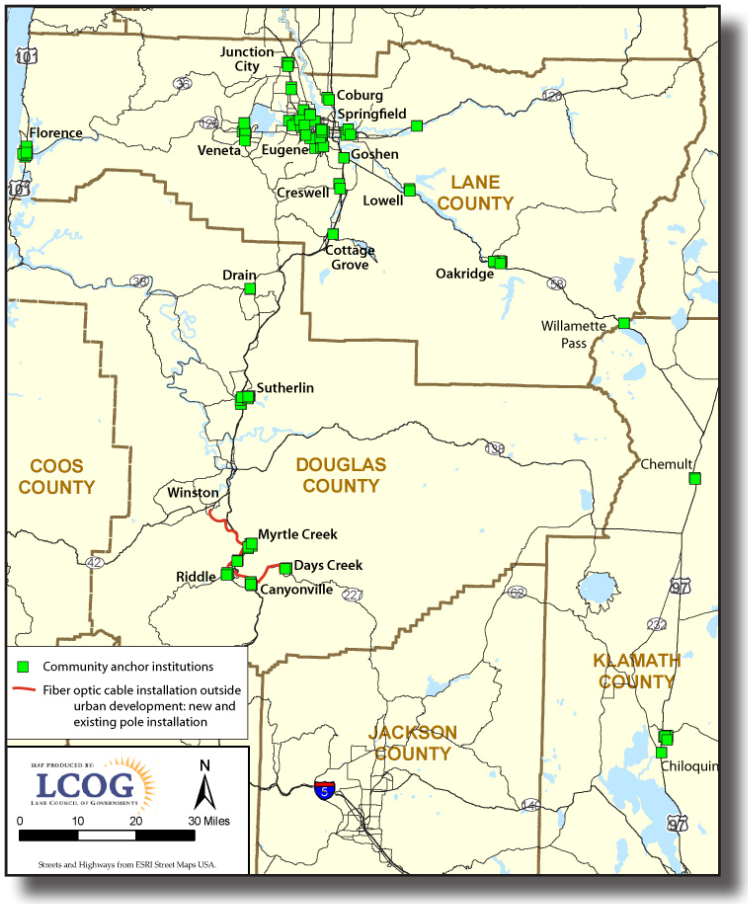
NEPA Environmental Assessment

For
Oregon South Central Rural Fiber Consortium
Lighting the Fiber Middle Mile Project

Broadband Technology Opportunities Program (BTOP)
&
National Telecommunications &
Information Administration
(NTIA)



LCOG
Lane Council of Governments

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Executive Summary

Lane Council of Governments (LCOG) in Eugene, OR has been awarded grant funding from the National Telecommunications and Information Administration (NTIA) through the Broadband Technology Opportunities Program to install approximately 124 miles of fiber optic cable to connect approximately 111 anchor institutions in 16 cities and four unincorporated areas in a three-county area totaling over 15,990 square miles.

The Regional Fiber Consortium Lighting the Fiber project will build upon an existing backbone of fiber optic cable that exists through portions of the tri-county area, extending approximately 124 miles of new fiber optic cables to places where the partners have not been able to provide service or communities have not been able to get adequate broadband service. When complete, the project will connect the proposed anchor institutions with a state-of-the-art fiber network, with a minimum level of service of 100 Megabit Ethernet to each direct connection, available in 10 Megabit increments. This project is needed in the proposed area since fiber-based facilities are either not available or are not suitable to meet the needs of the anchor institutions.

Analyses of the two alternatives – Preferred and No Action – was completed in compliance with the National Environmental Protection Act (NEPA) requirements and the guidelines provided by the Department of Commerce on National Telecommunications and Information Administration. Two additional alternatives, a wireless alternative and an underground alternative where burial of cables would be used for the entire network, were initially considered but eliminated from further review because the alternatives did not meet the purpose and need established for the project.

Under the Preferred Alternative, the existing utility infrastructure in Lane, Douglas, and Klamath Counties would be used to provide 124 miles of fiber optic network throughout these three counties in Oregon. Installation would occur by a combination of methods, summarized as follows:

1. Installing cable to existing utility poles located along roadways. This method is the predominant means of installation, occurring along approximately 106 miles of the route;
2. Replacing existing utility poles along approximately 1.5 miles of the route in order to accommodate the fiber optics, and installing cable on the new poles;
3. Adding new utility poles along approximately 8 miles of the route where existing poles cannot handle additional lines or do not exist, and
4. Installing cables underground by either directional boring or trenching. Directional boring is planned for approximately 7.2 miles along the route, while trenching is planned for approximately 0.9 miles along the route.

The project would also replace one existing vault, and add 41 new utility vaults. This new fiber optic networking would add 124 new miles to an existing network of 344 miles, for a total network of 468 miles. This environmental assessment only evaluates effects associated with the 124 new miles of proposed network.

In preparing this EA, LCOG has contacted interested environmental and governmental agencies, as well as consulted with NTIA's NEPA coordinator on overall project guidance. In particular, the State's Historic Preservation Office (SHPO), the Oregon Department of Fish and Wildlife (ODFW), NOAA National Marine Fisheries Service (NMFS), the U.S. Army Corps of Engineers, and area Tribal Governments were provided with a description and maps of the proposed project showing the area that could be affected by the proposed routing of new and/or replacement fiber optic cable. Each agency was given the opportunity to comment on the proposed project and its potential effect on the environment. LCOG has received correspondence from SHPO, several tribal governments, Oregon Department of Fish and Wildlife and NOAA National Marine Fisheries Service (NMFS) and the U.S. Army Corps of

Engineers, and has entered into a Programmatic Agreement with the National Telecommunications and Information Administration, Oregon State Historic Preservation Office regarding the project.

The Preferred Alternative, subject to implementation of appropriate mitigation measures, was found to have no significant adverse environmental impacts. The No Action Alternative, in contrast, fails to accomplish the project objectives and does not support anticipated population and employment growth or meet the needs of community anchor institutions in the tri-county area. Summary results of this analysis are provided in Table S-1.

Table S-1 Summary of Environmental Effects by Resource

Resource	Preferred Alternative	No Action Alternative
Noise	Temporary and minimal effects related to equipment noise during installation and periodic maintenance. No long term effects.	No effects.
Air Quality	Temporary and minimal short term effects of increased levels of dust and engine exhaust due to construction activities. No long term adverse effects.	No effects.
Geology/Soils	Temporary short term effects from minor soil disturbance in a limited number of areas where trenching or boring would occur. No long term adverse effects.	No effects.
Water	No short term or long term adverse effects, with proper BMPs and mitigation measures.	No effects.
Biological/T & S Species	Temporary and minimal short term disturbance in limited areas of habitat. No long term adverse effects anticipated.	No effects.
Wetlands	No short or long term adverse effects.	No effects.
Historical/Cultural	No short term or long term adverse effects with incorporation of proposed mitigation measures, including compliance with the terms of an agreement between National Telecommunications and Information Administration, an operating bureau of the U.S. Department of Commerce (NTIA), Lane Council of Governments (LCOG) and the Oregon State Historic Preservation Office (SHPO) addressing cultural resources. The agreement satisfies all Section 106 requirements.	No effects.
Aesthetic/Visual	Temporary and minimal short term effects due to construction activities. A minor long term adverse impact in one area due to new pole installation along 1.5 miles of Hwy 227. Given scale of entire project, would not constitute a significant adverse impact.	No effects.
Land Use	No long term effects. Minimal and temporary short term effect on land uses.	No effects.

Infrastructure	Minimal and temporary short term effect on transportation infrastructure. Minor long term impact to utility infrastructure due to addition of fiber strands on existing poles.	Long term adverse effect of no enhanced communication infrastructure.
Socioeconomic	Positive short term effects from construction hiring, indirect employment benefits for businesses serving construction firms, induced impacts including jobs created as a result of additional purchases by households with increased incomes. Long term positive effects on anchor institutions, residences and businesses with enhanced high speed communications.	No effects. Existing needs for improved communications continue to be unmet.
Human Health/Safety	Minor short term impacts during construction at one site, to be mitigated using BMPs. No long term adverse impacts. Indirect beneficial effect from enhanced high speed communication capabilities in area health clinics and social service agencies.	No effects.

1.0 Purpose and Need

The Oregon South Central Rural Fiber Consortium Lighting the Fiber Middle Mile Project is designed to bring broadband at needed speeds to community anchor institutions in portions of Lane, Douglas and Klamath counties in Oregon.

1.1 Background

The area is partially served by a backbone of fiber optic cable through portions of the three counties. Douglas Fast Net, EWEB and SUB have fiber optic systems to connect some schools in Eugene, Springfield, and portions of Douglas County, but there are schools, health clinics, public safety buildings, libraries and other community sites that do not have access to cost effective high-speed connections. The City of Eugene has a network connecting many of its public buildings, but has not connected its new police headquarters, its fire stations, or the Peterson Barn Community Center. The City of Cottage Grove has installed fiber optic cable in portions of the city, but has not been able to connect its key health care institution, the Cottage Grove hospital.

In addition, a dark fiber path from Eugene to Klamath Falls is available to the communities on the route, but has not been used due to lack of capital dollars to fund equipment and laterals to sites. The Oregon South Central Rural Fiber Consortium Lighting the Fiber Middle Mile Project combines these efforts and provides the interconnection to bring them together and create an opportunity for the tri-county area that will enhance broadband services and bring broadband to the region in a way that could never be achieved without the project.

1.2 Geographic Setting

The project is located in portions of Lane, Douglas and Klamath counties in Oregon. The combined area of the three counties is 15,990 square miles, larger than at least eight states. The total area served by the Consortium project will be approximately the size of New Jersey or Vermont.

When completed, this project will add to the service opportunities in 16 cities in the tri-county area, and also to four unincorporated communities or areas within the three counties. Because of the nature of the backbone infrastructure available for this project, the communities radiate out to the north, west, south and southeast of the Eugene Springfield area (see Map 1.0-1).

Using the 2000 US Census data, the project will pass a population of over 250,910. The largest city in the area to be served, Eugene, has a population of 137,893. No other community except Springfield (52,864) has a population of more than 20,000. The smallest reported city is Chiloquin, with a population of 716. Nine of the communities have a population less than 5,000 residents. The unincorporated communities of Chemult, Tricity, Days Creek, and the Willamette Pass area have no reported population because they are not large enough to appear as communities in the Census data.

In the same way, the census does not report the number of households for these communities, so stating that there are 104,354 households within the project area, according to the 2000 Census, is to underestimate the number of households by at least several dozen, perhaps a hundred or so. The report on the number of businesses is also limited by the data at hand. Ten of the cities and unincorporated communities are too small to report to the Census on the number of businesses. Again, therefore, the accumulated census estimate of 6,786 businesses is underreporting the actual number, because there are businesses in all these areas, even if they are too small to appear in the census reports.

1.3 Deficiency the Project was Initiated to Address

None of the community anchors, public safety agencies, and critical community organizations that this project proposes to connect now has adequate broadband services. While some of the areas to be served have available broadband services, the community anchor, public safety, and critical community organizational users of the area lack the broadband services that they need to operate efficiently. The area hospitals need a direct Ethernet service to allow them to establish a centralized record system with their branch offices. The medical clinics in the entire area need better connections so that they can better serve their patients. The emergency first responders need a secure, reliable broadband service system that allows them to communicate with each other. Libraries and community centers cannot provide the broadband connectivity they need to bring in patrons or to provide the services for their users.

These problems are repeated all over the area to be served by the Consortium's project. Public safety functions, including police and fire services are limited by inadequate bandwidth in Eugene and Springfield, Oakridge and Chiloquin, Roseburg and Canyonville. The schools in the area that have broadband connections are able to bring a world of classroom experiences to each campus through well developed distance learning programs. However, many schools in the Eugene and Springfield urban area, and in the outlying communities of Coburg and Oakridge, Myrtle Creek and Riddle, and elsewhere need connectivity to participate in the twenty-first century educational programs available to those with the proper fiber connection.

These target users lack broadband because the cost to obtain the services they need is too high. In many cases the problem is that the service just does not exist. This project will address that problem. When completed, the project will bring a minimum level of service of 100 megabit Ethernet to each direct connection, available in 10 megabit increments. For most of the service area the optical equipment will be installed to handle 10 gigabit Ethernet on the backbone to the Eugene consolidated interconnection point, and nowhere will the service be less than two gigabit Ethernet service at the time of first operation. All of the system will be designed to accommodate faster speeds through the addition of additional wave division lasers.

1.4 Project Purpose

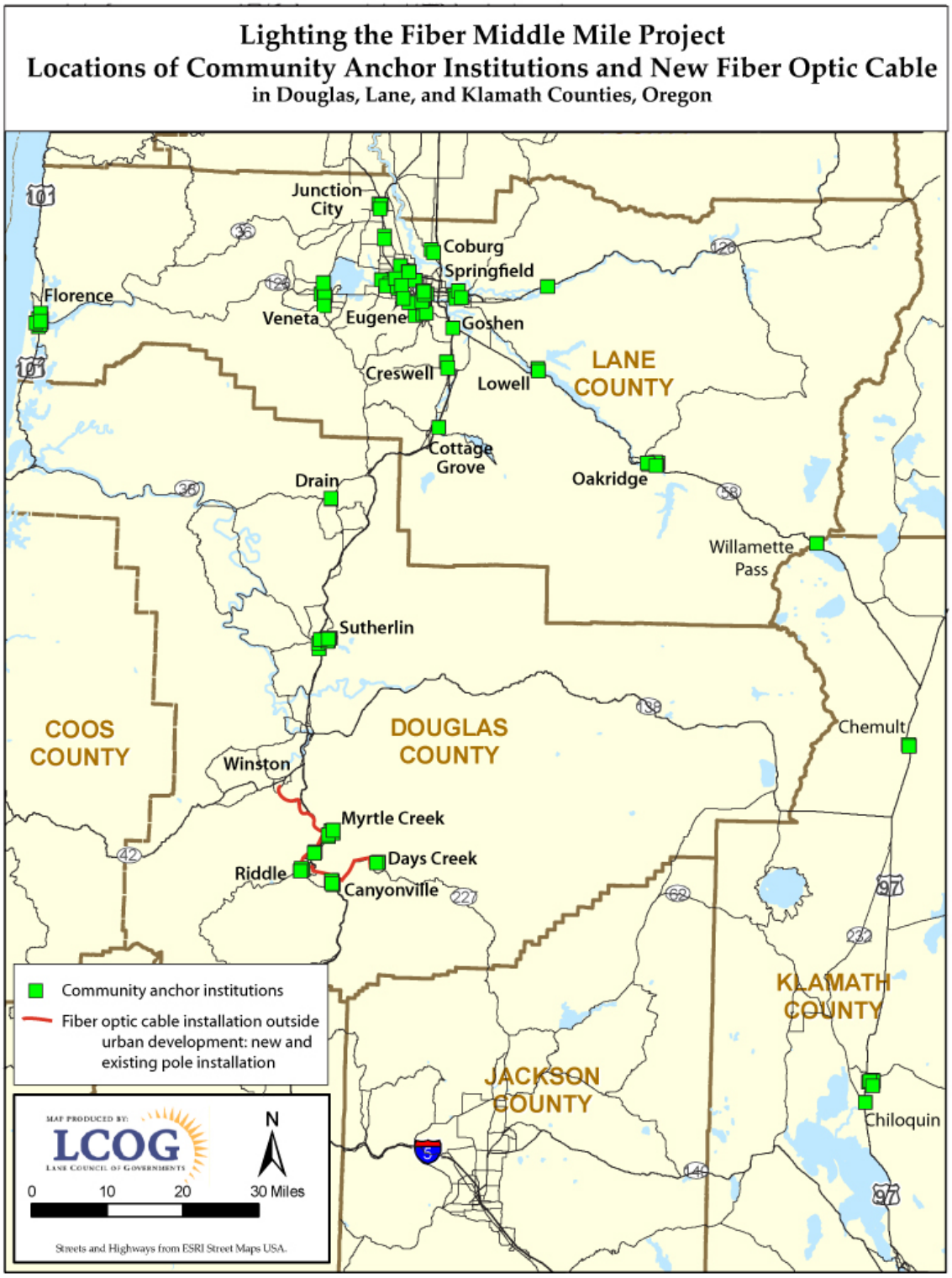
The project purpose guides the establishment of screening criteria and measures that will be used to select the Range of Alternatives to be studied in the project's Environmental Assessment. The purpose of the Oregon South Central Rural Fiber Consortium Lighting the Fiber Middle Mile Project is to:

1. Provide Ethernet transport service at high speeds (minimum of 10 MBPS bi-directional connectivity, with many sites provided with 100 or 1000 MBPS Ethernet connections) to key community institutions;
2. Install a system that can be cost effectively installed, operated and maintained;
3. Design and install a communications system that is scalable, secure, reliable, and resilient;
4. Take into account the communication needs of educational institutions, medical facilities, and other safety providers, who require high-speed, secure, reliable, and interactive communications;
5. Provide a fiber optic backbone that runs through the metropolitan area of Eugene and Springfield and into the rural areas of Lane, Douglas and Klamath Counties to provide the potential for broadband to be extended to businesses or households;
6. Design the system so that each end user point will be a point of potential additional connection;
7. Serve as a foundation for future economic recovery and growth in the three region area by providing the infrastructure needed to support high speed communications;
8. Design the project in a way that is consistent with laws related to resources in the natural and built environment; and

9. Design the project in a way which avoids, minimizes and mitigates for impacts, with installation to occur in the following order of preference, depending upon site circumstances: 1) located on existing facilities, such as existing utility poles, 2) located underground in existing rights-of-way and utility corridors, either installed by directional boring or by trenching, or 3) installed on new aerial facilities, such as new utility poles.

The Oregon South Central Rural Fiber Consortium Lighting the Fiber Middle Mile Project addresses the lack of high-speed communications infrastructure by installing approximately 124 miles of fiber optic cable to connect from existing cable to connect to approximately 111 anchor institutions in 16 cities and four unincorporated areas. It is designed to provide broadband access, equipment and support capable of easy adaptation for transmission of signals, in addition to the traffic of the community anchor institutions directly connected. The fiber optic infrastructure would be managed, administered, and made available in an open access, non-discriminatory fashion. By developing a true interconnection facility in Eugene, the hub of the project, the project will offer internet users and non-internet users the opportunity to develop cross connections and peering locations. Such an interconnection facility will facilitate broadband use by allowing the opportunities for direct connections that avoid the delays and uncertainties of the internet. It will also allow multiple internet providers to collocate and peer to expedite the transmission of internet information and messages.

Map 1.0-1 Project Proposed Coverage Area



2.0 Proposed Action

2.1 Project Description

The Oregon South Central Rural Fiber Consortium Lighting the Fiber Middle Mile Project will bring broadband at needed speeds to community anchor institutions in unserved and underserved portions of Lane, Douglas, and Klamath counties in Oregon, including Klamath Tribal institutions.

When completed, this project will add to the service opportunities in 16 cities in the tri-county area, and also to four unincorporated communities or areas within the three counties. The proposed project will deliver minimum 10 Mbps broadband speeds to critical anchor institutions within the proposed service area. It is estimated that approximately 111 community anchor institutions and public safety agencies will be served. The project will also add backbone capacity to the region, leveraging the existing network that has been developed.

2.2 Alternatives

Two alternatives are considered in this Environmental Assessment (EA). These include the Preferred Alternative and the No Action Alternative. Each is described below.

Preferred Alternative – The Oregon South Central Rural Fiber Consortium Lighting the Fiber Middle Mile Project would make use of existing utility infrastructure to provide 468 miles of fiber optic network throughout a three-county area in Oregon. The preferred alternative includes the following elements:

- Installation of approximately 124 miles of new backbone fiber, to be added to 344 miles of existing backbone fiber, to provide a total of approximately 468 backbone fiber miles. Installation would occur by a combination of methods, summarized as follows:
    - Installing cable to existing utility poles located along roadways. This method is the predominant means of installation, occurring along approximately 106 miles of the route. The process for installation of fiber optic cable on utility poles varies with the conditions present during installation. The cable is installed on the poles by one of two methods. The preferred option is to use a bucket truck to install the cable. In some circumstances a messenger line may be installed first, and then the cable pulled through the fasteners on the pole. If conditions on the ground are such that a bucket truck is not possible, the construction crew will climb the utility pole to install the fixtures and then assist with the cable being installed or pulled through. Installation will include the use of metal hardware attachments to hang cable to existing wood and metal utility poles carrying existing power and telecom cables.
    - Replacing existing utility poles along approximately 1.5 miles of the route in order to accommodate the fiber optics, and installing cable on the new poles. Poles are replaced by drilling a new hole for the pole immediately next to the pole to be replaced. Poles are installed using an auger to drill through the ground to the desired depth. The exception is where the pole might need to be installed in a solid stone footing. The general answer there would be to look for another location for the replacement pole. If this is not possible the hole for the pole would be installed using pneumatic drills (jackhammers). When the new pole is installed, the cables already on the pole are transferred to the new pole, and the old pole is cut off at ground level.

- Adding new utility poles along approximately 8 miles of the route where existing poles cannot handle additional lines or do not exist. Installation methods for the new poles would be similar to replacement poles; and

- Installing cables underground by either directional boring or trenching. Directional boring is planned for approximately 7.2 miles along the route, while trenching is planned for approximately 0.9 miles along the route. The underground work will be in the public right of way, almost exclusively on the edge of paved roads. There will also be some construction on paved or unpaved parking lots.

- Construction of three regeneration facilities; at Oakridge and Chemult. The regeneration facilities would be housed within a structure and contain metal racks with electronic equipment. Primary power for the regeneration facilities will be electricity from the local utility. Emergency backup power will be provided from a diesel-powered generator that will only run when the standard power is lost. At Oakridge, the regeneration facility will be placed in a newly constructed building measuring approximately 10 by 20 feet. It will be located at the Oakridge Industrial Park, adjacent to four similar structures that are regeneration facilities operated by other telecommunications companies. The building will be surrounded by a chain link fence. It will have external power to it, and a generator inside the building with an external fuel supply (propane). In Chemult, the regeneration facility will be located inside the ODOT maintenance station. It will have an external generator and power tank, located next to the existing building.

- Construction of an equipment hut at Chiloquin. The equipment hut will measure approximately 10 by 20 feet and be located approximately 10 feet to the rear of the headquarters building. Primary power for the equipment hut will be electricity from the local utility. Emergency backup power will be provided from a diesel-powered generator that will only run when the standard power is lost.

- The project would also replace one existing vault, and add 41 new utility vaults. The vaults are either buried under the surface or are buried so that the top is at the surface level, and is covered with a locked steel or reinforced concrete cover. These vaults will contain a coil of fiber optic cable and a splice case to cover and protect splices in the fiber optic cable. The vaults will generally be small, ranging from 13 by 24 inches in horizontal size to 36 by 36 inches horizontal size. Most vaults in this project will be installed at the base of a utility pole, and mostly in sidewalks. For sidewalk installation the contractor will cut away existing sidewalk and excavate a hole of sufficient depth (usually approximately three feet) then install the vault and fill in around the top sides of the vault with concrete, so that the top of the vault is at the level of the sidewalk, and the cover does not interfere with pedestrian traffic. Vaults are commonly installed at the end of a directional bore and at the ends of trenching. With all vaults the entrance for the fiber cable is underground. If the vault is installed at the base of a utility pole because the fiber is descending from the utility pole, a conduit will be installed starting above ground level on the pole and sweeping down and underground to enter the vault approximately twelve inches below ground level.

- Installation of optic equipment inside of approximately 111 community anchor institutions, public safety entities and critical community organizations that will connect to the fiber cables coming from outside. Facilities to be served include school buildings, entire schools districts, libraries, community service centers housing social service agencies, hospitals and fire districts (which provide ambulance services). A more complete description and map of the installation required to each community facility is found in Appendix A.

- Installation of an interconnection point in Eugene that will allow all interested carriers to locate in one space.

In the following locations, there are several design options being considered:

- Veneta:
  - The project will use existing abandoned fiber optic line connecting to the BPA station, run a parallel line underground, or complete a new aerial installation for a ¼ mile distance of the route.
  - At the elementary school, the project will either trench across the school parking lot or be installed aerially parallel to the existing electrical and telephone lines.
- Eugene.
  - At Division Avenue, the project will either use existing overhead facilities or bore under Division Avenue.
  - At the Lane County Housing Authority site, there are several route options involving different locations for directional borings.
  - At the PeaceHealth Barger Medical Building, the route will either use a directional bore or aerial installation, combined with underground installation.
  - At Irving Elementary School, there are a couple of options being considered.
- Chiloquin
  - At the Klamath Tribal Health Clinic, the connection will be underground, either by trench or directional bore.

Construction scheduling will be determined after the completion and approval of a traffic plan that establishes the appropriate time of day for installation, and safety procedures.

A more complete description of the installation required is found in Appendix A and B.

No Action Alternative – No change in existing infrastructure and services. Unmet needs would continue in unserved and underserved areas, and purpose and needs of this project would not be accomplished.

2.3 Alternatives Considered but Eliminated from Further Consideration

Two additional alternatives, a wireless alternative and an underground alternative where burial of cables would be used for the entire network, were initially considered but eliminated from further review because the alternatives did not meet the purpose and need established for the project. The following is a brief description of the alternatives and their limitations in meeting the established purpose and need for the project.

Wireless Alternative

A Wireless Alternative would replace fiber optic cable hung on existing pole lines with radio towers and microwave radios. This alternative would require construction of several hundred radio towers at variable altitudes above ground level, depending upon the surrounding terrain. Microwave dishes would be installed on the towers, and huts with radio gear and diesel generators would be installed at the base of each tower.

This alternative does not substantially address the need outlined above in Section 1.4, as follows:

- Microwave radio technology does not meet the communication needs of educational institutions, medical facilities, and other safety providers. The primary reason that the project does not propose use of wireless options is that, at present, the technology does not scale as well as fiber for higher-speed connectivity, particularly for inter-community traffic, where high speed is needed. In addition, wireless technology is more susceptible to security breaches.

- Secondly, the project is leveraging existing long haul fiber optic facilities. Wireless technology on long haul routes would not leverage this existing investment.

- Thirdly, wireless technology across the large distances and particularly the variable terrain of the region would require construction of a large number of towers with significant ground disturbance and visual impact. For the canyons of Douglas County, a radio based backbone would be very difficult to implement.
- Wireless technology can be costlier to operate and maintain, impacting the feasibility of customers to buy service.
- Wireless technology may require additional radio towers to be installed, depending upon future use, and therefore is not as scalable or able to offer the same potential for additional connection as does fiber optics.

Underground Alternative

In an Underground Alternative, cable would be buried directly underground or placed into a buried duct. Direct burial installations are most common for long cross-country installations. The cables are plowed in or buried in a trench. Fiber optic cables can also be pulled through underground ducts. This is the most common practice in urban areas. This alternative requires construction work to dig the trenches.

This alternative does not substantially address the need outlined above in Section 1.4, as follows:

- Underground installation has a high initial cost compared to other systems, impacting the feasibility of extending service.
- Direct burial does not provide the opportunity for maintenance or future expansion without the need to dig. While underground duct installation does provide opportunity for future expansion without the need to dig, it is significantly more costly, impacting the feasibility of extending service.
- This alternative would likely require greater permitting and consultation activity and would have greater magnitude affect on cultural resources, wetlands, and habitat of threatened or endangered species as the need for additional ground disturbing activities is increased significantly. In addition, the short-term impacts to noise and air quality are anticipated to be greater in magnitude due to the more construction-intensive characteristic of this alternative.
- Direct burial would be more susceptible to flooding impacts, which is a concern along the proposed route, which is located along several major river systems in Oregon.
- It is anticipated that buried construction would take longer than overhead fiber cable installation.
- Underground installation is not suitable for all terrain and soil conditions and may prove challenging in some areas along the route.

In addition, alternative routes were considered and later eliminated, in favor of the most direct route option that is contained in the preferred alternative. This decision was made in order to limit the length and potential affect and costs association with installation. As noted above, in some cases there are several final design options being considered along the project route. These minor variations would not impact the analysis of impacts.

3.0 Existing Environment

3.1 Noise

The proposed fiber optic cable routes are along existing highways in towns and cities and rural areas with the exception of approximately 8.1 miles where the cable will be placed underground in existing utility corridors by trenching or directional boring. These areas experience noise from automobiles and other modes of transportation and agricultural related activities on a regular basis. Noise levels along highways vary with speed, type of vehicle and intensity of traffic by time of day. There is approximately one mile of underground cable along a bike path where existing noise levels are lower since the distance from roadways is farther. This pathway is in within the Cottage Grove city limits in residential neighborhoods bordering on commercial areas.

3.2 Air Quality

Section 110 of the Clean Air Act, 42 U.S.C. §7410, requires state and local air pollution control agencies to adopt federally approved control strategies to minimize air pollution. EPA has established national ambient air quality standards (NAAQS) for air pollutants, including sulfur dioxide, particulate matter, nitrogen oxides, lead (Pb), carbon monoxide, and ozone. The project area includes several areas which are currently in nonattainment or are designated as a maintenance area under the NAAQS, as follows:

Lane Regional Air Protection Agency

The Eugene-Springfield area is currently designated as a maintenance area for carbon monoxide (CO). There has not been a violation since 1980, and monitored data shows a steady decline in measured CO to almost background levels. In addition, the Eugene-Springfield region was designated as a non-attainment area for PM 10 (particulate matter, 10 microns and less) in 1987. Analyses of sources revealed that home wood heating was the major source of this pollution.

The Oakridge Urban Growth Boundary was designated nonattainment for PM 10 and classified as moderate on January 20, 1994. Oregon submitted a PM 10 attainment plan on December 9, 1996, and EPA approved the plan on March 15, 1999 (64 FR 12751). The plan relies on control strategies needed to assure attainment of the PM 10 National Ambient Air Quality Standards (NAAQS). The strategy focuses on control of residential wood combustion, and road dust. Additional reductions are expected from statewide efforts to reduce slash burning smoke.

Klamath Falls PM Attainment Plan, CO Maintenance Plan, PM10 Maintenance Plan

Klamath Falls, Oregon, was designated a nonattainment area for CO and classified as moderate on January 6, 1992. Oregon submitted a CO maintenance plan on November 20, 2000, which EPA approved on September 20, 2001 (66 FR 48349). The plan relies on control strategies needed to maintain the CO National Ambient Air Quality Standards (NAAQS). The strategy focuses on the Federal Motor Vehicle Emission Control Program; discontinuation of oxygenated fuels; Best Available Control Technology for carbon monoxide emissions from major new or expanding industry.

3.3 Geology and Soils

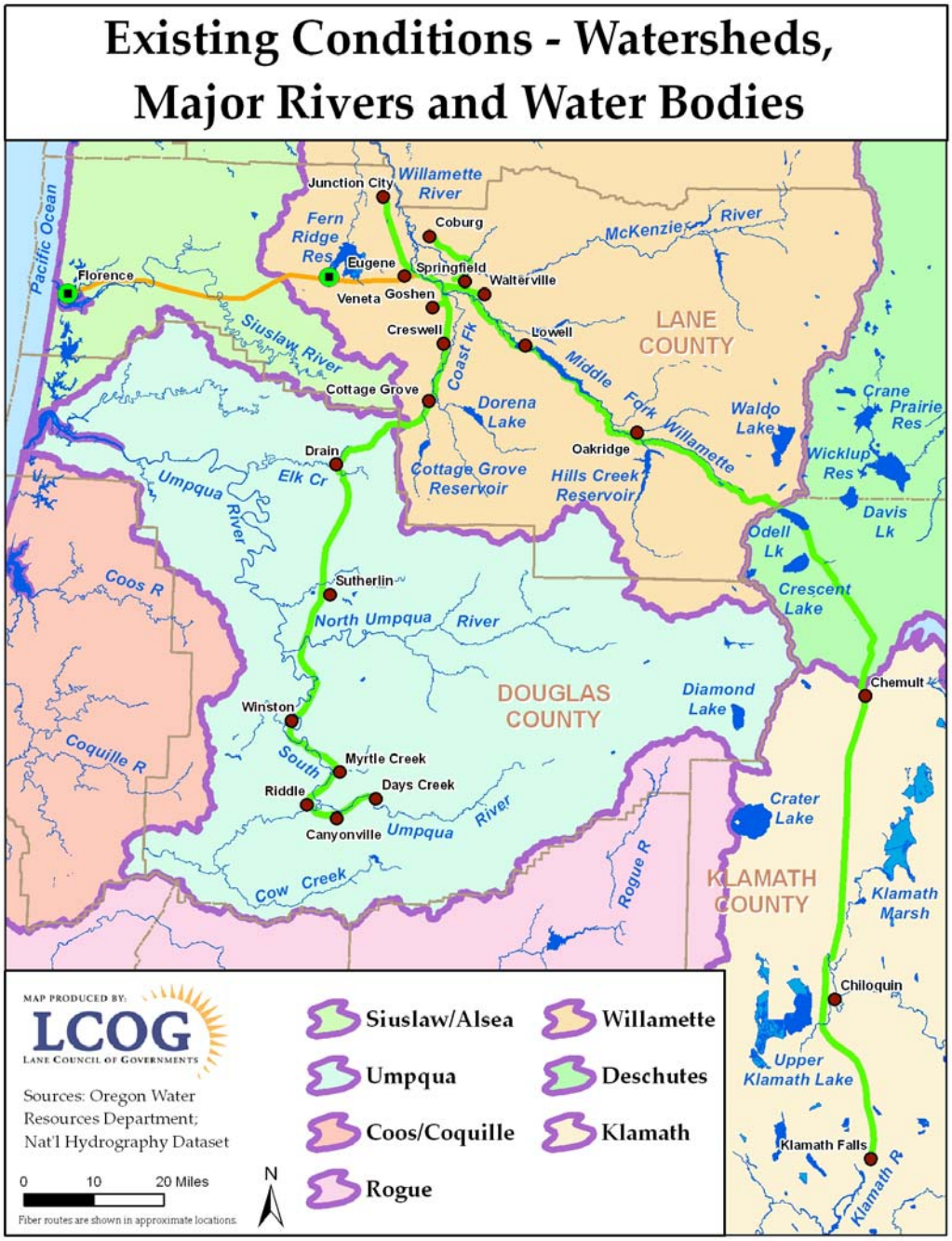
In general, most of the project area is underlain by the marine sedimentary rocks (sandstones and mudstones) of the Coast Range, volcanic rocks (lava flows, tuffs, and mudflow deposits) of the Western Cascades, and the younger volcanic rocks of the High Cascades and the Central Oregon plateau. Klamath Falls and Upper Klamath Lake are located within the most northwestern extent of the Basin and Range geological province. In Douglas County, the southernmost portions of the project extend into the northern edge of the Klamath Mountains province.

3.4 Water Resources

3.4.1 Watersheds

The proposed project routes fall within five major watersheds. The Florence area is in the Siuslaw/Alsea watershed, and all the other Lane County communities fall within the Willamette watershed. South of Cottage Grove, the proposed project area in Douglas County is in the Umpqua watershed. From Oakridge, the proposed project route follows Highway 58 over the crest of the Cascades, and falls within the Deschutes and Klamath watersheds.

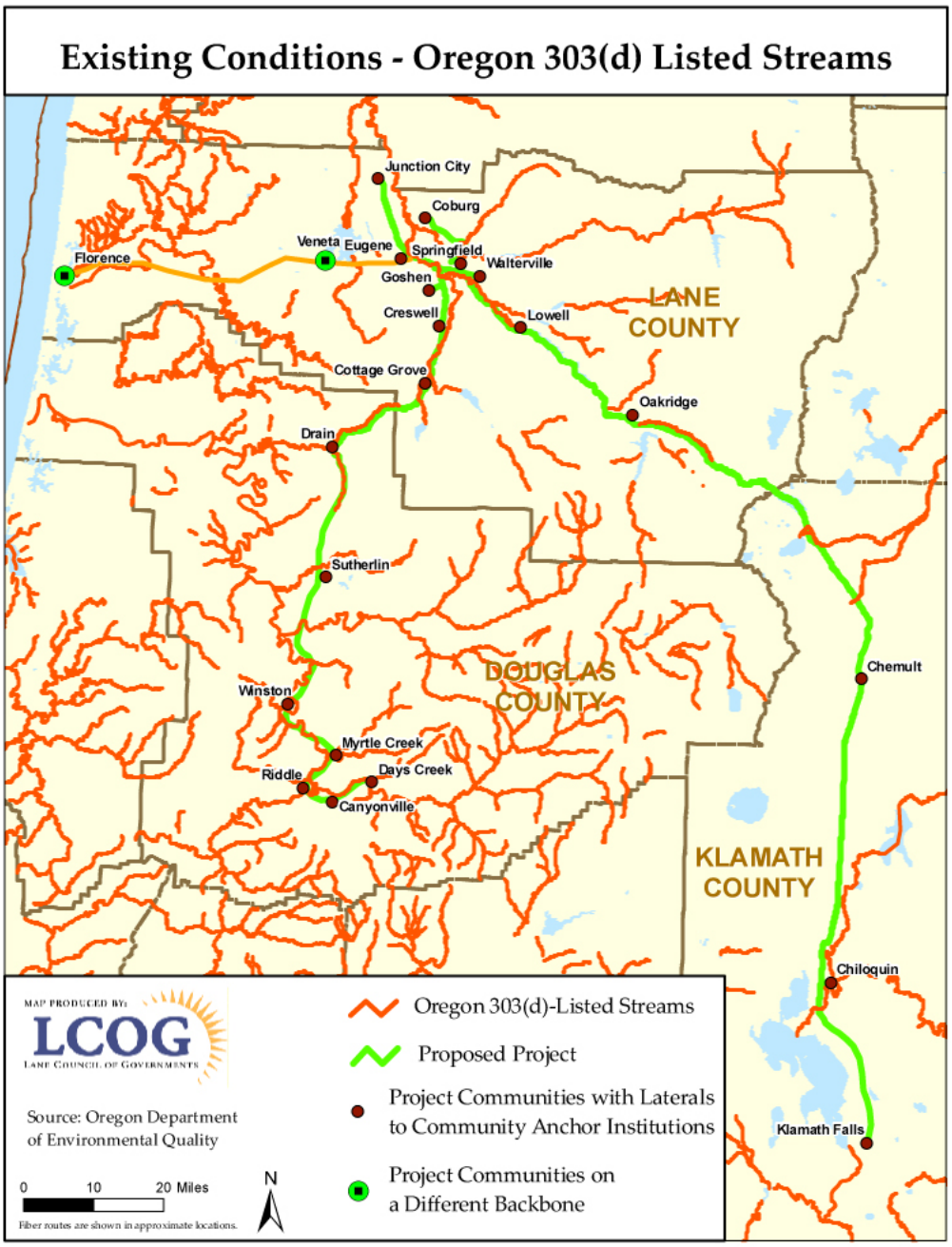
Map 3.4-1 Existing Conditions – Watersheds



3.4.2 Water Quality

Every two years, Oregon Department of Environmental Quality (DEQ) assesses water quality and reports to EPA on the condition of Oregon's waters. DEQ prepares an integrated report that meets the requirements of the federal Clean Water Act (CWA) for Section 305(b) and Section 303(d). Section 303(d) refers to waters that do not meet water quality standards. In Oregon, DEQ develops Section 303(d) lists for approval by EPA. The 2010 Integrated Report is in the process of being prepared, with a priority on updating the assessment of toxic chemicals in Oregon's waters. The data shown here are the 2004/2006 assessments.

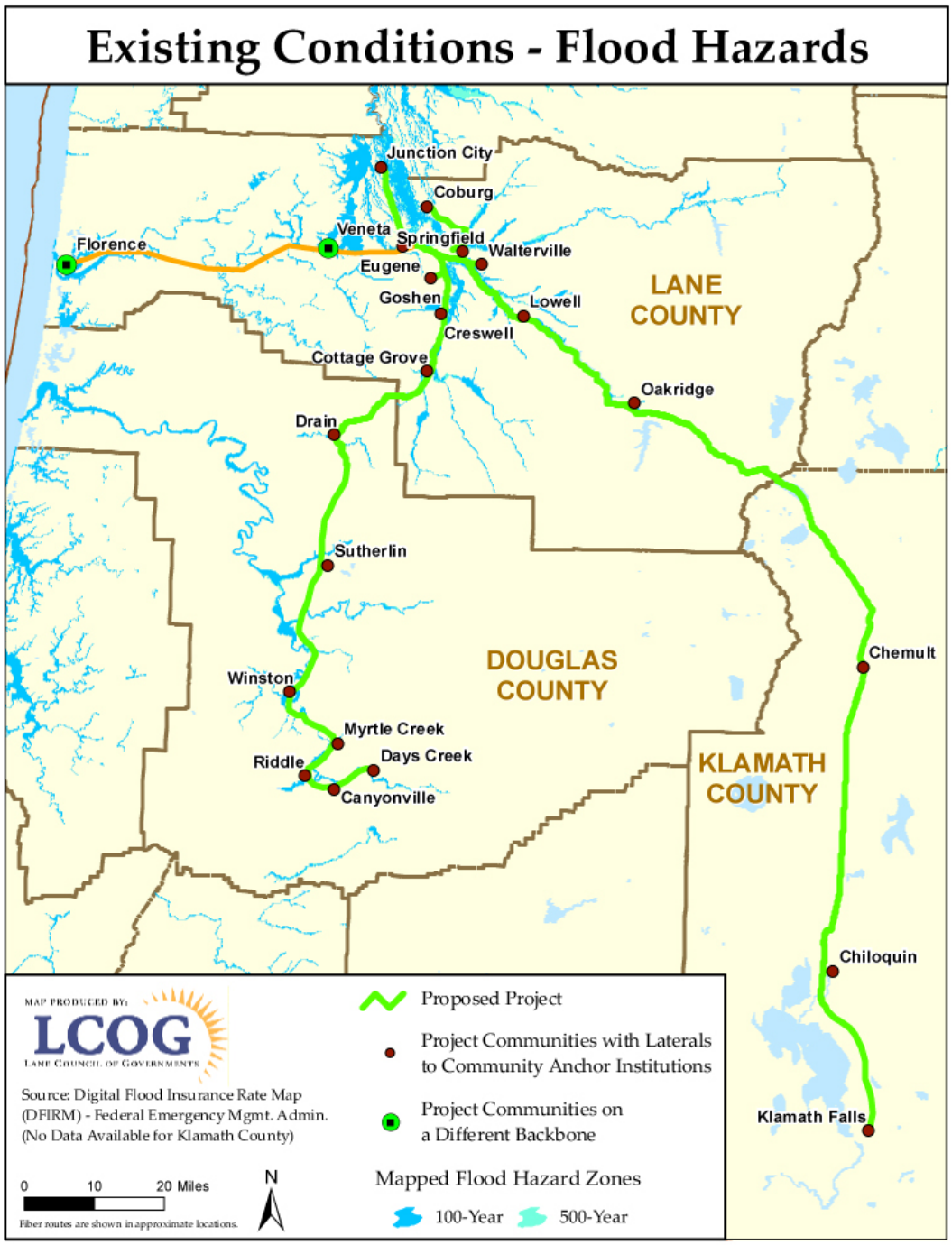
Map 3.4-2 Existing Conditions – 303(d) Listed Streams



3.4.3 Flood Zones

In areas where the proposed project route is within road rights-of-way along roads contiguous to rivers, the area may fall within a designated flood zone. In some areas the proposed project area may cross rivers and would intersect a designated flood zone.

Map 3.4-3 Existing Conditions – Flood Hazards



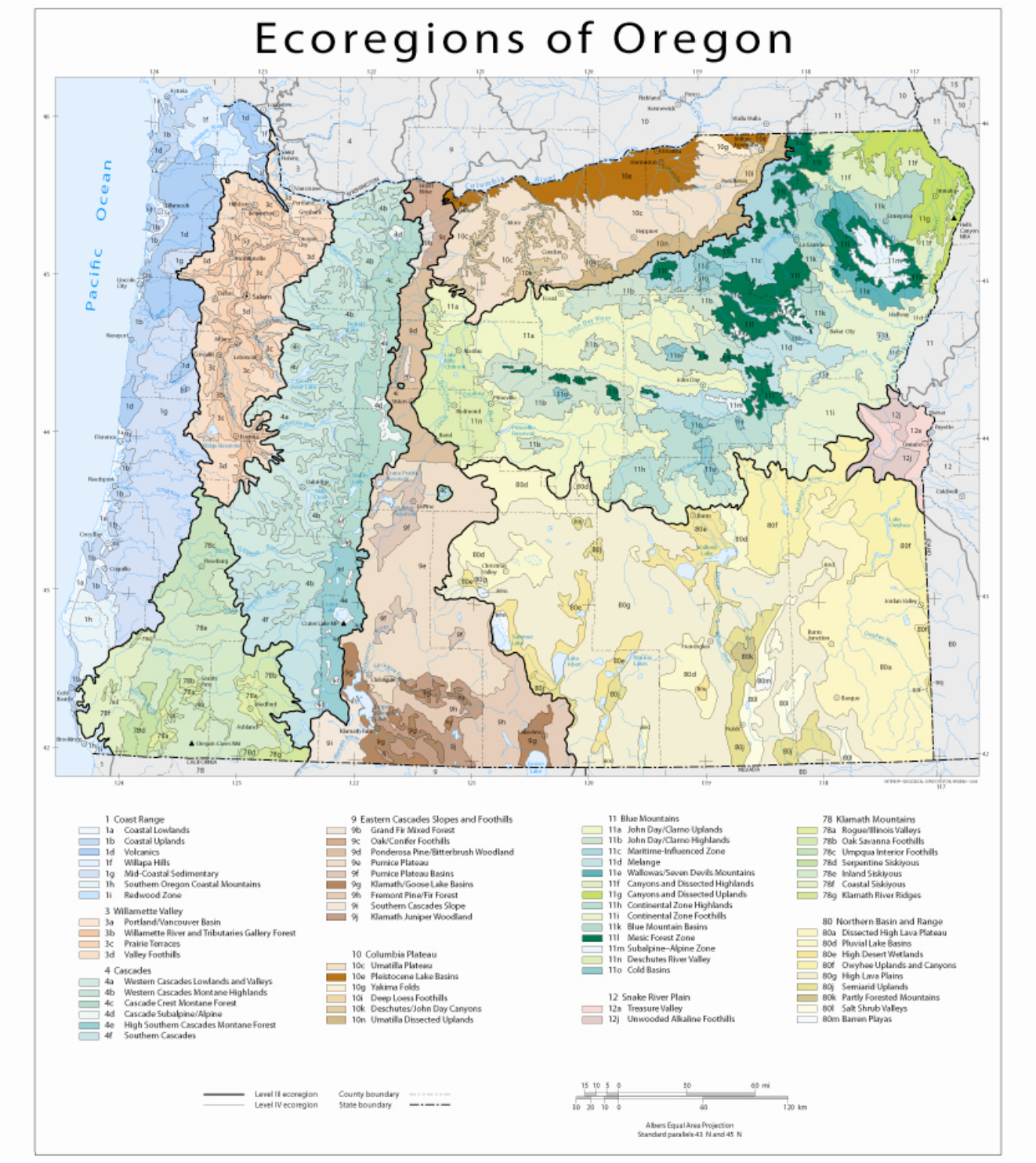
All of the cities containing anchor institutions participate in the National Insurance Flood Program (NFIP). When a community chooses to join the NFIP, it must adopt and enforce minimum floodplain management standards for participation. Any development which could potentially increase areas delineated as subject to the 100-year flood or affect the floodway would require a permit.

3.5 Biological Resources

Ecoregions

The route of the Preferred Alternative traverses five of the Level III ecosystems in Oregon, from the Pacific coast and Willamette Valley, south into the Umpqua interior foothills, and over the crest of the Cascade Range to the Klamath Mountains and eastern Cascades foothills. The following ecosystems are the Level III Ecoregions of the conterminous U.S., defined and described by the EPA.

Map 3.5-1 Ecoregions of Oregon



Coast Range
The low mountains of the Coast Range are covered by highly productive, rain-drenched coniferous forests. Sitka spruce and coastal redwood forests originally dominated the fog-shrouded coast, while a mosaic of western red cedar, western hemlock, and seral Douglas-fir blanketed inland areas. Today Douglas-fir plantations are prevalent on the intensively logged and managed landscape.

Willamette Valley
Rolling prairies, deciduous/coniferous forests, and extensive wetlands characterized the pre-19th century landscape of this broad, lowland valley. The Willamette Valley is distinguished from the adjacent Coast Range (1) and Cascades (4) by lower precipitation, less relief, and a different mosaic of vegetation. Landforms consist of terraces and floodplains that are interlaced and surrounded by rolling hills. Productive soils and a temperate climate make it one of the most important agricultural areas in Oregon.

Cascades
This mountainous ecoregion is underlain by Cenozoic volcanics and has been affected by alpine glaciations. It is characterized by steep ridges and river valleys in the west, a high plateau in the east, and both active and dormant volcanoes. Elevations range upwards to 4,390 meters. Its moist, temperate climate supports an extensive and highly productive coniferous forest. Subalpine meadows occur at high elevations.

Eastern Cascade Slopes and Foothills
The Eastern Cascade Slopes and Foothills ecoregion is in the rainshadow of the Cascade Mountains. Its climate exhibits greater temperature extremes and less precipitation than ecoregions to the west. Open forests of ponderosa pine and some lodgepole pine distinguish this region from the higher ecoregions to the west where fir and hemlock forests are common, and the lower dryer ecoregions to the east where shrubs and grasslands are predominant. The vegetation is adapted to the prevailing dry continental climate and is highly susceptible to wildfire. Volcanic cones and buttes are common in much of the region.

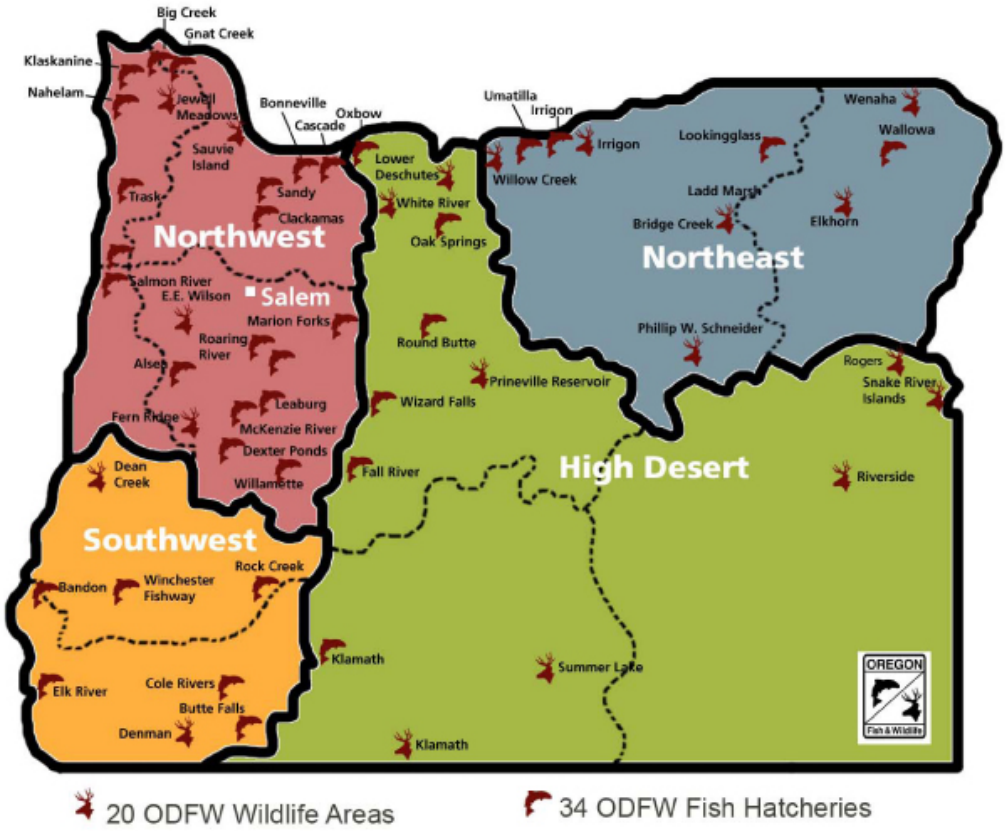
Klamath Mountains
The ecoregion is physically and biologically diverse. Highly dissected, folded mountains, foothills, terraces, and floodplains occur and are underlain by igneous, sedimentary, and some metamorphic rock. The mild, subhumid climate of the Klamath Mountains is characterized by a lengthy summer drought. It supports a vegetal mix of northern Californian and Pacific Northwest conifers.

3.5.1 Wildlife Resources

The Oregon Department of Fish and Wildlife maintains a listing of species of Oregon including amphibians, birds, mammals, and reptiles. Species names with photos and descriptions can be found on the website: http://www.dfw.state.or.us/species/index.asp

Oregon's fish hatcheries and wildlife management areas are operated by ODFW to conserve fish and wildlife species and to provide them optimum access to the quality and quantity of habitats they need for food, water, and nesting sites.

Map 3.5-2 ODFW Wildlife Areas and Fish Hatcheries



3.5.2 Vegetation/Habitats

ODFW recently completed the Oregon Conservation Strategy which guides conservation efforts at the statewide level. Strategy Habitats were designated by ecoregion, based on historic habitat loss and other factors. The following ecoregions are based on the EPA Level 3 Ecosystems and are those which fall in the BTOP Project Coverage area.

Oregon Conservation Strategy Habitat	Coast Range	East Cascades	Klamath Mountains	West Cascades	Willamette Valley	Comments
Coastal Dunes	X					
Estuaries	X					
Freshwater Aquatic Habitats	X	X	X	X	X	
Grasslands (includes grass-dominated habitats such as upland prairie, Coastal bluffs, and montane grasslands)	X		X	X	X	
Late Successional Mixed Conifer Forests	X		X	X		
Oak Woodlands	X	X	C[1]	X	X	C[1]= Pine, Pine-Oak and Oak Woodlands are combined in KM
Ponderosa Pine Woodlands		X	C[1]			
Riparian Habitats	X	X	X	X	X	
Wetlands (includes all freshwater wetland types: ponds, marshes, wet prairies, vernal pools, bogs, lakes, swamps, etc.)	X	X	X	X	X	

Coastal dunes are a Strategy Habitat in the Coast Range ecoregion and include beaches, foredunes, sand spits, and active-to-stabilizing back dunes. The vegetation varies from sparse to forested, as influenced by sand scour, deposition, movement, and erosion. Species composition is also influenced by salt spray, storm tidal surges, wind abrasion, and substrate stability. Beaches and sandspits are directly influenced by tidal action and are unvegetated. Foredunes generally have unstable sand and sparse to moderate vegetative cover including dunegrass, seashore bluegrass, grey beach peavine, large-headed sedge, beach morning glory, yellow sand-verbena and silver burweed. In dunes with greater sand stability, red fescue, seashore lupine, coastal strawberry, beach knotweed, and yarrow are dominant. With plant succession, dunes convert over time to shrublands dominated by salal and evergreen huckleberry and forests dominated by shore pine, then eventually Sitka spruce, western hemlock, and Douglas-fir. Species that live in Coastal dune habitats prefer open, sandy habitats with a high degree of disturbance from winds and tides. Strategy Species associated with Coastal dunes include western snowy plover, pink sand-verbena, and Wolf's evening-primrose.

Estuaries are a Strategy Habitat in the Coast Range ecoregion and occur where freshwater rivers meet the salty waters of the ocean. They are influenced by tidal flooding, and as such experience frequent changes in salinity, water levels, sunlight, and oxygen. Estuaries have four main subsystems: marine, bay, slough, and riverine. The marine subsystem is at the river's mouth and is dominated by salt-water plants and animals. Bays are characterized by broad mud flats that are alternately covered by water and exposed to the air due to tidal flows. Sloughs are smaller side tributaries with little freshwater input. Sloughs consist of a mosaic of meandering channels, mud flats and salt marshes. The riverine portion of the estuary extends up the river as far as tides influence water flow and salinity. The river forms a single channel that is usually bordered by salt and brackish marshes. Variation in salinity, tidal inundation, and soils influences marsh plant composition and often results in zones of vegetation, primarily grasses, rushes, sedges, and forbs. One the major bays in Oregon in the project area is the Siletz Bay.

This highly complex, productive habitat is critical for many fish and wildlife species, including salmon, crabs and other shellfish, marine mammals and seabirds. By some estimates, estuaries support up to three-quarters of all harvested fish species, and this is largely due to the high productivity of seagrass beds. Seagrasses grow underwater in estuaries and have the highest productivity of any plant. Efforts to maintain and restore estuaries will benefit many wildlife and commercially important species. Strategy

Species associated with estuaries include black brant and salt-marsh bird's beak. Estuaries also provide wintering habitat for waterfowl, migration stopover feeding areas for shorebirds, and mineral sources for band-tailed pigeons.

In accordance with state planning laws, local government comprehensive plans and zoning ordinances have been prepared for all of Oregon's estuaries.

Freshwater aquatic habitats are a Strategy Habitat in all of the state's ecoregions and include rivers, streams, ponds, lakes and reservoirs. They are defined as occurring above the influence of tides and salinity fluctuations. Freshwater aquatic habitats typically contain water year-round, while wetlands may dry out through the season.

Oregon's freshwater aquatic habitats are both interconnected and highly diverse, including tributary streams and lakes at high elevations, major rivers, smaller meandering streams, springs, seeps, and many lakes and reservoirs. The headwaters of many of Oregon's streams and rivers are located in the Cascades mountain range. Numerous lakes occur throughout Oregon, formed by glaciation, lava flows, and human-made structures such as dams. Waldo Lake is one of Oregon's clearest lakes, located in the West Cascades ecoregion.

Grasslands are a Strategy Habitat in the Coast Range, Klamath Mountains, West Cascades, and Willamette Valley ecoregions; however, grasslands such as alkali grasslands, perennial bunchgrass and montane grasslands also can be found in the East Cascades. Grasslands include a variety of upland grass-dominated habitats such as upland prairies, coastal bluffs and montane grasslands. In general, grasslands occur on dry slopes or plateaus and have well-drained sandy or loamy soils. Although dominant species vary across Oregon, perennial bunchgrass and forbs dominate native grasslands. In some areas, grasslands are similar to wet prairies and wet meadows in structure and share some of the same prairie-associated plants and animals. In all but the shallowest rocky soils, grasslands are maintained through disturbances such as periodic fire, soil upheaval by rodents, frost heave, wind, or salt spray.

Late successional conifer forests are a Strategy Habitat in the Coast Range, Klamath Mountains, and West Cascades. Late successional forests are defined by the plant species composition, overstory tree age and size, and the forest structure. They include characteristics such as a multi-layered tree canopy, shade-tolerant tree species growing in the understory, large-diameter trees, and a high volume of dead wood such as snags and logs. Historically, fire was the major natural disturbance in all but the wettest climatic areas. Depending on local conditions, fires in western Oregon conifer forests were moderate- to high-severity with fire return intervals averaging 100 to more than 400 years. The historic fire regime created a complex mosaic of stand structures across the landscape.

Coniferous forests dominate the landscape of the West Cascades ecoregion. Although there are several forest types in the Coast Range ecoregion, two types predominate: Sitka spruce and Douglas-fir. In the Klamath Mountains, mixed conifer forests are characterized by conifers but have higher tree diversity than those in the other two ecoregions. Douglas-fir is usually dominant, and depending on site characteristics, other canopy trees include white fir, sugar pine, ponderosa pine, and incense cedar.

Oak woodlands are a Strategy Habitat in the Coast Range, East Cascades, Klamath Mountains, West Cascades, and Willamette Valley ecoregions. Oak woodlands are characterized by an open canopy dominated by Oregon white oak. Depending on the ecoregion and site characteristics, oak woodlands may also have ponderosa pine, California black oak, and/or Douglas-fir, or, on steep slopes, canyon live oak. In general, the understory is relatively open with shrubs, grasses and wildflowers. The tree canopy of an oak woodlands obscures between 30 percent - 70 percent of the sky as you look up at it. Oak habitats are maintained through fire, which removes small conifers and maintains a low to moderate shrub cover.

In the Coast Range and West Cascades, oak habitats are found in drier landscapes, such as south-facing slopes and foothills bordering the Willamette Valley. In the Klamath Mountains, oak woodlands are

found in low elevations, on dry sites or in areas with frequent low-intensity fires. Here, woodlands may occur in a mosaic with chaparral and dry conifer woodlands. In the Willamette Valley, oaks were originally found in a mosaic of prairies, oak savanna, and riparian habitats throughout the valley floor and low elevation slopes. Oaks were most common on flat to moderately rolling terrain, usually in drier landscapes, and often are found between prairie remnants and conifer forests. Today, oak woodlands often are found in small isolated pockets surrounded by other land-uses, such as development or agriculture.

In the East Cascades, oak woodlands occur primarily on the north end of the ecoregion and in the Klamath River Canyon. They are located at the transition between ponderosa pine or mixed conifer forests in the mountains, and the shrublands or grasslands to the east. Oak habitats in the East Cascades are different in structure and composition than those in western Oregon, but are just as important to a variety of wildlife as well as rare plants.

Oak woodlands transition into oak savannas. Oak savannas are characterized by primarily upland prairie with widely-spaced large Oregon white oak and conifers. Oak savannas are discussed in the grasslands section. Oak woodlands also transition into pine-oak habitats in the Klamath Mountains, which are discussed in the ponderosa pine section.

Ponderosa Pine Woodlands are a Strategy Habitat in the East Cascades and Klamath Mountains ecoregions. The structure and composition of ponderosa pine woodlands varies across the state, depending on local climate, soil type and moisture, elevation, aspect and fire history. In the East Cascades and Klamath Mountains ecoregions, ponderosa pine woodlands have open canopies, generally covering 10-40 percent of the sky. Their understories are variable combinations of shrubs, herbaceous plants, and grasses. Ponderosa woodlands are dominated by ponderosa pine, but may also have lodgepole, western juniper, aspen, western larch, grand fir, Douglas-fir, incense cedar, sugar pine, or white fir, depending on ecoregion and site conditions. The structure of a savanna is open and park-like with an understory dominated by fire-adapted grasses and forbs. In the East Cascades ecoregion, ponderosa pine habitats generally occur at mid-elevation and are replaced by other coniferous forests at higher elevations. In the Klamath Mountains ecoregion, pine or pine-oak woodlands occur on dry, warm sites in the foothills and mountains of southern Oregon. Here, pine woodlands are usually dominated by ponderosa pine, but may be dominated by Jeffrey pine, depending on soil mineral content, fertility, and temperatures. The understory often has shrubs including green-leaf manzanita, buckbrush, and snowberry. Pine-oak woodlands are found primarily in valley margins and foothills on rolling plains or dry slopes. The structure is park-like with an open grassy understory, but may also have a shrubby understory. Throughout Oregon, the open structure of ponderosa pine habitats was historically maintained by frequent, low-intensity surface fires.

Riparian habitats are those adjacent to rivers and streams or occurring on nearby floodplains and terraces, and are shaped and maintained through seasonal flooding, scour, and soil deposition. Floods replenish nutrients, recharge groundwater, and reset successional processes. Riparian habitats occur along rivers and streams at all elevations, from valley bottom floodplains to alpine torrents. Riparian habitats also include springs, seeps, and intermittent streams, and many low elevation alluvial floodplains confined by valleys and inlet.

Riparian habitats vary from sparsely vegetated areas to cottonwood gallery forests due to flood dynamics. Plant composition is influenced by elevation, stream gradient, floodplain width, and flooding events. Throughout most of the state, riparian vegetation is mostly dominated by deciduous trees and shrubs, such as bigleaf maple, alders, aspen, cottonwood, dogwood, willows and Oregon white ash. Conifers, such as pines and spruce, dominate some riparian woodlands at higher elevations. In some ecoregions, riparian

habitats include some riparian shrublands. In the East Cascades, riparian shrublands are dominated by deciduous shrubs, such as willows, creek dogwood, western birch or hawthorn.

3.5.3 Wetlands

Wetlands are an important natural resource and are considered a Strategy Habitat throughout the state under the Oregon Conservation Plan. Wetlands are covered with water during all or part of the year. Permanently wet habitats include backwater sloughs, oxbow lakes, and marshes, while seasonally wet habitats include seasonal ponds, vernal pools, and wet prairies. Wetland habitats are highly diverse and include the following different types:

Deciduous swamps and shrublands are located in depressions, around lakes or ponds or on river terraces. They generally flood seasonally with nutrient-rich waters and are dominated by woody vegetation including willows, hardhack, alder, red-osier dogwood, Pacific crab apple, and ash.

Marshes (including emergent marshes) occur in depressions (ponds), fringes around lakes and along slow-flowing streams especially in valley bottoms. Marshes are seasonally or continually flooded and have water-adapted plants such as sedges, bulrush, spikesedges, rushes, cattails, and floating vegetation. Marshes can have mucky soils resulting in water with high mineral content and dominated by herbaceous species, often including wildflowers.

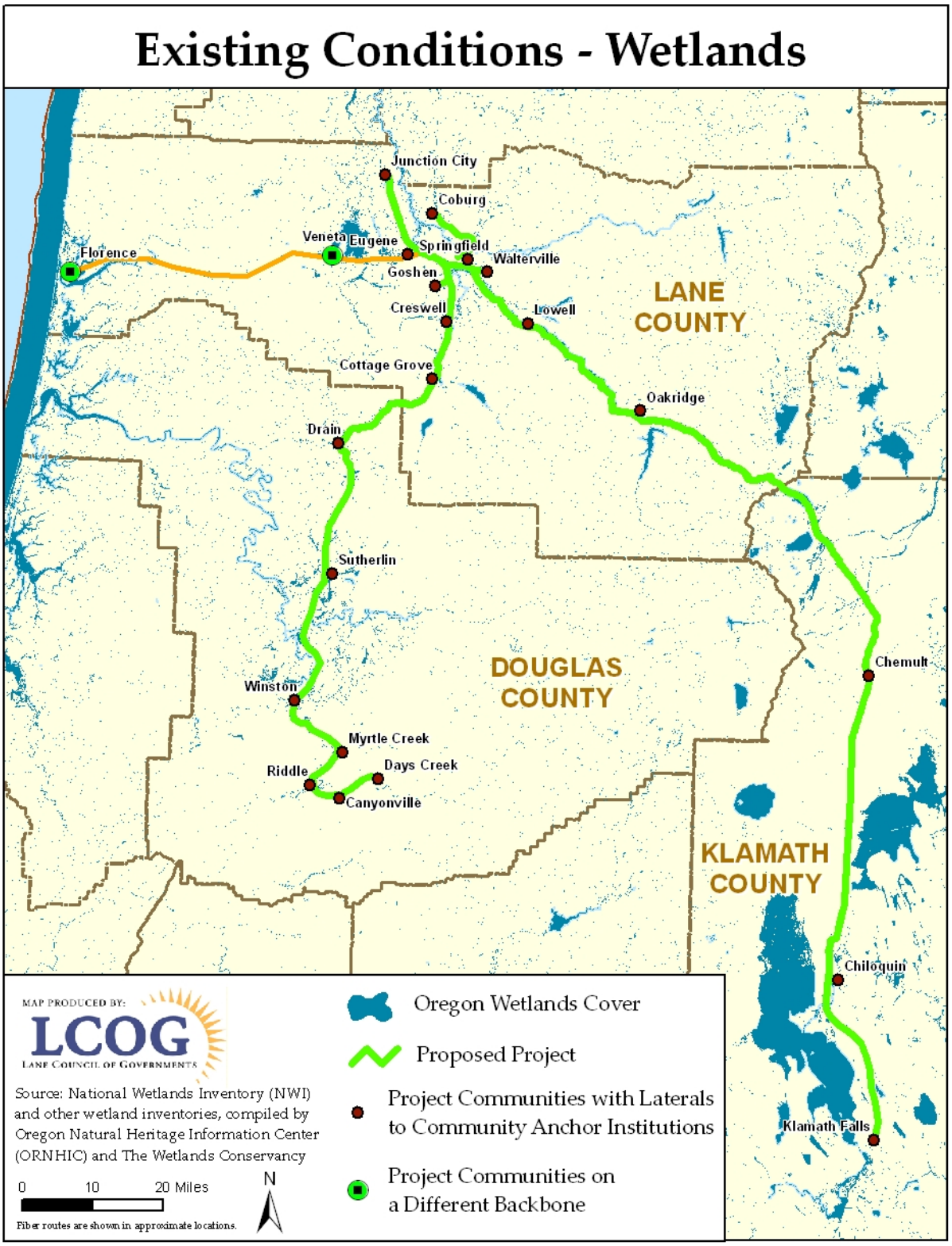
Off-channel habitat (oxbow lakes, stable backwater sloughs, and flooded marshes) are created as rivers change course. In these areas, water moves slowly, providing quiet aquatic habitats.

Seasonal ponds and vernal pools hold water during the winter and spring but typically dry up during the dry summer months. Vernal pools occur in complexes of networked depressions that are seasonally-filled with rainwater. They host a variety of species with unique adaptations.

Wet meadows (including montane wet meadows) occur on gentle slopes near stream headwaters, in mountain valleys, bordering lakes and streams, near seeps, in large river valley bottoms, and in open wet depressions among montane forests. They are dominated by tufted hairgrass, sedges, reedgrass, spikesedge, rushes, and wildflowers. Montane wet meadows may have shallow surface water for part of the year, are associated with snowmelt, and are not typically subjected to disturbance events such as flooding.

Wet prairies occur in lowlands, especially in floodplains whereas wet meadows occur in depressions surrounded by forests and are associated with snowmelt. Wet prairies are dominated by grasses, sedges and wildflowers.

Map 3.5-3 Existing Conditions -
Wetlands



3.5.4 Threatened & Endangered Species

Under federal law the U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration share responsibility for implementing the federal Endangered Species Act of 1973 (Public Law 93-205, 16 U.S.C. § 1531), as amended. In general, USFWS has oversight for land and freshwater species and NOAA for marine and anadromous species. In addition to information about species already listed, the USFWS-Oregon Field Office maintains a list of Species of Concern. The State of Oregon and the federal government maintain separate lists of Threatened and Endangered species. Under State law (ORS 496.171-496.192) the Fish and Wildlife Commission through ODFW maintains the list of native wildlife species in Oregon that have been determined to be either "threatened" or "endangered" according to criteria set forth by rule (OAR 635-100-0105).

Appendix C includes USFWS lists by county of federally listed plant and animal species, and Oregon listed plants from the ODA Plant Division.

Currently, at the state level there are 60 plant species that are administratively protected in Oregon. Of these 60 species, 30 are listed as endangered and 28 are listed as threatened. Two species, *Arabis macdonaldiana* and *Howellia aquatilis*, have been federally listed, but the Oregon Administrative Rules (OAR 603-073) have not been updated to reflect the state protection that is conferred by federal listing. All federally listed plant species occurring in Oregon are administratively protected by the Oregon Department of Agriculture. In addition, Oregon has 76 candidate species.

Essential Fish Habitat (EFH) and Designated Critical Habitat for Salmonids

The Magnuson-Stevens Act requires cooperation among NOAA Fisheries Service, fishery management councils, fishing participants, federal and state agencies, and others in achieving EFH protection, conservation and enhancement. Essential salmonid habitat is defined as the habitat necessary to prevent the depletion of native salmon species (chum, sockeye, Chinook and Coho salmon, and steelhead and cutthroat trout) during their life history stages of spawning and rearing.

Additionally, the Endangered Species Act (ESA) requires the federal government to designate "critical habitat" for any species it lists under the ESA; in this case, salmon and steelhead. "Critical habitat" is defined as: (1) specific areas within the geographical area occupied by the species at the time of listing, if they contain physical or biological features essential to conservation, and those features may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species if the agency determines that the area itself is essential for conservation.

Two species, Oregon Coast Coho Salmon and Upper Willamette River Chinook Salmon, are listed as threatened, and Oregon coast steelhead is a listed Species of Concern. DSL, in consultation with the Oregon Department of Fish and Wildlife (ODFW), designates essential salmonid habitat areas based on field surveys and/or the professional judgment of ODFW´s district biologists. Designations are periodically reviewed and updated.

NOAA Fisheries announced that it has proposed to retain the threatened Endangered Species Act status of Oregon coast coho salmon, and requested public review and comment. The comment period closed July 26, 2010.

NOAA Fisheries has Designated Critical Habitat (DCH) maps and data available and DSL and ODFW Essential Salmonid Habitat (ESH) has been designated in the state. The Siuslaw and Umpqua Rivers, including the South Umpqua, and their tributaries, located in proximity to the proposed route, are both DCH and ESH. For maps and more information, see Appendix C.

Willamette and Umpqua Valley Recovery Plan and Critical Habitat

The U.S. Fish and Wildlife Service released a final recovery plan in June 2010 to address the survival needs of 13 rare species (two butterflies and 11 plants) native to the prairies of Oregon's Willamette and Umpqua Valleys and southwestern Washington. Prairies in this region are among the most endangered ecosystems in the United States, with less than 1 percent remaining.

The plan covers six species listed under the Endangered Species Act and recommends conservation strategies for seven other rare species, some of which are protected under state law. Listed species are the Fender's blue butterfly, Willamette daisy, Bradshaw's lomatium, Kincaid's lupine, Nelson's checkermallow, and golden paintbrush. Others are the Taylor's checkerspot butterfly, pale larkspur, Willamette Valley larkspur, peacock larkspur, shaggy horkelia, white-topped aster, and Hitchcock's blue-eyed grass.

Other species with Designated or Proposed Critical Habitat in Lane, Douglas, and Klamath Counties include: Marbled murrelet, Western snowy plover, Oregon silverspot butterfly, Northern spotted owl, Oregon chub, Bull trout, Shortnose sucker, and Lost River sucker. Some DCH occurs near or along the proposed project route.

Recovery plans are non-regulatory; they are road maps federal agencies and partners use to improve the status of imperiled species. In addition to providing a synthesis of the current knowledge and science for listed species, recovery plans help direct efforts and resources towards conservation of rare species and their habitats.

3.6 Historic and Cultural Resources

3.6.1 Historic Buildings, Districts, and Other Sites

Oregon's State Historic Preservation Office (SHPO) manages and administers programs for the protection of the state's historic and cultural resources. Oregon's National Register and Survey Program is part of the SHPO, located within the Heritage Programs division of the Oregon Parks and Recreation Department. Oregon Parks & Recreation Department also administers the Oregon Historic Cemeteries List. See Appendix A for a list of Oregon properties listed in the National Register of Historic Places and Appendix E for a list of historic cemeteries in Douglas, Lane, and Klamath Counties.

3.6.2 Archaeological Sites

Due to the sensitivity of the information, access to SHPO Archaeological Records is restricted. General information concerning the presence or absence of an archaeological site within the boundaries of a proposed project has been provided for planning purposes for this project. SHPO staff has been consulted and have provided preliminary comments. For more information, see 4.6 Environmental Consequences, below.

3.7 Aesthetic and Visual Resources

Landscape Views

The landscapes of Douglas and Lane County are some of the most diverse in Oregon. Along the ocean shoreline are dunes, estuaries, marsh lands and lush forests. Traveling east from the coast, the terrain gradually slopes up 2,000 feet into the Coast Range. Evergreen forests dominate the Coast Range as well as the Cascade Mountains in eastern Lane County.

The Cascade mountain foothills adorn the Willamette Valley's eastern horizon before ascending to 6,500 feet in elevation at the eastern county boundary. The Willamette Valley runs north and south between the two mountain ranges. The valley is characterized by the Willamette River system, evergreen forests, oak savannahs, and agricultural lands. The Eugene-Springfield area in the valley is the county's one metropolitan area, and there are also eight smaller cities and 35 unincorporated communities. The majority of the county's landscape is devoted to forest use, mostly in federal land ownership. Numerous lakes, rivers and creeks, combined with a predominantly rural character and prevalence of natural areas, create high scenic values.

In Klamath County, the east side of the Cascade mountain range and foothills are dominated by drier forest, often ponderosa pine woodlands. These have more open canopies and shrubby grassland understories. Oregon's only national park provides stunning vistas of Crater Lake, and to the south, Klamath Lake is Oregon's largest lake. Surrounded by a complex a wildlife refuges, the Klamath Falls area attracts waterfowl and migrating birds and wildlife dependent on open water, marshes, and grasslands. Conifer forests and oak and pine woodlands, much in national forests, make up the scenic rural landscape.

Scenic Byways

Oregon's scenic byways are a part of the larger National Scenic Byways Program under the U.S. Department of Transportation, Federal Highway Administration. These roads are recognized officially based on one or more archeological, cultural, historic, natural, recreational and scenic qualities. Five of Oregon's scenic byways are near or contiguous to the project area: (see Appendix F).

- West Cascades Scenic Byway—Hwy 58 at Westfir north to Estacada
- Cascade Lakes Scenic Byway—Hwy 58 southeast of Willamette Pass north to Bend
- Pacific Coast Scenic Byway Hwy 101 through Florence
- Rogue-Umpqua Scenic Byway (near but not within project area)
- Myrtle Creek-Canyonville Tour Route
- Volcanic Legacy Scenic Byway (parallels project route, Hwy 140 south of Klamath Falls)
- Cottage Grove Covered Bridge Tour Route

Three of the scenic byways are roads that are part of the project area. Highway 101 is a Scenic Byway along the entire length of the Oregon coast. The upper southern section of the byway starts at Florence and continues to just south of Bandon. In Florence, the proposed project area would proceed along Highway 101 north of the intersection with Highway 126. New fiber strands would be hung overhead on existing poles in this area.

The second scenic byway that overlaps the proposed project area is the Myrtle Creek-Canyonville Tour Route. The section of Highway 227 from Canyonville to Days Creek along the South Umpqua River would include installation of poles in the right-of-way for approximately 1.5 miles, with that section otherwise using existing utility poles.

The Cottage Grove Covered Bridge Tour Route takes off from Interstate 5 and continues south along Row River Road. The terminus point for the Cottage Grove proposed project area is near the Cottage Grove Hospital at a vault approximately 150 feet from Row River Road. The project route would overlap the scenic byway route, following Row River Road for approximately 1,000 feet. The installation would be mostly trenching in the right-of-way and boring under existing driveways where necessary.

Scenic Waterways

There are six designated scenic waterways in Lane, Douglas, and Klamath Counties. These include the following:

- Two sections of the McKenzie River
- North Fork of the Middle Fork Willamette River
- Waldo Lake
- North Umpqua River
- Upper Rogue River
- Klamath River

The Oregon Parks and Recreation Department (OPRD) administers the Scenic Waterways Act, a program established in 1970 to "achieve a balance between protecting the rivers' natural resources and the… people who live along them." OPRD must be notified of certain activities proposed within ¼ mile of the bank of Oregon's designated scenic waterways. Such activities include cutting of trees, mining, construction of roads, railroads, utilities, buildings, or other structures. However, no project activities will occur within ¼ mile of the bank of these designated waterways. See map in Appendix E.

National Parks, National Forests, Wilderness Areas, and Wildlife Refuges

Crater Lake National Park in Klamath County is Oregon's only national park. Additionally, within the tri-county region there are many national forests and wilderness areas. The proposed project route passes through Siuslaw, Willamette, Umpqua, Deschutes, and Fremont-Winema National Forests. The closest wilderness areas are Diamond Peak, Mt. Thielsen, and Mountain Lake Wilderness Areas all of which are well outside the proposed route. There are also three national wildlife refuge areas near the proposed route which are part of Klamath Basin National Wildlife Refuge Complex. Only one, Hank's Marsh, part of the Upper Klamath Refuge, is directly contiguous to the route.

State Parks and Lands

There are numerous state parks and recreation areas near the proposed route. Along Highway 58 between Eugene and Oakridge, Elijah Bristow State Park, Dexter State Recreation Site, and Lowell State Recreation Site offer day use parks with access to boating, fishing, picnicking, hiking and other activities. Along Highway 97, thirty miles north of Klamath Falls, Collier Memorial State Park features a campground, outdoor museum of historic logging equipment, and other recreational amenities and is within the proposed project route.

Native American Lands

The tri-county area is an area of interest for several tribes, including the following: Confederated Tribes of Siletz, Cow Creek Band of Umpqua Indians, the Confederated Tribes of Warm Springs, the Confederated Tribes of Coos, Lower Umpqua and Siuslaw, the Klamath Tribes and the Coquille.

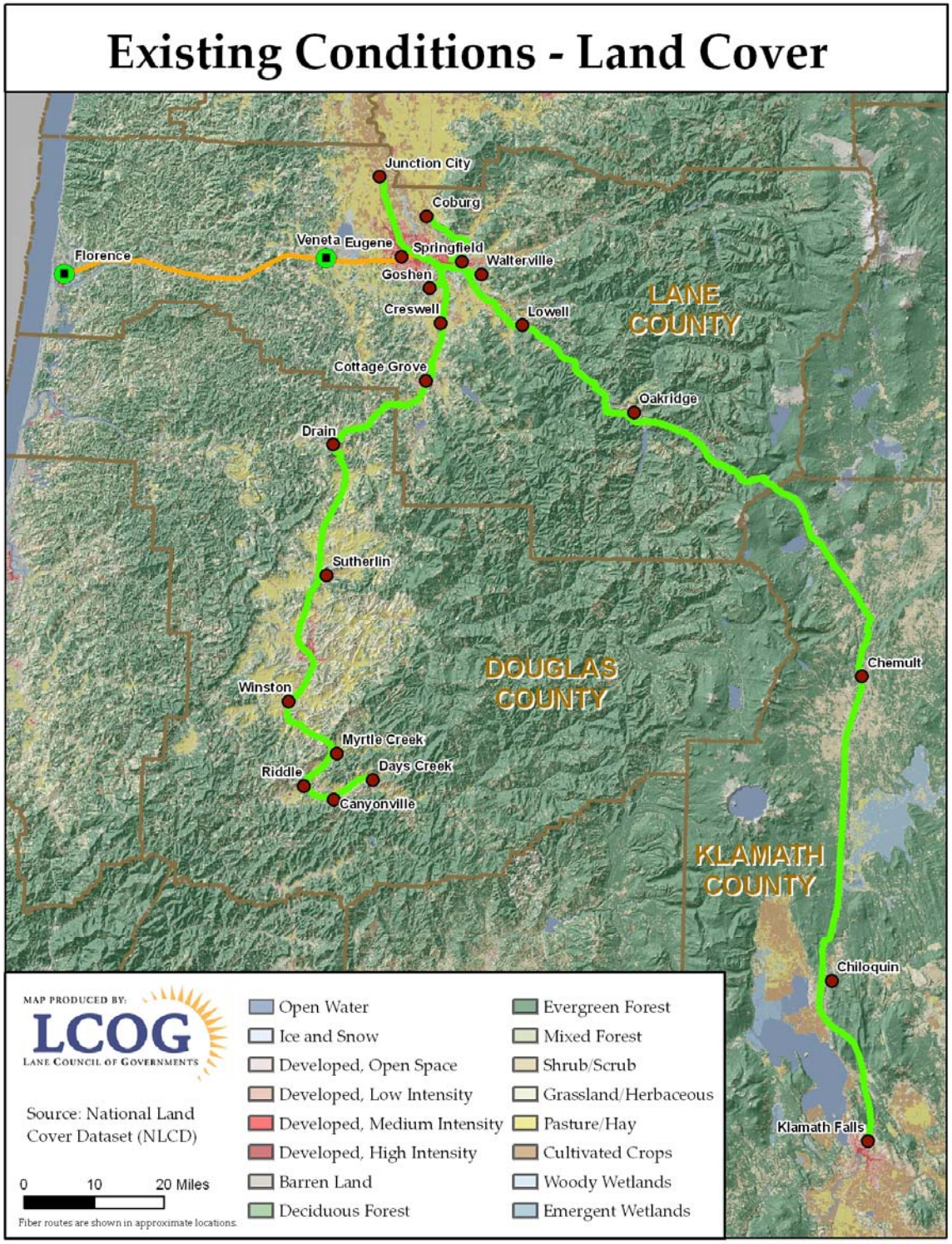
All Oregon tribal governments have reservation or trust land created by treaties or federal acts. These are lands over which tribes have regulatory authority unless that authority has been removed by Congress. There are no tribal reservation lands located within areas near the fiber optic route. There is trust land that is located along the fiber optic route that would be served in the Chiloquin area, including the Klamath Tribal Headquarters and the Klamath Tribal Health Center.

The proposed project routes have been submitted to Tribal Governments for comment (see Appendix F).

Municipal and County Lands

Local governments own land along the proposed project route and major cities and counties may have local zoning codes that protect scenic values. Locally owned park lands along the route will be identified prior to project construction.

Map 3.7-2 Existing Conditions – Land Cover



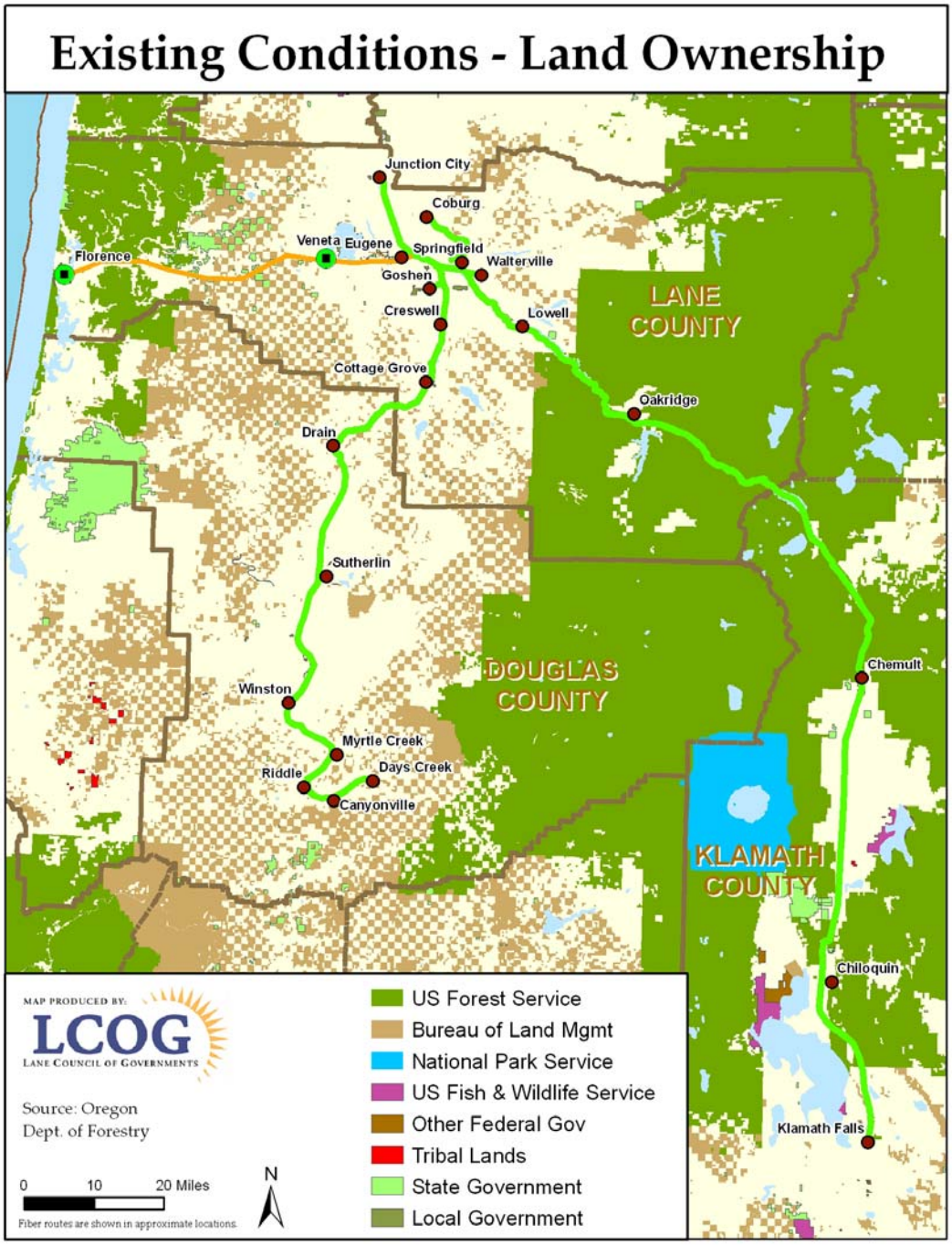
3.8 Land Use

The land uses within the region of the proposed fiber optic route are varied. Each county has incorporated cities and rural communities that include a variety of uses such as residential, commercial, industrial, government, and parks and open space. The portions of the proposed route located outside urban areas

will primarily be forest or agriculture. The tri-county region is rich with natural resources, including the ocean, major waterways (e.g., Willamette River, McKenzie River, Umpqua River, Klamath Lake), and prime timber and farm lands.

Each county and all incorporated cities in the region have comprehensive plans and local land use laws that guide land use planning actions.

Map 3.7-1 Existing Conditions – Land Ownership



3.9 Infrastructure

The proposed fiber optic routes traverse a variety of topography and demographics. The route is comprised of a diverse area ranging from fully urban to fully rural locations, with a wide range of infrastructure services from full-range to very rustic to non-existent. As a result, the communications needs for project implementation varies greatly from location to location.

3.9.1 Communications

Throughout the proposed route, the existing communications infrastructure will be used. Aerial facilities will primarily be used, however, where needed, underground trenching will extend and connect the fiber optics system. Using existing rights-of-way or other paved surfaces, such as driveways or parking lots will facilitate the connection of the system to existing users.

3.9.2 Travel Services

The existing rural and urban highway systems provide a well-established network for travelers and residents. Due to the diversity of topography among the three counties, travelers can reach many destinations in a timely manner through the valley corridor freeways. Traveling through the various mountain ranges, whether by freeway or more rural routes is both scenic and seasonally challenging.

3.9.3 Waste Disposal Services

Throughout the tri-county region, waste disposal services are available in urban and rural settings. Curb side recycling is available in the larger communities. Landfills and recycling centers are located throughout the region.

3.9.4 Roadways

The region is served by a combination of state, county, and city roadways. Existing facilities such as Highways 101, 58, and 97 have existing aerial infrastructure that will connect communities along the route. Urban streets in each of the communities also provide access to aerial infrastructure.

For more detailed descriptions and maps of the proposed routes, refer to Appendix A.

3.10 Socioeconomic Resources

The tri-county region includes a broad cross-section of socioeconomic characteristics and resources. All three counties have incorporated cities of various sizes, wide-ranging rural communities with differing levels of rural services, and large sparsely developed rural resource areas.

3.10.1 Demographics and Population

Lane County

Lane County is a large, diverse political subdivision of the state of Oregon. Most of Lane County is forest and farmland. The population is mainly concentrated in the Eugene-Springfield metropolitan area, which is the second largest metropolitan area in Oregon. The cities other than Eugene and Springfield are stretched across the county, ranging from Oakridge, located in the Cascade Mountains, to Florence, located at the mouth of the Siuslaw River near the Oregon Dunes seashore.

According to the American Community Survey (2006-2008), Lane County had a total population of 343,000, composed of 140,000 households. The average household size was 2.4 people.

The total school enrollment in Lane County was 88,000 in 2006-2008.

In 2006-2008, Lane County had a total of 149,000 housing units, 7 percent of which were vacant. Of the total housing units, 67 percent were single-unit structures, 23 percent were multi-unit structures, and 9 percent were mobile homes.

Lane County's economy is centered around agriculture, higher education, high technology, forest products, recreation, RV manufacturing and tourism.

Douglas County

Douglas County extends from sea level at the Pacific Ocean to 9,182-foot Mt. Thielsen in the Cascade Range. The Umpqua River marks the dividing line between northern and southern Oregon, and its entire watershed lies within the county's boundaries.

Most of the county's residents are grouped within a narrow corridor adjoining Interstate 5. The largest city, Roseburg, is located along I-5 in the heart of the county.

The county contains nearly 2.8 million acres of commercial forest lands and the largest stand of old growth timber in the world, which still provides the region's main livelihood. Interstate 5 passes through the middle of the Umpqua Valley Region.

Approximately 25 percent of the labor force is employed in the forest products industry. Agriculture includes field crops, orchards and livestock. Over 50 percent of the land area of the county is owned by the federal government.

According to the American Community Survey (2006-2008), Douglas County had a total population of 104,000, composed of 42,000 households. The average household size was 2.4 people.

The total school enrollment in Douglas County was 21,000 in 2006-2008.

In 2006-2008, Douglas County had a total of 46,000 housing units, 9 percent of which were vacant. Of the total housing units, 69 percent were single-unit structures, 12 percent were multi-unit structures, and 18 percent were mobile homes.

Incorporated cities include: Canyonville, Drain, Elkton, Glendale, Myrtle Creek, Oakland, Reedsport, Riddle, Roseburg, Sutherlin, Winston, and Yoncalla.

Douglas County's economy is centered around forest products, mining, agriculture, fishing and recreation.

Klamath County

Klamath County is the fourth largest county in Oregon encompassing more than 6,100 square miles, with most of its residents located within the county seat of Klamath Falls and its urban growth boundary. Klamath Falls serves as a retail center for diverse geographic locations. Klamath Lake, which covers 133 square miles, borders the city of Klamath Falls on the north and is the largest natural lake west of the Great Salt Lake.

Klamath County is the home of Crater Lake National Park, as well as forest lands and a number of national refuge sites. Klamath County is recognized for its scenic beauty, outdoor recreation, abundant waterfowl and diverse landscape.

According to the American Community Survey (2006-2008), Klamath County had a total population of 66,000, composed of 27,000 households. The average household size was 2.4 people.

The total school enrollment in Klamath County was 16,000 in 2006-2008.

In 2006-2008, Klamath County had a total of 31,000 housing units, 14 percent of which were vacant. Of the total housing units, 69 percent were single-unit structures, 13 percent were multi-unit structures, and 18 percent were mobile homes.

Incorporated cities include: Bonanza, Chiloquin, Klamath Falls, Malin, and Merrill.

Klamath County's economy is centered around forest products, agriculture, tourism and recreation

3.10.2 Demographic Profile of Tri-County Area

Table 3.10-1 Population and Area

County	Population (2009 PSU Estimated)	Total Area (square miles)	Population Per Square Mile	Population Forecast (2030)
Lane	347,690	4,722	73.6	430,454
Douglas	105,395	5,134	20.5	129,062
Klamath	66,350	6,136	21.2	74,924

Source: Portland State University, Population Research Center; US Census 2000, and Oregon Office of Economic Analysis

Table 3.10-2 Population by Age (%), 2006-2008

County	Under 18	18 – 24	25 – 44	45 – 64	65+
Lane	20	11	27	27	14
Douglas	21	8	23	28	20
Klamath	24	9	20	28	16

Source: American Community Survey, 2006-2008

Table 3.10-3 Race and Ethnicity (%), 2006-2008

County	White	Hispanic or Latino	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some other race	Two or more races
Oregon State	80.4%	10.6%	1.6%	1.0%	3.5%	0.2%	0.1%	2.6%
Lane	86.1%	6.2%	1.0%	1.1%	2.6%	0.2%	0.1%	2.6%
Douglas	90.7%	4.1%	0.3%	1.3%	1.0%	0.1%	0.1%	2.4%
Klamath	83.0%	9.0%	0.3%	3.1%	1.1%	0.1%	0.1%	3.4%

Source: American Community Survey, 2006-2008

3.10.3 Employment and Income

Table 3.10-4 Median Annual Income, Poverty Rates, and Unemployment Rate

County	Median Household Income	Poverty Rate	Unemployment Rates 2010
Oregon State	$49,863	14%	10.5%
Lane	$44,180	16%	10.6%
Douglas	$40,212	14%	14.3%
Klamath	$42,255	17%	12.9%

Source: American Community Survey, 2006-2008; Oregon Employment Department 2010

The economy of the tri-county area has been adversely affected by the current recession, with employment growth remaining stagnate. All three counties have been designated as a temporary Distressed Area by the Oregon Economic and Community Development Department, a designation used when a county's unemployment rate exceeds eight percent in a month in which Oregon's unemployment rate exceeds eight percent. All places and cities within a distressed county are considered distressed. Unemployment in the three counties has remained above 10 percent.

Table 3.10-5 shows forecast employment growth by sectors in the tri-county area over the 2008–2018 period.

Table 3.10-5: Employment by Major Occupational Groups

Employment by Major Occupational Groups									
	Lane County			Douglas County			Klamath and Lake Counties		
	2008	2018	% Change	2008	2018	% Change	2008	2018	% Change
Total payroll employment	154,400	169,400	10%	38,130	40,560	6%	26,820	29,470	10%
Total private	124,800	136,500	9%	29,350	31,270	7%	20,440	22,730	11%
Natural resources and mining	2,100	2,100	0%	1,410	1,360	-4%	1,380	1,420	3%
Mining and logging	900	800	-11%	880	810	-8%	230	210	-9%
Construction	7,300	7,100	-3%	1,700	1,680	-1%	1,090	1,300	19%
Manufacturing	17,700	17,300	-2%	5,260	4,890	-7%	2,440	2,580	6%
Durable goods	13,700	13,300	-3%	4,930	4,540	-8%	2,160	2,300	6%
Wood product manufacturing	4,100	4,000	-2%	3,230	3,100	-4%	1,550	1,650	6%
Transportation equipment manufacturing	3,000	2,300	-23%	n/a	n/a	n/a	n/a	n/a	n/a
Nondurable goods	4,000	4,000	0%	330	350	6%	280	280	0%
Trade, transportation, and utilities	28,400	31,200	10%	6,820	7,430	9%	4,940	5,380	9%
Wholesale trade	6,100	6,800	11%	640	690	8%	900	980	9%
Retail trade	19,200	21,000	9%	4,440	4,890	10%	3,240	3,560	10%
Food and beverage stores	n/a	n/a	n/a	1,100	1,200	9%	700	700	0%
General merchandise stores	n/a	n/a	n/a	1,000	1,200	20%	900	1,000	11%
Transportation, warehousing, and utilities	3,100	3,400	10%	1,740	1,850	6%	800	840	5%
Information	3,800	3,900	3%	330	320	-3%	260	250	-4%
Financial activities	8,300	8,600	4%	1,620	1,680	4%	1,100	1,170	6%
Professional and business services	15,600	17,700	13%	2,940	3,290	12%	2,270	2,570	13%
Administrative and support services	7,700	8,500	10%	n/a	n/a	n/a	n/a	n/a	n/a
Educational and health services	21,400	26,100	22%	4,540	5,390	19%	3,200	3,880	21%
Health care and social assistance	19,800	24,400	23%	n/a	n/a	n/a	2,180	2,670	22%
Health care	16,900	20,800	23%	n/a	n/a	n/a	1,990	2,430	22%
Leisure and hospitality	15,000	16,900	13%	3,550	3,960	12%	2,950	3,310	12%
Accommodation and food services	12,900	14,500	12%	n/a	n/a	n/a	2,170	2,440	12%
Food services and drinking places	11,400	12,800	12%	2,770	3,090	12%	n/a	n/a	n/a
Other services	5,200	5,600	8%	1,180	1,270	8%	810	870	7%
Government	29,600	32,900	11%	8,780	9,290	6%	6,380	6,740	6%
Federal government	1,700	1,700	0%	1,530	1,530	0%	1,150	1,150	0%
State government	11,500	13,500	17%	1,140	1,230	8%	1,600	1,670	4%
State education	9,000	9,500	6%	n/a	n/a	n/a	n/a	n/a	n/a
Local government	16,400	17,700	8%	6,110	6,530	7%	3,630	3,920	8%
Indian tribal	n/a	n/a	n/a	1,190	1,400	18%	n/a	n/a	n/a
Local education	9,200	9,500	3%	2,830	2,940	4%	n/a	n/a	n/a

Source: State of Oregon Employment Department

3.11 Human Health and Safety

Superfund sites are designated on the National Priorities List (NPL) through the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), which requires the clean up and remediation of sites contaminated by hazardous wastes. CERCLA and other federal regulations provide broad federal authority to clean up releases or threatened releases of hazardous substances that may endanger public health or the environment.

There are two sites that are located on the national priority list in the tri-county region of the proposed fiber optics route, as listed by the Environmental Protection Agency (EPA).

In addition, there are nine Resource Conservation and Recovery Act (RCRA) regulated facilities in the tri-county area. A RCRA permitted facility has obtained permits to treat, store, or dispose of hazardous wastes. RCRA gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also sets forth a framework for the management of non-hazardous solid wastes.

Finally, there are 15 identified RCRA brownfield sites in the tri-county area. A RCRA Brownfield is a RCRA facility that is not in full use, where there is redevelopment potential, and where reuse or redevelopment of that site is slowed due to real or perceived concerns about actual or potential contamination, liability, and RCRA requirements. Table 3.11.1 provides a listing of these sites:

Table 3.11-1: Cleanup Sites

Cleanup Name	Location Address	City	State	ZIP Code	County	Classification
YONCALLA	2750 EAGLE VALLEY RD	YONCALLA	OR	97499	DOUGLAS	Brownfields
MYRTLE CREEK	314 MAIN ST N	MYRTLE CREEK	OR	97457	DOUGLAS	Brownfields
WILBUR INDUSTRIAL PROPERTY	7379 HWY 99 NORTH	ROSEBURG	OR	97470	DOUGLAS	Brownfields
SOUTH UMPQUA INDUSTRIAL PARK	BY PASS ROAD AND I-5	RIDDLE	OR	97469	DOUGLAS	Brownfields
SUTHERLIN INDUSTRIAL PARK	NW OF PAGE AVE AND TAYLOR RD.	SUTHERLIN	OR	97479	DOUGLAS	Brownfields
LAKEWAY EXXON	2077 OREGON AVE	KLAMATH FALLS	OR	97601	KLAMATH	Brownfields
FORMER MODOC LUMBER MILL	404 N. AOK STREET	KLAMATH FALLS	OR	97601	KLAMATH	Brownfields
KLAMATH FALLS	600 KLAMATH AVE	KLAMATH FALLS	OR	97601	KLAMATH	Brownfields
KLAMATH FALLS INDUSTRIAL PARK	JOE WRIGHT ROAD AND SWAN COURT	KLAMATH FALLS	OR	97601	KLAMATH	Brownfields
CHILOQUIN LUMBER MILL	WEST END OF BLOCKLINGER STREET	CHILOQUIN	OR	97624	KLAMATH	Brownfields
OAKRIDGE INDUSTRIAL PARK	48513 HIGHWAY 58	OAKRIDGE	OR	97463	LANE	Brownfields
MCVAY HIGHWAY BIOFUELING STATION SITE	86714 MCVAY HIGHWAY	EUGENE	OR	97405	LANE	Brownfields
ELMIRA FAMILY STORE	88773 TERRITORIAL RD	ELMIRA	OR	97437	LANE	Brownfields
OAKLEA	NW CORNER OF OAKLEA DR AND 6TH AVE	JUNCTION CITY	OR	97448	LANE	Brownfields
PACIFIC VIEW INDUSTRIAL PROPERTY	RHODODENDON DRIVE- SOUTH OF 35TH STREET	FLORENCE	OR	97439	LANE	Brownfields
ROSEBURG FOREST PRODUCTS - DILLARD	OLD HIGHWAY 99 SOUTH	DILLARD	OR	97432	DOUGLAS	RCRA ECHO
MEW DATA ARMS	1120 SPRING ST	KLAMATH FALLS	OR	97601	KLAMATH	RCRA ECHO
3M NATIONAL ADVERTISING DBA OUTDOOR SYSTEMS	1000 OBIE STREET	EUGENE	OR	97402	LANE	RCRA ECHO
WILLAMETTE VALLEY COMPANY	3900 WEST 1ST AVENUE	EUGENE	OR	97402	LANE	RCRA ECHO
VALLEY PLATING	3985 WEST 12TH AVE	EUGENE	OR	97401	LANE	RCRA ECHO
POTTER MANUFACTURING COMPANY	415 RIVER RD	EUGENE	OR	97405	LANE	RCRA ECHO
AA PLATING	495 SENECA RD	EUGENE	OR	97402	LANE	RCRA ECHO
SAFETY-KLEEN SYSTEMS (705401)	550 SHELLY ST SPACE A-E	SPRINGFIELD	OR	97477	LANE	RCRA ECHO
J H BAXTER & COMPANY	85 N. BAXTER RD.	EUGENE	OR	97402	LANE	RCRA ECHO
FORMOSA MINE	T31 S R6W SEC23, WILLAMETTE MERIDIAN	RIDDLE	OR	97469	DOUGLAS	Superfund
BLACK BUTTE MINE	LONDON ROAD	COTTAGE GROVE	OR	97424	LANE	Superfund

Source: EPA

4.0 Environmental Consequences

4.1 Noise

Preferred Alternative

There would be temporary short-term effects due to construction along the project route. In most areas the fiber strands would be hung on existing poles and the noise during installation would be minimal. This temporary and intermittent increase in noise levels would be similar to what currently occurs as a result of regular maintenance of the existing utility lines. New poles would be installed in the road rights-of-way along approximately 8 miles of roadways, primarily in Douglas County, with 1.5 miles of replacement poles along Highway 227. Intermittent noise from trucks and excavators would temporarily affect these roadsides during installation. Noise effects of the new pole installation would be similar to utility line maintenance when replacement poles are required. In areas where underground fiber strands would be located under existing parking lots or driveways or other appropriate locations, trenching would occur. Approximately 41 new vaults would be installed, mostly underground, in Eugene, Veneta and Cottage Grove. For this excavation work, noise levels would increase due to heavy machinery in localized areas during construction. There are several noise sensitive facilities to be served by the project, including medical clinics, schools and educational facilities, and libraries.

In order to minimize these impacts, the project will prepare a traffic plan that will address construction scheduling as well other methods to mitigate noise and vibration impacts on these sensitive noise receptors. Mitigation to minimize construction-related impacts including nuisance impacts may include using the quietest possible equipment and noise barriers; performing construction during off-peak hours; and following other Best Management Practices (BMPs) mandated by Federal, State, and Local regulations.

If specific noise complaints are received during construction, the contractor may be required to implement one or more of the following noise mitigation measures:

1. Install temporary or portable acoustic barriers around stationary construction noise sources.
2. Locate stationary construction equipment as far from nearby noise-sensitive properties as possible.
3. Shut off idling equipment.
4. Reschedule construction operations to avoid periods of noise annoyance identified in the complaint.
5. Notify nearby residents whenever extremely noisy work will be occurring.

Long term noise effects in the Preferred Alternative would be minimal because fiber optic cables transmit photons and not electrical current; as a result, there is no potential for humming, crackling, or other noise associated with breakdown and ionization of air, which occurs from arcing across powerline-related hardware. The regeneration facilities would emit noise similar to other electrical equipment and located internal to buildings and therefore would not have any adverse effect to neighboring development. The facilities will have a back up electrical generator that will run when power is lost. The noise associated with the internal combustion engines of the generators will exceed typical noise levels, but would be temporary and short-term during times of power outage.

No Action Alternative

There would be no effects on noise from the No Action Alternative.

4.2 Air Quality

Preferred Alternative
There would be temporary short-term effects due to construction along the project route in the Preferred Alternative. Heavy equipment exhaust and possible dust emissions would affect the immediate project area where trenching and new pole installation would occur. Dust emissions would vary depending upon weather and soil conditions. Potential emissions for fiber strand installation on existing poles would be minimal, resulting from truck emissions and movement along the road right of way.

In order to minimize these impacts, the project will prepare a traffic plan that will address methods to mitigate air quality impacts, including the following construction BMPs:

1. Use dust abatement techniques on unpaved, unvegetated surfaces to minimize airborne dust and during earthmoving activities, prior to clearing, excavating, backfilling, compacting, or grading.
2. Revegetate disturbed areas as soon as possible after disturbance.
3. Ensure that all construction equipment is properly tuned and maintained prior to and for the duration of onsite operation.
4. Enforce and follow limits idling time for vehicles, including delivery and construction vehicles.
5. Schedule operations affecting traffic for off-peak hours whenever possible.
6. Minimize obstruction of through-traffic lanes.

Due to the limited impact on the ground of the proposed project, with most installation occurring on existing utility poles, no long term air quality effects would be expected.

No Action Alternative
The No Action Alternative would not impact air quality.

4.3 Geology and Soils

Preferred Alternative
Minimal disturbance to soils and geologic resources would occur in the Preferred Alternative. Any impacts would be minor and temporary, since a number of new poles would be installed along approximately 8 miles of roadway, only in the rights-of-way where soils have already been disturbed.

The predominate use of directional boring, in lieu of trenching, would minimize the amount of area disturbed for areas where underground installation would occur. A limited amount of trenching, less than 5,000 lineal feet throughout the project area, would disturb and replace soil in a limited number of areas where existing utility poles do not exist and installing new poles is not possible. This would mostly occur in areas along existing roadways or, in one area, a former railroad bed, where soils have been previously disturbed.

The regeneration facilities would be installed in existing buildings or on a foundation with a limited building footprint (approximately 200 square feet) on existing developed property.

In areas of pole installation, trenching and directional boring, and construction of new regeneration buildings, the following construction BMPs will be implemented to minimize impacts:

1. Identify and avoid areas with unstable slopes and local factors that can cause slope instability (groundwater conditions, precipitation, seismic activity, slope angles, and geologic structure).
2. Minimize the amount of land disturbed as much as possible. Minimize vegetation removal.

3. Implement erosion control measures during and after construction activities with ground disturbing activities.
4. Where directional boring occurs, properly dispose of any excess soil at a proper disposal site using construction BMPs to minimize soil erosion.

In general, the specific BMPs used would depend on site-specific conditions. An appropriate erosion and sediment control strategy would be developed that matches the needs of each site.

Revegetation efforts will ensure long-term recovery of the area and to prevent significant soil erosion problems. The use of native seeds and plants to assist in the conservation and enhancement of protected species should be considered.

No Action Alternative
There would be no impacts on geologic resources and soils from the No Action Alternative.

4.4 Water Resources

Preferred Alternative
The Preferred Alternative would result in minimal disturbance to water resources because in most areas the project has made use of existing facilities (e.g., existing utility poles, developed right-of-ways, access roads, and graded or paved areas) to the extent possible to minimize the amount of new disturbance.

Existing roads and maintenance roads would be used for access during fiber strand installation on existing poles and for trenching and directional boring operations. The project would necessitate the use of construction equipment near several water bodies. In order to prevent impacts, the construction crews will keep vehicles and equipment in good working order to prevent oil and fuel leaks and provide portable spill containment and cleanup equipment in all vehicles. No release of oils, hydraulic fluids, fuels, paints, solvents or other hazardous materials will be permitted into receiving waters. If water quality problems occur, including equipment leaks or spills, work operations shall cease immediately and agencies with jurisdiction shall be contacted immediately to coordinate spill containment and cleanup plans.

The Preferred Alternative route also includes several crossings of navigable waters, as follows:

- Winston: The route crosses the South Umpqua River on existing utility poles located along Highway 99.
- Winston/Dillard: SE of Dillard, the route crosses the Umpqua River at two separate locations on existing utility poles following Highway 99.
- Myrtle Creek: The route crosses Myrtle Creek on existing utility poles located along Highway 99.
- Tri-City: The route crosses two tributaries to the South Umpqua River on existing utility poles located along Myrtle Highway.
- Tri-City/Riddle: The route crosses Lane Creek on existing utility poles located along Highway 99.

The work over these water bodies is limited to attaching fiber strands to existing utility poles. The installation will not pose an adverse effect on navigation and construction crews will follow construction BMPs to avoid disturbance to surface waters.

The project also includes new pole installation in approximately five sections of roadway and three separate single spots. Of these, one five-mile stretch of new pole installation would occur along a water body, the South Umpqua River, southeast of Dillard where Dole Road is contiguous to the river. Work

would occur in the road right-of-way and BMPs would be followed to control erosion or sediment drift into the river. BMPs would include the following:

1. Clearing of vegetation shall be the minimum necessary for installation, infrastructure maintenance and public safety.
2. Implement erosion control measures during and after construction activities.
3. All areas disturbed by utility construction shall be replanted and stabilized with approved vegetation by seeding, mulching, or other effective means immediately upon completion of the construction or maintenance activity. Such vegetation shall be maintained until established.

New pole installation has the potential to cause minimal leaching to the surrounding soil of wood preservatives, such as chromate copper arsenate (CCA) or pentachlorophenol (PCP), which are commonly used on utility poles. Mobility of wood preservatives through the soil is dependent on characteristics of the soil, the presence of flowing water, and other site-specific factors (USFS, 1996). Some studies have indicated that the amount of CCA and PCP released into the environment by treated posts is small and is generally limited to close proximity (± one foot) of the structure either because the preservative has low water solubility or reacts (and binds) with components of the environment (Lebow *et al.*, 2002). As a precaution, industry standard often uses untreated poles in areas where the pole would be placed 50 feet from a known water supply. New pole installation would only occur in one place close to a water resource, along the South Umpqua River, and would involve approximately 375 poles within the roadside ROW. In a few sections, for a total of approximately 3,000 feet, the poles would be approximately 100 feet from the top of bank. All poles would be installed on the opposite side of the road from the river. The low mobility of the preservatives, combined with use of proper BMPs, results in a negligible risk of wood preservative to leech into ground water or surface water bodies.

For additional comments on wetlands, see Section 4.5.2.

The proposed project routes have been submitted to the U.S. Army Corps of Engineers in order to initiate pre-construction notification and consultation (see Appendix I). In consultation with the Army Corps of Engineers, it has been determined that the South Umpqua River is considered navigable up to mile 122 (Roseburg). All points included in the preferred alternative are upstream of the first crossing, at mile 141.5. Since the proposed construction would not occur within navigable waters or include a discharge to waters of the state, a permit from the Army Corps of Engineers is not required.

Coastal Zone Management Area

Oregon's Statewide Land use Goal 17, Coastal Shorelands, is one of the goals that provides protection for the Coastal Zone Management Area along the Oregon coast. Under Goal 17, planning for shorelands has two major objectives: setting aside lands for uses that need to be located along the shoreline and protecting the natural fringe between land and water. To accomplish these objectives, each plan includes a shorelands boundary and special zoning requirements for lands within the boundary.

The shoreline, the land at the water's edge, is the essence of the coastal zone. These lands are a delicate fringe of habitat critical to almost all types of wild life that inhabit the coastal zone.

In Florence, the only coastal community served by the project, the installation is generally planned to occur outside of shoreland areas, with the exception of installation along a stretch of Highway 126 at the intersection with Spruce Street, which occurs adjacent to a Natural Resource Conservation overlay district designated by the City of Florence (see Appendix E). In this area, the installation would occur on existing power poles. There will also be a directional bore to install a lateral under the sidewalk of Spruce Street. Construction BMPs, including those listed above, will be used to avoid and mitigate for impacts to any coastal resources. The City of Florence has reviewed the proposed construction and determined that the project would have no coastal zone impact (see Appendix J).

The proposed installation would continue past the Florence City limits to serve the Tribal Headquarters located off of Highway 126. This part of the project installation within Lane County would not be located within Lane County's Coastal Overlay Zoning (see Appendix E).

Finally, a representative of the Oregon Coastal Management Program has reviewed the project for consistency with the Oregon Coastal Zone Management Program and has determined that the project will not adversely affect coastal uses or resources (see Appendix J).

Flood Zone

The Preferred Alternative would result in minimal disturbance to flood zones because in most areas the fiber strands would be affixed to existing utility poles. In areas where ground disturbance is planned to occur, there would be no permanent alteration to the present landscape (such as the use of fill) that would affect drainage patterns or the flood carrying capacity of a watercourse. In addition, the fiber optics equipment is not critical to the continued habitability of a structure after a flood, such as other mechanical and utility equipment (furnaces, air conditioner units, hot water heaters, washers and dryers, and other similar equipment) that are required to be elevated to or above the base flood elevation.

No Action Alternative
There would be no impacts on water resources from the No Action Alternative.

4.5 Biological Resources

4.5.1 Biological Resources

Preferred Alternative
Under the Preferred Alternative, impacts to biological resources would be minimal. Aerial installation is proposed for the majority of the project route, using existing utility poles with existing wires to hang the fiber strands. There are some urban areas where installation would be accomplished by trenching or directional boring because utilities are required to be installed underground, or no poles are available. Approximately 37,779 lineal feet, or 7.2 miles, of proposed project installation would take place using directional boring within existing urban areas minimizing disturbance to existing infrastructure. Approximately 4,800 lineal feet would be affected by trenching, all of which (with the exception of approximately 400 lineal feet) would take place in more densely developed urban areas.

Proposed project routes in rural areas would be along existing roads in rights-of-way or under existing urban facilities such as sidewalks, driveways, and parking lots. Where river crossings would occur, the fiber optics would be affixed to existing facilities, such as existing bridges.

ODFW representatives have reviewed the proposal and determined that since the majority of the work will be hanging fiber optic lines on existing poles, there would be no impact to fish and wildlife resources. ODFW encouraged the use of untreated poles to prevent the possibility of any CCA or PCP from entering the waterway by way of road ditches or storm runoff (see Appendix G).

A NMFS representative has also reviewed the proposal and reiterated the comments from ODFW, noting that eliminating contaminants by not using treated poles is the best approach for preventing effects to Oregon Coast coho salmon along the Umpqua River (see Appendix H).

In response to the NMFS and ODFW comments, LCOG has consulted with the construction contractor selected to do the work along the Umpqua River. There is the potential of a significant economic impact.

Generally treated poles last three to four times as long as untreated poles. We will direct the contractor to take steps to avoid the possibility of the specified runoff getting to the Umpqua River. These steps include using different poles that do not contain the compounds listed, location of poles away from any possible runoff to the streams, and possibly using untreated poles.

Construction BMPs, including those listed above in Section 4.4, will be used to avoid and mitigate for impacts to any biological resources.

No Action Alternative
There would be no impacts to wildlife resources in the No Action Alternative.

4.5.2 Wetlands

Preferred Alternative

The project includes work near wetlands identified on the National Wetlands Inventory (NWI), though no direct discharge of dredged or fill material is planned. Table 4.5-1 identifies the location of these facilities and describes the construction actions and impact from these actions to the adjoining wetlands.

Table 4.5-1 Wetland Impacts

Sites with nearby wetlands	Jurisdiction	Notes	Actions	Impact
Florence Justice Center	Florence	Wetlands located approximately 380 feet to west of facility	Directional bores under existing streets & sidewalks	No Impact
Veneta City Hall	Veneta	Wetlands located to north and west, approximately 380 feet from facility	Aerial to 8th St, directional bore under parking lot	No Impact
Fern Ridge Library	Veneta	Wetlands located approximately 100 feet to south of facility	Directional bore under Territorial Hwy & library parking lot, new vault next to bldg	No Impact
Veneta Medical Clinic	Veneta	Wetlands located approximately 100 feet to southeast of facility	Aerial to Territorial & Bolton Rd, trench through parking lot, new vault	No Impact
MeadowView School	Eugene	Wetlands located approximately 500 feet to southeast of facility	Existing conduit, directional bore under Legacy St, existing conduit to bldg	No Impact
Prairie Mountain School	Eugene	Wetlands located approximately 500 feet to northeast of facility	Overhead to replacement vault in sidewalk, existing conduit to building	No Impact
Housing Authority Eugene	Eugene	Located in close proximity to river	Optional routes would all be directional bores under existing streets & sidewalk, in urbanized park setting, no river or water resources contact	No Impact
South Eugene Clinic	Eugene	Wetlands located approximately 200 feet to west of facility	New vault in sidewalk, overhead to trench through parking lot	No Impact
State Mental Hospital	Junction City	May be wetlands on-site	The route will use already installed conduit. Installed conduit for facilities, wetlands permitting at time of development	No Impact
Chiloquin Open Door Family Practice	Chiloquin	Wetlands located approximately 100 feet to east of facility	Existing aerial route, existing underground, new trench adjacent to street entrance	No Impact
Klamath Tribal headquarters	Chiloquin	Wetlands located approximately 200 feet to south of facility	Aerial route to directional bore under Chiloquin Rd and parking area	No Impact
Boring along trail	Cottage Grove	Wetlands located adjacent to trail	Trenching and boring along trail right-of-way	No Impact
Sutherlin Fire Department	Sutherlin	Wetlands located approximately 100 feet to north of facility	overhead to building	No Impact
Sutherlin High School	Sutherlin	Wetlands located approximately 150 feet to south of facility	overhead to building	No Impact
State of Oregon ODOT MTCE	Canyonville	Wetlands located approximately 50 feet to west of facility	overhead to building	No Impact
SE of Dillard/Highway 99	Douglas County	New utility pole installation separated from wetland complext by approximately 400 feet	Install 4 to 6 new utility poles	No Impact
SE of Dillard/ Dole Road	Douglas County	Wetlands separated by developed right-of-way from proposed activity	Install approximately five miles of new utility pole	No Impact

No installation is planned to occur directly in wetlands. In addition, there is no planned discharge of dredged or fill material into wetlands under Section 404 of the Clean Water Act associated with the Preferred Alternative.

New pole and replacement pole placement as well as trenching and directional boring activities may result in incidental erosion or sediment discharge to wetlands or surface waters; however, with the use of good utility practices (or BMPs) for erosion and sediment control, including those listed above in Section 4.4, this potential is minimized and does not represent a significant impact.

The proposed project routes have been submitted to the U.S. Army Corps of Engineers in order to initiate pre-construction notification and consultation (see Appendix I). Since the proposed construction would

not occur within navigable waters (see Section 4.4 above) or include a discharge to waters of the state, a permit from the Army Corps of Engineers is not required.

No Action Alternative
There would be no impacts to wetlands in the No Action Alternative.

4.5.3 Threatened and Endangered Species (T&E)

Preferred Alternative
In accordance with Section 7(c) of the Endangered Species Act (ESA), as amended, 16 U.S.C. 1531 et seq., lists have been obtained from the U.S. Fish and Wildlife Service for all federally Threatened and Endangered Species that may be present within the three counties in Oregon. USFWS recently published a final recovery plan for 13 rare species in southwestern Washington, and the Willamette and Umpqua Valleys in Oregon. Six of the species are federally listed T&E species protected under federal law and seven are rare species some of which are protected under state law. Critical Habitat has been designated for the T&E species, some of which occurs in the vicinity of proposed project routes, but none of which would be impacted by proposed project activities.

The ESA protects threatened and endangered species in several ways. Under Section 7, all federal agencies must ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species, or destroy or adversely modify its designated critical habitat**.** These complementary requirements apply only to federal agency actions, and the latter only to habitat that has been designated. A critical habitat designation does not set up a preserve or refuge, and applies only when federal funding, permits, or projects are involved.

The proposed critical habitat for Kincaid's lupine in Douglas County, Oregon, included lands owned by Lone Rock Timber Management Company, Roseburg Forest Products, and Seneca Jones Timber Company. These landowners have been working cooperatively with state and federal agencies to implement conservation and recovery activities for Kincaid's lupine on their property and have developed site-specific plans that include management for Kincaid's lupine. Additionally, 90.3 acres of federal land in Douglas County were excluded from the final designation based on protection commitments made in a signed Conservation Agreement for Kincaid's lupine by the Bureau of Land Management and USDA Forest Service.

Other species with Designated or Proposed Critical Habitat in Lane, Douglas, and Klamath Counties include: Marbled murrelet, Western snowy plover, Oregon silverspot butterfly, Northern spotted owl, Oregon chub, Bull trout, Shortnose sucker, and Lost River sucker.

Several species under the jurisdiction of NOAA Fisheries in the vicinity of the proposed project route are listed as threatened with Siuslaw and Umpqua Rivers and tributaries are DCH. These are Oregon coast coho, Upper Willamette Chinook salmon, and Upper Willamette steelhead.

No proposed project activities would be occurring in water resources so that listed fish species will not be impacted. The critical habitat of other species would not be impacted because the proposed project routes in federal forest lands and other areas would rely on existing infrastructure. Project activities near DCH water resources would use mitigation measures to eliminate the possibility of impacts.

The proposed project routes have been submitted to ODFW, as directed by the regional office of USFWS, and NOAA NMFS in order to initiate consultations under Section 7(c).

ODFW representatives have reviewed the proposal and determined that since the majority of the work will be hanging fiber optic lines on existing poles, there would be no impact to fish and wildlife resources. ODFW encouraged the use of untreated poles to prevent the possibility of any CCA or PCP from entering the waterway by way of road ditches or storm runoff (see Appendix G).

A NMFS representative has also reviewed the proposal and reiterated the comments from ODFW, noting that eliminating contaminants by not using treated poles is the best approach for preventing effects to Oregon Coast coho salmon along the Umpqua River (see Appendix H).

In response to the NMFS and ODFW comments, LCOG has consulted with the construction contractor selected to do the work along the Umpqua River. There is the potential of a significant economic impact. Generally treated poles last three to four times as long as untreated poles. We will direct the contractor to take steps to avoid the possibility of the specified runoff getting to the Umpqua River. These steps include using different poles that do not contain the compounds listed, location of poles away from any possible runoff to the streams, and possibly using untreated poles.

No Action Alternative
There would be no impacts to T & E species in the No Action Alternative.

4.6 Historic and Cultural Resources

Preferred Alternative
With the incorporation of proposed mitigation measures, there are no anticipated effects from the Preferred Alternative.

Project consultation has occurred with the State's Historic Preservation Office (SHPO) as well as area Tribal Governments (see Appendix F).

Two tribal groups have responded to the referrals, the Klamath Tribes and the cow Creek Band of the Umpqua Indians. Neither tribe indicated that the project would disturb known sites of tribal significance, but both tribal groups expressed concern and asked for assurances. Mr. Perry Chocktoot of the Klamath Tribes explained that the proposed directional bore south of Chiloquin would start from an area near an historic and prehistoric burial ground. Mr. Chocktoot indicated that there was some chance that the excavation for the bore and the bore itself would unearth cultural artifacts discarded in the area around the burial site. Mr. Chocktoot wanted assurances that an archeologist would be on site during excavation to identify and preserve any artifacts that might be discovered. Ms. Jessie Plueard of the Cow Creek Band of the Umpqua Indians indicated concern about the proposed installation of utility poles along the Umpqua River. As Ms. Plueard explained, the proposed installations are "in close proximity to known archaeological sites and/or located in high probability areas which leaves the potential for the project to impact previously undocumented archaeological sites in those areas."
.
The Lane Council of Governments has entered into an agreement with the NTIA and the Oregon State Historic Preservation Office (SHPO) to ensure compliance with Section 106 of the National Historic

Preservation Act (NHPA), 16 U.S.C. § 470f, and its implementing regulations, "Protection of Historic Properties" (36 C.F.R. Part 800) (see Appendix F). Under the terms of the Programmatic Agreement, LCOG will conduct a cultural resource survey for the area of ground disturbance near the proposed construction to connect the Klamath Tribes Gaming Regulatory Agency and in the area where ground disturbance is proposed along Dole Road and Highway 227 in close proximity to known archaeological sites or in close proximity to areas where there was a high probability of the discovery of previously undocumented sites. The resulting archeological report will be distributed to NTIA, affected tribes, and SHPO for review and comment. In the event that the report identifies the possibility of cultural artifacts in the vicinity of any of the pole installations, the Lane Council of Governments will make test excavations under the direction of a qualified archaeologist, as outlined in the Programmatic Agreement.

In the event that cultural resources are found, Lane Council of Governments and the qualified archaeologist shall develop an Archaeological Resources Monitoring and Treatment Plan in consultation with the Tribes, as outlined in the Programmatic Agreement.

The following outlines the anticipated schedule to complete the work described in the Programmatic Agreement:

General Location	Requirement under PA	Estimated Timeframe
Klamath Tribes Gaming Regulatory Agency	Qualified archaeologist on-site during ground excavation for vault	April, 2011
Dole Road and Highway 227	Concurrence on area of potential effect and scope of work; Cultural Resource Survey prior to any construction activities; preparation of Phase I report, 30-day review of report by NTIA and SHPO; consultation with affected Tribes	April/May, 2011
Dole Road and Highway 227	Qualified archaeologist on-site during excavation associated with new utility poles	July/August, 2011
Klamath Tribes Gaming Regulatory Agency	Qualified archaeologist on-site during directional bore under Highway 97 and parking lot of the casino	August, 2011
Dole Road and Highway 227	Issuance of final technical report; review by affected Tribes, SHPO, and NTIA	No later than November, 2011

The schedule may need to be revised in the event that cultural resources are found, which will trigger the need for an Archaeological Resources Monitoring and Treatment Plan and additional review under the terms of the Programmatic Agreement.

In addition, should there be an unexpected discovery of cultural resources during any phase of the project not otherwise addressed by the Programmatic Agreement, work shall stop in the vicinity of the discovery until the resources can be evaluated by a professional archaeologist.

No Action Alternative

There would be no historic or cultural resource effects from the No Action Alternative.

Preferred Alternative
Aerial installation is proposed for the majority of the project route, using existing utility poles with existing wires to hang the fiber strands. The addition of an additional cable to existing utility poles containing cables and other appurtenances is consistent with the existing visual character along these utility corridors and would not pose an adverse effect on local aesthetics, even on the Scenic Byways where aerial installation is planned to occur.

There are some urban areas where installation would be accomplished by trenching or directional boring because utilities are required to be installed underground, or no poles are available. Where trenching is proposed to occur, impacts to adjoining trees can occur if the root structure of the tree is damaged. In order to minimize impacts to adjoining trees when conducting trenching activities, appropriate tree protection measures to protect existing trees (e.g. install protective fencing at the dripline of trees) will be installed. The appropriate measure will depend upon existing site conditions, including the separation of trees from construction and staging activities.

The project route overlaps with the Cottage Grove Covered Bridge Tour Route for approximately 1,000 feet where installation will be mostly trenching in the right-of-way and boring under existing driveways where necessary. This activity would result in short term impacts along this Scenic Byway as construction crews trench roadsides, lay cable, bury it and re-vegetate disturbed areas using BMPs. These impacts would be temporary and would be eliminated upon completion and regrowth.

The construction will result in temporary and short term impacts associated with placement of construction staging and storage areas, erosion and sedimentation control devices, and dirt and dust from ground disrupting activities. In order to minimize these temporary impacts, the following BMPs will be incorporated into the construction plans:

1. Remove erosion control structures as soon as the area is stabilized.
2. Keep the roadway and work areas as clean as possible, for example by using street sweepers and wheel washes to minimized off-site tracking.
3. Stockpile materials in less visually sensitive areas, preferably where they are not visible from residences.

Finally, there are some areas where installation would be accomplished by installation of new utility poles. Along the Myrtle Creek-Canyonville Tour Route Scenic Byway, the preferred alternative includes installation of poles in the right-of-way for approximately 1.5 miles. This section of the Scenic Byway already contains existing utility poles adjoining the Umpqua River. The new poles would be installed on the opposite side of the right-of-way and would not interrupt views of the river. The addition of new utility poles would impact the view from the roadway, but would not be inconsistent with the character of the immediate landscape. This minor long-term adverse impact on the local aesthetics is limited to a small area. Over the full extent of the Preferred Alternative, there would be no significant adverse impacts to aesthetic and visual resources.

No Action Alternative
There would be no impact to aesthetic and visual resources under the No Action Alternative.

4.8 Land Use

Preferred Alternative

The Proposed Action is expected to have no long-term land use impacts. The Preferred Alternative proposes to use pre-existing utility poles located along pre-existing utility lines to install the fiber optic cables. Therefore, no long-term impacts would be associated with various land uses throughout the tri-county area.

The construction activities would cause temporary, short term impacts to different land uses along the route. These impacts would include temporary closures or lane configuration changes to roadways, as well as access driveway or sidewalk closures or modifications, and utility shut-offs. In order to minimize these impacts, the project will prepare a traffic plan that will address construction scheduling and route modifications. Construction activities will be scheduled and mitigated to minimize these impacts, including:

1. Minimize the extent and number of businesses, jobs, and access affected during construction.
2. If business access is impacted by construction activities, initiate public information campaigns to inform people those businesses are open during construction and to encourage their continued patronage.
3. Coordinate the timing of temporary facility closures to minimize impacts, to the extent practicable.
4. Provide public information (e.g., press releases, newsletters) on construction activities and ongoing business activities.
5. Maintain access for pedestrians, bicyclists, passenger vehicles, and trucks during construction.
6. Provide advance notice if utilities will be disrupted, and scheduling major utility shut-offs during non-business hours.
7. Coordinate with emergency service providers and community representatives to ensure the public and the environment's safety during construction.
8. Coordinate with all corridor emergency service providers in developing detour routes and other traffic handling plans, if needed, to be used during the construction period.
9. Where landscaping, sidewalks, and driveway access would be affected, coordination would occur with the landowner. These property features would be replaced and/or the property owner would be compensated.

The work will occur in several different jurisdictions (e.g. local cities and three counties) that each have different ordinances. All required permits and approvals will be obtained prior to the start of construction. Potential required permits include:

- Permits for authorization of work to occur within public right-of-ways.
- Authorization to co-locate fiber optic lines on existing utility poles.

For more information on applicable regulations, see Section 4.14.

No Action Alternative

The No Action Alternative would not result in any changes to land use.

4.9 Infrastructure

Preferred Alternative
The proposed project would bring high-speed communications to the tri-county area that is presently underserved.

There is a minor anticipated impact to infrastructure since the proposed project involves adding cable to existing utility poles, which can accommodate a finite number of cables and associated equipment; therefore, there may be less available space for potential future cables and lines on existing poles.

It is anticipated that construction activities would generate non-hazardous waste materials, including items such as cable trimmings, packaging materials, etc. that would necessitate proper handling and disposal methods. It is anticipated that this waste could be properly disposed of in one of the area's landfills or recycling centers.

Certain materials and resource staging areas would need to be created during the life of this project. It is anticipated that agreements would need to be reached with property owners located in certain strategic areas so that construction materials can be delivered and stored for use on the job.

Construction work has been planned to minimize impacts to access and transportation, with aerial installation being the predominate method of installation. In addition, directional boring has been used for driveway crossings in those areas where ground disturbance is required.

No Action Alternative
The No Action Alternative would not result in any changes to infrastructure and would therefore not result in the important enhanced communications infrastructure needed in this tri-county area. Minor negative effects associated with the Preferred Alternative, such as temporary impacts during construction (e.g., waste disposal), would not occur.

4.10 Socioeconomic Resources

Preferred Alternative
A number of positive effects can be expected by introducing and enhancing high-speed broadband access to residences and business, government, medical, and educational organizations across the tri-county area serviced under the Preferred Alternative.

The Preferred Alternative would provide long-term positive effects for educational, health care, social service and governmental organizations, which will be provided with enhanced high speed

communications. In addition, the Preferred Alternative would provide the capacity needed to serve residences and businesses.

The Preferred Alternative would provide high speed communications that would support anticipated population and employment growth, in particular the significant growth planned in educational and health services and professional and business services, which depend upon improved and more reliable high speed data access. The tri-county area is gradually transitioning from economies based upon resource industries to more diverse employment centers. The availability of broadband access in these economically distressed areas would help to spur job creation and stimulate long-term economic growth and opportunity.

The tri-county area served by the Preferred Alternative has a lower median household income, greater poverty rates, and greater unemployment rates than the State of Oregon and the nation. It is the intent of the project to bring meaningful communications service to this region, providing the middle mile facilities required to drive end mile projects at reasonable, competitive prices. The project is needed to support economic growth initiatives. In addition, the project is consistent with Environmental Justice principles, as low income areas would significantly benefit without being subject to significant environmental impacts.

The Preferred Alternative is likely to stimulate local economies during the construction period. Benefits from construction expenditures would include:

- Direct employment impacts of immediate construction hiring.
- Indirect employment benefits as businesses providing goods and services to the construction firms add jobs; and
- Induced impacts, including jobs created as a result of additional purchases made by households using increased incomes linked to direct or indirect employment impacts.

No Action Alternative

The No Action Alternative would have no socioeconomic impact. Residents, businesses, and community anchor institutions would continue to operate as is, without the benefit of enhanced broadband access.

4.11 Human Health and Safety

Preferred Alternative

Hazardous wastes could be encountered through contact with contaminated water and soil. Given that the majority of the proposed construction of the project involves running fiber optic cable along existing utility structures, contact with contaminated water and/or soil is unlikely.

Of the two NPL Superfund sites located in the tri-county area, work would not occur in close proximity to either site. The Formosa Mine site is located closest to the proposed installation. The mine is about 25 miles south of Roseburg, Oregon, and about seven miles south of Riddle, Oregon. The mine is near the top of Silver Butte at about 3600 feet above sea level. The only access for motorized vehicles is along a network of unpaved Bureau of Land Management (BLM) roads. Due to the distance separation of these cleanup sites to the proposed area of work, there would be no impacts.

Of the remaining Brownfield and RCRA permitted facilities, only two are located in close proximity to any proposed ground disturbance from directional boring or trenching activities, as follows:

- SUTHERLIN INDUSTRIAL PARK: This site is identified under Site ID 4575 in the Oregon DEQ Environmental Cleanup Site Information (ECSI) Database. The site is

  identified as having elevated arsenic levels. Directional boring is planned for approximately 1000 feet under the runway of the Sutherlin Municipal Airport runway. Ground disturbance activities in proximity to this site have the potential to create minimal exposure risks. Exposure risks can be minimized by using dust abatement techniques, such as wetting and covering any exposed soils excavated as a result of boring activities. Construction contractors should be advised of the potential for exposure and may want to collect and submit samples for testing to determine actual levels in the vicinity of the work area.
- WILLAMETTE VALLEY COMPANY (3900 WEST 1ST AVENUE). This site is listed on RCRA. Directional boring is planned to occur approximately 500 feet to the east of

this site as part of installation to serve the Eugene Spay and Neuter Clinic. Due to the separation and planned direction boring technique, no impacts are anticipated.

The fiber optic line itself does not generate any known adverse health issues. Providing all construction safety procedures are followed, the preferred alternative would not generate any safety issues.

Trained and qualified line workers would perform all work on utility poles. All installations must follow building and fire codes for safety. All components must be appropriately rated for the application and properly installed.

No Action Alternative
This alternative would not result in any contact with any hazardous wastes and, as a result, there would no adverse impacts to human health and safety.

4.12 Reasonably Foreseeable Future Actions and Cumulative Impacts

The regulations implementing the National Environmental Policy Act require that the cumulative effects of a proposed action be assessed (Title 40 Code of Federal Regulation (CFR) Parts 1500-1508). A cumulative impact is an "impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions" (40 CFR 1508.7).

Past, Current, and Future Projects:

The project spans over three counties with a combined area of 15,990 square miles, larger than at least eight states. The project area coincides with existing roads with existing utility infrastructure. Routine maintenance and repair activities are occasionally required for the continued operation of these existing utility lines and roadways.

ODOT has planned numerous road maintenance, enhancement and modernization projects throughout the tri-county area, listed in Appendix D. The applicant will work with ODOT to coordinate scheduling details to avoid conflicts.

Cumulative Effects of Project:

As noted in Section 4.0, the Oregon South Central Rural Fiber Consortium Lighting the Fiber Middle Mile Project is not anticipated to have any significant adverse impacts. As a result, there is not anticipated to be any incremental impacts that would result in any significant negative environmental consequences, when combined with other activities not related to this project (e.g., road maintenance or construction).

The potential increase in noise related to trucks and equipment would be minor and temporary. Pole replacement may result in incidental erosion or sediment discharge to wetlands or waters; however, with the use of good utility practices (or BMPs) for erosion and sediment control, this potential is minimized and does not represent a significant cumulative impact to soils or water resources. Effects to biological resources are also minimal due to the lack of wildlife habitat on the road right-of-ways and the generally disturbed character of these areas. Any noise disturbance to wildlife due to equipment would be temporary.

As such, significant impacts to any of these resources would not result from the wider consideration of incremental effects of the proposed project when considered along with unrelated potential projects such as roadway improvements or commercial development.

There is a minor cumulative impact to infrastructure since the proposed project involves adding cable to existing utility poles, which can accommodate a finite number of cables and associated equipment; therefore, there may be less available space for potential future cables and lines on existing poles.

There is a substantial positive cumulative impact of the project on socioeconomic resources. The Oregon South Central Rural Fiber Consortium Lighting the Fiber Middle Mile Project will provide broadband access to numerous underserved and unserved communities, which will improve opportunities to support economic growth initiatives, provide increased education opportunities, and improve public safety through reliable and high speed communication.

4.13 Mitigation

The following are a summary of mitigation measures that have been identified in Section 4.0 as being incorporated into the project in order to avoid, minimize, and mitigate for potential impacts:

Noise

1. Implement noise mitigation measures near sensitive noise receptors, such as medical facilities, schools, and libraries. Mitigation to minimize construction-related impacts including nuisance impacts may include using the quietest possible equipment and noise barriers; performing construction during off-peak hours; and following other Best Management Practices (BMPs) mandated by Federal, State, and Local regulations.
2. If specific noise complaints are received during construction, the contractor may be required to implement one or more of the following noise mitigation measures:
    a. Install temporary or portable acoustic barriers around stationary construction noise sources.
    b. Locate stationary construction equipment as far from nearby noise-sensitive properties as possible.
    c. Shut off idling equipment.
    d. Reschedule construction operations to avoid periods of noise annoyance identified in the complaint.
    e. Notify nearby residents whenever extremely noisy work will be occurring.

Air Quality

3. Institute construction BMPs, such as, but not limited to:
    f. Use dust abatement techniques on unpaved, unvegetated surfaces to minimize airborne dust and during earthmoving activities, prior to clearing, excavating, backfilling, compacting, or grading.
    g. Revegetate disturbed areas as soon as possible after disturbance.
    h. Ensure that all construction equipment is properly tuned and maintained prior to and for the duration of onsite operation.
    i. Enforce and follow limits idling time for vehicles, including delivery and construction vehicles.
    j. Schedule operations affecting traffic for off-peak hours whenever possible.

Geology and Soils

4. Institute construction BMPs, such as, but not limited to:
    a. Identify and avoid areas with unstable slopes and local factors that can cause slope instability (groundwater conditions, precipitation, seismic activity, slope angles, and geologic structure).

b. Minimize the amount of land disturbed as much as possible. Minimize vegetation removal.
c. Implement erosion control measures implemented during and after construction activities with ground disturbing activities.
d. Revegetation efforts to ensure long-term recovery of the area and to prevent significant soil erosion problems. The use of native seeds and plants to assist in the conservation and enhancement of protected species should be considered.

Water and biological resources

5. Clearing of vegetation within utility corridors shall be the minimum necessary for installation, infrastructure maintenance and public safety.
6. Implement erosion control measures implemented during and after construction activities.
7. Provide portable spill containment and cleanup equipment in all vehicles.
8. Keep vehicles and equipment in good working order to prevent oil and fuel leaks.
9. Apply spill prevention practices and response actions in refueling and vehicle-use areas to minimize accidental contamination of habitats. No release of oils, hydraulic fluids, fuels, paints, solvents or other hazardous materials shall be permitted into receiving waters. If water quality problems occur, including equipment leaks or spills, work operations shall cease immediately and agencies with jurisdiction shall be contacted immediately to coordinate spill containment and cleanup plans.
10. All areas disturbed by utility construction and maintenance shall be replanted and stabilized with approved vegetation by seeding, mulching, or other effective means immediately upon completion of the construction or maintenance activity. Such vegetation shall be maintained until established.
11. Utility poles to be installed near surface water such as Umpqua River shall be selected and installed to avoid the discharge of CCA or PCP to surface waters.

Historical and Cultural Resources

12. Ground disturbance activities near the proposed construction to connect the Klamath Tribes Gaming Regulatory Agency and in the area where ground disturbance is proposed along Dole Road and Highway 227 in close proximity to known archaeological sites or in close proximity to areas where there was a high probability of the discovery of previously undocumented sites shall be conducted in accordance with the provisions outlined in the Programmatic Agreement between The Lane Council of Governments, NTIA and the Oregon State Historic Preservation Office (SHPO) to ensure compliance with Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470f, and its implementing regulations, "Protection of Historic Properties" (36 C.F.R. Part 800) (see Appendix F).
13. Any discovery of cultural resources during any phase of the project shall result in a work stoppage in the vicinity of the find until the Oregon State Historic Preservation Office CIS and appropriate Tribes are contacted and the resources can be evaluated by a professional archaeologist. LCOG will instruct all contractors to comply with these restrictions.

Aesthetic and Visual Resources

14. Remove erosion control structures as soon as the area is stabilized.

15. Keep the roadway and work areas as clean as possible, for example by using street sweepers and wheel washes to minimized off-site tracking.
16. Stockpile materials in less visually sensitive areas, preferably where they are not visible from residences.
17. Where conducted trenching activities, install appropriate tree protection measures to protect existing trees (e.g. install protective fencing at the dripline of trees).

18. Minimize the extent and number of businesses, jobs, and access affected during construction.
19. If business access is impacted by construction activities, initiate public information campaigns to inform people that businesses are open during construction and to encourage their continued patronage.
20. Coordinate the timing of temporary facility closures to minimize impacts, to the extent practicable.
21. Provide public information (e.g., press releases, newsletters) on construction activities and ongoing business activities.
22. Maintain access for pedestrians, bicyclists, passenger vehicles, and trucks during construction.
23. Provide advance notice if utilities will be disrupted, and scheduling major utility shut-offs during non-business hours.
24. Coordinate with emergency service providers and community representatives to ensure the public and the environment's safety during construction.
25. Coordinate with all corridor emergency service providers in developing detour routes and other traffic handling plans, if needed, to be used during the construction period.
26. Where landscaping, sidewalks, and driveway access would be affected, coordination would occur with the landowner. These property features would be replaced and/or the property owner would be compensated.

4.14 Compliance with Applicable Laws and Regulations

Relevant laws and regulations for the analysis consist of the following:

Federal

General

National Environmental Policy Act of 1969, 42 U.S.C. 4321-4347
The National Environmental Policy Act (NEPA) requires that federal agencies consider environmental impacts before taking actions that could significantly affect the human environment. As interpreted by the Council on Environmental Quality (CEQ), NEPA requires that "reasonably foreseeable" direct, indirect, and cumulative effects of a proposed action be considered in the decision making process. The "effects" includes "aesthetic, historic, cultural, economic, social, or health" effects.

The project is undergoing review under NEPA and this draft Environmental Assessment is part of fulfilling NEPA requirements.

Air Quality

Federal

The following are relevant regulations pertaining to air quality. While temporary construction activities would result in temporary and minor air quality impacts, the project would not require authorization from relevant air quality agencies.

National Ambient Air Quality Standards, 40 CFR 50. EPA. "National Primary and Secondary Air Quality Standards." U.S. Code of Federal Regulations.
The federal government has established National Ambient Air Quality Standards (NAAQS) to protect the public from air pollution. In addition, the Oregon Department of Environmental Quality (DEQ) has established State Ambient Air Quality Standards (SAAQS), which are at least as stringent as the NAAQS. The U.S. Environmental Protection Agency (EPA) has delegated air quality program implementation to DEQ.

Clean Air Act (CAA). This comprehensive public law forms the basis for a broad range of regulations that control allowable emissions and concentrations of air pollutants in the environment.

State

Oregon Administrative Rule (OAR) 340 Division 202. DEQ. "Ambient Air Quality Standards and PSD Increments." In addition to the NAAQS, DEQ has established State Ambient Air Quality Standards (SAAQS) that are at least as stringent as the NAAQS.

Water Resources

The following outlines relevant regulations pertaining to water resources. While temporary construction activities may result in incidental erosion or sediment discharge to wetlands or waters, it is anticipated that the project would not require an NPDES permit or authorization under the relevant provisions of the Clean Water Act, including Section 303(d), Section 401, and Section 404, or related state provisions. Permit approval or a letter or authorization may be required by the Army Corps of Engineers for the river crossings proposed along the project route. A letter requesting project consultation was sent to the U.S. Army Corps of Engineers on August 26, 2010. The Army Corps of Engineers responded to this request in a letter dated September 29, 2010 which states, in part, that the proposed work may be authorized by Nationwide Permit No. 12 (Utility Line Activities) (see Appendix I). A subsequent meeting was held with Brian Wilson of the Eugene Field Office of the Army Corps of Engineers to discuss the project and application process. Mr. Wilson indicated that the South Umpqua River is considered navigable up to mile 122 (Roseburg), All points included in the preferred alternative are upstream of the first crossing, at mile 141.5. Since the proposed construction would not occur within navigable waters or include a discharge to waters of the state, a permit from the Army Corps of Engineers is not required. The applicant will finalize coordination with the Army Corps of Engineers prior to commencing construction work.

Further, it is anticipated that the project will be consistent with relevant regulations addressing flood hazards.

Federal

Clean Water Act (CWA), 33 USC 1251-1387
The CWA requires states to set water quality standards for all contaminants in surface waters, based on the "beneficial" or "designated" uses for the water body and makes it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a permit was obtained under its provisions. It also recognizes the need to address the problems posed by nonpoint source pollution. Some of the relevant provisions include Section 303(d), Section 401, and Section 404.

Section 303(d)
This section requires states to develop a list of water quality limited segments. These are waters that do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires states to establish priority rankings for

water on the lists and develop action plans, referred to as Total Maximum Daily Loads (TMDL), to improve water quality. TMDLs identify the pollutant load reductions that are necessary from point and nonpoint sources and guide implementation work by federal, state, tribal, territorial, and local water quality protection programs. In Oregon, DEQ develops Section 303(d) lists for approval by EPA.

Section 401 Water Quality Certification
Section 401 requires an applicant for a federal license or permit to conduct an activity that may result in a discharge to waters of the state or U.S. to also obtain a certification that the activity complies with state

water quality requirements and standards. Applicants in Oregon submit a Joint Permit Application to the U.S. Army Corps of Engineers (USACE), which then forwards the application to the certifying state agency, DEQ. DEQ then determines whether to certify that the project meets state water quality standards and does not endanger wetlands or other waters of the state or U.S.

Section 404
Section 404 of the Clean Water Act requires approval prior to discharging dredged or fill material into the waters of the United States, including special aquatic sites such as wetlands. Typical activities requiring Section 404 permits are:

- Depositing fill, dredged, or excavated material in waters of the U.S. and/or adjacent wetlands.
- Grading or mechanized land clearing of wetlands.
- Placement of spoils from ditch excavation activities in wetlands.
- Soil movement during vegetation clearing in wetlands.
- Site development fill for residential, commercial, or recreational developments.
- Construction of revetments, groins, breakwaters, beach enhancement, jetties, levees, dams, dikes, and weirs.
- Placement of riprap and road fills.

River and Harbors Act of 1899, Section 10
Work or Structures in Navigable Waters Section 10 Permit
Maintains and protects navigation in U.S. waters. A Department of the Army permit, issued by the Army Corps of Engineers, is required for certain activities in, over, under or near waters of the U.S. or special aquatic sites, including wetlands. Section 10 of the Rivers and Harbors Act of 1899 requires approval prior to the accomplishment of any work in, over or under navigable waters of the United States, or which affects the course, location, condition or capacity of such waters. Typical activities requiring Section 10 permits are:

- Construction or installation of piers, wharves, bulkheads, dolphins, marinas, ramps, floats, overhanging decks, buoys, boat lifts, jet ski lifts, intake structures, outfall pipes, marine waterways, overhead transmission lines, and cable or pipeline crossings, etc.
- Dredging and excavation

Flood Disaster Protection Act of 1973, Title 40 U.S.C., Chapter 50
Made the purchase of flood insurance mandatory for the protection of property located in Special Flood Hazard Areas.

Federal Emergency Management Act (FEMA) Regulations (CFR Title 44 Ch. 1):
The FEMA Floodway standards include the policies and procedures associated with the initial establishment of the regulatory floodway based on a maximum allowable 1' foot rise in the Base Flood Elevation (BFE) and the procedures for permitting development within the regulatory floodway after it has been established. The flood fringe are lands outside the floodway that are at or below the BFE that store, but do not effectively convey, floodwaters. Lands that compose the flood fringe will be inundated

during a 1% chance flood event but, due to physical characteristics of the floodplain, convey shallow, slower moving waters. The floodway and the Base Flood Elevation (BFE) of the 1% chance flood are determined using hydraulic modeling techniques. FEMA's regulations allow for State and local government regulations that are more stringent (allow something less than a one foot rise) to take precedence.

FEMA's Procedures for "No-Rise" Certificates: Section 60.3 (d) (3) of the National Flood Insurance Program (NFIP) requires that Communities shall prohibit encroachments, fill, new development,

substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses that the proposed encroachment would not result in any increase in flood levels within the community of the base flood (100-year) discharge.

State

Oregon Department of Environmental Quality (DEQ) – Clean Water Act Section 401/Water Quality Certification Permit
Any activity requiring discharge into waters of the State must receive water quality certification.

OAR 340-045-0005 to 340-045-0080, NPDES
A National Pollution Discharge Elimination System (NPDES) permit is required for construction activities such as clearing, grading, or excavating that disturb one or more acres of land.

Biological Resources

The following outlines relevant regulations pertaining to biological resources. While temporary construction activities may result in incidental impacts to wildlife habitat and erosion or sediment discharge to wetlands or waters, it is anticipated that the project would not result in a "take" of a listed animal (including significantly modifying its habitat) or modification of the waters of any stream or other body of water. A letter requesting project consultation was sent to the Oregon Department of Fish and Wildlife (ODFW) and NOAA National Marine Fisheries Service (NMFS).

ODFW representatives have reviewed the proposal and determined that since the majority of the work will be hanging fiber optic lines on existing poles, there would be no impact to fish and wildlife resources. ODFW encouraged the use of untreated poles to prevent the possibility of any CCA or PCP from entering the waterway by way of road ditches or storm runoff (see Appendix G).

A NMFS representative has also reviewed the proposal and reiterated the comments from ODFW, noting that eliminating contaminants by not using treated poles is the best approach for preventing effects to Oregon Coast coho salmon along the Umpqua River (see Appendix H).

In response to the NMFS and ODFW comments, LCOG has consulted with the construction contractor selected to do the work along the Umpqua River. There is the potential of a significant economic impact. Generally treated poles last three to four times as long as untreated poles. We will direct the contractor to take steps to avoid the possibility of the specified runoff getting to the Umpqua River. These steps include using different poles that do not contain the compounds listed, location of poles away from any possible runoff to the streams, and possibly using untreated poles.

Federal

Endangered Species Act of 1973, as amended (ESA), 16 USC 1531-1544.
(http://www.fws.gov/Endangered/esa.html) The federal ESA prohibits the take of any federally listed species. The law defines “take” to include harass and harm. “Harm” includes any act that actually kills or injures members of the species, including acts that may modify or degrade habitat in a way that significantly impairs essential behavioral patterns of the species. Under Section 7 of the ESA, any federal agency that authorizes, funds, or carries out an action must ensure that the action is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of designated critical habitat.

"Critical habitat" refers to specific geographic areas that are essential to the conservation of a threatened or endangered species. The purpose of designating critical habitat is to require federal agencies (or their representatives) to consider the effects of actions they carry out, fund, or authorize on habitat that is

essential to the conservation of a listed species. Critical habitat areas typically have special management considerations for actions taken within such areas or for any actions that could impact those areas. If federally listed species are found within the project area, an informal or formal consultation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the ESA may be required. Informal consultations occur for projects that likely would not adversely affect listed species, whereas formal consultations occur for projects that likely would adversely affect listed species.

Federal Fish and Wildlife Coordination Act, 16 USC 661-667e
(http://www.fws.gov/laws/laws_digest//fwcoord.html) The Fish and Wildlife Coordination Act requires consultation with the USFWS and the appropriate state wildlife agency (Oregon Department of Fish and Wildlife (ODFW) for Oregon) when a project will impound, divert, channelize, or otherwise control or modify the waters of any stream or other body of water. Such actions would also require compliance with Section 404 of the Clean Water Act (see above). Consideration must be given to preventing damage or loss to wildlife and to mitigating any effects caused by a federal project. The environmental assessment must include an evaluation of how the actions may affect fish and wildlife resources, and must identify measures to reduce impacts to fish and wildlife.

Magnuson-Stevens Fishery and Conservation Management Act of 1976, Public Law 94-265, as amended.
(http://www.nmfs.noaa.gov/sfa/magact/) The Fishery Conservation and Management Act of 1976 (Magnuson Act) authorized NMFS to regulate the fisheries of the United States. The act also established eight regional fishery management councils. These councils prepared fishery management plans (FMPs) to govern their management activities, and submitted these plans to NMFS for approval. The Sustainable Fisheries Act of 1996 amended the Magnuson Act (and also renamed it to the Magnuson-Stevens Fishery and Conservation Management Act) to emphasize the sustainability of the nation's fisheries. The act requires cooperation between NMFS, the regional fishery management councils, and federal agencies to protect, conserve, and enhance "essential fish habitat (EFH)," defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity."

The act requires EFH descriptions to be included in federal fishery management plans, and requires federal agencies to consult with NMFS on activities that may adversely affect EFH. NMFS regulations implementing the EFH provisions require all fishery management councils to amend their fishery management plans to describe and identify EFH for each managed fishery. The Pacific Fishery Management Council amended the Pacific Coast Salmon Plan in 1999 (Amendment 14). This amendment covers EFH for all fisheries under NMFS jurisdiction that would potentially be affected by the proposed action. EFH includes all streams, lakes, ponds, wetlands, and other currently viable water bodies, and most of the habitat historically accessible to salmon. Under Section 305(b)(4) of the act, NMFS must provide EFH conservation and enhancement recommendations to federal and state agencies for actions that adversely affect EFH.

Migratory Bird Treaty Act (MBTA), 16 USC 703-712 (http://www.fws.gov/le/pdffiles/MBTA.pdf) The MBTA protects migratory bird species and prohibits unauthorized destruction of active nests and disturbances that lead to the abandonment of active nests. Under the MBTA, nests of migratory birds should not be destroyed during the breeding season (approximately March - August). The MBTA is administered by the USFWS.

State

Oregon's Endangered Species Act, ORS 496.171-192.
(http://www.leg.state.or.us/ors/496.html) The Oregon ESA applies to actions of state agencies on state-owned or -leased lands. In general, the Oregon ESA is much more limited in scope than the federal law. Once a species is placed on the state list as threatened or endangered, Oregon statutes prohibit the "take"

(kill, obtain possession, or control) of the listed species. The ODFW is responsible for fish and wildlife under the Oregon ESA, and may issue a permit to any person for the incidental take of a state-listed threatened or endangered species if it determines that such take will not adversely impact the long-term conservation of the species or its habitat. The department may issue the permit under such terms,

conditions and time periods necessary to minimize the impact on the species or its habitat. An incidental take permit may be issued for individuals of more than one state-listed species. Incidental take permits are not issued for species listed under the federal ESA.

Essential Indigenous Anadromous Salmonid Habitat, ORS 196.810, ORS 196.910.
(http://www.leg.state.or.us/ors/196.html) Essential indigenous anadromous salmonid habitat (ESH) is defined as the habitat necessary to prevent the depletion of indigenous (native) anadromous salmonid species (chum, sockeye, Chinook and coho salmon; and steelhead, bull, and cutthroat trout) during their spawning and rearing life history stages. The designation applies only to those species that have been listed as sensitive, threatened, or endangered by a state or federal authority.

Oregon's Removal-Fill Law requires a permit from the Department of State Lands (DSL) for most removal and fill activities (OAR 141-085-0002
(http://arcweb.sos.state.or.us/rules/OARS_100/OAR_141/141_085.htm l); ORS 196.810(1)(b)). The DSL, in consultation with ODFW, designates ESH based on field surveys and/or the professional judgment of ODFW's district biologist.

ORS 196.795 to 196, Oregon's Removal-Fill Law Oregon Department of State Lands (DSL) Removal/Fill Permit
Projects involving more than 50 cubic yards of fill or removal in waters of the state or any amount of fill in essential salmon habitat requires a removal-fill permit from DSL.

Compensatory Mitigation and Wetland Mitigation, OAR 141-085-0115 to 141-085-0176
(http://arcweb.sos.state.or.us/rules/OARS_100/OAR_141/141_085.html)
These administrative rules govern the issuance and enforcement of removal-fill authorizations within waters of Oregon, including wetlands. DSL may require mitigation as a condition of an authorization to compensate for reasonably expected adverse impacts to water and wetland resources. Compensatory mitigation may include off-site or onsite restoration, enhancement or improvements, wetland creation, and/or monetary compensation for the purpose of watershed health, as approved by DSL. DSL may approve compensatory mitigation for impacts to waters of the state other than freshwater wetlands or estuarine areas, when the applicant demonstrates in writing that the compensatory mitigation plan will replace or provide a comparable substitute for water resources of the state and/or navigation, fishing, and public recreation uses lost by project development.

Wildlife Diversity Plan, OAR 635-100-0105
http://arcweb.sos.state.or.us/rules/OARS_600/OAR_635/635_tofc.html
The *Wildlife Diversity Plan* provides the program goal, objectives and strategies to identify and coordinate nongame wildlife management, research and status survey needs, and education and recreation needs related to Oregon's wildlife. The document provides direction to the Oregon Department of Fish and Wildlife in carrying out its mandated responsibilities. The plan is also intended as an informational document to be used in wildlife programs by public agencies and others concerned with the conservation of nongame and other fish and wildlife species.

Historic and Cultural Resources

The following outlines relevant regulations pertaining to historic and cultural resources. While temporary construction activities may result in some ground disturbance, it is anticipated that the project would not impact any resources.

Project consultation has occurred with the State's Historic Preservation Office (SHPO) as well as area Tribal Governments (see Appendix F) and the Army Corps of Engineers (USACE) (see Appendix I).

The Lane Council of Governments has entered into an agreement with the NTIA and the Oregon State Historic Preservation Office (SHPO) to ensure compliance with Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470f, and its implementing regulations, "Protection of Historic Properties" (36 C.F.R. Part 800) (see Appendix F). Under the terms of the Programmatic Agreement, LCOG will conduct a cultural resource survey for the area of ground disturbance near the proposed construction to connect the Klamath Tribes Gaming Regulatory Agency and in the area where ground disturbance is proposed along Dole Road and Highway 227 in close proximity to known archaeological sites or in close proximity to areas where there was a high probability of the discovery of previously undocumented sites. The resulting archeological report will be distributed to NTIA, affected tribes, and SHPO for review and comment. In the event that the report identifies the possibility of cultural artifacts in the vicinity of any of the pole installations, the Lane Council of Governments will make test excavations under the direction of a qualified archaeologist, as outlined in the Programmatic Agreement.

In addition, the Confederated Tribes of the Grand Ronde Community have submitted comments on the proposal (see Appendix F) requesting that the project proponent proceed with utmost caution and that if any archaeological materials are discovered, all work cease and contact be made with the Oregon State Historic Preservation Office CIS and appropriate tribes. This recommendation has been incorporated as a mitigation measure for this project in Section 4.13.

Compliance with the terms of the agreement will satisfy all Section 106 requirements. The following outlines the anticipated schedule to complete the work described in the Programmatic Agreement:

General Location	Requirement under PA	Estimated Timeframe
Klamath Tribes Gaming Regulatory Agency	Qualified archaeologist on-site during ground excavation for vault	April, 2011
Dole Road and Highway 227	Concurrence on area of potential effect and scope of work; Cultural Resource Survey prior to any construction activities; preparation of Phase I report, 30-day review of report by NTIA and SHPO; consultation with affected Tribes	April/May, 2011
Dole Road and Highway 227	Qualified archaeologist on-site during excavation associated with new utility poles	July/August, 2011
Klamath Tribes Gaming Regulatory Agency	Qualified archaeologist on-site during directional bore under Highway 97 and parking lot of the casino	August, 2011
Dole Road and Highway 227	Issuance of final technical report; review by affected Tribes, SHPO, and NTIA	No later than November, 2011

The schedule may need to be revised in the event that cultural resources are found, which will trigger the need for an Archaeological Resources Monitoring and Treatment Plan and additional review under the terms of the Programmatic Agreement.

Federal

National Historic Preservation Act of 1966, 16 U.S.C. 470 (http://www.law.cornell.edu/uscode/html/uscode16/usc_sec_16_00000470----000-.html) and implementing regulations, 36 CFR Part 63—Determinations of Eligibility for Inclusion in the National Register of Historic Places (http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title36/36cfr63_main_02.tpl), and 36 CFR Part 800—Protection of Historic Properties (http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title36/36cfr800_main_02.tpl).

This act establishes a program for preserving historic properties throughout the nation and declares as a national policy to protect, rehabilitate, restore, and reuse districts, sites, buildings, structures, and objects significant in American architecture, history, archaeology, and culture. Section 106 requires that federal agencies take into account the effect of government-funded construction projects on property that is included in, or eligible for inclusion in, the National Register of Historic Places.

Antiquities Act of 1906, 16 U.S.C. 431-433 (http://www.law.cornell.edu/uscode/html/uscode16/usc_sup_01_16_10_1_20_LXI.html)
This act protects historic, prehistoric ruins, monuments, or objects of antiquity located on lands owned or controlled by the U.S. Government.

Historic Sites Act of 1935, 16 U.S.C. 461-467 (http://www.cr.nps.gov/local-law/FHPL_HistSites.pdf) This act is a basic authority for the Secretary of the Interior to promulgate regulations concerning historic properties.

State

ORS 358.653 (http://www.leg.state.or.us/ors/358.html). This statute requires that any state agency or political subdivision responsible for real property of historic significance in consultation with the State Historic Preservation Officer must institute a program to conserve the property and assure that such property will not be inadvertently transferred, sold, demolished, substantially altered, or allowed to deteriorate.

Visual and Aesthetics

The following outlines relevant regulations pertaining to visual aesthetics. The project route is not located in close proximity to designated scenic waterways in the tri-county area.

Federal

National Wild and Scenic Rivers System Public Law 90-542; 16 U.S.C. 1271 et seq.

The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The Act is notable for safeguarding the special character of these rivers, while also recognizing the potential for their appropriate use and development. It encourages river management that crosses political boundaries and promotes public participation in developing goals for river protection.

State

ORS 390.805 to 390.925 Scenic Waterways

Oregon's Scenic Waterways program was created to enable all federal, state, and local agencies, individual property owners and recreational users to work together to protect and wisely use Oregon's rivers.

Land Use

The following outlines relevant national regulations pertaining to land use. While temporary construction activities may result in some impacts to real property, no acquisition or relocation is anticipated and no land uses would be significantly impacted.

Federal

The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, 42 U.S.C. 4601 et seq. (http://www.access.gpo.gov/uscode/title42/chapter61_subchapteri_.html). The Uniform Act establishes minimum standards for federally funded programs and projects that require the acquisition of real property (real estate) or displace persons from their homes, businesses, or farms. The Act's protections and assistance apply to the acquisition, rehabilitation, or demolition of real property for federal or federally- funded projects.

State

Oregon Statewide Planning Goals, OAR 660-15-0000 (1-15)
(http://www.lcd.state.or.us/LCD/goals.shtml#Statewide_Planning_Goals). The foundation of Oregon's land use planning program is a set of 19 Statewide Planning Goals. The goals express the state's policies on land use and related topics, such as citizen involvement, housing, and natural resources and are achieved through local comprehensive planning. State law requires each city and county to adopt a comprehensive plan and the zoning and land-division ordinances needed to put the plan into effect. Thus, the Statewide Planning Goals are the foundation of locally adopted plans, which are approved if consistent with Statewide Goals. No data collection or analysis will be conducted specifically for the Statewide Goals because they are implemented through local code and plans, which will direct the data gathering and analysis. Through reviewing the implementing plans and codes, the Project Team will address the following: Goal-1 Citizen Involvement, Goal-2 Land Use Planning, Goal-3 Agricultural Lands, Goal-4 Forest Lands, Goal-5 Open Spaces, Scenic and Historic Areas, and Natural Resources, Goal-8 Recreational Needs, Goal-9 Economic Development, Goal-10 Housing, Goal-11 Public Facilities and Service, Goal-12 Transportation, and Goal-14 Urbanization. No data collection or analysis will be conducted specifically for these statutes, as they are implemented through local code and plans which will direct the data gathering and analysis.

Local

General

Oregon law does not require land use approval for the installation of an additional utility line on an existing power or telephone pole. A pole attachment regulatory process requires pole owners to lease space on their poles unless the pole is at capacity. Prior to construction, the applicant will obtain appropriate approvals to conduct work on existing utility poles.

A portion of the fiber construction of laterals will be buried due to local conditions or requirements. Most of the cable will be buried in rights of way or across the property of critical users to be directly connected. Prior to construction, the applicant will obtain appropriate approvals to conduct work in existing right-of-ways.

Douglas Land Use Code
http://www.co.douglas.or.us/planning/tbl_cont.asp

Utility and communication facilities necessary for public service are generally permitted uses. In more sensitive resource zoned lands, the following is permitted: reconstruction or modification of public roads and highways, including the placement of utility facilities overhead and in the subsurface of public roads and highways along the public right of way, but not including the addition of travel lanes, where no removal or displacement of buildings would occur, or no new land parcels result.

Klamath County Code
http://www.klamathair.org/ComDevelopment/Planning_Land_Dev_Code.htm

The location and installation of underground utilities, sewers, and drains installed below streets or roads shall be approved by the Director of Public Works. Installation shall be completed prior to road surfacing, and all individual service connections shall be of sufficient length that will obviate any need for street cuts when service connections are made.

Lane County Land Use Code
http://www.lanecounty.org/Departments/CC/LaneCode/Pages/default.aspx
Permits utilities essential to the physical, economic and social welfare of an area.

Other

In addition, each of the jurisdictions which contain anchor institutions served by the project has local ordinances that should be consulted. In particular, within Cottage Grove, where the installation will occur mainly by ground disturbance activities, there is a tree preservation ordinance requiring protection of significant trees and shrubs (those having a caliper of 8 inches or larger, unless the plant is listed as non-native, invasive plants or plants listed by the city as prohibited street trees and landscape plants) during construction, generally corresponding with the drip line (the area around each edge of all branches) of each tree. The contractor completing installation within this area should be advised of this provision and coordinate with the city to install appropriate tree protection, if required.

Socioeconomic Resources

The following outlines relevant national regulations pertaining to socioeconomics. A positive impact on socioeconomic resources is anticipated.

Federal

Title VI of the Civil Rights Act of 1964 (Title VI), 42 U.S.C 2000d, 49 CFR Part 21, 23 CFR Part 200, Title VI prohibits discrimination on the basis of race, color, or national origin. It requires that "no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." The Civil Rights Restoration Act of 1987 specified that recipients of federal funds must comply with civil rights laws in all areas, not just in a particular program or activity that receives federal funding, (http://www.fhwa.dot.gov/legsregs/directives/notices/n4720-6.htm)

Executive Order 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 Federal Register 7629 (Feb. 11, 1994) (http://www.dotcr.ost.dot.gov/documents/ycr/eo12898.pdf). This order requires that federal agencies identify and address disproportionately high and adverse human health or environmental effects of programs, policies, and/or activities on minority populations and low-income populations. It addresses

both the requirements for equal justice embodied in Title VI of the Civil Rights Act, and the requirements for environmental protection embodied in NEPA.

5.0 List of Preparers

This list presents the individuals who contributed to the technical content of the EA.

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Bachelor of Landscape Architecture, University of Oregon, June 1995
Bachelor of Art in Political Science, Antioch College, Yellow Springs, Ohio, June 1975
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Bachelor of Social Science, Environmental Policy and Assessment, Western Washington University, Bellingham, WA 1996. Graduated Magna Cum Laude.
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Paula Taylor
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Bachelor of Science, Geology, University of Oregon, Eugene, Oregon, 1980

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6.0 References (Agencies and persons consulted)

In preparing this evaluation, the following organizations and documents were consulted:

Agency staff communication:
Oregon DEQ, Personal communication with Mary Camarata, Western Region, ERT Representative
SHPO, Written correspondence with Susan White and Ian Johnson
USFWS/ODFW, Written correspondence with John Spangler and Michelle Tate
NOAA NMFS, Written correspondence with Ken Phippen
DSL, Personal communication with Janet Morlan
USACE, Written correspondence with Brian J. Wilson, Teena Monical, personal communication with Brian J. Wilson
Oregon Coastal Zone Management Program, Written correspondence with Juna Hickner
City of Florence, Written correspondence with Sandra Belson

Documents and websites:

Klamath County Comprehensive Plan
http://www.klamathair.org/ComDevelopment/comprehensive_plan.htm

Lane Regional Air Protection Agency
http://www.lrapa.org/

Northwest Region of NOAA-Fisheries:
http://www.nwr.noaa.gov/ESA-Salmon-Listings/Index.cfm

National Wildlife Refuges and Parklands
http://www.fws.gov/klamathbasinrefuges/index.html
http://www.fws.gov/klamathbasinrefuges/areamap.html
http://www.fws.gov/klamathbasinrefuges/uk%20hunt.html - Hank's Marsh

ODA -- T&E plant species
http://www.oregon.gov/ODA/PLANT/CONSERVATION/statelist.shtml

Oregon Department of Environmental Quality
http://www.deq.state.or.us/wq/assessment/assessment.htm

Oregon Department of Fish and Wildlife
Oregon Conservation Strategy, Habitats
http://www.dfw.state.or.us/conservationstrategy/contents.asp

Key Species Table
http://www.dfw.state.or.us/conservationstrategy/document_pdf/b-species_2.pdf

Wildlife Mgmt Areas
http://www.dfw.state.or.us/resources/visitors/

T&E Species
http://www.dfw.state.or.us/wildlife/diversity/species/threatened_endangered_species.asp

Oregon Department of Land Conservation and Development
http://www.oregon.gov/LCD/goals.shtml\

Oregon Employment Department, Employment Forecasts
http://www.qualityinfo.org/olmisj/PubReader?itemid=00003217

Oregon National Register by County
http://egov.oregon.gov/OPRD/HCD/NATREG/docs/oregon_nr_list.pdf

Oregon Parks & Recreation Historic Cemeteries
http://egov.oregon.gov/OPRD/HCD/OCHC/index.shtml

Oregon Parks & Recreation Archaeological Services
http://egov.oregon.gov/OPRD/HCD/ARCH/index.shtml

Scenic Waterways
http://www.oregon.gov/OPRD/RULES/waterways.shtml
http://egov.oregon.gov/OPRD/RULES/docs/scenic_waterways_map.pdf

Scenic Byways
http://www.byways.org/explore/states/OR/
http://www.oregon.com/byways
http://www.traveloregon.com/Explore-Oregon/Willamette-Valley/Trips-We-Love/Cottage-Grove-Covered-Bridge-Tour-Route.aspx
http://www.traveloregon.com/Explore-Oregon/Southern-Oregon/Trips-We-Love/Myrtle-Creek_Canyonville-Tour-Route.aspx

State Parks
http://www.oregonstateparks.org/searchpark.php

US Census
http://factfinder.census.gov/home/saff/main.html?_lang=en

US Environmental Protection Agency (EPA):
US EPA Cleanup Sites
http://iaspub.epa.gov/Cleanups/

Air Quality EPA website: Region 10 Pacific Northwest and Alaska
http://yosemite.epa.gov/r10/airpage.nsf/webpage/SIP+-+Table+of+Contents?OpenDocument

Ecoregions EPA website:
http://www.epa.gov/wed/pages/ecoregions/or_eco.htm

USFWS—Oregon Fish & Wildlife Service Office
http://www.fws.gov/oregonfwo/Species/Lists/ T&E Species by county

Critical Habitat USFWS:
http://crithab.fws.gov/ (mapper)
The Prairie Species Recovery Plan is available in PDF format at
http://www.fws.gov/oregonfwo/Species/PrairieSpecies/default.asp
Downloadable, public domain images of the 13 prairie species are available at
http://www.fws.gov/oregonfwo/Species/PrairieSpecies/gallery.asp

Wilderness Areas
http://www.gorp.com/parks-guide/oregon-wilderness-areas-outdoor-pp1-guide-cid1449-ctid565.html

Glossary

AQMA	Air Quality Management Area
BLM	Bureau of Land Management
BMPs	Best management practices
CCA	Chromate copper arsenate
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulation
CO	Carbon Monoxide
CWA	Clean Water Act
DEQ	Oregon Department of Environmental Quality
DSL	Department of State Lands
EA	Environmental Assessment
ESCI	Environmental Cleanup Site Information database
EPA	Environmental Protection Agency
EWEB	Eugene Water & Electric Board
LCOG	Lane Council of Governments
LRAPA	Lane Regional Air Protection Agency
MBPS	Megabyte Per Second
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Protection Act
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NMFS	National Marine Fisheries Service
NPL	National Priorities List
NTIA	National Telecommunications &Information Administration
OAR	Oregon Administrative Rules
ODFW	Oregon Department of Fish and Wildlife
ODA	Oregon Department of Agriculture
OPRD	Oregon Parks and Recreation Department
OSHA	Occupational Safety and Health Administration
PCP	Pentachlorophenol (PCP)
PM	Particulate matter
RCRA	Resource Conservation and Recovery Act
ROW	Right-of-way
SHPO	State Historic Preservation Office
SEPS	State Implementation Plans
SUB	Springfield Utility Board
T & E	Threatened and Endangered Species
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service