

3.10 Special Status Aquatic Species

3.10.1 Regulatory Background

Background information on regulatory protection for special status species is provided in Section 3.6, Special Status Plant Species. Regulations that directly influence special status aquatic species management decisions within the analysis area primarily are implemented by the BLM, USFWS, USFS, and state wildlife agencies, which consist of the WGFD, CPW, UDWR, and NDOW. Specific special status aquatic species regulations relevant to the proposed Project are presented in **Table 3.10-1**.

Table 3.10-1 Relevant Regulations for Special Status Aquatic Species

Topic	Regulation
Aquatic Species (Amphibians, Fish, and Aquatic Invertebrates)	<ul style="list-style-type: none"> • Endangered Species Act (ESA) of 1973; • BLM Special Status Species Management Policy 6840 (6840 Policy) (Rel. 6-125); • FSM 2670; • Colorado Revised Statutes 33-2-105; • Utah Rules R657-3, R657-19, and R657-48; and • Nevada Revised Statutes 501.100, 501.110, 501.375 – 501.395; Chapter 502; 503.090, 503.270 – 503.430, and 503.584 – 503.650; • Nevada Administrative Codes 503.065, 503.067, 503.075, 503.090 – 503.104.

The analysis for special status aquatic species assumed that the BLM and USFS would continue to manage special aquatic status species’ habitats on their lands in coordination with the applicable state wildlife agencies (i.e., WGFD, CPW, UDWR, and NDOW). The USFWS would have regulatory oversight regarding the management of federally listed species. Management direction and guidance for special status aquatic species are provided through implementation of recovery plans, conservation agreements, management plans, and state wildlife plans (e.g., Colorado’s Comprehensive Wildlife Conservation Strategy and Wildlife Action Plans [CDOW 2006], Nevada Wildlife Action Plan [Wildlife Action Plan Team 2006], Utah Comprehensive Wildlife Conservation Strategy [UDWR 2005], and Wyoming State Wildlife Action Plan [WGFD 2010]). Recovery plans for federally listed aquatic species are referenced in Section 3.10.4.1; conservation agreements and management plans for other special status fish and amphibian species are identified in Section 3.10.4.2.

3.10.2 Data Sources

Information regarding special status aquatic species and their habitat within the analysis area was obtained from a review of existing published sources; BLM RMPs; USFS Forest Management Plans; BLM, USFS, WGFD, CPW, UDWR, NDOW, and USFWS file information; and WYNDD, CNHP, UNHP, and NNHP database information. In addition, information as a result of correspondence with agency fishery biologists was incorporated into this section as appropriate. Additional information is provided in the BA for federally listed species and the BE for FS species.

3.10.3 Analysis Area

The analysis area for special status aquatic species encompassed all alternative routes and locations of other Project components including terminals and ground electrodes. The analysis area included perennial streams, reservoirs, lakes, and springs that would be crossed by the alternative 250-foot-wide transmission line ROWs and refined transmission corridors. The width of the refined transmission corridors generally would range from approximately 500 to 3,600 feet. A reach of approximately 1 mile downstream of where the refined transmission corridor crosses a stream also was considered as part of the analysis area. This analysis area considered all special status aquatic species and their habitats that may be present, based on available literature and data reviewed for the Project. For federally listed fish in the Colorado River Basin, the downstream analysis area extended for at least 10 miles to include

potential water depletions. The Platte River Basin also was included in the analysis area for consideration of potential water depletions. For context, impacts in the Project analysis area are discussed in comparison to the watershed area.

3.10.4 Baseline Description

In total, 55 special status aquatic species were evaluated in terms of potential occurrence within the Project analysis area. As documented in **Appendix G, Table G-3**, 24 species were eliminated from further consideration in this EIS because of a lack of habitat or documented occurrence within the Project analysis area. Species carried forward in this EIS include 20 fish, 6 amphibians, and 3 invertebrates (**Table 3.10-2**).

In total, seven federally listed fish species were analyzed. The occurrence of three species (Colorado pikeminnow, razorback sucker, and Virgin River chub) within the analysis area is shown in **Figure 3.10-1**. The other four species (bonytail, humpback chub, June sucker, and pallid sturgeon) are not shown in the figure, but they are included in the analysis due to potential effects from water use. A summary of the listing status, habitat, and general distribution for the federally listed and candidate aquatic species are provided below.

Aquatic habitat in the analysis area used by special status aquatic species includes streams, springs, and wetlands. No lakes or reservoirs are inhabited by special status aquatic species. Stream habitats range from small channels with widths less than 10 feet to large rivers such as the Green, White, and Yampa. Habitat conditions vary depending on flow, gradient, channel configuration, water depth, substrate composition, presence of pools, runs, and riffles, types of instream cover, and extent of riparian vegetation. Site-specific habitat conditions for waterbodies with special status aquatic species that are located within the analysis area are not described in this section because information is lacking for most of the proposed waterbody crossings. This information will be gathered and considered in final Project siting as part of the Notice to Proceed POD for the Project. For the purposes of this analysis, information is based on of habitat preferences for federally listed and candidate species and species with conservation agreements, which are identified in Section 3.10.4.1. Habitat information also is provided for all special status aquatic species in **Appendix G, Table G-3**.

3.10.4.1 Federally Listed Fish Species

Bonytail (Federally Endangered)

The USFWS determined the species to be endangered in 1980 (45 FR 27710). In 1994 the USFWS designated seven reaches of the Colorado River system (totaling 312 miles) as critical habitat for the species, including portions of the Colorado, Green, and Yampa rivers in the Upper Basin and the Colorado River in the Lower Basin (59 FR 13374). A recovery plan was published for bonytail in 2002 (USFWS 2002a). The Upper Basin Recovery Subunit is composed of the Green River and Upper Colorado River Basin, and the Lower Basin Recovery Subunit includes the mainstem and tributaries of the Colorado River from Lake Mead downstream to the southerly international boundary with Mexico. The general types of habitat used by bonytail include mainstem riverine areas and impoundments in the Colorado River system. Deep pools and eddies with slow to fast currents are characteristic of the riverine habitat (Kaeding et al. 1986). It is assumed that spawning occurs in June or July (Maddux et al. 1993).

Known occurrence includes the Yampa River in Dinosaur National Monument, the Green River in Gray and Desolation canyons, the Colorado River near Black Rocks (Kaeding et al. 1986) and Cataract Canyon (59 FR 13374), Lake Mohave near the Arizona-Nevada border, and Lake Havasu in Arizona and California (USFWS 2002a). No occupied or critical habitat would be crossed by Project 250-foot-wide transmission line ROWs or refined transmission corridors. The closest known populations would be in the areas of Desolation and Gray canyons in the Green River in Utah, which are approximately 55 and 120 miles, respectively, downstream and approximately 15 miles upstream of the closest alternative refined transmission corridor.

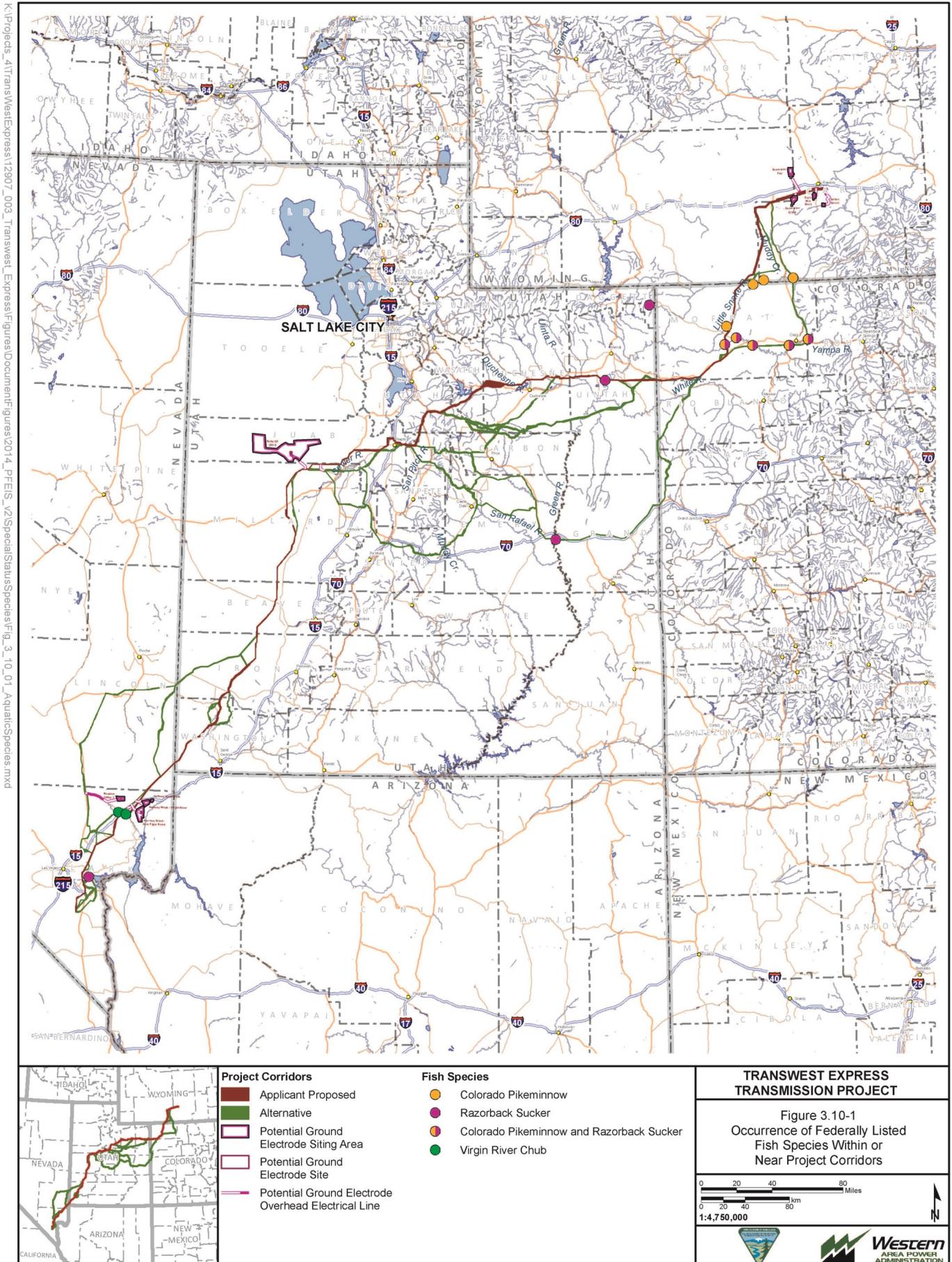
Table 3.10-2 Special Status Aquatic Species Analyzed for the TransWest Express Transmission Project

Common Name	Scientific Name	Status ¹
Bluehead sucker	<i>Catostomus discobolus</i>	BLM; CAS
Bonneville cutthroat trout	<i>Oncorhynchus clarki utah</i>	BLM; FS; UTSC; CAS
Bonytail (CH) ³	<i>Gila elegans</i>	FE; BLM
Colorado pikeminnow (CH) ³	<i>Ptychocheilus lucius</i>	FE; BLM
Colorado River cutthroat trout	<i>Oncorhynchus clarki pleuriticus</i>	BLM; FS; CAS
Flannelmouth sucker	<i>Catostomus latipinnis</i>	BLM; CAS
Humpback chub (CH) ³	<i>Gila cypha</i>	FE, BLM
June sucker	<i>Chasmistes liorus</i>	FE; BLM; UTSC
Least chub	<i>Lotichthys phlegethontis</i>	BLM; UTSC; CAS
Meadow Valley Wash desert sucker	<i>Catostomus clarkii</i> spp.	BLM; NV-P
Meadow Valley Wash speckled dace	<i>Rhinichthys osculus</i> subspecies	BLM
Moapa speckled dace	<i>Rhinichthys osculus moapae</i>	NV-P
Moapa White River springfish	<i>Crenichthys baileyi moapae</i>	NV-P
Mountain sucker	<i>Catostomus platyrhynchus</i>	BLM
Pallid sturgeon ²	<i>Scaphirhynchus antillarum</i>	FE
Razorback sucker (CH) ³	<i>Xyrauchen texanus</i>	FE; BLM
Roundtail chub	<i>Gila robusta robusta</i>	BLM, CAS
Southern leatherside chub	<i>Lepidomeda aliciae</i>	BLM; FS; CAS
Virgin River chub	<i>Gila robusta seminuda</i>	FE; BLM
Virgin River spinedace	<i>Lepidomeda mollispinis mollispinis</i>	BLM, NV-P; CAS
Arizona toad	<i>Bufo microscaphus</i>	BLM; UTSC; CAS
Boreal toad	<i>Bufo boreas boreas</i>	FS; CO-E; CAS
Columbia spotted frog	<i>Rana luteiventris</i>	FC; FS; NV-P; UTSC
Great Basin spadefoot toad	<i>Spea intermontana</i>	BLM
Northern leopard frog	<i>Rana pipiens</i>	BLM; NV-P
Relict leopard frog	<i>Rana onca</i>	FC; NV-P
California floater	<i>Anodonta californiensis</i>	BLM
Moapa Warm Spring riffle beetle	<i>Stenelmis moapa</i>	BLM
Southern Bonneville pyrg	<i>Pyrgulopsis transversa</i>	UTSC

¹ Status: FE = Federally Endangered; FT = Federally Threatened; FP = Federally Petitioned; BLM = BLM Sensitive; FS = Forest Sensitive; CO-E = Colorado Endangered; NV-P = Nevada State Protected; UTSC = Utah Special Concern; CAS = Utah Conservation Agreement Species.

² Species is included because of the water depletion evaluation requirement in the Platte River Basin.

³ Critical habitat is located within and/or downstream of the analysis area.



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Colorado Pikeminnow (Federally Endangered)

This species (originally named Colorado squawfish) was listed as endangered under the ESA on March 11, 1967 (32 FR 4001). With the 1973 passage of the ESA, the fish retained its endangered status. On March 21, 1994 the USFWS designated six reaches of the Colorado River system (totaling 1,148 miles) as critical habitat for the species, including portions of the Colorado, Green, Yampa, White, and San Juan rivers (59 FR 13374). Two reintroduced Colorado pikeminnow populations have been designated as Nonessential Experimental under Section 10(j) of the ESA (50 FR 30188). A recovery plan for this species was published in 2002 (USFWS 2002b). The entire population of the Colorado pikeminnow has been reduced to three recovery subunits in the Upper Colorado River Basin: the Green River, the Upper Colorado River, and the San Juan River subbasins. Habitat requirements of Colorado pikeminnow vary depending on the life stage and time of year. Young-of-the-year and juveniles prefer shallow backwaters, while adults use pools, eddies, and deep runs (Miller et al. 1982). During peak runoff in the spring and early summer, fish usually move into backwater areas of flooded riparian zones to avoid swift velocities, feed, and prepare for the upcoming spawning period. Adults are highly mobile during the spawning period, which occurs after peak runoff in mid-June to mid-August.

Colorado pikeminnow occurs within three subbasins and includes the following rivers: Green River subbasin (Green, Yampa, Little Snake, White, Price, and Duchesne), Upper Colorado subbasin (Upper Colorado, Gunnison, and Dolores), and San Juan (San Juan River). The 250-foot-wide transmission line ROWs and refined transmission corridors would cross occupied habitat in the Yampa and Little Snake rivers. Critical habitat would be crossed by Project 250-foot-wide transmission line ROWs in the Green, White, and Yampa rivers. Occupied habitat also would be located downstream of 250-foot-wide transmission line ROWs and corridors in the Colorado River and tributaries near the confluence with the Colorado River and the Price and White rivers. The only two known spawning sites for the species would be located downstream of Project 250-foot-wide transmission line ROWs and refined transmission corridors at Three Fords Canyon in the Gray Canyon area of the Green River (Carbon and Uintah counties, Utah) and the lower 20 miles of the Yampa River (Moffat County, Colorado).

Humpback Chub (Federally Endangered)

The dates for listing the humpback chub are the same as discussed for the Colorado pikeminnow. On March 21, 1994, the USFWS designated seven reaches of the Colorado River system (totaling 379 miles) as critical habitat for the species, including portions of the Colorado, Green, and Yampa Rivers in the Upper Basin and portions of the Colorado and Little Colorado Rivers in the Lower Basin (59 FR 13374). The current recovery plan for the humpback chub was published in 1990 and amended in 2002 (USFWS 2002c). Humpback chub mainly occur in river canyons where they utilize a variety of habitats including deep pools, eddies, upwells near boulders, and areas near steep cliff faces. Young and spawning adults are generally found in sandy runs and backwaters (USFWS 1990). Spawning occurs in May through July after peak spring flows.

Currently, there are six known self-sustaining populations. Five occur in the Upper and one on the Lower Basin Recovery Units. The Upper Recovery Unit consists of three populations on the Colorado River (Black Rocks, Westwater Canyon, and Cataract Canyon in Utah), one population on the Yampa River (Yampa Canyon in Colorado), and one population on the Green River (Desolation/Gray Canyons in Utah). The only population in the Lower Basin Recovery Unit occurs on the mainstem Colorado River in Marble and Grand canyons and the Little Colorado River. No occupied or critical habitat would be crossed by the alternative 250-foot-wide transmission line ROWs or refined transmission corridors. Occupied and critical habitat exists downstream of the Project 250-foot-wide transmission line ROWs and refined transmission corridors in the Colorado, Yampa, and Green rivers.

June Sucker (Federally Endangered)

The June sucker was federally listed in 1986 (USFWS 1986). This species is endemic to Utah Lake in Utah and uses the lower portion of the Provo River for spawning and early life stage development. June sucker also spawns intermittently in the lower portion of the Spanish Fork River, a tributary to Utah Lake.

A recovery plan was finalized for this species in 1999, with actions being implemented from 1995 through 2007 (USFWS 2012a, 1999). Utah Lake and the lower portion of the Provo River were designated as critical habitat for the June sucker. Utah Lake is a relatively large and shallow lake with slightly saline, turbid, and eutrophic conditions. June sucker adults leave Utah Lake and swim up the Provo River in June of each year (UDWR 2012a). Spawning occurs in shallow riffles over gravel or rock substrate. No occupied or critical habitat would be crossed by Project 250-foot-wide transmission line ROWs or refined transmission corridors.

Pallid Sturgeon (Federally Endangered)

Pallid sturgeon was listed as endangered in 1990 (55 FR 36641) and a recovery plan was published in 1993 (USFWS 1993). This species is included in the analysis due to the consideration of water depletions in the Platte River drainage in Wyoming. Project 250-foot-wide transmission line ROWs and refined transmission corridors would not cross habitat for this species. This species occurs in the Lower Platte River defined as downstream of the mouth of the Elkhorn River. No critical habitat has been designated for this species. Pallid sturgeon is a bottom-dweller that prefers areas with strong current and firm sandy bottoms in the main channel of large turbid rivers (National Research Council 2004).

Razorback Sucker (Federally Endangered)

The razorback sucker was first proposed for listing as a threatened species under the ESA in 1978 (43 FR 17375). In 1980, the USFWS withdrew the proposal because it was not finalized within the 2-year time limit from the initial publication in the *Federal Register* (45 FR 35410). In 1989, the USFWS received a petition requesting that the razorback sucker be added to the list of endangered species. A positive finding was made and subsequently published by the USFWS in 1991 (56 FR 54957). In 1994, the USFWS designated 15 reaches of the Colorado River system (totaling 1,724 miles) as critical habitat for the species, including portions of the Green, Yampa, Duchesne, Colorado, White, Gunnison, and San Juan rivers in the Upper Basin and portions of the Colorado, Gila, Salt, and Verde rivers in the Lower Basin (59 FR 13374). The current recovery plan for the razorback sucker was published in 1998 and amended in 2002 (USFWS 2002d). The Upper Basin Recovery Subunit is composed of the Green River, Upper Colorado River, and San Juan River subbasins and the Lower Basin Recovery Subunit includes the mainstem and tributaries of the Colorado River from Lake Mead downstream to the southerly international boundary with Mexico. Habitat requirements for this species reflect both riverine and reservoir environments. General habitats used by adults include eddies, pools, and backwaters during the non-breeding period (July through March) (Maddux et al. 1993). Seasonal habitat use includes pools and eddies from November through April, runs and pools from July through October, runs and backwaters in May, and backwaters and flooded gravel pits during June. Juveniles prefer shallow water with minimal flow in backwaters, tributary mouths, off-channel impoundments, and lateral canals (Maddux et al. 1993). Spawning usually occurs in April through mid-June. They migrate long distances and congregate in large numbers at spawning sites.

In the Upper Colorado River Basin, razorback suckers are considered extant in the following locations: Westwater and Cataract canyons and the Utah-Colorado state line on the Colorado River, Desolation and Gray canyons of the Green River, and a population in northwestern Colorado on the Yampa River. The razorback sucker is more widely distributed in the Lower Basin. In Lake Mead, the population is estimated at about 400 individuals with an average age of 20 to 25 years, indicating recent recruitment. Approximately 1,000 individuals are believed to inhabit a 60-mile reach between Davis Dam and Lake Havasu, which have demonstrated reproduction (USFWS 2002d). Project 250-foot-wide transmission line ROWs and transmission line corridors would cross two rivers inhabited by this species: the Yampa and Green rivers. The 250-foot-wide transmission line ROW also would cross designated critical habitat for razorback sucker in the Green River and a wash draining into Lake Mead. Occupied habitat also is located downstream of 250-foot-wide transmission line ROWs and corridors in the Little Snake River in Wyoming, the Colorado and White rivers in Colorado, and Las Vegas Wash in Nevada.

Virgin River Chub (Federally Endangered)

The Virgin River chub was officially listed as endangered in 1989, but designation of critical habitat was postponed (54 FR 35305). In 2000, 87.5 miles of the Virgin River in Utah, Arizona, and Nevada including the mainstem and 100-year floodplain was designated as critical habitat (65 FR 4140). When the species was listed, the USFWS recognized that a closely related species was found in the Moapa (Muddy) River in Nevada, but it was not affected by the listing in 1989. A recovery plan for the Virgin River chub was published in 1995 (USFWS 1995). The Virgin River chub occurs within the Muddy River in Nevada and the mainstem portion of the Virgin River from Pah Tempe Hot Springs, Utah, downstream to the confluence with Lake Mead in Nevada (USFWS 1995). The Muddy River population is not considered to be part of the federal listing at this time; however, a proposed rule change regarding federal listing is under review by the USFWS. The present distribution of this species in the Muddy River extends from the Warm Springs area downstream to the Wells Siding (approximately 8 miles below the Meadow Valley Wash confluence). The species is usually associated with deep runs or pool habitats that have slow to moderate velocities and an abundance of cover provided by boulders, undercut banks or woody debris (USFWS 1995). Spawning is suspected to occur in April through June.

A refugium population also is located at the Dexter National Fish Hatchery and Technology Center (USFWS 1995). Project 250-foot-wide transmission line ROWs and refined transmission corridors would cross one stream, the Muddy River, which is inhabited by this species. As previously mentioned, the Muddy River population is not federally listed at this time.

3.10.4.2 BLM Sensitive, Forest Sensitive, and State Protected Aquatic Species

Fish

In total, 19 BLM sensitive, Forest sensitive or state-protected fish species potentially occur within the Project analysis area (**Table 3.10-2**); 13 of these fish species are not federally listed. In general, most of these fish species are associated with stream habitat within the Project analysis area. Some of the sensitive fish species such as Meadow Valley Wash desert sucker, Meadow Valley Wash speckled dace, Moapa speckled dace, and Moapa White River springfish are associated with stream or spring habitats. Occurrence and habitat information is summarized below for three fish species (Bonneville cutthroat trout, Colorado River cutthroat trout, and least chub), which are BLM and Utah sensitive species with conservation agreements. Descriptions of occurrence and habitat used by the other sensitive fish species are provided in **Appendix G, Table G-3**.

Bonneville Cutthroat Trout

The Bonneville cutthroat trout, a BLM and Forest sensitive species as well as a Utah conservation agreement species, was petitioned for listing under the ESA; however, the 12-month finding determined that the species was not warranted for listing. A conservation agreement was published in 2000 to assist in the management of this species in Utah (Lentsch et al. 2000). This cutthroat subspecies prefers small headwater streams with pool and riffle habitat and slow, deep water with vegetated streambanks (Sigler and Sigler 1996). Spawning usually occurs in May through June (Lentsch et al. 2000). Project 250-foot-wide transmission line ROWs and refined transmission corridors would cross Bonneville cutthroat trout habitat in Utah counties including Duchesne, Sanpete, and Utah. The streams inhabited by this trout subspecies are part of the Bonneville Basin group.

Colorado River Cutthroat Trout

The Colorado River cutthroat trout is a BLM and Forest sensitive species and is considered a species of special concern in Wyoming and Colorado and a Tier 1 species in Utah (species with a conservation agreement). A conservation agreement was updated in 2006 to assure the long-term viability of this cutthroat subspecies throughout its historic range (CRCT Conservation Team 2006). This cutthroat subspecies typically is associated with isolated headwater streams with cool temperatures and clear conditions (Behnke 1981). Spawning typically occurs in April through early July depending on the water temperature. Colorado River cutthroat historically occupied portions of the Colorado River drainage in

Wyoming, Colorado, Utah, Arizona, and New Mexico and probably included portions of larger streams such as the Green, Yampa, White, Colorado, and San Juan rivers (CRCT Conservation Team 2006). A recent assessment of Colorado River cutthroat trout distribution identified a total of 3,022 miles of occupied stream habitat, which represents approximately 14 percent of its historic range. The Project 250-foot-wide transmission line ROWs and refined transmission corridors would cross Colorado River cutthroat trout habitat in Sweetwater County, Wyoming; Moffat County, Colorado; and Uintah, Emery, Grand, Duchesne, and Wasatch counties in Utah.

Least Chub

The least chub, a BLM and Utah conservation agreement species, was petitioned for listing under the ESA in 2007. The USFWS conducted a revised 12-month status review and released their finding in August 2014 (79 FR 51041). The USFWS determined that listing the least chub is not warranted at this time; therefore, least chub has been removed from the list of candidate species. The USFWS concluded that conservation efforts have reduced or eliminated current and future threats to the species (Least Chub Conservation Team 2014; USFWS and UDWR 2014). The species is endemic to the Bonneville Basin of Utah where it was once widely distributed and occupied a variety of habitats including rivers, streams, springs, ponds, marshes, and swamps (Sigler and Sigler 1996). Currently, there are five known wild, extant populations of least chub. Three populations are in the Snake Valley in Utah's West Desert and two are located on the eastern border of the native range near the Wasatch Range in the Sevier River drainage (Mills Valley and Clear Lake). An extirpated site exists at the Mona Springs in the Utah Lake drainage (USFWS 2012b). Since the initial Least Chub Conservation Agreement Strategy in 1998, the UDWR has had an ongoing monitoring program for least chub populations in Utah. The least chub is a schooling species that prefers areas of dense vegetation in slow-moving waters (UDWR 2012b). Spawning occurs in the spring or summer. Occupied habitat would be located approximately 1.5 miles from a refined transmission corridor in the Region II (Utah) portion of the analysis area.

Amphibians

Six special status amphibian species potentially occur within or near the refined transmission corridors: Arizona toad, boreal toad, Columbia spotted frog, Great Basin spadefoot toad, northern leopard frog, and relict leopard frog. Descriptions of occurrence and habitat used by these amphibian species are provided in **Appendix G, Table G-3**. Additional information is provided below for the boreal toad, Columbia spotted frog, northern leopard frog, and relict leopard frog, which have conservation agreements (boreal toad and Columbia spotted frog), conservation assessments (northern leopard frog), or federal candidate status (Columbia spotted frog and relict leopard frog).

Boreal Toad

The boreal toad, a Forest sensitive and Colorado endangered species as well as a Utah conservation agreement species, is a subspecies of the western toad. The Southern Rocky Mountain population of boreal toad in Colorado, Wyoming, and New Mexico was proposed for listing as endangered under the ESA. However, the subspecies was precluded from listing because the population is not recognized as a species. In Utah, it is considered a state sensitive species and it is a conservation agreement species (Hogrefe et al. 2005). In general, boreal toads are more independent of water compared to other amphibian species, although they must re-hydrate daily. Habitat used during the non-breeding period (August through March) consists of forested areas and upland vegetation such as sagebrush and grassland. Boreal toads migrate from terrestrial habitats to aquatic habitats during the breeding period (April through July). Breeding habitats in Utah consist of low velocity, low gradient streams, off-channel marshes, beaver ponds, small lakes, reservoirs, stock ponds, wet meadows, seeps, and associated woodlands (Hogrefe et al. 2005). Burrows are used by boreal toads and other amphibians during the summer and winter to maintain stable body temperatures and prevent water loss. The 250-foot-wide transmission line ROWs and refined transmission corridors would cross habitat in Juab (Birch Creek area), Wasatch (Willow Creek), and Duchesne (Sowers Creek) counties, Utah.

Columbia Spotted Frog

The Columbia spotted frog is a Forest sensitive species, a Nevada protected species, and a Utah species of special concern. A recent review of native species by the USFWS (2012c) determined that the Columbia spotted frog (Great Basin Distinct Population Segment) is a candidate for federal listing. A conservation agreement was published in 2005 for Utah (Bailey et al. 2005). This species occurs in streams, wet meadows, springs, and springbrooks, marshes, lakes, and reservoirs (Orabona et al. 2009). It is highly aquatic because it is rarely found far from permanent waterbodies; however, it may traverse upland areas during wet periods or movement to wintering sites. Stream and pond habitat is located within Project transmission line corridors in Juab, Sanpete, and Wasatch counties in Utah.

Northern Leopard Frog

The northern leopard frog, a BLM sensitive and Nevada protected species, was petitioned for listing under the ESA. A 90-day finding was issued and a 12-month status review was conducted to determine if listing the species in the western part of its range was warranted (USFWS 2009). The status review and 12-month finding concluded that listing the western population or the entire species is not warranted at this time (USFWS 2011). The distribution of northern leopard frog includes portions of Wyoming, Colorado, Utah, and Wyoming (Orabona et al. 2009; Smith and Keinath 2007). Habitat consists of marshes, beaver ponds, streams, rivers, lakes, and wet meadows at elevations up to approximately 9,000 feet amsl (Smith and Keinath 2007). The northern leopard frog uses underwater areas as overwinter habitat. Project 250-foot-wide transmission line ROWs and refined transmission corridors would cross habitat for northern leopard frog in Red Wash and Antelope and Muddy creeks and the Little Snake River in Wyoming; Douglas Creek and the Yampa and White rivers in Colorado; and Soldier and Carrant creeks in Utah. Northern leopard frog also occurs in wetlands and springs in the Pahrangat National Wildlife Refuge in the Region III portion of the analysis area.

Relict Leopard Frog

This amphibian species is a federal candidate and a conservation agreement species (Relict Leopard Frog Conservation Team 2005; USFWS 2012c). The current distribution of the relict leopard frog is limited to two general areas: near the Overton Arm of Lake Mead and in Black Canyon below Lake Mead, Nevada. These two areas encompass a linear distance of approximately 2.2 and 3.2 miles, respectively (Relict Leopard Frog Conservation Team 2005). The Overton Arm area is located approximately 12 miles from the refined transmission corridors in Region IV. Occupied habitat in the Black Canyon area is located approximately 2 to 2.5 miles from the Region IV refined transmission corridors. The Black Canyon habitat for this species consists of three springs (Boy Scout, Bighorn Sheep, and Salt Cedar) that are located within a narrow canyon of the Colorado River. Habitat in Boy Scout and Bighorn Sheep springs includes relatively long riffles and deep pools, while Salt Cedar Spring is shallow riffles and pools. Emergent and perimeter vegetation occur within or adjacent to the springs.

Invertebrates

Three special status invertebrate species, California floater, Moapa Warm Spring riffle beetle, and southern Bonneville pyrg (springsnail) potentially occur within the Project analysis area. Descriptions of occurrence and habitat used by these invertebrate species are provided in **Appendix G, Table G-3**, and summarized below.

- California Floater – This mollusk species occurs in stream (Carrant Creek) and spring (Mona) habitats in Juab County, Utah within the Region II portion of the analysis area. This species has been collected at depths ranging from approximately 0.5 to 1.5 feet over mud, sand, or gravel bottoms (Oliver and Bosworth 1999). The abundance is not reported at most Utah locations.
- Moapa Warm Spring Riffle Beetle – This beetle species occurs in the Muddy River drainage in Nevada just north of a portion of the Region IV portion of the analysis area. Habitat consists of outflow streams immediately downstream of spring sources in relatively swift, shallow water.

- Southern Bonneville Pyrg – This springsnail species occurs in a spring near Thistle Creek in Utah County, Utah, which is within the Region II portion of the analysis area. Habitat consists of small mineralized springs at elevations between approximately 5,830 and 6,740 feet amsl (Oliver and Bosworth 1999).

3.10.5 Regional Summary of Special Status Aquatic Species

A summary of the number of special status aquatic species by Project region is provided in **Table 3.10-3**. Region II contained the highest number of species (19) followed by 12 species in Regions I and III. Two species were analyzed in the Region IV analysis area.

Table 3.10-3 Summary of Special Status Aquatic Groups by Region

Species	Total within the Analysis Area (All Regions)	Region I	Region II	Region III	Region IV
Fish ¹	20	10	13	9	1
Amphibians	6	2	4	2	1
Aquatic Invertebrates	3	0	2	1	0
Total	29	12	19	12	2

¹ Number includes pallid sturgeon. This species has no potential for occurrence in the analysis area, but it is analyzed to determine if water use could affect habitat in the North Platte sub-basin.

3.10.5.1 Region I

Region I extends from the Terminal Siting Area southeast of Rawlins, Wyoming, southwest through northeastern Utah and northwestern Colorado. Habitat for aquatic species in Region I includes waterbodies in the North Platte, Great Divide, Upper Green, and White-Divide basins. Watersheds in these basins are listed in the Regional Summary of Water Resources, **Table 3.4-2**. Special status aquatic species that occur in Region I are listed in **Table 3.10-4**.

Table 3.10-4 Special Status Species Potentially Occurring in Region I

Amphibians		
Great Basin spadefoot toad	Northern leopard frog	
Fish		
Bluehead sucker	Bonytail ²	Colorado pikeminnow
Colorado River cutthroat trout	Flannelmouth sucker	Humpback chub ²
Mountain sucker	Razorback sucker	Roundtail chub
Pallid sturgeon ¹		
Aquatic Invertebrates - None		

¹ Pallid sturgeon has no potential for occurrence in the analysis area, but it is analyzed to determine if water use could affect habitat in the North Platte sub-basin.

² Bonytail and humpback chub do not occur within the Project analysis area, but they are included in the analysis to determine if water use could affect their habitat in the Colorado River basin.

3.10.5.2 Region II

Region II extends from northeastern Utah and northwestern Colorado to the IPP in western Utah. Habitat for aquatic species in Region II includes waterbodies in the White-Yampa, Colorado Headwaters, Lower Green, Jordan, Upper Colorado – Dirty Devil, Devil, and the Escalante Desert-Sevier Lake basins.

Watersheds in these basins are listed in the Regional Summary of Water Resources, **Table 3.4-2**. Special status aquatic species that occur in Region II are presented in **Table 3.10-5**.

Table 3.10-5 Special Status Species Potentially Occurring in Region II

Amphibians		
Boreal toad	Columbia spotted frog	Great Basin spadefoot toad
Northern leopard frog		
Fish		
Bluehead sucker	Bonneville cutthroat trout	Bonytail ¹
Colorado pikeminnow	Colorado River cutthroat trout	Flannelmouth sucker
Humpback chub ¹	June sucker ²	Least chub
Mountain sucker	Razorback sucker	Roundtail chub
Southern leatherside chub		
Aquatic Invertebrates		
California floater	Southern Bonneville pyrg	

¹ Bonytail and humpback chub do not occur within the Project analysis area, but they are included in the analysis to determine if water use could affect their habitat in the Colorado River basin.

² June sucker does not occur within the Project analysis area, but it is included in the analysis to determine if water use could affect habitat in the Utah Lake and Provo River areas.

3.10.5.3 Region III

Region III extends from the IPP in western Utah to north Las Vegas, Nevada. Habitat for aquatic species in Region III includes waterbodies in the Escalante Desert-Sevier Lake and Lower Colorado-Lake Mead basins. Watersheds in these basins are listed in the Regional Summary of Water Resources, **Table 3.4-2**. Special status aquatic species that occur in Region III are presented in **Table 3.10-6**.

Table 3.10-6 Special Status Species Potentially Occurring in Region III

Amphibians		
Arizona toad	Northern leopard frog ¹	
Fish		
Bluehead sucker	Meadow Valley Wash desert sucker	Meadow Valley Wash speckled dace
Moapa speckled dace	Moapa White River springfish	Razorback sucker
Roundtail chub	Virgin River chub	Virgin River spinedace
Aquatic Invertebrates		
Moapa Warm Spring riffle beetle		

¹ Northern leopard frog is included in the analysis because it occurs in a spring located approximately 600 feet west of the refined transmission corridor.

3.10.5.4 Region IV

Region IV extends from north Las Vegas, Nevada to the Marketplace Hub. Habitat for aquatic species in Region IV is located in the Lower Colorado-Lake Mead Basin and Las Vegas Wash watershed. Special status species that may occur in Region IV are presented in **Table 3.10-7**.

Table 3.10-7 Special Status Species Potentially Occurring in Region IV

Amphibians
Relict leopard frog
Fish
Razorback sucker
Aquatic Invertebrates – None

3.10.6 Impacts to Special Status Aquatic Species

Potential impacts to special status aquatic species were identified based on feedback from federal and state agency biologists, public scoping, and literature related to surface disturbance effects on aquatic habitat and species. Potential effects from surface disturbance activities would include direct alteration of habitat or loss of individuals from equipment and vehicles. Habitat also could be affected by changes in water quality from increased sedimentation and potential fuel spills. The use of surface water for dust control and concrete foundations also was evaluated in terms of effects on aquatic habitat.

The methodology for evaluating impacts on special status aquatic species involved comparisons of Project activities within the analysis area to habitat that supports aquatic species. The impact analysis area for special status aquatic species included perennial streams, reservoirs, lakes, ponds, and springs that would be crossed by the Project 250-foot-wide transmission line ROWs and contain sensitive species. A reach of approximately 1 mile downstream of where the refined transmission corridor crosses a stream also was considered part of the analysis area. The analysis area for water use and potential surface water depletions extended at least 10 miles downstream of diversion points. The analysis area for roads focused on perennial streams and waterbodies with special status aquatic species that would be crossed by the potential disturbance area beyond the refined transmission corridor. The larger analysis area for access roads was required because their locations have not been defined at this time. A road density analysis also was used to assess road effects on species. GIS analyses were conducted to identify perennial waterbodies and special status aquatic species occurrence within the potential disturbance areas (i.e., ROWs and refined transmission corridors, potential disturbance area beyond the refined transmission corridor, terminals, and electrode bed areas).

Special status aquatic species included 20 fish, 6 amphibians, and 3 invertebrate species (**Table 3.10-2**). In total, seven federally listed fish species and two candidate amphibian species were evaluated. The analysis also included 22 BLM sensitive species, 5 Forest sensitive species, and 17 species with state protection.

Impact parameters were used in combination with effects information for the purpose of quantifying impacts. The impact parameters also allow comparisons among the applicant proposed routes, alternatives, and alternative variations. Impact issues and the analysis considerations for special status aquatic species are listed in **Table 3.10-8**.

Table 3.10-8 Relevant Analysis Considerations for Special Status Aquatic Species

Resource Topic	Analysis Considerations and Relevant Assumptions
Potential loss and effects from construction activities and roads on special status aquatic species or habitat from construction equipment and use of access roads.	The analysis included direct disturbance effects and potential water quality changes from sediment delivery and fuel spills.
Potential effects of construction water use on aquatic habitat and special status aquatic species.	The analysis used the results of the water resources analysis, which determined if water sources were linked to surface flows of streams that would be crossed by the Project 250-foot-wide transmission line ROWs. Flow changes could detrimentally affect habitat for aquatic species.

Table 3.10-8 Relevant Analysis Considerations for Special Status Aquatic Species

Resource Topic	Analysis Considerations and Relevant Assumptions
Potential for increased fishing pressure during the life of the Project on streams from construction work crews and the public use of access roads.	This analysis for game fish species, some of which are special status species, is included in Section 3.9.6.
Potential mortalities to special status amphibians during movement periods from vehicle traffic.	The analysis evaluated vehicle traffic within the ROW and access roads on amphibians.

Impact parameters included the following:

- Number of perennial streams with special status aquatic species that would be crossed by Project 250-foot-wide transmission line ROWs.
- Number of additional streams with special status aquatic species that are located in the potential disturbance area beyond the refined transmission corridor.
- Number of perennial streams with federally listed species that would be crossed by Project 250-foot-wide transmission line ROWs.
- Acres of critical habitat for federally listed species that would be crossed by Project 250-foot-wide transmission line ROWs.
- Potential loss of habitat (square feet and acres) due to construction of culverts or low-water crossings.
- Acres of road disturbance on riparian habitat for special status aquatic species.
- Road density effects (linear miles/mile²) on special status species.

Potential direct and indirect effects of construction, operation, and decommissioning on special status aquatic species and their associated habitats are discussed below. After impacts are identified, relevant agency BMPs and design features are discussed in terms of reducing impacts. If impacts of concern remain after application of BMPs and design features, additional mitigation is recommended to reduce impacts to levels acceptable to the BLM and cooperating agencies.

The impacts analysis for special status species assumes that the BLM and USFS will continue to manage special status species habitats in coordination with CPW, NDOW, UDWR, and WGFD. It also assumes that the USFWS will continue to have jurisdiction over the management of federally endangered, threatened, proposed, and candidate species populations, the BLM will continue to manage BLM sensitive species in accordance with BLM Manual 6840, and the USFS will continue to manage Forest sensitive species in accordance with FSM 2670. Further assumptions are that the design features committed to by the proponent and the BMPs (**Appendix C**) would be implemented under all alternatives.

3.10.6.1 Impacts from Terminal Construction, Operation, and Decommissioning

The northern and southern terminals would be constructed regardless of which alternative route or design option is approved.

Northern Terminal

Construction of the Northern Terminal would not result in direct disturbance effects, since waterbodies (i.e., Eightmile Lake and Separation Creek) located within the proposed general siting area do not contain special status aquatic species. In addition, road access would not adversely affect special status aquatic species because existing or new roads would not cross waterbodies inhabited by any species. In

summary, surface disturbance and use of access roads would not adversely affect special status aquatic species, since habitat is not located within the proposed disturbance area for the Northern Terminal.

Water use for substation/converter station construction would require approximately 1.8 acre-feet for dust control. Water would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners or irrigation companies holding existing water rights. Since specific water sources have not been identified at this time, the USFWS cannot determine if the water sources have been through Section 7 consultation. Therefore, the USFWS assumes that all of this water use would be a new depletion. This water use from the Platte River Basin would be combined with the estimated water use discussed in Section 3.10.6.3 for the Region I alternatives.

Southern Terminal

Construction of the Southern Terminal would disturb upland areas in the Eldorado Valley watershed near Boulder, Nevada. Waterbodies located adjacent to the area include playa lakes. No perennial waterbodies are located in this area. No special status aquatic species habitat is located within the playa lakes. Surface disturbance and use of access roads would not adversely affect special status aquatic species, since habitat is not located within the proposed disturbance area for the Southern Terminal.

Water required for the construction of the Southern Terminal is estimated to be 1.2 acre-feet. The source of the water would be existing rights. The effect determination of new and existing water depletions would be made after the water sources are identified and an evaluation of their potential connection to surface flows is completed. Since specific water sources have not been identified at this time, the USFWS cannot determine if the water sources have been through Section 7 consultation. Therefore, the USFWS assumes that all of this water use would be a new depletion. This water use would occur in the Lower Colorado River Basin.

Design Option 2 – DC from Wyoming to IPP; AC from IPP to Marketplace Hub

The impacts of constructing and operating Design Option 2 would be similar to those discussed under the alternative routes because the implementation of this design would utilize the same alternative routes and construction techniques. Differences between this design option and the proposed Project include the locations of the southern converter station and ground electrode system, as well as the addition of a series compensation station midway between the IPP and Marketplace Hub. The southern converter station would be located near the IPP in Utah instead of at the Marketplace Hub in Nevada, and the ground electrode system would be within 50 miles of the IPP. Construction and operation of a converter station near IPP, ground electrode system, and a series compensation station would not be expected to impact special status aquatic resources.

Design Option 3 – Phased Build Out

Impacts from construction and operation of Design Option 3 would be the same as discussed for the Applicant Proposed Alternative because the same alternative routes, facilities, and construction would be used.

3.10.6.2 Impacts Common to All Alternative Routes and Associated Components

Construction Impacts

The types of direct and indirect effects of construction activities generally would be the same as those discussed for aquatic biological resources in Section 3.9.6.2. Direct disturbance to aquatic habitat due to vehicle crossings and culvert installation for some of the access roads could detrimentally affect habitat in streams that contain special status aquatic species. Removal of riparian vegetation also would alter habitat and indirectly affect ecological functions provided by this type of vegetation. Vehicle traffic near waterbodies also could result in sedimentation and fuel spill risks. BMPs such as ECO-3 (minimize stream crossings by roads) and WAT-11 (avoid alteration of existing drainages) would be implemented to reduce these types of impacts. Design features (TWE-8 and TWE-12) also would minimize

disturbance to stream channels and riparian vegetation. TWE-24 would restrict fueling within 100 feet of wetlands and 500 feet from perennial streams. Other BMPs such as ECO-1, ECO-2, and ECO-4 would require that Project activities avoid or minimize effects on sensitive species and their habitat. Design features TWE-2 (ESA Compliance), TWE-29 (Biological Protection Plan), TWE-31 (Development of Mitigation Measures), TWE-32 (Seasonal Restrictions), TWE-33 (Worker Training), and TWE-34 (Identification of New Locations for Protected Species) would provide additional protection for special status aquatic species. Additional details regarding these BMPs and design features are provided in **Appendix C** to this EIS. Species impacts by region and alternative are provided separately in Sections 3.10.6.3 through 3.10.6.6.

To further protect federally listed and special management fish species from sedimentation effects, the following mitigation measure are proposed for implementation in the final selected Alternative.

SSS-1 (*Sediment Protection for Streams with Federally listed and Special Management Fish Species*): Mitigation measure **WR-3** (Section 3.4.6.3) would be applied to perennial streams providing habitat for federally listed fish species or fish species requiring special management as mandated by existing federal land use plans. The measure would require coordination with the federal agencies having land jurisdiction. This coordination would include location and design of access roads and temporary work areas within 300 feet of streams providing habitat for these species to minimize erosion and sedimentation effects. The agencies would coordinate and provide input to TransWest for potential modification of locations and designs within TransWest's final engineering schedule.

Effectiveness: This measure would be highly effective in avoiding or minimizing sediment effects to streams with federally listed or special management fish species.

The estimated quantities of water needed per mile for construction would include approximately 3,400 gallons for foundation concrete and 240,000 gallons for dust control, totaling approximately 243,000 gallons or 0.75 acre-feet per mile. Water would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. As water sources are identified, a determination would be made whether the water counts towards the amount covered by the depletion consultation, based on an evaluation of their potential connection to the surface flows, groundwater connection, or if covered by existing consultations. Additional discussion for water use effects on federally listed species is provided in each of the analysis area Region impact sections.

Potential entrainment or impingement of early life stages of federally endangered fish species in critical habitat areas and conservation agreement fish species also could occur, if water is withdrawn for construction purposes (i.e., dust control or concrete foundations) from critical habitat or conservation agreement fish habitat that supports spawning or nursery areas. Entrainment or impingement of small-size fish could occur as a result of water withdrawal through intake hoses.

The following mitigation measures are recommended to protect federally listed (as discussed in Section 3.10.4.1), and conservation agreement fish species (bluehead sucker, Bonneville cutthroat trout, Colorado River cutthroat trout, flannelmouth sucker, least chub, southern leatherside chub, and Virgin River spinedace), as well as other special status fish species in the Colorado River Basin. Potential water depletion effects on federally listed fish species in the Upper Colorado River Basin also would be mitigated by the Recovery Implementation Program for Endangered Fish in the Upper Colorado River (Recovery Plan), as discussed in Section 3.10.6.3, Region I, and Section 3.10.6.4, Region II. As indicated in mitigation measures **SSS-2** and **SSS-3**, water withdrawal would be avoided if possible in critical habitat areas for federally listed fish and areas occupied by conservation agreement fish species. Mitigation measures **SSS-2** and **SSS-3** also would avoid or minimize entrainment and impingement effects on these species.

SSS-2 (*Avoidance of Water Withdrawal and Entrainment/Impingement Effects for Federally Listed Fish Species*): Where critical habitat for the Colorado River federally endangered fish species cannot be

avoided as water sources for construction purposes, TransWest would be required to obtain approval from the USFWS and state or federal agencies responsible for managing the land and critical habitat areas. Agency approval would ensure that water withdrawal methods would avoid or minimize entrainment or impingement effects to early life stages of endangered fish species. Requirements for water pumping in critical habitat areas would include: (1) avoidance of pumping between approximately April 1 through August 31, with specific dates dependent upon the water year; (2) intake hoses would be screened with 3/32-inch mesh size; (3) intake velocity would not exceed 0.33 feet/second in an area where larval stages of the federally endangered fish may be present; and (4) pumping from off-channel locations (i.e., no connection to the river during high spring flows) would use an infiltration gallery constructed in a USFWS-approved location. Additional guidance on pumping methodology is provided in the National Marine Fisheries Service's (1997) document entitled Fish Screening Criteria for Anadromous Salmonids.

Effectiveness: This measure would be highly effective in providing management direction to avoid water withdrawal in critical habitat areas if possible and avoiding or minimizing the entrainment or impingement effects on federally listed fish species in their critical habitat areas.

SSS-3 (*Avoidance of Water Withdrawal and Entrainment/Impingement Effects for Conservation Agreement Fish Species*): *Where waterbodies containing conservation agreement fish species (bluehead sucker, Bonneville cutthroat trout, Colorado River cutthroat trout, flannelmouth sucker, least chub, southern leatherside chub, and Virgin River spinedace) cannot be avoided as construction water sources, approval must be obtained from federal, state, and/or land management agencies regarding water withdrawal sites and methods. A site specific withdrawal plan would be prepared by TransWest for review/approval by the agencies. Requirements for water pumping for hose screening and intake velocities would be the same as identified in mitigation measure SSS-2. Additional requirements include the use of private, off-stream water sources if possible; withdrawal sites must be reviewed/approved by applicable agencies; and approval should include provisions to maintain adequate instream flows to protect aquatic species and their habitat.*

Effectiveness: This measure would be highly effective in providing management direction to avoid water withdrawal in habitat occupied by conservation agreement fish species.

Operation Impacts

The direct and indirect effects of operation of the Project would involve the use of access roads and the ROW for repair and maintenance activities and vegetation management. Impacts associated with operation activities would involve several of the same types of effects discussed for construction activities. These impacts would include potential direct disturbance to aquatic habitat for special status aquatic species due to vehicle crossings of small to mid-size streams without access roads and removal of vegetation as part of maintenance activities. Indirect effects on water quality would adversely affect habitat for special status aquatic species from soil disturbance within or near waterbodies by vehicles or equipment. Potential fuel spills could affect species and habitat if fuel entered waterbodies. The same BMPs and design features described under Construction Impacts would be applied to minimize these types of impacts on special status aquatic species resulting from operations. Herbicides may be used to control vegetation as part of maintenance activities in the ROW. **VEG-3** requires that herbicide use would be limited to non-persistent, immobile formulations to avoid effects on aquatic habitats and species. In addition, design features involving erosion control and use of a spill containment and control plan would be implemented. In addition to the BMPs, the following mitigation measure is recommended to minimize potential herbicide effects on biological resources.

AB-4 (*Herbicide Use Plan*) – *As part of vegetation management, the TransWest would prepare an Herbicide Use Plan. The Plan would identify a list of approved herbicides that may be used as well as locations of areas that may be treated. Licensed herbicide applicators would be used in the treatment process. The Plan also would discuss compliance with applicable federal, state, and local agencies.*

Effectiveness: This measure would be highly effective in minimizing toxic effects of herbicide use on special status aquatic species. Aquatic herbicides have been shown to work effectively with minor side-effects to aquatic species.

Decommissioning Impacts

Removal of Project structures during decommissioning would result in the same types of impacts as those discussed for construction activities. Direct disturbance to special status aquatic species habitats could occur as a result of vehicle traffic across streams. TransWest would be responsible for reclamation of access roads following abandonment in accordance with landowner’s or land agency’s direction. Water quality changes involving increased sediment and fuel spill risks would occur as a result of vehicle traffic within or near waterbodies. The same BMPs and design features that are described above for construction impacts would be applied to reduce impacts during decommissioning activities. Removal of riparian vegetation would not be required as part of decommissioning.

Impact discussions and conclusions for special status aquatic species are provided for the four Project regions. This organization was used because species occurrence varies by region and few species are present in all regions.

3.10.6.3 Region I

Table 3.10-9 provides a comparison of impact parameters with the alternative routes in Region I. Species occurrence in Region I streams is provided in **Appendix G, Table G-4**. Project Segment identification numbers referenced in this section are listed in **Table G-4** and depicted in **Figure 2-21**. Parameter information in **Table 3.10-9** is discussed separately for each of the Region I alternatives.

Table 3.10-9 Summary of Region I Alternative Route Impacts for Special Status Aquatic Species

Parameter	Alternative			
	I-A	I-B	I-C	I-D
Number of streams with special status aquatic species that would be crossed by 250-foot-wide transmission line ROWs	2	2	7	2
Number of additional streams with special status aquatic species that would be in the potential disturbance area beyond the refined transmission corridor	0	0	1	0
Number of streams with federally listed aquatic species that would be crossed by 250-foot-wide transmission line ROWs	2	2	1	2
Acres of critical habitat for federally listed Colorado pikeminnow that would be crossed by 250-foot-wide transmission line ROWs	1	1	3	1
Potential Aquatic Habitat Alteration or Loss ¹ (square feet) (acres shown in parentheses)				
Colorado River cutthroat trout	0	0	800 (0.02)	0
Bluehead sucker	0	0	1,600 (0.04)	0
Flannelmouth sucker	0	0	800 (0.02)	0
Mountain sucker	0	0	2,000 (0.05)	0
Roundtail chub	0	0	1,600 (0.04)	0

¹ Habitat loss represents area that could be permanently or temporarily removed due to the use of a culvert or low water crossing or temporarily disturbed from the instream use of equipment. The calculation excludes large rivers such as the Little Snake and Yampa.

Parameter information regarding riparian disturbance and road density is provided in **Tables 3.10-10** and **3.10-11**, respectively. The analyses focused on streams that contain special status aquatic species. A summary of these parameters is provided below.

Table 3.10-10 Ground Disturbance (acres) for Buffer Distances from Riparian Habitat Associated with Special Status Species, Region I Corridor

	Alternatives							
	I-A		I-B		I-C		I-D	
	100 feet	300 feet	100 feet	300 feet	100 feet	300 feet	100 feet	300 feet
Streams								
Construction	2	5	2	5	17	52	9	20
Operation	1	2	1	2	5	14	2	4

- Riparian Disturbance – A comparison of the construction and operation effects to riparian vegetation near perennial waterbodies containing special status aquatic species indicates that Alternative I-C would have the greatest potential disturbance compared to the other three alternatives. By following design features and stipulations for BLM FOs involving no disturbance or a buffer protection of 300 to 500 feet, the disturbance to riparian vegetation would be avoided on BLM lands.
- Road Density – The number of watersheds that would be crossed by the Region I alternative 250-foot-wide transmission line ROWs would range from 2 to 7. The road density units are highest for Alternative I-C. The increase in new road density would range from 0.01 to 0.36 mile/mile², with the highest increase in the Fourmile Creek watershed (Alternative I-C). BMPs and design features would be implemented to reduce sediment input to streams including those that support special status aquatic species.

Alternative I-A (Applicant Proposed)

Two streams (Little Snake and Yampa rivers) that contain special status aquatic species would be within the refined transmission corridor. Both of these streams would be crossed by the 250-foot-wide transmission line ROW. No additional streams with special status aquatic species would be within the potential disturbance area beyond the refined transmission corridor. Species-specific impacts are discussed below for Alternative I-A.

Colorado Pikeminnow (Federally Endangered and BLM Sensitive)

The 250-foot-wide transmission line ROW for Alternative I-A would cross occupied and critical habitat for Colorado pikeminnow in the Yampa River. Critical habitat for Colorado pikeminnow consists of the 100-year floodplain in the Yampa River. The 250-foot-wide transmission line ROW also would cross one other stream that contains Colorado pikeminnow: Little Snake River (noncritical habitat). Colorado pikeminnow occurrence in the Little Snake River is located in the lower 1-mile section near the confluence with the Yampa River. In total, 1 acre of Colorado pikeminnow critical habitat would be crossed. Occupied and critical habitat for the federally endangered razorback sucker is located approximately 7 miles downstream of the Alternative I-A 250-foot-wide transmission line ROW crossing at a point where the Yampa River enters the Green River.

Table 3.10-11 Open Road Density (miles/mile²) within 100 and 300 feet of Stream Crossings Associated with Special Status Species in Region I Corridor

Watershed	I-A					Watershed	I-B				
	Current Density		Density Increase		Streams with Special Status Species (# of Segments)		Current Density		Density Increase		Streams with Special Status Species (# of Segments)
	100 feet	300 feet	100 feet	300 feet			100 feet	300 feet	100 feet	300 feet	
Greasewood Gulch-Little Snake River	0.38	0.66	0.04	0.04	Little Snake River (1)	Greasewood Gulch-Little Snake River	0.38	0.66	0.04	0.04	Little Snake River (1)
Spring Creek-Yampa River	0.46	1.01	0.03	0.03	Yampa River (1)	Spring Creek-Yampa River	0.46	1.01	0.03	0.03	Yampa River (1)
Watershed	I-C					Watershed	I-D				
	Current Density		Density Increase		Streams with Special Status Species (# of Segments)		Current Density		Density Increase		Streams with Special Status Species (# of Segments)
	100 feet	300 feet	100 feet	300 feet			100 feet	300 feet	100 feet	300 feet	
Deception Creek-Yampa River	0.65	1.55	0.06	0.06	Yampa River (2)	Greasewood Gulch-Little Snake River	0.38	0.66	0.04	0.04	Little Snake River (1)
Elkhead Creek	0.82	1.36	0.01	0.01	Elkhead Creek (2)	Spring Creek-Yampa River	0.46	1.01	0.03	0.03	Yampa River (1)
Fortification Creek	1.19	2.00	0.11	0.12	Fortification Creek (1)	Lower Muddy Creek	1.08	2.12	0.01	0.01	No direct crossing of Muddy Creek, but a tributary to Muddy Creek would be crossed (1). No special status species occurs in this tributary.
Fourmile Creek	0.59	1.03	0.08	0.36	Fourmile Creek (1)						
Little Snake River-Willow Creek	0.54	1.12	0.05	0.04	Willow Creek (2)						
Lower Muddy Creek	1.08	2.12	0.07	0.05	Muddy Creek (3)						
Upper Muddy Creek	1.02	1.90	0.06	0.05	Muddy Creek (1)						

Potential effects on Colorado pikeminnow could include surface disturbance to critical habitat located within the 100-year floodplain. Potential entrainment or impingement of early life stages of Colorado pikeminnow also could occur, if water is withdrawn for construction purposes (i.e., dust control or concrete foundations) from critical habitat that supports spawning or nursery areas. Entrainment or impingement of small-size fish could occur as a result of water withdrawal through intake hoses. Mitigation measure **SSS-2** would be implemented to avoid entrainment and impingement effects on Colorado pikeminnow.

Indirect effects on both species could include sedimentation, riparian removal, and potential fuel spill risks. These effects could occur within the 250-foot-wide transmission line ROW and from the use of new or upgraded access roads. BMPs such as ECO-1 and ECO-4 require the consideration of sensitive or unique habitats and the avoidance, minimization, or mitigation for impacts to sensitive species and their habitat through Project design. BMPs require that no instream disturbance should occur between July 1 and September 30 to avoid impacts to the four federally endangered fish species in the Upper Colorado River Basin (WWEC) and construction activities should avoid modification of critical habitat for any species (BLM 2008). Design features such as TWE-2 (ESA Compliance), TWE-29 (Biological Protection Plan), and TWE-31 (Development of Section 7 Mitigation Measures) would be used to reduce impacts to important, sensitive, or unique habitats and develop appropriate mitigation measures. The following mitigation measure is recommended to further protect critical habitat for Colorado pikeminnow.

SSS-4 (*No Permanent Structures or New Roads in Critical Habitat for Federally Listed Fish Species*): *No permanent structures or new roads would be constructed in critical habitat for federally endangered fish species. Any temporary disturbance to soils in the 100-year floodplain within critical habitat would be minimized to the extent possible and restoration would be completed to maintain existing conditions. TransWest would avoid siting temporary facilities such as staging areas and helicopter pads in the 100-year floodplain that is designated critical habitat. Additionally, TransWest would avoid temporary river crossings by vehicles within designated critical habitat.*

Effectiveness: This measure would be highly effective in avoiding or minimizing direct or indirect effects to critical habitat for Colorado pikeminnow in Regions I and II and razorback sucker in Region II.

Alternative I-A would cross 1 acre of critical habitat for Colorado pikeminnow. Surface disturbance activities near the Yampa River pose a risk for sediment and fuel spills. A combination of BMPs, design features, and additional mitigation measure **SSS-4** would be implemented to minimize impacts to critical and occupied habitat for Colorado pikeminnow and downstream reaches occupied by Colorado pikeminnow and razorback sucker.

Colorado Pikeminnow, Humpback Chub, Bonytail, and Razorback Sucker (Federally Endangered) Water Depletions

Applicant committed design feature TWE-2 would ensure that applicable environmental regulations would be followed including requirements for federally listed species under the ESA and Section 7 consultation. This design feature would be applied to all Project actions related to the protection of environmental resources. As part of flow requirements for the four endangered fish species in the Upper Colorado River Basin (Colorado pikeminnow, humpback chub, bonytail, and razorback sucker), water use for projects must comply with the *Recovery Implementation Program for Endangered Fish Species in the Upper Colorado Basin* (Recovery Plan) (USFWS 2013). To ensure the survival and recovery of the four endangered fish species in the Upper Colorado River, water users with depletions are required to make a one-time payment to the Recovery Plan. In 1995, an intra-USFWS Opinion determined that the fee for depletions of less than 100 acre-feet (annual average) would no longer be required. In 2015, the fee for Colorado River Basin depletions was \$20.54 per acre-foot. Water use for this Project (i.e., approximately 2 acre-feet for foundation concrete and 114 acre-feet for dust control) would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An estimated 107 acre-feet of the water use would be within

the Colorado River Basin. In Wyoming, the effect determination for new and existing depletions would be completed by the Wyoming State Engineer.

Since specific water sources have not been identified at this time, the USFWS cannot determine if the water sources have been through Section 7 consultation. Therefore, the USFWS assumes that all of the construction water use would be new depletions. This action would represent a consumptive water use from the Upper Colorado Basin of 107 acre-feet during a 3-year time frame when water would be used for construction purposes. The volume in Region I would be combined with Region II to identify the total depletion from the Upper Colorado River Basin. New depletions would represent an adverse effect on endangered fish species in the Upper Colorado River. As part of the Recovery Program for the Upper Colorado River fish species, a one-time payment would be required for the average annual depletion volume (acre-feet) that exceeds 100 acre-feet. The depletion fee is established each fiscal year after it has been determined that the Recovery Program is making sufficient progress toward recovery of the endangered fish species regarding ESA compliance for water withdrawals.

Pallid Sturgeon (Federally Endangered)

The pallid sturgeon is located in the lower Platte River downstream of the Elk River confluence in Nebraska. This area would be a considerable distance downstream of any construction or operation disturbance areas in Wyoming, and so these activities would not affect pallid sturgeon. Water depletion also must be evaluated for pallid sturgeon. Applicant design feature TWE-2 would be followed to comply with the ESA and Section 7.

The PRRIP was implemented in 2006 to assist in the conservation and recovery of the target species and their associated habitats along the central and lower Platte River in Nebraska. Compliance with the PRRIP would require that water use in the Platte River Basin be evaluated to determine the potential effects of water depletions on Platte River federally listed species and their critical habitat. If the proposed water-related activity would deplete more than 0.1-acre-feet in the Platte River system and would rely on surface water or hydrologically connected groundwater, an evaluation would be required by the Wyoming State Engineer to determine whether the water use would be a new or existing activity. If the activity would be an existing water-related activity, the State Coordinator would determine whether any further action is required to be covered by the PRRIP. If further actions would be required, a Wyoming Platte River Recovery Agreement would be executed between the water user and the Wyoming State Engineer.

Approximately 8 acre-feet of water from the Platte River Basin would be used for construction purposes. The source of water would include municipal supplies, commercial sources, or a temporary water use agreement with landowners holding existing water rights. Since specific water sources have not been identified at this time, the USFWS cannot determine if the water sources have been through Section 7 consultation. Therefore, the USFWS assumes that all of the construction water use would be new depletions. This action would represent a consumptive water use from the Platte River Basin of 8 acre-feet during a 3-year time frame when water would be used for construction purposes. This small depletion would represent an adverse effect on the pallid sturgeon. The PRRIP would be used to mitigate for the effects of water depletions on federally listed species in the Platte River.

Northern Leopard Frog (BLM Sensitive and Nevada Protected)

The Little Snake River at Project Segment 1187 is the only impacted stream that contains potential habitat for northern leopard frog. It would be crossed by Alternative I-A. The potential effects of construction activities on northern leopard frog would include potential direct disturbance to habitat (i.e., flooded areas, wetlands, streams, or ponds) from vehicle traffic and riparian vegetation. Vehicle traffic also could cause mortalities as frogs move to or from aquatic habitats during breeding periods in the spring and summer months. Indirect effects on frog habitat would consist of sedimentation from soil disturbance near aquatic habitats and potential fuel spills. BMPs and design features would minimize erosion effects on waterbodies and restrict refueling within 100 feet of wetlands and streams. BMPs and

design features associated with WWEC would be applicable to northern leopard frog habitat in Region I. In addition, stipulations for the BLM Little Snake FO would restrict surface occupancy within a 0.25-mile of perennial water sources such as the Little Snake River.

BMPs and design features would be implemented to minimize effects of construction activities on northern leopard frog aquatic habitat. Impacts from these activities during construction would be considered of a low magnitude. Vehicle traffic could cause northern leopard frog mortalities, if traffic movement were to coincide with frog movements during breeding periods. Mortalities would be expected to be relatively low considering the traffic volume.

Great Basin Spadefoot Toad (BLM Sensitive)

The Great Basin spadefoot toad has potential to occur in sagebrush habitats below 6,000 feet amsl in Wyoming, Colorado, and Utah, although there are no specific records of occurrence within the Alternative I-A refined transmission corridor. Spadefoot toads utilize burrows in terrestrial habitats during the non-breeding period. This toad species requires water sources for breeding such as rain pools, roadside and irrigation ditches, flooded fields, intermittent and permanent desert streams, and pond and reservoir edges (Buseck et al. 2005). Surface disturbance activities could alter their terrestrial habitat during the non-breeding period or their aquatic habitat during the breeding period. Vehicle traffic during construction could cause mortalities during movements to and from water sources used for breeding in the spring months.

In summary, surface disturbance activities could alter terrestrial habitat used by Great Basin spadefoot toad during the non-breeding period or aquatic habitat in the breeding period in the spring months. Potential mortalities from vehicles could occur if construction occurs in the spring near breeding water sources.

Colorado River Cutthroat Trout (BLM and Forest Sensitive Species and Utah CAS)

Two streams (Yampa and Little Snake rivers) that contain Colorado River cutthroat trout would be crossed by the Alternative I-A 250-foot-wide transmission line ROW. Construction activities near these rivers could result in sediment and fuel spill risks. There would be no habitat loss from construction because culverts or low water construction techniques would not be required for large rivers. The same BMPs and design features for erosion control and spill prevention discussed for game fish streams also would apply to streams containing Colorado River cutthroat trout. Due to the large size of the Yampa and Little Snake rivers, new roads would not be constructed across these streams. By implementing erosion control and spill prevention BMPs and design features, water quality effects on Colorado River cutthroat trout habitat in the Yampa and Little Snake rivers during construction would be of a low magnitude. Mitigation measure **SSS-3** would be implemented to avoid entrainment and impingement effects on Colorado River cutthroat trout.

Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub (BLM Sensitive and Utah CAS)

Two streams (Little Snake and Yampa rivers) that contain bluehead sucker, flannelmouth sucker, and roundtail chub would be crossed by the Alternative I-A 250-foot-wide transmission line ROW. Vehicles and equipment would not cross large rivers such as the Yampa and Little Snake. Indirect impacts would be the same as discussed for other fish species. The same BMPs and design features discussed for game fish streams also would apply to streams containing these BLM sensitive species. By implementing erosion control and spill prevention BMPs and design features, water quality effects on special status sucker and roundtail chub habitat in the Yampa and Little Snake rivers during construction would be of a low magnitude. Mitigation measure **SSS-3** would be implemented to avoid entrainment and impingement effects on bluehead and flannelmouth suckers.

Alternative I-B (Agency Preferred)

In total, two streams (Little Snake and Yampa rivers) that contain special status aquatic species would be within the Alternative I-B transmission line corridor and would be crossed by its 250-foot-wide transmission line ROW. No additional streams with special status aquatic species would be within the potential disturbance area beyond the refined transmission corridor. Species-specific impacts are discussed below for Alternative I-B.

Colorado Pikeminnow (Federally Endangered and BLM Sensitive)

Construction activities could result in direct disturbance to 1 acre of Colorado pikeminnow critical habitat in the Yampa River. Potential entrainment/impingement effects to Colorado pikeminnow would be avoided by mitigation measure **SSS-2**. In addition, mitigation measure **SSS-4** would be implemented to avoid disturbance to critical habitat by restricting structures or new roads from being located within the critical habitat area. Potential impacts of sedimentation and fuel spills on Colorado pikeminnow habitat near the Yampa River crossing and downstream reaches occupied by razorback sucker would be minimized by BMPs and design features involving erosion control and spill prevention.

In summary, Alternative I-B would cross 1 acre of critical habitat for Colorado pikeminnow. Surface disturbance activities near the Yampa River pose a risk for sediment and fuel spills. A combination of BMPs, design features, and additional mitigation measures **SSS-2** and **SSS-4** would be implemented to avoid impacts to critical and occupied habitat for Colorado pikeminnow and downstream reaches occupied by Colorado pikeminnow and razorback sucker.

Colorado Pikeminnow, Humpback Chub, Bonytail, and Razorback Sucker (Federally Endangered) Water Depletions

Approximately 2 acre-feet for foundation concrete and 116 acre-feet for dust control would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An estimated 109 acre-feet of the construction water use would occur within the Colorado River Basin. Compliance with the Recovery Program would be required for the potential effect of water use on the federally endangered fish species in the Upper Colorado Basin. Since specific water sources for construction have not been identified at this time, the water use would be considered a new depletion. A depletion fee would be required for the Recovery Program.

Pallid Sturgeon (Federally Endangered)

Construction water use for Alternative I-B would be approximately 8 acre-feet from the Platte River Basin, with sources that would include municipal supplies, commercial sources, or a temporary water use agreement with landowners holding existing water rights. Compliance with the PRRIP would be required for the potential effect of water use on the federally endangered species in the Platte River Basin. Since specific water sources have not been identified at this time, the USFWS cannot determine if the water sources have been through Section 7 consultation. Similar to Alternative I-A, this action would represent a consumptive water use from the Platte River Basin of 8 acre-feet during a 3-year time frame when water would be used for construction purposes. This small depletion would represent an adverse effect on the pallid sturgeon. The PRRIP would be used to mitigate for the effects of water depletions on federally listed species in the Platte River.

Northern Leopard Frog (BLM Sensitive and Nevada Protected)

One stream, the Little Snake River at Project Segment 1187, contains potential habitat for northern leopard frog and would be crossed by Alternative I-B. The potential effects of construction activities on northern leopard frog would be the same as discussed for Alternative I-A. BMPs and design features associated with WWEC would be applicable to northern leopard frog habitat in Region I. Impacts from vehicle movement during construction would be considered of a low magnitude. Vehicle traffic could cause northern leopard frog mortalities, if traffic movement were to coincide with frog movements during breeding periods.

Great Basin Spadefoot Toad (BLM Sensitive)

The Great Basin spadefoot toad has potential to occur in sagebrush habitats below 6,000 feet amsl in Wyoming, Colorado, and Utah, although there are no specific records of occurrence within the Alternative I-B corridor. Surface disturbance activities could alter Great Basin spadefoot toad terrestrial habitat during the non-breeding period or aquatic habitat during the breeding period. Potential impacts to habitat would be considered short-term in duration and low magnitude due to low traffic volume and one-time vehicle movement. Vehicle traffic during construction could cause mortalities during movements to and from water sources used for breeding in the spring months. Mortalities would be expected to be relatively low considering the traffic volume.

Colorado River Cutthroat Trout (BLM and Forest Sensitive Species and Utah CAS)

Two streams (Yampa and Little Snake rivers) that contain Colorado River cutthroat trout would be crossed by the Alternative I-B 250-foot-wide transmission line ROW. There would be no habitat loss from construction because culverts or low water construction techniques would not be required for large rivers. Construction and operation maintenance effects on Colorado cutthroat trout habitat would be the same as discussed for Alternative I-A.

Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub (BLM Sensitive and Utah CAS)

Two streams (Little Snake and Yampa rivers) would be crossed by the Alternative I-B 250-foot-wide transmission line ROW. There would be no habitat loss from construction because culverts or low water construction techniques would not be required. Impacts would be the same as discussed for Alternative I-A. The same BMPs and design features discussed for game fish streams also would apply to streams containing these BLM sensitive species.

Alternative I-C

In total, seven streams that contain special status aquatic species would be within the Alternative I-C refined transmission corridor. These streams include Elkhead Creek, Fortification Creek, Fourmile Creek, Little Cottonwood Creek, Little Snake River, Muddy Creek (three crossings), and the Yampa River (three crossings). One additional stream (Willow Creek) with special status aquatic species would be within the potential disturbance area beyond the refined transmission corridor. Species-specific impacts associated with Alternative I-C are discussed below.

Colorado Pikeminnow (Federally Endangered and BLM Sensitive)

Construction activities could result in direct disturbance to 3 acres of Colorado pikeminnow critical habitat in the Yampa River. Mitigation measures **SSS-2** and **SSS-4** would be implemented to avoid entrainment/impingement effects and disturbance to critical habitat by restricting structures or new roads from being located within the critical habitat area. Potential impacts of sedimentation and fuel spills on Colorado pikeminnow habitat near the Yampa River crossing and downstream reaches occupied by Colorado pikeminnow and razorback sucker would be minimized by BMPs and design features involving erosion control and spill prevention.

In summary, Alternative I-C would cross 3 acres of critical habitat for Colorado pikeminnow. Surface disturbance activities near the Yampa River pose a risk for sediment and fuel spills. A combination of BMPs, design features, and mitigation measures **SSS-2** and **SSS-4** would be implemented to avoid impacts to critical and occupied habitat for Colorado pikeminnow and downstream reaches occupied by Colorado pikeminnow and razorback sucker.

Colorado Pikeminnow, Humpback Chub, Bonytail, and Razorback Sucker (Federally Endangered) Water Depletions

Approximately 2 acre-feet for foundation concrete and 137 acre-feet for dust control would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An estimated 131 acre-feet of the construction water use would occur

within the Colorado River Basin. Since specific water sources for construction have not been identified at this time, the water use would be considered a new depletion. A depletion fee would be required for the Recovery Program.

Pallid Sturgeon (Federally Endangered)

Construction water use for Alternative I-C would be approximately 8 acre-feet from the Platte River Basin, with sources that would include municipal supplies, commercial sources, or a temporary water use agreement with landowners holding existing water rights. Similar to Alternative I-A, this action would represent a consumptive water use from the Platte River Basin of 8 acre-feet during a 3-year construction time frame when water would be used for construction purposes. This small depletion would represent an adverse effect on the pallid sturgeon. The PRRIP would be used to mitigate for the effects of water depletions on federally listed species in the Platte River.

Northern Leopard Frog (BLM Sensitive, and Nevada Protected)

Potential habitat for northern leopard frog would be crossed by Alternative I-C in one stream, Muddy Creek. The potential effects of construction activities on northern leopard frog would be the same as discussed for Alternative I-A. BMPs and design features associated with WWEC would be applicable to northern leopard frog habitat in Region I. This measure would minimize effects on amphibian occurrence in and movements to these areas. Impacts from vehicle movement during construction would be considered of a low magnitude. Vehicle traffic could cause northern leopard frog mortalities if traffic movement were to coincide with frog movements during breeding periods.

Great Basin Spadefoot Toad (BLM Sensitive)

The Great Basin spadefoot toad has potential to occur in sagebrush habitats below 6,000 feet amsl in Wyoming, Colorado, and Utah, although there are no specific records of occurrence within the Alternative I-C transmission line corridor. Surface disturbance activities could alter Great Basin spadefoot toad terrestrial habitat during the non-breeding period or aquatic habitat during the breeding period. Potential impacts to habitat would be considered short-term and low magnitude due to low traffic volume and one-time vehicle movement. Vehicle traffic during construction could cause mortalities during movements to and from water sources used for breeding in the spring months.

Colorado River Cutthroat Trout (BLM and Forest Sensitive Species and Utah CAS)

Three streams (Fourmile, Little Cottonwood, and the Yampa River) that contain Colorado River cutthroat trout would be crossed by the Alternative I-C 250-foot-wide transmission line ROW. One additional stream, Willow Creek, also contains this trout subspecies and would be in the area that could be disturbed by access roads or staging areas. Potential instream disturbance to their habitat could occur if vehicles were to cross smaller streams such as Fourmile and Little Cottonwood creeks using ford or culvert techniques for road access. Vehicle traffic within the ROW also could cross streams that contain these species. Direct habitat loss could be 800 square feet (0.02 acre), if a culvert or low water construction is required at the Fourmile and Little Cottonwood Creek crossings. The same BMPs and design features discussed for game fish streams also would apply to streams containing Colorado River cutthroat trout. Entrainment and impingement effects would be avoided by mitigation measure **SSS-3**. Other applicable BMPs would be used to protect these species. In addition, the following mitigation measure is recommended to avoid potential effects on cutthroat trout spawning.

SSS-5 (Avoid Spawning Habitat Disturbance for Special Status Trout Species): *If spawning areas for special status trout species (Colorado River and Bonneville cutthroat trout) are known to occur at streams proposed for vehicle crossing or culvert construction, instream disturbance would be scheduled to avoid the spawning period from April through May. The exact dates for avoidance would be determined through discussions with WGFD, CPW, UDWR, or USFS. All disturbed areas would be restored to pre-construction conditions prior to the next spawning season. The state agencies also would determine if a habitat survey would be required prior to any Project disturbance, which would assist in*

defining habitat conditions for restoration. A stream crossing plan would be prepared by TransWest, with approval required by the state agencies' aquatic biologists.

Effectiveness: This measure would be highly effective in avoiding spawning periods for special status trout species and restoring any disturbed habitat.

By implementing erosion control and spill prevention BMPs and design features, water quality effects on Colorado River cutthroat trout habitat during construction would be of a low magnitude. Impacts on spawning special status trout species would be avoided by implementing mitigation measure **SSS-5**.

Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub (BLM Sensitive and Utah CAS)

The following BLM sensitive sucker and chub species are located in streams that would be crossed by the refined transmission corridor for Alternative I-C: bluehead sucker (Yampa River and Little Snake rivers and Fortification and Muddy creeks), flannelmouth sucker (Elkhead Creek, Fortification Creek, Muddy Creek, Little Snake River, and the Yampa River), and roundtail chub (Fortification Creek, Muddy Creek, and the Little Snake and Yampa rivers). The Alternative I-C 250-foot-wide transmission line ROW would cross the Little Snake River, Yampa River, Muddy Creek, Elkhead Creek, Fortification Creek, and Fourmile Creek. Direct disturbance to these species' habitats could occur in the small to mid-size streams such as Elkhead, Fortification, Fourmile, and Muddy creeks due to vehicle traffic. Habitat loss could be 1,600 to 2,000 square feet (0.04 to 0.05 acre) for these species, if culverts or low water construction were to be required in the smaller streams. The same BMPs and design features discussed for game fish streams also would apply to streams containing these BLM sensitive species. Entrainment and impingement effects would be avoided by mitigation measure **SSS-3**.

By implementing erosion control and spill prevention BMPs and design features, water quality effects on special status sucker and roundtail chub habitat in five streams during construction would be of a low magnitude. If roads are constructed across small and mid-sized streams such as Elkhead, Fourmile, Fortification, and Muddy creeks, construction impacts would occur to habitat for special status sucker species and roundtail chub. Disturbed habitat would be restored to pre-construction conditions resulting in impacts of relatively low net magnitude.

Mountain Sucker (BLM Sensitive)

The Alternative I-C 250-foot-wide transmission line ROW would cross two streams (Fourmile and Fortification creeks) containing mountain sucker. Each stream would be crossed once by the 250-foot-wide transmission line ROW. Habitat loss could be 800 square feet (0.02 acre), if culverts or low water construction were to be required for the two 250-foot-wide transmission line ROW crossings. Potential sediment input and fuel spill risks could occur as a result of construction. The same BMPs and design features discussed for game fish streams also would apply to streams containing this BLM sensitive species.

By implementing erosion control and spill prevention BMPs and design features, water quality effects on mountain sucker habitat in two streams potentially crossed during construction would be of a low magnitude. If a culvert or road were to be constructed across two perennial stream crossings listed above, direct loss of habitat could occur. Disturbed habitat from road construction would be restored to pre-construction conditions resulting in construction impacts of a relatively low net magnitude.

Alternative I-D

In total, two streams (Little Snake and Yampa rivers) that contain special status aquatic species would be within the refined transmission corridor and would be crossed by 250-foot-wide transmission line ROW. No additional streams with special status aquatic species are located within the potential disturbance area beyond the refined transmission corridor. Species-specific impacts are discussed below for Alternative I-D.

Colorado Pikeminnow (Federally Endangered and BLM Sensitive)

Construction activities could result in direct disturbance to 1 acre of Colorado pikeminnow critical habitat in the Yampa River. Mitigation measure **SSS-4** would be implemented to avoid disturbance to critical habitat by restricting structures or new roads to be located within the critical habitat area. Potential impacts of sedimentation and fuel spills on Colorado pikeminnow habitat near the Yampa River crossing and downstream reaches occupied by razorback sucker would be minimized by BMPs and design features involving erosion control and spill prevention.

In summary, Alternative I-D would cross 1 acre of critical habitat for Colorado pikeminnow. Surface disturbance activities near the Yampa River pose a risk for sediment and fuel spills. Potential water withdrawals from critical habitat areas could result in entrainment/impingement effects on young pikeminnow. Mitigation measure **SSS-2** would be implemented to avoid entrainment/impingement effects on pikeminnow. A combination of BMPs, design features, and additional mitigation measures **SSS-2** and **SSS-4** would be implemented to avoid impacts to critical and occupied habitat for Colorado pikeminnow and downstream reaches occupied by Colorado pikeminnow and razorback sucker.

Colorado Pikeminnow, Humpback Chub, Bonytail, and Razorback Sucker (Federally Endangered) Water Depletions

Approximately 2 acre-feet for foundation concrete and 124 acre-feet for dust control would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An estimated 117 acre-feet would occur within the Colorado River Basin. Since specific water sources for construction have not been identified at this time, the water use would be considered a new depletion. A depletion fee would be required for the Recovery Program.

Pallid Sturgeon (Federally Endangered)

Construction water use for Alternative I-D would require approximately 8 acre-feet in the North Platte watershed, with sources that would include municipal supplies, commercial sources, or a temporary water use agreement with landowners holding existing water rights. Similar to Alternative I-A, this action would represent a consumptive water use from the Platte River Basin of 8 acre-feet during a 3-year construction time frame when water would be used for construction purposes. This small depletion would represent an adverse effect on the pallid sturgeon. The PRRIP would be used to mitigate for the effects of water depletions on federally listed species in the Platte River.

Northern Leopard Frog (BLM Sensitive and Nevada Protected)

One stream, the Little Snake River at Project Segment 1187, contains potential habitat for northern leopard frog and would be crossed by Alternative I-D. The potential effects of construction activities on northern leopard frog would be the same as those discussed for Alternative I-A. BMPs and design features associated with WWEC would be applicable to northern leopard frog habitat in Region I. These measures would minimize adverse effects on amphibian occurrence and movements in these areas. Impacts from vehicle movement during construction would be considered of a low magnitude. Vehicle traffic could cause northern leopard frog mortalities if traffic movement coincides with frog movements during breeding periods. Mortalities would be expected to be relatively low considering the traffic volume.

Great Basin Spadefoot Toad (BLM Sensitive)

The Great Basin spadefoot toad has potential to occur in sagebrush habitats below 6,000 feet amsl in Wyoming, Colorado, and Utah, although there are no specific records of occurrence within the Alternative I-D transmission line corridor. Surface disturbance activities could alter Great Basin spadefoot toad terrestrial habitat during the non-breeding period or aquatic habitat during the breeding period. Potential impacts to habitat would be considered short-term in duration and low magnitude due to low traffic volume and one-time vehicle movements. Vehicle traffic during construction could cause mortalities during movements to and from water sources used for breeding in the spring months.

Colorado River Cutthroat Trout (BLM and Forest Sensitive Species and Utah CAS)

Two streams (Yampa and Little Snake rivers) that contain Colorado River cutthroat trout would be crossed by the Alternative I-D 250-foot-wide transmission line ROW. There would be no habitat loss due to construction because culverts or low water construction techniques would not be required for large rivers. Construction and operation maintenance effects on Colorado cutthroat trout habitat would be the same as discussed for Alternative I-A. By implementing erosion control and spill prevention BMPs and design features, water quality effects on Colorado River cutthroat trout habitat in the Yampa and Little Snake rivers during construction would be of a low magnitude.

Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub (BLM Sensitive)

Two streams (Little Snake and Yampa rivers) containing special status sucker species and roundtail chub would be crossed by the Alternative I-D 250-foot-wide transmission line ROW. There would be no habitat loss due to construction because culverts or low water construction techniques would not remove habitat. Impacts would be the same as discussed for Alternative I-A. The same BMPs and design features discussed for game fish streams also would apply to streams containing these BLM sensitive species. By implementing erosion control and spill prevention BMPs and design features, water quality effects on special status sucker and roundtail chub habitat in the Yampa and Little Snake rivers during construction would be of a low magnitude.

The Tuttle Ranch micro-siting options would not affect special status aquatic species, since no aquatic habitat would be within the areas associated with these options.

Alternative Ground Electrode Systems in Region I

The northern electrode system would be required within 100 miles of the Northern Terminal, which is based on the conceptual locations and connections to the alternative routes. There would be no impacts on special status aquatic species, since the conceptual locations associated with the Bolten Ranch and Separation Flat sites do not support habitat for special status fish, amphibian, or invertebrate species.

Region I Conclusion

Based on a comparison of impact parameters for Region I alternatives, potential impacts to special status aquatic species would be greatest for Alternative I-C. Potential effects for Alternatives I-A, I-B, and I-D would be similar and relatively low compared to Alternative I-C (**Table 3.10-9**). Alternative I-C would cross the highest number of streams with special status aquatic species (7) and critical habitat for federally listed Colorado pikeminnow (3 acres). In comparison, the other three alternatives would cross 2 streams with special status aquatic species and 1 acre of critical habitat for federally endangered fish. Alternative I-C also could result in the greatest alteration or loss of habitat (800 to 2,000 square feet or 0.02 to 0.05 acre) compared to no loss or alternation of habitat for the other three alternatives. Less than 0.1 percent of special status species habitat would be affected by Alternative I-C and the other three alternatives. Alternative I-C could result in the highest potential construction disturbance to riparian areas (17 acres at a 100-foot buffer and 52 acres at a 300-foot buffer) compared to the other three alternatives (2 to 9 acres at a 100-foot buffer and 5 to 20 acres at a 300-foot buffer) (**Table 3.10-10**). Alternative I-B ranks in the low range of potential riparian effects. Alternative I-C also would result in increased new road density in seven watersheds compared to two watersheds for the other alternatives (**Table 3.10-11**). Even though the greatest level of impacts would be associated with Alternative I-C, Project effects on special status species and their habitat would be avoided or considered to be low magnitude and short-term in duration after applying BMPs, design features, and additional mitigation (Section 3.10.6.3 and **Appendix C**). The only potential long-term impacts would be in streams where a culvert would displace stream bottom habitat. In comparison with available stream habitat, the relatively small long-term impacts of all alternatives would be unlikely to impact the population viability of special status aquatic species inhabiting these streams.

3.10.6.4 Region II

Table 3.10-12 provides a summary of impact parameters used to describe impacts for alternative routes in Region II. Based on species occurrence information and habitat associations, special status aquatic species that may be impacted by the proposed Project in Region II include 13 fish, 4 amphibians, and 2 invertebrate species (**Table 3.10-5**). Species occurrence in Region II streams is provided in **Appendix G, Table G-6**; occurrences in lakes/reservoirs are shown in **Appendix G, Table G-7**. Project Segment identification numbers referenced in this section are listed in **Table G-6** and depicted in **Figure 2-22**. Parameter information in **Table 3.10-12** is discussed separately for each of the Region II alternatives.

Table 3.10-12 Summary of Region II Alternative Route Impacts for Special Status Aquatic Species

Parameter	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F	Alternative II-G
Number of streams with special status aquatic species that would be crossed by 250-foot-wide transmission line ROWs	14	7	11	8	13	14	14
Number of additional streams with special status aquatic species that would be in the potential disturbance area beyond the refined transmission corridor	6	5	2	0	6	5	5
Number of streams with federally listed aquatic species that would be crossed by 250-foot-wide transmission line ROWs	1	2	2	2	1	2	1
Acres of critical habitat for federally listed fish species that would be crossed by 250-foot-wide transmission line ROWs							
Colorado pikeminnow	1	4	4	4	1	4	1
Razorback sucker	1	3	3	4	1	4	1
Potential Aquatic Habitat Alteration or Loss ¹ (square feet) (acres shown in parentheses)							
Northern leopard frog	400 (0.01)	400 (0.01)	400 (0.01)	0	800 (0.02)	1,600 (0.04)	400 (0.01)
Columbia spotted frog	400 (0.01)	400 (0.01)	0	400 (0.01)	0	0	400 (0.01)
Boreal toad	0	0	0	0	9,600 (0.22)	0	0
Bonneville cutthroat trout	2,000 (0.05)	400 (0.01)	0	800 (0.02)	2,400 (0.06)	2,400 (0.06)	2,000 (0.05)
Colorado River cutthroat trout	0	400 (0.01)	400 (0.01)	800 (0.02)	0	4,000 (0.11)	0
Southern leatherside chub	1,200 (0.03)	400 (0.01)	1,200 (0.03)	400 (0.01)	1,600 (0.04)	1,600 (0.04)	1,200 (0.03)
Bluehead sucker	2,800 (0.07)	400 (0.01)	1,200 (0.03)	0	1,200(0.03)	0	2,800 (0.07)
Flannelmouth sucker	2,400 (0.06)	0	800 (0.02)	0	1,200 (0.03)	0	2,400 (0.06)
Mountain sucker	400 (0.01)	0	800 (0.02)	0	1,200 (0.03)	1,200 (0.03)	400 (0.01)
Roundtail chub	2,000 (0.05)	0	400 (0.01)	0	1,200 (0.03)	1,200 (0.03)	2,000 (0.05)
California floater	0 ²	0	0	0	0	0 ²	0 ²
Southern Bonneville pyrg	0	0	0	0	400 (0.01)	400 (0.01)	0

¹ Habitat loss represents area that could be permanently or temporarily removed due to the use of a culvert or low water crossing or temporarily disturbed from the instream use of equipment. The calculation excludes large rivers such as the Duchesne, Green, Price, San Pitch, Sevier, Uinta, and White.

² California floater could be affected by access roads, since habitat exists within the potential disturbance area located beyond the refined transmission corridor.

Parameter information regarding riparian disturbance and road density is provided in **Tables 3.10-13** and **3.10-14**, respectively. The analyses focus on streams that contain special status aquatic species. A summary of these parameters is provided below.

Table 3.10-13 Ground Disturbance (acres) for Buffer Distances from Riparian Habitat Associated with Special Status Species, Region II Corridor

Streams	Alternatives													
	II-A		II-B		II-C		II-D		II-E		II-F		II-G	
	100 feet	300 feet	100 feet	300 feet	100 feet	300 feet	100 feet	300 feet	100 feet	300 feet	100 feet	300 feet	100 feet	300 feet
Construction	22	61	19	48	15	44	14	53	24	68	49	130	20	54
Operation	8	22	5	14	4	12	5	15	10	27	13	37	8	22

- **Riparian Disturbance** – A comparison of the construction effects to riparian vegetation near perennial waterbodies containing special status aquatic species indicates the highest potential impact for Alternative II-F compared to the other six alternatives. Alternative II-F could affect 49 acres at the 100-foot buffer distance and 130 acres at the 300-foot buffer distance. Similar potential disturbance (i.e., 14 to 24 acres for the 100-foot buffer distance and 44 to 68 acres for the 300-foot buffer distance) could occur for the other alternatives. These impacts would be reduced by design features and BLM and USFS requirements, which range from avoiding a riparian buffer area of 200 to 1,200 feet adjacent to perennial streams to total avoidance of riparian areas. In conclusion, the disturbance to riparian vegetation would be avoided on BLM and USFS lands. There could be disturbance on private lands if riparian vegetation is present.
- **Road Density** – The number of watersheds that would be crossed by the Region II alternative 7,250-foot-wide transmission line ROWs range from 8 (II-D) to 13 (II-A and II-G). The road density units would be highest for Alternatives II-C, II-E, and II-F. The increase in road density ranged from <0.1 to 1.9 mile/mile², with the highest increase in the Beaver Creek-Price River (Alternative II-F); Ivie Creek (Alternative III-C); Soldier Creek (Alternatives II-A, II-E, II-F, and II-G); Outlet Douglas Creek (Alternative II-C); and Willow Creek (Alternatives II-E and II-F) watersheds. BMPs and design features would be implemented to reduce sediment input to streams including those that support special status aquatic species.

The Strawberry IRA (Option 2 and Option 3) micro-siting options would not substantially affect the impact analysis for special status aquatic species.

Alternative II-A (Applicant Proposed)

In total, 14 streams that contain special status aquatic species would be crossed by the 250-foot-wide transmission line ROW. These include Currant, Dry Gulch, Hop, Lake Fork, Montes, Red, Soldier, Thistle, and Tie Fork creeks, and the Duchesne, Green, Strawberry, Uinta, and Lake Fork rivers. Three additional streams with special status species (Birch and Nebo creeks) would be within the refined transmission corridor. Six additional perennial streams with special status aquatic species would be within the potential disturbance area beyond the refined transmission corridor (**Appendix G, Table G-6**). Species-specific impacts are discussed below for Alternative II-A.

Table 3.10-14 Open Road Density (miles/mile²) within 100 and 300 feet of Stream Crossings Associated with Special Status Species in Region II Corridor

Watershed	II-A					Watershed	II-B				
	Current Density		Density Increase		Streams with Special Status Species (# of Segments)		Current Density		Density Increase		Streams with Special Status Species (# of Segments)
	100 feet	300 feet	100 feet	300 feet			100 feet	300 feet	100 feet	300 feet	
Cottonwood Creek-Dry Gulch Creek	1.93	2.72	0.15	0.09	Cottonwood Creek (1), Montes Creek (1), Dry Gulch Creek (2)	Coal Creek-Price River	2.00	2.81	0.09	0.06	Price River (1)
Currant Creek	3.24	3.02	0.01	0.02	Currant Creek (2)	Cottonwood Creek	1.60	2.92	0.01	0.01	Lowry River (1)
Dry Gulch Creek	1.61	2.37	0.05	0.06	Dry Gulch Creek (1)	Huntington Creek	3.87	4.10	0.02	0.03	Huntington Creek (2)
Strawberry River-Duchesne River	1.54	1.81	0.09	0.06	Duchesne River (1)	Middle Sevier River	1.43	2.13	0.01	0.02	Sevier River (1)
Middle Strawberry River	0.00	0.00	0	0	Willow Creek (1)	Outlet Douglas Creek	1.14	3.27	0.14	0.35	Douglas Creek (1)
Pelican Lake-Green River	0.55	1.43	0.01	0.02	Green River (1)	Red Wash-White River	1.13	2.50	0.06	0.09	White River (1)
Pigeon Water Creek-Lake Fork River	0.83	1.44	0.02	0.02	Lake Fork River (1)	Salt Wash-Green River	0.13	0.64	0.03	0.04	Green River (2)
Red Creek	3.45	4.61	0.05	0.07	Red Creek (1)	Upper San Pitch River	4.25	4.52	0.06	0.07	San Pitch River (1), Dry Pole Fork (1), North Fork Pleasant Creek (1), Pleasant Creek (1)
Soldier Creek	8.40	6.93	0.17	0.2	Soldier Creek (2), Tie Fork (1), Lake Fork (1)	Upper Sevier River	0.98	1.87	0.03	0.04	Sevier River (1)
Thistle Creek	10.88	7.18	0.08	0.09	Thistle Creek (2), Nebo Creek (1)						
Uinta River	1.39	2.15	0.01	0.01	Uinta River (1)						
Upper Strawberry River	1.01	1.52	0	0	Strawberry River (2)						
West Creek	3.59	4.13	0.18	0.15	Hop Creek (2), Currant Creek (1), Birch Creek (1)						

Table 3.10-14 Open Road Density (miles/mile²) within 100 and 300 feet of Stream Crossings Associated with Special Status Species in Region II Corridor

Watershed	II-C					Watershed	II-D				
	Current Density		Density Increase		Streams with Special Status Species (# of Segments)		Current Density		Density Increase		Streams with Special Status Species (# of Segments)
	100 feet	300 feet	100 feet	300 feet			100 feet	300 feet	100 feet	300 feet	
Cottonwood Creek	1.60	2.92	0.01	0.01	Cottonwood Creek (1)	Agency Draw-Willow Creek	3.29	4.17	0.07	0.05	Willow Creek (1)
Ferron Creek	1.54	2.02	0.01	0.04	Ferron Creek (1)	Beaver Creek-Price River	7.00	6.61	0.03	0.05	Price River (1)
Headwaters Muddy Creek	1.99	2.05	0.04	0.04	Muddy Creek (1)	Cottonwood Wash-White River	0.36	0.78	0.04	0.05	White River (1)
Ivie Creek (HUC10 1407000201)	3.86	6.20	0.06	0.07	Quitcupah Creek (2)	Huntington Creek	3.87	4.10	0.01	0.01	Huntington Creek (2)
Ivie Creek (HUC10 1603000501)	3.46	3.50	0.18	0.25	Quitcupah Creek (2)	Scofield Reservoir	3.81	4.46	0.08	0.15	Mud Creek (1)
Lost Creek-Sevier River	9.44	9.35	0.05	0.06	Lost Creek (1), Sevier River (1)	Sheep Wash-Green River	0.09	0.33	0.04	0.05	Green River (1)
Middle Sevier River	1.43	2.13	0.03	0.04	Sevier River (1)	Upper San Pitch River	4.25	4.52	0.07	0.16	Oak Creek (1), Cottonwood Creek (1)
Outlet Douglas Creek	1.14	3.27	0.14	0.35	Douglas Creek (1)	West Creek	3.59	4.13	0.05	0.05	Hop Creek (1)
Red Wash-White River	1.13	2.50	0.06	0.09	White River (1)						
Salina Creek	8.75	11.89	0.11	0.11	Gooseberry Creek (1), Little Creek (1)						

Table 3.10-14 Open Road Density (miles/mile²) within 100 and 300 feet of Stream Crossings Associated with Special Status Species in Region II Corridor

Watershed	II-E					Watershed	II-F				
	Current Density		Density Increase		Streams with Special Status Species (# of Segments)		Current Density		Density Increase		Streams with Special Status Species (# of Segments)
	100 feet	300 feet	100 feet	300 feet			100 feet	300 feet	100 feet	300 feet	
Beaver Creek-Price River	7.00	6.61	0.1	0.17	Price River (1), Kyune Creek (1)	Agency Draw-Willow Creek	3.29	4.17	0.07	0.05	Willow Creek (1)
Cottonwood Creek-Dry Gulch Creek	1.93	2.72	0.15	0.09	Cottonwood Creek (1), Montes Creek (1), Dry Gulch Creek (2)	Beaver Creek-Price River	7.00	6.61	0.52	0.44	Price River (1), Kyune Creek (1), Kyune Creek Right Fork (1)
Dry Gulch Creek	1.61	2.37	0.05	0.06	Dry Gulch Creek (1)	Cottonwood Wash-White River	0.36	0.78	0.04	0.05	White River (1)
Pelican Lake-Green River	0.55	1.43	0.01	0.02	Green River (1)	Middle Sevier River	1.43	2.13	0	0	Sevier River (1)
Pigeon Water Creek-Lake Fork River	0.83	1.44	0.09	0.1	Lake Fork River (1)	Sheep Wash-Green River	0.09	0.33	0.04	0.05	Green River (1)
Soldier Creek	8.40	6.93	0.21	0.21	Clear Creek (1), Soldier Creek (2), Tie Fork (1), Lake Fork (1)	Soldier Creek	8.40	6.93	0.21	0.21	Soldier Creek (2), Tie Fork (1), Lake Fork (1)
Strawberry River-Duchesne River	1.54	1.81	0.13	0.1	Duchesne River (1)	Thistle Creek	10.88	7.18	0.08	0.09	Bennie Creek (1), Thistle Creek (1)
Thistle Creek	10.88	7.18	0.08	0.09	Bennie Creek (1), Thistle Creek (1), Nebo Creek (1)	Upper Sevier River	0.98	1.87	0	0	Sevier River (1)
Uinta River	1.39	2.15	0.01	0.01	Uinta River (1)	West Creek	3.59	4.13	0.18	0.15	Hop Creek (2)
West Creek	3.59	4.13	0.14	0.12	Hop Creek (2)	White River	6.17	5.95	0.16	0.16	White River (2), Tabbyune Creek (1), White River Right Fork (1)
White River	6.17	5.95	0.04	0.05	White River (2), Tabbyune Creek (1)	Willow Creek	4.10	4.19	1.84	1.91	West Fork Willow Creek (1)
Willow Creek	4.10	4.19	0.39	0.42	West Fork Willow Creek (1)						

Table 3.10 14 Open Road Density (miles/mile²) within 100 and 300 feet of Stream Crossings Associated with Special Status Species in Region II Corridor

Watershed	II-G				
	Current Density		Density Increase		Streams with Special Status Species (# of Segments)
	100 feet	300 feet	100 feet	300 feet	
Cottonwood Creek-Dry Gulch Creek	1.93	2.72	0.15	0.09	Cottonwood Creek (1), Montes Creek (1), Dry Gulch Creek (2)
Currant Creek	3.24	3.02	0.01	0.01	Currant Creek (2)
Dry Gulch Creek	1.61	2.37	0.05	0.06	Dry Gulch Creek (1)
Strawberry River-Duchesne River	1.54	1.81	0.09	0.06	Duchesne River (1)
Middle Strawberry River	0.00	0.00	0	0	Willow Creek (1)
Pelican Lake-Green River	0.55	1.43	0.01	0.02	Green River (1)
Pigeon Water Creek-Lake Fork River	0.83	1.44	0.02	0.02	Lake Fork River (1)
Red Creek	3.45	4.61	0.03	0.04	Red Creek (1)
Soldier Creek	8.40	6.93	0.17	0.20	Soldier Creek (2), Tie Fork (1), Lake Fork (1)
Thistle Creek	10.88	7.18	0.08	0.09	Thistle Creek (2), Nebo Creek (1)
Uinta River	1.39	2.15	0.01	0.01	Uinta River (1)
Upper Strawberry River	1.01	1.52	0	0	Strawberry River (2)
West Creek	3.59	4.13	0.14	0.12	Hop Creek (2), Currant Creek (1)

Note: Zero indicates no new roads within the buffer area.

Colorado Pikeminnow, Humpback Chub, Bonytail, and Razorback Sucker (Federally Endangered and BLM Sensitive)

Direct Disturbance and Indirect Water Quality Effects

Construction activities could result in direct disturbance to 2 acres of Colorado pikeminnow and razorback sucker critical habitat (i.e., 1 acre per species) in the Green River. The 250-foot-wide transmission line ROW would cross critical habitat in Project Segment 1320.05. Critical habitat for both species is defined as the 100-year floodplain of the Green River. Vehicles and equipment would not enter the wetted area of the river channel; however, disturbance could occur in the dry area of the 100-year floodplain on both sides of the Green River. It should be clarified that this area is an overestimate of disturbance because it includes the wet portion of the floodplain. Mitigation measure **SSS-4** would be implemented to avoid disturbance to critical habitat by restricting structures or new roads from being located within the critical habitat area. Mitigation measure **SSS-2** would be implemented to avoid entrainment/impingement effects on young pikeminnow and razorback sucker in critical habitat areas. Potential impacts of sedimentation and fuel spills on Colorado pikeminnow and razorback sucker habitat near the Green River crossing and downstream reaches occupied by all four federally endangered fish species would be minimized by BMPs and design features involving erosion control and spill prevention.

In summary, Alternative II-A would cross 2 acres of critical habitat for Colorado pikeminnow and razorback sucker. Surface disturbance activities near the Green River would pose a risk for sediment and fuel spills for all four federally endangered fish species. Potential water withdrawals from critical habitat areas could result in entrainment/impingement effects on young pikeminnow and razorback sucker. A combination of BMPs, design features, and additional mitigation measures **SSS-2** and **SSS-4** would be implemented to avoid impacts to critical and occupied habitat for Colorado pikeminnow and razorback sucker and downstream reaches occupied by all four federally endangered fish species.

Water Depletions

Approximately 3 acre-feet of water for foundation concrete and 190 acre-feet for dust control would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An estimated 111 acre-feet of construction water use would occur within the Colorado River Basin. Since specific water sources have not been determined at this time, the USFWS assumes that the one-time use of 111 acre-feet would represent a new depletion in the Upper Colorado River Basin. New depletions represent an adverse effect on endangered fish species in the Upper Colorado River. A depletion fee would be applied to the water use in the Upper Colorado Basin within the refined transmission corridor for Regions I and II as part of the Recovery Program.

June Sucker (Federally Endangered, BLM Sensitive, and Utah Special Concern)

June sucker habitat in Utah Lake and the Provo River would be approximately 15 miles upgradient from the Region II corridors. There would be no direct disturbance to habitat. Since water sources have not been identified at this time, potential construction water use from Utah Lake, Provo River, and the Spanish Fork River could adversely affect habitat from reductions in river flow or lake water levels. This conclusion also would apply to the other Region II alternatives. As a result of this potential effect, the following mitigation measure would be implemented.

SSS-6 (Approval of Water Use from June Sucker Habitat Areas): Any potential water use from Utah Lake, Provo River and the Spanish Fork River that would represent a new depletion must be approved by UDWR and the Utah State Engineer, Utah Division of Water Rights.

Effectiveness: This measure would be effective in reducing adverse effects on June sucker habitat as a result of reductions in river flows or lake water levels. UDWR's involvement on the June Sucker

Recovery Implementation Team would ensure that recovery goals were considered in the water use request.

Least Chub (Utah Conservation Agreement and BLM Sensitive)

Least chub habitat occurs in springs and wetland areas within the Currant Creek drainage, which would be approximately 1.5 miles downgradient of the Alternative II-A refined transmission corridor and 3.5 miles from the 250-foot-wide transmission line ROW. There would be no direct disturbance on least chub habitat. In addition, there would be no indirect effects on least chub habitat from construction, since water sources for the springs and wetlands would not be disturbed or used for dust control or concrete formation by implementing mitigation measure **SSS-3**. This measure would avoid water withdrawal and entrainment effects on this species. Least chub habitat would not be near or within the refined transmission corridors for the other Region II alternatives except Alternative II-G.

Boreal Toad (Forest Sensitive Species, Colorado Endangered, and Utah Conservation Agreement)

Potential breeding habitat for boreal toad would overlap with the Alternative II-A 250-foot-wide transmission line ROW near Birch Creek. There would be no potential habitat loss, since the Birch Creek drainage would not be crossed by the 250-foot-wide transmission line ROW. Vehicle traffic could cause toad mortalities, if construction were to coincide with migration periods to and from a water source used for breeding or terrestrial habitat during the non-breeding period. By applying a 2-mile dispersal distance around Birch Creek, potential effects could occur in approximately 4,603 acres of terrestrial habitat. BMPs and design features associated with WWEC would be applicable to boreal toad habitat in Region II.

Impacts from vehicle movement would be considered of a low magnitude. Vehicle traffic could cause toad mortalities, if traffic movement were to coincide with their movements during breeding periods.

Columbia Spotted Frog (Federal Candidate, Forest Sensitive Species, and Utah Special Concern)

One habitat area (Soldier Creek in Project Segment 1325) that contains Columbia spotted frog would be crossed by the Alternative II-A refined transmission corridor and ROW. One additional habitat area for this amphibian species (Currant Creek/unnamed tributary to Currant at Project Segment 1340) would be in the potential disturbance area beyond the refined transmission corridor, which could be affected by access roads or staging areas. Construction activities within these streams could alter habitat used for eggs and rearing of young. Potential direct habitat loss could be 400 square feet (0.01 acre), if a culvert or low water crossing were to be required at the one ROW crossing. Direct effects of construction activities and maintenance could include mortalities to frogs from vehicle traffic within the ROW or along access roads due to stream crossings or periods when frogs move to upland areas for overwintering. Vehicle traffic also could cause sedimentation in the disturbance area near these streams. BMPs and design features for Columbia spotted frog would be the same as discussed for northern leopard frog (as discussed for Region I). As discussed for California floater, mitigation measures **WET-2** and **WET-4** would restrict disturbance in the wetland near Currant Creek. Impacts from vehicle traffic during construction would be considered of a low magnitude. Vehicle traffic could cause Columbia spotted frog mortalities, if traffic movement coincides with frog movements during breeding periods.

Northern Leopard Frog (BLM Sensitive)

One habitat area in Soldier Creek (Project Segment 1325) contains potential habitat for northern leopard frog and would be crossed by the Alternative II-A ROW. One additional habitat area for this amphibian species (Currant Creek/unnamed tributary to Currant Creek at Project Segment 1340) would be in the potential disturbance area beyond the refined transmission corridor, which could be affected by access roads or staging areas. The potential effects of construction activities on northern leopard frog would be the same as discussed for Region I. Potential loss of habitat would be 400 square feet (0.01 acre), if a culvert or road crossing were to be required at the 250-foot-wide transmission line ROW crossing. BMPs and design features associated with WWEC would be applicable to northern leopard frog habitat in Region II. Mitigation measures **WET-2** and **WET-3** would restrict disturbance in the wetland near Currant

Creek. Impacts from vehicle traffic would be considered of a low magnitude. Vehicle traffic could cause northern leopard frog mortalities, if traffic movement were to coincide with frog movements during breeding periods.

Bonneville Cutthroat Trout (BLM and Forest Sensitive Species and Utah Conservation Agreement)

Seven streams containing Bonneville cutthroat trout would be crossed by the Alternative II-A refined transmission corridor including Carrant (Wasatch County), Lake Fork, Nebo, Red, Soldier, Thistle, and Tie Fork creeks. All of these streams except Carrant and Nebo creeks would be crossed by the 250-foot-wide transmission line ROW. Two additional perennial streams (Bennie and Carrant creeks) with this trout subspecies would be within the potential disturbance area beyond the refined transmission corridor. Direct disturbance to habitat would occur if vehicles or equipment were to cross any of these streams or if culverts were constructed as part of developing new access roads. Potential loss or alteration of habitat would be 2,000 square feet (0.05 acre), if culverts or low water crossings are required at five 250-foot-wide transmission line ROW crossings involving small streams. Indirect effects of instream work or surface disturbance near the streams could result in sedimentation or potential fuel spills. The same BMPs and design features discussed for game fish streams also would apply to streams containing Bonneville cutthroat trout. Entrainment and impingement effects would be avoided by mitigation measure **SSS-3**. Other applicable BMPs would be used to protect these species. Two Uinta National Forest Planning Area¹ management restrictions would apply to cutthroat trout streams on Forest lands. The first restriction would be that management activities should not significantly reduce habitat for Bonneville and Colorado River cutthroat trout in Tie Fork Creek. The second restriction would be that a 300-foot buffer would be established along perennial streams that are identified as recovery habitat for Bonneville and Colorado River cutthroat trout. Mitigation measure **SSS-5** also would be applied to streams that contain spawning habitat for Bonneville cutthroat trout.

In summary, by implementing erosion control and spill prevention BMPs and design features, water quality effects on Bonneville cutthroat trout habitat would be minimized during construction and be considered of a low magnitude. Impacts on spawning special status trout species would be avoided by implementing mitigation measure **SSS-5** and the Uinta National Forest Planning Area management restrictions for Tie Fork Creek.

Colorado River Cutthroat Trout (BLM and Forest Sensitive Species and Utah Conservation Agreement)

Two streams (Green and Strawberry rivers) that contain Colorado River cutthroat trout would be crossed by the Alternative II-A refined transmission corridor and 250-foot-wide transmission line ROW. No additional perennial streams with this trout subspecies would be within the potential disturbance area beyond the refined transmission corridor. No crossings would be constructed across the Green or Strawberry rivers. BMPs, design features, and Uinta National Forest Planning Area management restrictions would minimize effects to Colorado River cutthroat trout. Entrainment and impingement effects would be avoided by mitigation measure **SSS-3**. In addition, mitigation measure **SSS-5** would avoid direct disturbance to spawning areas for special status trout species.

Southern Leatherside Chub (BLM and Forest Sensitive Species and Utah Conservation Agreement)

Three streams (Soldier, Hop, and Thistle creeks) containing southern leatherside chub would be crossed by the 250-foot-wide transmission line ROW and refined transmission corridor. Southern leatherside chub also occurs in two additional streams (Little Creek and Hop Creek) that would be in the potential disturbance area beyond the refined transmission corridor. Potential direct effects on southern leatherside chub habitat could occur in these small and mid-size streams due to vehicle and equipment

¹ In March 2008, the Uinta National Forest and the Wasatch-Cache National Forest were combined into one administrative unit (Uinta-Wasatch-Cache National Forest). Each of these forests continues to operate under individual forest plans approved in 2003. The term "Uinta National Forest Planning Area" is used to refer to the portion of the Uinta-Wasatch-Cache National Forest managed under the 2003 LRMP for the Uinta National Forest.

crossings and removal of riparian vegetation. Potential direct habitat loss could be 1,200 square feet (0.03 acre), if culverts or low water crossings were to be required at three 250-foot-wide transmission line ROW crossings. Indirect effects involving sedimentation and potential fuel spills on southern leatherside chub habitat would be the same as discussed for other fish species. Entrainment and impingement effects would be avoided by mitigation measure **SSS-3**. The same BMPs and design features discussed for other sensitive fish species also would be applied to construction activities in or near streams containing southern leatherside chub. The following mitigation measure would be implemented to avoid impacts on spawning chub.

SSS-7 (Avoid Spawning Habitat Disturbance for Southern Leatherside Chub): *If spawning areas for southern leatherside chub are known to occur at streams proposed for vehicle crossing or culvert construction, instream disturbance would be scheduled to avoid the spawning period from April through June. The exact dates for avoidance would be determined through discussions with UDWR. All disturbed areas would be restored to pre-construction conditions prior to the next spawning season.*

Effectiveness: This measure would be highly effective in avoiding spawning periods for southern leatherside chub and restoring any disturbed habitat.

Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub (BLM Sensitive and Utah Conservation Agreement)

The following number of streams that contain these BLM special status sucker and roundtail chub would be crossed by the refined transmission corridor for Alternative II-A: bluehead sucker (eight streams), flannelmouth sucker (seven streams), and roundtail chub (six streams). The Alternative II-A 250-foot-wide transmission line ROW would cross eight streams (Carrant, Dry Gulch, and Montes creeks, and Duchesne, Green, Lake Fork, Strawberry, and Uinta rivers) that contain one or more of these species. Direct disturbance to species habitat could occur in the small to mid-size streams such as Carrant, Dry Gulch, Lake Fork, and Montes creeks due to vehicle traffic. Habitat loss could be 2,000 to 2,800 square feet (0.05 to 0.07 acre) for these species, if culverts or low water construction were to be required in the smaller streams. The same BMPs and design features discussed for game fish streams also would apply to streams containing these BLM sensitive species. Entrainment and impingement effects would be avoided by mitigation measure **SSS-3**.

In summary, by implementing erosion control and spill prevention BMPs and design features, water quality effects on special status sucker and roundtail chub habitat in nine streams during construction would be of a low magnitude. If roads were constructed across Carrant, Dry Gulch, Lake Fork, and Montes creeks, impacts during construction would occur to habitat for special status sucker species and roundtail chub. Disturbed habitat would be restored to pre-construction conditions resulting in construction impacts of a relatively low net magnitude.

Mountain Sucker (BLM Sensitive)

The Alternative II-A refined transmission corridor would cross two streams (Soldier and Thistle creeks) containing mountain sucker. Soldier Creek is the only stream with mountain sucker habitat that would be crossed by the 250-foot-wide transmission line ROW. Habitat loss could be 400 square feet (0.01 acre), if culverts or low water construction were to be required in Soldier Creek. Potential sediment input and fuel spill risks could occur as a result of construction. The same BMPs and design features discussed for game fish streams also would apply to streams containing this BLM sensitive species.

By implementing erosion control and spill prevention BMPs and design features, water quality effects on mountain sucker habitat in one stream during construction would be of a low magnitude. If a culvert or road were to be constructed across Soldier Creek, direct loss of habitat could occur. Disturbed habitat from road construction would be restored to pre-construction resulting in construction impacts of a relatively low net magnitude.

Southern Bonneville Pyrg (Utah Protected)

The transmission line corridor for Alternative II-A would cross one unnamed spring near Thistle Creek that is inhabited by the springsnail, southern Bonneville pyrg. The spring would be approximately 600 feet east of the 250-foot-wide transmission line ROW or approximately 500 feet from the ROW. Direct effects of construction could include the potential disturbance to habitat or springsnail mortalities as a result of access road traffic within or near the spring. Disturbance to habitat features involving bottom substrates or aquatic vegetation used by this species would reduce the number of individuals and possibly eliminate the population in this spring. Habitat loss or alteration could occur if vehicles were to cross this small spring. This spring contains one of six populations known to occur in Utah. Indirect effects of construction could adversely affect water quality and habitat from sediment input or a potential fuel spill near the spring. BMPs and design features involving sediment control and restrictions on refueling within 100 feet of waterbodies would minimize potential indirect effects on this species and habitat. The following mitigation measure is recommended to avoid potential direct effects on southern Bonneville pyrg.

SSS-8 (*Avoid Direct Disturbance to Habitat for Southern Bonneville Pyrg*): No vehicle or equipment disturbance from ROW work or access road construction would be allowed within 300 feet of the unnamed spring located near Thistle Creek that contains southern Bonneville pyrg.

Effectiveness: This measure would be highly effective in avoiding direct effects to southern Bonneville pyrg habitat.

California Floater (BLM Sensitive)

California floater habitat would not be crossed by the Alternative II-A 250-foot-wide transmission line ROW. However, habitat exists in Currant Creek in Juab County (Project Segment 1340), which would be in the potential disturbance area beyond the refined transmission corridor. Direct effects of construction could include the potential disturbance to habitat or mortalities as a result of access road traffic within or near the stream or adjacent wetland complex. Two vegetation mitigation measures, **WET-2** and **WET-3**, would protect wetlands by establishing a 500-foot buffer that would restrict direct disturbance. The following mitigation measure is proposed to protect California floater in Currant Creek.

SSS-9 (*Survey to Avoid Direct Disturbance to California Floater Habitat*): If instream construction is proposed for Currant Creek, a survey would be conducted to determine if California floater is present. If the species is absent, construction would be allowed after meeting UDWR requirements for restoration. If the species is present, relocation of individuals in the disturbance area would be considered to avoid impacts to it.

Effectiveness: This measure would be highly effective in avoiding effects on California floater habitat.

In summary, potential direct impacts to California floater would be minimized by implementing mitigation measures **SSS-9**, **WET-1**, and **WET-3**. BMPs, BLM stipulations, and design features would be followed to minimize potential sedimentation or fuel spill impacts to California floater habitat. These protection measures would assist in maintaining the population and contribute to a trend in avoiding federal listing.

USFS Sensitive Species

In total, two perennial streams would be within the Alternative II-A transmission line refined transmission corridor in one National Forest (Uinta) (**Appendix G, Table G-13**). One additional stream, Birch Creek, would be in the potential disturbance area beyond the analysis area, which could be affected by access roads and staging areas. Two of these streams (Tie Fork Creek and the Birch Creek drainage) contain USFS sensitive species. Species include Bonneville cutthroat trout and southern leatherside chub in Tie Fork Creek and boreal toad in the Birch Creek drainage. Tie Fork Creek would be crossed by the 250-foot-wide transmission line ROW, which could result in a direct loss of aquatic habitat of 400 square feet (0.01 acre), if construction of culverts or low water crossings were to be required. Management

restrictions for the Uinta National Forest Planning Area require that management activities should not significantly reduce cutthroat trout habitat in Tie Fork Creek, and a 300-foot buffer is established along Bonneville and Colorado River cutthroat recovery streams. Therefore, direct disturbance to cutthroat trout habitat would not occur in Tie Fork Creek. Sediment input and riparian disturbance would be avoided by following the Uinta National Forest management restriction that requires a 300-foot buffer along perennial streams.

Alternative II-B

In total, nine streams (Douglas, Hop, Huntington, and Pleasant creeks and the Green, Price, San Pitch, Sevier, and White rivers) that contain special status aquatic species would be within the Alternative II-B refined transmission corridor. Except for Hop Creek, these streams would be crossed by the 250-foot-wide transmission line ROW. Five additional perennial streams with special status aquatic species would be within the potential disturbance area beyond the refined transmission corridor (**Appendix G, Table G-6**). Species-specific impacts are discussed below for Alternative II-B.

Colorado Pikeminnow, Humpback Chub, Bonytail, and Razorback Sucker (Federally Endangered and BLM Sensitive)

Direct Disturbance and Indirect Water Quality Effects

Construction activities could result in direct disturbance to 4 acres of Colorado pikeminnow critical habitat in the Green and White rivers and 3 acres of razorback sucker critical habitat in the Green River. The 250-foot-wide transmission line ROW would cross critical habitat in Project Segment 1220 at the two locations. Mitigation measure **SSS-4** would be implemented to avoid disturbance to critical habitat by restricting structures or new roads from being located within the critical habitat area. Entrainment/impingement effects from potential water withdrawals in critical habitat areas would be avoided by mitigation measure **SSS-2**. Potential impacts of sedimentation and fuel spills on Colorado pikeminnow and razorback sucker habitat near the Green River crossing and downstream reaches occupied by all four federally endangered fish species would be minimized by BMPs and design features involving erosion control and spill prevention.

In summary, Alternative II-B would cross 4 acres of critical habitat for Colorado pikeminnow and 3 acres for razorback sucker. Surface disturbance activities near the Green and White rivers would pose a risk for sediment and fuel spills for all four federally endangered fish species. A combination of BMPs, design features, and additional mitigation measures **SSS-2** and **SSS-4** would be implemented to avoid impacts to critical and occupied habitat for Colorado pikeminnow and razorback sucker and downstream reaches occupied by all four federally endangered fish species.

Water Depletions

Approximately 4 acre-feet of water for foundation concrete and 255 acre-feet for dust control would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An estimated 192 acre-feet of construction water use would occur within the Colorado River Basin. Since specific water sources have not been determined at this time, the USFWS assumes that the one-time use of 192 acre-feet would represent a new depletion in the Upper Colorado River Basin. A depletion fee would be applied to the water use in the Upper Colorado Basin within the refined transmission corridor for Regions I and II as part of the Recovery Program.

Columbia Spotted Frog (Forest Sensitive Species, Nevada Protected and Utah Special Concern)

Two streams (San Pitch and Sevier rivers in Sanpete County, Project Segment 1310) containing Columbia spotted frog would be crossed by the Alternative II-B 250-foot-wide transmission line ROW and refined transmission corridor. No additional habitat for this species would be in the potential disturbance area beyond the refined transmission corridor. Direct effects of construction and

maintenance activities would be the same as discussed for Alternative II-A. Potential direct loss of aquatic habitat could be 400 square feet (0.01 acre), if a culvert or low water construction were to be required. BMPs and design features for Columbia spotted frog would be the same as discussed for northern leopard frog (as discussed for Region I). Impacts from construction traffic would be considered a low magnitude. Vehicle traffic could cause Columbia spotted frog mortalities, if traffic movement were to coincide with frog movements during breeding periods.

Northern Leopard Frog (BLM Sensitive and Nevada State Protected)

Two streams (White River and Douglas Creek) contain potential habitat for northern leopard frog and would be crossed by Alternative II-B. No additional habitat for this species would be in the potential disturbance area beyond the refined transmission corridor. The potential effects of construction activities on northern leopard frog would be the same as discussed for Region I. Potential loss of habitat would be 400 square feet if culverts or road crossings were to be used at the 250-foot-wide transmission line ROW crossings. BMPs and design features associated with WWEC would be applicable to northern leopard frog habitat in Region II. Impacts from construction activities would be considered a low magnitude. Vehicle traffic could cause northern leopard frog mortalities if traffic movement were to coincide with frog movements during breeding periods. Mortalities would be expected to be relatively low considering the traffic volume.

Bonneville Cutthroat Trout (BLM and Forest Sensitive Species and Utah Conservation Agreement)

One stream (Pleasant Creek) with this trout subspecies would be crossed by the Alternative II-B refined transmission corridor. Pleasant Creek is the only stream that would be crossed by the 250-foot-wide transmission line ROW. Two additional streams (Dry Pole and North Fork Pleasant creeks) contain Bonneville cutthroat trout and would be in the potential disturbance area beyond the refined transmission corridor. Direct disturbance to habitat would occur if vehicles or equipment were to cross any of these streams or if culverts were constructed as part of developing new access roads. Potential habitat loss would be 400 square feet (0.01 acre) associated with the Pleasant Creek crossing. Indirect effects of instream work or surface disturbance near the streams could result in sedimentation or potential fuel spills. The same BMPs and design features discussed for game fish streams also would apply to streams containing Bonneville cutthroat trout. Other applicable BMPs would be used to protect these species. Mitigation measures **SSS-3** and **SSS-5** also would be implemented for streams that contain spawning habitat for Bonneville cutthroat trout.

In summary, by implementing erosion control and spill prevention BMPs and design features, water quality effects on Bonneville cutthroat trout habitat in these streams during construction would be a low magnitude. Impacts on spawning special status trout species would be avoided by implementing mitigation measure **SSS-5**.

Colorado River Cutthroat Trout (BLM and Forest Sensitive Species and Utah Conservation Agreement)

Three streams (Huntington Creek and the Green and White rivers) containing Colorado River cutthroat trout habitat would be crossed by the Alternative II-B refined transmission corridor. The Green and White rivers and Huntington Creek also would be crossed by the 250-foot-wide transmission line ROW. Bitter Creek and the Lowry River also contain this trout subspecies and would be in the potential disturbance area beyond the refined transmission corridor. Potential habitat loss of 400 square feet (0.01 acre) would occur, if a culvert or low water construction were to occur at the Huntington Creek crossing. BMPs, design features, and mitigation measures **SSS-3** and **SSS-5** would minimize effects to Colorado River cutthroat trout. Stipulations for the BLM White River FO specify that the Project Applicant submit a POD describing proposed disturbance of occupied Colorado River cutthroat trout habitat. BLM approval would require that the proposed disturbance would not adversely affect Colorado River cutthroat trout habitat.

Southern Leatherside Chub (BLM and Forest Sensitive Species and Utah Conservation Agreement)

Two streams (San Pitch and Sevier rivers) contains southern leatherside chub habitat and would be crossed by the 250-foot-wide transmission line ROW. One additional stream (Hop Creek) would be in the refined transmission corridor. Potential effects of construction and maintenance operations on southern leatherside habitat would be the same as discussed for Alternative II-A. Direct habitat loss could be 400 square feet (0.01 acre) if culverts or low water construction were to be required for the ROW crossing. The same BMPs and design features discussed for other sensitive fish species also would be applied to construction activities in or near streams containing southern leatherside chub. In addition, mitigation measures **SSS-3** and **SSS-7** also would be implemented to avoid impacts on spawning and entrainment and impingement if water is withdrawn from these rivers.

Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub (BLM Sensitive and Utah Conservation Agreement)

The following BLM special status sucker species and roundtail chub occur in streams that would be crossed by the transmission line refined transmission corridor for Alternative II-B: bluehead sucker (Green River, Huntington Creek, Price River, and White River), flannelmouth sucker (Green, Price, and White rivers), and roundtail chub (Green and White rivers). The number of 250-foot-wide transmission line ROW crossings for these species would include six for bluehead sucker, five for flannelmouth sucker, and three for roundtail chub. Direct disturbance to their habitat could occur in the small to mid-size streams such as Huntington Creek due to vehicle traffic. Habitat loss could be 0 to 400 square feet (0.01 acre) for these species if culverts or low water crossings were to be required in Huntington Creek. The same BMPs and design features discussed for game fish streams also would apply to streams containing these BLM sensitive species. Entrainment and impingement effects would be avoided by mitigation measure **SSS-3**.

In summary, by implementing erosion control and spill prevention BMPs and design features, water quality effects on special status sucker and roundtail chub habitat instreams during construction would be of a low magnitude. If roads are constructed across Huntington Creek, impacts during construction would occur in habitat for special status sucker species and roundtail chub. Disturbed habitat would be restored to pre-construction resulting in construction impacts of a relatively low net magnitude.

Mountain Sucker (BLM Sensitive)

The Alternative II-B 250-foot-wide transmission line ROW would cross two streams (San Pitch and Sevier rivers) containing mountain sucker. There would be no habitat loss, since the ROW crossings would occur at large rivers where culverts or low water construction would not be required. Potential sediment input and fuel spill risks could occur as a result of construction. The same BMPs and design features discussed for game fish streams also would apply to streams containing this BLM sensitive species. By implementing erosion control and spill prevention BMPs and design features, water quality effects on mountain sucker habitat in two streams during construction would be of a low magnitude.

USFS Sensitive Species

In total, two perennial streams (Indian and Straight Fork creeks) would be crossed by the Alternative II-B transmission line refined transmission corridor and located in in one National Forest (Manti-La Sal) (**Appendix G, Table G-13**). Three additional perennial streams (Dry Pole and North Fork Coal creeks and the Lowry River) would be in the potential disturbance area beyond the analysis area. Two streams in the Manti-La Sal National Forest contain USFS sensitive species (Bonneville cutthroat trout in Dry Pole Creek and Colorado River cutthroat trout in the Lowry River). There would be no direct habitat loss in these two streams, since they would not be crossed by the 250-foot-wide transmission line ROW. Potential sediment input and riparian disturbance could result from the use of access roads or staging areas, which would be minimized by BMPs and design features regarding sediment control and a Forest management restriction that establishes a 300-foot buffer near Bonneville and Colorado River cutthroat trout recovery streams.

Alternative II-C

In total, 11 streams (Cottonwood, Douglas, Ferron, Gooseberry, Huntington, Lost, Muddy, and Quitchupah creeks and the Green, Sevier, and White rivers) would be within the refined transmission corridor that contains special status aquatic species. All of these streams also would be crossed by the 250-foot-wide transmission line ROW. Two additional perennial streams with special status aquatic species would be within the potential disturbance area beyond the refined transmission corridor (**Appendix G, Table G-6**). Species-specific impacts are discussed below for Alternative II-C.

Colorado Pikeminnow, Humpback Chub, Bonytail, and Razorback Sucker (Federally Endangered and BLM Sensitive)

Direct Disturbance and Indirect Water Quality Effects

Direct and indirect effects on the federally endangered fish species in the Upper Colorado River Basin for Alternative II-C would be the same as discussed for Alternative II-B. Alternative II-C would cross 4 acres of critical habitat for Colorado pikeminnow in the Green and White rivers and 3 acres for razorback sucker in the Green River. Surface disturbance activities near the Green and White rivers would pose a risk for sediment and fuel spills for all four federally endangered fish species. Potential water withdrawals from critical habitat areas also could result in entrainment/impingement effects on young pikeminnow and razorback sucker. A combination of BMPs, design features, and additional mitigation measures **SSS-2** and **SSS-4** would be implemented to avoid impacts to critical and occupied habitat for Colorado pikeminnow and razorback sucker and downstream reaches occupied by all four federally endangered fish species.

Water Depletions

Approximately 4 acre-feet of water for foundation concrete and 269 acre-feet for dust control would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An estimated 197 acre-feet of construction water use would occur within the Colorado River Basin. Since specific water sources have not been determined at this time, the USFWS assumes that the one-time use of 197 acre-feet would represent a new depletion in the Upper Colorado River Basin. New depletions would represent an adverse effect on endangered fish species in the Upper Colorado River. A depletion fee would be applied to the water use in the Upper Colorado Basin within the refined transmission corridor for Regions I and II as part of the Recovery Program.

Northern Leopard Frog (BLM Sensitive and Nevada State Protected)

Impacts of Alternative II-C on northern leopard frog would be the same as discussed for Alternative II-B. Two streams, the White River and Douglas Creek, with northern leopard frog habitat would be crossed by the Alternative II-C refined transmission corridor and ROW. Potential loss of habitat would be 400 square feet (0.01 acre) if a culvert were to be used at the 250-foot-wide transmission line ROW crossing on Douglas Creek. Impacts from construction activities would be considered of a low magnitude. Vehicle traffic could cause northern leopard frog mortalities, if traffic movement were to coincide with frog movements during breeding periods. Mortalities would be expected to be relatively low considering the traffic volume.

Colorado River Cutthroat Trout (BLM and Forest Sensitive Species and Utah Conservation Agreement)

Three streams (Huntington Creek and the Green and White rivers) that contain Colorado River cutthroat trout would be crossed by the refined transmission corridor and the 250-foot-wide transmission line ROW. One additional stream (Bitter Creek) contains this trout subspecies and would be within the potential disturbance area beyond the refined transmission corridor. Construction- and operations-related activities would not disturb Colorado cutthroat trout habitat in the two larger rivers. If a culvert or low water construction were required on Huntington Creek, approximately 400 square feet (0.01 acre) of

habitat could be altered or removed. Entrainment and impingement effects would be avoided by mitigation measure **SSS-3**. The BLM White River FO stipulation involving protection of Colorado River cutthroat trout habitat also would be applicable to Alternative II-C. By implementing erosion control and spill prevention BMPs and design features, water quality effects on Colorado River cutthroat trout habitat during construction would be of a low magnitude.

Southern Leatherside Chub (BLM and Forest Sensitive Species and Utah Conservation Agreement)

Four streams (Gooseberry, Muddy, and Quitchupah creeks and the Sevier River) contain southern leatherside chub habitat and would be crossed by the refined transmission corridor and the 250-foot-wide transmission line ROW. Leatherside chub habitat exists in one additional stream (Little Creek), which would be in the potential disturbance area beyond the refined transmission corridor. Potential effects of construction and maintenance operations on southern leatherside habitat would be the same as discussed for Alternative II-A. Direct habitat loss could be 1,200 square feet (0.03 acre) if culverts or low water construction were to be required at three 250-foot-wide transmission line ROW crossings. The same BMPs and design features discussed for other sensitive fish species also would be applied to construction activities in or near streams containing southern leatherside chub along with mitigation measures **SSS-3** and **SSS-7**.

Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub (BLM Sensitive and Utah Conservation Agreement)

The following sucker and chub species occur in streams that would be crossed by the refined transmission corridor for Alternative II-C: bluehead sucker (Ferron Creek, Green River, Huntington Creek, Muddy Creek, and White River), flannelmouth sucker (Ferron Creek, Green River, Muddy Creek, Quitchupah Creek, and White River), and roundtail chub (Ferron Creek and the Green and White rivers). The number of 250-foot-wide transmission line ROW crossings for these species include six for bluehead sucker, six for flannelmouth sucker, and four for roundtail chub. Habitat loss could be 400 to 1,200 square feet (0.01 to 0.04 acre) for these species if culverts or low water construction were to be required in the smaller streams. No direct disturbance to species habitat would be expected due to the relatively large size of these streams. The same BMPs and design features discussed for game fish streams also would apply to streams containing these BLM sensitive species. Entrainment and impingement effects would be avoided by mitigation measure **SSS-3**.

In summary, by implementing erosion control and spill prevention BMPs and design features, water quality effects on special status sucker and roundtail chub habitat in streams during construction would be of a low magnitude. Road disturbance and effects on habitat for these species would not be expected for these larger streams.

Mountain Sucker (BLM Sensitive)

The Alternative II-C 250-foot-wide transmission line ROW would cross three streams (Muddy and Quitchupah creeks and the Sevier River) containing mountain sucker. Habitat loss could be 800 square feet (0.02 acre) if culverts or low water construction were required in Muddy and Quitchupah creeks. Potential sediment input and fuel spill risks could occur as a result of construction. The same BMPs and design features discussed for game fish streams also would apply to streams containing this BLM sensitive species. By implementing erosion control and spill prevention BMPs and design features, water quality effects on mountain sucker habitat in three streams during construction would be of a low magnitude. If a culvert or road were to be constructed across Muddy and Quitchupah creeks, direct loss of habitat could occur. Disturbed habitat from road construction would be restored to pre-construction resulting in construction impacts of a relatively low net magnitude.

USFS Sensitive Species

In total, three perennial streams (Meadow, Niotche, and Saleratus creeks) would be crossed by the Alternative II-C transmission line refined transmission corridor in the Fishlake National Forest

(**Appendix G, Table G-13**). In addition, one stream (Little Creek), three springs, and Saleratus Reservoir would be in the potential disturbance area beyond the refined transmission corridor. One of these streams (Little Creek) contains a USFS sensitive species, southern leatherside chub. By following the BMPs and design features regarding sediment control and Forest management guidance involving avoidance of riparian areas near streams, effects on riparian vegetation and sediment input would be minimized.

Alternative II-D

In total, nine streams (Cottonwood, Hop, Mud, Oak, and Willow creeks and the Green, Price, San Pitch, and White rivers) would be within the refined transmission corridor that contains special status aquatic species. Except for Oak Creek, these streams would be crossed by the 250-foot-wide transmission line ROW. No additional perennial streams with special status aquatic species are located within the potential disturbance area beyond the refined transmission corridor (**Appendix G, Table G-6**). Species-specific impacts are discussed below for Alternative II-D.

Colorado Pikeminnow, Humpback Chub, Bonytail, and Razorback Sucker (Federally Endangered and BLM Sensitive)

Direct Disturbance and Indirect Water Quality Effects

Direct effects on critical habitat due to potential disturbance within the 250-foot-wide transmission line ROW crossing would be 4 acres for Colorado pikeminnow in the Green and White rivers and 4 acres for razorback sucker in the Green River. Indirect effects on the federally endangered fish species in the Upper Colorado River Basin for Alternative II-D would be the same as discussed for Alternative II-A.

In summary, Alternative II-D would cross 4 acres of critical habitat for Colorado pikeminnow and 4 acres for razorback sucker. Surface disturbance activities near the Green and White rivers would pose a risk for sediment and fuel spills for all four federally endangered fish species. Potential water withdrawals from critical habitat areas also would pose a risk to young fish due to impingement/entrainment effects. A combination of BMPs, design features, and additional mitigation measures **SSS-2** and **SSS-4** would be implemented to avoid impacts to critical and occupied habitat for Colorado pikeminnow and razorback sucker and downstream reaches occupied by all four federally endangered fish species.

Water Depletions

Approximately 3 acre-feet of water for foundation concrete and 191 acre-feet for dust control would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An estimated 129 acre-feet of construction water use would occur within the Colorado River Basin. Since specific water sources have not been determined at this time, the USFWS assumes that the one-time use of 129 acre-feet would represent a new depletion in the Upper Colorado River Basin. New depletions would represent an adverse effect on endangered fish species in the Upper Colorado River. A depletion fee would be applied to the water use in the Upper Colorado Basin within the refined transmission corridor for Regions I and II as part of the Recovery Program.

Columbia Spotted Frog (Forest Sensitive Species, Nevada Protected, and Utah Special Concern)

One stream (San Pitch River in Sanpete County, Project Segment 1217.15) containing Columbia spotted frog would be crossed by the Alternative II-D 250-foot-wide transmission line ROW and refined transmission corridor. Direct effects of construction and maintenance activities would be the same as discussed for Alternative II-A. Potential direct loss of aquatic habitat could be 400 square feet (0.01 acre) if a culvert or low water construction were to be required. BMPs and design features for Columbia spotted frog would be the same as discussed for northern leopard frog. Impacts from construction activities would be considered a low magnitude. Vehicle traffic could cause Columbia spotted frog mortalities if traffic movement were to coincide with frog movements during breeding periods.

Northern Leopard Frog (BLM Sensitive and Nevada State Protected)

One stream with northern leopard frog habitat, the White River, would be crossed by the Alternative II-D refined transmission corridor. The potential effects of construction activities on northern leopard frog would be the same as discussed for Region I, but only one habitat area would be crossed by the Alternative II-D 250-foot-wide transmission line ROW. There would be no loss of habitat since culverts or low water construction would not occur at the White River crossing. Impacts from construction activities would be considered a low magnitude. Vehicle traffic could cause northern leopard frog mortalities if traffic movement were to coincide with frog movements during breeding periods. Mortalities would be expected to be relatively low considering the traffic volume.

Bonneville Cutthroat Trout (BLM and Forest Sensitive Species and Utah Conservation Agreement)

Three streams consisting of Mud, Oak, and Cottonwood creeks would be crossed by the Alternative II-D refined transmission corridor. Cottonwood and Oak creeks would be crossed by the 250-foot-wide transmission line ROW. Direct disturbance to habitat would occur if vehicles or equipment cross any of these streams or if culverts were constructed as part of developing new access roads. Potential habitat loss would be 800 square feet (0.02 acre) associated with the two 250-foot-wide transmission line ROW crossings. Indirect effects of instream work or surface disturbance near the streams could result in sedimentation or potential fuel spills. The same BMPs and design features discussed for game fish streams also would apply to streams containing Bonneville cutthroat trout. Other applicable BMPs would be used to protect these species. Mitigation measures **SSS-3** and **SSS-5** also would be applied to streams that contain spawning or rearing habitat for Bonneville cutthroat trout.

By implementing erosion control and spill prevention BMPs and design features, water quality effects on Bonneville cutthroat trout habitat in three streams during construction would be of a low magnitude. Impacts on spawning special status trout species would be avoided by implementing mitigation measures **SSS-3** and **SSS-5**.

Colorado River Cutthroat Trout (BLM and Forest Sensitive Species and Utah Conservation Agreement)

Three streams (Willow Creek and the Green and White rivers) that contain Colorado River cutthroat trout would be crossed by the refined transmission corridor and 250-foot-wide transmission line ROW for Alternative II-D. Construction- and operations-related activities could disturb Colorado River cutthroat trout habitat on Willow Creek. Direct loss of habitat could be 800 square feet (0.02 acre) if culverts or low water construction were to be required at the Willow Creek crossing. BMPs, design features, and mitigation measures **SSS-3** and **SSS-5** would minimize effects to Colorado River cutthroat trout. By implementing erosion control and spill prevention BMPs and design features, water quality effects on Colorado River cutthroat trout habitat in three streams during construction would be of a low magnitude.

Southern Leatherside Chub (BLM and Forest Sensitive Species and Utah Conservation Agreement)

Two streams (Hop Creek and the San Pitch River) contain southern leatherside chub habitat and would be crossed by the refined transmission corridor and the 250-foot-wide transmission line ROW. Potential effects of construction and maintenance operations on southern leatherside habitat would be the same as discussed for Alternative II-A. Direct habitat loss could be 400 square feet (0.01 acre) if culverts or low water construction were to be required at the Hop Creek crossing. The same BMPs and design features discussed for other sensitive fish species also would be applied to construction activities in or near streams containing southern leatherside chub along with mitigation measures **SSS-3** and **SSS-7**.

Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub (BLM Sensitive and Utah Conservation Agreement)

Two streams that contain special status sucker and roundtail chub would be crossed by the refined transmission corridor and the 250-foot-wide transmission line ROW for Alternative II-D: Green and White rivers. No direct disturbance to species habitat would be expected due to the relatively large size of these streams. The same BMPs and design features discussed for game fish streams also would

apply to streams containing these BLM sensitive species. Entrainment and impingement effects would be avoided by mitigation measure **SSS-3**.

In summary, by implementing erosion control and spill prevention BMPs and design features, water quality effects on special status sucker and roundtail chub habitat in two streams during construction would be of a low magnitude. Road disturbance and effects on habitat for these species would not be expected for these larger streams.

Mountain Sucker (BLM Sensitive)

The Alternative II-D 250-foot-wide transmission line ROW would cross two streams (Price and San Pitch rivers) containing mountain sucker. There would be no habitat loss or alteration because culverts or low water construction would not be required in these streams. Potential sediment input and fuel spill risks could occur as a result of construction. The same BMPs and design features discussed for game fish streams also would apply to streams containing this BLM sensitive species. By implementing erosion control and spill prevention BMPs and design features, water quality effects on mountain sucker habitat in two streams during construction would be of a low magnitude. If a culvert or road were to be constructed across Mud Creek and the San Pitch River, direct loss of habitat could occur. Disturbed habitat from road construction would be restored to pre-construction resulting in construction impacts of a relatively low net magnitude.

USFS Sensitive Species

Three streams (Gooseberry, Upper Huntington, and White Pine Fork creeks) in the Manti-La Sal National Forest would be crossed by the Alternative II-D refined transmission corridor (**Appendix G, Table G-13**). In addition, two streams (Huntington and Dry creeks) and two reservoirs would be in the potential disturbance area beyond the refined transmission corridor. One stream (Huntington Creek) contains USFS sensitive species, Bonneville cutthroat trout. Huntington Creek could be affected by sediment input, if access roads or staging areas occur near this stream. By following BMPs and design features regarding sediment control and the Forest management restriction involving a 300-foot buffer near Bonneville and Colorado cutthroat trout streams, effects on riparian vegetation and sediment input would be minimized.

Alternative II-E

In total, 17 streams (Dry Gulch, Hop, Kyune, Lake Fork, Montes, Nebo, Soldier, Sowers, Tabbyune, Thistle, and Tie Fork creeks and the Duchesne, Green, Lake Fork, Price, Uinta, and White rivers) would be within the refined transmission corridor that contains special status aquatic species. Except for Kyune, Nebo, and Tabbyune creeks and the White River, these streams would be crossed by the 250-foot-wide transmission line ROW. Six additional perennial streams with special status aquatic species would be within the potential disturbance area beyond the refined transmission corridor (**Appendix G, Table G-6**). Species-specific impacts are discussed below for Alternative II-E.

Colorado Pikeminnow, Humpback Chub, Bonytail, and Razorback Sucker (Federally Endangered and BLM Sensitive)

Direct Disturbance and Indirect Water Quality Effects

Surface disturbance within the Alternative II-E 250-foot-wide transmission line ROW crossing near the Green River could affect 1 acre each for Colorado pikeminnow and razorback sucker. Indirect effects on Colorado pikeminnow and razorback sucker and on the downstream reaches occupied by all four federally endangered fish species would be the same as discussed for Alternative II-A.

In summary, Alternative II-E would cross 1 acre each of critical habitat for Colorado pikeminnow and razorback sucker in the Green River. Surface disturbance activities near the Green River would pose a risk for sediment and fuel spills for all four federally endangered fish species. A combination of BMPs,

design features, and additional mitigation measures **SSS-2** and **SSS-4** would be implemented to avoid impacts to critical and occupied habitat for Colorado pikeminnow and razorback sucker and downstream reaches occupied by all four federally endangered fish species.

Water Depletions

Approximately 3 acre-feet of water for foundation concrete and 198 acre-feet for dust control would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An estimated 118 acre-feet of construction water use would occur within the Colorado River Basin. Since specific water sources have not been determined at this time, the USFWS assumes that the one-time use of 118 acre-feet would represent a new depletion in the Upper Colorado River Basin. New depletions would represent an adverse effect on endangered fish species in the Upper Colorado River. A depletion fee would be applied to the water use in the Upper Colorado Basin within the refined transmission corridor for Regions I and II as part of the Recovery Program.

Boreal Toad (Forest Sensitive Species, Colorado Endangered, and Utah Conservation Agreement)

Boreal toad habitat within the Sowers Creek drainage would be within the Alternative II-E refined transmission corridor and would be crossed 24 times by the 250-foot-wide transmission line ROW. Potential breeding habitat for this toad species could be disturbed by vehicle crossings or culvert construction in Sowers Creek (9,600 square feet or 0.22 acre). Vehicle traffic within the refined transmission corridor also could disturb upland habitat used by this toad species during non-breeding periods. By applying a 2-mile dispersal distance around Sowers Creek, potential effects could occur within approximately 12,450 acres. Vehicle traffic could cause mortalities to boreal toads if construction activities overlap with dispersal periods to and from Sowers Creek. However, mortalities would be expected to be minor due to low traffic volumes. Indirect effects involving sedimentation and potential fuel spills on breeding habitat in Sowers Creek would be minimized by BMPs and design features for erosion control and refueling restrictions near waterbodies. The following mitigation measure is proposed to reduce potential direct disturbance on breeding habitat for boreal toad.

SSS-10 (*Reduce Crossings of Sowers Creek to Protect Boreal Toad Breeding Habitat*): *The ROW alignment would be evaluated so that the number of Sowers Creek crossings can be reduced. The portion of the creek that would be crossed by the ROW also would be evaluated as breeding habitat for boreal toad to identify any priority areas that should be avoided if possible.*

Effectiveness: This measure would be effective in reducing direct disturbance effects on breeding habitat for boreal toad.

In summary, implementation of BMPs, design features, and additional mitigation measure **SSS-10** would minimize direct and indirect effects to a minor level for boreal toad.

Northern Leopard Frog (BLM Sensitive)

One stream, Soldier Creek, with northern leopard frog habitat would be crossed twice by the Alternative II-E 250-foot-wide transmission line ROW. Potential impacts would consist of habitat disturbance and mortalities due to construction traffic. Potential loss of habitat would be 800 square feet (0.02 acre) if culverts were to be used at the Soldier Creek 250-foot-wide transmission line ROW crossings. BMPs and design features would be implemented to minimize effects of construction activities and on northern leopard habitat. Impacts from construction activities would be considered a low magnitude. Vehicle traffic could cause northern leopard frog mortalities if traffic movement were to coincide with frog movements during breeding periods. Mortalities would be expected to be relatively low considering the traffic volume.

Bonneville Cutthroat Trout (BLM and Forest Sensitive Species and Utah Conservation Agreement)

Five streams consisting of Lake Fork, Nebo, Soldier, Thistle, and Tie Fork creeks would be crossed by the Alternative II-E refined transmission corridor. Two additional streams (Bennie and Clear creeks) contain Bonneville cutthroat trout and would be in the potential disturbance area beyond the refined transmission corridor. There would be six 250-foot-wide transmission line ROW crossings for these streams, which represents a potential loss of habitat of 2,400 square feet (0.06 acre) if culverts or low water construction were to be required. Indirect effects of instream work or surface disturbance near the streams could result in sedimentation or potential fuel spills. The same BMPs and design features discussed for game fish streams also would apply to streams containing Bonneville cutthroat trout. Other applicable BMPs and Forest management restrictions would be followed to protect these species, as discussed for Alternative II-A. Mitigation measures **SSS-3** and **SSS-5** also would be applied to streams that contain spawning and rearing habitat for Bonneville cutthroat trout.

By implementing erosion control and spill prevention BMPs, Forest management restrictions, and design features, water quality effects on Bonneville cutthroat trout habitat in seven streams during construction would be of a low magnitude. Impacts on spawning special status trout species would be avoided by implementing mitigation measures **SSS-4** and **SSS-5**.

Colorado River Cutthroat Trout (BLM and Forest Sensitive Species and Utah Conservation Agreement)

Four streams that contain Colorado River cutthroat trout would be crossed by the refined transmission corridor (Kyunne and Tabbyune creeks and the Green and White rivers). The Green River is the only stream that would be crossed by the 250-foot-wide transmission line ROW. There would be no direct loss of habitat from construction activities at this large river crossing. The White River (tributary to Price River) would be in the potential disturbance area beyond the refined transmission corridor and also contains this trout subspecies. BMPs, design features, and mitigation measures **SSS-3** and **SSS-5** would minimize effects to Colorado River cutthroat trout.

Southern Leatherside Chub (BLM and Forest Sensitive Species and Utah Conservation Agreement)

Three streams (Hop, Soldier, and Thistle creeks) contain southern leatherside chub habitat and would be crossed by the transmission line refined transmission corridor. Potential effects of construction and maintenance operations on southern leatherside chub habitat would be the same as discussed for Alternative II-A. Direct habitat loss could be 1,600 square feet (0.04 acre) if culverts or low water construction were to be required. The same BMPs and design features discussed for other sensitive fish species also would be applied to construction activities in or near streams containing southern leatherside chub along with mitigation measures **SSS-3** and **SSS-7**. By implementing these protection measures, effects on southern leatherside chub habitat during construction would be of a low magnitude.

Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub (BLM Sensitive and Utah Conservation Agreement)

The following number of streams that contain these special status sucker species and roundtail chub would be crossed by the refined transmission corridor and the 250-foot-wide transmission line ROW for Alternative II-E: six streams (Dry Gulch Creek, Duchesne River, Green River, Lake Fork River, Montes Creek, and Uinta River) each for bluehead sucker, flannelmouth sucker, and roundtail chub. Habitat loss could be 1,200 square feet (0.03 acre) for each of these species if culverts or low water construction were to be required in the smaller streams such as Dry Fork and Montes creeks and the Lake Fork River. The same BMPs and design features discussed for game fish streams also would apply to streams containing these BLM sensitive species. Entrainment and impingement effects would be avoided by mitigation measure **SSS-3**.

In summary, by implementing erosion control and spill prevention BMPs and design features, water quality effects on special status sucker and roundtail chub habitat in streams during construction would

be of a low magnitude. Road disturbance and effects on habitat for these species would not be expected for the larger streams.

Mountain Sucker (BLM Sensitive)

The Alternative II-E 250-foot-wide transmission line ROW would cross three streams (Thistle and Soldier creeks and the Price River) containing mountain sucker. Habitat loss could be 1,200 square feet (0.03 acre) if culverts or low water construction were required at the three 250-foot-wide transmission line ROW crossings in Soldier and Thistle creeks. Potential sediment input and fuel spill risks could occur as a result of construction. The same BMPs and design features discussed for game fish streams also would apply to streams containing this BLM sensitive species. By implementing erosion control and spill prevention BMPs and design features, water quality effects on mountain sucker habitat in one stream during construction would be of a low magnitude. If a culvert or road were to be constructed across Soldier Creek, direct loss of habitat could occur. Disturbed habitat from road construction would be restored to pre-construction conditions resulting in construction impacts of relatively low net magnitude.

Southern Bonneville Pyrg (Utah Protected)

One unnamed spring near Thistle Creek containing the springsnail, southern Bonneville pyrg, would be within the Alternative II-E refined transmission corridor. The spring would not be crossed by the 250-foot-wide transmission line ROW. Potential impacts to this special status springsnail would be the same as discussed for Alternative II-A. BMPs, design features, and mitigation measure **SSS-8** would avoid direct habitat impacts and minimize water quality effects from sedimentation or spills on springsnail habitat. Indirect effects to southern Bonneville pyrg habitat could occur in an unnamed spring near Thistle Creek due to vehicle traffic. Mitigation measure **SSS-8** would be implemented to avoid direct impacts to this springsnail species and its habitat.

USFS Sensitive Species

The Alternative II-E refined transmission corridor would overlap with waterbodies in the Uinta National Forest Planning Area (Indian and Sheep creeks) and Ashley (Sowers Creek). One additional drainage (Birch Creek) would be in the potential disturbance area beyond the refined transmission corridor in the Uinta National Forest Planning Area. Two of these streams (Sowers Creek and the Birch Creek drainage) contain the USFS sensitive species, boreal toad. Potential direct loss of aquatic habitat would include 9,600 square feet (0.22 acre) due to multiple crossings in Sowers Creek if culverts or low water construction were required. Mitigation measure **SSS-10** would be implemented to reduce potential ROW crossings of Sowers Creek. BMPs and design features would be followed to minimize sediment effects on aquatic habitat in Sowers Creek and the Birch Creek drainage.

Alternative II-F

Fifteen streams with special status aquatic species would be within the Alternative II-F refined transmission corridor (Hop, Kyune, Kyune Creek Right Fork, Lake Fork, Nebo, Soldier, Tabbyune, Thistle, Tie Fork, West Fork Willow, and Willow creeks, White River [tributary to the Price River], and the Green, Price, and White rivers). All of these streams except Nebo Creek also would be crossed by the 250-foot-wide transmission line ROW. Five additional perennial streams with special status aquatic species would be within the potential disturbance area beyond the refined transmission corridor (**Appendix G, Table G-6**). Species-specific effects are discussed below for Alternative II-F.

Colorado Pikeminnow, Humpback Chub, Bonytail, and Razorback Sucker (Federally Endangered and BLM Sensitive)

Direct Disturbance and Indirect Water Quality Effects

Surface disturbance within the Alternative II-F 250-foot-wide transmission line ROW crossing could affect critical habitat within the 100-year floodplain of the Green and White rivers. Potential disturbance could include 4 acres for Colorado pikeminnow (1 acre in the White River and 3 acres in the Green River) and

4 acres for razorback sucker in the Green River. Potential water withdrawals from critical habitat areas could result in entrainment/impingement effects on young fish. Indirect effects on Colorado pikeminnow and razorback sucker and downstream reaches containing these two species plus bonytail and humpback chub would be the same as discussed for Alternative II-A.

In summary, critical habitat for Colorado pikeminnow and razorback sucker could be affected by Project construction within the 100-year floodplain of the Green and White river crossings by the 250-foot-wide transmission line ROW. In total, approximately 4 acres could be affected for each of these species. A combination of BMPs, design features, and additional mitigation measures **SSS-2** and **SSS-4** would be implemented to avoid impacts to critical and occupied habitat for Colorado pikeminnow and razorback sucker and downstream reaches occupied by all four federally listed species.

Water Depletions

Approximately 3 acre-feet of water for foundation concrete and 198 acre-feet for dust control would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An estimated 115 acre-feet of construction water use would occur within the Colorado River Basin. Since specific water sources have not been determined at this time, the USFWS assumes that the one-time use of 115 acre-feet would represent a new depletion in the Upper Colorado River Basin. New depletions would represent an adverse effect on endangered fish species in the Upper Colorado River. A depletion fee would be applied to the water use in the Upper Colorado Basin within the refined transmission corridor for Regions I and II as part of the Recovery Program.

Northern Leopard Frog (BLM Sensitive and Nevada State Protected)

Northern leopard frog habitat associated with Soldier Creek and the White River crossings by the Alternative II-F 250-foot-wide transmission line ROW potentially could be disturbed by construction vehicles and equipment. Potential impacts would consist of habitat disturbance associated with up to five Soldier Creek crossings and mortalities due to construction traffic. Potential habitat loss or alteration would be 1,600 square feet (0.04 acre) if culverts or low water construction were to occur at the Soldier Creek crossings. BMPs and design features would be implemented to minimize effects of construction activities on this amphibian species. Vehicle traffic near Soldier Creek and the White River could cause mortalities if traffic were to coincide with movement periods to and from aquatic habitat.

Bonneville Cutthroat Trout (BLM and Forest Sensitive and Utah Conservation Agreement)

Five streams with habitat for Bonneville cutthroat trout would be crossed by the Alternative II-F refined transmission corridor: Lake Fork, Nebo, Soldier (2 crossings), Thistle, and Tie Fork creeks. Potential loss of habitat could be 2,400 square feet (0.06 acre) if culverts or low water construction were to be required. Two additional streams (Bennie and Clear creeks) that contain Bonneville cutthroat trout would be in the potential disturbance area beyond the refined transmission corridor. Indirect effects of construction on habitat for this species could include sedimentation or fuel spills. The same BMPs and design features discussed for game fish species would be implemented for streams containing Bonneville cutthroat trout. Mitigation measures **SSS-3** and **SSS-5** also would be applied to the streams containing spawning and rearing habitat for this species. By implementing BMPs, Forest management restrictions, design features, and additional mitigation, impacts would be reduced for streams containing Bonneville cutthroat trout. Construction of culverts could remove a small amount of habitat for this species in streams. Mitigation measure **SSS-5** would avoid direct impacts to Bonneville cutthroat trout spawning during construction.

Colorado River Cutthroat Trout (BLM and Forest Sensitive Species and Utah Conservation Agreement)

Nine streams that contain Colorado River cutthroat trout would be crossed by the Alternative II-F refined transmission corridor and the 250-foot-wide transmission line ROW: Kyune, Kyune Creek Right Fork, Tabbyune, West Fork Willow, and Willow creeks, White River and White River Right Fork [tributaries to

the Price River], and the Green and White rivers. Potential loss or alteration of approximately 4,000 square feet (0.11 acre) of habitat could occur, if a culvert or low water construction were to be required at 10 ROW crossings. Several streams such as Willow and West Fork Willow creeks could be crossed multiple times. Other direct and indirect effects of construction on cutthroat habitat would be the same as discussed for Alternative II-A. BMPs, design features, and mitigation measures **SSS-3** and **SSS-5** would minimize effects on Colorado River cutthroat trout. By implementing erosion control, spill prevention, and riparian protection BMPs, Forest management restrictions, and design features, other direct and indirect effects of construction on habitat for this cutthroat subspecies would be of low magnitude.

Southern Leatherside Chub (BLM and Forest Sensitive Species and Utah Conservation Agreement)

Potential impacts from access road use could affect southern leatherside chub habitat in three streams located within the Alternative II-F refined transmission corridor (Hop, Soldier, and Thistle creeks). Direct effects on habitat also could occur at four 250-foot-wide transmission line ROW crossings (one crossing each in Hop and Thistle creeks and two Soldier Creek crossings). Potential habitat loss or alteration would be approximately 1,600 square feet (0.04 acre) if culverts or low water construction were to be required. The same BMPs and design features discussed for other sensitive fish species also would be implemented for streams containing southern leatherside chub. In addition, mitigation measures **SSS-3** and **SSS-7** would avoid direct impacts to spawning or early development stages of chub. By implementing erosion control, spill prevention, and riparian protection BMPs and design features, other direct and indirect effects of construction on habitat for this chub species would be of low magnitude.

Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub (BLM Sensitive and Utah Conservation Agreement)

Two streams, the Green and White rivers, containing these two special status sucker species and roundtail chub would be crossed by the Alternative II-F refined transmission corridor and 250-foot-wide transmission line ROW. There would be total of two ROW crossings for the three species. There would be no direct loss or alteration of habitat since vehicles or equipment would not cross or enter the Green and White rivers. Other indirect effects of construction on sucker habitat would be the same as discussed for Alternative II-A. BMPs and design features would minimize effects on these three species. In summary, by implementing erosion control, spill prevention, and riparian protection BMPs and design features, effects on special status sucker species in the Green and White rivers would be of low magnitude. Alternative II-F would not cause direct loss or alteration of special status sucker habitat since culverts or low water construction would not be used. Entrainment and impingement effects would be avoided by mitigation measure **SSS-3**.

Mountain Sucker (BLM Sensitive)

Potential impacts from access road use could affect mountain sucker habitat in two streams that would be within the Alternative II-F refined transmission corridor (Soldier and Thistle creeks). Direct effects on habitat also could occur at three 250-foot-wide transmission line ROW crossings (two Soldier Creek crossings and one Thistle Creek crossing). Potential habitat loss or alteration would be approximately 1,200 square feet (0.03 acre) if culverts or low water construction were to be required. Other effects on mountain sucker and its habitat would be the same as discussed for Alternative II-A. The same BMPs and design features for sediment control, spill prevention, and riparian protection discussed for other special status fish species would be implemented for construction near streams containing mountain sucker. By implementing erosion control, spill prevention, and riparian protection BMPs and design features, other direct and indirect effects of construction on mountain sucker habitat would be of low magnitude.

Southern Bonneville Pyrg (Utah Protected)

One unnamed spring near Thistle Creek containing the springsnail, southern Bonneville pyrg, would be within the Alternative II-F refined transmission corridor. The spring would not be crossed by the

250-foot-wide transmission line ROW. Potential impacts to this special status springsnail would be the same as discussed for Alternative II-A. BMPs, design features, and mitigation measure **SSS-8** would avoid direct habitat impacts and minimize water quality effects from sedimentation or spills on springsnail habitat.

USFS Sensitive Species

The Alternative II-F refined transmission corridor would cross two streams (Indian and Sheep creeks) in the Uinta National Forest Planning Area (**Appendix G, Table G-13**). No USFS Sensitive species occur in these two streams. No additional streams on Forest lands would be in the potential disturbance area beyond the refined transmission corridor.

Alternative II-G (Agency Preferred)

In total, 15 streams that contain special status aquatic species would be within the refined Alternative II-G transmission corridor. These include Currant, Dry Gulch, Hop, Lake Fork, Montes, Nebo, Red, Soldier, Thistle, and Tie Fork creeks, and the Duchesne, Green, Strawberry, Uinta, and Lake Fork rivers. All of these streams except Nebo Creek would be crossed by the Alternative II-A 250-foot-wide transmission line ROW. Five additional perennial streams with special status aquatic species would be within the potential disturbance area beyond the refined transmission corridor (**Appendix G, Table G-6**). Species-specific impacts for Alternative II-G would be the same as discussed for Alternative II-A with two exceptions. The additional disturbance area beyond the refined corridor for Alternative II-G would avoid crossing Birch Creek or Currant Creek at Segment 1340. Birch Creek contains potential habitat for boreal toad. Currant Creek at Segment 1340 contains habitat for least chub, Columbia spotted frog, northern leopard frog, and California floater. As result of these differences, potential impacts to least chub, Columbia spotted frog, boreal toad, and California floater from Alternative II-G would be less than those discussed for Alternative II-A. The potential water depletion for Alternative II-G would be 110 acre-feet during a 3-year time frame, which would be considered a new depletion in the Upper Colorado River Basin.

Alternative Variation in Region II

Reservation Ridge Alternative Variation

Based on the number of stream crossings by the 250-foot-wide transmission line ROW, the potential effects of constructing the Reservation Ridge Alternative Variation on special status aquatic species would be less than the comparable portion of Alternative II-F. The ROW for this alternative variation would cross two perennial streams (Bear and Tabbyune creeks) compared to six streams (Horse, Kyune, Right Fork Kyune, Tabbyune, West Fork Willow, and Willow creeks) for the comparable portion of the Alternative II-F segment. The total stream crossings would be two for the Reservation Ridge Alternative Variation and ten for the comparable portion of Alternative II-F when considering multiple crossings. The number of ROW stream crossings with special status species (Colorado River cutthroat trout) would be one for the alternative variation and nine for the Alternative II-F segment. One of the Tabbyune Creek crossings would be on the Uinta National Forest Planning Area. There would be a higher potential risk of habitat alteration and sediment input to the streams due to the higher number of ROW crossings. However, erosion control BMPs and design features would be implemented to reduce sediment related impacts for the Reservation Ridge Alternative Variation and Alternative II-F.

Alternative Connectors in Region II

The Castle Dale, Roan Cliffs, Price, Lyndyll, and IPP East alternative connectors would have no impacts on special status aquatic species, since these alternatives would not cross streams that support habitat for special status fish, amphibian, or invertebrate species.

Region II Conclusion

Based on a comparison of impact parameters for Region II alternatives, potential impacts to special status aquatic species would be greatest for Alternatives II-A, II-C, II-E, II-F, and II-G. Potential effects for Alternatives II-B and II-D would be similar and lower compared to the other five alternatives (Table 3.10-12). Alternatives II-A, II-C, II-E, II-F, and II-G 250-foot-wide transmission line ROWs would cross the highest number of streams with special status aquatic species (11 to 14) and potential alteration or loss of habitat (upper end of range for some species would be 1,200 to 9,600 square feet or 0.03 to 0.22 acre). In comparison, the other two alternatives would cross 7 or 8 streams with special status aquatic species and result in loss or alteration of habitat of 400 to 800 square feet or 0.01 to 0.02 acre (upper end of range for some species). Less than 0.1 percent of special status species habitat would be affected by each of the seven alternatives. Potential effects on critical habitat for federally listed fish species (Colorado pikeminnow and razorback sucker) would range from 2 to 8 acres, with the highest potential disturbance for Alternatives II-B, II-C, II-D, and II-F. Potential disturbance to riparian areas near perennial waterbodies containing special status aquatic species for II-F would be approximately two to three times higher than the values estimated for the other six alternatives (Table 3.10-13). Alternatives II-A, II-E, and II-G also would result in increased new road density in 12 or 13 watersheds, compared to 8 to 11 watersheds for the other alternatives (Table 3.10-14). Even though the greatest level of impacts would be associated with Alternatives II-A, II-C, II-E, II-F, and II-G, Project effects on special status species and their habitat would be avoided or considered to be low magnitude and short-term in duration after applying BMPs, Forest management restrictions, design features, and additional mitigation (Section 3.10.6.4 and Appendix C). The only potential long-term impacts would be in streams where a culvert would displace stream bottom habitat. In comparison with available stream habitat, the relatively small long-term impacts of all alternatives are unlikely to impact the population viability of special status aquatic species inhabiting these streams.

3.10.6.5 Region III

Table 3.10-15 provides a summary of impact parameters used to describe impacts for alternative routes in Region III. Based on species occurrence information and habitat associations, special status aquatic species that were analyzed by the proposed Project in Region III included nine fish, two amphibians, and one invertebrate species (Table 3.10-6). Species occurrence in Region III streams is provided in Appendix G, Tables G-8 for streams and G-9 for waterbodies. Project Segment identification numbers referenced in this section are listed in Tables G-8 and G-9 and depicted in Figure 2-23. Parameter information in Table 3.10-15 is discussed separately for each of the Region III alternatives.

Table 3.10-15 Summary of Region III Alternative Route Impacts for Special Status Aquatic Species

Parameter	Alternative			
	III-A	III-B	III-C	III-D
Number of streams with special status aquatic species that would be crossed by 250-foot-wide transmission line ROWs	3	2	0	2
Number of additional streams with special status aquatic species that would be in the potential disturbance area beyond the refined transmission corridor	0	0	0	0
Number of streams with federally listed aquatic species ¹ that would be crossed by 250-foot-wide transmission line ROWs	1	1	0	1
Acres of critical habitat for federally listed aquatic species that would be crossed by 250-foot-wide transmission line ROWs	0	0	0	0

Table 3.10-15 Summary of Region III Alternative Route Impacts for Special Status Aquatic Species

Parameter	Alternative			
	III-A	III-B	III-C	III-D
Potential Aquatic Habitat Alteration or Loss ² (square feet) (acres shown in parentheses)				
Virgin River chub	400 (0.01)	400 (0.01)	0	400 (0.01)
Virgin River spinedace	800 (0.02)	0	0	0
Bluehead sucker	400 (0.01)	0	0	0
Roundtail chub	400 (0.01)	0	0	0
Meadow Valley Wash desert sucker	400 (0.01)	800 (0.02)	400 (0.01)	800 (0.02)
Meadow Valley Wash speckled dace	400 (0.01)	800 (0.02)	400 (0.01)	800 (0.02)
Moapa speckled dace	400 (0.01)	400 (0.01)	0	400 (0.01)
Moapa White River springfish	400 (0.01)	400 (0.01)	0	400 (0.01)
Arizona toad	800 (0.02)	400 (0.01)	400 (0.01)	400 (0.01)

¹ Federal listing is under review for Virgin River chub.

² Habitat loss represents area that could be permanently or temporarily removed due to the use of a culvert or low water crossing or temporarily disturbed from the instream use of equipment.

Parameter information regarding riparian disturbance and road density is provided in **Tables 3.10-16** and **3.10-17**. The analyses focus on streams that contain special status aquatic species. A summary of these parameters is provided below.

Table 3.10-16 Ground Disturbance (acres) for Buffer Distances from Riparian Habitat Associated with Special Status Species, Region III Corridor

Streams	Alternative							
	III-A		III-B		III-C		III-D	
	100 feet	300 feet	100 feet	300 feet	100 feet	300 feet	100 feet	300 feet
Construction	6	17	8	21	2	5	8	21
Operation	2	6	2	5	<1	1	2	5

- Riparian Disturbance – A comparison of the construction and operation effects to riparian vegetation near streams containing special status aquatic species indicates that Alternatives III-A, III-B, and III-D would have the highest acres of potential disturbance. However, these impacts would be reduced by design features and BLM and USFS stipulation requirements that range from avoiding a buffer area of 200 to 1,200 feet adjacent to perennial streams to total avoidance of riparian areas. In conclusion, the disturbance to riparian vegetation would be avoided on BLM and USFS lands. There could be disturbance on private lands.
- Road Density – The number of watersheds that would be crossed by the Region III alternative 250-foot-wide transmission line ROWs range from one (III-C) to three (III-B). Road density increases would occur in one watershed for Alternative III-A, two watersheds for Alternative III-B, no watersheds for Alternative III-C, and one watershed for Alternative III-D. The road density units would be highest for Alternatives III-B and III-D. The increase in new road density would range from 0.05 to 0.23 mile/mile², with the highest density increase in the Lower Muddy River watershed (Alternative III-A). BMPs and design features would be implemented to reduce sediment input to streams including those that support special status aquatic species.

Table 3.10-17 Open Road Density (miles/mile²) within 100 and 300 feet of Stream Crossings Associated with Special Status Species in Region III Corridor

Watershed	Alternative III-A				Streams with Special Status Species (# of Segments)	Watershed	Alternative III-B				Streams with Special Status Species (# of Segments)
	Current Density		Density Increase				Current Density		Density Increase		
	100 feet	300 feet	100 feet	300 feet			100 feet	300 feet	100 feet	300 feet	
Lower Muddy River	1.67	2.75	0.11	0.23	Muddy River	Clover Creek	7.61	5.50	0	0	Clover Creek (1)
Moody Wash	2.04	2.93	0	0	Magotsu Creek (1), Moody Wash (1), Spring Creek (1)	Lower Meadow Valley Wash	0.37	0.97	0.08	0.09	Meadow Valley Wash (1)
						Upper Muddy River	2.82	2.88	0.05	0.05	Muddy River (1)
Watershed	Alternative III-C				Streams with Special Status Species (# of Segments)	Watershed	Alternative III-D				Streams with Special Status Species (# of Segments)
	Current Density		Density Increase				Current Density		Density Increase		
	100 feet	300 feet	100 feet	300 feet			100 feet	300 feet	100 feet	300 feet	
Cathedral Gorge- Meadow Valley Wash	4.77	4.15	0	0	Meadow Valley Wash (1)	Clover Creek	7.61	5.50	0	0	Clover Creek (1)
						Lower Meadow Valley Wash	0.37	0.97	0.08	0.09	Meadow Valley Wash (1)
											Upper Muddy River

Note: Zero indicates no new roads within the buffer area.

Alternative III-A (Applicant Proposed)

In total, four streams that contain special status aquatic species (Magotsu Creek, Spring Creek, Moody Wash, and the Muddy River) would be within the refined transmission corridor. All streams except Moody Wash would be crossed by the 250-foot-wide transmission line ROW. Species-specific impacts are discussed below for Alternative III-A.

Virgin River Chub (Federally Endangered and BLM Sensitive)

The 250-foot-wide transmission line ROW and transmission line for Alternatives III-A would cross one stream, the Muddy River, which contains Virgin River chub. The types of impacts that could result from vehicle traffic and equipment disturbance within the ROW and access roads would be the same as discussed for other special status fish species. Direct disturbance to habitat would occur if vehicles would cross the river, culverts would be constructed, or riparian vegetation would be removed during construction. Habitat loss could be 400 square feet (0.01 acre) if culverts or low water construction were to be required. Indirect effects involving sedimentation or fuel spill risks would result from disturbance near the Muddy River. BMPs and design features would minimize erosion effects on waterbodies and restrict refueling within 100 feet of the Muddy River. The following mitigation measure is proposed to avoid vehicle crossing and road disturbance effects on this species:

SSS-11 (*No Vehicle Crossings or New Roads in the Muddy River*): No vehicle crossings or new roads would be constructed across the Muddy River. This measure would protect habitat for special status fish species (Virgin River chub, Moapa speckled dace, Moapa White River springfish, Meadow Valley Wash desert sucker, and Meadow Valley Wash speckled dace) in the Muddy River.

Effectiveness: This measure would be highly effective in avoiding direct disturbance to habitat for special status fish species in the Muddy River.

By implementing erosion control and spill prevention BMPs and design features, water quality effects on Virgin River chub habitat in the Muddy River during construction would be of a low magnitude. Direct impacts on Virgin River chub habitat would be avoided by implementing mitigation measure **SSS-11**.

Virgin River Spinedace (BLM Sensitive, Nevada Protected, and Utah Conservation Agreement)

Three streams containing Virgin River spinedace (Magotsu Creek, Moody Wash, and Spring Creek) in Utah would be crossed by the refined transmission corridor. Magotsu and Spring creeks also would be crossed by the 250-foot-wide transmission line ROW. Direct disturbance to habitat could occur if vehicles would cross these streams or culverts would be constructed. Direct loss of habitat could be 800 square feet (0.02 acre) if culverts or low water construction were to be required for the two ROW crossings. Indirect effects on this species would be the same as discussed for other fish species. The same BMPs and design features would be implemented to reduce impacts from erosion and fuel spills. By implementing erosion control and spill prevention BMPs and design features, water quality effects on Virgin River spinedace habitat during construction would be of a low magnitude. If roads were to be constructed across Magotsu and Spring creeks or Moody Wash, construction would directly disturb habitat for this species. Disturbed habitat from any instream construction would be restored to pre-construction conditions resulting in construction impacts of a relatively low net magnitude. Culvert installation would be a permanent loss of habitat. Entrainment and impingement effects would be avoided by mitigation measure **SSS-3**.

Bluehead Sucker and Roundtail Chub (BLM Sensitive and Utah Conservation Agreement)

Potential impacts to these two fish species could occur as a result of the Alternative III-A 250-foot-wide transmission line ROW crossings and potential access road use within the transmission line corridor at the Magotsu Creek crossing. Direct and indirect effects would be the same as discussed for other fish species such as the Virgin River spinedace. Direct loss of habitat could be 400 square feet (0.01 acre) for each species if a culvert or low water construction were to be required. The same BMPs and design

features would be implemented to minimize direct impacts on habitat and indirect effects from erosion and fuel spill effects. By implementing erosion control and spill prevention BMPs and design features, water quality effects on bluehead sucker and roundtail chub habitat during construction would be of a low magnitude. If roads were to be constructed across Magotsu Creek, construction impacts would occur to habitat for this species. Disturbed habitat from instream construction would be restored to pre-construction conditions resulting in construction impacts of a relatively low magnitude. A culvert installation would result in permanent loss of habitat. Entrainment and impingement effects would be avoided by mitigation measure **SSS-3**.

Meadow Valley Wash Desert Sucker BLM Sensitive and Nevada Protected and Meadow Valley Wash Speckled Dace (BLM Sensitive)

Construction activities could adversely affect habitat for these two species at the Muddy River crossing. Direct loss of habitat could be 400 square feet (0.01 acre) for each species if a culvert or low water construction were to be required. The same BMPs and design features and additional mitigation measure **SSS-11** would be implemented to minimize direct and indirect impacts on these species. By implementing erosion control and spill prevention BMPs and design features during construction, water quality effects on Meadow Valley Wash desert sucker and speckled dace habitat in the Muddy River would be of a low magnitude. Direct impacts on habitat would be avoided by implementing mitigation measure **SSS-11**.

Moapa Speckled Dace and Moapa White River Springfish (Nevada Protected)

Construction activities could adversely affect habitat for these two species at the Muddy River crossing. Habitat loss could be 400 square feet (0.01 acre) for each species if a culvert were to be used. The same BMPs and design features and additional mitigation measure **SSS-11** would be implemented to minimize direct and indirect impacts on these species. By implementing mitigation measure **SSS-11**, there would be no direct loss of habitat.

Arizona Toad (BLM Sensitive and Utah Conservation Agreement)

This species, also commonly referred to as the southwestern toad, has been collected in standing water with marsh or riparian vegetation within Meadow Valley Wash (BIO-WEST 2005). It also is known to occur in gravelly areas of streams and arroyos in the drier portion of its range; often on the sandy banks of quiet water in other areas. This species also occurs in Abe and Hiway springs, Magotsu Creek, and Moody Wash, which are located within the refined transmission corridor for Alternative III-A. Vehicle traffic on access roads near marsh or riparian vegetation could result in mortalities to toads particularly during movement to breeding habitat consisting of wet areas. Risk of effects also could occur within approximately 18,263 acres of terrestrial habitat by applying a 2-mile dispersal distance around Magotsu Creek, Moody Wash, and Abe and Hiway springs. Vehicle traffic also could result in sediment input and fuel spill risks to habitat for Arizona toad. The same BMPs and design features would be implemented to minimize direct impacts on habitat and indirect effects from erosion and fuel spill effects. The following mitigation measure is proposed to protect breeding habitat in springs used by Arizona toad.

SSS-12 (Avoid Direct Disturbance to Abe and Hiway springs used by Arizona Toad): No vehicle or equipment disturbance from ROW work or access road construction would be allowed in Abe and Hiway springs to protect Arizona toad breeding habitat.

Effectiveness: This measure would be highly effective in avoiding direct disturbance to Arizona toad habitat.

BMPs and design features would be implemented to minimize effects of construction activities and on Arizona toad habitat. Impacts from these activities during construction would be considered of a low magnitude. Vehicle traffic could cause toad mortalities if traffic movement were to coincide with toad movements during breeding periods. Mitigation measure **SSS-12** would protect breeding habitat in Abe and Hiway springs.

Moapa Warm Springs Riffle Beetle (BLM Sensitive)

The Moapa Warm Springs riffle beetle is restricted to the Warm Springs area within the Muddy River. Direct and indirect impacts could occur if construction activities were to occur within or near the Warm Springs area that would be crossed by the 250-foot-wide transmission line ROW and refined transmission corridor for Alternative III-A. The same BMPs and design features would be implemented to minimize direct impacts on habitat and indirect effects from erosion and fuel spill effects. By implementing erosion control and spill prevention BMPs and design features, water quality effects on Moapa Warm Springs riffle beetle habitat in the Muddy River during construction would be of a low magnitude. Direct impacts on habitat would be avoided by implementing mitigation measure **SSS-11**.

USFS Sensitive Species

No USFS sensitive species occur in the two perennial streams and six springs that would be within the Alternative III-A transmission line corridor in the Dixie National Forest (**Appendix G, Table G-13**).

Alternative III-B

In total, three streams (Clover Creek, Meadow Valley Wash, and the Muddy River) that contain special status aquatic species would be within the Alternative III-B refined transmission corridor. Meadow Valley Wash and the Muddy River would be crossed by the 250-foot-wide transmission line ROW. Species-specific impacts are discussed below for Alternative III-B.

Virgin River Chub (Federally Endangered and BLM Sensitive)

The potential impacts of constructing and maintaining Alternative III-B on Virgin River chub would be the same as those discussed for Alternative III-A. By implementing erosion control and spill prevention BMPs and design features, water quality effects on Virgin River chub habitat in the Muddy River during construction would be of a low magnitude. Direct impacts on Virgin River chub habitat would be avoided by implementing mitigation measure **SSS-11**.

Meadow Valley Wash Desert Sucker (BLM Sensitive and Nevada Protected)and Meadow Valley Wash Speckled Dace (BLM Sensitive)

The 250-foot-wide transmission line ROW and refined transmission corridor would cross habitat for these two species in Meadow Valley Wash and the Muddy River. Direct loss of habitat could be 800 square feet (0.02 acre) for both species if a culvert or low water construction were to be required. Mitigation measure **SSS-11** would avoid direct effects to habitat in the Muddy River. Vehicle crossings or new road construction could adversely affect habitat in Meadow Valley Wash. By implementing erosion control and spill prevention BMPs and design features during construction, water quality effects on Meadow Valley Wash desert sucker and speckled dace habitat would be of a low magnitude. If roads were constructed across Meadow Valley Wash, construction impacts would occur to habitat for this species. Disturbed habitat would be restored to pre-construction conditions resulting in construction impacts of a relatively low net magnitude. Direct effects to habitat in the Muddy River would be avoided by mitigation measure **SSS-11**.

Moapa Speckled Dace and Moapa White River Springfish (Nevada Protected)

Construction activities could adversely affect habitat for these two species at the Muddy River crossing. Habitat loss could be 400 square feet (0.01 acre) for each species, if a culvert were to be used. The same BMPs and design features and additional mitigation measure **SSS-11** would be implemented to minimize direct and indirect impacts on these species. By implementing mitigation measure **SSS-11**, there would be no direct loss of habitat.

Arizona Toad (BLM Sensitive and Utah Conservation Agreement)

Meadow Valley Wash would be crossed by the transmission line corridor for Alternative III-B. Vehicle traffic on access roads near marsh or riparian vegetation could result in mortalities to toads particularly

during movement to breeding habitat consisting of wet areas. Direct loss of habitat could be 400 square feet (0.01 acre) if a culvert or low water construction were to be required. Risk of effects also could occur within approximately 6,477 acres of terrestrial habitat by applying a 2-mile dispersal distance around Meadow Valley Wash. Vehicle traffic also could result in sediment input and fuel spill risks to habitat for Arizona toad. The same BMPs and design features would be implemented to minimize direct impacts on habitat and indirect effects from erosion and fuel spill effects. Impacts from construction activities would be considered of a low magnitude. Vehicle traffic could cause toad mortalities if traffic movement were to coincide with toad movements during breeding periods. Mortalities would be expected to be relatively low considering the traffic volume.

Moapa Warm Springs Riffle Beetle (BLM Sensitive)

The potential impacts of constructing and maintaining Alternative III-B on Moapa Warm Springs riffle beetle are the same as discussed for Alternative III-A. By implementing erosion control and spill prevention BMPs and design features, water quality effects on Moapa Warm Springs riffle beetle habitat in the Muddy River during construction would be of a low magnitude. Direct impacts on habitat would be avoided by implementing mitigation measure **SSS-11**.

USFS Sensitive Species

No NFS lands would be crossed by the Alternative III-B refined transmission corridor or 250-foot-wide transmission line ROW.

Alternative III-C

One stream (Meadow Valley Wash) that contains special status aquatic species would be within the Alternative III-C refined transmission corridor. This stream would not be crossed by the 250-foot-wide transmission line ROW. Species-specific impacts are discussed below for Alternative III-C.

Meadow Valley Wash Desert Sucker (BLM Sensitive and Nevada Protected) and Meadow Valley Wash Speckled Dace (BLM Sensitive)

Vehicle crossings or new road construction could detrimentally affect habitat in Meadow Valley Wash. Habitat loss could be 400 square feet (0.01 acre) if a culvert or low water construction were to be required. By implementing erosion control and spill prevention BMPs and design features during construction, water quality effects on Meadow Valley Wash desert sucker and speckled dace habitat would be of a low magnitude. If roads would be constructed across Meadow Valley Wash, construction impacts would occur to habitat for this species. Disturbed habitat would be restored to pre-construction conditions resulting in construction impacts of a relatively low net magnitude. Culvert installation would result in a permanent loss of habitat.

Arizona Toad (BLM Sensitive and Utah Conservation Agreement)

Arizona toad habitat would be crossed by the Alternative III-C refined transmission corridor in Meadow Valley Wash. Potential impacts of construction and operation would be the same as discussed for Alternative III-B. The same BMPs and design features would be implemented to minimize direct impacts on habitat and indirect effects from erosion and fuel spill effects. Impacts from these activities would last through construction and be considered of low magnitude. Vehicle traffic could cause toad mortalities if traffic movement were to coincide with toad movements during breeding periods. Mortalities would be expected to be relatively low considering the traffic volume.

Northern Leopard Frog (BLM Sensitive and Nevada Protected)

The Alternative III-C refined transmission corridor would cross through the Pahrnagat National Wildlife Refuge, which contains habitat for the northern leopard frog. Although there is no northern leopard frog habitat within the refined transmission corridor, the species occurs in Maynard Spring located approximately 600 feet west of the corridor. Since the spring is located outside of the transmission line

corridor, Project construction and road access would not affect habitat or movements to and from breeding areas for northern leopard frog in the Pahrnagat NWR. Furthermore, northern leopard frog would not be expected to disperse from the Refuge springs into the transmission line corridor due to the lack of waterbodies. In conclusion, Alternative III-C would not affect northern leopard frog.

USFS Sensitive Species

No NFS lands would be crossed by the Alternative III-C refined transmission corridor or 250-foot-wide transmission line ROW.

Alternative III-D (Agency Preferred)

In total, three streams (Clover Creek, Meadow Valley Wash, and the Muddy River) that contain special status aquatic species would be within the Alternative III-D refined transmission corridor. Meadow Valley Wash and the Muddy River would be crossed by the 250-foot-wide transmission line ROW. Potential impacts to special status aquatic species would be the same as discussed for Alternative III-B. Based on the impact parameters, Alternative III-D would affect two streams with special status aquatic species compared to three streams for Alternative III-A. Species that potentially could be affected include five fish (Virgin River chub, Meadow Valley Wash desert sucker, Meadow Valley Wash speckled dace, Moapa speckled dace, and Moapa White River springfish), one amphibian (Arizona toad), and one invertebrate (Moapa Warm Springs riffle beetle).

USFS Sensitive Species

No NFS lands would be crossed by the Alternative III-D refined transmission corridor or 250-foot-wide transmission line ROW.

Alternative Variations in Region III

The 250-foot-wide transmission line ROW and refined transmission corridor for the Ox Valley East and West alternative variations would cross one stream (Spring Creek) that contains one special status species (Virgin River spinedace). The comparable portion of III-A would cross two streams, Spring and Magotsu creeks. Special status species in Magotsu Creek includes Arizona toad, Virgin River spinedace, bluehead sucker, flannelmouth sucker, and roundtail chub. Two springs, Abe and Hiway, also are located adjacent to the III-A 250-foot-wide transmission line ROW. These springs contain habitat for Arizona toad.

The Pinto Alternative Variation would cross two streams (Magotsu Creek and the Santa Clara River) that contain special status species Arizona toad, bluehead sucker, flannelmouth sucker, roundtail chub, and Virgin spinedace. The comparable portion of Alternative III-A would cross one stream (Spring Creek) with special status species, Virgin River spinedace.

Alternative Connectors in Region III

No perennial streams would be crossed by the Avon and Moapa Alternative Connectors in Region III. However, one stream (Meadow Valley Wash) with habitat for Arizona toad, Meadow Valley Wash desert sucker, and Meadow Valley Wash speckled dace is located in the potential disturbance area beyond the refined transmission corridor. Habitat for these species potentially could be affected by access roads or temporary work areas. BMPs and design would minimize effects to these species.

Alternative Ground Electrode Systems in Region III

The southern electrode system would be required within 100 miles of the southern terminal, which is based on the conceptual locations and connections to the alternative routes. There would be no impacts on special status aquatic species since the conceptual locations do not support habitat for fish, amphibian, or invertebrate species.

No Forest sensitive species occur in the streams or springs that would be crossed by alternative variations on NFS lands in Region III (**Appendix G, Table G-13**).

Region III Conclusion

Based on a comparison of impact parameters for Region III alternatives, potential impacts to special status aquatic species would be generally similar for Alternatives III-A, III-B, and III-D. Potential effects for Alternatives III-C would be relatively low compared to the other three alternatives (**Table 3.10-15**). Alternatives III-A, III-B, and III-D refined transmission corridors would cross the highest number of streams with special status aquatic species (4, 3, and 3, respectively). In addition, these three alternatives also could result in the greatest potential alteration or loss of habitat (upper end of range being 800 square feet or 0.02 acre for several species). In comparison, the Alternative III-C refined transmission corridor would cross one stream with special status aquatic species and disturb less habitat (upper end of range being 400 square feet or 0.01 acre for several species). Less than 0.1 percent of special status species habitat would be affected by each of the four alternatives. Alternatives III-A, III-B, and III-D could result in the highest potential construction disturbance to riparian areas (6, 8, and 8 acres at a 100-foot buffer and 17, 21, and 21 acres at a 300-foot buffer, respectively) compared to Alternative III-C (2 acres at a 100-foot buffer and 5 acres at a 300-foot buffer) (**Table 3.10-16**). Alternative III-B also would result in increased new road density in three watersheds compared to one or two watersheds for the other three alternatives (**Table 3.10-17**). The highest increase in road densities also could occur as a result of Alternative III-B. Even though the greatest level of impacts would be associated with Alternatives III-A, III-B, or III-D, Project effects on special status species and their habitat would be avoided or considered to be low magnitude and short-term in duration after applying BMPs, design features, and additional mitigation (Section 3.10.6.5 and **Appendix C**). The only potential long-term impacts would be in streams where a culvert would displace stream bottom habitat. In comparison with available stream habitat, the relatively small long-term impacts of all alternatives would be unlikely to impact the population viability of special status aquatic species inhabiting these streams.

3.10.6.6 Region IV

Table 3.10-18 provides a summary of impact parameters used to describe impacts for alternative routes in Region IV. Based on species occurrence information and habitat associations, special status aquatic species that may be impacted by the proposed Project in Region IV includes one fish species and one amphibian (**Table 3.10-7**). Species occurrence in Region IV streams is provided in **Appendix G, Tables G-10** for streams and **G-11** for waterbodies. Project Segment identification numbers referenced in this section are listed in **Tables G-10** and **G-11** and depicted in **Figure 2-24**. Parameter information in **Table 3.10-18** is discussed separately for each of the Region IV alternatives.

Table 3.10-18 Summary of Region IV Alternative Route Impacts for Special Status Aquatic Species

Parameter	Alternative IV-A	Alternative IV-B	Alternative IV-C
Number of streams with special status aquatic species that would be crossed by 250-foot-wide transmission line ROWs	1	0	0
Number of additional streams with special status aquatic species that would be in the potential disturbance area beyond the refined transmission corridor	0	1	1
Number of streams with federally listed aquatic species that would be crossed by 250-foot-wide transmission line ROWs	1	1	1
Acres of critical habitat for federally listed aquatic species that would be crossed by 250-foot-wide transmission line ROWs	0	5	5

Parameter information regarding riparian disturbance and road density is provided in **Tables 3.10-19** and **3.10-20**. The analyses focus on streams that contain special status aquatic species. A summary of these parameters is provided below.

Table 3.10-19 Ground Disturbance (acres) for Buffer Distances from Riparian Habitat Associated with Special Status Species, Region IV Corridor

Streams	Alternatives					
	IV-A		IV-B		IV-C	
	100 feet	300 feet	100 feet	300 feet	100 feet	300 feet
Construction	1	2	2	5	1	3
Operation	<1	<1	<1	1	<1	1

- Riparian Disturbance – A comparison of the construction and operation effects to riparian vegetation near streams containing special status aquatic species indicates that Alternative IV-B would have the highest acres of potential disturbance. However, these impacts would be reduced by design features and BLM stipulations that require a 0.25-mile buffer from natural waters (Las Vegas FO). In conclusion, the disturbance to riparian vegetation would be avoided on BLM lands. There could be disturbance on private lands.
- Road Density – Two watersheds would be crossed by the Region IV alternative 250-foot-wide transmission line ROWs. Road density would increase for Alternative IV-A in one watershed. The road density units are highest for Alternative IV-A. The predicted increase in new road density would be 0.05 mile/mile² in the Duck Creek-Las Vegas Wash watershed. BMPs and design features would be implemented to reduce sediment input to streams including those that support special status aquatic species.

Alternative IV-A (Applicant Proposed and Agency Preferred)

The 250-foot-wide transmission line ROW and refined transmission corridor would not cross any habitat for special status aquatic species. The relict leopard frog is included in the analysis due to the proximity of habitat the refined transmission corridor. Species-specific impacts are discussed below for Alternative IV-A.

Razorback Sucker (Federally Endangered and BLM Sensitive)

Construction and maintenance activities would not affect razorback sucker because habitat would be at least 2 miles downstream of the Las Vegas Wash crossing.

Relict Leopard Frog (Federal Candidate and Nevada Protected)

The closest relict leopard frog habitat to the refined transmission corridor would be springs in the Black Canyon, which would be approximately 2 to 2.9 miles east of the corridor boundary. No direct disturbance to relict leopard frog habitat would occur as a result of construction activities within the refined transmission corridor. In addition, access roads would not be used within the narrow canyon area of Black Canyon. Therefore, no construction or operation/maintenance effects from Alternative IV-A would occur for the relict leopard frog.

Alternative IV-B

The refined transmission corridor would cross an arm of Lake Mead, which represents occupied and critical habitat for razorback sucker. Species-specific impacts are discussed below for Alternative IV-B.

Table 3.10-20 Open Road Density (miles/mile²) within 100 and 300 feet of Stream Crossings Associated with Special Status Species in Region IV Corridor

Watershed	IV-A					Watershed	IV-B				
	Current Density		Density Increase		Streams with Special Status Species (# of Segments)		Current Density		Density Increase		Streams with Special Status Species (# of Segments)
	100 feet	300 feet	100 feet	300 feet			100 feet	300 feet	100 feet	300 feet	
Duck Creek-Las Vegas Wash	2.78	3.98	0.05	0.05	Las Vegas Wash (1)	Government Wash-Colorado River	0.04	0.12	0	0	Las Vegas Wash (1)
Watershed	IV-C					Watershed	IV-D				
	Current Density		Density Increase		Streams with Special Status Species (# of Segments)		Current Density		Density Increase		Streams with Special Status Species (# of Segments)
	100 feet	300 feet	100 feet	300 feet			100 feet	300 feet	100 feet	300 feet	
Government Wash-Colorado River	0.04	0.12	0	0	Las Vegas Wash (1)						

Note: Zero indicates no new roads within the buffer area.

Razorback Sucker (Federally Endangered and BLM Sensitive)

The 250-foot-wide transmission line ROW and refined transmission corridor for Alternative IV-B would cross an arm of Lake Mead, which is designated critical habitat for razorback sucker. This arm and wash that would be crossed by the ROW is vegetated and wet throughout the year and it can be accessed by razorback sucker. However, no spawning habitat is present. Construction activities could result in direct disturbance to 5 acres of razorback sucker critical habitat in Lake Mead. Mitigation measure **SSS-4** would be implemented to avoid disturbance to critical habitat by restricting structures or new roads from being located within the critical habitat area. In addition, potential entrainment/impingement effects to razorback sucker would be avoided by mitigation measure **SSS-2**. Potential impacts of sedimentation and fuel spills on razorback sucker habitat near the Lake Mead arm crossing would be minimized by BMPs and design features involving erosion control and spill prevention.

Relict Leopard Frog (Federal Candidate and Nevada Protected)

No direct disturbance to relict leopard frog habitat would occur as a result of construction activities within the refined transmission corridor since the closest habitat would be 2.5 to 8 miles east of the corridor boundary. Therefore, no construction or operation/maintenance effects from Alternative IV-B would occur for the relict leopard frog.

Alternative IV-C

The refined transmission corridor would cross an arm of Lake Mead, which represents occupied and critical habitat for razorback sucker. Species-specific impacts are discussed below for Alternative IV-C.

Razorback Sucker (Federally Endangered and BLM Sensitive)

The effects of construction and maintenance activities on razorback sucker from Alternative IV-C would be the same as discussed for Alternative IV-B. The 250-foot-wide transmission line would cross approximately 5 acres of critical habitat for razorback sucker. The same BMPs, design features, and mitigation measures discussed for Alternative IV-B would be applied for this alternative to avoid effects on razorback sucker.

Relict Leopard Frog (Federal Candidate and Nevada Protected)

No direct disturbance to relict leopard frog habitat would occur as a result of construction activities within the refined transmission corridor since the closest habitat would be 2.5 to 8 miles east of the corridor boundary. Therefore, no construction or operation/maintenance effects from Alternative IV-C would occur for the relict leopard frog.

Alternative Variations in Region IV

No waterbodies that contain special status aquatic species would be crossed by the Marketplace Alternative Variation in Region IV.

Alternative Connectors in Region IV

One alternative connector (River Mountain) could be utilized through various combinations to avoid crossing Las Vegas Wash. There would be no advantage or disadvantage from the perspective of special status aquatic species since Alternatives IV-A, IV-B, or IV-C would not affect razorback sucker. There are no apparent unique opportunities or constraints for special status aquatic species by utilizing the River Mountain Alternative connector.

Region IV Conclusion

Based on a comparison of impact parameters for Region IV alternatives, potential impacts to special status aquatic species would be lower for Alternative IV-A compared to Alternatives IV-B and IV-C. Alternatives IV-B and IV-C would cross 5 acres of critical habitat, while none would be crossed by Alternative IV-A (Applicant Proposed and Agency Preferred). Less than 0.1 percent of special status

species habitat would be affected by each of the three alternatives. Construction and operation disturbance on riparian habitat would be similar for the three alternatives, with values ranging from <1 to 5 acres (**Table 3.10-19**). There would be minor effects of road use on stream buffers for Alternative IV-A, and no road effects on Alternatives IV-B and IV-C (**Table 3.10-20**). Project effects on special status species and their habitat would be avoided or considered to be low magnitude and short-term in duration after applying BMPs, design features, and additional mitigation (Section 3.10.6.6 and **Appendix C**). The only potential long-term impacts would be in streams where a culvert would displace stream bottom habitat. In comparison with available stream habitat, the relatively small long-term impacts of all alternatives would be unlikely to impact the population viability of special status aquatic species inhabiting these streams.

3.10.6.7 Residual Impacts

- Potential loss or alteration of aquatic habitat for special status fish species in smaller streams that would require culverts or vehicle crossings.
- Potential short-term sedimentation effects on aquatic habitat for special status species as a result of direct disturbance within or adjacent to streams from vehicle traffic.
- Potential loss or disturbance to riparian vegetation along streams containing special status fish species on private lands or public lands where the ROW would be parallel and adjacent to streams.
- Potential special status amphibian mortalities from vehicle traffic during amphibian movements to and from waterbodies that would be located within the ROWs.

3.10.6.8 Irreversible and Irrecoverable Commitment of Resources

- Potential loss of aquatic habitat for special status fish species in streams that would require culverts for vehicle crossings would be irretrievable. However, the habitat loss would be reversible if the culvert were to be removed at a later time.
- Potential amphibian mortalities from vehicle traffic would be an irretrievable and irreversible loss of a portion of amphibian populations.

3.10.6.9 Relationship between Local Short-term Uses and Long-term Productivity

The proposed action and alternatives would result in short-term disturbance to aquatic habitat and use of these habitats by aquatic species, but these effects would not affect the long-term productivity of special status fish, amphibian, or invertebrate populations.

3.10.6.10 Impacts to Special Status Aquatic Species from the No Action Alternative

Under the No Action Alternative, the proposed Project would not be constructed or operated. No Project-related disturbance would occur in waterbodies as a result of vehicle traffic or removal of riparian vegetation. No Project-related sedimentation or risks to aquatic species from potential fuel spills or introduction of invasive species would occur in the Project area. Impacts to aquatic habitat and species would continue at present levels as a result of natural conditions (e.g., annual fluctuations in stream flow due to varying precipitation, erosion, and wildland fires) and existing development in drainages within the Project area.