Upper Clark Fork River Flow Story

Prepared by

The Upper Clark Fork River Basin Steering Committee

August 2006

The Upper Clark Fork River Basin Steering Committee was created in 1991 pursuant to 85-2-338 MCA. Steering Committee members are appointed by the Clark Fork River basin's six counties and six conservation districts and the Director of the Montana Department of Natural Resources and Conservation. In December 1994, the Steering Committee adopted the *Upper Clark Fork River Basin Water Management Plan*, which was subsequently adopted into the State Water Plan. Among the Steering Committee's duties set out in 85-2-338 MCA are:

> "…provid(ing) education about water law and water management issues…" and "…identify(ing) short-term and long-term water management issues and problems and identify(ing) alternatives for resolving them."

This report is written in light of these duties.

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GoogleEarth

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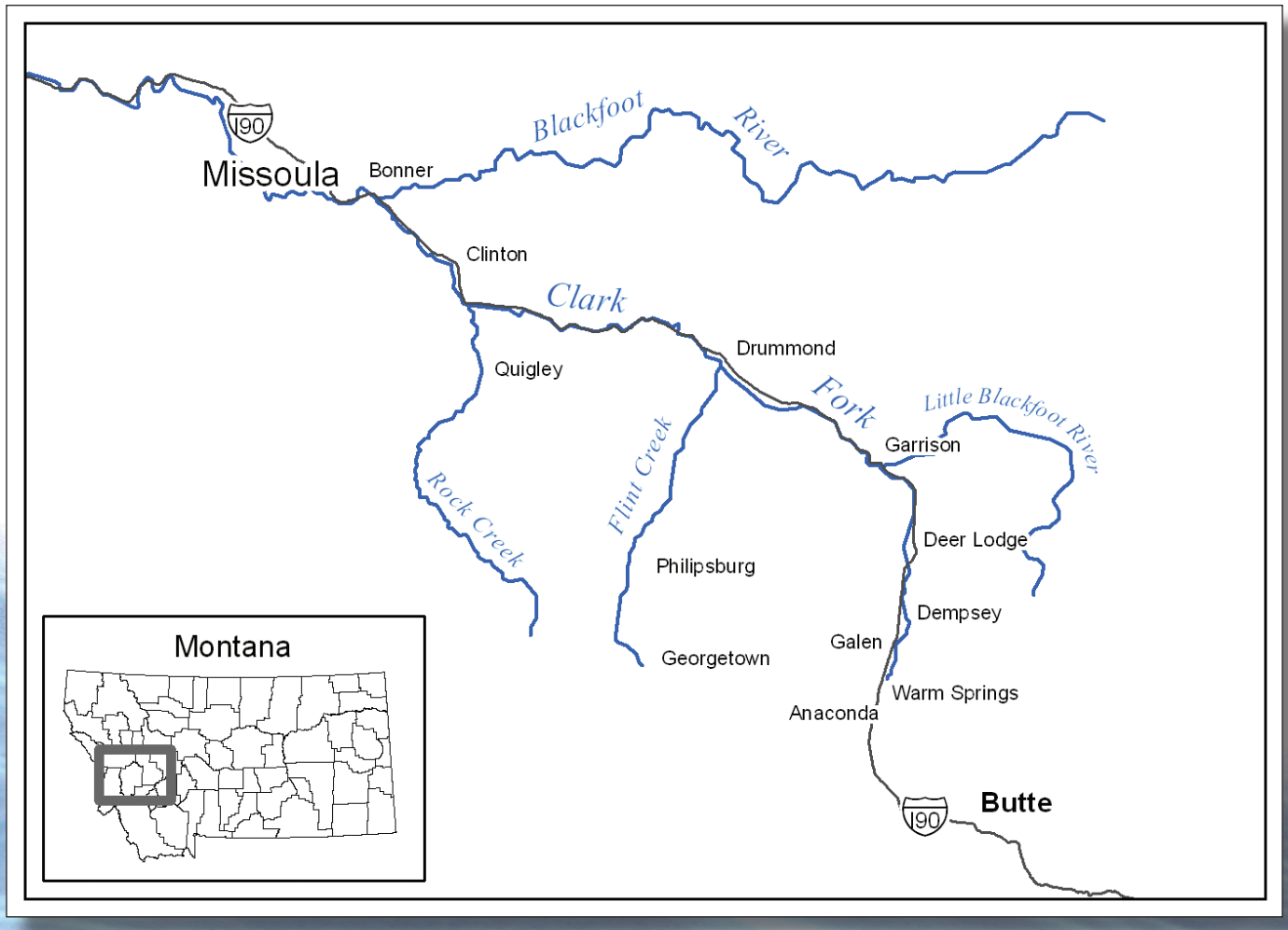
Introduction

The upper Clark Fork River has suffered damage from metals contamination from over 100 years of mining and smelting activities in Butte and Anaconda. In 1983, the Environmental Protection Agency (EPA) designated this stretch of the Clark Fork River as a Superfund site, the nation's largest. It reaches from near the outflow of the Warm Springs ponds through the Deer Lodge Valley to Milltown Dam. In its Natural Resource Damage litigation against BP/ARCO, the State of Montana, backed by numerous scientific studies, argues that metals pollution is the most important factor causing the degraded state of the river's aquatic ecosystem and fishery. Fortunately, cleanup of the metals is about to begin. In April 2004, the EPA and the Montana Department of Environmental Quality jointly issued a record of decision for the remediation of the Clark Fork River. EPA anticipates remediation design beginning in 2006, followed by 10 years of remediation work.

Metals contamination has been a major limiting factor for the fishery in the upper Clark Fork River, i.e., that portion of the river from the Warm Springs ponds to its confluence with the Little Blackfoot River **(see Figure 1)**. However, flow is also an issue to the fishery and water users. This report focuses on flow, and attempts to tell the contemporary story of the upper river from both a fishery and water user perspective.

Figure 1



Vision

Rather than past or current conditions, this story begins with a vision of what the river might be. The vision includes two components: a vibrant fishery and continued water use to support Deer Lodge Valley agriculture.

In a 1984 report written for the Montana Department of Fish, Wildlife and Parks (DFWP), fishery biologist Ken Knudsen discussed what the upper river fishery "could or should" be in both fish per mile and species diversity. He argued that Rock Creek and the Blackfoot River should be the prototypes for the upper Clark Fork's fishery. He made this proposal because Rock Creek and the Blackfoot River are major tributaries of the Clark Fork that "...are nearly equal in size to the segments of the Clark Fork near their confluences." In the early 1980s, Rock Creek supported an average of about 1,500 trout per mile and the Blackfoot about 2,500 trout per mile. In 2004, in their lower reaches, these two streams supported about 900 and 700 trout sized six inches and longer per mile, respectively. Knudsen also noted that both Rock Creek and the Blackfoot Rivers supported four different trout species – two native species (bull trout and cutthroat trout), and two non-native (rainbow and brown trout).

Agricultural land use in the form of grazing and irrigated hay production remains the major use of land in the Deer Lodge Valley.

Agriculture is an important element of the Valley's economy. As will be detailed below, agricultural water users have significant water rights on the upper Clark Fork River. To maintain the economic, life style, and open space benefits that agriculture provides, any vision of the upper Clark Fork must include continued agricultural water use.

Attaining this vision of the Clark Fork above Deer Lodge as a river that supports both a fishery of the quality of Rock Creek or the Blackfoot and continued agricultural water use requires attention to the river's flow. The remainder of this upper river story continues by addressing the current status of flows, the flows necessary for Rock Creek and Blackfoot River quality fisheries, and the water use and infrastructure that affects river flow. It concludes by discussing opportunities to improve instream flows without adversely affecting agriculture and the steps necessary to realize the opportunities.

Current Flow Status

Figures 2 through 5 show the mean annual and the monthly mean flows measured at the Galen and Deer Lodge USGS gauges for the specified periods of record. The location of these gauges is shown on **Figure 8**. At Galen, from 1988 through 2004, the annual mean varied from 55 cubic feet per second (cfs) in 1992 to 296 cfs in 1997, while mean monthly flows during the June through September period varied from a low of 10 cfs in August 1988 to a high of 974 cfs in June 1997. From 1978 through 2004, the annual mean flow at Deer Lodge varied from a low of 122 cubic feet per second (cfs) in 1992 to a high of 497 cfs in 1997. Mean monthly flows at this gauge during this period of record for June through September varied from 30 cfs in August 1985 to 1,450 cfs in July 1997.

Figure 2

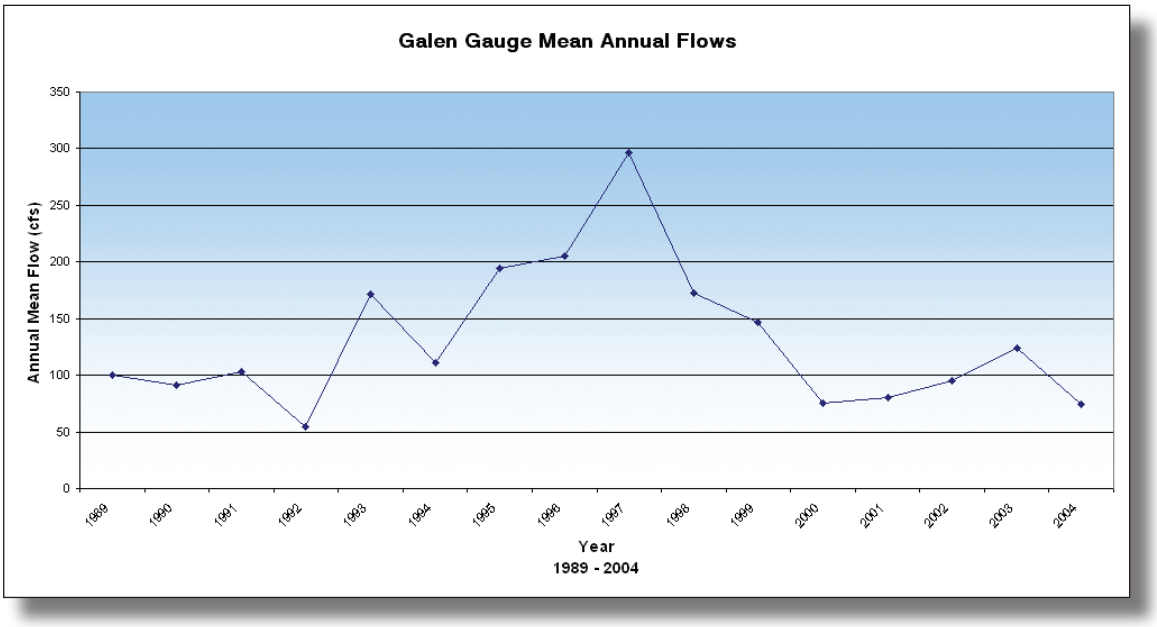


Figure 3

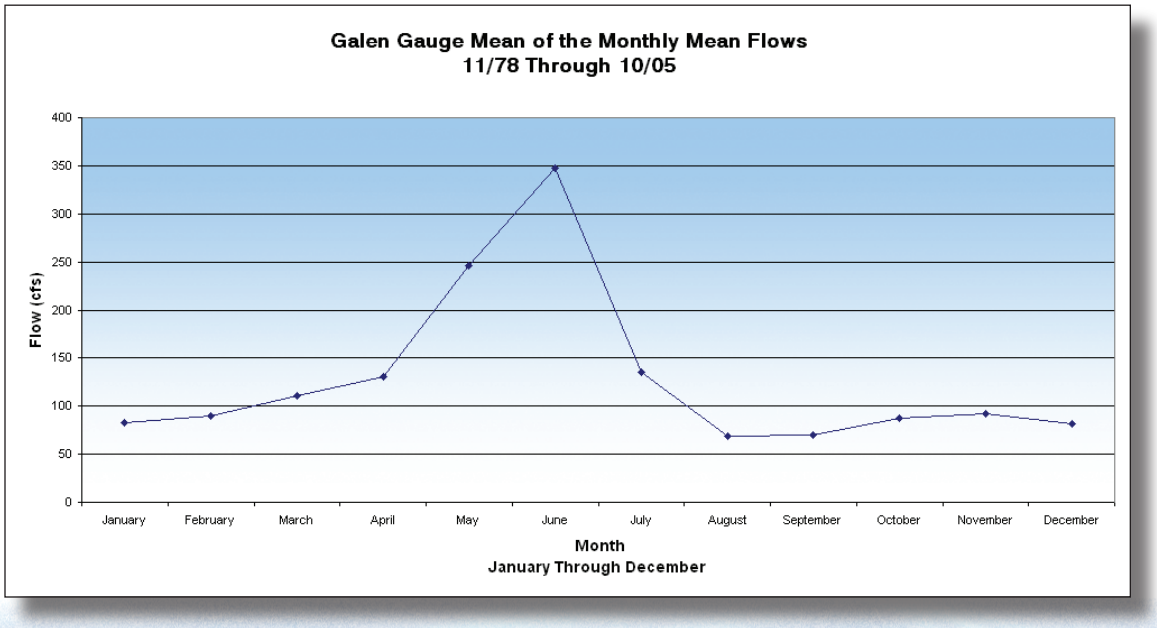


Figure 4

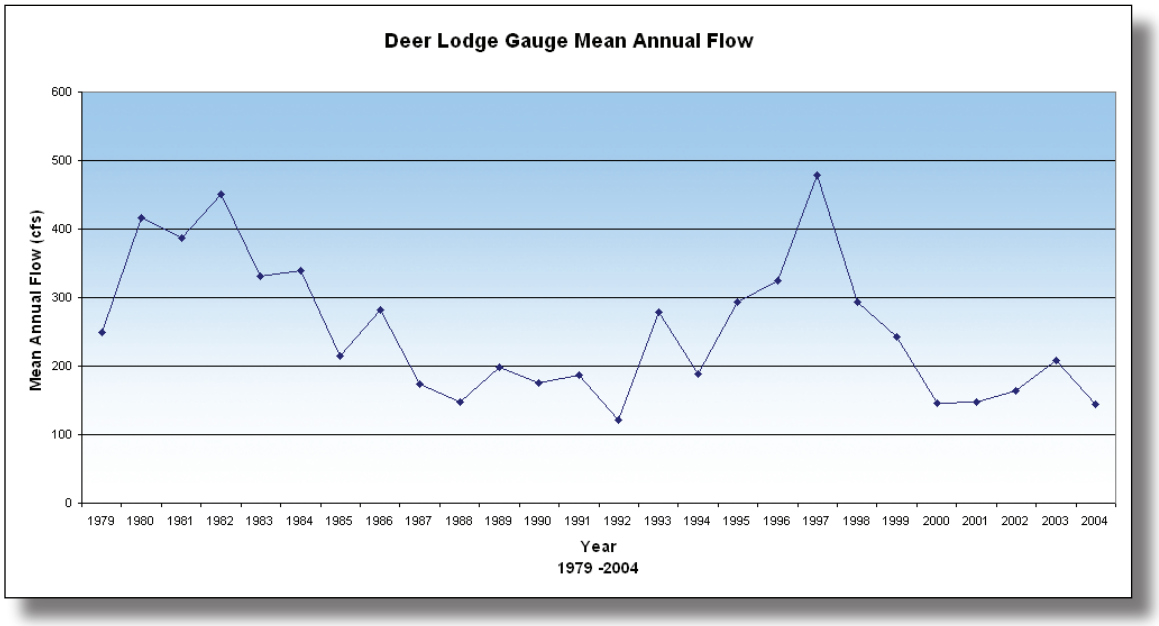
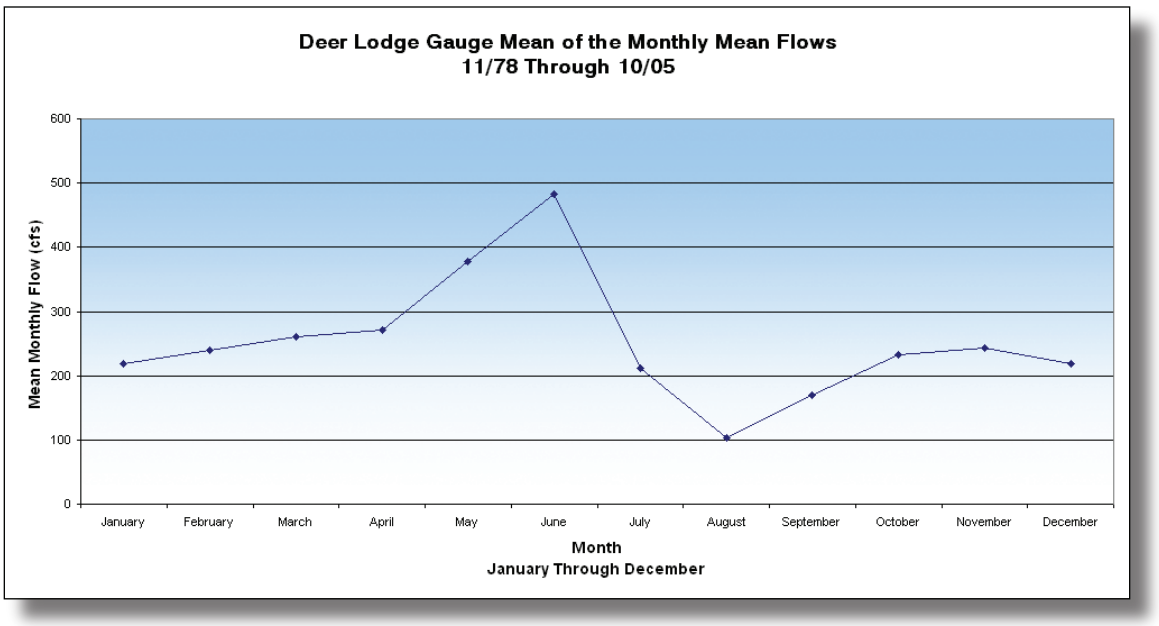


Figure 5



DFWP maintains a list of Montana streams that are chronically dewatered. The mainstem of the Clark Fork River from Racetrack Creek to Rock Creek, some 92.7 miles, is on this list. The DFWP list does not include information about the frequency or the severity of the dewatering or its significance to the fishery. In 1999, the Upper Clark Fork River Basin Steering Committee (Steering Committee) developed this information for streams in the Clark Fork basin above Milltown Dam by contracting with a retired DFWP Region 1 fishery manager, Dennis Workman. Workman classified stream reaches according to the degree and frequency of dewatering and the potential effects of this dewatering on the fishery.

Based on his analysis, Workman recommended three mainstem reaches for immediate work to relieve the effects of the dewatering. These priority reaches make up the mainstem of the Clark Fork River in the Deer Lodge Valley from Perkins Lane to its confluence with the Little Blackfoot River **(see Figure 8)**.

Table 1 summarizes Workman's findings. He found that the priority reaches are dewatered frequently enough in sufficient amounts to adversely affect the river fishery. The dewatering is most severe in the reach from the Westside Ditch to Sager Lane.

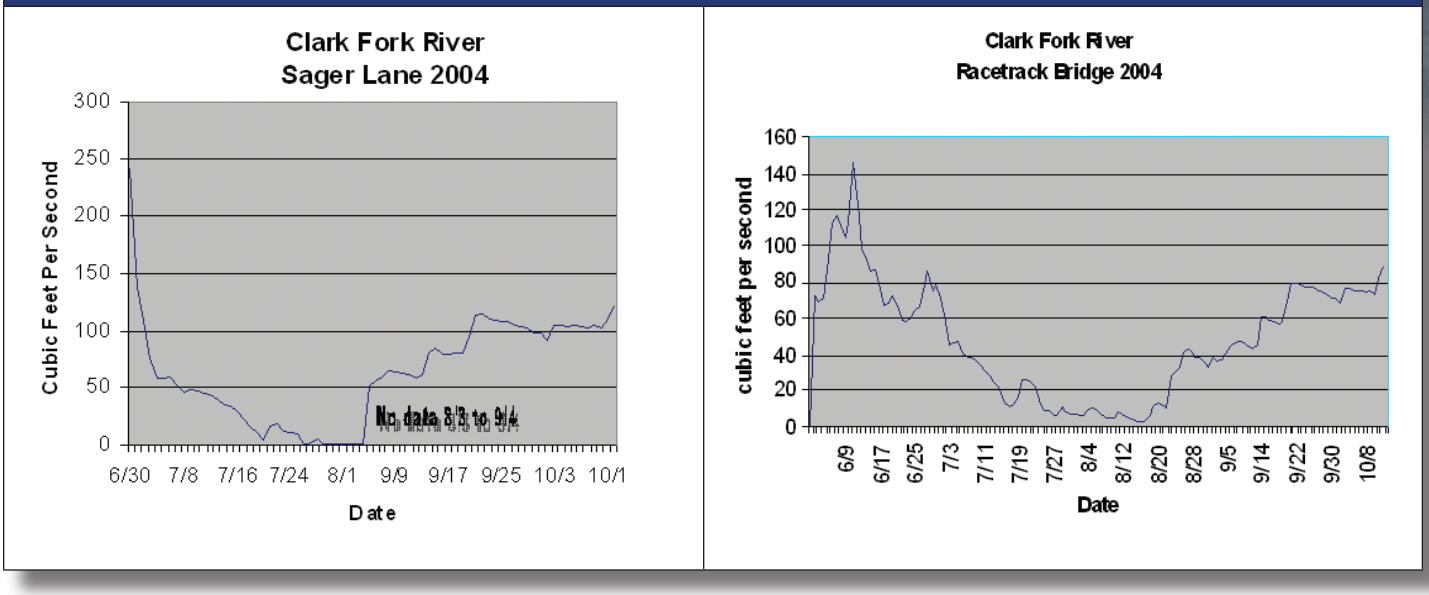
Table 1 - Workman Dewatering Analysis Results

River Reach	Dewatering Frequency *	Dewatering Category ‡
Perkins Lane to Westside Ditch	*1* *4*	*3* *4*
Westside Ditch to Sager Lane	*1* *4*	*2* *3*
Sager Lane to Little Blackfoot	*1* *4*	*3* *4*

* Dewatering frequency is the number of years out of five that the dewatering category occurs. For example, for the Perkins Lane to Westside Ditch, one year in five the reach is category 3 and four years in five it is category 4.

‡ The dewatering categories correspond to the following conditions:
- Category 1 - The stream reach is dewatered completely or so as to eliminate fish.
- Category 2 - The stream reach is dewatered to the point that fish can survive the irrigation season but fish movement is blocked.
- Category 3 - The stream reach is dewatered but fish can survive, some movement is possible, and habitat availability is limited.
- Category 4 - The stream reach flows year round but dewatering in summer limits fish production.
- Category 5 - Dewatering, if it occurs, is not a limiting factor to fish.

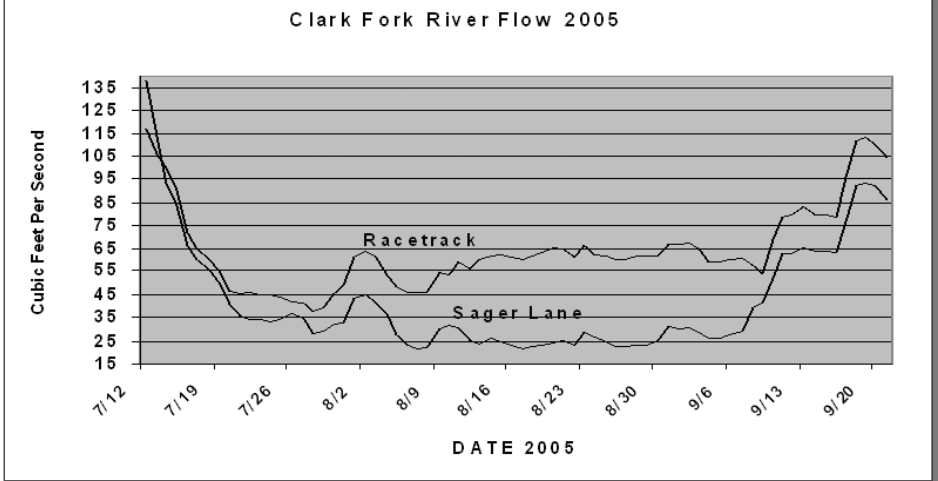
Figure 6 - 2004 Clark Fork River Flows at Sager Land and Race Track Bridge



In addition to the two USGS flow gauges at Galen and Deer Lodge, the Steering Committee installed two aqua rod gauges near the Racetrack Interstate Bridge and the Sager Lane Bridge in 2004 using funding from the Montana Association of Conservation Districts' Local Empowerment Grant Program. Flow data at these two locations for 2004 and 2005 are shown in **Figures 6 and 7**.

As shown in **Figure 6**, in 2004, flows at these locations dropped to 10 cfs or less during the four weeks beginning in mid-July.

Figure 7 - 2005 Clark Fork River Flows at Sager Land and Race Track Bridge



Upper River Trout Fishery

DFWP fish surveys in the upper river find only brown trout in sufficient numbers for population estimates. Fish numbers based on measurements at Galen, just above Perkins Lane, from 1987, 1999, and 2001 indicated a population in the range of about 240 to 410 brown trout per mile, less than a half of the most recent population estimates for the lower reach of Rock Creek and the Blackfoot River. Because of metals contamination, little spawning or rearing occurs in the mainstem, so the river serves primarily as habitat for adult fish.

Because bull trout, cutthroat trout and rainbow trout are present in its tributaries, DFWP expects the abundance of these three species to increase in the upper river once the cleanup of the metals contamination occurs. An improved supply of cold, clean water is also likely to enhance fishery diversity in the upper river.

DFWP assesses flow needs for fish and aquatic life using an analysis technique known as the wetted perimeter inflection point methodology. This technique generally identifies two flow levels related to the physical characteristics of the flow channel. A lower flow level is the minimum value needed to maintain self-sustaining wild trout populations and the macroinvertebrates that support them. A higher level identifies an optimum flow for maintaining thriving trout populations and aquatic life. DFWP has conducted the wetted perimeter analysis at two locations in the upper river, near the Galen and Deer Lodge USGS gauges. The results of the analysis are shown in **Table 2**.

Table 2 - Wetted Perimeter Results

Location	Minimum Flow	Optimum Flow
Galen Gauge	*40 cfs*	*Not Determined**
Deer Lodge Gauge	*90 cfs*	*180 cfs*

*Only one inflection point was identified.

The Clark Fork River flow downstream of the Sager Lane Bridge on July 26, 2006. The flow on the preceding day was measured to be 4.7 cfs. The aqua rod is on the left bank in the middle of the picture.

Having specified the minimum and optimum flow levels, one can now quantify the frequency at which they occur at Galen and Deer Lodge. Flow measurements only recently began at Sager Lane, so similar frequency data are not yet available. **Table 3** shows Workman's calculation of the number of days between July 1 and September 30 over the 1988 to 2001 period of record when the river flowed less than the minimum 40 cfs at the Galen gauge and less than the minimum 90 and optimum 180 cfs at the Deer Lodge gauge. More water is needed from July through September to meet minimum self-sustaining flows 32% of the time at the top of the priority reaches at Galen and 40% of the time at Deer Lodge, which is in the third of the three priority reaches. **Table 3** also includes data on the number of days at Galen in which the flows were less than 30 cfs. Using these data, Workman determined that an additional 10 cfs in the river would have met the minimum self-sustaining flows an additional 180 days at Galen.

Table 3 - Galen and Deer Lodge Fish Flow Data

Year	Gauging Station			
	Galen		Deer Lodge	
	Number of days with flow less than 30 cfs	Number of days with flow less than 40 cfs	Number of days with flow less than 90 cfs	Number of days with flow less than 180 cfs
1988	*70*	*92*	*89*	*92*
1989	*19*	*35*	*47*	*82*
1990	*13*	*28*	*39*	*90*
1991	*40*	*56*	*59*	*85*
1992	*55*	*68*	*47*	*92*
1993	*0*	*0*	*0*	*0*
1994	*37*	*66*	*71*	*92*
1995	*0*	*0*	*17*	*37*
1996	*0*	*0*	*19*	*59*
1997	*0*	*0*	*0*	*0*
1998	*0*	*0*	*0*	*58*
1999	*0*	*0*	*22*	*83*
2000	*11*	*57*	*64*	*92*
2001	*0*	*23*		
Total Number of Days	*245*	*425 (32%)*	*480 (40%)*	*862 (72%)*

Workman also analyzed winter base flows to determine if they would affect fish production. He examined November through February flows, the period in which the ground is normally frozen, little surface runnoff occurs, and almost no flow is diverted from the river for other uses. He found that even when low flow occurred during the summer, the base winter flows bounced back to the 30 to 60 cfs levels. He concluded that "... there is no apparent winter flow problem that would negate our efforts to enhance fish production by increasing instream flow in the summer."

(*Draft Upper Clark Fork River Drought Management Plan, January* 2004, *page* 9.)

Existing Water Use, Water Rights, and Infrastructure

Existing water right claims filed with the Montana Department of Natural Resources and Conservation (DNRC) indicate that in the three priority reaches identified by Workman, water diverted from the Clark Fork River supports only agricultural uses. Municipalities in the Deer Lodge Valley use ground water. A significant recreational brown trout fishery exists from the Warm Springs ponds for about five miles to around the Galen gauge at Perkins Lane.

Pivot and wheel line irrigation off of the Morrison Ditch.

Use of the Clark Fork mainstem water by agriculture occurs through a series of pumps and five diversion ditches: the Johnson, Whalen, Westside, Valiton, and Kohrs-Manning ditches. The location of the diversions for these ditches is shown in **Figure 8**. **Table 4** includes information about the pre-1955 water right claims on these ditches compiled by Workman.

These water rights are listed as claims because a final water rights decree including them has not yet been issued by the Montana Water Court. A temporary preliminary decree for the Clark Fork River above the confluence of the Blackfoot River, including these rights, was issued on May 17, 1985. Water rights information for the pumps on the river from the Warm Springs ponds to the confluence of the Little Blackfoot River is shown in **Table 5**.

Table 4 - Water Right Claim Data

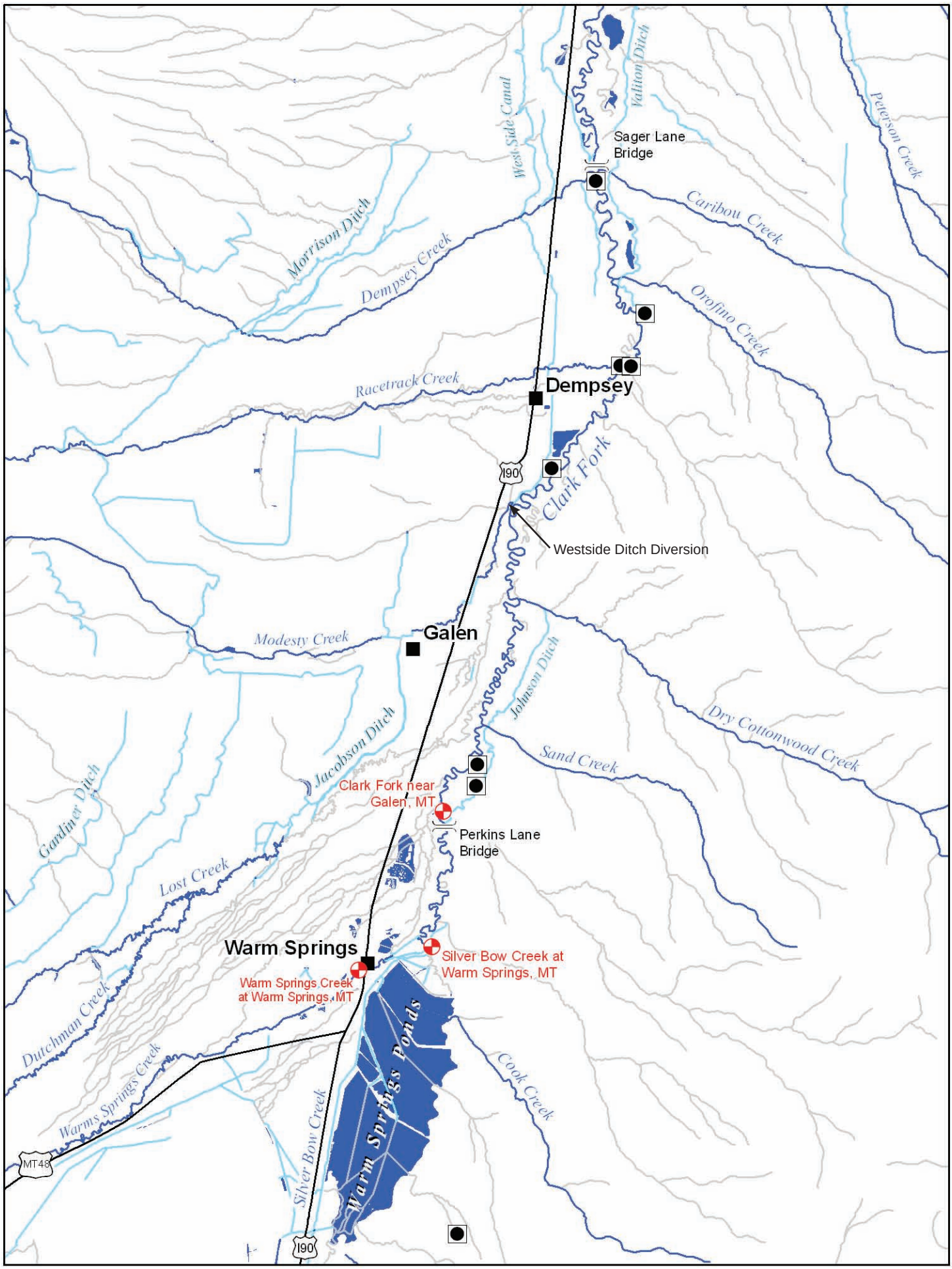
Ditch	Water Right Claim	
	Priority Date	Amount (cfs)
Johnson Ditch	*12/31/1875*	*6.2*
	12/31/1875	*3.1*
	12/31/1880	*7.2*
	12/31/1883	*3.8*
	7/10/1920	*12.5*
	7/26/1953	*12.5*
Total		*45.3*
Whalen Ditch	*6/19/1889*	*25.0*
Westside Ditch	*6/19/1889*	*1.9*
	6/28/1889	*40.0*
	7/11/1889	*6.52*
	10/14/1937	*.9*
	12/7/2006	*25.0*
Total		*74.3*
Viliton Ditch	*10/01/1891*	*40.0*
	10/01/1891	*5.0*
	6/15/1946	*20.0*
Total		*65.0*
C. Kohrs & Manning Ditch Co.	*9/01/1895*	*15.0*
	12/15/1931	*25.0*
	12/17/1931	*40.0*
	12/19/1958	*44.2*
Total		*124.2*

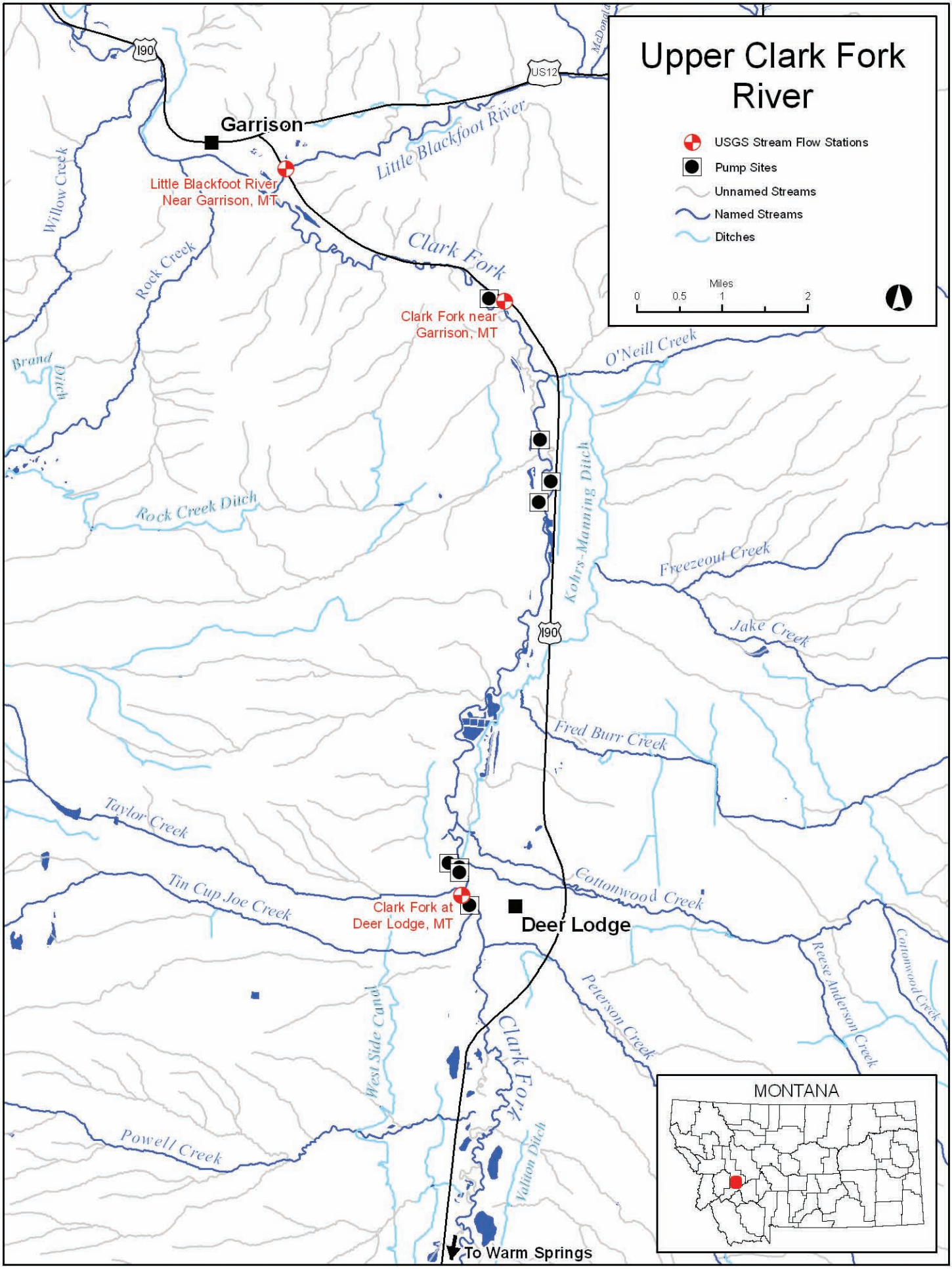
Table 5

Pumps - Clark Fork River Above Confluence of Little Blackfoot **Source DNRC Water Right Data Base, July 19, 2006**

Means of Diversion	Number of Diversions	Maximum Unit Gallons/min. Rate Cubic ft/sec.	Max Acres Irrigated	Priority Date Year	Priority Date Month	Priority Date Day	County Deer Lodge/ Powell	Township	Range	Section	Quarter Section
Pump	1	700 GPM	110	1973	5	6	DL	5N	9W	32	SWSESW
Pump/ headgate w/ditch or pipeline	2	2.5 CFS	593.9	1871	10	1	DL	5N	9W	5	SWNESW
Pump/ headgate w/ditch or pipeline	2	2.5 CFS	593.9	1921	2	24	DL	5N	9W	5	SWSENW
Pump	1	125 GPM	5.5	1977	5	27	PW	6N	9W	10	NWNWNW
Pump	1	200 GPM	40	1982	1	26	PW	6N	9W	9	SWNESE
Pump	1	125 GPM	3	1984	12	27	PW	6N	9W	10	NWNWNW
Pump	1	300 GPM	53	1988	8	22	PW	6N	9W	9	SWNESE
Pump	1	120 GPM	17	1989	8	3	PW	6N	9W	9	SENESE
Pump	1	6.25 CFS	47	1954	4	15	PW	6N	9W	16	SWSWSW
Pump	1	210 GPM	30	1984	5	10	PW	6N	9W	9	SWNESE
Pump	1	2.67 CFS	170	1974	8	8	PW	7N	9W	33	NENESW
Pump	1	20 GPM	3	1978	4	7	PW	7N	9W	4	NENWNW
Pump	1	210 GPM	30	1985	4	9	PW	7N	9W	33	NENESW
Pump	1	2000 GPM	642	1972	8	15	PW	8N	9W	33	SWNWSW
Pump	1	8.98 CFS	237	1931	12	18	PW	8N	9W	9	NENENE
Pump	1	5185 GPM	305	1885	4	15	PW	8N	9W	32	NENESE
Pump	1	3.13 CFS	216	1895	9	1	PW	8N	9W	33	W2NWSW
Pump	2	8.98 CFS	237	1931	12	18	PW	8N	9W	9	NWSENE
Pump	3	8.98 CFS	237	1931	12	18	PW	8N	9W	4	NWNESE
Pump	4	8.98 CFS	237	1931	12	18	PW	9N	9W	28	SESWSW

The entire upper Clark Fork River basin, i.e. the area drained by the Clark Fork River above Milltown Dam, is closed to the issuance of permits for most new surface water rights. Permits for ground water wells are allowed if the source of the ground water is not a part of or substantially or directly connected to surface water. Certain uses of surface water are exempt from the closure, including stock water, stored water, and power generation at existing hydroelectric dams that does not result in additional consumption of water. The closure means that, except for the specified exemptions, additional water will not be withdrawn from the upper Clark Fork River and its tributaries due to the issuance of new water right permits.


Sager Lane
Bridge
Valliton Ditch
West Side Canal
Peterson Creek
Caribou Creek
Morrison Ditch
Dempsey Creek
Orofino Creek
Racetrack Creek
Dempsey
I90
Clark Fork
Westside Ditch Diversion
Modesty Creek
Galen
Johnson Ditch
Dry Cottonwood Creek
Sand Creek
Jacobson Ditch
Gardiner Ditch
Clark Fork near
Galen, MT
Perkins Lane
Bridge
Lost Creek
Warm Springs
Silver Bow Creek at
Warm Springs, MT
Warm Springs Creek
at Warm Springs, MT
Dutchman Creek
Warms Springs Creek
Warm Springs Ponds
Cook Creek
Silver Bow Creek
MT 48
I90


Upper Clark Fork River
USGS Stream Flow Stations
Pump Sites
Unnamed Streams
Named Streams
Ditches
Miles
0
0.5
1
2
I90
US12
Garrison
Little Blackfoot River
Little Blackfoot River Near Garrison, MT
Willow Creek
Rock Creek
Clark Fork
Clark Fork near Garrison, MT
Brand Ditch
O'Neill Creek
Kohrs-Manning Ditch
Rock Creek Ditch
Freezeout Creek
Jake Creek
Fred Burr Creek
Taylor Creek
Tin Cup Joe Creek
Clark Fork at Deer Lodge, MT
Deer Lodge
Cottonwood Creek
Reese Anderson Creek
Peterson Creek
West Side Canal
Clark Fork
Yallion Ditch
Powell Creek
To Warm Springs
MONTANA

Opportunities to Improve Stream Flows

At least four opportunities exist for increasing stream flow in the Perkins Lane to Little Blackfoot River portion of the Clark Fork River mainstem: increased water conveyance efficiency, changes to existing water rights, a split-season water right lease, and the development and implementation of a drought plan.

The Westside Ditch and Whalen Ditches near Perkins Lane. The Westside Ditch is the larger of the two.

Water Conveyance Efficiency

At the request of the Steering Committee, ditch seepage during the 2001 irrigation season was measured by DNRC on the Johnson and Valiton ditches and on the Westside Ditch by its owners. Detailed results of the measurements are reported in the DNRC Report WR-3.C.2.UCF and in Workman's June 2002 report to the Steering Committee. For the Johnson Ditch, seepage losses were largest early in the irrigation season, 7.1 cfs or 59% of inflows on June 15, 2001, and decreased through the summer to 0.6 cfs or 42 % of inflows on September 13, 2001. Average daily river flows measured at the Galen Gauge just downstream of the Johnson Ditch headgate varied from 154 cfs to 63 cfs during this same period. Seepage losses on the Valiton Ditch measured 0.4 cfs or 18 % on May 30, 2001 and rose to 0.9 cfs or 31 % on July 11, 2001. Average daily flows at the Galen gauge on May 30, 2001 were 157 cfs and on July 11, 2001 were 46 cfs. Workman concluded that because the seepage measured was small relative to the river flow, the seepage from these ditches would not be a significant potential source of instream flow for the Clark Fork River.

Seepages losses were also measured on Westside Ditch during the 2001 irrigation season. With 74.3 cfs of water rights, the Westside is second to the Kohrs-Manning Ditch as the largest diversion in the upper Clark Fork. The Westside Ditch diversion is located about 5 miles downstream of the Galen gauge. The ditch is 12 miles long and transports water about 6.5 miles to its first delivery point. The ditch owners have been interested in increasing the efficiency of water deliveries and used temporary sealants during the 2003 and 2004 seasons. Workman reported that seepage and evaporation losses were 18.8 cfs and 19.4 cfs on June 22, 2001, and June 27, 2001, respectively. During August and early September, seepage losses were in the 5 cfs to 10 cfs range in a portion of the ditch. Reducing seepage and evaporation losses on the order of 20 cfs through ditch lining and moving the point of diversion closer to the first delivery point appears to have the potential to increase mainstem flows significantly without reducing agricultural water use. The expense of reducing ditch losses could be substantial, so it would be important to identify if, when, and where seepage losses return to the river before proceeding with a ditch lining project to benefit instream river flows.

Water Right Changes

A second method for increasing instream flows in the Perkins Lane to Little Blackfoot reach of the mainstem involves changes to existing water rights. Butte-Silver Bow government owns water stored in Silver Lake, which is part of the water gathering and storage system formerly owned and operated by the Anaconda Company to provide water to its Anaconda and Butte mining and processing operations. ARCO, apparently to meet its Superfund restoration and remediation responsibilities, has purchased both stored water in Silver Lake and irrigation water rights and plans to use them to increase flows in tributaries to the upper river and in the mainstem.

Butte-Silver Bow -

The consolidated City and County of Butte-Silver Bow has two water right change applications pending before DNRC. Both change applications deal with stored water from Silver Lake and Storm Lake and direct flow water from Warm Springs Creek. One, application 30013720, seeks to change the use of some of the water diverted at Meyer's Dam from industrial to instream flow to benefit the fishery in Silver Bow Creek from its confluence with Blacktail Creek to the Warm Springs pond. The amount of water in the change is 2,083 gallons per minute (gpm) up to 3,360 acre-feet per year (acf/yr) or 4.6 cfs. The second, application 30013721, again seeks to change an industrial use to instream flow, this time to benefit the fishery in Warm Springs Creek and the mainstem of the Clark Fork River from its confluence with Warm Springs Creek to Gold Creek. This application, which primarily involves stored water from Silver Lake, seeks to change 15,580 acf/yr to instream use. Under an agreement between Butte-Silver Bow and ARCO, ARCO can call for the releases from Silver Lake. From 1998 to 2001, ARCO tested using water stored in Silver Lake to enhance instream flows during the irrigation season in Warm Springs Creek and into the Clark Fork River. ARCO determined that the test was successful. Since 2002, ARCO and Montana Trout Unlimited (TU) have had an agreement authorizing TU to monitor flows and call for release of water from Silver Lake to maintain a target flow of 40 cfs in Warm Springs Creek. In part because of this agreement, flows in Warm Springs Creek have been continuous to the mouth every irrigation season, and, with occasional exceptions, have stayed above 20 cfs.

Deer Lodge Valley near Dugout Bar

Below - Haybails between Racetrack and Dempsy

ARCO -

ARCO filed two water rights change applications to convert water used for irrigation to maintain and enhance instream flows in Willow Creek to a level of 22 cfs and in Mill Creek to a level of 25 cfs to benefit their respective fisheries. Mill, Willow, and Silver Bow creeks combine in the vicinity of the Warm Springs ponds to form the Clark Fork River. According to the applications, ARCO also intends the instream flows in these applications to continue into the Clark Fork River as far as Gold Creek. Details of the flows requested were included in the water rights change applications, 30013722 and 30012723. In January 2006, these applications were terminated by DNRC because they were not correct and complete. To pursue these changes, ARCO will have to refile change applications for them.

In 2004, ARCO purchased about 6,650 acres of land near Anaconda together with the water rights formerly used to irrigate these lands. In May 2005, ARCO, the former property owner, and DFWP developed an outline for an agreement involving these lands and water rights. Included in the outline was ARCO's conversion of all of the water rights, subject to certain limitations, to instream flow to result in up to 40 cfs in Warm Springs Creek at its confluence with the Clark Fork River. No water rights change application has been filed with DNRC concerning this water. Finalizing the agreement is subject to completion of the Superfund consent decree for the Anaconda operable unit.

Split-Season Water Right Lease

A third opportunity for increasing instream flows is the split-season water right lease. This technique is a variation on the standard approach to leasing water rights. In a split season lease, irrigators use a water right for part of the year, and then, for compensation,

commit part of the water right to instream use later in the year when flows are lowest. This approach has the advantage of focusing the instream restoration on the period in which it is needed most, allowing the irrigator to grow crops in the most productive part of the growing season, while minimally affecting the existing return flow regime. The Steering Committee has not yet discussed this option with water right holders.

Drought Plans

The fourth approach to increasing instream flows involves voluntary actions by agricultural water users to reduce diversions from the river during low-flow conditions. Working together with fishery and other instream interests, irrigators in the Blackfoot, Big Hole, and Jefferson watersheds have created committees that have developed and implemented drought plans. The plans identify flow targets that trigger a series of voluntary actions to increase instream flows. The Steering Committee has held meetings of local water users to discuss such a committee for the upper Clark Fork. At the request of the participants of these meetings, Workman identified flow targets upon which a drought plan could be built. The targets were 40 cfs at the Galen gauge, 50 cfs at the Racetrack Bridge aqua rod, 60 cfs at the Sager Lane Bridge aqua rod, and 90 cfs at Deer Lodge. To date, the actions that would be taken when river flows fall to the trigger levels have not been identified.

Actions Necessary to Realize the Opportunities

Achieving any of the four opportunities to increase instream flows in the upper Clark Fork River will require two things–cooperation of water right holders and money. Increasing the conveyance efficiency of the Westside Ditch would require engineering, funding, and a water lease. A split-season or traditional water lease would require a willing lessor, funding to pay for the lease, and a finding by DNRC that the lease would have no adverse affect on any water right holder. The water right changes being sought by Butte-Silver Bow and formerly by ARCO would also require a successful water right change application demonstrating no adverse affect on other water right holders. Both the water lease and the water rights changes would require demonstration of the ability to protect the instream flow created while protecting irrigation existing water rights. This protection would likely require an enforceable water rights decree on the upper Clark Fork mainstem issued by the Montana Water Court and a water commissioner appointed by district court to enforce the degree. If petitioned to do so by the affected water rights holders, the Water Court can make a temporary preliminary decree such as has been issued on the upper Clark Fork River enforceable. A petition signed by 15% of the water right holders in the decree is generally required to initiate action by the Water Court.

Irrigation along Sager Lane in the Deer Lodge Valley looking east.

Right - Clark Fork River near Warm Springs

Unlike the other options, a drought committee is not dependent on any administrative or judicial action. The local water right holders that would participate simply have to see it in their interest to do so. One advantage of a committee to the local water rights holders could be allowing them greater opportunity to be informed of and participate in the water management activities that may be involved in the other two instream flow enhancement options, water conveyance efficiency improvements or the management of instream flows created by water right changes. Given the uncertainty surrounding the water rights change applications and the Superfund remediation and NRD restoration decisions on the Clark Fork River mainstem, the Steering Committee has not pressed for formation of a drought committee at this time.

Potential sources of funding for instream flow in the upper Clark Fork include state programs such as the Natural Resource Damage (NRD) Program and the Future Fisheries, the Columbia Basin Water Transaction Program funded by the Bonneville Power Administration, and various private funding sources. Until the NRD law suit regarding the mainstem of the Clark Fork River is resolved, funding from state sources will not be available. Private funding is likely to supplement rather than replace state funding, so it too likely awaits resolution of the NRD suit.

Whatever alternative is pursued to increase instream flows is unlikely to succeed if water right holders perceive that increased flows occur to their detriment. Also, without compensation, existing water right holders are also unlikely to forgo use of water which they are entitled to use.

Summary

This story of the flows in the upper Clark Fork began with a vision of a fishery the quality of Rock Creek or the Blackfoot Rivers and continued agricultural water use. It examined current flow conditions including the location, amount and frequency of dewatering and its importance for the fishery. It continued with the identification of alternatives for addressing the dewatering and enhancing instream flows and ended with an assessment of how these alternatives might be achieved. The next chapter awaits resolution of the NRD litigation involving the river mainstem and collective action by the mainstem water users and interests.

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Upper Clark Fork River Basin Steering Committee

Montana Department of Natural Resources and Conservation
Water Resources Division

Project Coordinator
Gerald Mueller, Facilitator

Contributors
Watershed Assistance Program

DNRC - Conservation and Resource Development Division

Maps
Marcus Sadak, WRD GIS Program Manager

Graphic Design
Martha Hodder