

1. Mill Creek Watershed Summary

Description and Land Use

Table xxx: Mill Creek Watershed Overview

Watershed Size	31,435 acres/49.1 sq miles/ 127.1 sq km
Elevation Range	5,594 feet [4,967-10,561]
Stream Miles	71.8
Land Ownership	Private: 79% /State: 21%
Road Miles	Local Road/City Street = 36.6 Service Road/Driveway = .5 Highway = 2.1 Total = 39.2

Source: Montana GIS Portal Data Layers

Mill Creek lies within the Silver Bow watershed and was once a tributary to Silver Bow Creek (a direct tributary to the Clark Fork River . In order to avoid the highly contaminated Warm Springs settling ponds and Silver Bow Creek, the stream now drains into Willow Creek via the Mill-Willow Bypass near the town of Opportunity (MFWP, 2009). Mill Creek has its headwaters near Miller Lake in the Anaconda Range, and flows for approximately 20 miles until its confluence with Willow Creek.

The Mill Creek drainage has a long history of mining, and also supports grazing, irrigated agriculture, timber harvest and some recreation (MFWP, 2009). Land ownership is overwhelmingly private with some state-owned land and almost no federal property (BLM, 2009).

2. Impairments

Table xxx: Listed and Suspected Impairments for Mill Creek

2008 303 (d) Listed Pollutants			
Impairment	Upper Reach	Pollutant	Affected Beneficial Use
Arsenic	8.7-20.2	Metals	Aquatic Life, Cold Water Fishery
Cadmium,	8.7-20.2	Metals	Aquatic Life, Cold Water Fishery
Copper,	8.7-20.2	Metals	Aquatic Life, Cold Water Fishery

Lead	8.7-20.2	Metals	Aquatic Life, Cold Water Fishery
Iron	8.7-20.2	Metals	Aquatic Life, Cold Water Fishery
Zinc	8.7-20.2	Metals	Aquatic Life, Cold Water Fishery

2010 303 (d) Listed Pollutants

Impairment	Lower Reach	Pollutant	Affected Beneficial Use
Arsenic	0.0-8.7	Metals	Agricultural, Aquatic Life, Cold Water Fishery, Drinking Water
Cadmium,	0.0-8.7	Metals	Agricultural, Aquatic Life, Cold Water Fishery, Drinking Water
Copper,	0.0-8.7	Metals	Agricultural, Aquatic Life, Cold Water Fishery, Drinking Water
Lead	0.0-8.7	Metals	Agricultural, Aquatic Life, Cold Water Fishery, Drinking Water
Iron	0.0-8.7	Metals	Agricultural, Aquatic Life, Cold Water Fishery, Drinking Water
Zinc	0.0-8.7	Metals	Agricultural, Aquatic Life, Cold Water Fishery, Drinking Water

Temperature Measurements for Mill Creek (Suspected Impairment)

RM*	Start Date	End Date	Max T (°C)	Days>15°C	Days>20°C
1.6	7/8	10/13/08	18.9	47	0

*River Mile

Source: MDEQ, 2010; MFWP 2009

Metals

The main contaminants in the Mill Creek watershed consist of metals. There are few abandoned mines in the basin and those that exist have been found to contribute little pollution. However, Mill Creek flows through the Anaconda Smelter Superfund Site and has been subject to large quantities of aerial contamination (MDEQ, 2010). Both the 2008 and 2010 303 (d) lists include arsenic, cadmium, copper, lead, iron and zinc. All of these were

found to exceed water quality targets and, with the exception of chromium, will have TMDLs developed for them (MDEQ, 2010).

Temperature

Thermal impairments are often attributed to agricultural dewatering, and have been documented on Mill Creek. Mill Creek has had little recent temperature monitoring, but Montana FWP noted several days above 15 °C in 2008, with a maximum temperature of 18.9 °C during the monitoring period (Table xxx). Temperatures below 16°C are optimum for westslope cutthroat trout growth, while temperatures below 20 °C are critical for their survival (Kirk, 2010). High temperatures also encourage algae growth and reduce dissolved oxygen content, which can be detrimental to fish health.

3. Native/Sport Fishery

Table xxx: Fish Distribution in Mill Creek

Waterbody	Begin RM*	End RM*	Species	Updated
Mill Creek	0.0	1.5	Westslope Cutthroat Trout	8/31/2009
Mill Creek	6.7	10.9	Westslope Cutthroat Trout	9/4/2009
Mill Creek	10.9	17.4	Westslope Cutthroat Trout	9/4/2009
Mill Creek	0.0	2.7	Longnose Sucker	2/23/2009
Mill Creek	0.0	9.9	Slimy Sculpin	8/31/2009
Mill Creek	0.0	9.9	Brown Trout	11/18/2009
Mill Creek	0.0	9.9	Brook Trout	8/31/2009
Mill Creek	0.0	19.4	Rainbow Trout	7/26/2009

*River Mile

Source: MFWP, 2010

Current Condition

Montana FWP conducted fish sampling on Mill Creek in 2008 at River Mile 1.2, 5.2, 9.7 and 13.6. Conditions for fish improved as sampling moved upstream. Westslope cutthroat trout, brook trout and brown trout present together in most of the samples, and

westslope cutthroat trout making up the majority of the population in the upper section of the creek (MFWP, 2009). Fish habitat at RM 1.2 varied between “fair” and “good”, but was given a “good” rating because of some deep pools (MFWP, 2009). Fish habitat at RM 5.2 and 9.7 received scores of “good” and was thought to be near potential (MFWP, 2009). River Mile 13.6 was scored “excellent” for fish habitat because of the amount of pools and woody debris. That section was considered to be near its potential as a fishery.

Fishery Potential

Table xxx: Tributary Rating Summary for Mill Creek (Priority 2)

Stream	Reach(RM)	Trout Species	Impairments
Mill Creek	Lower: 0.0-11.0	Brown, Brook, Westslope Cutthroat	Metals contamination; low summer flows due to irrigation; livestock grazing in riparian areas; high temperatures; competition to westslope cutthroat from brook and brown trout; residential development
Current Recruitment/Restoration Fishery Value			Protection/Enhancement Value
Medium			High
Current Tributary/Replacement Fishery Value			Protection/Enhancement Value
Medium			High
Current Native Fishery Value (westslope cutthroat)			Protection/Enhancement Value
Medium			Medium

Source: MFWP, 2010

While Mill Creek experiences several impairments, protection and enhancement possibilities for a viable trout fishery exist on several levels (Table xxx). Montana FWP has shown an interest in managing (in collaboration with state agencies and other organizations) Mill Creek as a recreational fishery, declaring lower Mill Creek a “Priority 2” stream reach in the agency’s Final Tributary Rating Summary (2010). Improved management practices can increase the fishery viability by addressing documented impairments (Table xxx) with appropriate restoration projects.

4. Assessments

Mill Creek’s habitat and water quality status have been assessed several times in the last few years (Table xxx). Assessments have included fish habitat and fishery potential, temperature, noxious weeds, and stream channel and riparian habitat status.

Table xxx: Assessments on Mill Creek

Type	Agency	Year	Area
Upper Clark Fork Tributaries TMDL	MDEQ	2010	River Mile 0.0-20.2
Tributary Prioritization/Rating Summary	MFWP	2010	River Mile 0-11.0
Fish Population/Riparian Habitat	MFWP	2009	River Mile 1.2, 5.2, 9.7,13.6

FWP Riparian Assessment

Montana FWP (2009) conducted riparian assessments on the same reaches and at the same time as the fish survey (Table xxx). River Mile 1.2 showed signs of bank erosion, lacked woody vegetation and exhibited low flows at the time of the assessment. Old car bodies had been used in an attempt to stabilize the bank. River Mile 5.2 and 9.7 both had stable banks, good amounts of woody vegetation and a near perfect score on the riparian assessment. River Mile 13.6 also scored well on the riparian assessment.

5.Restoration

Needs

- Continue to monitor metals contamination and apply mitigation practices if necessary
- Address dewatering in the creek by improving irrigation practices
- Continue to monitor temperature throughout the drainage
- Reduce fish passage obstacles by removing or modifying in-stream irrigation structures
- Limit livestock access to streams and riparian areas

Activities: Projects being undertaken by the WRC

6.Watershed Map

7.Bibliography

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