Headwaters Elk River Corridor Recreation Improvements

Environmental Assessment (EA)/Initial Study (IS)
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1. Introduction

Background and Setting

The Headwaters Forest Reserve (Headwaters) was established in 1999 to protect the world's last unprotected, intact old-growth redwood forest ecosystem. Co-managed by the Bureau of Land Management (BLM) and the California Department of Fish and Wildlife (CDFW), Headwaters encompasses approximately 7,500 acres in northern California's Humboldt County near the cities of Eureka and Fortuna (Figures 1 and 2). Headwaters is a component of the BLM's National Landscape Conservation System and is designated by the State of California as a state ecological reserve.

The federal legislation that established Headwaters called for a management plan for the area and established the following management goal: "conserve and study the land, fish, wildlife, and forests occurring on such land, while providing public recreation opportunities and other management needs." The Headwaters Forest Reserve Resource Management Plan/EIS/EIR was completed with substantial public input and involvement in 2004.

There are two public trails in Headwaters: the Elk River Trail and the Salmon Pass Trail. The Salmon Pass Trail, near the City of Fortuna, is accessible by guided tour only. The Elk River Trail, near the City of Eureka, is accessible year-round for the visiting public. This trail, which receives nearly 40,000 visits per year, is a popular destination for dog-walking, hiking, nature viewing, bicycling, trail running and environmental education/interpretation. The trail winds along the South Fork Elk River for three miles, followed by a two-mile ascent to a short 0.5-mile loop through an old-growth redwood forest. The Headwaters Education Center, a restored train engine house that is now used for environmental education and interpretation, is located a half-mile from the Elk River Trailhead.

Figure 1: Vicinity map of the Headwaters Forest Reserve

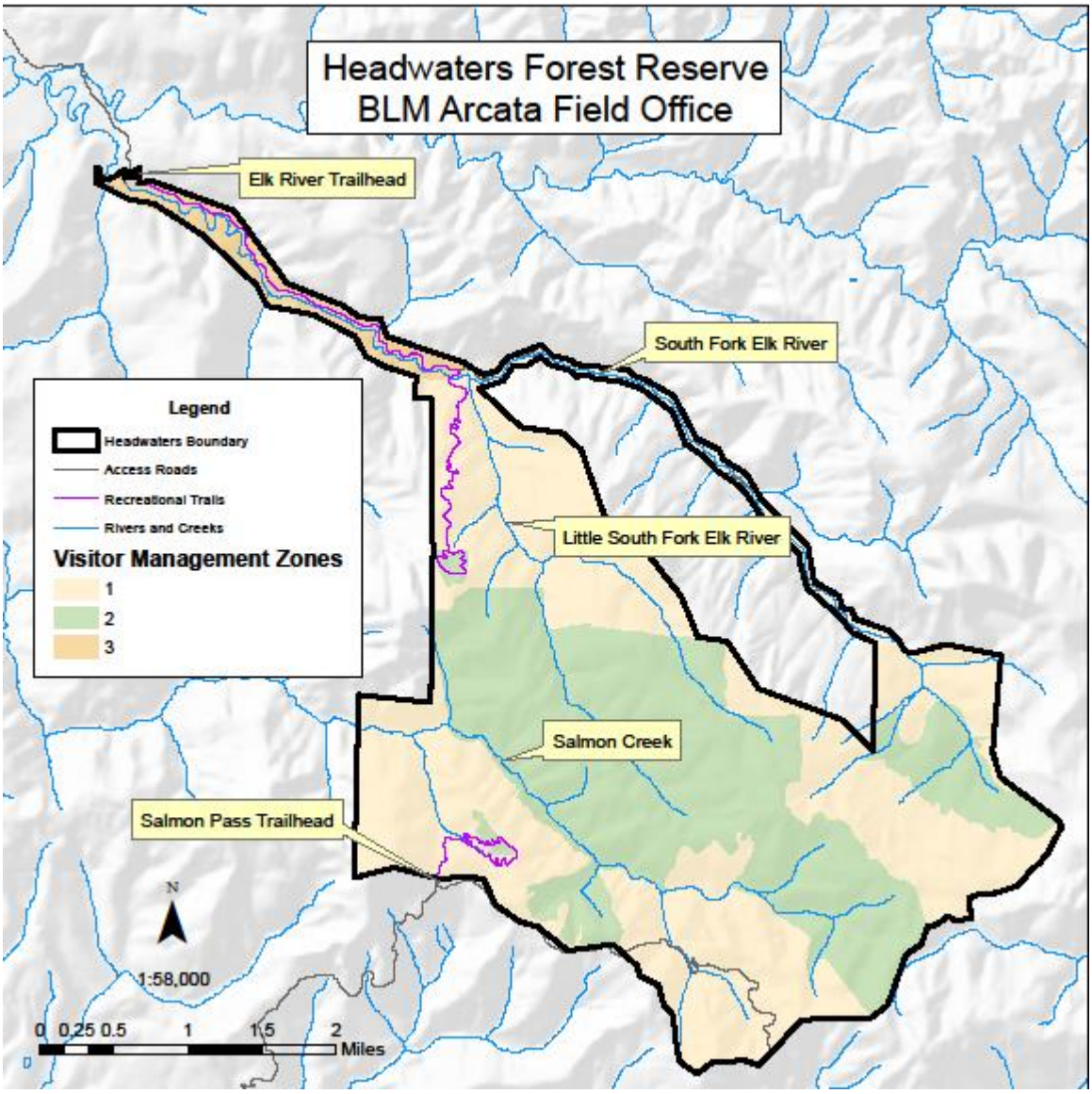

Figure 2: Overview Recreation Map of the Headwaters Forest Reserve

Purpose and Need for Action and Decision to be Made

The Headwaters Elk River Trail is an increasingly popular destination for hiking, bicycling, dog walking, trail running, nature viewing, and photography. From 1999 to 2012, the trail experienced an 80 percent increase in visitation. While visitors continue to express satisfaction with their visit to the Elk River Trail, increased visitation has led to visitor conflicts — particularly between dog walkers and those without dogs — and reduced opportunities for solitude, wildlife viewing, nature study and self-reflection (Martin and White 2013). In addition, the Elk River Trailhead parking area is frequently overcrowded, causing visitors to park illegally and unsafely with the potential to negatively impact nearby neighbors. The BLM anticipates that visitor use to the Elk River Trail will continue to increase and that modification and/or additions

to the existing recreation facilities are needed to accommodate this increased use and continue to provide high-quality recreation opportunities at the Headwaters Forest Reserve.

The BLM will decide whether or not to implement this recreation area improvement project as described in the Proposed Action and Alternatives section of this Environmental Assessment (EA)/ Negative Declaration (ND).

Conformance with Land Use Plan

This EA/ND is consistent with the Headwaters Forest Reserve Resource Management Plan/EIS/EIR (Headwaters RMP 2004). The RMP established the following management goals related to recreation and this EA (Page 4-31):

- Continue opportunities for year-round, outstanding environmental interpretation and education.
- Provide the minimal necessary facilities needed to support the recreation program.
- Minimize disturbance to adjoining residents and landowners caused by visitors.
- Offer interpretation of appropriate historic properties.
- Provide a trail network and use strategy with an appropriate level of access to minimize impacts to the Reserve's resources.

The RMP also established three visitor management zones within Headwaters. Zone 3, the Elk River Corridor, is to be managed as a natural-appearing environment with considerable visitor use. The proposed action would take place within this zone. The other two visitor management zones (Zones 1 and 2) are intended to have fewer facilities, less visitor use and a more natural environment. This EA does not propose any actions in Visitor Management Zones 1 or 2.

The RMP called for a system of interpretive facilities and trails within the Elk River Corridor. This system included two spur routes across the South Fork Elk River with seasonal pedestrian bridges to two interpretive sites associated with the former town of Falk. This EA/ND would meet this intent, while maintaining an appropriate level of access to the area's resources.

Conformance with Other Applicable Policies and Plans

This EA is in conformance with the Federal Land Policy and Management Act of 1976 and the National Environmental Policy Act (NEPA) of 1969. The Headwaters Forest Reserve is co-managed by the BLM and CDFW. Therefore, this document is a joint EA/ND under NEPA and the California Environmental Quality Act (CEQA).

This EA/ND is also in conformance with regulations for designated State Ecological Reserves and BLM Manual 6220 – National Monuments, National Conservation Areas, and Similar Designations.

2. Proposed Action and Alternatives

Proposed Action

Two related actions are proposed: modification of the Headwaters Elk River Trailhead parking lot and construction of a new seasonally-accessible recreation trail in the vicinity of the existing Elk River Trail.

a) Parking Lot Expansion: this project would expand parking capacity and improve traffic flow, while minimizing the footprint of the site and the number of trees removed (Figure 3). The proposed parking area would be designed to disperse and dissipate surface runoff and avoid runoff concentration. This may include the use of permeable surfacing (e.g. pavers) in the footprint of the site to reduce surface water flow. The total disturbance footprint of this expansion would be approximately 0.25 acres.

   During the construction period, all fuels, lubricants, and paving materials would be stored and re-filled outside of the riparian area. A spill plan would be prepared for all equipment working on site and absorbent materials in sufficient quantities will be on site to prevent any potential spills from reaching surface water.

   Construction activities would be limited to dry periods between August 31 and November 15 to avoid impacts to fish, as well as nesting migratory birds and raptors, including the northern spotted owl.

   The following tasks would be included as part of this action (see Figure 3):

   - Re-surface and harden the existing "overflow lot" and delineate parking spaces.
   - Approximately fifteen redwood trees ranging from 3-24 inches diameter would be removed to allow for parking lot modifications.
   - Construct and pave an entrance route to connect the "overflow lot" to the existing parking lot. Traffic would be required to drive through the entire parking area in a counter-clockwise direction, exiting the parking area along the existing road.
   - An area along the new entrance route would be widened to allow for school bus parking parallel to the entrance route. When not in use for school buses, this area would provide additional parallel-parking spaces.
   - Construct split rail fencing around the overflow lot and new entrance route, consistent with the current fencing
   - Preserve a median between the entrance and exit roadways comprised of native vegetation to minimize the project footprint and maintain the visual quality of the parking area. The existing entry sign would be moved to this median area.

- Modify the far end of the existing parking lot (near the surveillance cameras) to provide more turning space for vehicles driving through the lot. This may require a small expansion of the parking lot footprint.

b) The BLM would construct a new seasonally-available hiking trail along the south side of the South Fork Elk River (South Side Trail) consistent with Trail Maintenance and Construction Guidelines from the Headwaters RMP (see Appendix A). The South Side Trail (approximately 1.5 miles in length) would be moderately strenuous, primitive (natural surface, hand-tool construction with spot rocking/mulching in wet areas) and 2 – 3 feet in width (Figure 4). Frequent surface drainage would be installed in the form of dips, grade reversals and spot rocking to disperse overland flow that has the potential to deliver sediment to adjacent watercourses. The trail would avoid certain understory native plants that are established along the route in coordination with the field office botanist in order to maintain maximum trail-side native plant diversity. The South Side Trail would cross the South Fork Elk River immediately to the west of the existing parking lot and would then parallel the river in a southeasterly direction before re-crossing the river and connecting with the existing Elk River Trail near the "big-leaf maple pool".

   The BLM would develop interpretive signage related to the former logging town of Falk around at least two sites along the trail: the "Olsen house" and the "Model T". A post-and-rail fence would be constructed around the Olsen house for visitor safety and to prevent looting. The BLM would reduce impacts to historic debris associated with the town of Falk by relocating any intact, visible artifacts with high interpretation value to the Headwaters Education Center (or another appropriate site) to be used in the interpretation of the history of the site and the region. Trail construction would be limited to dry periods between August 31 and November 15 and would follow the Trail Construction and Maintenance Guidelines included in the Headwaters RMP (Appendix A).

   The BLM would construct two seasonal pedestrian bridges over the South Fork Elk River. These bridges would be installed each spring (at the end of the rainy season and no earlier than May 15) and disassembled each fall (before the beginning of the rainy season and no later than November 15) in order to allow for unimpeded winter flooding processes and to minimize disturbance to the watercourse and riparian resources. The two seasonal bridges would be constructed from metal rods and wooden decking (see example in Figure 5). Installation of the bridges would require hand-driving the rods into the banks and bed of South Fork Elk River. Given the year-to-year variability of the locations of surface flow during the summer months, the bridges would be designed to span the active channel of the river. Abutments or permanent installations of any kind

would not be used. Prior to each installation and disassembly of the bridges, fish would be excluded from the work areas through the use and installation of block netting. Where necessary, trail crews would construct permanent foot bridges over intermittent tributaries to the South Fork Elk River. Installation of the permanent foot bridges would not involve in-stream work.

This trail would be for foot traffic only. Bicycles would not be allowed in order to reduce impacts to adjacent water courses and to reduce the required width of the trail. Dogs would not be allowed on this new trail, confining dog use to the existing Elk River Trail. The South Side Trail would provide loop hiking and trail-running opportunities in connection with the existing Elk River Trail, and a less developed recreation setting during the summer season. Targeted users of this trail would be visitors seeking opportunities for trail hiking/running, nature viewing/study, photography, historical/cultural study, and solitude, as well as those seeking to avoid interaction with dogs and bicycles. The trail would be open seasonally, from the end of the rainy season and no earlier than May 15 to before the beginning of the rainy season and no later than November 15. The trail corridor will be surveyed annually for nesting birds, including the northern spotted owls, prior to trail opening. If a northern spotted owl nest is located within 500 feet of the trail, the trail will not be opened either for the entire season or until any juvenile owls have demonstrated adequate flight. For other nesting bird species, trail opening will be delayed if visitation could impact nest success.

Alternative 1 (No Action)

No new recreation resources or modifications to existing facilities would be provided in the vicinity of the Elk River Trail. Existing facilities and trails would continue to be maintained and patrolled. The BLM would continue to implement the actions outlined in the 2004 Headwaters Forest Reserve Resource Management Plan.

Alternative 2

Alternative 2 is the same as the proposed action, except that dogs would be allowed on the South Side Trail with the same rules as those on the existing Elk River Trail (voice control or leash at all times).

Alternative 3

Alternative 3 is the same as the proposed action, except that a new trail would not be constructed. Only the parking lot improvements outlined in the proposed action would be pursued.

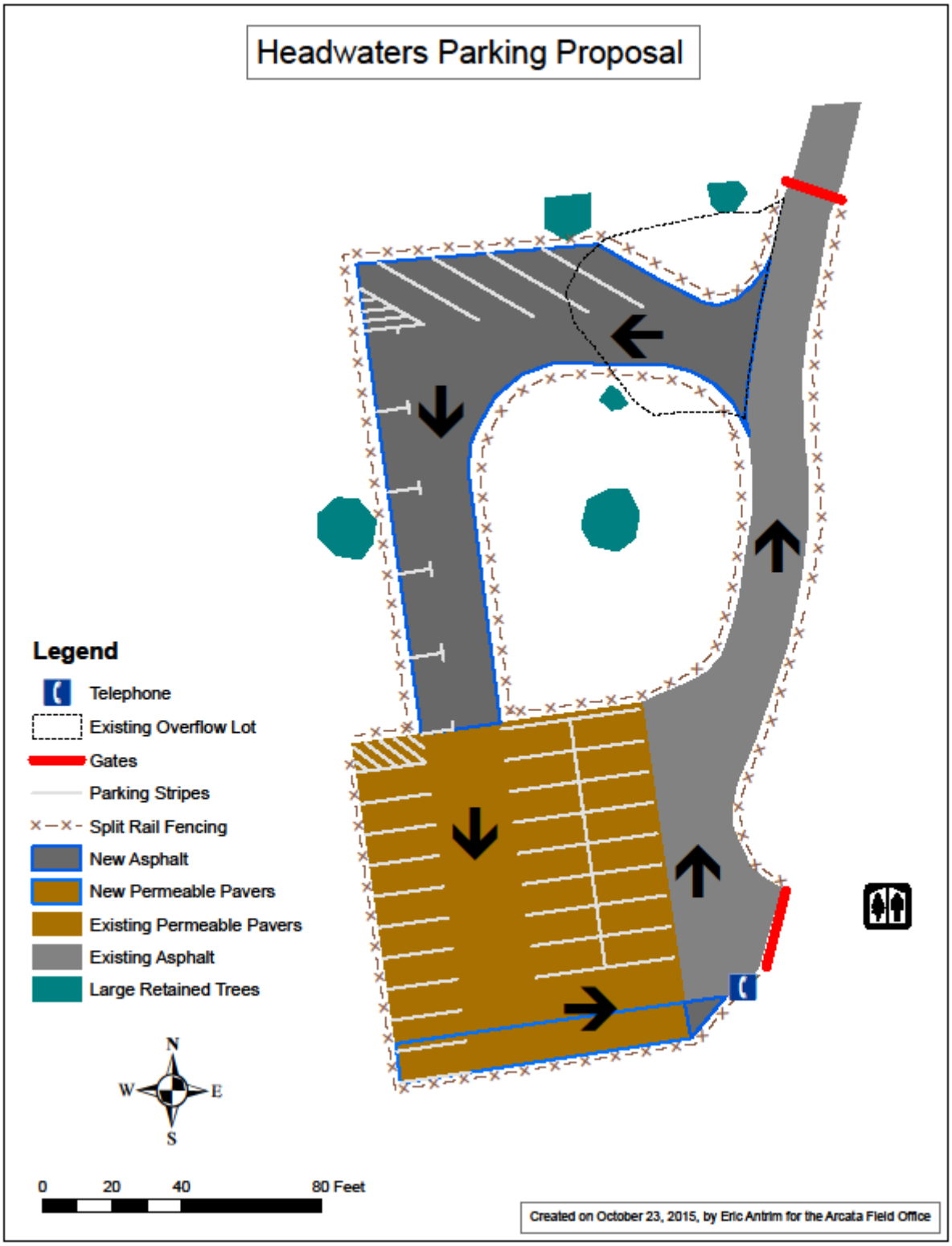

Figure 3 Generalized design of proposed modifications to the Elk River Trailhead parking area. Arrows show proposed traffic flow through the parking lot.

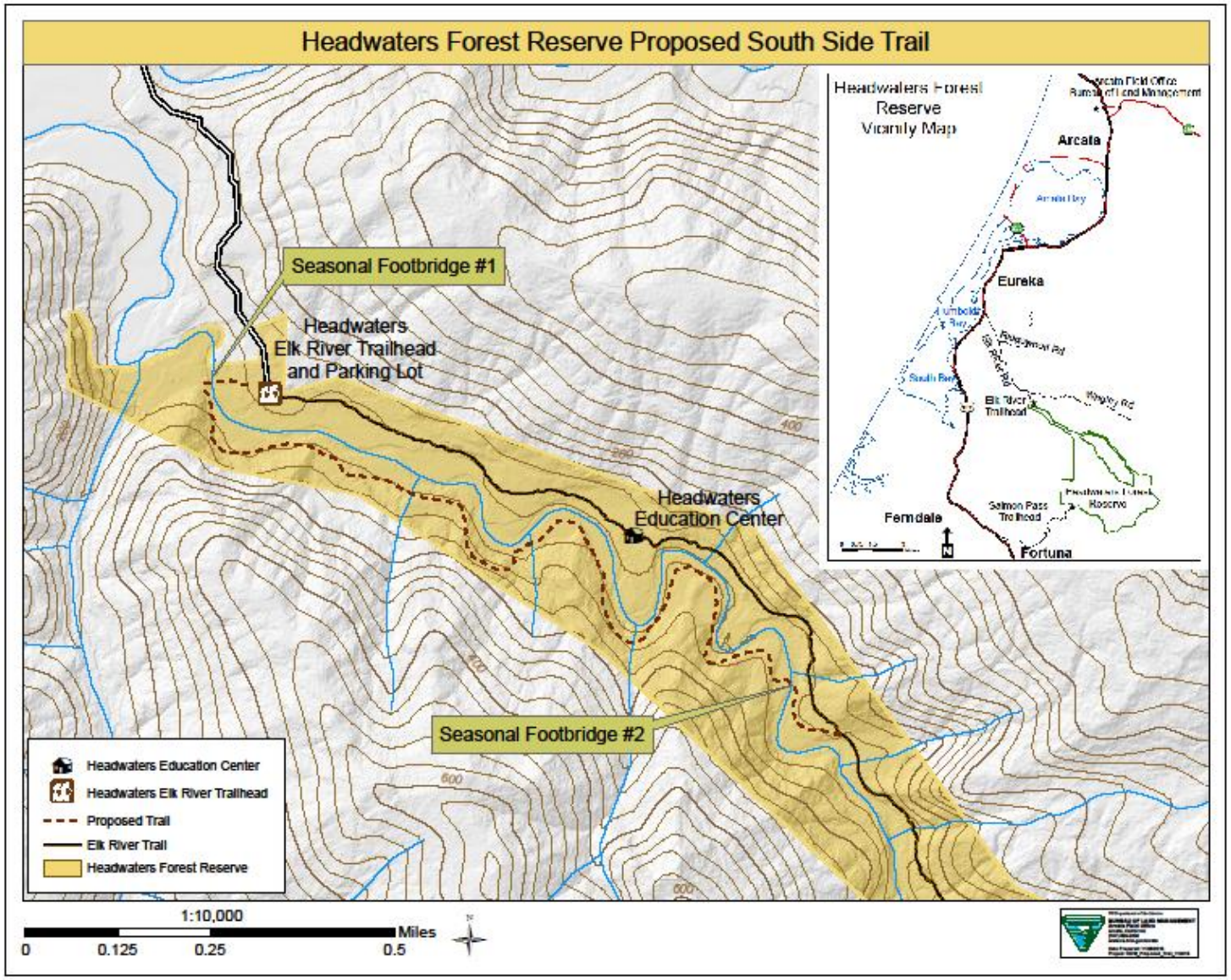

Figure 4: Map displaying the proposed location of the South Side Trail.

Figure 5: Example of a seasonal foot bridge in use on the South Fork Eel River in Humboldt Redwoods State Park. Two similar bridges would be used at Headwaters to cross the South Fork Elk River.

3. Affected Environment

Climate Change

The climate of the project area can be described as a coastal influenced Mediterranean climate with wet winters and dryer, mild summers. Precipitation occurs as rainfall with the bulk of the precipitation occurring between October and May. The area receives an average of 90 days of precipitation annually with the least number of days of rain in July and the maximum in December. Average annual precipitation ranges from 40 – 80 inches depending on elevation. Maximum temperatures occur in September with an average maximum of nearly 73^0 F. Minimum temperatures occur in December with an average minimum of nearly 40^0 F (National Weather Service 2011).

The Intergovernmental Panel on Climate Change (IPCC) defines climate change as "any change in climate over time, whether due to natural variability or as a result of human activity." An ever-increasing body of scientific research attributes these climatological changes to greenhouse gases, particularly those generated from the human production and use of fossil fuels. As atmospheric concentrations of greenhouse gases rise, so do temperatures, because less heat is able to escape the atmosphere (California Climate Change Portal 2011).

The average global surface temperature has increased by 1.1 degrees Fahrenheit since the 19th century. The 10 warmest years of the last century all occurred within the last 15 years — 2014 was the warmest year on record. Sea-level has risen 4–10 inches since 1900. A continued increase in greenhouse gas emissions, and the associated temperature rise, is likely to accelerate the rate of climate change, producing further impacts (California Climate Change Portal 2011).

Although substantial uncertainty is inherent in climate modeling and effects on specific areas are difficult to predict, climate change is expected to result in warmer annual and monthly temperatures, accompanied by substantially wetter winters. In the western United States, both the frequency of heavy precipitation events and the frequency of periods of drought have increased over the past century (IPCC 2007). Rising sea-level will affect coastal areas. Coastal rivers, estuaries, and relatively flat shoreline habitats will be more subject to damage by flooding and erosion. More severe storm surges from the ocean, due to higher sea levels, combined with higher river runoff could significantly increase flood levels by more than the rise in sea-level alone (California Climate Change Portal 2011).

Cultural Resources

Headwaters was extensively surveyed by qualified archaeologists in 2000 (Roscoe et al. 2002). Roscoe et al. (2002) conducted a complete pedestrian survey (<25 yard spacing per person) for areas of the Headwaters that were considered high sensitivity for cultural resources, based on historic maps, interviews, and settings where prehistoric sites are commonly located (e.g., level terrain near freshwater sources). Areas of lower sensitivity were subjected to a pedestrian survey with up to 40 yard spacing. Seven historic sites associated with the now-abandoned logging town of Falk and one prehistoric site were recorded within the Headwaters boundaries at this time. In 2015, BLM archaeologist Gina Munson, PhD, surveyed the route of the proposed new trail.

The affected environment for the parking lot modification does not contain any previously identified prehistoric or historic cultural resources.

The affected environment for the proposed trail includes three home sites and the company store associated with the town of Falk, in addition to an abandoned Motel T Ford. Two of the structures of the home sites have been demolished. The remaining Olsen house has been left to the elements. The structure experienced a tree fall in the last 5 years and has mostly collapsed. These cultural resources are considered potentially eligible for listing on the National Register of Historic Places under Criteria A (associated with events that have made a significant contribution to the broad patterns of local history, that is early logging in Northern California), C (embody distinctive characteristics of a period), and D (potential to yield information important in history) (Roscoe et al. 2002). In addition to the historic home sites and Model T, Dr. Munson identified several concentrations of historic debris along the potential trail route. These concentrations were determined to be not eligible for listing in the National Register of Historic Places (NRHP).

However, the BLM has an obligation under FLPMA to manage cultural resources regardless of NRHP eligibility.

Terrestrial Wildlife/ Special Status Wildlife

Appendix B contains a list of all special status wildlife species with potential range overlap within 0.25 miles of the project area. This appendix describes the potential for species presence within the project area based on the field experience of the BLM Wildlife Biologist, which included a walking assessment along the potential trail on July 7, 2015. This list contains wildlife species that are either listed by the U. S. Fish and Wildlife Service (USFWS) as threatened or endangered under the Federal Endangered Species Act (FESA), listed as threatened or endangered by CDFW under the California Endangered Species Act (CESA), listed by the BLM as a sensitive species (BLM-S), or listed by CDFW as a Species of Special Concern (CDFW-SSC) or a fully protected (CDFW-FP) species.

FESA and CESA species and their habitat are protected by federal and/or state law and must undergo critical analysis to eliminate any potential for significant impacts. The BLM-S are species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under FESA, and are designated by the BLM State Director(s). All Federal candidate species, proposed species, and delisted species in the 5 years following delisting are conserved as Bureau sensitive species (BLM 2008). The CDFW goal of designating species as "Species of Special Concern" is to halt or reverse their decline by calling attention to their plight and addressing the issues of concern early enough to secure their long-term viability (CDFW July 2016). Species identified as "fully protected" are those that require additional protection because they are rare or face possible extinction (CDFW July 2016).

This environmental analysis provides detailed consideration of common wildlife and those wildlife species identified in Appendix B that have suitable or preferred habitat with consistent**,** occasional, seasonal or year-round presence in the project area. Of those species, the project area only has suitable habitat for one FESA species, the northern spotted owl (*Strix occidentalis caurina*), listed as threatened. The northern spotted owl known activity center nearest to the project area is over 0.25 miles from the project area. Based on a field assessment by the BLM Wildlife Biologist, the project area does not contain suitable habitat for the marbled murrelet (*Brachyramphus marmoratus*). The nearest suitable habitat for the marbled murrelet is approximately 3 miles from the project area.

Parking Lot Expansion

The area proposed for parking lot modification contains approximately fifteen 3-24 inch diameter-at-breast height (dbh) coast redwood trees. This area potentially provides permanent forest habitat for the common small mammals listed in Appendix C. The redwood trees identified for removal may provide nesting and foraging habitat for common small to medium-

sized birds listed in Appendix C. This area does not contain any aquatic or wetland habitat and so will be unsuitable for wildlife species that prefer or depend on that habitat.

Trail Development

A portion of the proposed trail is routed within riparian habitat and adjacent upland habitat. Many species utilize riparian habitat for a variety of purposes, including hydration, greater availability of vegetation for food or cover, travel corridors, thermal relief, potential abundance of wildlife for predators. Common wildlife species associated with this habitat type are listed in Appendix D.

Aquatic Species and Essential Fish Habitat

The South Fork Elk River supports populations of three species of Pacific salmon listed as threatened under the federal Endangered Species Act: Southern Oregon/Northern California Coast (SONCC) coho salmon (*Oncorhynchus kisutch*) Evolutionarily Significant Unit (ESU), California Coastal (CC) Chinook salmon (*Oncorhynchus tshawytscha*) ESU, and Northern California steelhead (*Oncorhynchus mykiss*) Distinct Population Segment (DPS). The project area is also designated critical habitat for these three species. State special status fish species in the project area include SONCC coho salmon (threatened) and coastal cutthroat trout (*O. clarkii clarkii*) (species of special concern). The project area is also Essential Fish Habitat for Chinook salmon and coho salmon. In addition, populations of Pacific lamprey (*Entosphenus tridentatus*) and threespine stickleback (*Gasterosteus aculeatus*) are present in the project area. Based upon recent monitoring efforts in nearby Freshwater Creek, longfin smelt (*Spirinchus thaleichthys*) could be found within the project area. A full list of special status fish and wildlife species can be found in Appendix B.

Monitoring data for the reach of South Fork Elk River within the project area shows the river contains suitable habitat for rearing juvenile salmonids as well as other aquatic species. The river reach within the project area is typical of the lower South Fork Elk River, which is low-gradient with abundant pools (approximately 60 pools per mile with a median depth of approximately 1.75 ft) and woody debris (600 pieces of large wood per mile). Pools provide important rearing habitat and large wood provides cover from predators. National Marine Fisheries Service (2014) rated coho salmon streams with more than 85 pieces of large wood per mile as 'very good.'

Due to past land management activities that introduced high loads of fine sediment to South Fork Elk River, spawning and egg incubation habitat for salmonids in the project area is low quality. Monitoring data found riffles in the river reach to contain between 10–20 percent fine sediment particles. Fine sediment particles can impede flow through spawning redds (nests), harm eggs, and reduce survival of eggs and newly-hatched fry.

Water temperature in the river is conducive to support salmonids and other coldwater fauna. Monitoring data show that the river rarely exceeds 16 °C during the summer.

Wetlands and Riparian Resources

Portions of the project area are within riparian habitat associated with the South Fork Elk River and its tributaries. The riparian zone provides habitat for riparian-dependent species and links the terrestrial environment to the aquatic environment. Riparian areas are characterized by a mixed overstory canopy of coast redwood, Douglas-fir and red alder. The understory is composed of a diverse array of shrub and herbaceous plants.

In addition to the wildlife habitat previously discussed, riparian areas along the South Fork Elk River provide food resources for the aquatic ecosystem, contribute woody vegetation for instream habitat functions, buffer sediment supply, provide shade and thermal buffering to the channel, and provide bank and channel stability.

Water Quality

The Elk River watershed is listed as an impaired water body under the Clean Water Act. The Northcoast Regional Water Quality Control Board has drafted, but not finalized, a total maximum daily load (TMDL) for the Elk River. The primary pollutant is excessive sediment. Elevated sediment loads in the Elk River have impacted aquatic habitat and increased flooding frequency in downstream reaches. During winter flows, turbidity is often high as a result of sediment transport. Flood flows typically leave a veneer of fine sediment on floodplains.

Summer water temperature in the project vicinity (13-16 °C) (BLM unpublished data) is considered ‘very good’ based on NMFS (2014) criteria.

Recreation and Visual Resources

Headwaters is accessible year-round by Elk River Road from the city of Eureka (6 miles) or seasonally for BLM tours by Felt Springs Road from the city of Fortuna (4 miles). Each of these roads leads to a developed trailhead parking area. The Elk River Trailhead contains 22 parking spaces, a vault restroom, trash container, two picnic tables, information kiosk, split-rail fencing, and various signage. The 5.5 mile-long Elk River Trail begins at this trailhead and ends in the upper reaches of the watershed in a small patch of old-growth redwood. Approximately 40,000 visitors travel along this trail each year, and it is a popular destination for dog-walking, hiking, nature viewing, bicycling, trail running and environmental education/interpretation. The first mile is paved and accessible by wheelchair. The Headwaters Education Center, a restored train engine house that is now used for environmental education and interpretation, is located a half-mile from the trailhead. Numerous interpretive displays have been installed along the first mile of trail for visitors to learn and appreciate the outstanding resources values of Headwaters.

In the southern portion of Headwaters is the Salmon Pass Trailhead. Guided hikes are provided by BLM and volunteers along the 3-mile-long Salmon Pass Trail, which loops through a remnant old-growth redwood forest. Use on this trail is restricted to hiking only (no dogs), and visitation numbers have increased slightly (less than 10 percent over the last 15 years.

Visitation along the first three miles of the Elk River Trail, however, has increased by approximately 80 percent over this same time period, resulting in people having to park along the roadway because the parking area is full, particularly on the weekends. Visitation is at its heaviest during holiday weekends, regular weekends, and when the sun shines. Rainy days seldom draw large numbers of people.

Visitors are not allowed to hike off the designated trails in order to protect forest and riparian resource values. Vegetation gathering, overnight camping, horseback riding, hunting, fishing, and motorized vehicle are also prohibited.

A visitor survey of Reserve visitors conducted by Humboldt State University in 2012 revealed the following information (Martin and White 2013):

- Most groups who visited described themselves as "family" groups (53 percent). Alone was the next most common group type (21 percent).
- The most common group size was two (48 percent). The next most common group size was alone (21 percent).
- A quarter of respondents (25 percent) reported that this was their first visit to Headwaters, while 21 percent reported having visited 1 to 5 times previously, 12.5 percent reported visiting 6 to 10 times and 12.5 percent reported 11 to 20 previous visits.
- The most common length of visit was 1 to 2 hours (57 percent)
- Just over 44 percent of respondents reported having a dog with them on the day they were surveyed.
- Nearly half of respondents hiked no farther than one mile up the trail to the Falk town site (46.9 percent). Only 5 percent reported having made it all the way to the end of the trail.
- The most common age category was 50 to 59 years old (nearly 23 percent of respondents), though visitors 60 or older made up nearly 25 percent of all respondents.
- Hiking on trails was the most common reason for the visit (85 percent), followed by dog walking (45 percent) and viewing wildlife (34 percent). More respondents said that socializing was a major reason for their visit (31 percent) than said they were there to spend time alone (20 percent).
- Fewer than 3 percent of respondents reported seeing too many other hikers, although 8 percent of all respondents reported seeing too many dogs.
- The resource problem thought most serious was trail erosion, which 8 percent of respondents thought was major or moderate.
- The only two social problems rated major or moderate by more than 10 percent of respondents were dog waste (15 percent) and dogs off leash (14 percent). "Not enough trails" was thought to be the most serious management problem, rated major or moderate by 22 percent of respondents.

This study also compared results of the 2012 survey to a similar survey conducted in 1999. Some notable changes from 1999 to 2012 are the following:

- Visitor use has increased by over 81 percent.
- The age of visitors has increased significantly, with mean age increasing from 42.9 to 47.0.
- Family groups increased from 39 percent to 53 percent, while friends groups declined from 28 percent to 15 percent.
- Average group size declined from 3.3 in to 2.5.
- Respondents in 2012 were twice as likely (44 percent) to encounter 10 or more other visitors than they were in1999 (22 percent).
- Visitors are hiking shorter distances in 2012 than in 1999. For example, 77% of 1999 respondents hiked farther than 2 miles, while on 28% of 2012 respondents did so.
- Fewer visitors claim that spending time alone, nature study, and wildlife viewing are major reasons for their trip to Headwaters.

Comments provided by respondents indicated that, while 45 percent of visitors bring dogs to Headwaters, a large contingent of visitors is highly impacted by the abundance of dogs (particularly off-leash dogs) on the trail (Martin and White 2013). As a majority of visitors hike only the first mile of trail, it is likely that this conflict is concentrated in this one-mile section of trail. It is likely that an unknown number of visitors have simply stopped coming to the Elk River Trail due to negative interactions with, or fear of, dogs.

Forestry and Fuels

The dominant forest types of the project area are second-growth/disturbed mixed conifer forest dominated by coast redwood (*Sequoia sempervirens),* and riparian forest dominated by hardwoods including red alder (*Alnus rubra*), big leaf maple (*Acer macrophyllum*), black cottonwood (*Populus balsamifera trichocarpa*), and willows (*Salix spp.*). Other tree species of the mixed conifer forest include Sitka spruce (*Picea* sitchensis), Douglas-fir (*Pseudotsuga* menziesii), western redcedar (*Thuja plicata*), grand fir (*Abies grandis*), and western hemlock (*Tsuga heterophylla*). The forest stand within the area of the parking lot modification is a nearly pure stand of closed canopy coast redwood planted approximately 30 years ago as a plantation (uniform spacing between rows of trees).

Fuels in the area consist of dead and down woody debris, and live understory fuels such as sword fern (*Polystichum munitum*), cascara (*Frangula purshiana*), California blackberry (*Rubus ursinus*) and other understory plant species (see vegetation section below). In the area of the proposed parking lot modification, there is minimal dead and down woody debris. In the area of the proposed South Side trail there is a moderate amount of woody debris. In both areas, however, decomposition rates and fuel moisture levels are relatively high because of high relative humidity levels. Both areas have closed canopies, low live crown heights and well developed understories which results in vertical and horizontal continuity of fuels. This may

increase the risk of a crown fire especially under conditions of severe drought as was experienced from 2011 to 2014.

Soils and Geology

The project area is underlain by geologically young sedimentary deposits of the Wildcat Group. Bedrock is (poorly hardened siltstones and sandstones that are highly fractured and prone to landsliding and surface erosion. Soils are similarly erosive, though highly productive and rapidly covered with vegetation, which provides a degree of natural buffering to overland transported sediment.

Floodplains

Floodplains in the project vicinity are actively inundated during winter high flows. They support a diverse and productive riparian community. Floodplains in the project area filter and store transported sediment from upstream and upslope sources. The proposed trail would traverse the floodplain as it approaches the two seasonal bridges.

Vegetation and T&E/Special Status plants/Invasive Non-native Species

The vegetation of the project area includes areas of second-growth/disturbed redwood forest, and to a lesser extent, hardwood riparian forest dominated by red alder and big leaf maple. The area of the proposed parking lot modification traverses a patch of coast redwood second-growth forest, with common understory plants such as sword fern, cascara and California black berry.

The proposed South Side trail traverses the South Fork Elk River riparian corridor in three locations, but mostly follows an abandoned road bed through second-growth redwood forest, with necessary deviations from the road bed where terrain requires. Much of the road bed, having been exposed to increased sunlight for a time, contains population of moist, forest-opening species such as stink currant (*Ribes bracteosum*), white-stemmed gooseberry (*Ribes inerme*) as well as slender-footed sedge (*Carex leptopoda*). Other moist, shady understory species commonly encountered include stinging nettle (*Urtica dioica* ssp. *gracilis*), California hedge nettle (*Stachys bullata*), western coltsfoot (*Petasites frigidus* var. *palmatus*), wild ginger (*Asarum caudatum*), fringe cups (*Tellima grandiflora*) and stream-side violet (*Viola glabella*). Many mature ferns follow the proposed trail, including sword fern and deer fern (*Blechnum spicant*) and lady fern (*Athyrium felix-femina* var. *cyclosorum*). Other typical shrub to small tree species that grow adjacent to the trail are evergreen huckleberry (*Vaccinium ovatum*), red huckleberry (*Vaccinium parvifolium*), oso berry (*Oemleria cerasiformis*), Pacific red elderberry (*Sambucus racemosa*), thimbleberry (*Rubus parviflorus*), and salmon berry (*Rubus spectabilis*).

A list of special-status plants with potential to occur in the Reserve was developed through a search of the latest versions of the California Natural Diversity Data Base (CNDDB, using quads: Fields Landing, McWhinney Creek and Hydesville), the CNPS Electronic Inventory (CNPS 2016), and descriptions of the vegetation types of the project area (Jimerson and Jones 2000). These lists were aggregated and species with no possible suitable habitat on the Reserve

were removed. Special-status plants that may occur in the Reserve, their listing status, known geographic distribution, ecological information and potential or confirmed occurrence on the Reserve are summarized in Appendix F, Tables 1 and 2.

In summary, no California rare or BLM Sensitive species are known to occur, or were observed in the proposed project area upon botanical field survey July 10, 2015. No California rare or BLM Sensitive plants are known to occur within a quarter mile of the proposed project area, and no California Endangered Species Act (CESA) or federal Endangered Species Act (ESA) listed plant species are known to occur in Headwaters Forest Reserve.

Invasive, non-native plant English ivy (*Hedera helix*) is known to occur in the proposed project area. Other invasive plants, such as French broom (*Genista monspessulana*), pampas grass (*Cortaderia jubata*), Cotoneaster (*Cotoneaster franchetti*), teasel (*Dipsacus fullonum*), Himalaya berry (*Rubus discolor*), periwinkle (*Vinca major*), three-cornered leek (*Allium triquetrum*), bull thistle (*Cirsium vulgare*) and poison hemlock (*Conium maculata*) are known to occur, or have occurred, in the greater vicinity.

4. Environmental Effects – Direct, Indirect and Cumulative

Proposed Action

Direct and Indirect Effects

Climate Change

The Proposed Action will have no direct or indirect effect on climate.

Cultural Resources

The parking lot modification will have no effect on any known cultural resources. In the event that cultural resources are discovered as a result of the project, activities would cease and the resources would be evaluated by a qualified archaeologist.

The creation of a trail to previously inaccessible cultural resources, including the Olsen House and the Model T, would have a negative impact on these resources, including looting of surface artifacts, metal detecting and excavation of buried artifacts, removal of structural elements of the Olsen house, and graffiti. These effects are to be reduced by installation of protective fencing around existing elements and signage communicating the illegal nature of damaging cultural resources on federal land. Removing any intact or visible surface artifacts to the Headwaters Education Center will also help deter looting by removing easily accessible objects. The potential for increased looting is offset by the interpretive value of the Olsen House and the Model T.

Native American Religious Concerns

The BLM is engaged in on-going consultations with the Bear River Band of Rohnerville Rancheria and the Table Bluff Reservation Wiyot Tribe. Previous consultation with representatives of these tribes has not revealed any sacred or traditional cultural properties within the Reserve. As there are no sacred or traditional cultural properties within the Reserve, there will be no direct or indirect effects.

Terrestrial Wildlife/ Special Status Wildlife

A table of special status fish and wildlife whose ranges overlap with the project area is provided in Appendix B. This table also provides a summary of mitigation measures being used to avoid significant impacts to these species. Information regarding these mitigation measures is more extensively described below.

Parking Lot Expansion

The permanent removal of the forest habitat for the parking lot modification will permanently displace or kill some small, common wildlife species found in Appendix C. Those few individuals may be shrews, voles, mice and snakes. Bird species will permanently lose foraging and nesting habitat but birds will not be directly affected since the tree removal will occur after

the nesting season and any birds present at the time of removal will disperse. Medium-sized mammals are expected to change their behavior to avoid the area but those impacts are not significant since these animals are not expected to have permanent occupancy in this area. The relative small amount of forest area removed and the new flow of vehicle and human traffic will negatively affect wildlife behavior or presence in that immediate area but the effects will not be significant. The removal of that forest habitat will also change thermal dynamics within the excavated area by increasing solar exposure and potentially drying the forest adjacent to the new road. The increased sunlight in the excavated area will benefit both plant and wildlife species that thrive under those conditions. Restrictions that limit construction activities to dry periods between August 31 and November 15 will avoid significant impacts to nesting birds.

Trail Development

Wildlife that use this portion of the South Fork Elk River will be displaced or disturbed either temporarily or permanently with human presence on both the north and south sides of the river. The level of wildlife displacement or disturbance depends on how much the trail is used. In time, those species that adapt to or are attracted to human presence will remain in the area and those species intolerant to the disturbance will be seasonally or permanently displaced.

There are two northern spotted owl (FESA-threatened, CESA-candidate as threatened) territories that have had historic activity from 0.27 to 0.5 mile of the proposed trail. Both territories are on adjacent Humboldt Redwood Company (HRC) land (HRC personal communication). The effects determination on northern spotted owls due to the trail construction can be found in Appendix E. Trail construction will not be completed during the spotted owl breeding season (Feb 1 to Aug 31) to minimize disturbance during the northern spotted owl nesting season. The trail corridor will be surveyed for northern spotted owls prior to the opening of the trail every year to determine presence or nesting. If a nest is located within 500 feet of the trail, the trail will not be opened either for the entire season or until any juvenile owls have demonstrated adequate flight. The trail construction and use will not negatively affect these northern spotted owls.

The fisher (BLM-S, CDFW-SSC) and the Humboldt marten (CESA-candidate as endangered), if present, may occasionally move through the project area due to their wide-ranging habits but would not be expected to have a permanent territory in the project area due to marginally suitable habitat and disturbance from the existing Elk River Trail. Both species will not be significantly affected by the trail construction and use.

The bat species that may be found in the project area are active from dusk to dawn, which allows the bats to use the project area at a time when trail use is not permitted. Trail construction will occur after migratory bats have departed the area. Any potential roost trees with cavities or sluffing bark will be identified and retained during trail construction. The Yuma myotis (BLM-S) concentrates its foraging for flying insects along the river corridor. The Fringed myotis (BLM-S) and Townsend's big-eared bat (BLM-S, CESA-candidate as threatened) may be found

throughout the forest and may not concentrate their activity in the riparian corridor. The trail development and use will not have significant negative effects on any of these bat species.

There are several species that may be found in the project area that are primarily aquatic. The foothill yellow-legged frog (BLM-S, CDFW-SSC), Pacific tailed frog (CDFW-SSC), northern red-legged frog (CDFW-SSC), western pond turtle (CDFW-SSC) and the southern torrent salamander (CDFW-SSC) spend most of their life in or adjacent to the waters of ponds, streams and rivers. Their life habits would keep them away from the traffic on the trail the majority of the time but would expose them to any off trail disturbance along the river or near bridge crossings. The northern red-legged frog is confined to aquatic habitat in its egg and larval stages of life but as an adult could be found away from water. The western pond turtle may also be found some distance from water but only temporarily. The two bridge placement sites will be inspected for these species or their egg masses prior to seasonal installation and removal. If egg masses are detected, the bridge will be re-located a short distance downstream, the masses will be moved upstream of the bridge location, or installation will be delayed to ensure egg protection. These frogs, turtle and salamander, if in the project area, are not expected to suffer significant impacts from the establishment of this trail.

The Sonoma tree vole (CDFW-SSC) usually inhabits mature forests but may be in the project area. They spend the majority of their life within the tree canopy and therefore would have less than significant impacts from trail use. Trail construction will remove the smallest diameter trees to minimize the footprint of negative effects for all species. Trees marked for removal will be inspected for obvious nest evidence of the tree vole or any other wildlife species. The Sonoma tree vole, if in the area, will not have significant negative impacts from trail development.

Any migratory birds using the project area are protected under the Migratory Bird Treaty Act. In order to provide protection for those birds (as well as aquatic species) during the nesting season the BLM will avoid all construction activities outside of dry periods between August 31 and November 15. This will avoid significant impacts from trail construction to bird species identified in Appendix B. In addition, the BLM will conduct nest surveys annually prior to opening the south side Elk River Trail. If nests are identified that could be impacted by human visitation along the trail, trail opening may be delayed.

The Arcata Field Office is covered under the Northwest Forest Plan and the Survey-and-Manage Species program identified under that Plan. The Survey-and-Manage program has undergone several changes since it was initiated, resulting in many species eliminated from the list. Headwaters is not within the range or does not contain habitat for any of the vertebrate or invertebrate animal species currently on the Survey-and-Manage list (BLM 2011).

If any unexpected wildlife species requiring special protection appears in the project area during trail construction, appropriate mitigation measures will be taken to ensure protection.

Aquatic Species and Essential Fish Habitat

A table of special status fish and wildlife whose ranges overlap with the project area is provided in Appendix B. This table also provides a summary of mitigation measures being used to avoid significant impacts to these species. Information regarding these measures is more extensively described below.

Parking Lot Expansion

The parking lot expansion would involve the use of heavy equipment to remove trees, grade and contour the earth, and to pave the area. Potential effects to fish and aquatic habitat include the introduction of toxic materials and sediment to the South Fork Elk River. However, parking lot construction would not be expected to result in the introduction of toxics or sediment to the river because toxic material will be stored and re-filled outside of the riparian area and away from the river and earth movement activities would be a sufficient distance from the river to limit the possible introduction of sediment. In addition, the new parking area would be designed to dissipate and disperse runoff, and the 250-foot riparian buffer between the expanded parking lot and river is expected to capture any construction-related sediment prior to entering surface water. In-stream shade and recruitment of woody debris to the river would not be affected because the trees to be removed are located 250-foot from the river and therefore do not currently provide shade and do not have the potential to recruit to the stream channel.

Trail Development

The new trail would be constructed using hand tools and would not include cutting large trees in the riparian area. The only potential effect to fish and aquatic habitat from trail construction is erosion-related increased sediment delivery to the river. However, the small footprint of the trail tread, use of hand tools, limitations on construction to dry periods between August 31 and November 15, and use of mulch material would limit the increase in sediment delivered to the river during and following construction. In addition, the trail would include frequent surface drainage features to reduce the probability of water concentration and subsequent erosion, trail use would be restricted to dry months, and wet areas of the trail would be maintained and treated with spot-rocking and mulch. Therefore, erosion-related sediment from the trail surface would be minimal and would have insignificant effects on fish or aquatic habitat.

Bridge Crossings

Two bridges would be installed and removed each spring and fall for access to the new trail segment. The bridges would be constructed from metal rods and wooden decking. Bridge installation would require a pair of rods to be driven into the stream bank and stream bed in five foot intervals. The lower bridge would span approximately 50 feet and sit on the floodplain of each side of the river. The upper bridge would span approximately 80 feet from floodplain to floodplain. Habitat under the bridge footprint is shallow riffle/run, typically less than six inches deep and lacking complexity. Wetted channel widths at each site are expected to range from 10-

20 feet across. Fish would be excluded from the construction areas prior to commencement of bridge installation and removal.

Fish would be excluded from the work area by installing block nets comprised of fine nylon seine or plastic mesh anchored by posts on each end and cobble or sandbags within the stream channel. The exclusion area would be approximately 20 feet wide and would span the extent of the wetted stream channel. Bridge installation and removal would each take one work day to complete; therefore, fish access will be blocked from the 20-foot wide work area two days per year at each site. BLM conducted a fish survey of each bridge site in June 2016 and documented the presence of several small salmonids (presumed to be steelhead based on size of fish and habitat preferences) within each potential fish exclusion zone. Based on this information, it is anticipated that less than ten salmonids will be excluded from utilizing the habitat at each worksite each year. The June 2016 survey also documented habitat of similar or higher quality immediately upstream of the exclusion areas (the location where excluded fish will reside during bridge installation).

Block nets would be installed using the following procedure: 1) BLM biologist visually surveys the footprint of the downstream block net to confirm absence of fish; 2) first block net is installed at downstream extent of work area; 3) second block net is walked upstream beginning at the downstream block net, and is installed at the upstream extent of work area.

Potential effects to fish and aquatic habitat from bridge installation and removal include short-term plumes of turbidity caused from pounding rods into the stream bed, injuring or killing fish when installing block nets, injuring or killing fish left in the work area by trampling, and displacing aquatic insects from the stream bed by pounding rods and trampling. Fish exclusion will be conducted by experienced biologists and it is expected that all fish will be excluded from the site and kept from re-entering the site by use of block nets, and excluded fish will move into habitat of equal or better quality and upstream of the exclusion area in order to reduce their likelihood of exposure to downstream effects. Therefore, the likelihood of injury or mortality to fish is minimal. Displacement of aquatic insects is likely to occur, but the magnitude of displacement would be minor, and it is expected that a portion of these insects will be consumed by fish downstream from the bridge site and that others will settle downstream. Short term plumes of turbidity are likely to occur and dissipate as they move downstream. These turbidity plumes are likely to cause minor, short-term disruption to visual feeding by fish but not result in any reduction of survival or growth.

It is likely small areas of bare soil would be present on each end of the bridges during the rainy season. This is expected to result in minor amounts of erosion during rain events. Given the level of turbidity that occurs in the river during rain events the additional minor amount of erosion from the bridge landings is expected to be unmeasurable.

Use of the bridges by hikers is not expected to result in effects to fish or other aquatic organisms.

Wetlands and Riparian Resources

Parking Lot Expansion

The proposed parking area is positioned adjacent to (outside) the South Fork Elk River riparian zone. Designing the parking surface to disperse and dissipate overland flow would avoid concentrating runoff into the adjacent riparian zone. Approximately fifteen redwood trees ranging from 3-24 inches diameter would be cut to allow for parking lot modifications. Several larger trees within the footprint of the parking lot would be retained to ensure the trees are available to recruit to the adjacent riparian zone. Tree removal would reduce long-term woody debris recruitment to the adjacent riparian zone.

Trail Development

The trail would cross the riparian zones of the South Fork Elk River and its tributaries. Much of the trail would border the South Fork Elk River as it contours along the slope. The narrow trail width (single-track) would minimize disturbance to woody vegetation within the riparian corridor. The new trail would be constructed using hand tools and would not include cutting large trees in the riparian area. Any vegetative material removed during trail development will be left on site. Sediment generation and delivery would be most elevated during the winter months when the bridges are removed and the trail is inaccessible. Regular surface drainage would be installed in the form of dips, grade reversals and spot-rocking to disperse overland flow that has the potential to deliver sediment to adjacent watercourses. No large tree removal will occur from the trail construction; therefore, recruitment of large wood to the channel will not be affected. Due to the narrow width/footprint of the trail, impacts to riparian vegetation will be less than significant.

Water Quality

Parking Lot Expansion

Less than one-quarter acre of hardened surface will be added to the current parking lot footprint, therefore potentially increasing the rate of stormwater runoff in the expansion area. However, the parking area would be designed to disperse and dissipate overland flow across the drivable surface, which would promote infiltration of storm water, rather than rapid runoff and diminish the likelihood of a potential increase in flooding frequency.

Trail Development

The single-track width of the proposed trail, combined with a lack of winter use due to bridge removal, would represent a minor disturbance within and along the periphery of the riparian zone. The proposed trail would be designed with frequent drainage and spot rocking to disperse overland flow and dissipate it across the adjacent forest floor. Sediment delivery would likely be confined to the immediate bridge approaches where mulch would be applied to limit the potential for erosion and sediment delivery following the first rain events of the season. No overstory trees

would be removed. Thus, no effects on riparian and stream temperatures are expected. Effects to water quality would be minor.

Recreation and Visual Resources

Parking Lot Expansion

The construction of the expanded parking area would occur during late-summer and early fall during dry conditions. The effects of construction to visitors are expected to be limited because the bulk of the work will occur outside the existing parking area. However, to facilitate construction-related activities and to ensure visitor safety, portions of the parking area may be closed for periods of time. In addition, visitors may experience short delays due to temporary road closures to facilitate movement of heavy equipment in and out of the area. During the construction period the sounds and smells of construction activity would be experienced by visitors but these impacts are expected to attenuate as visitors move along the trail.

The additional parking spaces would reduce the safety problem created when the parking area is full and visitors end up parking along the roadway. Also, the increased parking spaces would allow the ever-increasing numbers of visitors to hike or bike into Headwaters.

Trail Development

The proposed action would provide a new 1.5-mile seasonal hiking trail (no dogs or bicycles) on the south side of the South Fork Elk River. This development would result in additional opportunities for visitors to experience a more primitive hiking experience without seeing or being affected by both dogs and bicycles. Opportunities for spending time alone, wildlife viewing, and nature study would likely increase because the new trail would be located in a more quiet, remote, and primitive setting. Unlike the first section of the Elk River Trail which is paved and 10 feet wide, the new trail would be only about three feet wide at the most, and the tread surface would be natural dirt and rock.

This new trail would allow long distance hikers with an opportunity to bypass the most heavily visited section of the existing Elk River Trail. It would also provide opportunities for short distance hikers to bypass the existing Elk River Trail altogether with out-and-back hiking opportunities. Conflicts between hikers and dogs, or hikers and bicycles would be eliminated while hikers are on this new trail. Due to more dispersed use, this may also reduce conflict on the existing Elk River Trail.

Visitor use numbers are expected to increase because of (1) the addition of parking spaces which would likely be utilized during the spring, summer, and fall, and (2) an additional 1.5 miles of seasonal hiking trail available for use and enjoyment. This use is estimated to increase approximately 5 percent for the first five years and then is expected to slow to an annual increase of 2 percent. The new South Side trail could see up to 100 visitors or more per day during sunny weather conditions.

Forestry and Fuels

The proposed action (parking lot modification portion) would lead to cutting of approximately fifteen 3-24 inch diameter-at-breast height (dbh) coast redwood trees to allow for parking lot modifications. These improvements would result in the thinning of trees in an overstocked stand that is in need of thinning. This action would open up the forest to light penetration which would decrease competition for resources (particularly light), and therefore, increase growth rates and crown development and accelerate stand development towards mature forest conditions. In addition, the larger existing trees in the area that provide substantial value for wildlife will not be removed. This will provide additional habitat diversity into the future.

The proposed action would result in an increase in fine, medium and large woody fuels. As this area is a moist, mixed-conifer and riparian forest, however, the relative risk of these added fuels is minimal. In addition, removal of trees may act to break up the current vertical and horizontal continuity of fuels, creating a more fire resilient stand of trees. Lastly, the addition of fuels through this action could be mitigated through actions such as lop and scatter, chipping and/or removal of material.

The proposed South Side Trail would not include the removal of any trees or result in any impact to forestry resources or fuels.

Soils and Geology

Parking Lot Expansion

Construction of the proposed parking area will disturb soil. Subsequent surfacing and drainage design to disperse runoff will prevent sediment generation from the parking area.

Trail Development

The proposed trail would disturb the soil along its length. The single-track width of the trail would confine the footprint of disturbance to a narrow corridor. Any sediment generation and delivery from this disturbed linear feature would be dispersed from the trail surface due to appropriate drainage and design. Vegetation impacts would be negligible as the surrounding soils are productive and well-vegetated.

Floodplains

The trail would intersect the South Fork Elk River floodplain near two seasonal bridge crossings. The trail would not be designed to divert or otherwise re-route flood flows across the floodplain. Following winter peak flows, the floodplain is often covered in a thin layer of freshly deposited fine sediment. Because of the lack of hydrologic disruptions from the trail tread and the frequent disturbance and deposition that naturally occurs on the floodplain surface, any effects of the trail crossing the floodplain will be negligible.

Vegetation and T&E/Invasive Non-native Species

The proposed action would lead to removal of approximately fifteen 3-24 inch dbh redwood trees to allow for parking lot modifications. Some common understory vegetation would also be removed.

The proposed trail would minimize disturbance to understory vegetation through hand-construction methods, single track width, and relatively low level of development. While many individual plants would be permanently impacted, the local communities and adjacent populations would remain intact.

Access for survey of invasive, non-native English ivy would be improved, and therefore long-term, manual, early detection-rapid response control along the overall South Fork Elk River corridor as a whole could potentially be more successful.

Cumulative Effects

Climate Change

The proposed action is expected to lead to an increase in visitation to Headwaters, with a subsequent release of additional greenhouse gases from vehicles traveling to and from the trailhead. Due to the relatively small number of additional visits expected (approximately 5 percent per year for five years followed by sustained 2 percent growth per year), this impact is likely to be negligible when considered within the larger context of global climate change.

Cultural Resources

Cultural resources in the Headwaters Forest Reserve are experiencing natural processes of decay and deterioration. These processes will occur regardless of the action taken for this study. While the potential for damage to cultural resources along the proposed trail increases with improved access, this will be mitigated by protective fencing, signage, and removal of intact artifacts. As a result of these mitigation measures, major impacts to cultural resources are unlikely.

Native American Religious Concerns

No sacred or traditional cultural properties have been identified within the Reserve at this time.

Terrestrial Wildlife/ Special Status Wildlife

Due to the previous logging activity in the Elk River watershed during the last century and the current activity on the Elk River trail this area has suffered significant disturbance and wildlife habitat alteration. All wildlife in the project will not have any cumulative negative effects with this alternative.

Aquatic Species and Essential Fish Habitat

The area of consideration for cumulative effects is the South Fork Elk River. The South Fork Elk River was logged using both primitive methods and modern methods from the 1870s through the

1990s. The town of Falk, along with a railroad system, was formed as a timber extraction and milling town and remained active for approximately five decades. The river was dammed and used for log transport during this time. From the mid-20th Century until the late 1990s the Elk River Timber Company logged the area using tractor logging techniques. Throughout the 1970s and 1980s the California Department of Fish and Wildlife and the California Conservation Corps installed several in-stream fish habitat improvement structures in the river, some of which are still in place and functioning. From 2002 through present the BLM has been actively removing potential sediment sources to prevent future erosion into the river. Similar activities have occurred on surrounding private timberlands in the watershed. The greatest impact to fish and aquatic species from past activities has been from excessive erosion — much of the sediment from that past erosion is stored in stream channels throughout the watershed and routed downstream over time (North Coast Regional Water Quality Board 2013).

As stated above, the potential of erosion from the proposed action is minimal and would not be measureable. Therefore, no cumulative effects are expected to occur.

Wetlands and Riparian Resources

The area of consideration for riparian cumulative effects is the South Fork Elk River watershed. For the previous 15 years an aggressive program of road removal by both the BLM and private timber companies has restored many acres of riparian habitat formerly buried under failing road fills. Furthermore, overall riparian conditions are improving as streamside harvest has ceased along the river corridor. The narrow footprint of the trail within the riparian zone will not reduce the extent of riparian habitat. No adverse cumulative effects are expected from the proposed action.

Water Quality

The area of consideration for water quality cumulative effects is the Elk River watershed. For the previous 15 years an aggressive program of road removal by both the BLM and private timber companies has reduced sediment inputs from failing road fills. The narrow footprint of the trail combined with appropriate drainage dispersion will not exacerbate water quality issues within the watershed. Similarly, the parking lot is not expected to generate or deliver sediment to the South Fork Elk River and tree removal from the proposed parking area will not influence stream temperatures. No adverse cumulative effects are expected from the proposed action.

Recreation and Visual Resources

Visitation to the Elk River Trail increased by approximately 80 percent from 1999 to 2012. While it is likely that visitation would continue to increase regardless of this proposed action (at a rate of about 2 percent/year), the availability of a new trail and additional parking spaces may increase visitation beyond what would have occurred otherwise. Expected visitation on the new South Side Trail would likely increase by approximately 5 percent per year for the first several years after the project is completed before leveling off. By adding additional parking spaces and

a new trail, the BLM hopes to minimize the impacts of increased visitation, and reduce conflicts that sometimes occur from dog and bicycle use on the Elk River Trail.

Within the north coast region, there are many miles of hiking trails similar to the proposed South Side Trail. Most of these trails are located in Humboldt Redwoods State Park and Redwood National and State Parks, which provide visitors with direct access to some of the world's tallest and most impressive old-growth redwood forests. The South Side Trail would add nearly 1.5 miles to the region.

Forestry and Fuels

There are no negative Cumulative Impacts on forestry and fuels due to the Proposed Action. Currently there are no other proposed parking lot modifications or trail development in the Headwaters Forest Reserve. The proposed parking lot modification would result in thinning of trees in an overstocked stand that is in need of thinning. This action would result in decreasing competition for resources and therefore increase growth rates and crown development and accelerate this stands development towards old growth forest conditions. In addition, this action may result in disrupting the current vertical and horizontal continuity of fuels by opening up the canopy and raising the crowns of residual trees.

Soils and Geology

The area of consideration for soils and geology cumulative effects is the Elk River watershed. For the previous 15 years an aggressive program of road removal by both the BLM and private timber companies has restored disturbed areas and reduced sediment inputs from failing road fills. The narrow footprint of the trail combined with appropriate drainage dispersion will not exacerbate erosion within the watershed. Similarly, the parking lot is not expected to generate or deliver sediment to the South Fork Elk River. No adverse cumulative effects are expected from the proposed action.

Floodplains

The area of consideration for floodplain cumulative effects is the South Fork Elk River watershed. Floodplains in this area are dynamic with frequent deposition of sediment, channel migration and other disturbances associated with high flows. The narrow tread of the trail and seasonal placement of the bridges is not expected to contribute to adverse cumulative effects on floodplains within the South Fork Elk River.

Vegetation and T&E/Invasive Non-native Species

The cumulative effect within the overall Headwaters Forest Reserve assessment area would be the addition of slightly greater than one mile of new trail and approximately 220 feet of hardened road and parking access where there is currently contiguous vegetation, representing a reduction of about 0.18 acres of surface available to permanent vegetation. In comparison to the nearly 40 miles of old logging roads that have been fully decommissioned and restored since 2000, this represents a very small area of disturbance.

Alternative 1 (No Action)

Direct and Indirect Effects

Climate Change
This alternative will have no direct or indirect effect on climate.

Cultural Resources
The cultural resources identified along the proposed new trail would continue to deteriorate in condition and be reclaimed by the forest if the trail is not created. People may loot these sites despite lack of access.

Native American Religious Concerns
No sacred or traditional cultural properties have been identified within the Reserve at this time**.**

Terrestrial Wildlife/ Special Status Wildlife
Wildlife will not be disturbed, displaced or harmed by this action and there will not be any negative direct, indirect or cumulative effects.

Aquatic Species and Essential Fish Habitat
No effects would be expected from the No Action alternative.

Wetlands and Riparian Resources
Under the No Action alternative, no trail or parking lot construction would occur. Therefore, no effects on riparian resources would occur.

Water Quality
Under the No Action alternative, no trail or parking lot construction would occur. No soil disturbance or vegetation removal would occur. Therefore, no effects on water quality would occur.

Recreation and Visual Resources
Under the No Action alternative, no recreation improvements would be made. Conflict, particularly between dog walkers and other visitors will continue. Some visitors, particularly those seeking opportunities for spending time alone, nature study, and wildlife viewing may stop visiting the existing Elk River Trail. These visitors will be displaced by visitors seeking opportunities for socializing, dog walking, and bicycling.

Issues associated with parking along the roadway would continue, with associated impacts to neighboring property owners.

Forestry and Fuels

Under the No Action alternative, the coast redwood trees within the plantation adjacent to the existing parking lot would not be cut and they would continue to compete for light and growing space. The impact of this is to limit growth rates and healthy crown development. In addition, No Action would continue the slow development of old-growth characteristics, (e.g., old age, large size and complex crown characteristics) in this stand. Under this alternative, the current fuels situation of high vertical and horizontal continuity would continue. These closed canopy stands would continue to be at risk of crown fires because of this, especially under conditions of severe drought.

Soils and Geology

Under the No Action alternative, no trail or parking lot construction would occur. No soil disturbance or vegetation removal would occur. No erosion would result. Therefore, no effects on soils and geology would occur.

Floodplains

Under the No Action alternative, the trail would not be constructed across the South Fork Elk River floodplain. Therefore, no effects on floodplains would occur.

Vegetation and T&E/Invasive Non-native Species

Under the No Action alternative, understory vegetation and fifteen 3-24 inch dbh redwood trees would not be impacted. English ivy would continue to be present in areas of the South Fork Elk River corridor, though annual efforts would strive to find new starts regardless.

Cumulative Effects

Climate Change

Under the No Action Alternative, visitation can still be expected to increase at Headwaters, with a subsequent release of additional greenhouse gases from vehicles traveling to and from the trailhead. Due to the relatively small number of additional visits expected (approximately 2 percent per year), this impact is likely to be negligible when considered within the larger context of global climate change.

Cultural Resources

Cultural resources in the Headwaters Forest Reserve are experiencing natural processes of decay and deterioration. These processes will occur regardless of the action taken for this study.

Native American Religious Concerns

No sacred or traditional cultural properties have been identified within the Reserve at this time.

Terrestrial Wildlife/ Special Status Wildlife

There will not be any negative cumulative impacts to any wildlife from the No Action alternative.

Aquatic Species and Essential Fish Habitat

No cumulative effects would be expected to occur from the No Action alternative.

Wetlands and Riparian Resources

There are no Cumulative Impacts due to the No Action alternative.

Water Quality

There are no Cumulative Impacts due to the No Action alternative.

Recreation and Visual Resources

Visitation to the Elk River Trail increased by approximately 80 percent from 1999 to 2012. Under the No Action alternative, visitation would continue to increase at a rate of approximately 2 percent per year. Over time, this will result in additional conflict and loss of quiet recreation opportunities such as spending time alone, nature study, and wildlife viewing. Some hikers may be inclined to visit other trails that do not allow dogs or bicycles. Within the north coast region there are many miles of such trails within the State Parks and Redwood National Park.

Forestry and Fuels

There are no Cumulative Impacts due to the No Action alternative.

Soils and Geology

There are no Cumulative Impacts due to the No Action alternative.

Floodplains

There are no Cumulative Impacts due to the No Action alternative.

Vegetation and T&E//Invasive Non-native Species

There are no Cumulative Impacts due to the No Action alternative.

Alternative 2

This alternative would be the same as the proposed alternative except that dogs would be allowed on the new trail.

Direct and Indirect Effects

Climate Change

The Proposed Action will have no direct or indirect effect on climate.

Cultural Resources

The expected effects for Alternative 2 are similar to that of the proposed action as the presence or absence of dogs is unlikely to significantly change human behavior or affect natural processes of decay. The mitigation measures of fencing the Olsen house should protect the structural remains from both interested human and canine visitors.

Native American Religious Concerns

No sacred or traditional cultural properties have been identified within the Reserve at this time.

Terrestrial Wildlife/ Special Status Wildlife

The effects to wildlife and their habitat will be the same as the preferred alternative except for the addition of dogs. All wildlife reacts to dogs as they would to any predator. The presence of humans and leashed dogs on the trail will permanently or temporarily displace wildlife due to scent and activity. It is expected that with this alternative most dogs will be off leash which is a common practice on the Elk River trail. Dogs off leash will potentially frighten a greater number of wildlife as these dogs explore areas away from the trail or harass wildlife by chasing them. Dogs off trail may attract medium to large predatory wildlife to those dogs as potential prey. Less wildlife will consider this portion of the South Fork Elk River suitable habitat with dogs present on both the north and south sides of the River. An additional permanent displacement of medium to large bodied wildlife would occur if this alternative were adopted.

Aquatic Species and Essential Fish Habitat

Dogs allowed to roam off trail and into the South Fork Elk River or tributaries could temporarily displace aquatic species from their preferred habitat. Since use would occur during the summer months when flows are low and habitat is limited, aquatic species may crowd into those areas where dog use is low, thereby increasing competition for resources such as rearing space and food.

Wetlands and Riparian Resources

The presence of dogs on the trail will cause minor disturbances to the riparian areas along the proposed trail route. This would occur when off-leash dogs roam into the riparian area, disturbing vegetation. However, these effects would be minor given the rapid growth and regrowth of vegetation along the riparian corridor.

Water Quality

Dogs allowed to roam off trail and into the South Fork Elk River or tributaries could contribute waste products to the river. Since use would occur during the summer months when flows are low, the effects would be more pronounced. The principal water quality concerns would be bacterial contamination of stream flows and increased nutrient inputs.

Recreation and Visual Resources

The additional parking spaces would reduce the safety problem created when the parking area is full and visitors end up parking along the roadway. Also, the increased parking spaces would allow the ever-increasing numbers of visitors to hike or bike into Headwaters.

Under Alternative 2, the BLM would allow dogs on the new trail. Under this alternative, conflict between visitors (particularly between dog walkers and other visitors) would persist or increase due to the presence of dogs on a narrower trail where opportunities for hikers to step out of the way of approaching dogs are limited. Under this alternative, opportunities for spending time alone, nature study, and wildlife viewing would continue to decline due to the presence of dogs on both the existing and new trail. Without an alternative dog-free hiking trail, additional non-dog walking visitors would be displaced by dog walkers at Headwaters.

The addition of dogs on the new trail would also introduce dog waste and additional vegetation trampling along the trail, with associated visual impacts.

Forestry and Fuels

The impacts under Alternative two would be the same as impacts due to the Proposed Action.

Soils and Geology

The presence of dogs on the trail will cause minor disturbances to soils along the proposed trail route. This would occur when off-leash dogs roam into the riparian area, disturbing vegetation and soils. However, these effects would be minor and rapidly masked given the rapid growth and regrowth of vegetation along the riparian corridor.

Floodplains

Dogs allowed to roam across the floodplain could disturb soils. However, observations from the existing Elk River trail suggest that soil disturbance from dogs is negligible.

Vegetation and T&E/Invasive Non-native Species

Under Alternative two, the impacts would be similar to the Proposed Action with the exception that trailside vegetation would likely be trampled to a wider footprint than a single track width as dogs on leash or under voice control may travel more widely.

Cumulative Effects

Climate Change
Cumulative effects under Alternative 2 would be the same as those described for the Proposed Action.

Cultural Resources
Cultural resources in the Headwaters Forest Reserve are experiencing natural processes of decay and deterioration. These processes will occur regardless of the action taken for this study.

Native American Religious Concerns
No sacred or traditional cultural properties have been identified within the Reserve at this time.

Terrestrial Wildlife/ Special Status Wildlife

Although the project area is recovering from the impacts to wildlife populations and habitat over the last century the presence of dogs on both sides of the river will slow the recovery of wildlife presence in the area. The continued presence of dogs off leash year after year harassing wildlife during the summer wildlife reproductive months will be a negative cumulative effect for all terrestrial wildlife including BLM sensitive and CDFW species of special concern found in Appendix D. If wildlife reproduction were to be decreased continuously some wildlife populations may eventually be extirpated from the project area.

Aquatic Species and Essential Fish Habitat

The area of consideration for aquatic species and EFH cumulative effects is the South Fork Elk River watershed. Consideration of the cumulative effects of the trail on aquatic species and essential fish habitat was considered for the proposed action. The addition of dogs to the proposed trail would likely result in behavioral disturbance to aquatic species and potentially introduce dog waste into aquatic habitat. This disturbance would not affect the overall condition of aquatic species and EFH within the assessment area. Therefore, no cumulative effects are expected from this alternative.

Wetlands and Riparian Resources
The area of consideration for riparian cumulative effects is the Elk River watershed. Consideration of the cumulative effects of the trail on wetlands and riparian resources was considered for the proposed action. The presence of dogs on the trail would add a small increment of disturbance to vegetation and riparian wetlands along the South Fork Elk River.

Water Quality
The area of consideration for water quality cumulative effects is the Elk River watershed. Consideration of the cumulative effects of the trail on floodplains was considered for the proposed action. A small amount of additional disturbance would occur along the stream banks if

dogs wander off the trail towards the stream channel. Given the rapid revegetation that area experiences, this effect would be negligible when considered in combination with the existing sediment loads carried by the river.

Recreation and Visual Resources

Cumulative impacts under Alternative 2 are similar to those described for the Proposed Action.

Forestry and Fuels

The cumulative impacts under Alternative two would be the same as the Proposed Action for both forestry and fuels.

Soils and Geology

The area of consideration for soils and geology cumulative effects is the Elk River watershed. Consideration of the cumulative effects of the trail on soils and geology was considered for the proposed action. The addition of dogs use to the proposed trail would add a small amount of additional soil disturbance where dogs roam off the trail into the adjacent forest. This soil disturbance would be negligible when considered in tandem with the current sediment loads carried by the Elk River and the rapid revegetation of disturbed surfaces – particularly of the limited size caused by dog traffic.

Floodplains

The area of consideration for floodplain cumulative effects is the South Fork Elk River watershed. Consideration of the cumulative effects of the trail on floodplains was considered for the proposed action. The addition of dogs to the proposed trail would add a minor amount of disturbance to active floodplains. This disturbance would not affect the overall function of floodplains within the assessment area. Therefore, no cumulative effects are expected from this alternative.

Vegetation and T&E/Invasive Non-native Species

Cumulative impacts would be similar to the proposed action, although a slightly larger area of disturbance would be anticipated due to the presence of dogs. However, in comparison to the nearly 40 miles of old logging roads that have been fully decommissioned since 2000, this represents a very small area of disturbance.

Alternative 3

Under this alternative, the BLM would implement only the parking lot portion of the proposed action. A new trail would not be constructed.

Direct and Indirect Effects

Climate Change
The Proposed Action will have no direct or indirect effect on climate.

Cultural Resources
The direct and indirect affects for Alternative 3 are similar to that of Alternative 1, the No Action alternative. The cultural resources identified along the proposed new trail would continue to deteriorate in condition and be reclaimed by the forest if the trail is not created. People may loot these sites despite lack of access. There will be no effect to known cultural resources if the parking lot is expanded as planned.

Native American Religious Concerns
No sacred or traditional cultural properties have been identified within the Reserve at this time.

Terrestrial Wildlife/ Special Status Wildlife
The effects would be identical to those described in the preferred alternative for the proposed parking expansion.

Aquatic Species and Essential Fish Habitat
The effects would be identical to those described in the proposed action for the proposed parking area, minus the effects related to fish exclusion during bridge installation and removal.

Wetlands and Riparian Resources
The effects would be identical to those described in the preferred alternative for the proposed parking area.

Water Quality
The effects would be identical to those described in the preferred alternative for the proposed parking area.

Recreation and Visual Resources
Under Alternative 3, the BLM would not develop a new trail. Impacts would be the same as those described for Alternative 1 (No Action), except that impacts associated with an undersized parking lot would be eliminated or reduced. The additional parking spaces would reduce the safety problem created when the parking area is full and visitors end up parking along the roadway. Also, the increased parking spaces would allow the ever-increasing numbers of visitors to hike or bike into Headwaters.

Forestry and Fuels
The impacts under Alternative three would be the same as the Proposed Action.

Soils and Geology
The effects would be identical to those described in the preferred alternative for the proposed parking area.

Floodplains
The effects would be identical to those described in the preferred alternative for the proposed parking area.

Vegetation and T&E/Invasive Non-native Species
Under Alternative 3, there would be no additional trail built, however approximately 0.18 acres of permanent vegetation would be displaced by the proposed to parking lot enhancements.

Cumulative Effects

Climate Change
Cumulative effects under Alternative 3 would be the same as those described for the Proposed Action.

Cultural Resources
Cultural resources in the Headwaters Forest Reserve are experiencing natural processes of decay and deterioration. These processes will occur regardless of the action taken for this study.

Native American Religious Concerns
No sacred or traditional cultural properties have been identified within the Reserve at this time.

Terrestrial Wildlife/ Special Status Wildlife
The cumulative effects to wildlife would be the same as the parking lot expansion in the preferred alternative.

Aquatic Species and Essential Fish Habitat
The area of consideration for aquatic species and EFH cumulative effects is the Elk River watershed. The only identified potential effect to aquatic species and EFH in the area is sediment delivery following soil disturbance, and measures to disperse runoff from the driving surface are anticipated to diminish the magnitude and likelihood of effects to the Elk River watershed.

Wetlands and Riparian Resources
The area of consideration for riparian cumulative effects is the Elk River watershed. The footprint of the parking area would result in approximately 0.18 acres of soil disturbance and tree removal. The removal of trees would result in a small decrease in potentially recruitable woody debris to the adjacent riparian zone. Riparian conditions in the assessment area are improving as trees gain in size and function and will continue to improve into the future. The tree removal proposed as part of the parking lot will not add to the riparian and wetland cumulative effects in the assessment area.

Water Quality

The area of consideration for water quality cumulative effects is the Elk River watershed. The footprint of the parking area would result in approximately 0.18 acres of soil disturbance. The work window would occur during the dry season and no sediment delivery is expected that would contribute to cumulative sediment impacts to the Elk River watershed.

Recreation and Visual Resources

Visitation to the Elk River Trail increased by approximately 80 percent from 1999 to 2012. Under Alternative 3, visitation would accelerate following the expansion of the trailhead parking lot at a rate of approximately 5 percent per year for several years before levelling off. This would result in additional visitor conflict and loss of quiet recreation opportunities such as spending time alone, nature study, and wildlife viewing.

Forestry and Fuels

The cumulative impacts under Alternative three would be the same as the proposed action because there are no forestry or fuels impacts due to the proposed South Side trail, which is not included in this Alternative.

Soils and Geology

The area of consideration for water quality cumulative effects is the Elk River watershed. The footprint of the parking area would result in approximately 0.18 acres of soil compaction. Measures to disperse runoff from the driving surface would result in no increases in soil delivery to offsite areas. Therefore, no cumulative effects are expected on soils and geology from this alternative.

Floodplains

The area of consideration for water quality cumulative effects is the South Fork Elk River watershed. No cumulative effects on floodplains within the assessment area are anticipated under this alternative. The parking lot lies outside and above the elevation of the current floodplain.

Vegetation and T&E/Invasive Non-native Species

The cumulative effect within the overall Headwaters Forest Reserve assessment area would be the addition of hardened vehicle road and parking access where there is currently contiguous vegetation, that would add remove about 0.18 acres of surface available to permanent vegetation.

5. Tribes, Individuals, Organizations and Agencies Consulted

The following persons, organizations, and agencies were consulted during preparation of this analysis. Inclusion of an organization or individual's name below should not be interpreted as their endorsement of the analysis or conclusions.

Theodore Weller, Ecologist, U.S. Forest Service, Pacific Southwest Research Station, Arcata, CA

Bill McIver, Wildlife Biologist, level 1 consultation, U.S. Fish and Wildlife Service, Arcata, CA

Brad Mauney, Wildlife Biologist, Humboldt Redwood Company, Scotia, CA

Ted Hernandez, Tribal Chair, Wiyot Tribe, Loleta, CA

Claudia Brundin, Tribal Chair, Blue Lake Rancheria, Blue Lake, CA

William Sand, Chairman, Bear River Band of the Rohnerville Rancheria, Loleta, CA

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Appendix A: Trail Construction and Maintenance Guidelines

The following information was excerpted from the 2004 Headwaters RMP (Page 4-35 and 4-36).

The following guidelines will be employed in the development of new trail elements, conversion of roads to trails, and maintenance of trails:

- Limit trail construction and maintenance to the non-rainy season,
- To the extent practicable, buffer all recreation access, restoration activities, trail construction or maintenance activities, or other work requiring use of motorized equipment from marbled murrelet and northern spotted owl nesting habitat during the period of February 1–September 15. Use vegetative screening or topographic screening, establish seasonal operating periods, or create a distance buffer of up to 0.25 mile, as determined in consultation with USFWS, to balance murrelet and owl needs with recovery actions for threatened fish species and human use.
- Minimize disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow.
- Avoid sidecasting to prevent the introduction of sediment into streams.
- Minimize sediment delivery to streams from trails. Outsloping of the tread surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is unfeasible or unsafe. Route drainage away from potentially unstable channels, fills, and hill slopes.
- Provide and maintain fish passage at all crossings of existing and potential fish-bearing streams.
- Replace culverts and bridges only during times of low streamflow but prior to upstream migration of adult anadromous salmonids. Replacement activities should avoid, to the extent feasible, removal of any riparian vegetation.
- Use materials for bridge repair, replacement, or temporary crossings that minimize the possibility of introduction of fine sediments or toxins into the drainage system.
- Minimize disturbance to riparian reserves for bridge and stream-crossing replacement. Disturbed ground should receive appropriate erosion control treatment (mulching, seeding, planting, etc.) prior to the beginning of the wet season.
- Close and rehabilitate random “social” trails that develop.
- Maintain foot trails to gradients not to exceed 10% percent. Pitch grades up to 15% may be used to a maximum of 100 feet, provided erosion can be prevented.
- Develop new trail treads that are 18–24 inches wide. If bicycle use of Elk River Corridor Trail is allowed, maintain tread 36–48 inches wide.
- Limit culvert use to locations where no other methods are feasible (e.g., grade dips, water bars).
- Keep switchbacks to a minimum wherever possible. Design switchbacks with curve radii as long as possible, with an absolute minimum of six feet for pedestrian use.

- Use native soil to construct new trails to the extent suitable, but use rock or harden trails where necessary.
- Consult and follow the additional trail design specifications described in BLM Handbook 9114-1.

Appendix B. Special Status Fish and Wildlife Species with Range Overlap within 0.25 miles of the Project Area

Element Type	Scientific Name	Common Name	Federal Status	State Status	BLM Status	CDFW Status	Occurrence in Project Area	Summary of Measures to Avoid Significant Impacts (Proposed Action)
Amphibians	*Ascaphus truei*	Pacific tailed frog	None	None	None	SSC	Confirmed present	Bridge locations will be inspected for species presence during placement and removal; If egg masses or adults are detected, bridges will be re-located a short distance downstream, the masses will be moved upstream of the bridge location, or installation/ removal will be delayed to ensure egg protection.
Amphibians	*Rana aurora*	Northern red-legged frog	None	None	None	SSC	Confirmed present	Same measures described for Pacific tailed frog above.
Amphibians	*Rana boylii*	Foothill yellow-legged frog	None	None	BLMS	SSC	Confirmed present	Same measures described for Pacific tailed frog above.
Amphibians	*Rhyacotriton variegatus*	Southern torrent salamander	None	None	None	SSC	Confirmed present	Same measures described for Pacific tailed frog above.
Reptiles	*Emys marmorata*	Western pond turtle	None	None	None	SSC	Suitable habitat, presence not detected	Same measures described for Pacific tailed frog above.
Birds	*Accipiter gentilis*	Northern goshawk	None	None	BLMS	SSC	Habitat not preferred, presence not detected	Trail construction will occur outside the nesting season during dry periods from Aug. 31 to Nov. 15; BLM will conduct a survey of the area prior to construction activities; If species presence is detected,

Element Type	Scientific Name	Common Name	Federal Status	State Status	BLM Status	CDFW Status	Occurrence in Project Area	Summary of Measures to Avoid Significant Impacts (Proposed Action)
								trail construction work will be halted until bird departs. Any nest site will be protected with restrictions on visitation.
Birds	*Aquila chrysaetos*	Golden eagle	None	None	BLMS	FP	Habitat not preferred, presence not detected	Same measures described for northern goshawk above.
Birds	*Circus cyaneus*	Northern harrier	None	None	None	SSC	Habitat not preferred, presence not detected	Same measures described for northern goshawk above.
Birds	*Elanus leucurus*	White-tailed kite	None	None	BLMS	FP	Habitat not preferred, presence not detected	Same measures described for northern goshawk above.
Birds	*Haliaeetus leucocephalus*	Bald eagle	Delisted	Endangered	BLMS	FP	Habitat not preferred, presence not detected	Same measures described for northern goshawk above.

Element Type	Scientific Name	Common Name	Federal Status	State Status	BLM Status	CDFW Status	Occurrence in Project Area	Summary of Measures to Avoid Significant Impacts (Proposed Action)
Birds	*Falco peregrinus anatum*	American peregrine falcon	Delisted	Delisted	None	FP	Habitat not preferred, presence not detected	Same measures described for northern goshawk above.
Birds	*Brachyramphus marmoratus*	Marbled murrelet	Threatened	Endangered	None	None	Unsuitable nesting habitat, flyovers may occur during nesting season	Project location is approximately 3 miles from nearest suitable nesting habitat.
Birds	*Coccyzus americanus occidentalis*	Western yellow-billed cuckoo	Threatened	Endangered	BLMS	None	Suitable habitat, presence not detected	Trail construction will occur outside the nesting season during dry periods from Aug. 31 to Nov. 15; BLM will conduct a survey of the area prior to construction activities; If species presence is detected, trail construction work will be halted until bird departs. Any nest site will be protected with restrictions on visitation.
Birds	*Asio otus*	Long-eared owl	None	None	None	SSC	Suitable habitat, presence not detected	Same measures described for the western yellow-billed cuckoo above.

Element Type	Scientific Name	Common Name	Federal Status	State Status	BLM Status	CDFW Status	Occurrence in Project Area	Summary of Measures to Avoid Significant Impacts (Proposed Action)
Birds	*Strix occidentalis caurina*	Northern spotted owl	Threatened	Candidate threatened	None	SSC	Confirmed present	Trail construction will occur outside the nesting season during dry periods from Aug. 31 to Nov. 15. The trail corridor will be surveyed annually for nesting NSO prior to trail opening. If a NSO nest is located within 500 feet of the trail, the trail will not be opened either for the entire season or until the juvenile owls have demonstrated adequate flight.
Birds	*Chaetura vauxi*	Vaux's swift	None	None	None	SSC	Suitable habitat, presence not detected	Trail construction will occur outside the nesting season during dry periods from Aug. 31 to Nov. 15; BLM will conduct a survey of the area prior to construction activities; If species presence is detected, trail construction work will be halted until bird departs. Any nest site will be protected with restrictions on visitation.
Birds	*Contopus cooperi*	Olive-sided flycatcher	None	None	None	SSC	Confirmed present	Same measures described for the Vaux's swift above.

Element Type	Scientific Name	Common Name	Federal Status	State Status	BLM Status	CDFW Status	Occurrence in Project Area	Summary of Measures to Avoid Significant Impacts (Proposed Action)
Birds	*Empidonax traillii*	Willow flycatcher	None	Endangered	None	None	Habitat not preferred, presence not detected	Same measures described for the Vaux's swift above.
Birds	*Progne subis*	Purple martin	None	None	None	SSC	Suitable habitat, presence not detected	Same measures described for the Vaux's swift above.
Birds	*Riparia riparia*	Bank swallow	None	Threatened	BLMS	None	Habitat not preferred, presence not detected	Same measures described for the Vaux's swift above.
Birds	*Icteria virens*	Yellow-breasted chat	None	None	None	SSC	Suitable habitat, presence not detected	Same measures described for the Vaux's swift above.
Birds	*Setophaga petechia*	Yellow warbler	None	None	None	SSC	Suitable habitat, presence not detected	Same measures described for the Vaux's swift above.
Birds	*Ammodramus savannarum*	Grasshopper sparrow	None	None	None	SSC	Habitat not preferred, presence not detected	Same measures described for the Vaux's swift above.
Birds	*Agelaius tricolor*	Tricolored blackbird	None	None	BLMS	SSC	Habitat not preferred, presence not detected	Same measures described for the Vaux's swift above.

Element Type	Scientific Name	Common Name	Federal Status	State Status	BLM Status	CDFW Status	Occurrence in Project Area	Summary of Measures to Avoid Significant Impacts (Proposed Action)
Fish	*Entosphenus tridentatus*	Pacific lamprey	None	None	BLMS	SSC	Confirmed present	Fish exclusion during bridge installation; Trail and parking lot construction will occur outside the nesting season during dry periods from Aug. 31 to Nov. 15.; Parking lot designed to mitigate surface runoff; Trail closed May 15 (or later) to November 15 (or earlier), depending on weather.
Fish	*Oncorhynchus clarkia clarkii*	Coast cutthroat trout	None	None	None	SSC	Confirmed present	Same measures described for Pacific lamprey above.
Fish	*Omcorhynchus kisutch*	Coho salmon – southern Oregon / northern California ESU	Threatened	Threatened	None	None	Confirmed present	Same measures described for Pacific lamprey above.
Fish	*Oncorhynchus mykiss irideus*	Steelhead – northern California DPS	Threatened	None	None	None	Confirmed present	Same measures described for Pacific lamprey above.

Element Type	Scientific Name	Common Name	Federal Status	State Status	BLM Status	CDFW Status	Occurrence in Project Area	Summary of Measures to Avoid Significant Impacts (Proposed Action)
Fish	*Oncorhynchus tshawytscha*	Chinook salmon – California coastal ESU	Threatened	None	None	None	Confirmed present	Same measures described for Pacific lamprey above.
Fish	*Spirinchus thaleichthys*	Longfin smelt	Candidate	Threatened	None	SSC	Presence unknown – may occur	Same measures described for Pacific lamprey above.
Mammals	*Arborimus albipes*	White-footed vole	None	None	None	SSC	Suitable habitat, presence not detected	During trail construction disturbance to logs and rock piles where vole nests may occur will be minimized
Mammals	*Arborimus pomo*	Sonoma tree vole	None	None	None	SSC	Suitable habitat, presence not detected	Trees targeted for trail construction removal will be visually inspected for any evidence of vole or bird nesting activity. Alternate trees will be selected for removal, if occupied.
Mammals	*Antrozous pallidus*	Pallid bat	None	None	BLMS	SSC	Suitable habitat, presence not detected	Trail closed from dawn to dusk; Trees along the trail route determined to be potential bat roosts will be preserved.
Mammals	*Corynorhinus townsendii*	Townsend's big-eared bat	None	Candidate Threatened	BLMS	SSC	Suitable habitat, presence not detected	Same measures described above for Pallid bat.

Element Type	Scientific Name	Common Name	Federal Status	State Status	BLM Status	CDFW Status	Occurrence in Project Area	Summary of Measures to Avoid Significant Impacts (Proposed Action)
Mammals	*Martes caurina humboldtensis*	Humboldt marten	None	Candidate Endangered	None	SSC	Habitat not preferred, presence not detected	Marten may temporarily travel through the project area but are not expected to occupy the area due to low quality habitat and current disturbance. Restrictions will be implemented if long term occupation is determined.
Mammals	*Myotis thysanodes*	Fringed myotis	None	None	BLMS	None	Suitable habitat, presence not detected	Same measures described above for Pallid bat.
Mammals	*Myotis yumanensis*	Yuma myotis	None	None	BLMS	None	Suitable habitat, presence not detected	Same measures described above for Pallid bat.
Mammals	*Pekania pennanti*	Fisher – West Coast DPS	None	None	BLMS	SSC	Habitat not preferred, presence not detected	Same measures described for Humboldt marten above

Appendix C. Common wildlife that may be, but not necessarily, found in the affected environment of the parking lot enlargement

Mammals with permanent or year round habitat:

- wood rat (*Neotoma spp.*)
- shrew (*Sorex spp.*)
- vole (*Microtus spp.*)
- deer mouse (*Peromyscus maniculatus*)
- brush rabbit (*Sylvilagus bachamni*)

Mammals with temporary (occasional use) habitat:

- gray fox (*Urocyon cinereoargenteus*)
- spotted skunk (*Spilogale gracilis*)
- opossum (*Didelphis virginiana*)
- raccoon (*Procyon lotor*)
- bobcat (*Lynx rufus*)

Birds:

- Anna's hummingbird (*Calypte anna*)
- Allen's hummingbird (*Selasphorus sasin*)
- downy woodpecker (*Picoides pubescens*)
- hairy woodpecker (*Picoides villosus*)
- northern flicker (*Colaptes auratus*)
- Pacific sloped flycatcher (*Empidonax difficilis*)
- black phoebe (*Sayomis nigricans*)
- Steller's jay (*Cyonocitta stelleri*)
- common raven (*Corvus corax*)
- tree swallow (*Tachycineta bicolor*)
- violet-green swallow (*Tachycineta thalassina*)
- chestnut-backed chickadee (*Poecile rufescens*)
- brown creeper (*Certhia americana*)
- Pacific wren (*Troglodytes pacificus*)
- wrentit (*Chamaea fasciata*)
- Swainson's thrush (*Catharus ustulatus*)
- American robin (*Turdus migratorius*)
- varied thrush (*lxoreus naevius*)
- Wilson's warbler (*Cardellina pusilla*)
- song sparrow (*Melospiza melodia*)
- white-crowned sparrow (*Zonotrichia leucophrys*)
- dark-eyed junco (*Junco hyemalis*)

Amphibians and Reptiles:

- Pacific treefrog (*Hyla regilla*)
- Pacific giant salamander (*Dicamptodon tenebrosus*)

northern alligator lizard (*Elgaria coeruleus*)
garter snake (*Thammophis spp*.)

Appendix D. Common wildlife that may be, but not necessarily, found in the affected environment of the proposed south-side trail

Mammals with permanent or year round habitat:

raccoon (*Procyon lotor*)
opossum (*Didelphis virginiana*)
brush rabbit (*Sylvilagus bachamni*)
deer mouse (*Peromyscus maniculatus*)
shrew (*Sorex spp*.)
wood rat (*Neotoma spp*.)
Douglas' squirrel (*Tamaiasciurus douglasii*)
chipmunk (*Tamias spp*.)
voles *(Microtus spp.)*
spotted skunk (*Spilogale gracilis*)
striped skunk (*Mephitis mephitis*)

Mammals with occassional or seasonal habitat:

gray fox (*Urocyon cinereoargenteus*)
bobcat (*Lynx rufus*)
black bear (*Ursus americanus*)
mountain lion (*Puma concolor*)
coyote (*Canis latrans*)
river otter (*Lontra canadensis*)
mountain beaver (*Aplodontia rufa*)
big brown bat (*Eptesicus fuscus*)
Black-tailed deer (*Odocoileus hemionus columbianus*)

Birds:

great blue heron (*Ardea herodias*)
sharp shinned hawk (*Accipiter striatus*)
red-shouldered hawk (*Buteo lineatus*)
red-tailed hawk (*Buteo jamaicensis*)
band-tailed pigeon (*Patagioenas fasciata*)
barred owl (*Strix varia*)
northern pygmy owl (*Glaucidium gnoma*)
Anna's hummingbird (*Calypte anna*)
Allen's hummingbird (*Selasphorus sasin*)
downy woodpecker (*Picoides pubescens*)
hairy woodpecker (*Picoides villosus*)
northern flicker (*Colaptes auratus*)
Pacific sloped flycatcher (*Empidonax difficilis*)
black phoebe (*Sayomis nigricans*)
Steller's jay (*Cyonocitta stelleri*)
common raven (*Corvus corax*)
tree swallow (*Tachycineta bicolor*)

violet-green swallow (*Tachycineta thalassina*)
barn swallow (*Hirundo rustica*)
chestnut-backed chickadee (*Poecile rufescens*)
brown creeper (*Certhia americana*)
Pacific wren (*Troglodytes pacificus*)
American dipper (*Cinclus mexicanus*)
golden-crowned kinglet (*Regulus satrapa*)
ruby-crowned kinglet (*Regulus calendula*)
wrentit (*Chamaea fasciata*)
Swainson's thrush (*Catharus ustulatus*)
American robin (*Turdus migratorius*)
varied thrush (*lxoreus naevius*)
Wilson's warbler (*Cardellina pusilla*)
song sparrow (*Melospiza melodia*)
white-crowned sparrow (*Zonotrichia leucophrys*)
dark-eyed junco (*Junco hyemalis*)
California quail (*Callipepla californica*)

Amphibians and Reptiles:

Pacific treefrog (*Hyla regilla*)
Pacific giant salamander (*Dicamptodon tenebrosus*)
California slender salamander (*Batrachoseps attenuates*)
northern alligator lizard (*Elgaria coeruleus*)
common garter snake (*Thammophis sirtalis*)

Appendix E. Effects Determination on Northern Spotted Owl for trail construction

The trail construction will have no effect on the two nearby owl activity centers. The primary reasons that influenced this determination were:

1. The Headwaters Forest Reserve Resource Management Plan, published in 2003, had a trail planned on the south side of the South Fork Elk River. That trail, if it had been implemented, would have been as close as 0.1 mile to one of the spotted owl activity centers. The proposed trail for this Environmental Assessment is 0.27 mile from that same owl activity center. That pair of owls has been known to occupy that site since 2002 and would have been known for the consultation of the original plan.
2. The two northern spotted owl activity centers near the proposed trail have not had consistent occupation in the recent past. One site that is 0.5 miles from the proposed trail has only had one spotted owl response in the last eight visits in years 2013 and 2015. The other activity center that is 0.27 mile from the proposed trail was occupied in 2013 but has only had one spotted owl response in the last ten visits in years 2014 and 2015. That same owl pair was found on Green Diamond Resource Company's property, south of their current activity center, in 2015. Recent barred owl activity in this area is considered to be the primary reason for either the permanent or temporary displacement of these spotted owls. These spotted owls may continue to be in the general area but, if so, are not responding to biologist's calls due to the competitive pressure from barred owls.
3. The northern spotted owls occupying these two activity centers have been close enough to the current Elk River trail to have adapted to or habituated to most human activity in that area. The proposed trail will only be up to 300 feet from the existing trail and so will not introduce much new area to human activity. The only difference will be that the human activity will now be on the south side of the River whereas currently the River potentially limits any off trail wandering to the south. The density of vegetation adjacent to the trail is expected to discourage most of this off trail use.
4. The construction of the trail will not remove or degrade any spotted owl habitat. All of the trail construction will be done by hand tools and will not remove any trees larger than 12 inches in diameter, the current limitation to forest restoration directed in the management plan. The trail will follow a path of least resistance through the current vegetation to minimize tree removal and tread development and therefore minimize disposal of cut vegetation.

Appendix F. List of Special-Status Plants, Fungi, Lichens and Bryophytes That Have Potential to Occur in Project Area

This section describes special-status vascular plants, fungi, lichens, and bryophytes (mosses, liverworts, and hornworts) that occur or may occur in Headwaters Forest Reserve.

Vascular Plants

Special-status plants are plants that are legally protected under ESA, CESA, or other regulations and species that are considered sufficiently rare by the scientific community to qualify for such listing. Special-status plants are species in any of the following categories:

- Plants listed or proposed for listing as threatened or endangered under ESA (50 CFR 17.12 [listed plants] and various notices in the Federal Register [proposed species]);
- Candidates for possible future listing as threatened or endangered under ESA (61 FR 40: 7596-7613, February 28, 1996);
- Listed or proposed for listing by the state as threatened or endangered under CESA (14 CCR 670.5);
- Rare or endangered under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);
- Those that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines, Section 15380);
- Considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" (lists 1B and 2 described in Skinner and Pavlik 1994);
- Listed by CNPS as species about which more information is needed to determine their status; plants of limited distribution (lists 3 and 4 described in Skinner and Pavlik 1994), which may be included as special-status species on the basis of local significance or recent biological information;
- Designated as Bureau sensitive by BLM. Bureau Sensitive plants are those plant species that are not federally Endangered, Threatened, or Proposed, but are designated by the BLM State Director for special management consideration. In California this includes all plants on BLM lands that are Federal Candidates for listing, all plants that are listed as Endangered, Threatened, or Rare by the State of California, all plants that have a Rare Plant Rank of 1B (plants are native California species, subspecies or varieties that are rare, threatened, or endangered in California and elsewhere) in the most current online version of the California Department of Fish and Games list of Special Vascular Plants, Bryophytes, and Lichens (unless the State Director has determined, on a case-by-case basis, that a particular List 1B plant does not require Sensitive status), and any other plants the State Director has determined to warrant Sensitive status.

A list of special-status plants with potential to occur in the Reserve was developed through a search of the latest versions of the California Natural Diversity Data Base, Rarefind 5 (CNDDB

2016 and 2016a) (using quads: Fields Landing, McWhinney Creek and Hydesville), the CNPS Electronic Inventory (8th edition, 2016), and descriptions of the vegetation types of the project area (Jimerson and Jones 2000). These lists were aggregated and species with no possible suitable habitat on the Reserve were removed. Special-status plants that may occur in the Reserve, their listing status, known geographic distribution, ecological information and potential or confirmed occurrence on the Reserve are summarized below in Table 1.

Non Vascular Plants

No fungi, lichens, or bryophytes are currently listed, or are candidates for listing under the ESA or CESA. However, the CNPS has developed a list of lichens and bryophytes that are considered rare. In addition, the Northwest Forest Plan contains a list of Survey and Manage species that includes fungi, lichens, and bryophytes (U.S. Forest Service and U.S. Department of Interior Bureau of Land Management 2001). A subset of these Survey and Manage species that are known or suspected to occur in the Arcata Field Office area are currently designated by the California BLM as BLM Sensitive.

Seven (five fungi and two lichens) BLM Sensitive, late successional, forest-dependent, non-vascular plant species are known to occur in the Reserve, see Table 2.

Table 1. A list of special-status plants with potential to occur in Headwaters Forest Reserve. Confirmed species occurring in the Reserve are highlighted in green.

Scientific Name	Common Name	CNPS Rare Plant Rank	State Rank	Global Rank	CESA	FESA	Elevation Range (m)	Geographic Distribution	Ecological Information	Occurrence in Headwaters Forest
Bensoniella oregona	bensoniella	1B.1	S2	G3	CR	--	915-1400	CA (HUM Co.), OR	Perennial herb, inhabits mesic sites. Blooms May-July	No confirmed observations, suitable habitat present.
Cardamine angulata	seaside bittercress	2B.1	S1	G5	--	--	915-65	CA (DNT, HUM, MRN, SIS Co.), AK, OR, WA	Perennial herb, wet areas or stream sides. Blooms Jan - July.	No confirmed observations, suitable habitat present.
Carex arcta	northern clustered sedge	2B.2	S1	G5	--	--	60-1400	CA (DNT, HUM, MEN, MPA, TUL), northern USA.	Perennial herb, generally bogs, fens and mesic forest. Blooms June - Sept.	No confirmed observations, suitable habitat present.
Carex leptalea	bristle-stalked sedge	2B.2	S1	G5	--	--	0-700	CA (HUM, DNT, MRN, TRI Co.), many other states.	Perennial rhizomatous herb living in seeps, springs, bogs, fens, marshes.	No confirmed observations, suitable habitat present.
Carex lyngbyei	Lyngbye's sedge	2B.2	S3	G5	--	--	0-10	CA (North Coast counties), OR, WA,	Perennial rhizomatous herb, brackish or freshwater marshes. Blooms Apr - Aug.	No confirmed observations, suitable habitat present. Confirmed observations in nearby quads.
Carex praticola	northern meadow sedge	2B.2	S2	G5	--	--	0-3200	CA (Sierra and NW counties), western USA.	Perennial rhizomatous herb, meadows and seeps, blooms May - July.	No confirmed observations, suitable habitat present.
Chrysosplenium glechomifolium	Pacific golden saxifrage	4.3	S3	G5	--	--	10-220	CA (HUM, DNT, MEN Co.), OR, WA.	Perennial herb, inhabits streambanks, also seeps and roadsides. Always shaded areas. Blooms Feb - June.	No confirmed observations, suitable habitat present.

Scientific Name	Common Name	CNPS Rare Plant Rank	State Rank	Global Rank	CESA	FESA	Elevation Range (m)	Geographic Distribution	Ecological Information	Occurrence in Headwaters Forest
Coptis laciniata	Oregon goldthread	4.2	S3	G4	--	--	0-1000	CA (DNT, HUM, MEN), OR, WA.	Perennial rhizomatous herb, wet sites in conifer forest, also seeps and streambanks. Blooms Feb - Nov.	No confirmed observations, abundant suitable habitat.
Cypripedium californicum	California lady's-slipper	4.2	S4	G4	--	--	30-2750	Northern CA, OR.	Perennial rhizomatous herb, seeps and streambanks in lower elevation conifer forest, often serpentine sites. Blooms Apr - July.	No confirmed observations, possibly suitable habitat.
Cypripedium fasciculatum	clustered lady's-slipper	4.2	S4	G4	--	--	100-2435	North coast and northern Sierra Nevada counties (CA), western states.	Perennial rhizomatous herb, mesic and shady coniferous forest, generally serpentine. Notably small population sizes. Blooms Mar - Aug.	No confirmed observations, possibly suitable habitat.
Cypripedium montanum	mountain lady's-slipper	4.2	S4	G4	--	--	185-2225	North coast and Northern Sierra Nevada counties (CA), MT, WY.	Perennial rhizomatous herb, upland conifer and broadleaf forests, dry or moist sites. Blooms Mar - Aug.	No confirmed observations, possibly suitable habitat.
Epilobium oreganum	Oregon fireweed	1B.2	S2	G2	--	--	500-2240	Klamath and North Coast CA to Southern OR.	Perennial herb, inhabits bogs and small streams, Blooms July - Aug.	No confirmed observations, likely very little suitable habitat on the Reserve.

Scientific Name	Common Name	CNPS Rare Plant Rank	State Rank	Global Rank	CESA	FESA	Elevation Range (m)	Geographic Distribution	Ecological Information	Occurrence in Headwaters Forest
Erythronium revolutum	coast fawn lily	2B.2	S3	G4G5	--	--	0-1600	NW CA to So BC	Bulbiferous perennial herb, inhabits wet places in woodlands. Blooms Mar - July.	No confirmed observations, possibly suitable habitat.
Gilia capitata ssp. pacifica	Pacific gilia	1B.2	S2	G5T3	--	--	5-1330	CA (DNT, HUM, MEN, SON), OR.	Annual herb, generally coastal bluff or scrub. Flowers May - Aug.	No confirmed observations, low potential for suitable habitat.
Hosackia gracilis	harlequin lotus	4.2	S3	G4	--	--	0-700	Northern and Central coast of CA, also OR, WA.	Annual herb, inhabits a variety of habitats from coastal bluffs to meadows and roadside ditches. Prefers wet areas. Blooms Mar - July.	No confirmed observations, possibly suitable habitat.
Kopsiopsis hookeri	small groundcone	2B.3	S1S2	G4?	--	--	90-885	Northern CA coast, OR, WA, into Southern Canada.	Parasitic rhizomatous herb, generally found in coniferous forests on Ericaceous host plants. Blooms in April.	No confirmed observations, possibly suitable habitat.
Lilium kelloggii	Kellogg's lily	4.3	S3	G3	--	--	3-1300	CA (DNT, HUM Co.), OR.	Bulbiferous perennial herb, inhabits gaps and roadsides in coniferous forest. Blooms Jun - Aug.	Multiple confirmed observations in the Reserve, abundant suitable habitat.
Lilium occidentale	western lily	1B.1	S1	G1	CE	FE	2-185	CA (DNT, HUM Co.), OR.	Bulbiferous perennial herb, inhabits gaps in coniferous forest and coastal bluffs, populations highly disjunct. Blooms Jun - Aug.	No confirmed observations. While suitable habitat may exist, this species is under active USFWS management due to its status and almost certainly does not

Scientific Name	Common Name	CNPS Rare Plant Rank	State Rank	Global Rank	CESA	FESA	Elevation Range (m)	Geographic Distribution	Ecological Information	Occurrence in Headwaters Forest
										occur on the Reserve.
Lilium rubescens	redwood lily	4.2	S3	G3	--	--	30-1910	CA (DNT, GLE, HUM, LAK, MEN, NAP, SHA, SIS, SON, TRI Co.)	Bulbiferous perennial herb, inhabits chaparral but also gaps in coniferous forest including road cuts. Blooms May - Aug.	No confirmed observations, but suitable habitat exists
Listera cordata	heart-leaved twayblade	4.2	S4	G5	--	--	5-1370	Throughout Western USA, also Eurasia, AK, Eastern USA.	Perennial herb, inhabits moist shady coniferous forests. Blooms Mar - June.	Confirmed in 1 location in old-growth, unharvested part of the Reserve.
Lycopodium clavatum	running-pine	4.1	S3	G5	--	--	40-1225	Northern CA, across USA, global distribution.	Perennial creeping herb, prefers moist to inundated areas.	Confirmed in 1 location 4 miles SE of project area boundary in old growth habitat.
Mitellastra caulescens	leafy-stemmed mitrewort	4.2	S4	G5	--	--	5-1700	Northern CA, ID, OR, WA, MT.	Perennial rhizomatous herb, wet shaded areas, sometimes road cuts.	No confirmed observations, but suitable habitat exists.
Monotropa uniflora	ghost-pipe	2B.2	S2	G5	--	--	10-550	CA (HUM, DNT Co.), considerable populations outside CA.	Mycotropic achlorophyllous perennial herb, mixed evergreen forests, blooms June - Sept.	No confirmed observations, but suitable habitat exists.
Montia howellii	Howell's montia	2B.2	S2	G3G4	--	--	0-835	CA (HUM, TRI Co.), OR, WA.	Annual herb, inhabits spring-wet sites such as seeps, springs and road ditches. Blooms Feb - May.	No confirmed observations in Reserve, but suitable habitat exist.

Scientific Name	Common Name	CNPS Rare Plant Rank	State Rank	Global Rank	CESA	FESA	Elevation Range (m)	Geographic Distribution	Ecological Information	Occurrence in Headwaters Forest
Packera bolanderi var. bolanderi	seacoast ragwort	2B.2	S2S3	G4T4	--	--	30-650	CA (DNT, HUM, MEN), OR, WA.	Perennial rhizomatous herb, inhabits coastal forest/scrub, sometimes roadsides. Blooms Jan - Aug.	No confirmed observations, but suitable habitat exists.
Piperia candida	white-flowered rein orchid	1B.2	S3	G3	--	--	30-1310	CA, OR, WA.	Bulbiferous perennial herb, open or shady mixed evergreen forests. Blooms May - Sept.	No confirmed observations, but suitable habitat exists.
Pityopus californicus	California pinefoot	4.2	S4	G4G5	--	--	15-225	CA, OR, WA.	Mycotropic achlorophyllous perennial herb, mixed evergreen forests, blooms March - Aug.	No confirmed observations, but suitable habitat exists.
Pleuropogon refractus	nodding semaphore grass	4.2	S4	G4	--	--	0-1600	CA (DNT, HUM, MEN, MRN Co.), OR, WA.	Perennial rhizomatous herb, inhabits wet meadows or shady riparian streambanks. Blooms Apr - July.	No confirmed observations, but suitable habitat may exist.
Ribes laxiflorum	trailing black currant	4.3	S4	G5	--	--	5-1395	Western USA	Deciduous perennial shrub, inhabits coniferous forests. Blooms Mar - Aug.	No confirmed observations, but suitable habitat exists.
Sidalcea malachroides	maple-leaved checkerbloom	4.2	S3	G3	--	--	0-730	Northern CA, OR.	Perennial herb, often in disturbed sites in woodlands. Blooms Mar - Aug.	No confirmed observations, but suitable habitat may exist.
Sidalcea malviflora ssp. patula	Siskiyou checkerbloom	1B.2	S2	G5T2	--	--	15-880	CA (DNT, HUM, MEN Co.), OR.	Perennial rhizomatous herb, inhabits open coastal forest and bluffs. Blooms May - Aug.	No confirmed observations, likely very little to no suitable habitat on the Reserve.

Scientific Name	Common Name	CNPS Rare Plant Rank	State Rank	Global Rank	CESA	FESA	Elevation Range (m)	Geographic Distribution	Ecological Information	Occurrence in Headwaters Forest
Sidalcea oregana ssp. eximia	coast checkerbloom	1B.2	S1	G5T1	--	--	5-1340	CA (DNT, HUM, SIS, TRI Co.).	Perennial rhizomatous herb, coastal meadows, blooms June - Aug.	No confirmed observations, likely very little to no suitable habitat on the Reserve.
Tiarella trifoliata var. trifoliata	trifoliate laceflower	3.2	S2S3	G5T5	--	--	170-1500	CA (TRI, HUM Co.), western USA.	Perennial herb, inhabits moist shady streambanks. Blooms Jun - Aug.	No confirmed observations, but suitable habitat exists.
Viola palustris	alpine marsh violet	2B.2	S1S2	G5	--	--	0-150	CA (Klamath, known from only 5 occurences), western USA.	Perennial herb, mesic areas such as marshes and streambanks, often beneath shrubs. Blooms Mar - Aug.	No confirmed observations, but suitable habitat may exist.

Table 2: BLM Sensitive non-vascular plants species known to occur in Headwaters Forest Reserve.

Species	Common name	Habitat/niche in the region
Clitocybe subditopoda	n/a	In duff under conifers/hardwoods
Dermocybe humboldtensis	n/a	On hard-packed soil
Mycena quinaultensis	n/a	In duff under conifers
Phaeocollybia olivacea	n/a	In duff under conifers/hardwoods
Ramaria largentii	orange coral mushroom	In duff under conifers
Lobaria oregana	Oregon lettuce lung	On mossy branches and trunks of hardwoods and conifers
*Usnea longissima**	Methuselah's beard lichen	On branches of older conifers (8 occurrences are confirmed in the Reserve, all greater than 3 miles from the Project Area)

**Usnea longissima* is also listed by CNPS (List 4.2) and the state of California as S4 – Apparently Secure.

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