Chapter 7. Coastal Recovery Unit—Odell Lake Critical Habitat Unit

Chapter 7. Odell Lake Critical Habitat Unit

The Odell Lake Critical Habitat Unit lies entirely within the Deschutes National Forest in Klamath County and includes Odell Lake, Trapper Creek, Crystal Creek, Odell Creek, Unnamed Tributary #1 to Odell Creek, and Maklaks Creek. Odell Lake contains only one bull trout population, which has been isolated from the Deschutes River populations by a lava flow that impounded Odell Creek and formed Davis Lake approximately 5,500 years ago. Odell Lake is the only natural adfluvial bull trout population in Oregon. Naturally adfluvial bull trout populations are less abundant than fluvial bull trout range-wide, and therefore Odell Lake supports an important and limited life history expression.

Bull trout distribution and abundance are limited within the Odell Lake/Odell Creek sub-watersheds. According to fish survey data and incidental catch information gathered between 1994 and 2008, current bull trout distribution in the Odell Lake watershed includes Odell Lake, Trapper Creek, Odell Creek and two of its tributaries (i.e., Unnamed Tributary #1 and Maklaks Creek) (USFS 2004), an occasional bull trout in Davis Lake (S. Marx, pers. comm. 2000), one occurrence in Fire Creek (also referred to as Hemlock Creek) (USFS 2003b), and one occurrence in Crystal Creek (USFS *in litt*., 2005a).

Little is known about the life history of the Odell Lake population (USFS and BLM 1999b). Bull trout historically spawned in Crystal Creek (OSGC 1948). However, only one juvenile bull trout has been observed in recent years (USFS *in litt*. 2005a). Most of the spawning occurs in Trapper Creek. Bull trout are occasionally encountered in Odell Creek, and recent observations of juvenile bull trout in Maklaks Creek and Unnamed Tributary #1, indicate that spawning is occurring either in Odell Creek or these two tributaries to Odell Creek. It is believed that bull trout are likely outmigrating from the lake, downstream into Odell Creek to spawn. Bull trout that migrate downstream to spawn are unique, range-wide. Another unique life history expression may be occurring in Odell Lake bull trout. During the fall while monitoring kokanee, ODFW has incidentally caught large, ripe females near the outlet of the lake near Sunset Cove. This area of the lake is a terminal moraine where cold water upwelling occurs. It has been speculated that some bull trout may be spawning in this area of the lake. There is no evidence of shoal spawning bull trout range-wide. Therefore, if shoal spawning is occurring in Odell Lake bull trout, it is a unique situation. Bull trout have also been observed in Davis Lake near the outlet of Odell Creek in a few rare instances.

The Odell Lake bull trout population is the southernmost population in the Coastal Recovery Unit. Genetic analysis of Odell Lake bull trout indicate that the population is uniquely different from others in the Deschutes River Basin due to nearly 6,000 years of isolation, resulting from a lava flow (Ardren, DeHaan, and O'Reilly 2007). The population has persisted despite the length of time that it has been isolated.

To recover bull trout in the Odell Lake Recovery Unit, it has been determined that it is essential to maintain current distribution and expand bull trout into at least one additional stream , (*e.g*., Crystal Creek) and increase the population to at least 200 spawning adults (Service 2002a). Odell Creek and its tributaries, and Crystal Creek provide the best opportunities for additional bull trout spawning areas. Additionally, there are 6.3 miles of unoccupied bull trout habitat on the upper end of Trapper Creek that are currently occupied by brook trout. This segment of stream could provide excellent habitat for bull trout if brook trout were to be eradicated. Ideally, bull trout would be restored into more than one additional stream.

Because of the small size of this population and its isolation, expansion of its range into any potential bull trout habitat would assist in recovery, stabilizing or increasing trends in abundance, and reduce the risk of extirpation. Therefore, all occupied and potential habitat is critical habitat.

Fire Creek and Davis Lake are not suitable for bull trout and bull trout occurrence is rare. Fire Creek is a naturally very low flow stream where one juvenile bull trout was found in a small pool near the outlet of the lake. Highway 58 crosses Fire Creek and there is little suitable habitat for bull trout upstream of the road. Bull trout may forage in Davis Lake in the winter, but otherwise the lake is shallow and warm most of the year and has an abundance of non native fish such as smallmouth bass. The lake does not provide suitable habitat for them year around nor have bull trout been found in tributaries to Davis Lake in recent years other than Odell Creek. Thus, we have determined it is not essential to bull trout conservation.

Odell Lake is approximately 1,387 ha (3,427 ac) in surface area within the lake shoreline as depicted on a 1:24,000 scale map and provides FMO habitat for this adfluvial bull trout population. Odell Lake is utilized as foraging, migratory, and overwintering habitat in the lakeshoreline areas, and possibly limited SR. Odell Lake is a large, high elevation lake with an average depth of 40 meters (130 feet) and a maximum depth of 86 meters (282 feet) (Johnson et al. 1985). Because the entire Odell Lake Recovery Unit population is dependent on Odell Lake for foraging and overwintering, habitat designation as critical habitat and maintenance and improvement of habitat conditions and fish populations is essential for recovery of this unit. Little is known about this adfluvial bull trout population life history or population size, and information is primarily limited to survey information in Trapper Creek and angler catch records in Odell Lake. Angler observations of bull trout incidentally caught have increased since the harvest of bull trout was prohibited since 1992 (Buchanan et al. 1997) Incidental catch estimates ranged from 0 to 30, average 15 between 1996 and 1999 (Service 2002a). During the fall while monitoring kokanee, ODFW has incidentally caught large, ripe females near the outlet of Odell Lake near Sunset Cove (T. Wise, pers. Comm. 2009). Bull trout, mountain whitefish, and redband trout are native to Odell Lake. Odell Lake also contains lake trout (introduced in the early 1900's), rainbow trout (first stocked in 1926), kokanee salmon (stocked 1950-1971 and 1981-83), and tui chub (stocked before 1940) (Fies et al. 1996). Some of these species may provide a forage base for bull trout. However, competition with other species is one of the threats to this population. Odell Lake supports a large fishery, and one threat to the bull trout population is from incidental harvest, and catch and release related mortality (Fies et al. 1996). Approximately 38 kilometers of tributary streams flow into Odell Lake, the largest being Trapper Creek. Surface water temperatures rarely exceed 20 °C and range to 4 °C at deeper levels year-round. The lake surface occasionally freezes (USFS 1999g; USFS and BLM 1999b). Lake pH levels consistently exceed state standards of 8.5 (USFS 1999g). Chlorophyll *a* levels are of potential concern, and increased levels are related to eutrophication of the lake due to recreational use, shore line developments, and septic systems (Johnson et al. 1985; USFS 1999g). Developments on Odell Lake include five Forest Service campgrounds and a resort at each end of the lake. There are about 70 private homes on the lake under permit from the Forest Service (Fies et al. 1996). Many of the tributaries to Odell Lake are spring-fed from the Cascade Mountains. Spring-fed rivers are particularly important in that climate change may result in warming waters. High elevation habitats such as Odell Lake offer areas of cooler water year round and provide foraging opportunities for the population. Odell Lake and Odell Creek are essential for maintaining connectivity between local populations of bull trout in Trapper Creek and the Maklaks Creek and Unnamed Tributary #1.

Trapper Creek provides SR habitat from its mouth at the confluence with Odell Lake upstream 6.2 km (3.9 mi) at the confluence of two spring-fed tributaries that form its headwaters. A portion of the creek, above RK 0.7 (RM 1.1) is within wilderness. The lower 1.3 km (0.8 miles) of Trapper Creek is the only known spawning area for the Odell Lake CHU bull trout. Fifteen years of red surveys and adult trapping data indicate that adult numbers are low. From 1998 to 2008, redd counts in Trapper Creek have averaged approximately 9 redds, ranging from 0 to 24 redds counted (ODFW *in litt.* 2008a). Adult bull trout trapping, conducted by ODFW and USFS during 1999 and 2000, captured 48 and 39 adult bull trout, respectively, in Trapper Creek (USFS 2003b). Night snorkel surveys in 2009 counted the maximum (i.e., 298) number of juvenile bull trout since surveys began in 1996 (USFS *in litt.* 2009f). A mark and recapture of bull trout within the lower 1.3 kilometers (0.8 mile) of Trapper Creek in 2005, yielded a juvenile (≥ 80 mm) population estimate of 163 ± 32 (Moore 2005). The number of adult spawning bull trout in the Odell Lake/Odell Creek sub-watersheds is estimated to be below 100 individuals. The primary threats to this population are incidental angling mortality, competition with other fish species, hybridization with brook trout, and limited habitat availability. Depending on success of establishment of other bull trout spawning areas in the recovery unit, this area may need to provide habitat for many of the 200 to 800 spawning adults specified as needed for recovery (Service 2002a). Although bull trout have not been found in Trapper Creek upstream of the falls at RK 1.3, the falls may not be a barrier since it is not vertical and it appears that bull trout may be able to pass it. Spawning gravels are found upstream of the falls (USFS 1996b), and could provide an area for expansion of the population, to help achieve recovery criteria (Service 2002a).

Crystal Creek from its mouth at the confluence with Odell Lake approximately 3.6 km (2.23 mi) to its headwater springs provides FMO habitat. It is in wilderness upstream of RK 1.1 (RM 0.7). Records indicate that Crystal Creek was the primary spawning area for bull trout in the late 1940's. Bull trout numbers may have been depleted by unlimited harvest which was allowed until 1950, poaching, or loss of suitable habitat (OSGC 1948; Fies et al. 1996). A single juvenile bull trout was observed in Crystal Creek in 2006 during electroshocking fish surveys. Since 1994, several red surveys have occurred in Crystal Creek, but none have been verified as bull trout redds (USFS 1999b). At RK 0.5 (RM 0.3) there is a railroad culvert that is not a barrier to larger fish but may impede passage for juvenile salmonids (USFS 1999b). Water temperatures in Crystal Creek remain cold throughout the summer months. Water temperatures in 1994 and 1999, did not exceed 7 °C (USFS 1999b). The lower 0.8 km of stream contains excellent rearing habitat for fish, since it is low gradient, has extensive pool formation, and an abundant large wood supply (USFS and BLM 1999b). Spawning gravels in Crystal Creek are less than ideal due to the source material in the watershed, the gradient alteration created by the culvert at the railroad crossing, and fill material at the railroad crossing (USFS 1999b). The spawning gravels and the jump and rest pool at the culvert crossing were improved in 1994 (USFS 1999b). Crystal Creek may offer one of the better opportunities for establishment of a spawning bull trout population to meet the recovery criteria of expanding to at least one additional spawning stream. Crystal Creek historically supported bull trout spawning and maintains many of the habitat elements essential to bull trout. Efforts have been taken or are outlined in the Recovery Plan to address other habitat concerns in Crystal Creek (Service 2002a).

Odell Creek from its confluence with Odell Lake downstream 12.36 km (7.68 mi) to its confluence with outlet at Davis Lake is FMO habitat. Odell Creek also provides a connection between local populations of bull trout in Trapper Creek/Odell Lake and the Maklaks/Unnamed

Tributary #1 complex. The stream is managed as Late Successional Reserve and Riparian Reserve (USFS and BLM 1999b). Historically bull trout, redband trout and mountain whitefish were present in Odell Creek (Fies et al. 1996). Bull trout have been observed in Odell Creek sporadically in recent years. An adult bull trout was observed in Odell Creek on November 1, 1998 about 100 yards below the outlet of Odell Lake and appeared to be feeding on the eggs of spawning kokanee salmon (USFS 1998d). Two bull trout were reportedly caught by anglers in the same area in 1989 (Goetz 1991). During snorkel surveys in Odell Creek in 2003, two bull trout were observed below its confluence with Maklaks Creek, one juvenile was observed below McCord Cabin Spring and one juvenile bull trout was observed at its confluence with Tributary #1 (Powers, in litt. 2005). Two juvenile bull trout were observed in lower Odell Creek, prior to a wood placement project (USFS 2004). The most recent observations of bull trout previous to these sightings were made by Satterthwaite (1979) during snorkel surveys on Odell Creek. Satterthwaite observed low numbers (0-5 per 100 ft) of 30 - 45 cm bull trout in pools from river kilometer 0.0 to 1.8 and 2.8 to 5.1 (river miles 0.0 to 1.1 and 1.75 to 3.2). Redband trout were the most abundant fish species observed in Odell Creek (USFS 1998d). Brook trout have also been found in Odell Creek (Goetz 1991). Redband trout and kokanee have been observed spawning in Odell Creek (USFS 1998d). There are no records of bull trout spawning in Odell Creek (USFS 1998d). Summer water temperatures are warm at the upper end of Odell Creek because it is fed by Odell Lake surface water. Maximum and mean temperatures near the outlet of Odell Lake were 25.2 °C and 17.6 °C (77.4 °F and 63.7 °F), respectively (USFS 1998d). Maklaks Creek, two other large unnamed spring fed tributaries and several other small unnamed spring-fed tributaries were found to contribute approximately 50% of the flow during low summer flow. This helps cool the water where it enters Davis Lake by an average of 10.8 °F during the summer of 1998 (USFS 1998d). At 0.8 kilometers up from Davis Lake or 10.9 kilometers down from Odell Lake in 1998, the maximum temperature was 20.2 °C (68.4 °F) and the mean was 11.6 °C (52.9 °F). The mostly spring fed nature of Odell Creek helps keep flows relatively stable throughout the year (USFS 1998d). Habitat is complex, deep pools are common, wood density high, and there are 60 side channels (USFS 1998d). Gravel and cobble are the most common substrate types, and spawning gravels are available (USFS 1998d). Odell Creek contains many primary constituent elements and is necessary to maintain the current distribution of bull trout, to provide a migratory corridor, and potentially provide additional spawning habitat to meet recovery criteria (Service 2002a).

> **Unnamed Tributary #1** to Odell Creek is spawning and rearing habitat from its mouth on Odell Creek (~1 km upstream of Maklaks Creek) upstream 2.6 km (1.6 mi) to a large spring. Flow downstream of RK 0.6 (RM 0.4) was 21.5 cfs and upstream of RK 0.6 was 1.3 cfs in June, 1999. Because it is a spring fed stream, temperatures are cool and the maximum recorded in 1999 was 5 °C in the lower reach and 18 °C upstream of RK 0.6. This source of cool water is also important in cooling Odell Creek and Davis Lake. During presence-absence electrofishing surveys in 2003, a single bull trout was observed. In 2004, snorkel surveys counted eighteen juvenile bull trout (USFS 2004). Other fish species found include redband trout and brook trout (USFS 1999c). Substrate downstream of RK 0.6 is a mix of mostly sand then gravels and cobbles. Upstream of RK 0.6 sand dominated with small amounts of gravel. Stream cover is complex with a mix of pools, wood, and undercut banks (USFS 1999c). Overall habitat conditions appear favorable for bull trout. Recovery criteria specify expanding the spawning population to at least one other stream and increasing overall abundance of this population. Unnamed

Tributary #1 is a potential stream for expansion. Brook trout presence would be a concern, but the brook trout are currently mostly in the upper part of this stream.

Maklaks Creek is spawning and rearing habitat from its mouth on Odell Creek upstream 2.7 km (1.7 mi) to the convergence of several small spring-fed tributaries. During presence-absence electrofishing surveys in July 2003, a juvenile bull trout was observed in Maklaks Creek (USFS 2003c) along with ten rainbow trout. Fish rearing habitat in the creek is excellent; however no fish were found in electrofishing efforts at units throughout the stream in 1990 (USFS 2003c). One rainbow trout and 4 brook trout were observed during electrofishing surveys in 1997 (USFS 2003c). Temperatures are cool, regulated by springs and are suitable for bull trout. Continuous water temperature data were recorded near the mouth of Maklaks Creek during 2002 and 2003 and at the 4668 road crossing in 1994. The highest temperature recorded was 6.9 °C during July of 1994. Monthly average water temperatures from June to September 2003 ranged from 4.7 to 5.0 °C (USFS 2003c). This source of cool water is important in cooling Odell Creek. Gradient ranges from 3% at the mouth to 6% at the headwaters. Habitat is mostly riffle dominated with boulders. Woody debris is likely at near natural conditions for this stream (USFS 2003c). The area could provide spawning and rearing habitat for bull trout. At the time of the stream survey in 2003, the culvert under road 4668 was considered a barrier to fish passage (USFS 2003c) but was replaced in 2007.

Table 30. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Odell Lake CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Odell Lake—None	Crystal Creek	OR	Crystal Creek from its mouth at the confluence with Odell Lake approximately 3.6 km (2.23 mi) to its headwater springs provides FMO habitat. Crystal Creek historically supported bull trout spawning and maintains many of the habitat elements essential to the conservation of bull trout. A single juvenile bull trout was observed in Crystal Creek in 2006 during presence–absence fish surveys. Establishing an appropriate additional spawning population in the area at Crystal Creek is essential to the long-term conservation of the species and this core area. The stream is entirely within the Deschutes National Forest and is in wilderness upstream of RK 1.1 (RM 0.7). Records indicate that Crystal Creek was the primary spawning area for bull trout in the late 1940's. Bull trout numbers may have been depleted by unlimited harvest which was allowed until 1950, poaching, or loss of suitable habitat (OSGC 1948; Fies et al. 1996). A single juvenile bull trout was observed in Crystal Creek in 2006, during electroshocking fish surveys. Since 1994, several redd surveys have occurred in Crystal, but none have been verified as bull trout redds (USFS 1999b). At RK 0.5 (RM 0.3) there is a railroad culvert that is not a barrier to larger fish but may impede passage for juvenile salmonids (USFS 1999b). At RK 1.1 (RM 0.7) in the wilderness, there was a small dam which was used by the railroad to divert water for power production. However, the dam was removed by the Forest Service in 2003. Water temperatures in Crystal Creek remain cold throughout the summer months. Water temperatures in 1994 and 1999 did not exceed 7 °C (USFS 1999b). The lower 0.8 kilometer of stream contains excellent rearing habitat for fish, since it is low gradient, has extensive pool formation, and an abundant large wood supply (USFS and BLM 1999b). Spawning gravels in Crystal Creek are less than ideal due to the source material in the watershed, the gradient alteration created by the culvert at the railroad crossing, and fill material at the railroad crossing (USFS 1999b). The spawning gravels and the jump and rest pool	See text for this CHU	1214318 445887

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
			at the culvert crossing were improved in 1994 (USFS 1999b). Crystal Creek may offer one of the better opportunities for establishment of a spawning bull trout population to meet the recovery criteria of expanding to at least one additional spawning stream. Crystal Creek historically supported bull trout spawning and maintains many of the habitat elements essential to bull trout. Efforts have been taken or are outlined in the Recovery Plan to address other habitat concerns in Crystal Creek (Service 2002a).		
Odell Lake—None	Maklaks Creek	OR	Maklaks Creek is spawning and rearing habitat from its mouth on Odell Creek upstream 2.7 km (1.7 mi) to the convergence of several small spring-fed tributaries. A juvenile bull trout was observed in this stream during presence–absence electrofishing surveys in 2003. The stream is in the Deschutes National Forest. During presence-absence electrofishing surveys in 2003, a juvenile bull trout was observed in Maklaks Creek (USFS 2004). Fish rearing habitat in the creek is excellent; however no fish were found in electrofishing efforts at units throughout the stream in 1990 (USFS 1990b). One rainbow trout was found in night snorkel efforts and 1 rainbow trout and 4 brook trout in electrofishing surveys in 1997 (USFS in litt., 2003c). Temperatures are cool, regulated by springs and are suitable for bull trout. On September 5, 1990, flow at the mouth was 19 cfs, water temperature at the mouth was 5.5 °C, and at the headwaters it was 4.5 °C (USFS 1990b). In 1994 temperatures were continually monitored and the maximum was 6.9 °C (USFS in litt.2003c). This source of cool water is also important in cooling Odell Creek. Gradient ranges from 3% at the mouth to 6% at the headwaters. Habitat is mostly riffle dominated with boulders. Although in 1990 surveys few gravels and few macroinvertebrates were noted (USFS 1990b). The area could provide spawning and rearing habitat for bull trout (N. Dachtler, pers. comm. 2002b). A culvert and a few small falls were not considered capable of restricting fish movement (USFS 1990b).	See text for this CHU	1217409 444216
Odell Lake—None	Odell Creek	OR	Odell Creek from its confluence with Odell Lake downstream 12.36 km (7.68 mi) to its confluence with	See text for this CHU	1220237 435808

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
			Davis Lake provides connectivity between the known spawning population of bull trout in Trapper Creek and a spawning population of bull trout in two tributaries to Odell Creek: Maklaks Creek and Unnamed Tributary #1. Although redds have not been observed in Odell Creek, it provides spawning and rearing habitat where cold water tributaries enter the creek. Odell Creek also provides FMO habitat for bull trout that is essential to the long-term conservation of the species. During snorkel surveys in Odell Creek in 2003, two bull trout were observed below its confluence with Maklaks Creek, one juvenile bull trout was observed below McCord Cabin Spring, and another was observed at its confluence with Unnamed Tributary #1. Two juvenile bull trout were observed in lower Odell Creek prior to a wood placement project. The stream is entirely within the Deschutes National Forest and is managed as Late Successional Reserve and Riparian Reserve (USFS and BLM 1999b). Historically bull trout, redband trout and mountain whitefish were present in Odell Creek (Fies et al. 1996). Bull trout have been observed in Odell Creek sporadically in recent years. An adult bull trout was sighted in Odell Creek on November 1, 1998, about 100 yards below the outlet of Odell Lake and appeared to be feeding on the eggs of spawning kokanee salmon (USFS 1998d). Two bull trout were reportedly caught by anglers in the same area in 1989 (Goetz 1991). During snorkel surveys in Odell Creek in 2003, two bull trout were observed below its confluence with Maklaks Creek, one juvenile was observed below McCord Cabin Spring and one juvenile bull trout was observed at its confluence with Tributary #1 (Powers, P. pers. comm. 2005). Two juvenile bull trout were observed in lower Odell Creek, prior to a wood placement project (USFS 2002a). The most recent observations of bull trout previous to these sightings were made by Satterthwaite (1979) during snorkel surveys on Odell Creek. Satterthwaite observed low numbers (0-5 per 100 ft) of 30 - 45 cm bull trout in pools from river kilometer 0.0 to 1.8 and 2.8 to 5.1 (river miles 0.0 to 1.1 and 1.75 to 3.2). Redband trout were the most abundant fish species observed in Odell Creek (USFS 1998d). Brook trout have also been found in Odell Creek (Goetz		

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
			1991). Redband trout and kokanee have been observed spawning in Odell Creek (USFS 1998d). There are no records of bull trout spawning in Odell Creek (USFS 1998d). Summer water temperatures are warm at the upper end of Odell Creek because it is fed by Odell Lake surface water. Maximum and mean temperatures near the outlet of Odell Lake were 25.2 °C and 17.6 °C (77.4 °F and 63.7 °F), respectively (USFS 1998d). Maklaks Creek, two other large unnamed spring-fed tributaries and several other small unnamed spring fed tributaries were found to contribute approximately 50% of the flow during low summer flow. This helps cool the water where it enters Davis Lake by an average of 10.8 °F during the summer of 1998 (USFS 1998d). At 0.8 kilometers up from Davis Lake or 10.9 kilometers down from Odell Lake in 1998 the maximum temperature was 20.2 °C (68.4 °F) and the mean was 11.6 °C (52.9 °F). The mostly spring fed nature of Odell Creek helps keep flows relatively stable throughout the year (USFS 1998d). Habitat is complex, deep pools were common, wood density high, and there were 60 side channels (USFS 1998d). Gravel and cobble were the most common substrate types, and spawning gravels were available (USFS 1998d). The presence of many primary constituent elements needed by bull trout, and the documented use of Odell Creek by bull trout justify its designation as critical habitat. It provides a migratory corridor from the primary area for the population in Odell Lake to Odell Creek and its tributaries. This habitat is needed to maintain the current distribution of bull trout, to provide a migratory corridor, and may be an additional spawning area to meet recovery criteria (Service 2002a).		
Odell Lake—None	Trapper Creek	OR	Trapper Creek provides SR habitat from its mouth at the confluence with Odell Lake upstream 6.2 km (3.9 mi) at the confluence of two spring-fed tributaries that form its headwaters. Trapper Creek is the only tributary to Odell Lake where bull trout redds have been observed. Trapper Creek is the primary spawning and rearing tributary to Odell Lake. Spawning is documented within the lower 1.0 km (0.6 mi) of Trapper Creek, and potential spawning and rearing habitat occurs 5.2 km (3.3 mi) upstream above the	See text for this CHU	1220475 435846

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
			falls is. Trapper Creek is entirely within the Deschutes National Forest, and upstream of RK 0.7 (RM 1.1) it is within wilderness. This population utilizes the lower 1.3 kilometers (0.8 miles) of Trapper Creek between the mouth and a 2.3 meter falls. Fifteen years of red surveys and adult trapping data indicate that adult spawner numbers are low. From 1998 to 2008, redd counts in Trapper Creek have averaged approximately 9 redds, ranging from 0 to 24 redds counted. (ODFW *in Litt*. 2008a). Adult bull trout trapping, conducted by ODFW and USFS during 1999 and 2000, captured 48 and 39 adult bull trout, respectively, in Trapper Creek (Dachtler 2002). Night snorkel surveys in 2009 counted the maximum (i.e., 298) number of juvenile bull trout since surveys began in 1996. A mark and recapture of bull trout within the lower 1.3 kilometers (0.8 mile) of Trapper Creek in 2005, yielded a juvenile (≥ 80 mm) population estimate of 163 ± 32 (Moore 2005). The number of adult spawning bull trout in the Odell Lake/Odell Creek sub-watersheds is estimated to be below 100 individuals. The primary threats to this population are incidental angling mortality, competition with other fish species, hybridization with brook trout, and limited habitat availability. Because the lower 1.3 kilometers of Trapper Creek is the only known spawning area for the Odell Lake bull trout, it is critical that it be designated as critical habitat and that all efforts are taken to maintain and improve the habitat and population conditions. Depending on success of establishment of other bull trout spawning areas in the recovery unit, this area may need to provide habitat for many of the 200 to 800 adult bull trout specified as needed for recovery (Service 2002a). Although bull trout have not been found in Trapper Creek upstream of the falls at RK 1.3, the falls may not be a barrier since it is not vertical and it appears that bull trout may be able to pass it (N. Dachtler, pers. comm. 2002a). Spawning gravels are found upstream of the falls (USFS 1996b), and could provide an area for expansion of the population to help achieve recovery criteria (Service 2002a).		

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Odell Lake—None	UNNAMED Creek #1 - off Odell Creek	OR	Unnamed Tributary #1 to Odell Creek is spawning and rearing habitat from its mouth on Odell Creek (~1 km upstream of Maklaks Creek) upstream 2.6 km (1.6 mi) to a large spring. The Draft Recovery Plan specifies expanding the spawning population to at least one other stream and increasing overall abundance of this population. Unnamed Tributary #1 is a stream for potential bull trout population expansion. A single juvenile bull trout was observed in this stream during presence–absence electrofishing surveys in 2003 and 18 juvenile bull trout were counted during a snorkel survey in 2004. The stream is in the Deschutes National Forest. This spring fed tributary provides a source of cool water that is essential in cooling Odell Creek and Davis Lake. During presence-absence electrofishing surveys in 2003, a single bull trout was observed. In 2004, snorkel surveys counted eighteen juvenile bull trout (USFS 2004). Other fish species found snorkeling below RK 0.6 were 80% redband trout and 20% brook trout, whereas in electrofishing upstream of RK 0.6 all fish were brook trout (USFS 1999c). Substrate downstream of RK 0.6 was a mix of mostly sand then gravels and cobbles. Upstream of RK 0.6 sand dominated with small amounts of gravel. Stream cover was complex with a mix of pools, wood, and undercut banks (USFS 1999c). Brook trout currently occur in the upper part of this stream.	See text for this CHU	1220475 435846.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Odell Lake—None	Odell Lake	OR	Odell Lake is approximately 1,387 ha (3,427 ac) in surface area within the lake shoreline as depicted on a 1:24,000 scale map and provides FMO habitat for this adfluvial bull trout population. Odell Lake is utilized as foraging, migratory, and overwintering habitat in the lake shoreline areas, and possibly limited SR. Odell Lake is a large, high elevation lake that provides the primary foraging, migratory and overwintering habitat for the Odell Lake Recovery Unit population. Because the entire Odell Lake Recovery Unit population is dependent on Odell Lake for foraging and overwintering, habitat designation as critical habitat and maintenance and improvement of habitat conditions and fish populations is essential for recovery of this unit. Additionally, many of the tributaries to Odell Lake are spring-fed from the Cascade Mountain Range. Spring-fed rivers are particularly important in that climate change may result in warming waters. High elevation habitats such as Odell Lake offer areas of cooler water year round and provide foraging opportunities for the population. This is particular important as the climate warms. Odell Lake and Odell Creek are essential for maintaining connectivity among bull trout in Trapper Creek and the Maklaks Creek and Unnamed Tributary #1.	See text for this CHU	1220475 435846.3