer. Likely, the more water connecting the Creek to the River, the better for fry getting to the river. To monitor and quantify downstream movement by fry would be more than FWP staff can absorb at this time. We have learned from monitoring Skalkaho Creek that there is considerable downstream movement by westslope cutthroat during July, August and September. So, biologists suspect the Tin Cup lease is similarly helping get Tin Cup young-of-the-year to the river.

2003 Mol Heron, Cedar and Big Creeks – Water Lease Monitoring Report

No specific compliance monitoring was conducted for these creeks in 2003, however visual surveys indicated flow was present on a regular basis in all three. With some program changes, we will likely be able to better monitor these leases in 2004. Additional observations and information regarding lease effectiveness/issues is provided below, by creek.

Mol Heron

Last year's fish passage problems created by modifications to an irrigation diversion have been partially resolved.

Cedar Creek

A highway upgrade of twin culverts at US 89 South/Cedar Creek crossing has not been completed yet. New design incorporates fish passage. Although the stream is not totally blocked now, the new culverts should improve fisheries benefits when the project is completed.

Big Creek

This stream is scheduled for adult fish trapping work this spring.