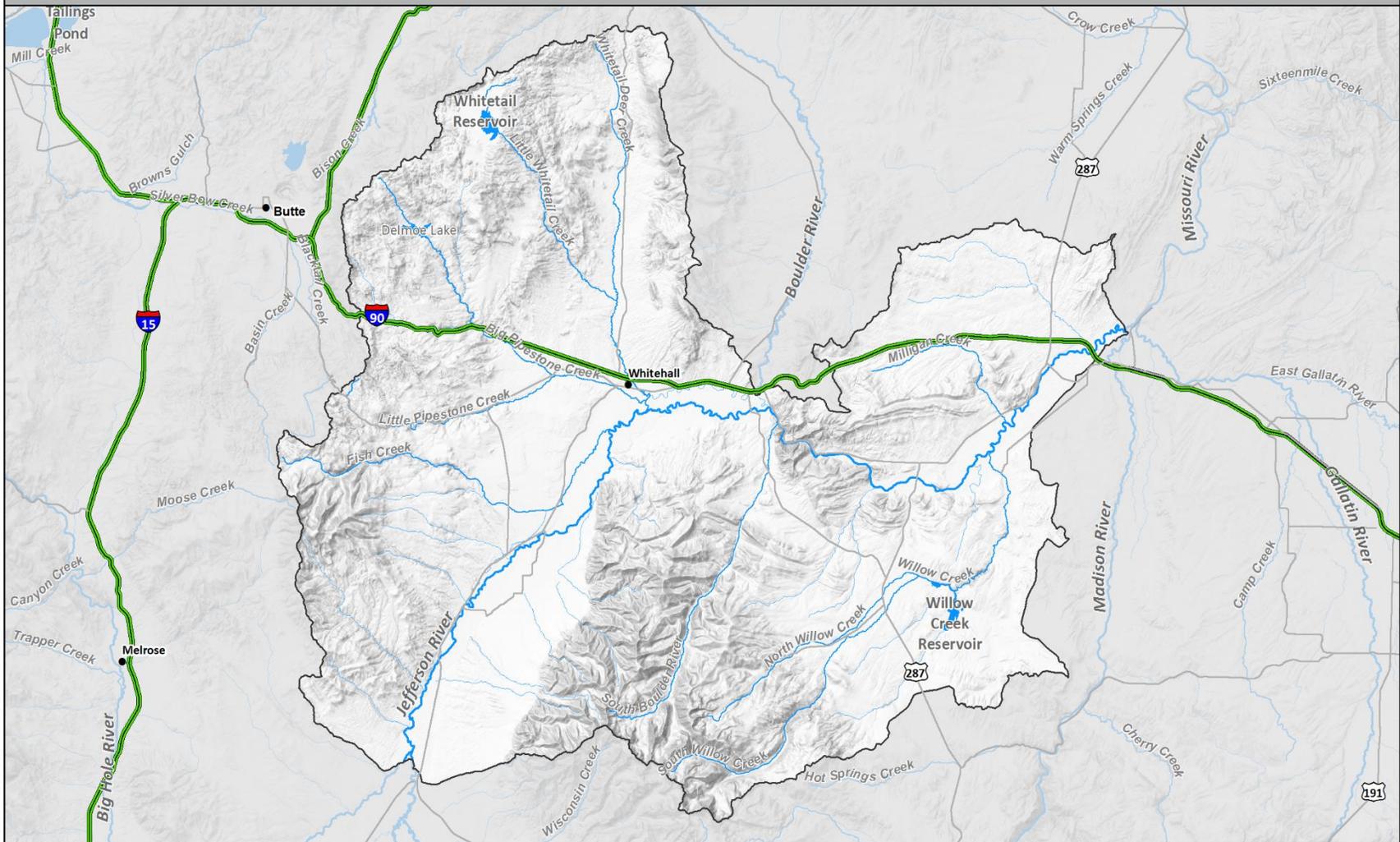


Jefferson River Drainage

MONTANA FWP



 Drainage Boundary



Map Produced by:
ASP - Geographic Data Services
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Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI

Jefferson River Drainage

Physical Description

The Jefferson River flows for about 80 miles from its origin at the junction of the Big Hole and Beaverhead rivers to its mouth at Three Forks where it joins the Madison and Gallatin rivers to form the Missouri River. Much of the Jefferson River is braided, particularly in the area near Three Forks where many islands and side channels exist. During the irrigation season, virtually all the tributaries to the Jefferson River are diverted before reaching the river. The North and South Boulder rivers are the largest tributaries contributing significant volumes of flow during spring runoff.

Fisheries Management

All flowing waters in this drainage that support trout populations are managed as wild trout fisheries, emphasizing habitat protection and natural reproduction. Connectivity of tributaries to the Jefferson River are critical for supporting natural reproduction, providing rearing habitats for juvenile trout, and delivering cool summer streamflow. Key tributaries include Hell's Canyon, Fish, Willow Springs, Parsons, Whitetail, Pipestone, North and South Boulder, Antelope and Willow creeks. Tributary connectivity for non-native brown trout and rainbow trout recruitment is balanced with occasional tributary isolation from the mainstem river to promote native fish recovery in five streams. The number of native westslope cutthroat trout streams in the Jefferson drainage is lower than most surrounding river systems.

The current wild trout management strategy replaced the previous hatchery-based management of trout about 50 years ago. Maintenance of healthy fish habitats for all life stages is needed for the strategy to succeed, and the predicted changes in streamflow and water temperature are high priorities for fishery management in this drainage. Stream permitting with the Ruby, Broadwater, and Jefferson Valley conservation districts attempt to protect habitats in the watershed while implementation of the [Jefferson River Drought Plan](#) is the primary activity to support streamflow improvement in the watershed.

The Jefferson River basin contains fish species common to southwestern Montana. These species include rainbow trout, brown trout, brook trout, hybrid westslope cutthroat trout, westslope cutthroat trout, mountain whitefish, common carp, longnose dace, longnose sucker, Rocky Mountain sculpin, mountain sucker, and white sucker. Occasional northern pike were detected in the Jefferson River between 2000 and 2009 but have not been observed in recent years.

The sport fishery of the Jefferson River is primarily comprised of brown trout and rainbow trout. Trout density in the upper river is about 500 trout per mile in the upper 40 miles of the river, and less than 200 trout per mile in the lower 40 miles of the Jefferson River. Trout abundance is closely associated with streamflow as significant declines in trout abundances typically occur during drought (e.g., late 1980s and 2000-2007), but recover during years of near normal streamflow (e.g., 2009, 2010, and 2011). FWP and Montana Trout Unlimited developed an informal goal to sustain 1000 trout per mile in the upper 40 miles and 500 trout per mile in the lower 40 miles of the Jefferson River by improving instream habitats and flow in the Jefferson River and its tributaries.

Hell's Canyon Creek, Parson's Slough, Willow Springs, and North Boulder River are important tributaries for supporting the wild trout populations of the Jefferson River. Impaired flows and sediment delivery in Pipestone Creek, Whitetail Creek, South Boulder River, Antelope Creek, and Willow Creek have compromised the Jefferson River fishery. Fish Creek, Mill Creek, Halfway Creek, and Whitetail Creek contain conservation populations of westslope cutthroat trout (See [Westslope Cutthroat Trout Conservation Strategy for the Missouri River Headwaters of Southwest Montana](#)).

Stocking of hatchery reared fish in the Jefferson River began in the 1920s and continued through the early 1970s when wild trout management philosophies were instituted. Historically stocked species in the Jefferson River included rainbow trout, brown trout, cutthroat trout (undesigned), and bass. In 1989 and 1990, rainbow trout and brown trout were stocked for the specific purpose of establishing a spawning run into Jefferson River tributaries. Arctic grayling were stocked in the lower reaches of the Jefferson River in 2002 and 2003; however, reproduction was not detected, so reintroduction efforts were terminated in the lower Jefferson River.

The Jefferson River is open to angling during the entire year. Restrictive fishing regulations are in place to maintain the wild fishery while still allowing some harvest. No limit is imposed on northern pike to help prevent the further establishment of the invading population.

The relationship between drought impacts to trout populations and angler use are well established for the Jefferson River. During periods when flow and temperature conditions are favorable for trout populations, trout densities increase. Angler use is often low, especially compared to surrounding rivers, during peak summer periods due to water temperature restrictions. Total angling pressure was estimated at 16,863 angler days in 2020.

Various high mountain lakes and lowland reservoirs exist within the Jefferson River basin. Willow Creek Reservoir, Delmoe Lake, Homestake Lake, and Piedmont Pond are coldwater lakes/ponds stocked annually to provide fishing opportunities.

Habitat

The mainstem Jefferson River has desirable habitat quality for supporting a sport fishery of brown trout and rainbow trout during years with sufficient streamflow. Water quantity and quality is severely impaired during drought when water recedes from shoreline habitats, and water temperature approaches 80 F. Quality tributaries able to provide suitable trout spawning and rearing habitat are rare.

Over the past 25 years, priority habitat enhancement efforts have focused on flow improvements during summer irrigation, tributary restoration that enhances spawning and rearing habitats, and encouraging sound floodplain function practices through the stream permitting review processes. Participation in the implementation of the [Jefferson River Drought Plan](#) with the [Jefferson River Watershed Council](#) and water users has been the primary tool for preventing acute dewatering of the river.

The average width of the river is about 197 feet. The gradient averages 7 feet per mile and sinuosity is 2. The bottom substrate is primarily gravel cobble. Fine sediments are common throughout the main channel as well as many side channels. FWP determined that the minimum instream flow for fish and other aquatic life for the Jefferson River is 1100 cfs, based on the upper inflection point of the wetted perimeter model.

Special Management Issues

Jefferson River Drought Management

The [Jefferson River Drought Plan](#) was developed in 2000, and revised in 2012, in order to attract voluntary participation in meeting streamflow targets in the Jefferson River Basin. The plan identifies flow and temperature targets that initiate conservation measures to benefit the aquatic resources. Considerable work has been completed within the basin to enhance streamflow (e.g., Hell's Canyon water lease, Parson's Slough channel construction, Willow Springs channel narrowing) and improve spawning conditions through tributary enhancement projects. Trout spawning is monitored in these streams and significant increases in recruitment of juvenile trout is documented. Future work will look at the potential of flow augmentation from upstream reservoirs (e.g., Ruby and Willow Creek reservoirs) to benefit aquatic resources during times of low flow. Fostering relationships with landowners along those important spawning tributaries will continue to be a focus to maintain stream function.

Northern Pike Population Expansion

Northern pike have become established through an unauthorized introduction in the Missouri River headwaters area including parts of the Jefferson River. To address threats of northern pike on trout, FWP removed harvest regulations on northern pike throughout the basin in 2011. No pike were captured during recent annual fish population surveys.

Westslope Cutthroat Trout Conservation

The Jefferson River drainage is home to four conservation populations of westslope cutthroat trout providing opportunities to conserve this native species in the drainage. Populations exist in Fish, Halfway, Mill, and Whitetail creeks and exist in about 34 miles historically occupied tributary habitats. The top conservation priority is to secure or protect all remaining nonhybridized populations of westslope cutthroat trout. Once these populations are protected, FWP will seek public input on feasible locations to isolate larger tributaries and expand westslope cutthroat trout distribution to occupy 20% of historically inhabited tributary drainages within the sub-basin.

Priority Drought Waters

Drought related angling restrictions and closure criteria are outlined in the [Jefferson River Drought Plan](#). River reaches that typically see drought related angling restrictions or closures are summarized below in Table 2.16-1. All drought related fishing restrictions or closures are implanted and lifted through coordination with the Jefferson River Watershed Council, and triggers for implementing or lifting closures have some flexibility to attempt to coordinate with the adjacent Big Hole River drought conditions.

Table 2.16-1 Designated hoot owl reaches where drought related fishing restrictions and closures due to fishing pressure, high water temperatures, and/or low flows are expected to be implemented.

Waterbody	Reach	Classification	Criteria
Jefferson River	Confluence with the Madison River to confluence of the Beaverhead and Big Hole River (RM 0 to 77)	Non-native salmonid sport fishery	<ul style="list-style-type: none"> • Daily maximum river temperature reaches or exceeds 73°F for three consecutive days. • A full fishing closure can be implemented when average daily flow falls below 280 cfs. • Measurements relevant for criteria will occur at U.S. Geological Survey (USGS) gage 06026500 Jefferson River near Twin Bridges. • Lifting of temperature related restrictions or closures can occur when daily maximum temperatures are less than 70°F for three consecutive days or on September 15. • Lifting of flow related restrictions or closures can occur when flows exceed 300 cfs for 7 consecutive days or October 31.

FISHERIES MANAGEMENT DIRECTIONS FOR JEFFERSON RIVER DRAINAGE

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
Jefferson River and tributaries (Twin Bridges to Cardwell)	40 miles mainstem	Rainbow trout, Brown trout	Wild	Restrictive Regulations	Continue restrictive harvest to reduce angling mortality and recover from drought impacts. Maintain streamflow with the water lease at Hell's Canyon and expand habitat improvements at Parson's, and Willow Springs that will benefit wild trout.
		Mountain whitefish (N)	Wild	General	Maintain abundance.
Habitat needs and activities: The upper 40 miles of the Jefferson River and associated tributaries are periodically dewatering, but the reach has high potential for trout recovery. Activities: Improve instream flow conditions and drought plan implementation, improve spawning tributaries, and maintain function of the river channel and floodplain health.					
Jefferson River and tributaries (Cardwell to Confluence with Madison River)	40 miles mainstem	Rainbow trout, Brown trout	Wild	Restrictive Regulations	Restrictive harvest to reduce angling mortality.
		Mountain whitefish (N)	Wild	General	Maintain abundance.
Habitat needs and activities: Flow improvement at North and South Boulder, Antelope, and Willow creeks will benefit tributary and river fisheries.					
Willow Creek Reservoir	713 acres	Rainbow trout	Wild	General	Manage fish density through angler harvest to maintain fish growth and manage wild brood stock.
		Brown trout	Wild	General	Manage fish density through angler harvest to maintain fish growth.
Habitat needs and activities: Work with DNRC to manage reservoir water levels.					
Delmoe Lake	279 acres	Westslope cutthroat trout	Hatchery	Put-and-Take	Manage stocking and harvest to maintain fish growth.
Habitat needs and activities: Private Reservoir with challenging water level issues. Occasional blue-green algae blooms during late summer.					
Westslope Cutthroat Trout Conservation	50 miles	Westslope cutthroat trout (N) and other	Wild	Conservation	Secure at risk populations of westslope cutthroat trout in tributaries through isolation from non-native fish, which may include barrier construction and fish removal. Protect or secure conservation populations in 20% of their

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
Tributaries Include: Mill Fish Curly Whitetail Halfway	3.1 18.3 0.5 5.0 7.6	native fish species			historically occupied tributaries within the Jefferson River watershed (420 miles). Utilize existing populations of nonhybridized fish to repopulate future projects. Extend the Whitetail Creek population with a constructed barrier below the current natural barrier is the most practical means to enhance overall distribution In the Jefferson.
Tobacco Root Mountain Lakes	16 lakes and 128 acres	Westslope cutthroat trout Brook trout, Rainbow trout	Wild/ Hatchery Wild	General/ Put-Grow-and-Take General	Manage stocking and harvest to maintain fish growth. Manage stocking to maintain fish growth.