

**Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is  
Essential, and Documentation of Occupancy**

**Chapter 24. Upper Snake Recovery Unit—Malheur River  
Basin Critical Habitat Unit**



## Chapter 24. Malheur River Basin Critical Habitat Unit

The Malheur River Basin CHU is essential to the conservation of bull trout because the two local bull trout populations are genetically distinct, exhibit important resident and fluvial life histories, and represents the westernmost occurrence of bull trout in the Upper Snake River RU. This CHU does or can contain multiple populations, providing a mechanism for spreading risk from stochastic events and ensuring population redundancy. The Malheur River core area is disconnected from other core areas in the Upper Snake River RU (see Appendix 1 for more detailed information).

The Malheur River CHU is in eastern Oregon within Grant, Baker, Harney, and Malheur Counties. It is the most western core area in the Upper Snake Recovery Unit and is isolated from the other core areas in this unit. There are two local bull trout populations identified; upper Malheur and North Fork Malheur Rivers. These populations consist of both fluvial and resident bull trout. The 2002 Bull Trout Draft Recovery Plan also identified several streams, including Bosonberg Creek, McCoy Creek, and Corral Basin Creek, for expansion of bull trout range within the upper Malheur River local population and they are considered essential for recovery. Summit Creek is considered potential suitable bull trout habitat and is included in the designation. The Burns Paiute Tribe owns lands within this unit.

### **Rationale for determining Critical Habitat based on the Seven Guiding Principles**

- 1. Conserve opportunity for diverse life-history expression* –The upper Malheur River Basin contains two local bull trout populations, the North Fork Malheur population and the upper Malheur population. The presence of dams on the upper Malheur River (Warm Springs Dam) and on the North Fork Malheur (Agency Dam, neither of which have upstream fish passage), effectively separates the two populations. Both populations exhibit resident and fluvial life histories, although fluvial fish are more prevalent in the North Fork Malheur population. Bull trout from the North Fork Malheur population are known to overwinter in Beulah Reservoir (Schwabe et al. 2001, p. 8). The ability to migrate is important to the persistence of local bull trout subpopulations (Rieman and McIntyre 1993, p. 25; M. Gilpin 1997; Rieman and Clayton 1997, p. 11; Rieman et al. 1997, p. 54).
- 2. Conserve opportunity for genetic diversity*- Genetic analysis of Malheur bull trout indicate that there is variation between the upper Malheur and North Fork Malheur bull trout populations and variation among populations within these two stream systems (DeHaan, Diggs, and Ardren 2007, p. 5). These populations have remained diverse in spite of 60 to 70 years of isolation above barrier dams and, in the case of the upper Malheur population, hybridization with brook trout (DeHaan, Diggs, and Ardren 2007, p. 10). Bull trout populations in the Malheur Basin exhibit genetic diversity consistent with other bull trout populations at the southern extent of their range in the Upper Snake Recovery Unit (DeHaan, Diggs, and Ardren 2007, p. 5). Maintaining multiple local populations within the Malheur Basin provides a mechanism for spreading risk from stochastic events (Service 2002a, p. 50).
- 3. Ensure bull trout are distributed across representative habitats* –Spawning and juvenile rearing occurs in the headwaters of the upper Malheur and North Fork Malheur rivers, and subadult rearing occurs in the mainstems of both rivers. Use of habitat in Warm Springs Reservoir by upper Malheur River bull trout has not been documented, although it is possible for them to forage downstream to the reservoir during winter (Service 2002a, p. 9). Fluvial bull

trout in the North Fork Malheur River utilize the mainstem and Beulah Reservoir as overwintering habitat. However, during low water years Beulah Reservoir does not provide a sufficient pool to support overwintering bull trout and this may affect their ability to reproduce as reflected in redd counts (Rose and Mesa 2009, pp 17 and 51).

4. *Ensure sufficient connectivity among populations* –The draft recovery plan identifies restoration of passage at the dams to allow connectivity as an objective in the Malheur River Basin. However, brook trout remain a threat in the upper Malheur River, and this threat needs to be addressed before volitional passage can be restored (Service 2002a, p. 35).

5. *Ensure sufficient habitat to support population viability (e.g., abundance, trend indices)* - Bull trout redd surveys have been taking place annually since 1992 in the North Fork Malheur and since 1998 in the upper Malheur River. Although survey timing and locations have been adjusted over time in order to respond to new information and staffing challenges, a measure of trend can be obtained from redds per mile data. In the North Fork Malheur redds per mile (r/m) trended upward from 0.2 r/m in 1992 to 6.6 r/m in 2000, dipped downward to 3.1 r/m in 2005 and reached the highest during the period of record in 2007 (7.1 r/m). In 2008 redds per mile were down to 5.9 (Perkins 2009, p. 20). Coincidentally the minimum reservoir pool in Beulah Reservoir was 0 acre-feet during the period from 2003 through 2005, which may have had an influence of redd counts in the North Fork Malheur (Rose and Mesa 2009, p. 17, 51). Redd counts in the upper Malheur are confounded by the presence of brook trout and the similarity in redd sizes of both species. Redds counted before September 15 are presumed to be those of bull trout based on the onset of spawning observed in the North Fork Malheur (Perkins 2009, p. 17). Although fewer in number compared to the North Fork Malheur, the trend in the upper Malheur is similar with peaks in redds per mile noted in 2001 and 2007 (Perkins 2009, p. 21). The Bureau of Reclamation has initiated studies that should provide guidance for reservoir operations and establishment of a conservation pool for Beulah Reservoir (Peterson and Kofoot 2002, p. 8). Ensuring sufficient habitat to support fluvial populations is important to the conservation of the species.

6. *Consider threats (e.g., climate change)* - Most of the streamflow in the Malheur Basin is from winter snow pack, although several of the tributaries where bull trout spawn are spring fed. Based on recent simulations, a warming climate could have a profound effect on Malheur bull trout populations by reducing the suitability of habitat through changes in the thermal regime (increased stream temperature) (Rieman et al. 2007, pp. 1557 – 1562) and, in the upper Malheur in particular, changes that favor further expansion of brook trout into bull trout spawning tributaries (Rahel and Olden 2008, p. 523).

7. *Ensure sufficient redundancy in conserving population units* – The draft recovery plan identified two local populations, upper Malheur and North Fork Malheur River. DeHaan, Diggs, and Ardren (2007) analyzed samples from bull trout in three streams in the upper Malheur and five streams in the North Fork Malheur. They observed a high level of genetic variation among all populations, and that the greatest level of variation observed was between populations in the upper Malheur and North Fork Malheur rivers (DeHaan, Diggs, and Ardren 2007, p. 6). Having 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 61)

**North Fork Malheur River** from Agency Valley Dam upstream 22.5 km (14.0 mi) to the confluence with Bear Creek (including Beulah Reservoir) is FMO habitat. From the confluence with Bear Creek 37.7 km (23.4) upstream to its source is occupied spawning and rearing habitat. Bull trout are known to be present throughout the length of the North Fork Malheur River including Beulah Reservoir. Life history patterns of the population have been well documented (Gonzales 1998, pp. 9-12, Schwabe et al. 2000, pp. 1-77, 2001, pp. 4-65, 2003, pp. 1-68 and 2004, pp. 1-221). The North Fork Malheur River is bull trout population is an adfluvial population, with migration to, and overwintering in, Beulah Reservoir an essential part of the bull trout's life history upon which persistence of the population is dependent. The North Fork Malheur has been redd surveyed annually since 1992 (Perkins 2009, p. 5)

**Beulah Reservoir** provides (716 ha (1,769 ac) of FMO habitat. Life history patterns of the population have been well documented (Gonzales 1998, pp. 9-12, Schwabe et al 2000, pp. 1-77, 2001, pp. 4-65, 2003, pp. 1-68 and 2004, pp. 1-221). Beulah Reservoir is an essential part of the bull trout's life history upon which persistence of the population is dependent.

**Crane Creek** from the confluence with the North Fork Malheur River upstream 1.8 km (1.1 mi) to the confluence with Little Crane Creek contains suitable migratory and rearing habitat. A bull trout life history study conducted in 1999, documented the use of Crane Creek from its mouth up to Little Crane Creek by migrating bull trout (Schwabe et al 2000, p. 10). Although no spawning has been observed, bull trout have been observed in Crane Creek during spawning surveys, and during sampling conducted by Burns Paiute Tribe in 1998 (Burns Paiute Tribe 1998).

Little Crane Creek from the confluence with Crane Creek upstream 9.6 km (6.0 mi) to its spring-fed sources is occupied spawning and rearing habitat. Little Crane Creek has been redd surveyed annually since 1992, and continues to be one of several prime spawning areas in the basin (Perkins, 2009. P. 17).

**Elk Creek** from the confluence with the North Fork Malheur River upstream 1.6 km (1.0 mi) to the confluence with North Fork Creek and South Fork Elk Creek is occupied spawning and rearing habitat. Elk Creek has been redd surveyed annually since 1992. Redd counts in 2008 in Elk Creek increased from 2007 counts (Perkins 2009, p.17).

South Fork Elk Creek from the confluence with Elk Creek upstream 1.2 km (0.8 mi) is occupied spawning and rearing habitat. South Fork Elk Creek is included in the redd surveys for Elk Creek and has been surveyed annually since 1992 (Perkins 2009, p. 9).

North Fork Elk Creek from the confluence with Elk Creek upstream 4.0 km (2.5 mi) is occupied spawning and rearing habitat. North Fork Elk Creek is included in the redd surveys for Elk Creek and has been surveyed annually since 1992 (Perkins 2009, p. 9).

**Sheep Creek** from the confluence with North Fork Malheur River upstream 6.7 km (4.2 mi) to its source is occupied spawning and rearing habitat. Sheep Creek has been redd surveyed annually since 1992, and continues to be one of several prime spawning areas in the basin (Perkins, 2009, P. 17).

**Swamp Creek** from the confluence with North Fork Malheur River upstream 6.7 km (4.2 mi) to its source is occupied spawning and rearing habitat. Swamp Creek has been redd surveyed annually since 1992, and continues to be one of several prime spawning areas in the basin (Perkins, 2009, P. 17).

**Flat Creek** from the confluence with North Fork Malheur River upstream 1.2 km (0.7 mi) to the first tributary confluence provides FMO habitat. Bull trout were detected in Flat Creek during sampling in 1989, but use of the habitat is suspected to be limited to rearing and foraging in the lowest reach of the stream (up to the first tributary) (Buckman et al. 1992, p.49).

**Horseshoe Creek** from the confluence with the North Fork Malheur River upstream 2.7 km (1.7 mi) to its source is occupied spawning and rearing habitat. Horseshoe creek has been redd surveyed annually since 1998 (Perkins 2009, p. 6). Redd counts in 2008 were higher than in 2007 (Perkins 2009, p. 17).

**Malheur River** from Drewsey Valley at the Headgate north of Highway 20, upstream 72.1 km (44.8 mi) to the confluence with Big Creek in the Logan Valley provides FMO habitat for bull trout that migrate downstream from spawning and rearing habitat upstream of the confluence of Big Creek. Much of the Upper Malheur River mainstem is in need of restoration to be able to support fluvial bull trout. The draft recovery plan identifies restoration of habitat to support all life histories of bull trout as a recovery goal for the Malheur (Service 2002a, p.31).

**Big Creek** from the confluence with the Malheur River upstream 13.8 km (8.6 mi) to its source is occupied spawning and rearing habitat. Redds have been counted in Big Creek from 1998 to 2001 and from 2004 to 2008 (Perkins 2009, p. 12).

Meadow Fork Big Creek from the confluence with Big Creek upstream 5.2 km (3.3 mi) to its source is occupied spawning and rearing habitat. Bull trout were detected in Meadow Fork Big Creek in surveys done in 1989 by Buckman et al.(1992, p. 53). Spawning surveys conducted since 1998 have continued to indicate bull trout spawning in Meadow Fork Big Creek (Perkins 2009, p. 13).

Snowshoe Creek from the confluence with Big Creek upstream 3.4 km (2.1 mi) to its source are occupied and provide spawning and rearing habitat for the upper Malheur River local population. Surveys in 1993 revealed bull trout in Snowshoe Creek (Buchanan et al. 1997, p. 140). Redd surveys have been conducted in Snowshoe Creek since 1998 (Perkins 2009, p. 11).

Corral Basin Creek from the confluence with Big Creek upstream 5.8 km (3.6 mi) to its source is historic spawning and rearing habitat necessary to provide for population expansion. Although currently unoccupied, habitat restoration could provide spawning and rearing habitat for bull trout (R. Perkins, Oregon Department of Fish and Wildlife, pers. comm. 2009). Corral Basin Creek is identified as areas for range expansion in the draft recovery plan (Service 2002a, p. 55).

**Lake Creek** from the confluence with the Malheur River upstream 16.8 km (10.4 mi) to its source provides spawning and rearing habitat for the upper Malheur River local population. Spawning surveys conducted since 1998 have continued to indicate bull trout spawning in Lake Creek (Perkins 2009, p. 14).

Crooked Creek from the confluence with Lake Creek upstream 13.5 km (8.4 mi) to its source provides spawning and rearing habitat for the upper Malheur River local population. A bull trout was caught in 1995 by Forest Service fisheries biologist in Crooked Creek (Buchanan et al. 1997, p. 140), and rearing bull trout were sampled in 1998 by Burns Paiute Tribe biologists (Burns Paiute Tribe 1998). Habitat in Crooked Creek is currently below optimal conditions for bull trout, but the stream has been

identified as essential for restoration for habitat expansion in the draft recovery plan (Service 2002a, p. 35).

*McCoy Creek* from the confluence with Lake Creek upstream 10.2 km (6.3 mi) to its source contains potential spawning and rearing habitat. McCoy Creek is identified as an area for range expansion in the Bull Trout Draft Recovery Plan and is essential for the long-term conservation of the species.

**Summit Creek** from the confluence with the Malheur River upstream 22.8 km (14.2 mi) to its source contains potential spawning and rearing habitat. Summit Creek has been surveyed from 1999 through 2006. Redds, some of which may be brook trout, have been counted annually since 1999, but bull trout have not been observed since 2000. Restoration of the habitat in Summit Creek to provide for population expansion is essential to the long-term conservation of the species. Although currently unoccupied, restoration could provide suitable spawning and rearing habitat for bull trout (R. Perkins, pers. comm. 2009). Summit Creek has been surveyed from 1999 through 2006. Redds have been counted, but bull trout have not been observed since 2000 (Schwabe et al 2001, p. 11, pg. 41; Perkins 2009, p. 11).

**Bosonberg Creek** from the confluence with the Malheur River upstream 13.2 km (8.2 mi) to its source contains potential spawning and rearing and FMO habitat. Restoration of the habitat in Bosonberg Creek to provide for population expansion is essential to the long-term conservation of the species.

Although currently unoccupied, habitat restoration could provide spawning and rearing habitat for bull trout (R. Perkins, pers. comm. 2009). Bosonberg Creek is identified as an area for range expansion in the draft recovery plan (Service 2002a, p. 55).



**Table 61. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Malheur River Basin CHU/CHSU**

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Malheur River Basin–None	Big Creek	OR	Big Creek from the confluence with the Malheur River upstream 13.8 km (8.6 mi) to its source is occupied spawning and rearing habitat. Redds have been counted in Big Creek from 1998 to 2001 and from 2004 to 2008 (Perkins 2009, p. 12).	See CHU text	1186252 441447
Malheur River Basin–None	Bosonberg Creek	OR	Bosonberg Creek from the confluence with the Malheur River upstream 13.2 km (8.2 mi) to its source contains potential spawning and rearing and FMO habitat. Restoration of the habitat in Bosonberg Creek to provide for population expansion is essential to the long-term conservation of the species. Although currently unoccupied, habitat restoration could provide spawning and rearing habitat for bull trout (R. Perkins, Oregon Department of Fish and Wildlife, pers. comm. 2009). Bosonberg Creek is identified as an area for range expansion in the draft recovery plan (Service 2002a, p. 55).	See CHU text	1186192 441346
Malheur River Basin–None	Corral Basin Creek	OR	Corral Basin Creek from the confluence with Big Creek upstream 5.8 km (3.6 mi) to its source is historic spawning and rearing habitat necessary to provide for population expansion. Although currently unoccupied, habitat restoration could provide spawning and rearing habitat for bull trout (R. Perkins, Oregon Department of Fish and Wildlife, pers. comm. 2009). Corral Basin Creek is identified as areas for range expansion in the draft recovery plan (Service 2002a, p. 55).	See CHU text	1186183 442142
Malheur River Basin–None	Crane Creek	OR	Crane Creek from the confluence with the North Fork Malheur River upstream 1.8 km (1.1 mi) to the confluence with Little Crane Creek contains suitable migratory and rearing habitat. A bull trout life history study conducted in 1999, documented the use of Crane Creek from its mouth up to Little Crane Creek by migrating bull trout (Schwabe et al 2000, p. 10). Although no spawning has been observed, bull trout have been observed in Crane Creek during spawning surveys, and during sampling conducted by Burns Paiute Tribe in 1998 (Burns Paiute Tribe 1998).	See CHU text	1183709 441616

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Malheur River Basin–None	Crooked Creek	OR	Crooked Creek from the confluence with Lake Creek upstream 13.5 km (8.4 mi) to its source provides spawning and rearing habitat for the upper Malheur River local population. A bull trout was caught in 1995 by Forest Service fisheries biologist in Crooked Creek (Buchanan et al. 1997, p. 140), and rearing bull trout were sampled in 1998 by Burns Paiute Tribe biologists (Burns Paiute Tribe 1998). Habitat in Crooked Creek is currently below optimal conditions for bull trout, but the stream has been identified as essential for restoration for habitat expansion in the draft recovery plan (Service 2002a, p. 35).	See CHU text	1186352 441513
Malheur River Basin–None	Elk Creek	OR	Elk Creek from the confluence with the North Fork Malheur River upstream 1.6 km (1.0 mi) to the confluence with North Fork Creek and South Fork Elk Creek is occupied spawning and rearing habitat. Elk Creek has been redd surveyed annually since 1992. Redd counts in 2008 in Elk Creek increased from 2007 counts (Perkins 2009, p.17).	See CHU text	1183920 442497
Malheur River Basin–None	Flat Creek	OR	Flat Creek from the confluence with North Fork Malheur River upstream 1.2 km (0.7 mi) to the first tributary confluence provides FMO habitat. Bull trout were detected in Flat Creek during sampling in 1989, but use of the habitat is suspected to be limited to rearing and foraging in the lowest reach of the stream (up to the first tributary) (Buckman et al.1992, p.49).	See CHU text	1184032 443044
Malheur River Basin–None	Horseshoe Creek	OR	Horseshoe Creek from the confluence with the North Fork Malheur River upstream 2.7 km (1.7 mi) to its source is occupied spawning and rearing habitat. Horseshoe creek has been redd surveyed annually since 1998 (Perkins 2009, p. 6). Redd counts in 2008 were higher than in 2007 (Perkins 2009, p. 17).	See CHU text	1184157 443231
Malheur River Basin–None	Lake Creek	OR	Lake Creek from the confluence with the Malheur River upstream 16.8 km (10.4 mi) to its source provides spawning and rearing habitat for the upper Malheur River local population. Spawning surveys conducted since 1998 have continued to indicate bull trout spawning in Lake Creek (Perkins 2009, p. 14).	See CHU text	1186252 441446

<b>CHU—CHSU</b>	<b>Water Body Name</b>	<b>State</b>	<b>Information Documenting Bull Trout Occupancy</b>	<b>Essential Habitat Rationale</b>	<b>LLID</b>
Malheur River Basin–None	Little Crane Creek	OR	Little Crane Creek from the confluence with Crane Creek upstream 9.6 km (6.0 mi) to its spring-fed sources is occupied spawning and rearing habitat. Little Crane Creek has been redd surveyed annually since 1992, and continues to be one of several prime spawning areas in the basin (Perkins, 2009. P. 17).	See CHU text	1183868 441515.1
Malheur River Basin–None	Malheur River	OR	Malheur River from Drewsey Valley at the Headgate north of Highway 20, upstream 72.1 km (44.8 mi) to the confluence with Big Creek in the Logan Valley provides FMO habitat for bull trout that migrate downstream from spawning and rearing habitat upstream of the confluence of Big Creek. Much of the Upper Malheur River mainstem is in need of restoration to be able to support fluvial bull trout. The draft recovery plan identifies restoration of habitat to support all life histories of bull trout as a recovery goal for the Malheur (Service 2002a, p.31).	See CHU text	1169731 440585
Malheur River Basin–None	McCoy Creek	OR	McCoy Creek from the confluence with Lake Creek upstream 10.2 km (6.3 mi) to its source contains potential spawning and rearing habitat. McCoy Creek is identified as an area for range expansion in the Bull Trout Draft Recovery Plan and is essential for the long-term conservation of the species.	See CHU text	1186540 441692
Malheur River Basin–None	Meadow Fork Big Creek	OR	Meadow Fork Big Creek from the confluence with Big Creek upstream 5.2 km (3.3 mi) to its source is occupied spawning and rearing habitat. Bull trout were detected in Meadow Fork Big Creek in surveys done in 1989 by Buckman et al.(1992, p. 53). Spawning surveys conducted since 1998 have continued to indicate bull trout spawning in Meadow Fork Big Creek (Perkins 2009, p. 13).	See CHU text	1186219 442274
Malheur River Basin–None	North Fork Elk Creek	OR	North Fork Elk Creek from the confluence with Elk Creek upstream 4.0 km (2.5 mi) is occupied spawning and rearing habitat. North Fork Elk Creek is included in the redd surveys for Elk Creek and has been surveyed annually since 1992 (Perkins 2009, p. 9).	See CHU text	1184093 442451

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Malheur River Basin—None	North Fork Malheur River	OR	North Fork Malheur River from Agency Valley Dam upstream 22.5 km (14.0 mi) to the confluence with Bear Creek (including Beulah Reservoir) is FMO habitat. From the confluence with Bear Creek 37.7 km (23.4) upstream to its source is occupied spawning and rearing habitat. Bull trout are known to be present throughout the length of the North Fork Malheur River including Beulah Reservoir. Life history patterns of the population have been well documented (Gonzales 1998, pp. 9-12, Schwabe et al 2000, pp. 1-77, 2001, pp. 4-65, 2003, pp. 1-68 and 2004, pp. 1-221). The North Fork Malheur River is bull trout population is an adfluvial population, with migration to, and overwintering in, Beulah Reservoir an essential part of the bull trout's life history upon which persistence of the population is dependent. The North Fork Malheur has been redd surveyed annually since 1992 (Perkins 2009, p. 5)	See CHU text	1180605 437569.1
Malheur River Basin—None	Sheep Creek	OR	Sheep Creek from the confluence with North Fork Malheur River upstream 6.7 km (4.2 mi) to its source is occupied spawning and rearing habitat. Sheep Creek has been redd surveyed annually since 1992, and continues to be one of several prime spawning areas in the basin (Perkins, 2009, P. 17).	See CHU text	1183970 442810
Malheur River Basin—None	Snowshoe Creek	OR	Snowshoe Creek from the confluence with Big Creek upstream 3.4 km (2.1 mi) to its source are occupied and provide spawning and rearing habitat for the upper Malheur River local population. Surveys in 1993 revealed bull trout in Snowshoe Creek (Buchanan et al. 1997, p. 140). Redd surveys have been conducted in Snowshoe Creek since 1998 (Perkins 2009, p. 11).	See CHU text	1186119 442421
Malheur River Basin—None	South Fork Elk Creek	OR	South Fork Elk Creek from the confluence with Elk Creek upstream 1.2 km (0.8 mi) is occupied spawning and rearing habitat. South Fork Elk Creek is included in the redd surveys for Elk Creek and has been surveyed annually since 1992 (Perkins 2009, p. 9).	See CHU text	1184093 442450

<b>CHU—CHSU</b>	<b>Water Body Name</b>	<b>State</b>	<b>Information Documenting Bull Trout Occupancy</b>	<b>Essential Habitat Rationale</b>	<b>LLID</b>
Malheur River Basin–None	Summit Creek	OR	Summit Creek from the confluence with the Malheur River upstream 22.8 km (14.2 mi) to its source contains potential spawning and rearing habitat. Summit Creek has been surveyed from 1999 through 2006. Redds, some of which may be brook trout, have been counted annually since 1999, but bull trout have not been observed since 2000. Restoration of the habitat in Summit Creek to provide for population expansion is essential to the long-term conservation of the species. Although currently unoccupied, restoration could provide suitable spawning and rearing habitat for bull trout (R. Perkins, Oregon Department of Fish and Wildlife, pers. comm. 2009). Summit Creek has been surveyed from 1999 through 2006. Redds have been counted, but bull trout have not been observed since 2000 (Schwabe et al 2001, p. 11, pg. 41; Perkins 2009, p. 11).	See CHU text	1185880 440989
Malheur River Basin–None	Swamp Creek	OR	Swamp Creek from the confluence with North Fork Malheur River upstream 6.7 km (4.2 mi) to its source is occupied spawning and rearing habitat. Swamp Creek has been redd surveyed annually since 1992, and continues to be one of several prime spawning areas in the basin (Perkins, 2009, P. 17).	See CHU text	1184011 442907
Malheur River Basin - None	Beulah Reservoir	OR	Beulah Reservoir provides (716 ha (1,769 ac) of FMO habitat. Life history patterns of the population have been well documented (Gonzales 1998, pp. 9-12, Schwabe et al 2000, pp. 1-77, 2001, pp. 4-65, 2003, pp. 1-68 and 2004, pp. 1-221). Beulah Reservoir is an essential part of the bull trout's life history upon which persistence of the population is dependent.	See CHU text	1181543 439309