2001 ANNUAL PROGRESS REPORT
WATER LEASING STUDY

Submitted to:

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

Submitted by:

Montana Fish, Wildlife and Parks
Fisheries Division

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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 (which we interpret to mean for each new or renewed 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 lease was finalized in 2001, on Locke Creek in the Yellowstone River basin, east of Livingston.

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 2001 leasing year, including the new and renewed leases;
Section IV – additional detail on the 2001 new and renewed leases, 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 2002.

Appendix A is a matrix summarizing characteristics of all current FWP leases and water conversions.
Appendix B lists our leasing objectives, which is what we currently use to evaluate leasing offers, as well as actively seek additional lease opportunities.
Appendix C is a copy of a media story on FWP's newest instream flow lease on Locke Creek
Appendix D provides monitoring information for FWP's 14 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*" (85-1-101(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, without direct consideration of the aquatic and recreation elements described above. 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 many 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 Commission and DNRC and submitted to the EQC, for their 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 Work Plan for the 1997-98 Interim. They 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. They 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. We thank the EQC for its long-term support of this program. (Note: Copies of the 1998 Final Report are available both from EQC and FWP staff, upon request.)

III. A REVIEW OF THE 2001 LEASING YEAR

Drought conditions continued in Montana in 2001, and effects broadened to affect the northwestern portion of the state more seriously than in 2000. 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.

2001 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. Notable elements of the 2001 leasing year are described below.

- **One new water lease negotiated.** FWP entered into a lease with a private ranch to contribute $45,000 towards the costs associated with the construction and operation of a groundwater well to replace irrigation water use from Locke Creek. In return, the rancher leased his irrigation surface water rights to FWP for 30 years. The ranch could divert up to 9.5 cfs from Locke Creek under these rights, which were the only quantified rights drawing

from the source. The funds were provided from a special drought-related Future Fisheries Improvement program funding window, reserved for streamflow-related projects that would provide long-term benefits. The window was created between the normal grant deadlines of January 1st and July 1st, to enable projects that could get implemented during the drought conditions of 2001. As a condition for FWP to provide the special funding window, DNRC agreed to expedite any water permitting that was necessary to get funded projects implemented and providing benefits during the low-flow period of 2001. DNRC granted the ranch an Interim permit to appropriate water, such that the well was drilled and groundwater used for irrigation in 2001. The lease agreement has since been signed, and the Change Authorization and new groundwater permit (for the well) are being processed simultaneously. The Authorization and Permit are expected to be issued before the 2002 irrigation season.

- **New lease opportunities.** Word is getting out about FWP's instream flow leasing program. We received many inquiries in 2001, yielding several excellent lease opportunities. We continue to pursue leasing opportunities on Little Prickly Pear and Prickly Pear creeks (Middle Missouri basin), Poorman Creek (Blackfoot Basin), Therriault Creek (Tobacco River basin), 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.

- **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 several times this year, and the associated "fishpads" ("Water for Fish+" – by species – notepads) are a popular token of FWP's appreciation to our cooperators. A standardized Power Point presentation has been developed for the FWP Water Resources 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 three 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 broader inter-agency relationships for us, and also helps those agencies and entities provide multiple offerings to their cooperators.

- **Supporting leasing/conversion by others.** We continue to assist others interested in leasing to other parties, or converting their rights to instream flow. Such assistance is through

funding consideration in our Future Fisheries Improvement grant program, technical assistance in project planning, provision of information on water rights and the conversion process, memos to right holders regarding the potential benefit of conversions on the fishery resource (required by statute), and general encouragement of the use and promotion of all types of instream flow protection/enhancement tools.

- **FWP leases and water reservations available on the Web.** FWP GIS staff loaded all of FWP's instream flow information into the Water Information System, 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 the following link: http://nris.state.mt.us/scripts/esrimap.dll?name=MRIS2&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.

IV. 2001 NEW LEASES

FWP and lessors finalized one new lease in 2001, which is described below.

Locke Creek – New Lease

Locke Creek originates in the northern foothills of the Absaroka Mountain range in southwest Montana and flows in a northerly direction for about 5.8 miles before entering the Yellowstone River near Springdale, Montana. For much of its length, Locke Creek passes through hilly grazing lands owned by a private ranch. The diversion of irrigation water has impacted the flow and fishery of the lower creek, which is used by Yellowstone cutthroat trout (a "species of special concern" in Montana) for spawning and the rearing of young.

The ranch controlled all irrigation rights on Locke Creek. Historically, water for flood irrigation was diverted at two sites on the Creek; one diversion served about 113 acres and another served about 30 overlapping acres. Recently, water was also pumped to wheel lines from Locke Creek at a third diversion site further downstream, which augmented the flood irrigation from the upper two diversions.

FWP has leased for instream use the ranch's two irrigation rights (multiple diversion points) from Locke Creek. Under the 30-year agreement, lands formerly watered from Locke Creek will be served by a groundwater well that is not hydrologically connected to Locke Creek. The new system is planned to include a submersible pump and a wind-powered turbine that will be connected to the power grid and used to offset energy costs associated with the pump. In addition to leasing to FWP the only quantified diversionary rights on Locke Creek, the ranch will cooperate with FWP staff and volunteers to correct fish passage and habitat problems associated with the lower section of creek.

The upper Yellowstone River, a highly valued and popular sport fishery in Montana, supports self-sustaining populations of 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. Dewatering of the lower segments of these tributaries during the irrigation season adversely affects the reproductive success of Yellowstone cutthroat trout, and, consequently, limits the production of new recruits for the river fishery. Studies by FWP and others show tributary dewatering to be an important, if not the major, factor regulating numbers of adult cutthroat in the Yellowstone River.

Locke Creek is one of the spawning tributaries to the Yellowstone River. When flows are adequate, adult cutthroat typically ascend the Creek in June, spawn in late June to mid-July as runoff flows recede, then return to the river where they reside until the next spawning season. Cutthroat eggs incubate in the spawning gravel for about 30 days before hatching. The young (called "fry") begin to out-migrate to the Yellowstone River shortly after emerging from the gravel. By late September, most have entered the main river. Some fry remain in the creek one or more years before out-migrating.

Data collected for FWP from 1996 to 1998 suggest that cutthroat reproduction in Locke Creek is adversely impacted by seasonal irrigation withdrawals. In 1997, when the daily flow of Locke Creek averaged slightly more than 3 cfs during the summer, 1,844 out-migrating fry were collected in the creek. In contrast, only six fry were collected in 1998 when the daily flow averaged less than 1.5 cfs. In 1996, fry collection and associated flow were intermediate to those in 1997 and 1998. This relationship suggests that increasing summer flow in lower Locke Creek by as little as 1.5 cfs, could significantly increase recruitment to the Yellowstone River.

A diversion structure, located about 0.15 mile above the mouth acts as a barrier to the upstream movement of cutthroat spawners. Implementation of this multi-element project would result in the modification of this barrier, opening an additional 0.35 mile of spawning and rearing habitat. Seasonal livestock fencing, coordinated with the ranch, FWP staff, and potentially volunteers, completes the ability of the creek to make full use of the flow commitment provided by the ranch. FWP staff predict these improvements will allow Locke Creek to annually recruit approximately 10,000 cutthroat fry to the Yellowstone River.

Figure 1. Specific Statutorily-Required Information for 2001 New FWP Instream Flow Lease (Locke Creek)	
Statutorily-Required Reporting Element (abbreviated, see p. 1 for full text of reporting requirement)	**Response**
length of stream reach and how determined	Locke Creek is 5.8 miles in length. With the flow contribution, habitat protection, and barrier removal that are part of the FFI-funded project, the benefiting reach is approximately 1.25 miles in length, which will produce an estimated 10,000 cutthroat fry to the Yellowstone. The distance is determined by the distance from the mouth to the uppermost former diversion structure.
technical methods and data used to determine fishery needs	A Masters student at MSU measured flow and fry production in Locke Creek in 1996-1998 as part of her thesis work. The data suggests that increasing summer flow in the lower Creek by as little as 1.5 cfs (the amount recently pumped for irrigation) could significantly increase requirement to the Yellowstone River.
determining and substantiating the amount of water available for lease	The USGS provided monthly percentile flow estimates for Locke Creek based on a drainage-area ration adjustment applied to recorded flows for another upper Yellowstone tributary. Flow availability, related to historic and recent amounts diverted was discussed with the ranch owner. Also, since the ranch is the only diversionary right-holder on the mainstem, all of the water arriving at his diversion was considered available for lease, up to his combined diversionary rights of 9.5 cfs. The USGS calculations showed that 9.5 cfs was likely only available during the run-off period of May-July in most years, with later-season flows being less. The ranch owner noted that during past drought events, the 1.5-cfs-capacity pump was capable of completely dewatering the creek in some periods. The Masters thesis also provided flow information for the lower creek (below the ranch diversions) for 1996-1998.
ensuring no adverse impact to other appropriators	There are no downstream appropriators. Given the small number of upstream appropriators, we predict there will be very little concern about potential adverse effect. As the DNRC change Authorization process proceeds, anyone with such concerns can participate, and their concerns incorporated into the process. Because this process is not yet complete, we hope to report on the lack of adverse affect in next year's report to the EQC.
monitoring water use under lease	A staff gauge will be reactivated downstream of the former surface water diversion points. It will be a similar location to that used in previous studies of Locke Creek, thus results will be comparable to past flow 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 2. 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
4. Cedar Creek	Yellowstone River	final approval 1/6/92	lease
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
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 finalized in 2000
14. Locke Creek	Yellowstone River	study stream approval 12/01	lease agreement signed; advance payment made; awaiting DNRC approval of change application/ groundwater permit

VI. GOALS FOR 2002

In looking forward to 2002, 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 2002, 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 2002. 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 Appendix B for FWP's Leasing Criteria.)

- **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 promote such tools (along with many others) whenever provided the opportunity. We know of at least three "conversions" of water to instream flow to benefit the fishery resource, 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.

- **A better FWP "pricing" mechanism.** FWP currently uses the criteria listed in Appendix B 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, 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 (finanacial 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 Appendix A gets wider and wider distribution, we find potential lessors focusing on the maximums we have previously paid (e.g., Big Creek) as their starting point for negotiation. We plan to expand the matrix to include descriptions of how the leases rate according to our 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. .

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APPENDICES

Appendix A. Features of Montana Fish, Wildlife & Parks Instream Water Leases – January, 2002

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	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	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 (first 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 (dedicated in perpetuity)	April 15 - October 15	$228,640 - one-time payment
Big Creek	Private ranch	10 years May 1, 2009	June 30, 1873 (first 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

[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.

Note: A Lease Agreement on Locke Creek was finalized with the Lessor in 12/01, but is awaiting authorization from DNRC.

Appendix B. 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?

Contact Montana Fish, Wildlife & Parks' (FWP) Water Resources Program Manager at 406-444-3888, or your local FWP Fish Biologist, for more information.

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. Monitoring Summary for FWP's 14 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:

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

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

Rock Creek (Garrison) Instream Flow and Habitat Improvement Project

FY2001 Monitoring Report

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. 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 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. 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 and 2001, 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. Electrofishing estimates were conducted in fall 2001. In 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). Prior to project completion, the channel had been dewatered for the past 35 years. The redd counts and population estimates indicate that brown trout are using the restored reaches of Rock Creek.

TO: Kathleen Williams

FROM: Chris Clancy (11/5/01)

Kathleen, this is a quick report about our activities on Tincup Creek this year:

All of our time was spent measuring streamflows and contacting the water commissioner to maintain our lease quantities. We measured streamflow 4 times to establish a rating curve and then stopped by the site about 12 times to observe whether the flow volumes were adequate. I called and talked to the water commissioner about 5 times throughout the summer.

Early in the summer, flows were maintained well and we talked to the water commissioner on site to be sure he was clear on our expectations. He seemed pretty well versed in the system and whenever we called that the flows had dropped below our lease level, he quickly restored the water. In late September, I was unexpectedly out of the area for a week and when I returned, the flows were very low, well below our lease level. I called the commissioner and he said he felt the amount in the creek was adequate for fish. I informed him that he should restore our lease flows and he said he would have to take it from other users. I agreed he would, and flows were restored the next day. I estimate our flows were about ½ of the lease quantities for about 2 weeks in September. All said, this year was the best year for maintaining flows in Tincup Creek despite the drought. However, due to the time it takes to establish a rating curve and observe flows, and maintain contact with the commissioner, I don't feel I had time to spend doing biological monitoring this year. The USGS did collect one streamflow measurement that was similar to ours, however, by the time we receive that information, we typically have the curve established. I suggest that we continue to collect the streamflow data ourselves due to the timeliness of the data.

Williams, Kathleen

From: Ron Spoon [fwprs@in-tch.com]

Sent: Tuesday, November 20, 2001 2:01 PM

To: Williams, Kathleen

Subject: Hell's Canyon Water Lease -

Kathleen-

Flow in Hell's Canyon Creek exceeded guaranteed minimums established in the lease agreement during 2001 despite extreme drought conditions experienced throughout the summer and eary fall. The guaranteed minimum flow in the agreement from 16 July through 4 November is 0.25 cfs. The lowest measured flow during this critical period was 0.33 cfs on 22 August. The lower 2-miles of Hell's Canyon Creek would have been completely dewatered for an extended period of time if no lease agreement existed. Juvenile fish surveys conducted on 2 November confirmed the presence of brown and rainbow trout rearing in Hell's Canyon Creek downstream of the Carroll Diversion. This juvenile rearing opportunity would not have been avaliable under past irrigation practices.

Monitoring of Hell's Canyon stream flow was modified from past years due to the presence of a beaver dam at the USGS staff gage. Alternatively, a staff gage located about 1-mile downstream of the USGS site was observed to determine compliance of the lease requirement. Trout fry monitoring and pipeline water volume data was conducted during July and August. These results will be summarized this winter.

RS

2001 Blackfoot River Tributary Water Lease Monitoring Report

In 2001, the Blackfoot River watershed was subject to a second consecutive year of severe drought.

During the 2001 field season, we surveyed fish populations on Blackfoot tributaries where FWP holds water leases for enhancing instream flows. Population monitoring occurred on Blanchard Creek, Cottonwood Creek and Pearson Creek. We did not monitor fish populations on Chamberlain Creek. Site visits to the Chamberlain Creek water lease monitoring staff gages recorded continued lease compliance in 2001.

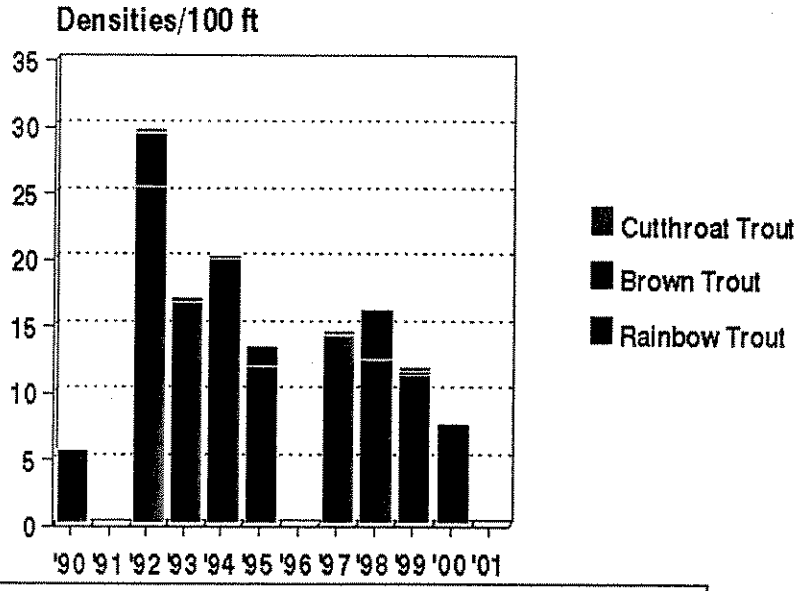

Figure 1. Estimated densities of salmonids (fish>4.0") in lower Blanchard Creek (mile 0.1), 1990-2001.

Blanchard Creek

Blanchard Creek, a tributary to the lower Clearwater River, is a spawning tributary for rainbow and cutthroat trout, and supports low densities of brown trout and brook trout. Rainbow trout is the dominant species in the section of stream influenced by the lease. Minimum instream flows (~3.0 cfs) were maintained from 1990 to 2000 with he water lease taking affect in 1993.

In 2001, the water rights holder terminated the lease for the 2001 irrigation season. As a result, the lower 1.1 miles of Blanchard Creek was completely dewatered. Young-of-the-year rainbow trout densities declined from 48.5 $\pm$ 3.9 fish/100' in 2000 to zero in 2001. Likewise, densities of age 1+ rainbow trout decreased from an estimated 7.5 $\pm$ 1.9 fish/100' in 2000 to zero fish in 2001 (Figure 1).

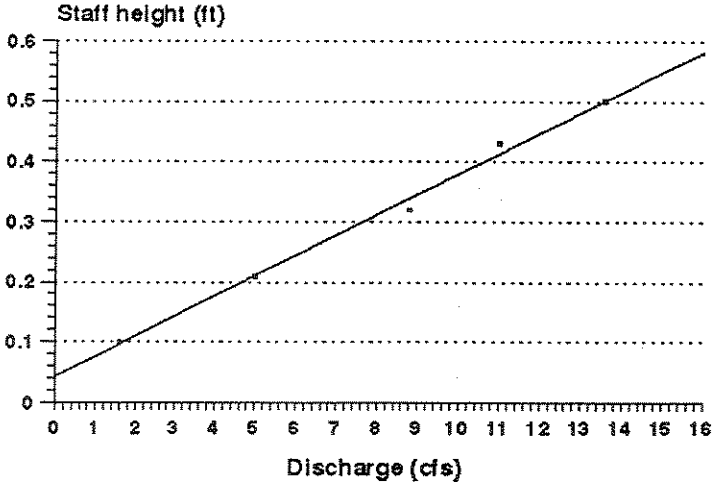

Figure 2. Stage Discharge relationship for the staff gage at the flume in the Dryer Diversion, Cottonwood Creek.

Cottonwood Creek

Cottonwood Creek, a tributary to the middle Blackfoot River, supports populations of

WSCT and bull trout along with low numbers of brown trout and brook trout in the area of the FWP water lease. In 2001, FWP fisheries staff monitored the Cottonwood Creek water lease using two methods. We developed 1) a stage/discharge rating curve for a staff gage in the Dryer Ditch (figure 2); and 2) completed a fish population survey in Cottonwood Creek downstream of the Dreyer Diversion. Before 1997 when the water lease took affect, Cottonwood Creek below the Dreyer diversion was dewatered completely during the irrigation season.

The Dryer ditch diverts water from Cottonwood Creek at stream mile 12.1. On June 27, 2001, we measured discharge at various flow rates in order to calibrate the stage/discharge relationship at a partial flume staff gage located ~200' downstream of the point of diversion. The purpose of this curve is to monitor water use and compliance with the Cottonwood Creek water lease.

Before July 1, 2001, FWP fisheries staff visited the Dreyer diversion on several occasions. During site inspections, flows did not exceed 0.45' on the staff gage (<12 cfs). On July 1, the Dreyer ditch was shut down completely as per the water lease and drought management commitments.

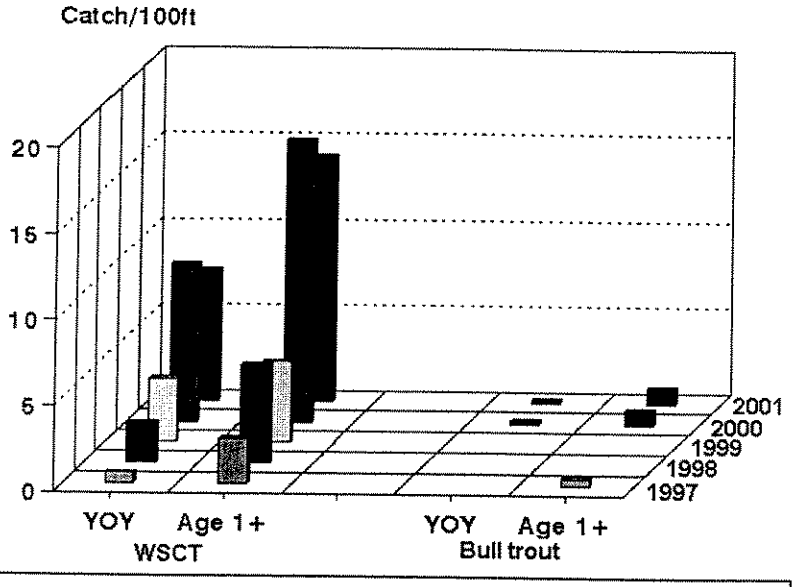

Figure 3. Electrofishing catch for Cottonwood Creek at mile 12.0, 1997-2001.

In September 2001, we re-sampled fish populations at mile 12.0, downstream of the Dreyer Diversion. We recorded very little change in westslope cutthroat and bull trout densities compared to 2000 (Figure 3). In 2001, the CPUE for age1+ WSCT was 14.3 fish/100' and 7.7 fish/100' for young-of-the-year WSCT. The CPUE for age 1+ bull trout increased slightly from 0.8 fish/100'in 2000 to 0.9 fish/100' in 2001. The 2001 surveys indicate an upward trend with increased densities for both species compared to the 1990's (Figure 3).

Pearson Creek

Pearson Creek is a small tributary to Chamberlain Creek. Pearson Creek supports spawning migrations of fluvial WSCT, along with low densities of brook and brown trout in lower reaches.

In September 2001, we re-sampled fish populations in an index reach established in 1999, located at mile 1.1. This sampling site is located in a stream reach influenced by a water lease and other related riparian improvements (riparian fencing and habitat restoration). In 2001, we found no young-of–the-year (YOY) in the survey section, compared to densities of 31.1± 2.5 YOY/100' in 2000. Age I+ WSCT also recorded a decrease in the survey reach, declining from 38.9 ± 2.5 fish/100' in 2000 to 23.7 +2.2 fish/100' in 2001 (figure 4).

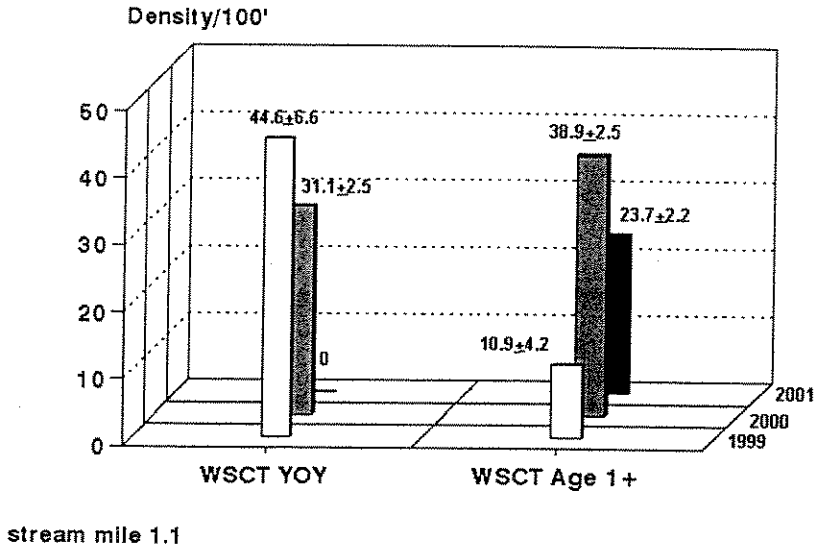

Figure 4. Estimated densities of WSCT for Pearson Creek at mile 1.1, 1999-2001.

The loss of the 2001 year-class was likely related to drought - low flows and the inability of WSCT to pass beaver dams and thereby access the spawning site. The decline in age 1+ WSCT was likely a function of habitat loss due to extreme low flows.

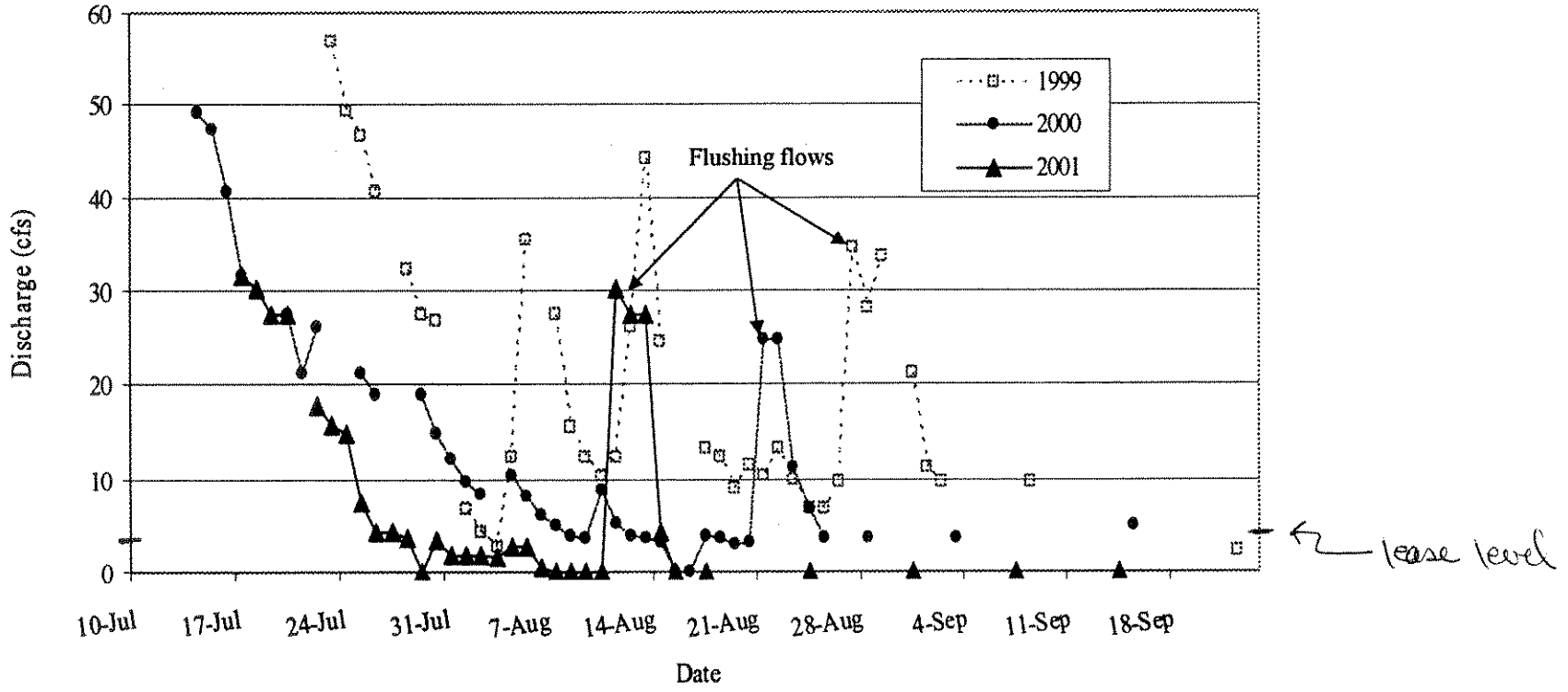

Figure 3. Comparison of daily discharge readings for Mill Creek, Montana, during the 1999, 2000, and 2001 Yellowstone cutthroat trout fry trapping seasons. The annual flushing flows are indicated by arrows.

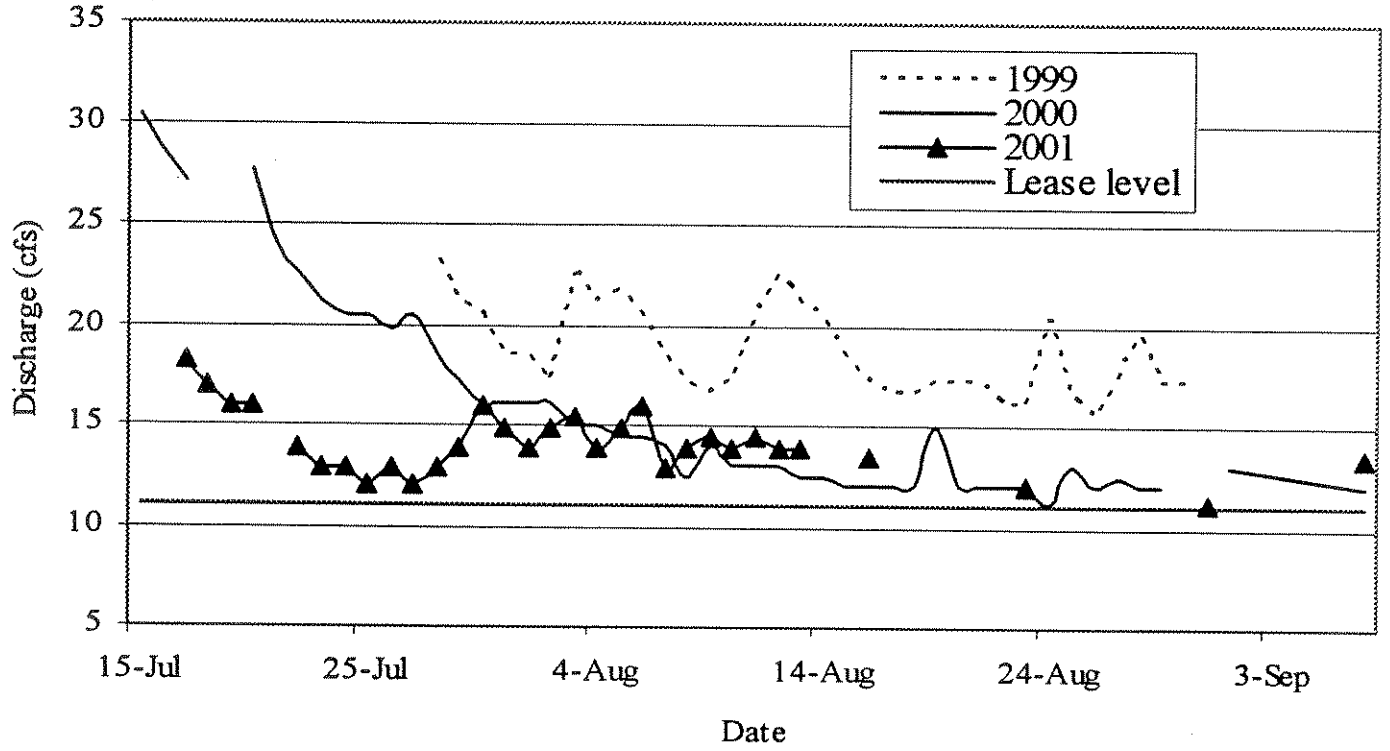

Figure 4. Comparison of daily discharge readings for Big Creek, Montana, during the 1999, 2000, and 2001 Yellowstone cutthroat trout fry trapping seasons and the lease level (11 cfs).

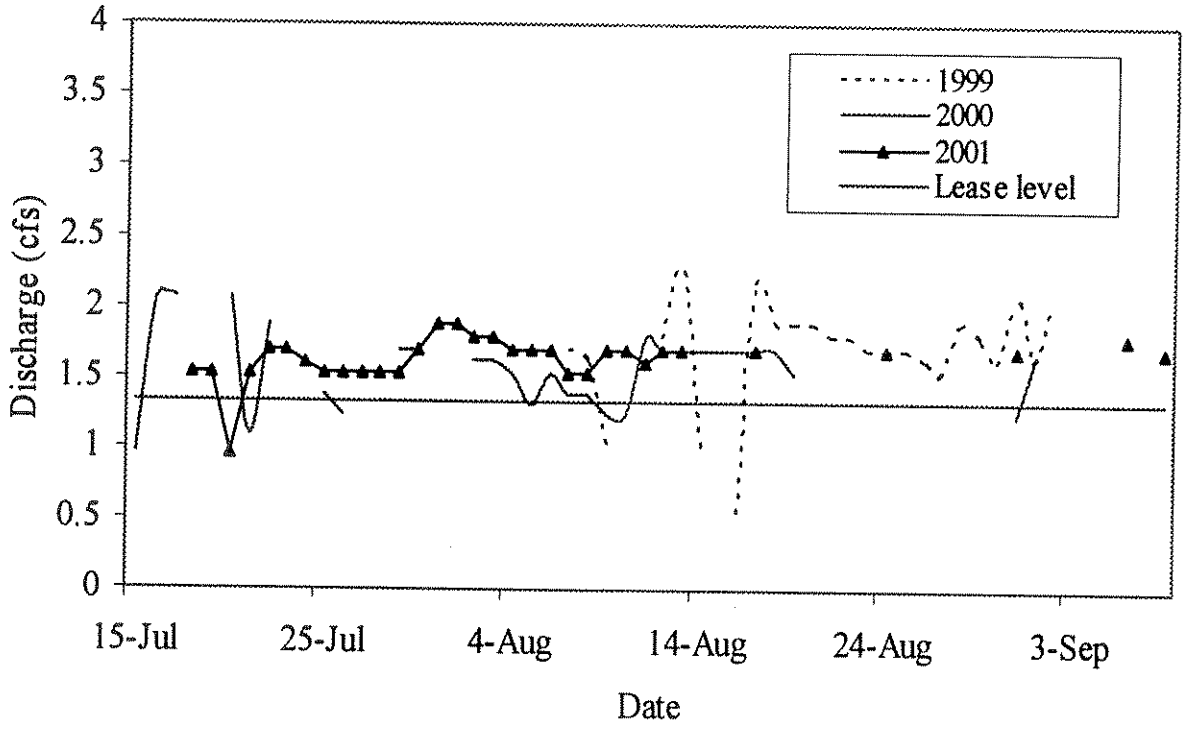

Figure 6. Comparison of daily discharge readings on Cedar Creek, Montana, during the 1999, 2000, and 2001 Yellowstone cutthroat trout fry trapping seasons with the water lease level (1.33 cfs).

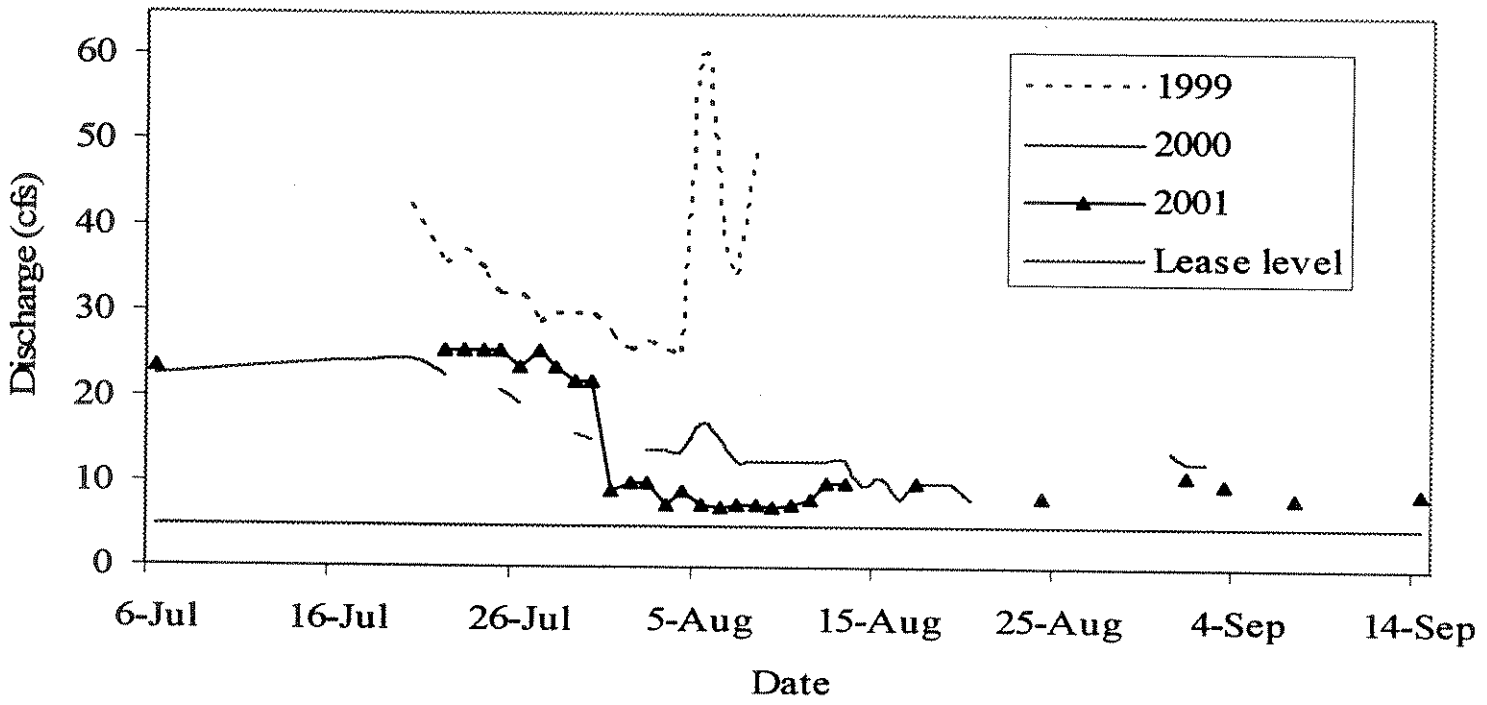

Figure 7. Comparison of daily discharge readings on Mol Heron Creek, Montana, during the 1999, 2000, and 2001 Yellowstone cutthroat trout fry trapping season with the water lease level (5.0 cfs).

D-11

Table 4-1. Summary of discharge readings for the four project streams from mid-July to September 1997-2000. These statistics do not include flow measurements gathered during spawning surveys, for pre-trapping season flows, please see Appendix B.

Project stream	Year	Seasonal mean cfs	Seasonal mean m^3/s	Maximum cfs	Maximum m^3/s	Maximum Date	Minimum cfs	Minimum m^3/s	Minimum Date
Big	1999	18.7	0.53	23.3	0.66	July 29[a]	15.6	0.44	August 27
	2000	18.9	0.54	61.7	1.75	July 1	11.24	0.32	August 24
	2001	**14.2**	**0.40**	**18.2**	**0.51**	**July 17**	**11.24**	**0.32**	**August 31**
Mill	1997	38.5	1.09	95.3	2.70	September 12	17.7	0.50	August 31
	1998	27.9	0.79	78.7	2.23	July 31	0	0	September 17 & 18
	1999	21.64	0.61	56.95	1.61	July 23	2.75	0.08	August 3
	2000	12.94	0.37	40.7	1.15	July 15	0	0	August 16 & 17
	2001	**10.24**	**0.29**	**31.6**	**0.89**	**July 17**	**0**	**0**	**July 28[b]**
Cedar	1997	2.6	0.075	3.8	0.108	August 8	1.56	0.06	September 15
	1998	1.9	0.053	2.8	0.08	August 24	0.4	0.01	August 23
	1999	1.1	0.03	1.54	0.04	August 13	0.4	0.01	August 16
	2000	1.58	0.04	2.1	0.06	July 16	0.97	0.03	July 15
	2001	**1.65**	**0.4**	**1.8**	**0.05**	**August 2**	**0.97**	**0.03**	**July 15**
Mol Heron	1997	52.0	1.474	54.7	1.55	August 16 &19	49.2	1.39	September 15
	1998	31.3	0.886	38.7	1.10	August 19	25.2	0.71	September 17
	1999	32.3	0.92	60.1	1.70	August 28	21.9	0.62	August 8
	2000	14.1	0.40	24.6	0.70	July 21	7.9	0.22	August 16 & 20
	2001	**14.4**	**0.4**	**25.6**	**0.72**	**July 22**	**7.2**	**0.20**	**August 6 & 9**

[a] July 29, 1999 was the day that the staff gauge was installed on Big Creek.
[b] Mill Creek also had no flow at the mouth of the creek on August 7, 8, 9, 10, 14, 17, 24, 31 and September 7 and 14 26, 2001.

Discharge in Mol Heron Creek in 2001 was similar to that seen in 2000, but lower than in 1999 The seasonal mean stream discharge was less than half of that seen in 1999 (Figure 7, Table 2). Discharge varied from 7.2 cfs (0.20 m^3/s) to 25.6 cfs (0.72 m^3/s) in 2001 (Table 2). Flows declined sharply during the third week in July, and remained low, but above the 5.0 cfs (0.14 m^3/s) protected by the lease (Figure 9).