Chapter 20. Mid-Columbia Recovery Unit—Powder River Critical Habitat Unit

Chapter 20. Powder River Critical Habitat Unit

The Powder River CHU is located within Baker, Union, and Wallowa Counties in northeastern Oregon. This unit is thought to contain up to nine resident bull trout local populations, which are small and highly fragmented. Bull trout in the Powder River basin are part of the Hells Canyon complex and represent the southern range of the Middle Columbia / Snake River Recovery Unit. Little is known about the status of bull trout in this CHU.

Rationale for determining Critical Habitat based on the Seven Guiding Principles

1. *Conserve opportunity for diverse life-history expression – Bull trout in the Powder River Basin are* believed to be resident (Service 2002a, p. 12). There may have been a fluvial life history historically, but there is no documentation. Access to the Snake River was blocked for bull trout in the upper Powder Basin in 1932, with the construction of Thief Valley Dam on the mainstem Powder River. Bull trout in Eagle Creek may have had access to the Snake River. A twelve inch bull trout was caught during net sampling in Brownlee Reservoir in 1959 (Buchanan et al. 1997, p. 133).

2. *Conserve opportunity for genetic diversity* – Bull trout samples were taken from fish in the North Fork Powder River and Silver Creek in 1995 and preserved for analysis (Bellerud et al. 1997, p. 8). The genetic analysis revealed Powder River bull trout were genetically similar to bull trout from the Grande Ronde River system (Spruell and Allendorf 1997, p. 13). They also found that while bull trout have low levels of variation within populations they are highly differentiated between populations suggesting that all populations should be conserved to maintain the genetic diversity of the species (Spruell and Allendorf 1997, p. 13).

3. *Ensure bull trout are distributed across representative habitats* – Bull trout in the Powder River basin are part of the Hells Canyon complex and represent the southern range of the Middle Columbia / Snake River Recovery Unit. The draft revised recovery plan (Service 2004a, p. 21) identified nine local populations in the Powder River Basin, although another local population (in Rock Creek) was added during the 2008 core area assessments. All are located in headwater streams draining the Elkhorn Mountain Range and persist in areas where the habitat is still suitable.

4. *Ensure sufficient connectivity among populations* – Bull trout populations in the Powder River Basin are small and highly fragmented. Migratory corridors are blocked by dams, unscreened diversions, and poor water quality. Tasks to identify, assess, and reduce barriers to bull trout passage were deemed essential for recovery to occur (Service 2004a, pp 79-80). There is no connectivity to other core areas in the recovery unit.

5. *Ensure sufficient habitat to support population viability (e.g., abundance, trend indices)* - The role of the Powder River basin habitat to the Middle Columbia / Snake River Recovery Unit is unknown. Redd surveys were conducted from 1996 through 1999, in three Powder Basin streams, but the length of record is not sufficient to determine trend. The populations have not been assessed since 1999. Results of snorkel and electrofishing surveys in Silver Creek in 1999, resulted in a population estimate of 885 bull trout 150 millimeters (5.1 inches) fork length or greater (Hemmingsen, Gunckel, and Howell 2001, p. 38).

6. *Consider threats (e.g., climate change)* - The Powder River bull trout populations would be at increased risk of extinction with a warming of the climate because the hydrology is driven

primarily by snowmelt (Nowak 2004, p. 2). Protection of high elevation habitats will become even more important as the climate warms. Summer maximum water temperature increases in spawning and rearing habitat of 1° to 3° C would have profound impacts on the bull trout population. Maximum weekly average temperatures of 13-15 °C were reported for streams supporting bull trout in the Powder River basin (Hemmingsen, Bellerud, Buchanan, et al. 2001, p. 19). Maximum daily temperatures would have been higher than the weekly averages. If maximum daily temperatures increased 1-3 °C, they would likely be in the high teens and low twenties. Bull trout typically do not occur in streams where maximum daily temperature exceeds 18° C (Rieman and Chandler 1999, p. 11). Brook trout are present in many of the streams in the basin where bull trout occur. A 1-3 °C increase in maximum daily temperature could provide brook trout a greater competitive advantage over bull trout than they might already have (McMahon et al. 1999, p. 1321). It might also allow brook trout to expand the upper limit of their distribution into areas where bull trout currently occur in allopatry, furthering the threat posed by hybridization. Isolation and habitat fragmentation along with brook trout and legacy effects from mining and agricultural development are continuing threats to the populations. However, local efforts are ongoing to address water quality issues in the Powder River Basin (Service 2004a, pp. 63-64). Recent Oregon Watershed Enhancement Board (OWEB) funded projects include riparian restoration on 10 miles of the Powder River below Baker City and piping of a ditch system to supply livestock water by the Baker Valley SWCD, and the Sumpter Municipal Diversion by the Powder Basin Watershed Council (T. Bailey, ODFW, *in litt*. 2009). This project involved the installation of a new fish passage friendly diversion intake for the City of Sumpter water intake on McCully Fork (T. Bailey, ODFW, *in litt*. 2009). McCully Fork appears to have suitable habitat but for bull trout but is not currently occupied (Service 2004a, p. 107). The draft recovery plan includes recovery tasks to address passage barriers, sedimentation, and inadequate flows and temperatures where necessary for recovery (Service 2004a, pp. 92-94).

7. *Ensure sufficient redundancy in conserving population units* – Habitat in the occupied reaches of the Powder River Basin provide high quality habitat for resident bull trout. All of the occupied area is essential because it provides redundancy across the Powder River basin and to the critical habitat unit. The presence of multiple local populations distributed throughout a watershed provides a mechanism for spreading risk (Service 2002a, p. 24).

The following water bodies are included in this CHU (see Table 53).

Powder River from the confluence with Brownlee Reservoir on the Snake River upstream 15.3 km (9.5 mi) to the confluence of the Eagle Creek is potential FMO habitat; from the confluence with Wolf Creek upstream 0.8 km (0.5 mi) to the confluence with the North Powder River is potential FMO habitat; and from Mason Dam upstream 15.9 km (9.9 mi) to the confluence with Cracker Creek is potential FMO habitat. There are historical (1960s) observations of bull trout in the Powder River downstream of Baker City, Oregon, and upstream of Mason Dam (Buchanan et al. 1997, p. 135). Bull trout can utilize Phillips Reservoir above Mason Dam for FMO habitat in the fall, winter, and spring, but there are no documented records of bull trout presence. Thief Valley Dam and Mason Dam represent upstream fish passage barriers in the mainstem Powder River. If restored, the segments of the Powder River would provide FMO habitat and connectivity for existing local populations of bull trout in the upper Powder and North Powder rivers and a potential local population in Eagle Creek, which is essential for recovery (Service 2004a, p. 28).

Eagle Creek from the confluence with the Powder River upstream to the perennial headwaters is designated as critical habitat. The lower river below the East Fork Eagle Creek confluence provides 34.0 km (21.1 mi) of FMO habitat. There is 26.9 km (16.7 mi) of spawning and rearing habitat upstream of the confluence with East Fork Eagle Creek. Eagle Creek has numerous historical (1940s–1980s) records and recent (1990s) angler reports of bull trout. However, 1991 and 1994 surveys failed to locate any bull trout in Eagle Creek (Buchanan et al. 1997, p. 134). Both habitat conditions and water quality are considered to be excellent in the headwaters of Eagle Creek, especially within the Eagle Cap Wilderness, and could support bull trout spawning (Buchanan et al. 1997, p. 136). Reestablishing a local population of bull trout in the Eagle Creek watershed is necessary for recovery of bull trout in the Powder River Basin (Service 2004a, p.105).

> **East Fork Eagle Creek** from the confluence with Eagle Creek upstream 24.2 km (15.0 mi) to its source is potential spawning and rearing habitat. The stream has historical (1965–1967) records of bull trout, but current occupancy is unknown (Buchanan et al. 1997, p. 135). Habitat conditions and water quality in the headwaters are considered to be excellent and could support bull trout spawning and rearing (Buchanan et al. 1997, p. 136).
>
> **West Fork Eagle Creek** from the confluence with Eagle Creek upstream 15.1 km (9.4 mi) to its source is potential spawning and rearing habitat. The stream has historical (1965–1967) records of bull trout, but current occupancy is unknown (Buchanan et al. 1997, p. 135). Habitat conditions and water quality in the headwaters are considered to be excellent and could support bull trout spawning and rearing (Buchanan et al. 1997, p. 136).

Wolf Creek from the confluence with the Powder River upstream 11.2 km (6.9 mi) provides FMO habitat and upstream approximately 20.4 km (12.7 mi) to the end of perennial water is spawning and rearing habitat. Bull trout occur in the headwaters of Wolf Creek above the confluence with Elkhorn Creek (Service 2004a, p. 28).

North Powder River from the confluence with the Powder River upstream provides approximately 33.2 km (20.7 mi) of FMO habitat and 5.8 km (3.7 mi) of spawning and rearing habitat from the FMO habitat upstream to the end of perennial water. Adult and juvenile bull trout and hybrids are found in the North Powder River (Hemmingsen, Bellerud, Buchanan, et al. 2001, p. 20; Bellerud et al. 1997, p. 8; Buchanan et al. 1997, p. 134).

Anthony Creek from the confluence with the Powder River upstream provides 7.9 km (4.9 mi) of FMO habitat and 7.9 km (11.1 mi) of spawning and rearing habitat to the end of perennial water. Bull trout in Anthony Creek and its tributaries, North Anthony Creek and Indian Creek, form a single local population.

Upstream fish movement in Anthony Creek is limited by a waterfall located approximately 10 kilometers (6.2 miles) upstream from the confluence with Indian Creek (Buchanan et al. 1997, p. 136). There are also two major diversion structures on Anthony Creek downstream of known bull trout distribution, which result in reduced flows and elevated temperatures (USFS 1995c, p. 24); Buchanan et al. 1997, p. 137).

> **North Fork Anthony Creek** from the confluence with Anthony Creek upstream to the end of perennial water provides 8.5 km (5.3 mi) of occupied spawning and rearing habitat

(Buchanan et al. 1997, p. 136; Bellerud et al. 1997, p. 14). Brook trout and brook/bull trout hybrids have been documented in North Fork Anthony Creek (Bellerud et al. 1997, p. 8).

Indian Creek from the confluence with Anthony Creek upstream 8.4 km (5.2 mi) to the end of perennial water provides occupied spawning and rearing habitat. Indian Creek has a potential upstream barrier (0.6 m (2 ft) waterfall) downstream of known bull trout distribution. Indian Creek has a potential upstream barrier (0.6-meter, 2-foot waterfall) downstream of known bull trout distribution (RUT 2001, p. 17).

Phillips Reservoir is a 897.0 ha (2216.5 ac) reservoir that provides FMO habitat and connectivity to the upper Powder River populations and Deer Creek / Lake Creek population.

Deer Creek from the confluence with the north bank of Phillips Reservoir on the Powder River upstream 9.2 km (5.7 mi) to the confluence with Lake Creek is potential FMO habitat. Stream survey data for Deer Creek indicate primary constituent elements for habitat complexity and migratory corridors are present, though extent of use by bull trout is uncertain (USFS, 1999c). Deer Creek provides a migration corridor for bull trout from Lake Creek to access Phillips Reservoir and the Powder River (P/PBTW 1999, p. 2).

Lake Creek from the confluence with Deer Creek upstream to the extent of perennial water provides 8.3 km (5.2 mi) of spawning and rearing habitat for a local population of bull trout. Bull trout have been documented in Lake Creek. The entire perennial length of Lake Creek is essential for recovery (Bellerud et al. 1997, p. 9; Buchanan et al. 1997, pp. 134 & 135; USFS and BLM 1999a, p. 3; Service 2004a, pp. 78 - 79). The draft recovery plan specifies providing connectivity among local populations within the Powder River Basin (Service 2004a, pp. 79-80.)

Cracker Creek from the confluence with the McCully Fork (the upstream extent of the Powder River) upstream 13.5 km (8.4 mi) to its perennial headwaters is FMO habitat. Cracker Creek provides connectivity between two headwater tributaries (Silver and Little Cracker Creeks) within the upper Powder River local population, which is essential for recovery. It is presumed, but actually unknown, if bull trout are present or using Cracker Creek. However, upper Cracker Creek could provide 4.7 km (2.9 mi) of spawning and rearing habitat and allow for expansion of the upper Powder River local population (USFS and BLM 1999a). Expansion of distribution within existing local populations is called for in the Bull Trout Draft Recovery Plan. Connectivity with other local populations within the Powder River Basin via lower Cracker Creek is also necessary for recovery (Service 2004a, pp. 79-80).

Little Cracker Creek from the confluence with Cracker Creek upstream 3.1 km (1.9 mi) to its headwaters is known to support bull trout rearing (Bellerud et al. 1997, p. 8, 17), but it is uncertain that spawning is occurring. Brook trout occur in Little Cracker Creek and hybrids were documented in Little Cracker Creek in 1996. Little Cracker Creek and Silver Creek are considered one local population, the upper Powder local population (Service 2004a, p. 22). The Bull Trout Draft Recovery Plan specifies providing connectivity among local populations within the Powder River Basin (Service 2004a, pp. 79-80.).

Silver Creek from the confluence with Cracker Creek upstream 0.4 km (0.2 mi) is FMO habitat and the remaining 9.4 km (5.8 mi) provides spawning and rearing habitat. This is

an important occupied bull trout spawning and rearing stream (Bellerud et al. 1997, p. 31; Buchanan et al. 1997, p. 135; USFS 1995a, p. 4; RUT 2001, p. 5). Silver Creek has sites with high substrate embeddedness and is water quality limited for temperature for bull trout spawning from the mouth to the headwaters and requires some restoration (USFS 1995a, p. 20; ODEQ *in litt* 2009*;* Service 2004a, pp. 89-97).

Fruit Creek from the confluence with Silver Creek upstream 7.3 km (4.5 mi) to the perennial headwaters is historical bull trout habitat and is still considered likely to contain bull trout (Buchanan et al. 1997, p. 135; USFS 1995a, p. 15). Fruit Creek has several potential fish passage barriers (RUT 2001, p. 6) and evidence of substrate embeddedness (USFS 1995a, p. 23; USFS 1999f). However, water temperatures in Fruit Creek are suitable for spawning and rearing (RUT 2001, p. 5). Implementation of recovery tasks to address habitat issues would allow for natural expansion of distribution, reproductive rates, and numbers of individuals within the upper Powder River local population.

Table 53. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Powder River Basin CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Powder River Basin–None	Anthony Creek	OR	Anthony Creek from the confluence with the Powder River upstream provides 7.9 km (4.9 mi) of FMO habitat and 7.9 km (11.1 mi) of spawning and rearing habitat to the end of perennial water. Bull trout in Anthony Creek and its tributaries, North Anthony Creek and Indian Creek, form a single local population. Upstream fish movement in Anthony Creek is limited by a waterfall located approximately 10 kilometers (6.2 miles) upstream from the confluence with Indian Creek (Buchanan et al. 1997, p. 136). There are also two major diversion structures on Anthony Creek downstream of known bull trout distribution, which result in reduced flows and elevated temperatures (USFS 1995c, p. 24); Buchanan et al. 1997, p. 137).	See CHU text	1180600 450132
Powder River Basin–None	Cracker Creek	OR	Cracker Creek from the confluence with the McCully Fork (the upstream extent of the Powder River) upstream 13.5 km (8.4 mi) to its perennial headwaters is FMO habitat. Cracker Creek provides connectivity between two headwater tributaries (Silver and Little Cracker Creeks) within the upper Powder River local population, which is essential for recovery. It is presumed, but actually unknown, if bull trout are present or using Cracker Creek. However, upper Cracker Creek could provide 4.7 km (2.9 mi) of spawning and rearing habitat and allow for expansion of the upper Powder River local population (USFS 1999c). Expansion of distribution within existing local populations is called for in the Bull Trout Draft Recovery Plan. Connectivity with other local populations within the Powder River Basin via lower Cracker Creek is also necessary for recovery (Service 2002a, pp. 79-80).	See CHU text	1182058 447415

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Powder River Basin–None	Deer Creek	OR	Deer Creek from the confluence with the north bank of Phillips Reservoir on the Powder River upstream 9.2 km (5.7 mi) to the confluence with Lake Creek is potential FMO habitat. Stream survey data for Deer Creek indicate primary constituent elements for habitat complexity and migratory corridors are present, though extent of use by bull trout is uncertain (USFS, 1999c). Deer Creek provides a migration corridor for bull trout from Lake Creek to access Phillips Reservoir and the Powder River (P/PBTW 1999, p. 2).	See CHU text	1180605 446836
Powder River Basin–None	Eagle Creek	OR	Eagle Creek from the confluence with the Powder River upstream to the perennial headwaters is designated as critical habitat. The lower river below the East Fork Eagle Creek confluence provides 34.0 km (21.1 mi) of FMO habitat. There is 26.9 km (16.7 mi) of spawning and rearing habitat upstream of the confluence with East Fork Eagle Creek. Eagle Creek has numerous historical (1940s–1980s) records and recent (1990s) angler reports of bull trout (USFS 1995b). However, 1991 and 1994 surveys failed to locate any bull trout in Eagle Creek (Buchanan et al. 1997, p. 134). Both habitat conditions and water quality are considered to be excellent in the headwaters of Eagle Creek, especially within the Eagle Cap Wilderness, and could support bull trout spawning (Buchanan et al. 1997, p. 136). Reestablishing a local population of bull trout in the Eagle Creek watershed is necessary for recovery of bull trout in the Powder River Basin (Service 2002a, p.105).	See CHU text	1171699 447463
Powder River Basin–None	East Fork Eagle Creek	OR	East Fork Eagle Creek from the confluence with Eagle Creek upstream 24.2 km (15.0 mi) to its source is potential spawning and rearing habitat. The stream has historical (1965–1967) records of bull trout, but current occupancy is unknown (Buchanan et al. 1997, p. 135). Habitat conditions and water quality in the headwaters are considered to be excellent and could support bull trout spawning and rearing (Buchanan et al. 1997, p. 136).	See CHU text	1173711 449826

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Powder River Basin–None	Fruit Creek	OR	Fruit Creek from the confluence with Silver Creek upstream 7.3 km (4.5 mi) to the perennial headwaters is historical bull trout habitat and is still considered likely to contain bull trout (Buchanan et al. 1997, p. 135; USFS 1995a, p. 15). Fruit Creek has several potential fish passage barriers (RUT 2001, p. 6) and evidence of substrate embeddedness (USFS 1995a, p. 23; USFS 1999c). However, water temperatures in Fruit Creek are suitable for spawning and rearing (RUT 2001, p. 5). Implementation of recovery tasks to address habitat issues would allow for natural expansion of distribution, reproductive rates, and numbers of individuals within the upper Powder River local population.	See CHU text	1182122 448088
Powder River Basin–None	Indian Creek	OR	Indian Creek from the confluence with Anthony Creek upstream 8.4 km (5.2 mi) to the end of perennial water provides occupied spawning and rearing habitat. Indian Creek has a potential upstream barrier (0.6 m (2 ft) waterfall) downstream of known bull trout distribution. Indian Creek has a potential upstream barrier (0.6-meter, 2-foot waterfall) downstream of known bull trout distribution (RUT 2001, p. 17).	See CHU text	1181554 450189
Powder River Basin–None	Lake Creek	OR	Lake Creek from the confluence with Deer Creek upstream to the extent of perennial water provides 8.3 km (5.2 mi) of spawning and rearing habitat for a local population of bull trout. Bull trout have been documented in Lake Creek. The entire perennial length of Lake Creek is essential for recovery (Bellerud et al. 1997, p. 9; Buchanan et al. 1997, pp. 134 & 135; USFS 1999f, p. 3; Service 2002a, pp. 78 - 79). The draft recovery plan specifies providing connectivity among local populations within the Powder River Basin (Service 2002a, pp. 79-80.)	See CHU text	1181079 447494

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Powder River Basin–None	Little Cracker Creek	OR	Little Cracker Creek from the confluence with Cracker Creek upstream 3.1 km (1.9 mi) to its headwaters is known to support bull trout rearing (Bellerud et al. 1997, p. 8, 17), but it is uncertain that spawning is occurring. Brook trout occur in Little Cracker Creek and hybrids were documented in Little Cracker Creek in 1996. Little Cracker Creek and Silver Creek are considered one local population, the upper Powder local population (Service 2002a, p. 22). The Bull Trout Draft Recovery Plan specifies providing connectivity among local populations within the Powder River Basin (Service 2002a, pp. 79-80.).	See CHU text	1181968 448257
Powder River Basin–None	North Fork Anthony Creek	OR	North Fork Anthony Creek from the confluence with Anthony Creek upstream to the end of perennial water provides 8.5 km (5.3 mi) of occupied spawning and rearing habitat (Buchanan et al. 1997, p. 136; Bellerud et al. 1997, p. 14). Brook trout and brook/bull trout hybrids have been documented in North Fork Anthony Creek (Bellerud et al. 1997, p. 8).	See CHU text	1182315 450424
Powder River Basin–None	North Powder River	OR	North Powder River from the confluence with the Powder River upstream provides approximately 33.2 km (20.7 mi) of FMO habitat and 5.8 km (3.7 mi) of spawning and rearing habitat from the FMO habitat upstream to the end of perennial water. Adult and juvenile bull trout and hybrids are found in the North Powder River (Hemmingsen, Bellerud, Buchanan, et al. 2001, p. 20; Bellerud et al. 1997, p. 8; Buchanan et al. 1997, p. 134).	See CHU text	1178956 450385
Powder River Basin–None	Phillips Reservoir	OR	Phillips Reservoir is a 897.0 ha (2216.5 ac) reservoir that provides FMO habitat and connectivity to the upper Powder River populations and Deer Creek / Lake Creek population.	See CHU text	1180518 446812

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Powder River Basin–None	Powder River	OR	Powder River from the confluence with Brownlee Reservoir on the Snake River upstream 15.3 km (9.5 mi) to the confluence of the Eagle Creek is potential FMO habitat; from the confluence with Wolf Creek upstream 0.8 km (0.5 mi) to the confluence with the North Powder River is potential FMO habitat; and from Mason Dam upstream 15.9 km (9.9 mi) to the confluence with Cracker Creek is potential FMO habitat. There are historical (1960s) observations of bull trout in the Powder River downstream of Baker City, Oregon, and upstream of Mason Dam (Buchanan et al. 1997, p. 135). Bull trout can utilize Phillips Reservoir above Mason Dam for FMO habitat in the fall, winter, and spring, but there are no documented records of bull trout presence. Thief Valley Dam and Mason Dam represent upstream fish passage barriers in the mainstem Powder River. If restored, the segments of the Powder River would provide FMO habitat and connectivity for existing local populations of bull trout in the upper Powder and North Powder rivers and a potential local population in Eagle Creek, which is essential for recovery (Service 2002a, p. 28).	See CHU text	1170508 447455
Powder River Basin–None	Silver Creek	OR	Silver Creek from the confluence with Cracker Creek upstream 0.4 km (0.2 mi) is FMO habitat and the remaining 9.4 km (5.8 mi) provides spawning and rearing habitat. This is an important occupied bull trout spawning and rearing stream (Bellerud et al. 1997, p. 31; Buchanan et al. 1997, p. 135; USFS 1995a, p. 4; RUT 2001, p. 5). Silver Creek has sites with high substrate embeddedness and is water quality limited for temperature for bull trout spawning from the mouth to the headwaters and requires some restoration (USFS 1995a, p. 20; ODEQ 2009 in litt; Service 2002a, pp. 89-97).	See CHU text	1182078 448087
Powder River Basin–None	West Fork Eagle Creek	OR	West Fork Eagle Creek from the confluence with Eagle Creek upstream 15.1 km (9.4 mi) to its source is potential spawning and rearing habitat. The stream has historical (1965–1967) records of bull trout, but current occupancy is unknown (Buchanan et al. 1997, p. 135). Habitat conditions and water quality in the headwaters are considered to be excellent and could support bull trout spawning and rearing (Buchanan et al. 1997, p. 136).	See CHU text	1174544 450192

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Powder River Basin–None	Wolf Creek	OR	Wolf Creek from the confluence with the Powder River upstream 11.2 km (6.9 mi) provides FMO habitat and upstream approximately 20.4 km (12.7 mi) to the end of perennial water is spawning and rearing habitat. Bull trout occur in the headwaters of Wolf Creek above the confluence with Elkhorn Creek (Service 2002a, p. 28).	See CHU text	1178944 450439