Highway 299 Fiber & Wireless Broadband Business Plan

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Funded by:
Community Development Block Grant

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Introduction

The purpose of this report is to identify and describe the requirements of a party (or parties) to successfully complete the construction of a redundant and diversely routed fiber-optic cable to the Eureka area of Humboldt County, California, resulting in the accessibility to broadband Internet access for un-served communities in Shasta, Trinity, and Humboldt counties.

Humboldt County is currently served via AT&T's single fiber-optic backbone cable, built along California State Highway 101. The AT&T fiber terminates in the City of Eureka, and is Humboldt County's sole fiber link carrying nearly all Internet, telephone, and cable Internet traffic originating from or terminating in the area.

Although AT&T utilizes its microwave network in the region for redundancy of its voice services, the microwave network capacity is limited and does not provide the same levels of service as the fiber.

Broadband Associates plans to build fiber from Eureka to the I-5 corridor. This project will be financed in part by a $7,830,720 California Advanced Services Fund (CASF) grant from the California Public Utilities Commission (CPUC). This CASF grant will cover 40% of the cost to build a fiber backbone, often called "backhaul", from Eureka to Redding and to supply "last mile" broadband to communities along Highway 299.

Velocity Technology of Weaverville, in partnership with Broadband Associates, plans to expand its current wireless "last mile" broadband service to communities on Highway 299 between Whiskeytown and Glendale.

Terms of the CASF grant include providing 2 megabits per second symmetrical (upstream and downstream) residential and business service for five years starting at $39.99 per month. The residential and business services will be delivered through wireless broadband services from Velocity Technology. The fiber optic backbone will be built and operated by Broadband Associates. Customers of the fiber optic backbone will be at the "wholesale" or large user level: telephone companies, cable companies, wireless Internet service providers (WISPs), cellular companies, and potentially government agencies, health facilities, and school sites.

Included in this report is a discussion of California SB1191, enacted into law in 2008. SB1191 allows Community Service Districts (CSDs) to provide broadband where no provider is willing or able. The community of Fieldbrook is not included in the Broadband Associates/CASF plan, but it is included in this report since their CSD wishes to explore providing broadband in their community.

Project Partners

Broadband Associates is a California Competitive Local Exchange Carrier (CLEC) based in Northern California and focused on rural broadband deployment and development, with specific expertise in design, engineering and provisioning of custom fiber-optic and wireless networks for communities and institutions.

The Broadband Associates team is made up of broadband networking pioneers from Comcast, AT&T Broadband, TCI Cable, and Sprint. Michael Brinskele, Broadband Associates CEO, is a 23 year telecom industry veteran.

Broadband Associates is highly experienced in engineering, installing and managing custom fiber-optic networks for carriers, the Fortune 1000, Education, Healthcare, and Local Government agencies.

Broadband Associates has built fiber networks for Cisco Systems, British Telecom, AT&T, Barclays Global, Sony, and others, and is known for having built the world's first commercial, metropolitan OC192 DWDM multi-wavelength fiber ring. Broadband Associates' team has specific experience in rural wireless, fiber-to-the-home, Voice Over IP, video, and Internet access.

Velocity Technology is a California consumer cooperative corporation headquartered in Weaverville. Current Trinity County communities served by Velocity Technology are: Weaverville, Lewiston, Hayfork, Junction City, and Deerlick Springs. The community of Hoopa in Humboldt County is also served.

Project Description

This project will build a fiber backbone and build wireless broadband infrastructure and service in communities along Highway 299 between Redding and Eureka, using Broadband Associates' fiber optic backbone. Velocity Technology has partnered with Broadband Associates to provide "last mile" residential and business broadband service between Eureka and Redding.

The Highway 299 communities planned to be served by Velocity Technology and Broadband Associates are, going west to east: Glendale, Blue Lake, Korbel, Willow Creek, Salyer, Hawkins Bar, Trinity Village, Burnt Ranch, Cedar Flat, Del Loma, Big Bar, Big Flat, Junction City, Weaverville, Douglas City, Lewiston, French Gulch, and Whiskeytown.

The primary objective of this report is to outline the requirements of a party (or parties) to undertake the project of providing a redundant and diverse, scalable broadband link into Humboldt County.

Objectives of the contemplated new link are to:

a) Greatly reduce or eliminate the possibility of service disruptions to the region.

The existence of an alternate and diverse fiber link into the Humboldt area will not be enough, by itself, to solve the local communities' broadband service reliability problems. It is important that the major service providers in the area have access to both the existing AT&T fiber and an alternate fiber backbone, thus solidifying their service offerings as well as their Service Level Agreement (SLA) commitments to their customers.

Utilization of two fiber cable paths into and out of the Humboldt region, combined with "self-healing" telecommunications protocols and system architectures such as SONET (Synchronous Optical Network), would immediately result in nearly fault-proof resiliency for all services into and out of the region.

b) Drive down the cost of telecommunications services in the area by offering options.

Because the only fiber connection into the area is owned by AT&T, alternatives for high-speed backhaul into and out of the region are severely limited to (i) AT&T's fiber, (ii) capacity limited microwave systems, or (iii) expensive satellite broadband links.

Therefore, AT&T has considerable market power locally to control the rates charged for services to end users, both directly and indirectly via local carriers utilizing AT&T's network for backhaul.

Our research indicates that a second fiber-optic link brought into the region, making virtually unlimited backhaul capacity available to all regional carriers and institutions, can foster competition for telecom services at the retail and wholesale levels. This scenario would likely result in downward pressure on rates for telecom services overall in the local market.

c) Provide much needed broadband Internet access to various communities along Highway 299, currently un-served by broadband Internet service providers.

As part of The State of California's Executive Order S-23-06, Governor Arnold Schwarzenegger created a 21-member California Broadband Task Force comprised of public and private stakeholders, with the expertise to advise policymakers on a framework for making California a global leader in the telecommunications revolution. The Task Force published a report containing a comprehensive assessment of the state of broadband in California. The report includes detailed maps of wireline and wireless broadband Internet access availability. Various communities in the Shasta, Trinity, and Humboldt counties were identified in this report as being un-served.

Rural Broadband Market

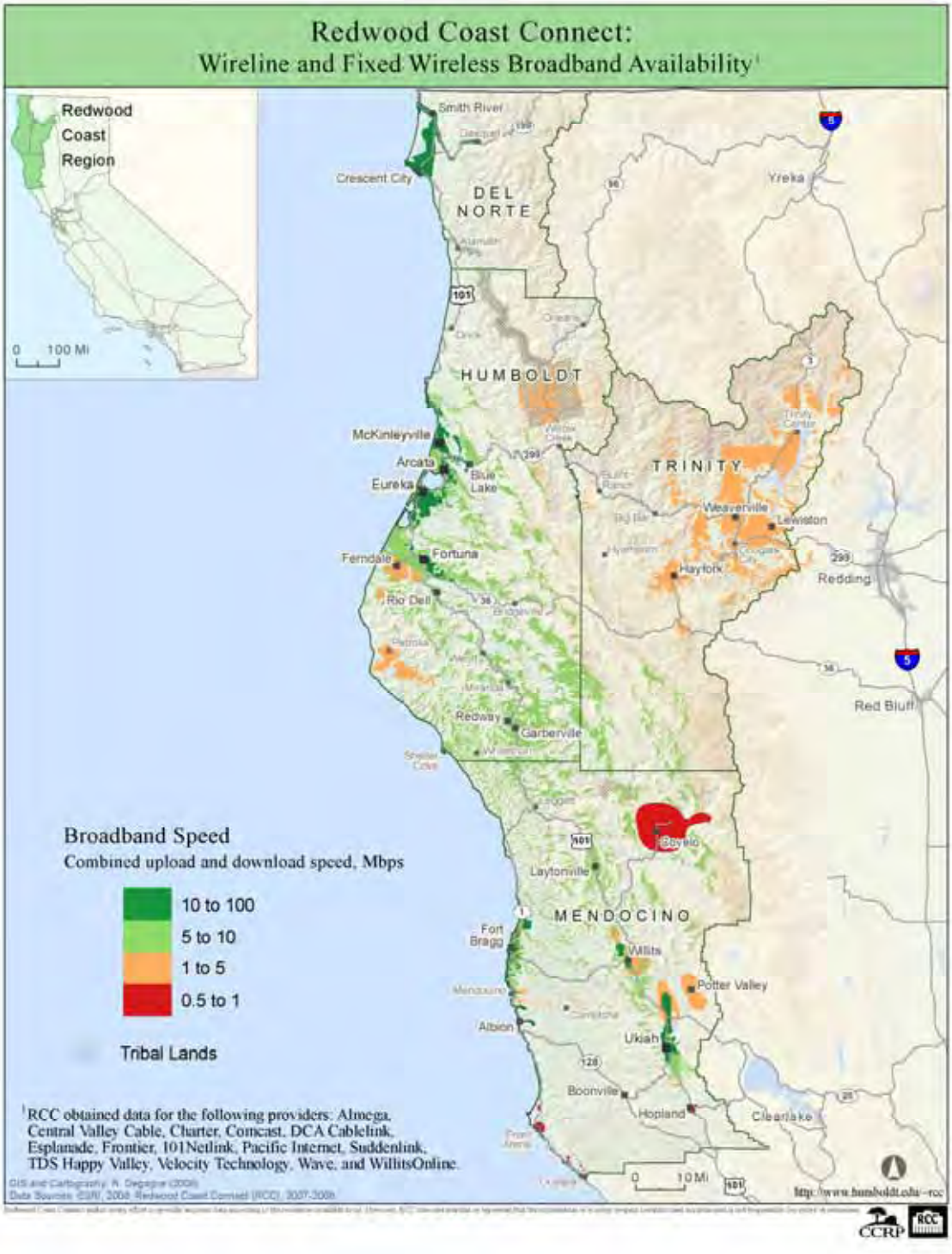
The Highway 299 portion of interest for this project crosses difficult terrain spanning a distance of approximately 150 miles from Eureka to the I-5 corridor. The route passes through a number of small and remote rural communities. Most of the communities have no broadband options available. The list of communities is as follows:

Communities	Estimated # of Households	Current Broadband Provider(s)
Blue Lake	466	Suddenlink
Glendale	150	Suddenlink
Korbel	20	none
Fieldbrook	680	Suddenlink
Willow Creek	961	Almega
Salyer	366	none
Hawkins Bar	57	none
Trinity Village	170	none
Burnt Ranch	264	none
Cedar Flat	12	none
Del Loma	120	none
Big Bar	143	none
Big Flat	57	none
Junction City	410	Com-Pair, Velocity Technology
Weaverville	2117	Com-Pair, DCA Cablelink, Velocity Technology
Douglas City	531	Velocity Technology
Lewiston	1038	Com-Pair, Velocity Technology
French Gulch	109	none
Whiskeytown	34	none

The following table represents the Census Block Groups (CBGs) that were applied for in the CASF grant. These communities are all either underserved or unserved.

Highway 299 Broadband Network	
Highway 299 Between Redding & Eureka, CA	
a) Community Name	***c) Zip Codes***
Blue Lake / Glendale / Korbel	95525
Willow Creek	95573
Salyer	95563
Burnt Ranch / Cedar Flat / Hawkins Bar / Trinity Villiage	95527
Big Bar / Big Flat / Del Loma	96010
Junction City	96048
Weaverville	96093
Douglas City	96024
Lewiston	96052
French Gulch	95033
Whiskeytown	96095
b) CBGs	***Median Household Income***
60230101021	$22,984
60230101024	$42,813
60230103003	$32,443
60230103004	$29,583
60230103005	$44,375
60890124001	$30,000
60890124002	$39,625
61050001003	$34,853
61050001004	$31,687
61050001005	$41,083
61050001006	$30,822
61050001007	$30,144
61050001008	$31,583
61050001009	$26,736
61050002002	$24,206
61050002003	$26,696
61050002004	$21,250
61050002005	$34,063

2008 wireline and fixed wireless broadband coverage in the region is on the following map (source: Redwood Coast Connect project). Even those communities with broadband along Highway 299 have slower speeds due to lack of available and affordable backhaul to the Internet.



Rural communities may not have the traditional anchor tenant, a large business. Anchor tenant businesses in rural regions tend to be small or home-based operations, most with broadband demand needs similar to residential needs. Government agencies and schools are located in rural communities but their telecom providers or private network buying practices may be dictated at the state or national level, which precludes their participation in local broadband initiatives as anchor tenants.

Anchor tenants identified along Highway 299 are in the following table. With the exception of California Redwood Corporation in Korbel, most are not large consumers of broadband.

Communities	Potential Anchor Tenants
Blue Lake	School, City of Blue Lake, fish hatchery, Wallace & Hines
Glendale	Mill, market
Korbel	California Redwood Corporation
Fieldbrook	School, CSD
Willow Creek	School, CSD, small hospitality businesses, organic farmers
Salyer	CSD, small hospitality businesses
Hawkins Bar	Small hospitality businesses
Trinity Village	Water company
Burnt Ranch	School, small hospitality businesses
Cedar Flat	None identified
Del Loma	Small hospitality businesses
Big Bar	School, small hospitality businesses, USFS
Big Flat	Small hospitality businesses
Junction City	School, restaurant, store, USFS
Weaverville	County govt, TPUD, USFS, small hospitality businesses
Douglas City	Store, CSD, school
Lewiston	Store, hospitality businesses, manufacturing, school

French Gulch	Restaurant, hospitality businesses
Whiskeytown	National Park Service, marinas

Demand in the region was recently assessed by the Redwood Coast Connect project. Below are their characterizations based on supply/demand analysis:

- Population centers are generally well served with both a variety of broadband choices and a price competition.
- The entire region suffers from a lack of redundancy that will hamper business expansion.
- Areas that have had active, ongoing broadband leadership for a number of years have better broadband deployment, higher satisfaction levels, high demand and fewer underserved areas.
- Geography is a key limiter to broadband penetration.
- Lack of backhaul capacity is a key limiter to broadband deployment in many of the underserved areas.
- Town centers may have limited broadband capabilities, but outlying areas are underserved (even at the block level). This seems to be more prevalent with the larger providers who draw arbitrary service lines owing to distance, technology constraints or operational cost constraints.
- Locally-owned fixed wireless providers are the only providers in most of the underserved areas.
- Mobile wireless coverage is expanding rapidly with 3G coverage available in mid-2008. However, topology constraints in the regions (especially dense trees and hills) make coverage spotty and unpredictable.

According to Redwood Coast Connect survey data:

- Humboldt County has a high take-rate for services when they are available, 61%, which demonstrates a high-level of general community awareness of the importance of broadband and the need for broadband.
- Trinity County's take-rate for services when they are available is 32%.

Northwest California Backhaul Market

From the Redwood Coast Connect report, "there are two backhaul issues in the Redwood Coast region:

1. Unserved and underserved areas, along with areas of very low population density, do not have backhaul capacity, scalability, and affordability.
2. Well-served areas do not have the route diversity (redundancy) which would make broadband more reliable to residents, government agencies and businesses."

The Highway 299 route backhaul has historically been at capacity and at a high cost with Verizon as the only company capable of providing backhaul along 299 from Willow Creek east to Weaverville. Backhaul from Lewiston is provided by AT&T.

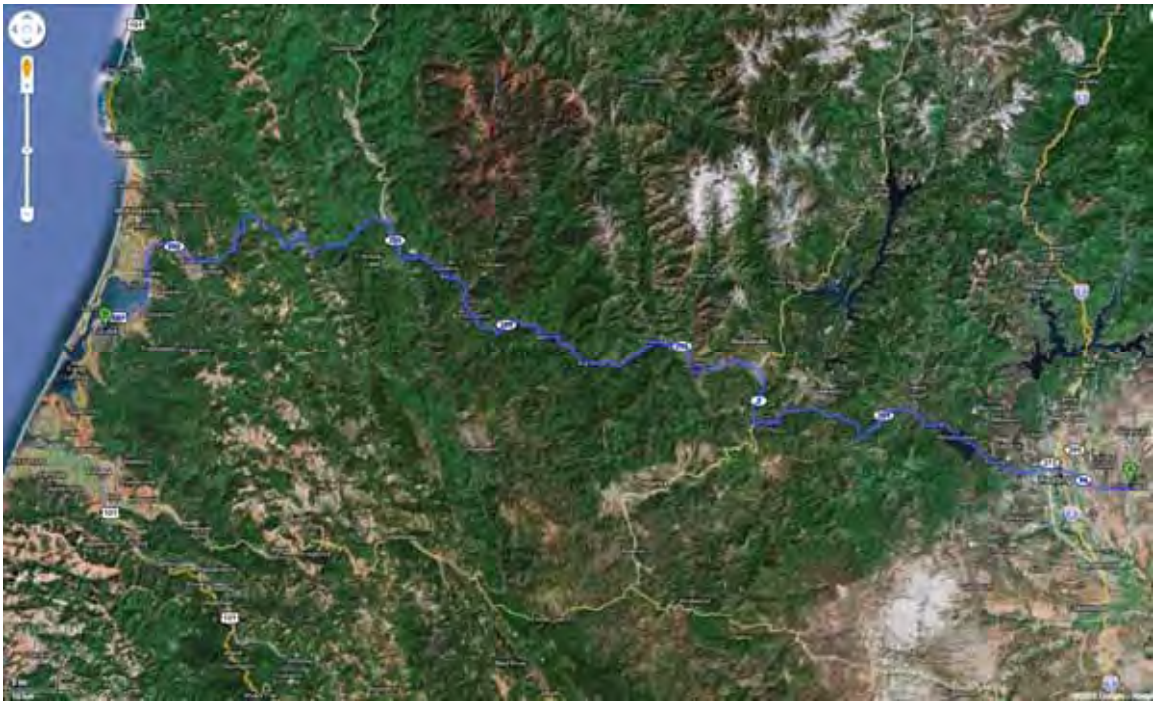
AT&T is the sole provider for backhaul over fiber into the Humboldt Bay region at this time. All backhaul subscribers currently on AT&T's fiber are also potential subscribers for the new fiber backbone to be built along Highway 299. The new Highway 299 fiber backbone will give subscribers an alternative to AT&T's backhaul service and a compelling option for network diversity.

Research shows that AT&T's fiber backhaul subscribers in the Humboldt region, currently include local CATV firms, cellular telephone firms, and Wireless Internet Service Providers (WISPs). Meetings have been held with these firms locally and have confirmed significant demand exists for an alternative to the AT&T backhaul service.

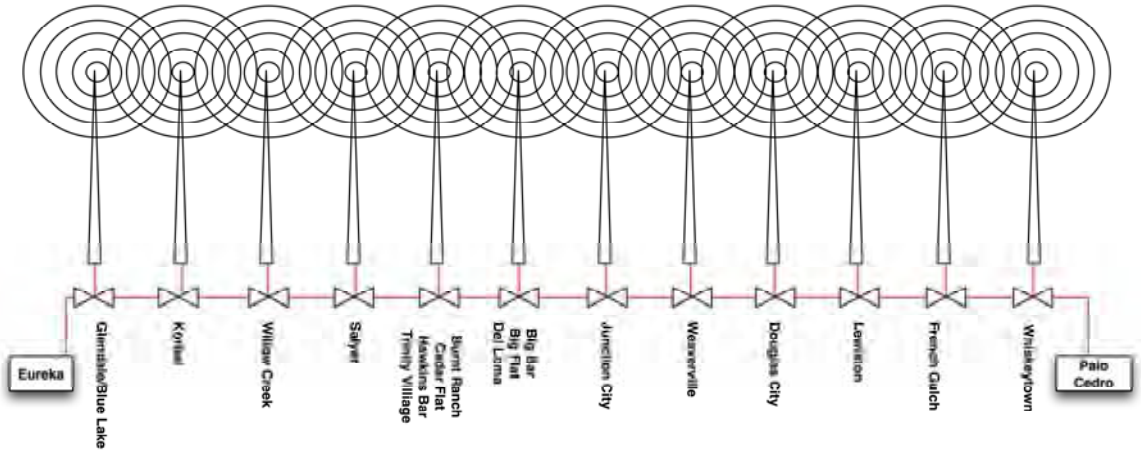
Interviews with Humboldt businesses convey a consistent message about the community's need for, and growing frustration with the lack of, reliable, scalable, high-speed Internet service. Pain felt locally from the lack of a redundant Internet link to the area was magnified and widely felt when outages to the AT&T fiber in recent years caused "a devastating impact" to the local community. Each time the AT&T fiber fails due to land-slides, mud-slides and the like, vital services in the local communities are disrupted, including cellular telephone service, banking, e-commerce, air traffic control, and Internet access in general.

Because the CASF grant is the most important single business case feasibility factor, fulfillment of CASF grant requirements had to be considered in selecting the fiber route for this project. Highway 299 represents the route with the most unserved communities and therefore had the greatest potential for the CASF grant. The Highway 299 route has the highest number of potential Internet access subscribers (5,734) of all the east-west paths, which also factored into the route selection.

The Highway 299 route is recommended route to bring the potential of redundancy to current Humboldt County telecommunications infrastructure, with the added benefit of serving 18 unserved or underserved communities.



the end points of the Highway 299 fiber backbone are designed to terminate in the cities of Eureka and Palo Cedro. Fiber interconnection points for wireless service will be located in the following communities:



Why Wireless for "Last Mile"?

The term "last mile" applies to the portion of the network to the home or residence. Low residential density of most rural communities, lack of anchor tenants (or anchor tenants who are already part of a restricted system and so are presently not considered part of the demand market), and a lack of backhaul infrastructure, make serving small rural communities across the state very challenging. In the case of the North Coast this is exacerbated by rugged terrain and a tree covered landscape. Wireline infrastructure is extremely expensive per subscriber to install in sparsely populated rural communities.

Local wireless internet service providers (WISPs) have been stepping up to the plate to serve small communities in the regions in which they are located. Expansion is often dependent upon recovering costs before taking on the next community. Serving additional communities is a slow, step by step process.

In the North Coast region there are two factors which influence expansion into communities by the WISPs—cost and complexity of securing backhaul and the challenge of securing anchor tenants to help offset the cost of supplying residential service. In this project, backhaul to the Internet will be provided by Broadband Associates.

Products & Services

Fiber Products & Services

Offerings to be made available across the Middle Mile fiber include: (1) Lit services – such as SONET (Synchronous Optical Network), (2) Ethernet, and (3) Dark Fiber leased by strand distance per month. Due to the relatively small customer base for this wholesale fiber market, pricing is negotiated on a case by case basis.

There are a number of major wholesale bandwidth subscribers in the local Humboldt area. These firms have significant aggregate demand for capacity on an alternate route to the existing AT&T fiber. After meeting with AT&T, it is evident that AT&T would prefer to have a diverse fiber path into the Humboldt area to provide redundancy to their fiber as well. Broadband Associates interviewed multiple voice, data and video carriers operating in the region who have informed us of their intent to order services on a new fiber backbone as soon as one is installed.

Wireless Products & Services

"Last mile" residential and business wireless broadband service speeds will be 2mbps both upstream and downstream. This symmetrical service will provide speeds more attractive to consumers with their changing patterns of residential and business broadband usage. User-generated content will continue to grow in popularity, making faster upstream speeds more important. DSL and cable modem speeds are generally asymmetrical, with the upstream speed often quite slow.

Pricing is as follows:
Business price: $69.99/mo, $299 installation
Residential price: $39.99/mo, $199 installation
Installation includes attachment of a wireless receiver to the outside of the home or business and connection to a single computer. Multiple computers will require the installation of a router (provided by customer). Consumer Premise Equipment (CPE) is owned by Velocity Technology.

Velocity Technology Terms: Bills are mailed the first business day of the month and are due by the 15th day of the month. Subscribers not paying by the 30th day of the month will be sent a late notice and are disconnected by the 15th day of the following month if payment arrangements have not been made. Payment methods include: cash, check, credit card. The service is provided on a month-to-month basis; there are no long-term contracts. The installation costs are non-refundable.

Project Feasibility

Due to the size of Humboldt County and the cost of a project this size, it is very difficult to create a business case that makes sense. For a company to take on this project without subsidies or low interest financing, it would have to accept the idea of not realizing a return on investment for many, many years.

The following key factors, however, make this project feasible:

a) California Advanced Services Fund

The California Advanced Services Fund (CASF) was authorized by the California Public Utilities Commission on December 20, 2007, in D.07-12-054 in accordance with Public Utilities Code § 701. It provides grants to "telephone corporations" (as defined under Public Utilities Code § 234) for subsidizing the deployment of broadband Internet access into un-served and underserved areas of California.

The total CASF currently sits at $100 million. Expected to be a two-year program, the CASF will promote universal service in un-served and underserved areas in the state by awarding funding to qualifying certificated applicant carriers. The CASF will award to applicants up to 40% of their total broadband deployment capital costs.

The CASF is the most important factor in making the Highway 299 alternate fiber installation project financially feasible, and would allow the grantee the ability to realize an accelerated return on investment.

b) Potential Backhaul Subscribers

There are a number of major wholesale bandwidth subscribers in the local Humboldt area. These firms have significant aggregate demand for capacity on an alternate route to the existing AT&T fiber. After meeting with AT&T, it is evident to us that AT&T would prefer to have a diverse fiber path into the Humboldt area to provide redundancy to their fiber as well. We have interviewed multiple voice, data and video carriers operating in the region who have informed us of their intent to order services on a new fiber backbone, as soon as one is installed.

When added to the business case for the Highway 299 fiber project, the revenue forecasted from these potential wholesale subscribers significantly helps make this project financially feasible.

c) Subsidies, Low Cost Long-term Loans and Grants

We believe this project qualifies for multiple funding programs; including regional economic development grants and loans, and federal Rural Broadband grant and loan programs administered by the US Department of Agriculture (USDA). We are in the process of applying for financial assistance for this project from both the USDA and regional economic development entities at this time.

d) Potential ISP Subscribers

There are approximately 5,734 potential residential subscribers to Internet service within the eighteen communities included in the project. Based on our research, we estimate a 38% take rate is achievable within the first year following completion of the project. Revenue from these potential subscribers is significant to the overall feasibility of this project.

Technologies Used

There will be multiple technologies utilized within the various phases of this project:

a) *Backhaul / Middle Mile Phase* – Due to the bandwidth restrictions of Microwave technology and the unlimited bandwidth possibilities of fiber optic cable, the recommended Middle Mile medium for this project is fiber optic cable. Offerings to be made available across the Middle Mile fiber include: (1) Lit services – such as SONET (Synchronous Optical Network), (2) Ethernet, and (3) Dark Fiber leased by strand distance per month.

b) *Construction phase* – There are a number of different construction technologies that needed to be considered when evaluating this project, such as Traditional Trenching, Directional Boring, Aerial Pole Construction, and Micro-Trenching. After evaluating each technology, the recommended technology is Micro-Trenching, due to overall cost, speed of installation, and ease of maintenance. Bridge crossings along the Highway 299 route will be addressed using conduit underneath and attached to the bridges themselves.

c) *Subscriber Network / Last Mile Phase* – When considering the Last Mile Phase, there are also various technology options such as FTTH (Fiber to the Home), DSL, Cable Modem and Wireless. Due to geographical location of potential subscribers, the most cost effective and recommended technology is wireless.

See Appendices for technological diagrams for fiber and wireless construction.

Marketing Plan

Fiber marketing has been targeted to the following list of potential large-scale wholesale and institutional subscribers who have expressed their backhaul needs to the Redwood Coast Connect project personnel:

Telephone Companies	AT&T
	Frontier
	Verizon
Cable Companies	Suddenlink
	DCI Cablelink
	Almega
Wireless ISPs	Velocity Technology
	101Netlink
Cellular Companies	US Cellular
	Verizon
PG&E	
Education	
Government Agencies	
Health Care	

The best marketing for last mile residential and business broadband in rural communities is word of mouth. A list of contacts has been gathered for each community. These are residents willing to spread the word and to help with identifying potential sites for equipment placement. The list is:

Communities	Contact Name
Blue Lake	Sherm Schapiro
Glendale	Jarl Johansen
Korbel	Bruce Bott, Jack Blakely
Fieldbrook	Jamie Crowell, Jason Garlick
Willow Creek	Steve Paine
Salyer	Garrett Watty, Nicole Ammon, Keri Raphael
Hawkins Bar	Diana Lynn
Trinity Village	Gordon Heft
Burnt Ranch	Bill Anderson, Greg Simmons
Cedar Flat	Steve Spellenberg
Del Loma	Del Loma Lodge
Big Bar	Straw House Coffee Shop, Don Ellis (owner)
Big Flat	same as Big Bar
Junction City	Bob Winkler
Weaverville	Jeff Morris
Trinity County	Dero Forslund
Trinity PUD	Barbara Bowers
Douglas City	Arnold Whitridge
Douglas City	Travis Finch
Lewiston	Katie Quinn

Lewiston	Jack Scribner
Lewiston	Gary Norder
French Gulch	Restaurant
Whiskeytown	Jim Milestone

The local news media will be contacted when services are available. Community Service Districts (CSDs) will be asked to put a flyer in their bill mailings. Flyers will be posted on community bulletin boards. Communities with web sites will be asked to post information.

Some of the media outlets in the region are:

Community	Media Outlet
Arcata/Eureka and east on 299	The Arcata Eye
	Eureka Times-Standard
	Trinity Journal
	North Coast Journal
	KHSU
	KIEM
	KINS
	KHUM
Willow Creek, Salyer, Trinity Village, Cedar Flat, Burnt Ranch, Hawkins Bar	Two Rivers Tribune
	Hoopa KIDE radio station
	North Coast Journal
Weaverville & Trinity County	Trinity Journal
Regional	Jefferson Public Radio

Community Service Districts (CSDs)

SB1191 was signed into law by the California State Legislature in 2008. This bill was the result of a recommendation from the Governor's Broadband Task Force. As of January 1, 2009, CSDs may provide broadband "where no private provider is willing or able to serve the area". See Appendix for exact SB1191 language.

CSDs are in a unique position due to their status as a local government agency. As such, they can apply for grant funding. The Orick Wireless Broadband Business Plan (January, 2007, www.neratech.net/docs/Orick.pdf) includes research into potential broadband funding sources for unserved rural communities.

On the Highway 299 route, the Salyer CSD is the only entity with no broadband service within its jurisdiction. Other CSDs, for example Willow Creek, have a small portion of their district served by broadband, while 90% of the district is unserved.

Though not included in the Highway 299 Broadband Associates/Velocity Technology project, the community of Fieldbrook was added into this report because they have expressed the desire to provide broadband to their entire district. Suddenlink provides broadband to a portion of their district.

In December, 2008, a discussion was had with the CSDA (www.csda.net) regarding the Fieldbrook CSD's wish to provide broadband to its residents. Iris Herrera of CSDA and Peter Detwiler, staff director for the California State Senate's Committee on Local Government, put forth the following process as being legal and correct for CSDs who have private broadband providers covering only a portion of their district:

"Fieldbrook CSD, starting on January 1, 2009, is authorized to construct, own, improve, maintain and operate broadband facilities and may provide broadband services, if a private person or entity is unable or unwilling to do so (*Government Code Section 61100*).

1. Get a letter from Suddenlink Cable and AT&T (and whoever else the district has contacted already or should contact) to get a formal denial that they do not wish to expand their broadband services in the area where the Fieldbrook CSD performs services ("*The district shall first make a reasonable effort to identify a private person or entity willing to deploy service*.").
2. Create zones (Zone 1, Zone 2…) in the district that do not include the houses that already have broadband services. This not only separates the areas that the district would like to provide broadband services from the areas in the district that already has broadband access but also provides a way for the district to keep track of fees being collected for broadband services so that the fees are not confused with fees collected for water, etc.
3. Present your proposal to LAFCO.

Remember, the CSD along with Suddenlink Cable/AT&T… need to know that when a private person or entity is ready, willing, and able to acquire, construct, improve, maintain, and operate broadband facilities and to provide broadband services, the CSD must sell those services at a comparable cost and quality of service as provided by the district."

The Appendix has the full version of State Government Code 61100, but below is the applicable portion for CSDs to provide broadband:

(af) If a private person or entity is unable or unwilling to deploy broadband service, construct, own, improve, maintain, and operate broadband facilities and to provide broadband services. For purposes of this section, broadband has the same meaning as in subdivision (a) of Section 5830 of the Public Utilities Code. The district shall first make a reasonable effort to identify a private person or entity willing to deploy service. The authority granted by this subdivision shall expire when a private person or entity is ready, willing, and able to acquire, construct, improve, maintain, and operate broadband facilities and to provide broadband services, and to sell those services at a comparable cost and quality of service as provided by the district. At that time, the district shall do one of the following:

(1) Diligently transfer its title, ownership, maintenance, control, and operation of those broadband facilities and services at a fair market value to that private person or entity.

(2) Lease the operation of those broadband facilities at a fair market value to that private person or entity.

Communities

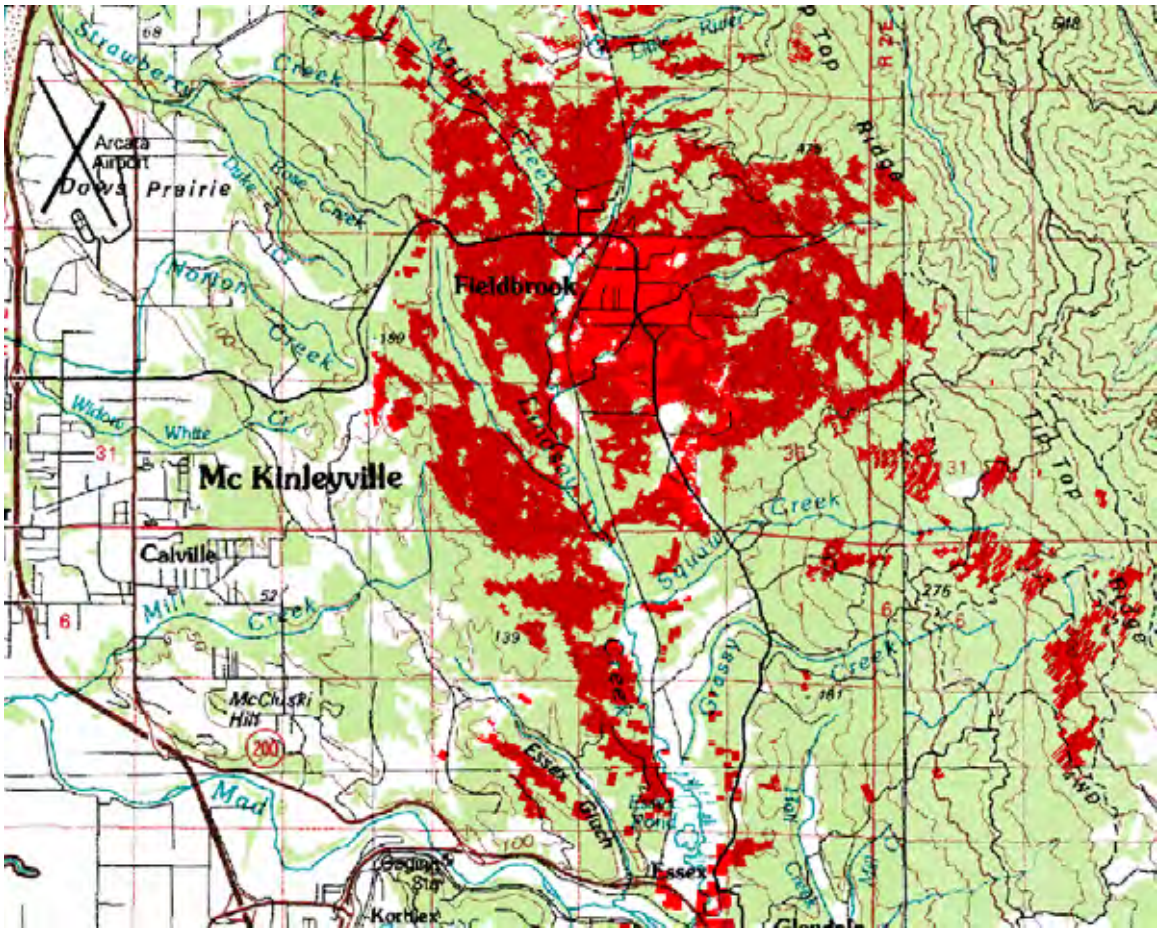
Listed below are the wireless site surveys of the communities.

Fieldbrook

There are two approaches that can be taken for relatively complete wireless coverage of the Fieldbrook Valley. Again, it should again be noted that Fieldbrook is not one of the communities included in the Broadband Associates/Velocity Technology/CASF project. This information is provided for the use of the Community Service district.

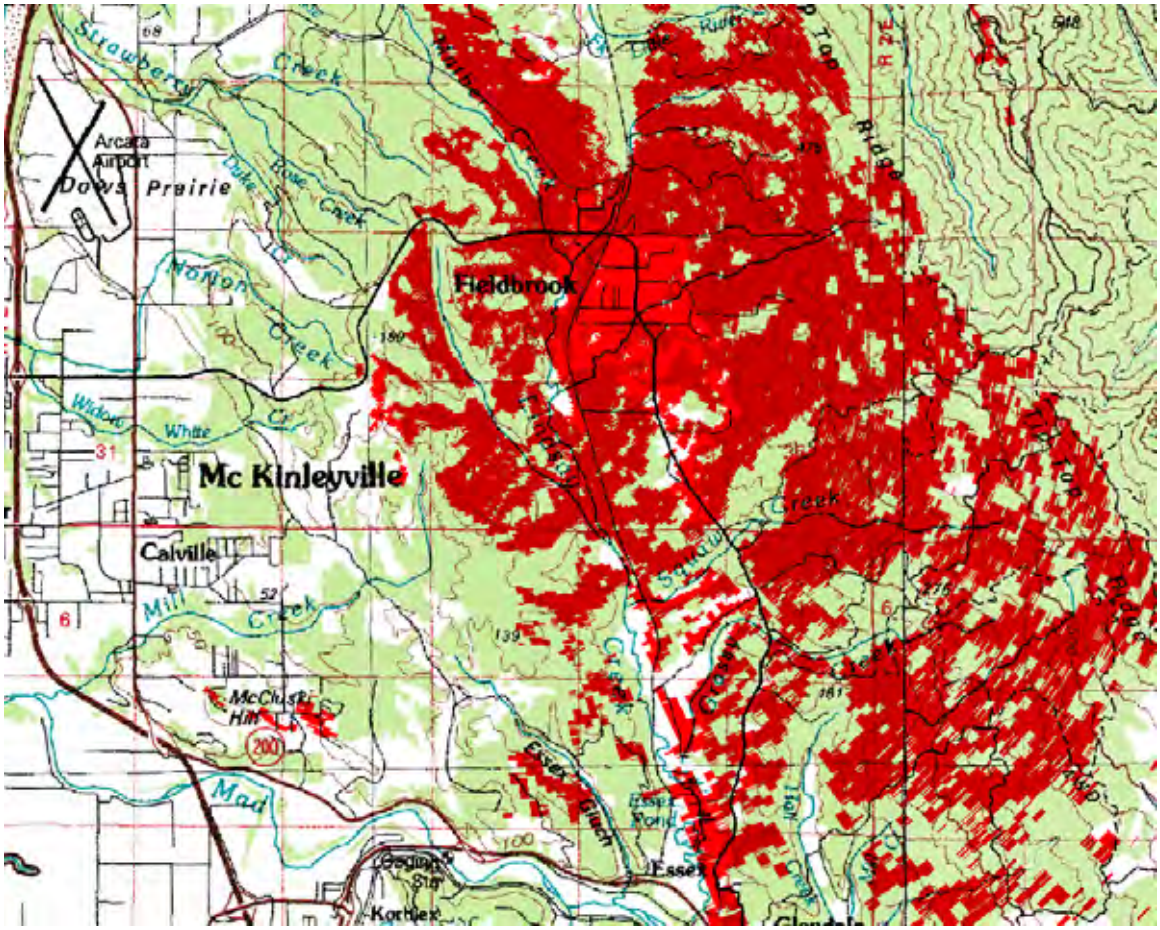
Option 1 - Utilization of Existing Sites

Currently there exist two possible wireless repeater sites for Fieldbrook: the CSD Fire Department and the CSD Water Tank. Neither of these sites provide optimal wireless coverage on its own, so both sites would need to be used (see Appendix for individual coverage plots for CSD Fire Department location and for CSD Water Tower Location). Both of these sites have clear lines-of-sight to an existing communications site located to the west of Fieldbrook. This communications site in turn has line-of-sight to both Eureka and Kneeland. The plot below shows combination of Fire Department and Water Tank.



Option 2 - Construction of New Site

Optimal coverage of the Fieldbrook Valley would be achieved through the construction of a new communications site located at approximately 40° 57’ 53.56” N, 124° 3’ 24.96” W. This site is located on a privately owned parcel approximately 1,600 feet from existing infrastructure. This new site has line-of-sight to both Eureka and Kneeland. This site may also serve well to expand cell phone coverage in the area. See plot below.



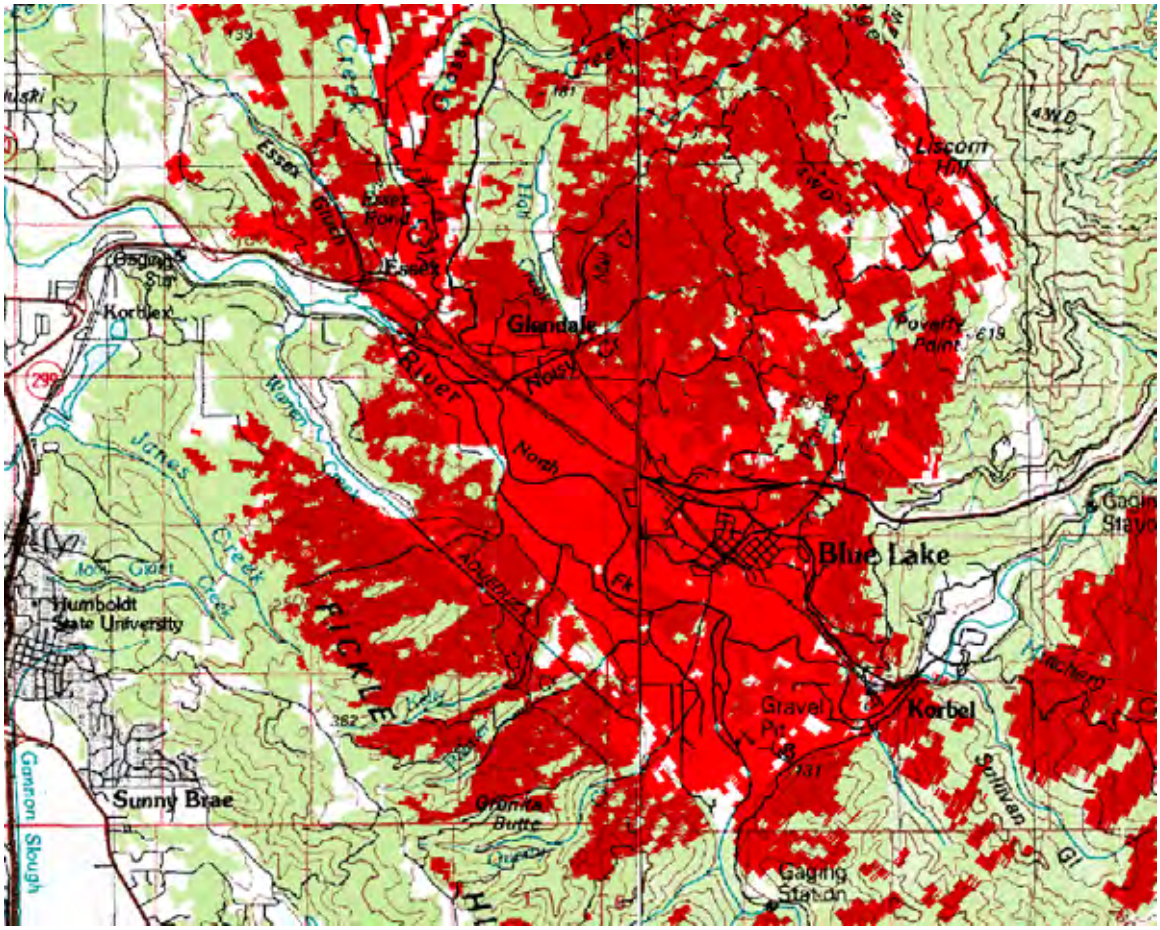
Blue Lake-Glendale-Korbel

In order to provide contiguous wireless coverage to the Glendale/Blue Lake area, a new facility will need to be constructed. Service to Korbel can be achieved by either utilizing an existing site, or by constructing a new facility.

Glendale/Blue Lake - New Facility Construction

Upon analysis of the Glendale/Blue Lake area, no suitable existing sites were identified. The area is "bowl" shaped with a flat valley floor. As such, deploying wireless access points on existing buildings or structures would yield a very small radius of coverage.

Optimal coverage could be achieved through the construction of a new facility. The site that has been identified is located at approximately 40º 53' 12.25" N 124º 1' 18.71" W. This site is located on private property and appears to be located near residences, which would allow for easy connection to existing infrastructure. This site has line-of-sight to two sites previously mentioned in the Fieldbrook data; the proposed new facility and the existing facility west of Fieldbrook. This site may also serve well for enhanced cell phone coverage. See plot below.



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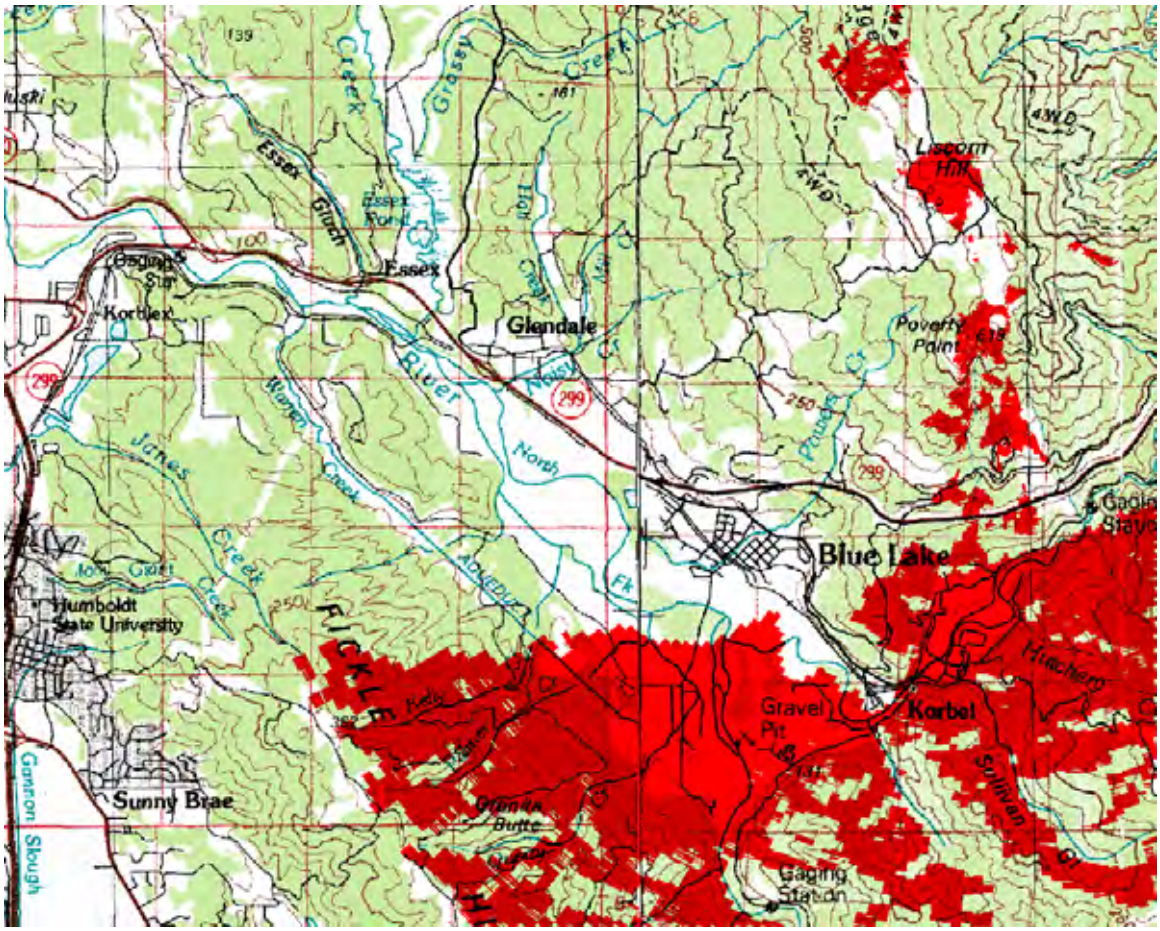
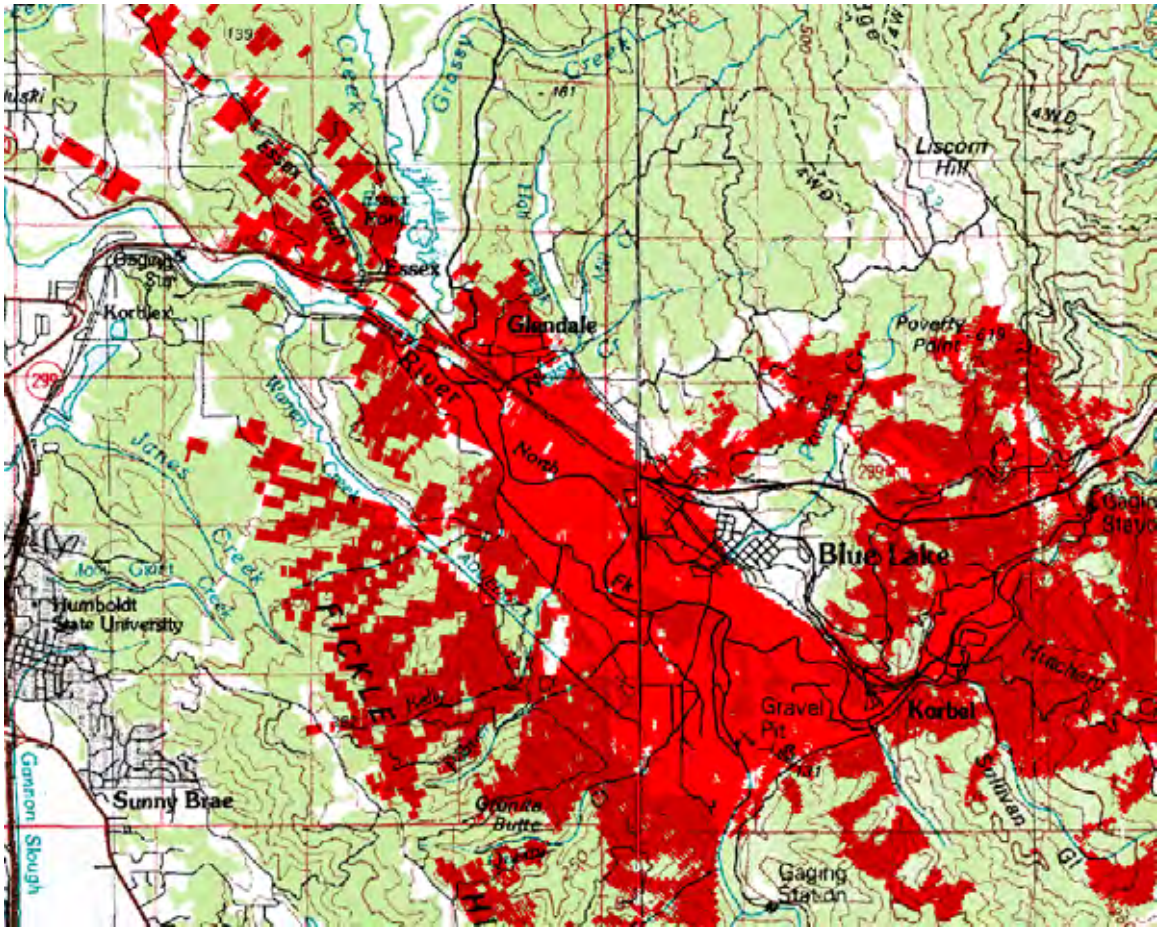
Korbel - Utilize Existing Site

Coverage of Korbel can be achieved by utilizing the existing cell site located at Poverty Peak. This existing site has line-of-sight to two sites mentioned in the Fieldbrook data; the proposed new facility and the existing facility west of Fieldbrook, however this site does not have line-of-sight to the proposed new site for Glendale/Blue Lake and does not provide any coverage for the Glendale/Blue Lake area. See plot below.

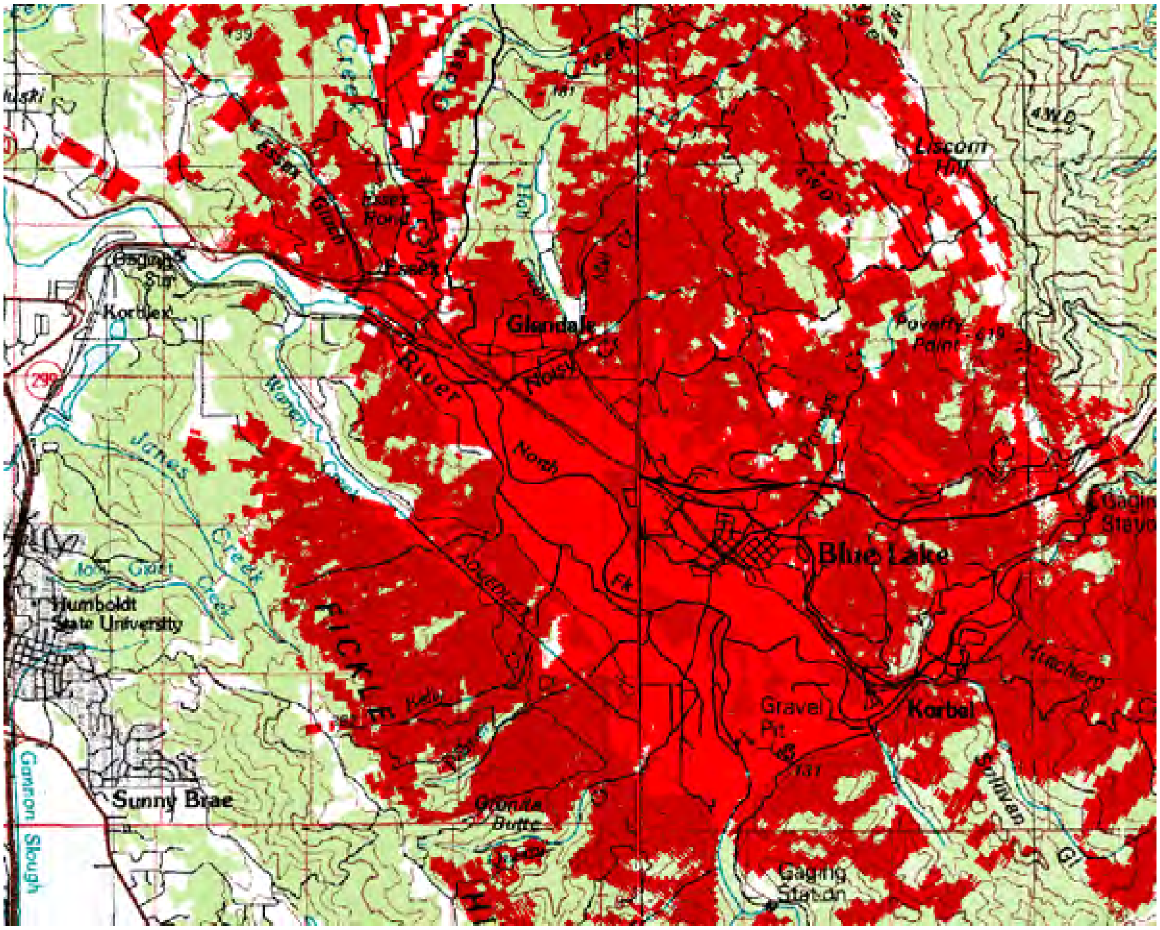


Korbel - New Facility Construction

Another option for coverage of Korbel would be construction of a new facility located at approximately 40º 52’ 17.07” N 123º 57’ 58.94” W. This site is located on Simpson property approximately 500 feet from an existing road. Utility availability needs to be confirmed. If they are not present, the site is located near enough to the mill that they could be brought in easily. This site would also provide another point of presence for the Glendale/Blue Lake area and further enhance coverage. This site has line-of-sight to the proposed new facility for Glendale/Blue Lake and to the existing facility on Poverty Peak. See plot below.



The complete wireless coverage plot for Blue Lake-Glendale-Korbel is shown below:



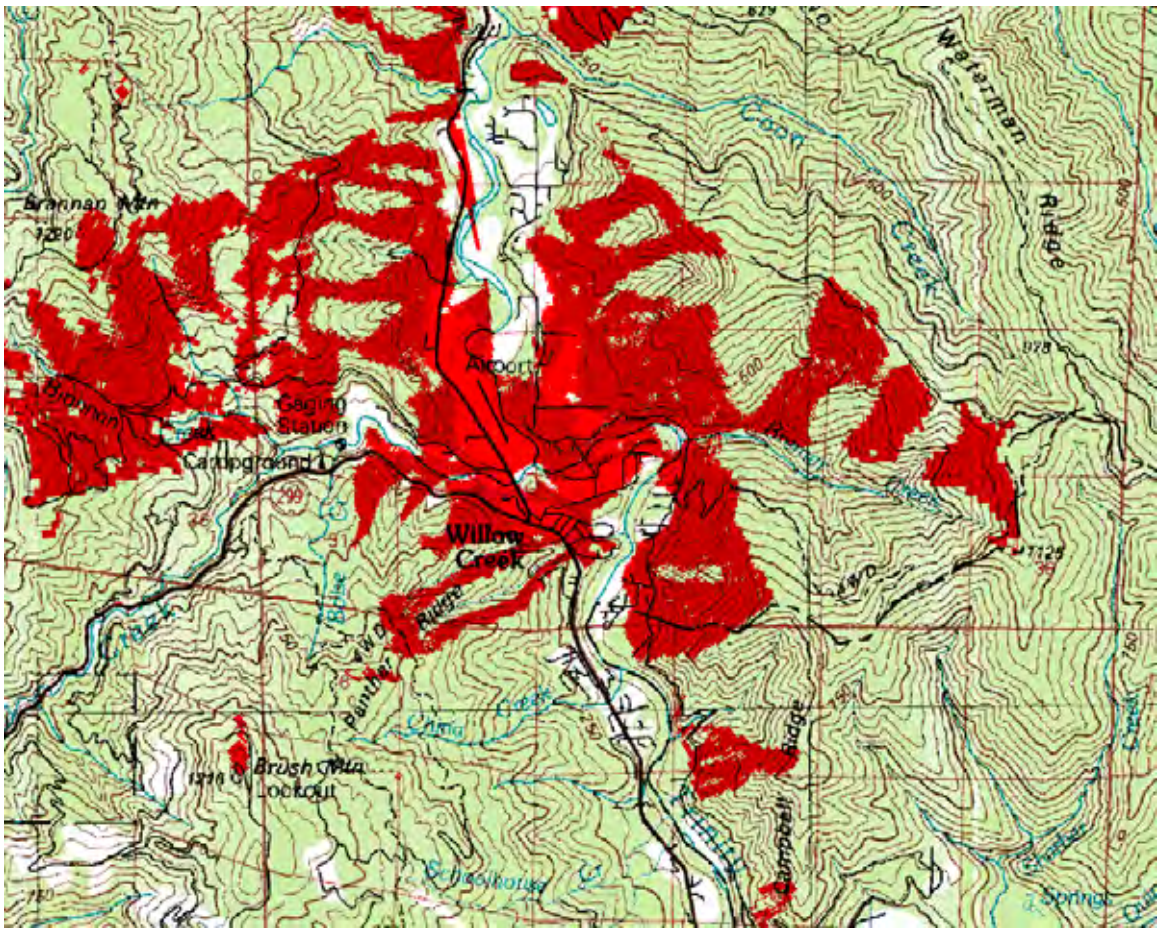
Willow Creek

In order to provide contiguous wireless coverage to the Willow Creek area, 3 new facilities will need to be constructed. Equipment will also need to be collocated at an existing cell tower site.

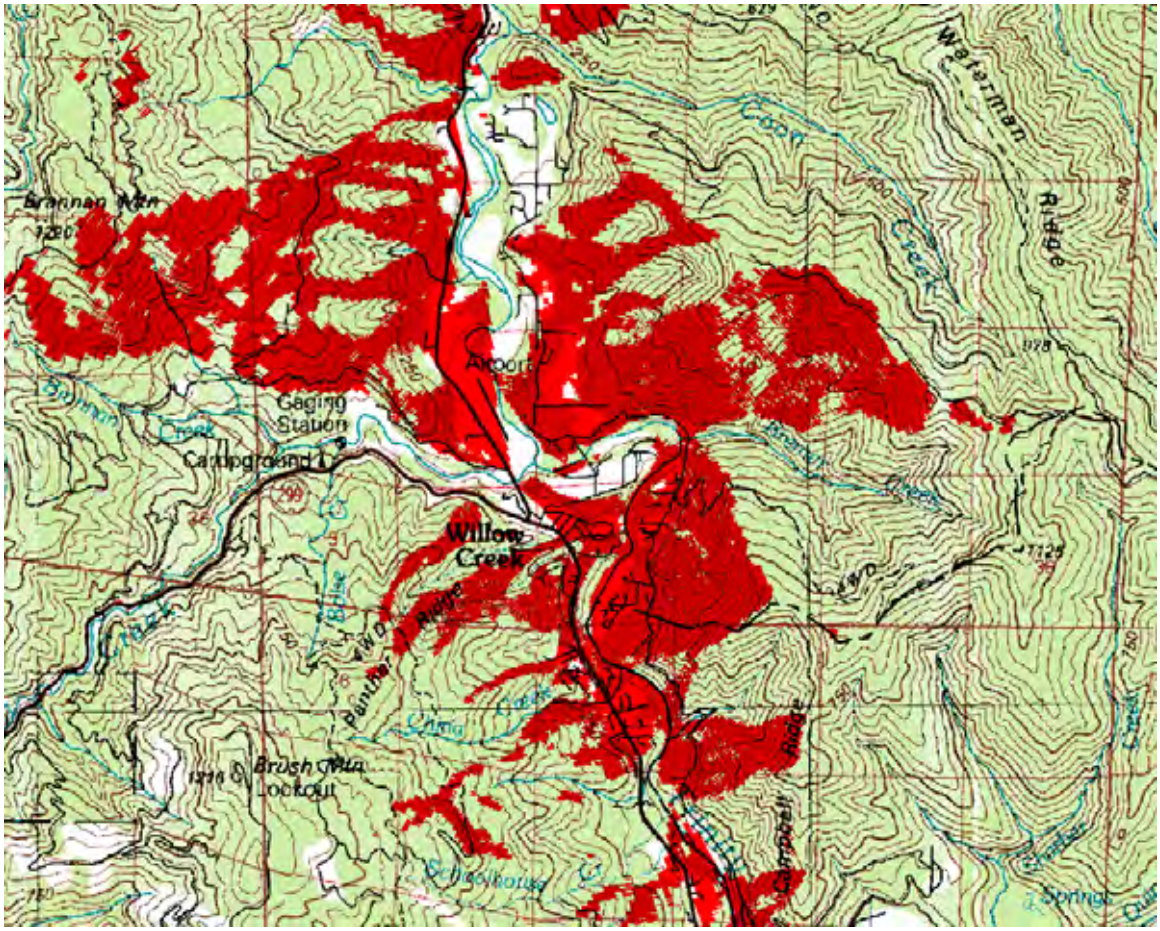
Willow Creek - New Facility Construction

Upon analysis of the Willow Creek area, only one suitable existing site was identified. However, it does not offer complete coverage on its own. Because of the odd terrain of this area, service will need to be distributed from multiple sites.

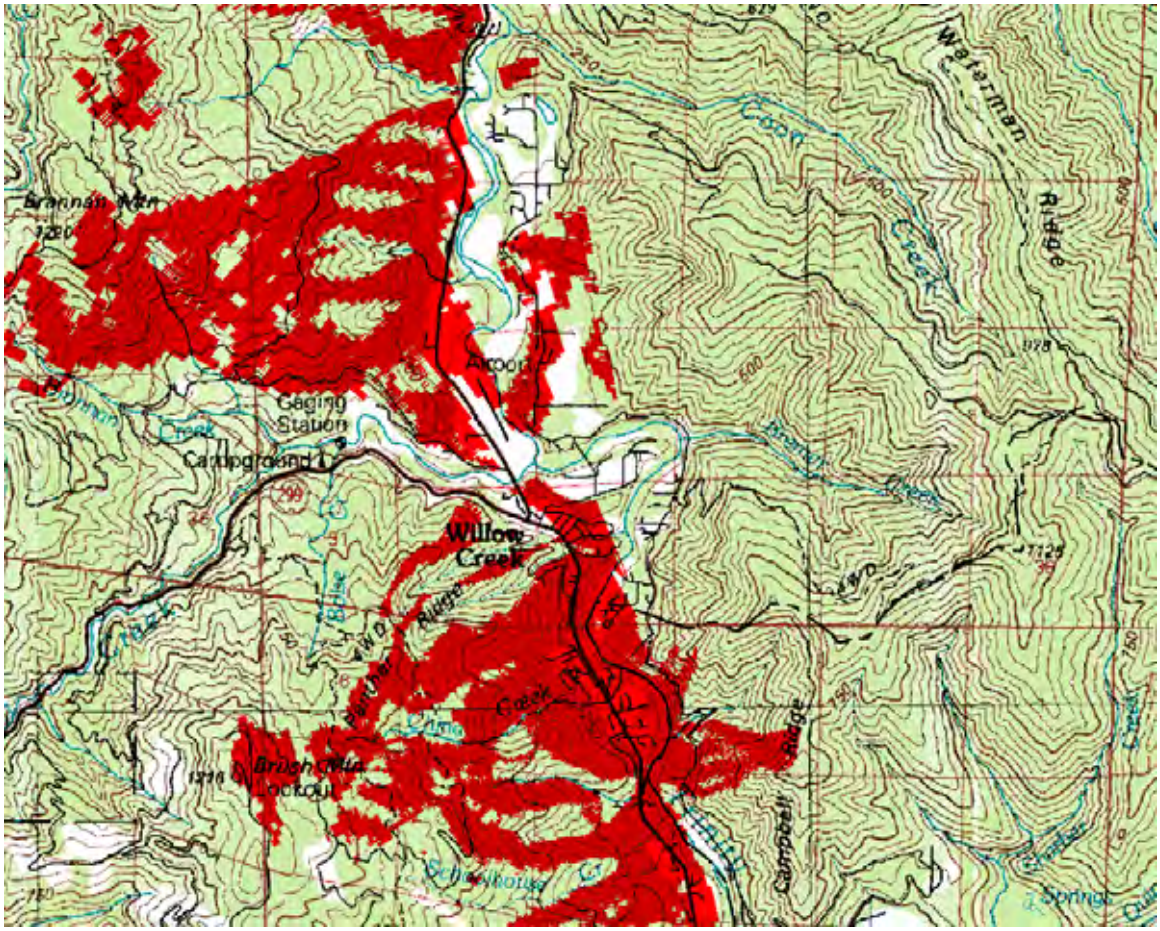
Optimal coverage could be achieved through the construction of three new facilities. The first site, referred to as the "Downtown site" would be located on private property at approximately 40º 56' 33.54" N 123º 37' 43.89" W. This site appears to be located within a few hundred feet of power. It is approximately 2,000 feet from Highway 299. It has line-of-sight to the existing cell tower. See plot below.



The second Willow Creek site, referred to as the “Panther Road site” would be located on private property at approximately 40º 56’ 3.89” N 123º 37’ 39.60” W. This site is located near multiple residences, so utilities should be readily available. It is approximately 1,500 feet from Highway 299. This site has line-of-sight to the previous site, as well as the existing cell tower. See plot below.

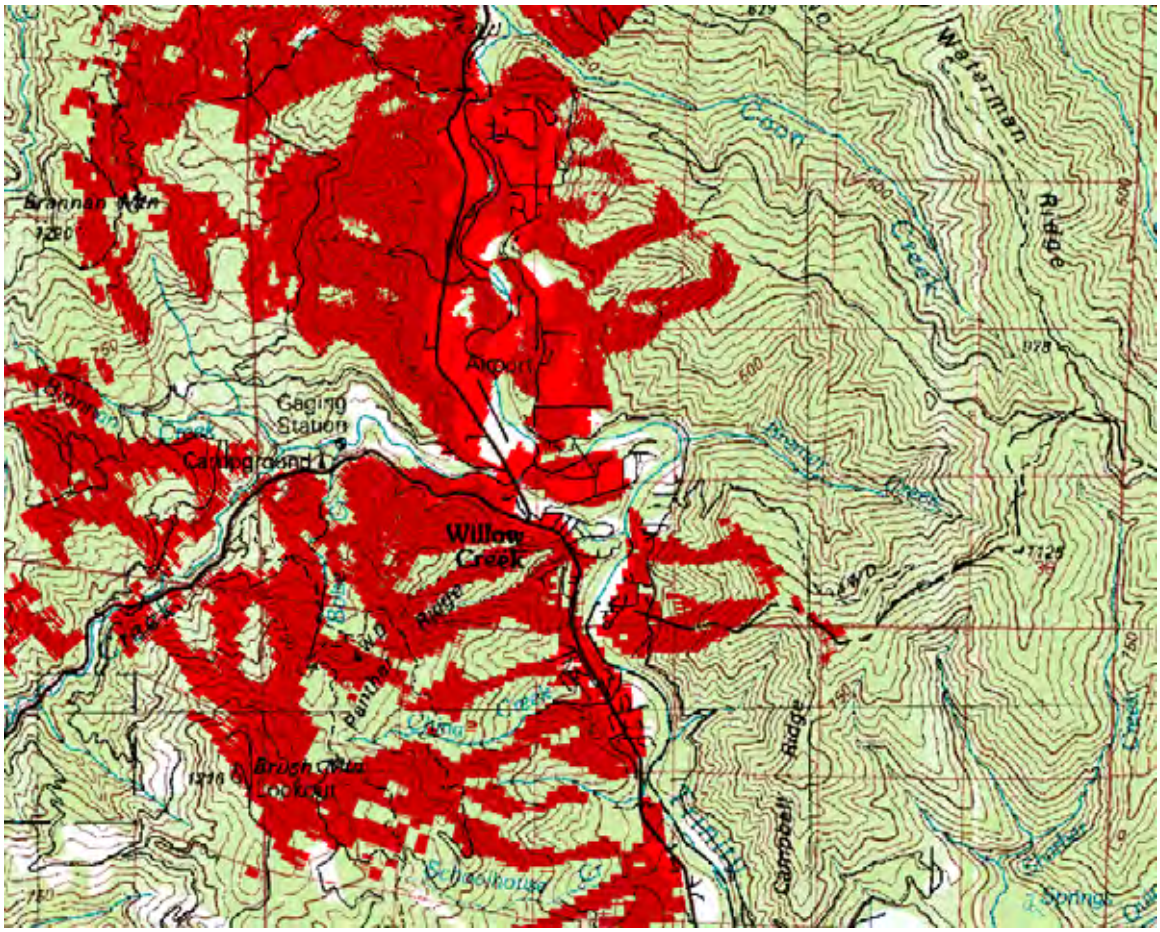


The third Willow Creek site, referred to as the "Campbell Ridge site" would be located on private property at approximately 40º 55' 33.41" N 123º 36' 50.77" W. According to aerial photographs, this site is located approximately 1,100 feet from a residence, it is assumed that these are the nearest utilities. This site has line-of-sight to all other sites. See plot below.

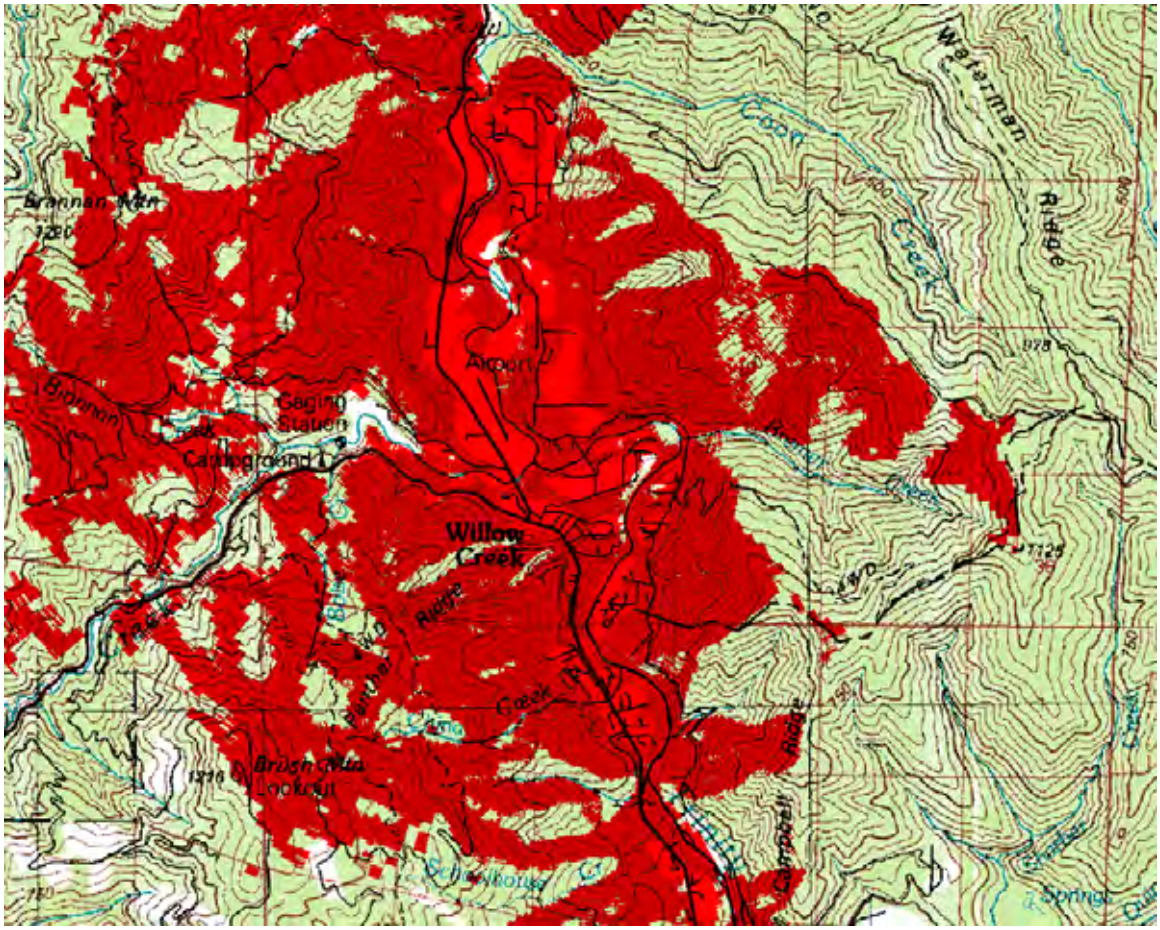


Willow Creek - Existing Site

An existing cell tower site is located at 355 Peach Tree Lane. The northern part of Willow Creek would be served by this facility. This site is owned by PWM, Inc. There is hardline telephone and power to the site. This site has line-of-sight to all new proposed sites, as well as the Horse Mountain communications facility. See plot below:



The complete wireless coverage plot for Willow Creek is shown below:



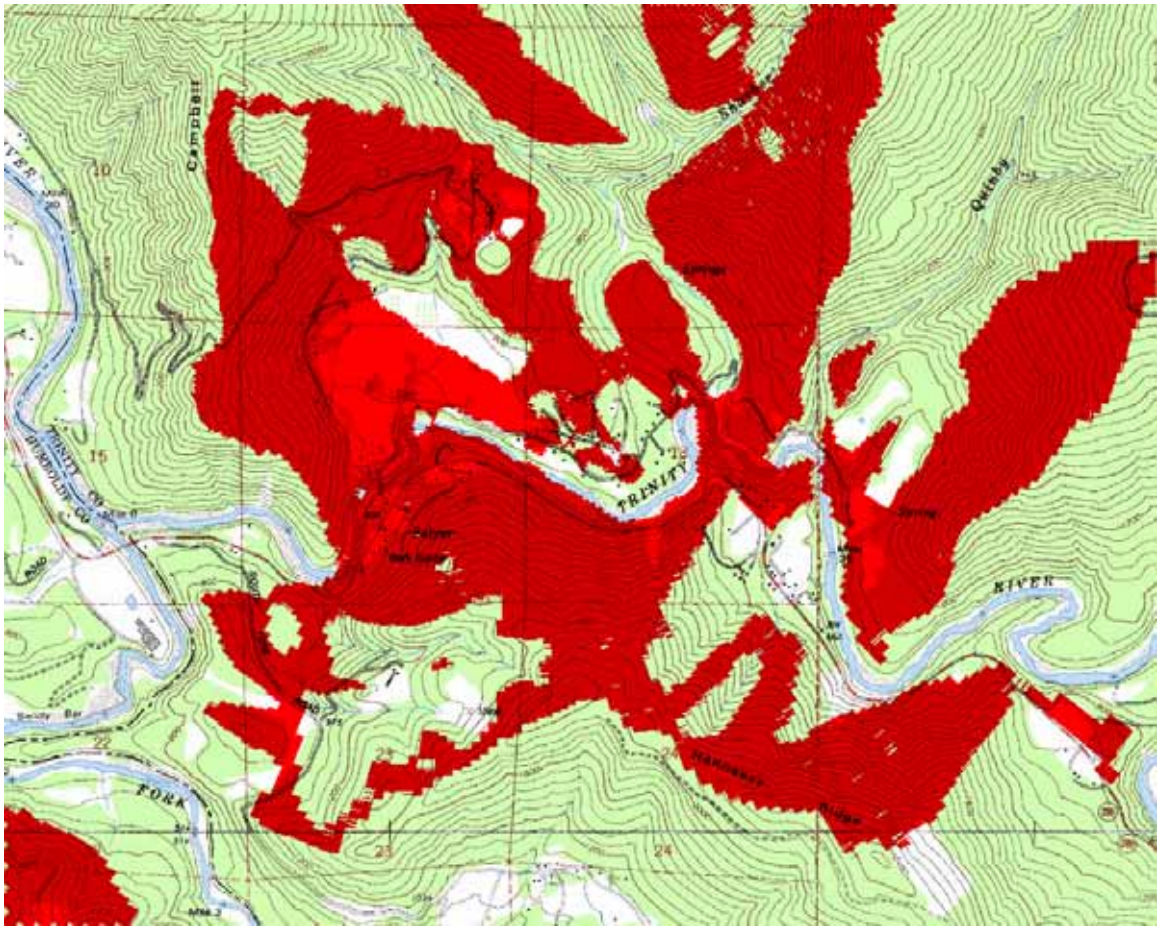
Salyer

In order to provide contiguous wireless coverage to the Salyer area, 2 new facilities will need to be constructed.

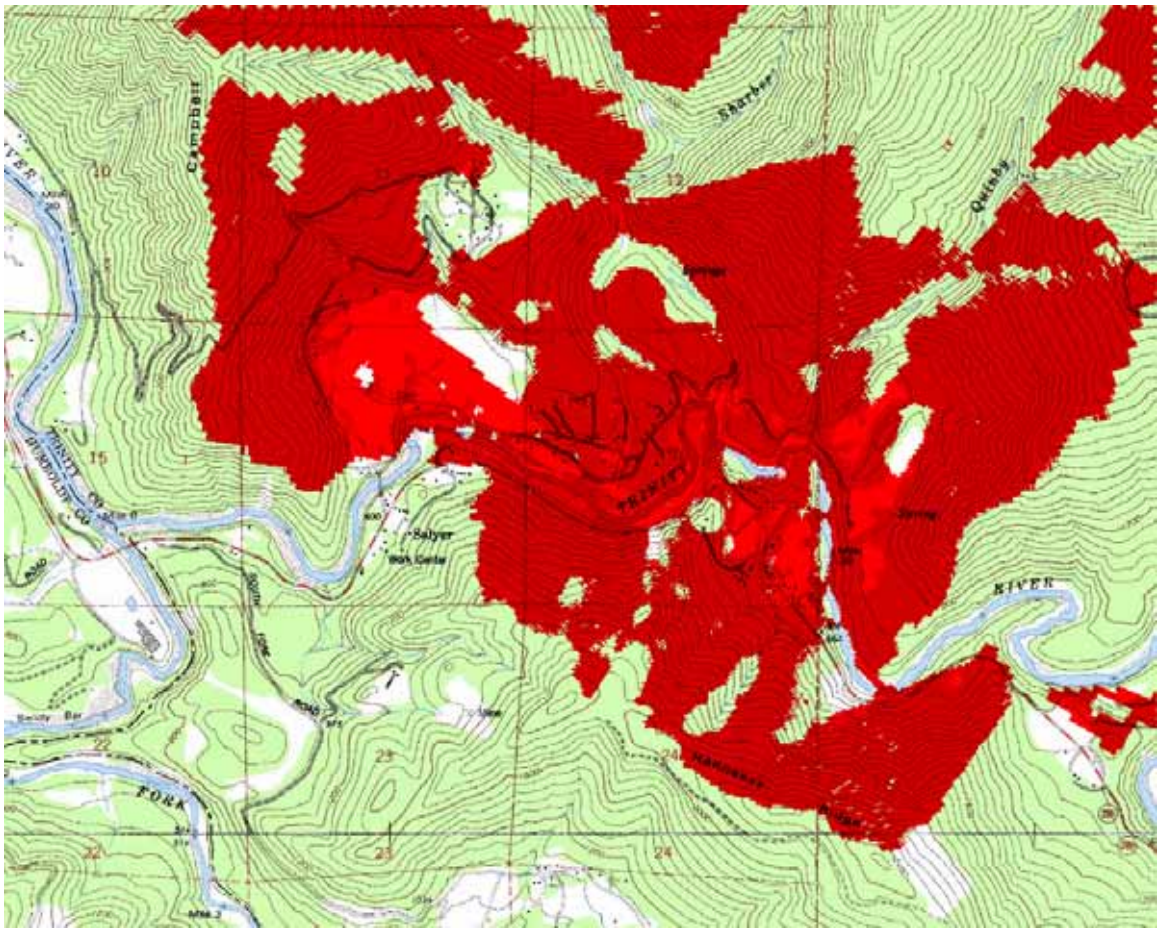
Salyer - New Facility Construction

Upon analysis of the Salyer area, no suitable existing sites were identified. Because of the odd terrain of this area, service will need to be distributed from multiple sites.

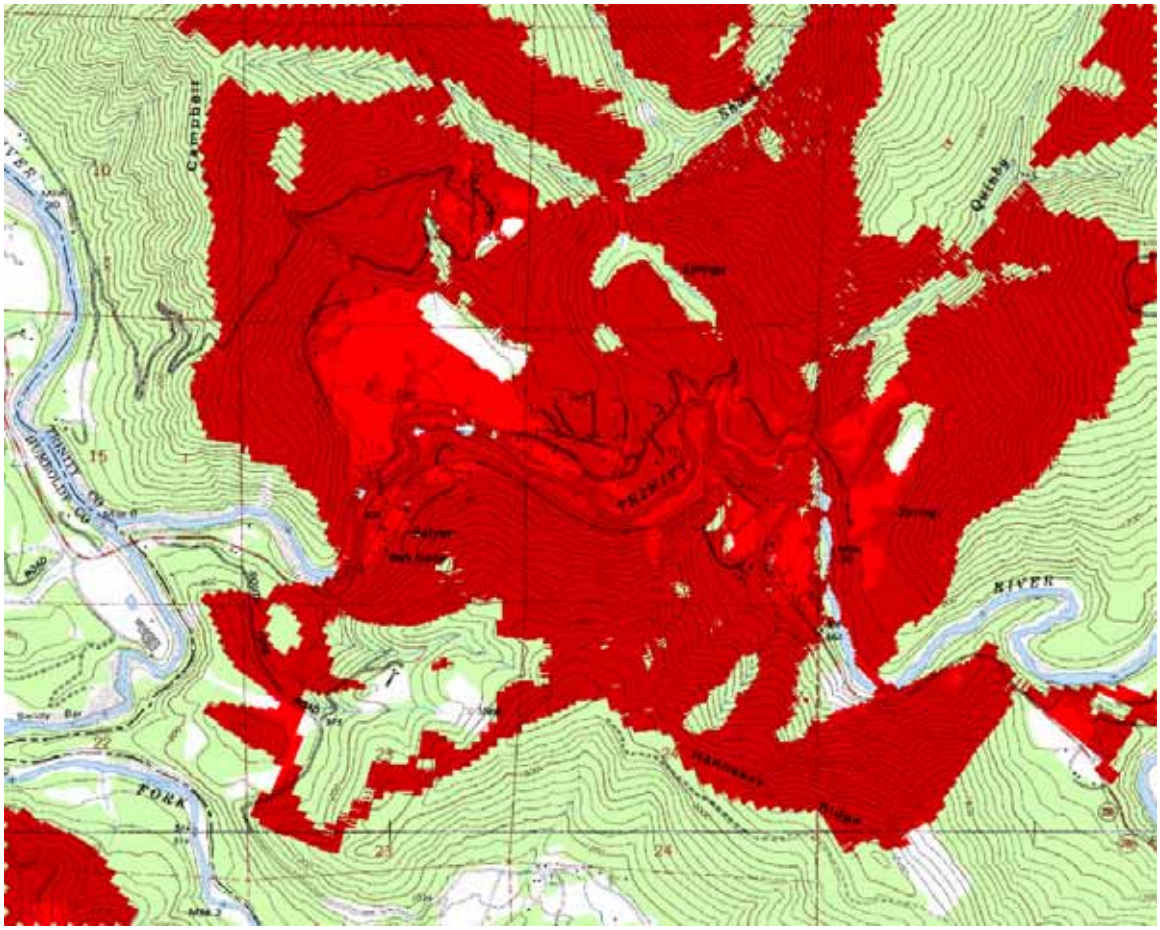
The first site, referred to as the "Orchard Lane site" would be located on private property at approximately 40º 54' 10.86" N 123º 34' 36.18" W. This site is located near residences believed to have hardline power and phone, so utilities should be easy to bring to the site. See plot below.



The second Salyer site, referred to as the “Oden Flat Road site” would be located on private property at approximately 40º 53’ 24.35” N 123º 33’ 47.47” W. The site is located near residences believed to have utilities. This site is also located within a few hundred feet of Highway 299, making connection to fiber optic lines easy. This site has line-of-sight to the previous site. See plot below.



The complete wireless coverage plot for Salyer is shown below:



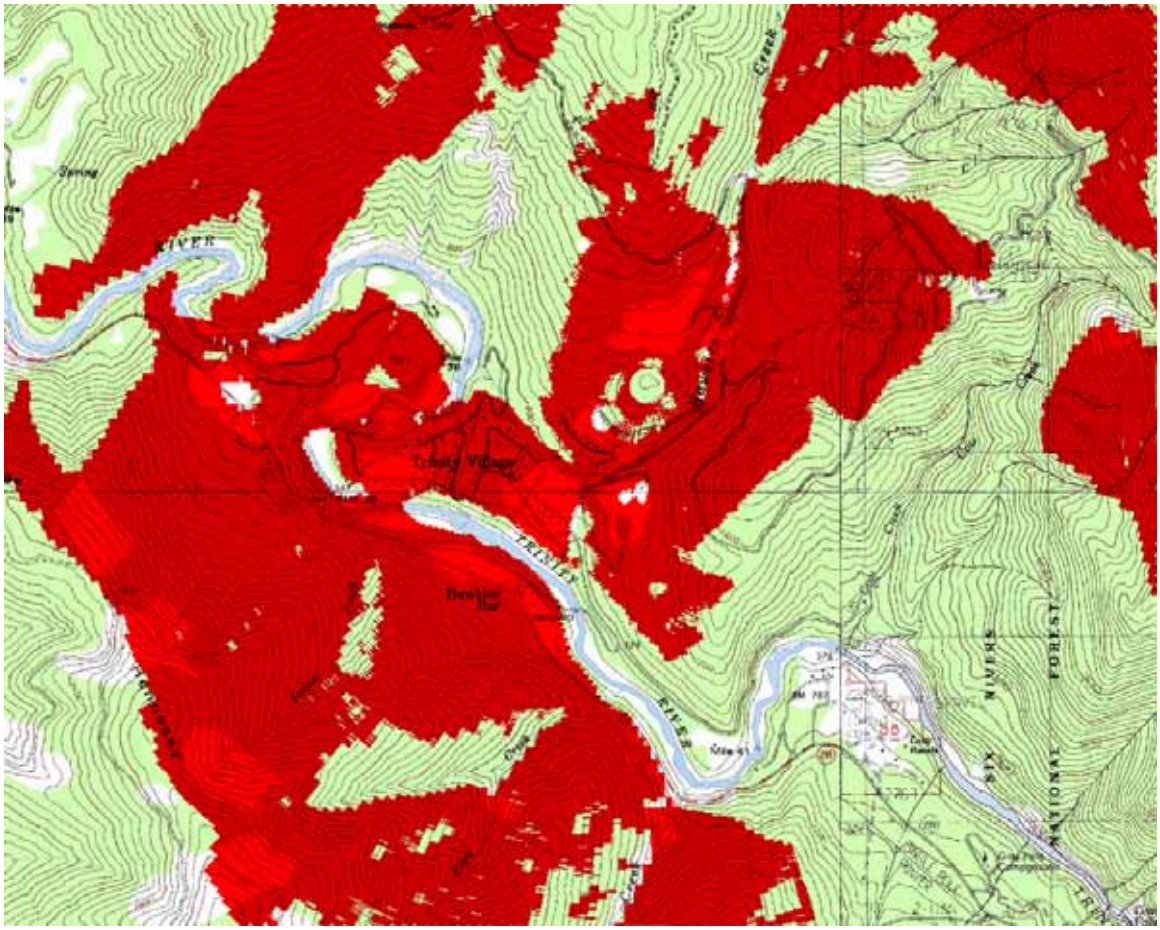
Hawkins Bar-Trinity Village

In order to provide contiguous wireless coverage to the Hawkins Bar/Trinity Village area, one new facility will need to be constructed.

As a point of interest, Hawkins Bar is a possible area for the construction of a new cell tower by the County of Trinity. Trinity should be contacted as a possible tenant or partner in construction. Connection to the fiber optic lines could also aid in the backhaul of cellular data.

Hawkins Bar/Trinity Village - New Facility Construction

Upon analysis of the Hawkins Bar/Trinity Village area, no suitable existing sites were identified. The proposed site sits atop a large hill with a good view of the surrounding area. This site would be located on private property at approximately 40º 52’ 49.40” N 123º 30’ 45.33” W. The site is located near residences assumed to have hardline utilities and is approximately 1.4 miles from Highway 299, making connection to fiber optic lines relatively easy. See plot below.

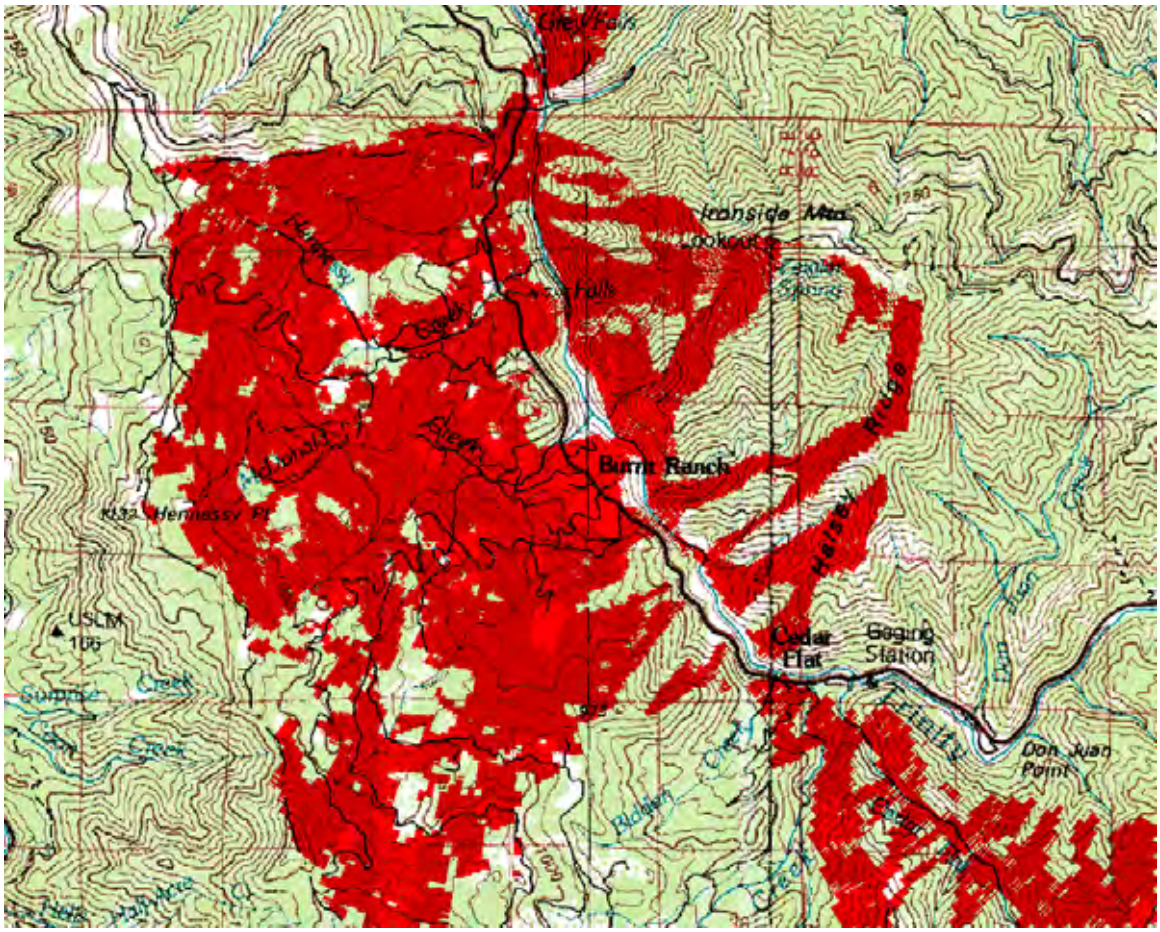


Burnt Ranch-Cedar Flat

In order to provide contiguous wireless coverage to the Burnt Ranch/Cedar Flat area, one new facility will need to be constructed.

Burnt Ranch/Cedar Flat - New Facility Construction

Upon analysis of the Burnt Ranch/Cedar Flat area, no suitable existing sites were identified. After extensive analysis, no suitable private parcels were identified as possible sites. The recommended site sits atop a hill in the center of the Burnt Ranch area at approximately 40º 48' 57.66" N 123º 28' 54.23" on USFS property. The site is located approximately 1500 feet from power and phone. There is no existing road to the site, so one will need to be constructed. Using existing PG&E power poles, the site is 1.2 miles from Highway 299, making the site relatively easy to reach with fiber optic lines. This site would also be excellent for cellular phone coverage as it covers approximately 6 miles of Highway 299. See plot below.

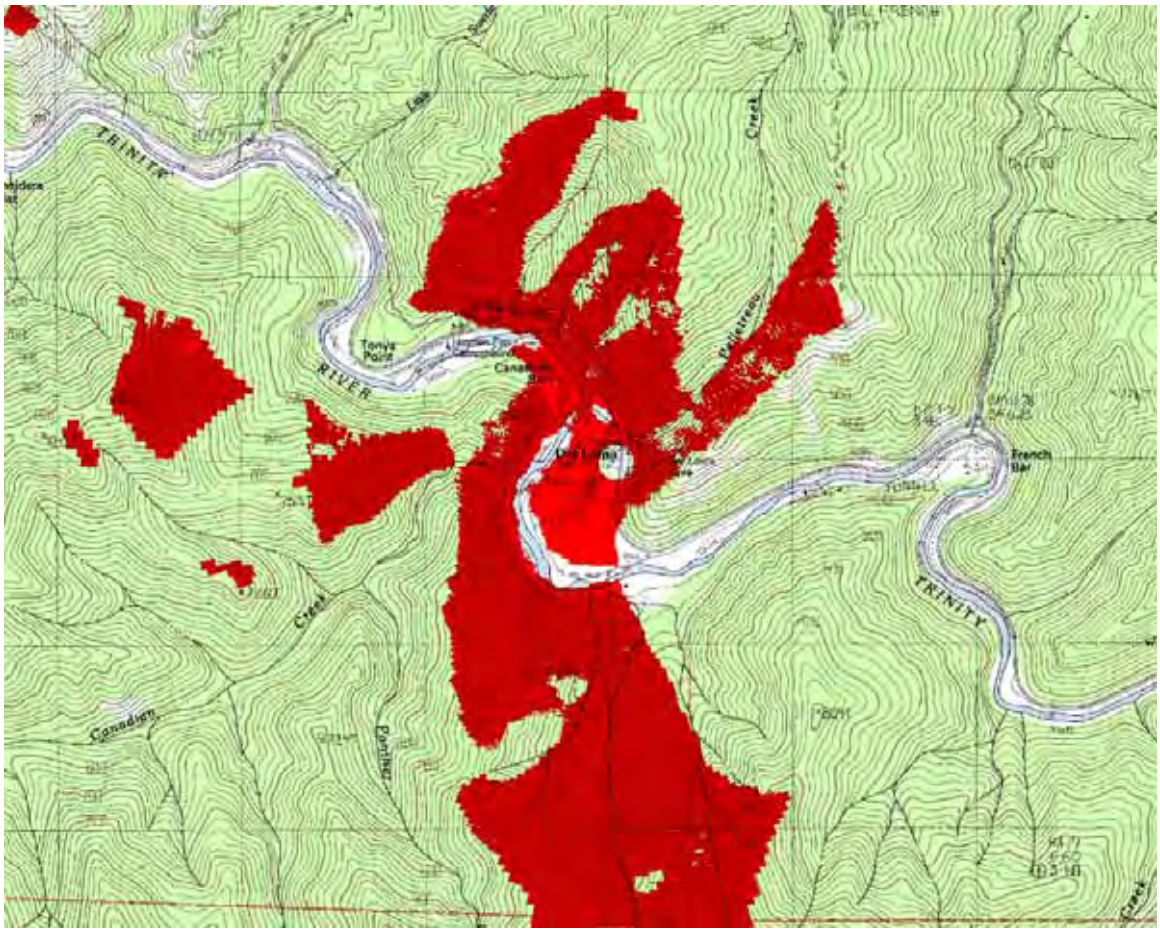


Del Loma

In order to provide contiguous wireless coverage to the Del Loma area, one new facility will need to be constructed.

Del Loma - New Facility Construction

Upon analysis of the Del Loma area, no suitable existing sites were identified. The proposed site sits at the center of the community near the Del Loma RV Park. This site is located on private property near utilities. The site is within 100 feet of Highway 299, making fiber access easy. See plot below.



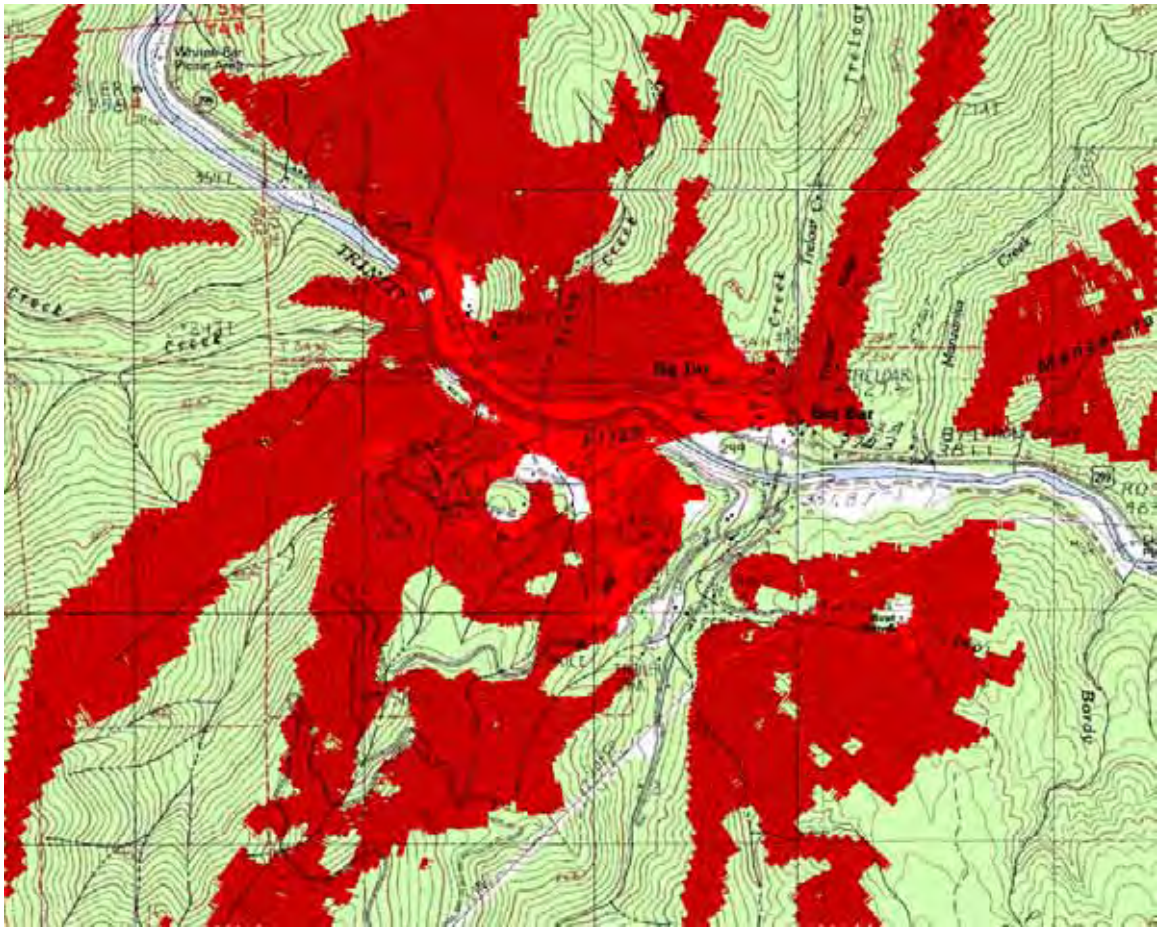
Big Bar

In order to provide contiguous wireless coverage to the Big Bar area, two new facilities will need to be constructed.

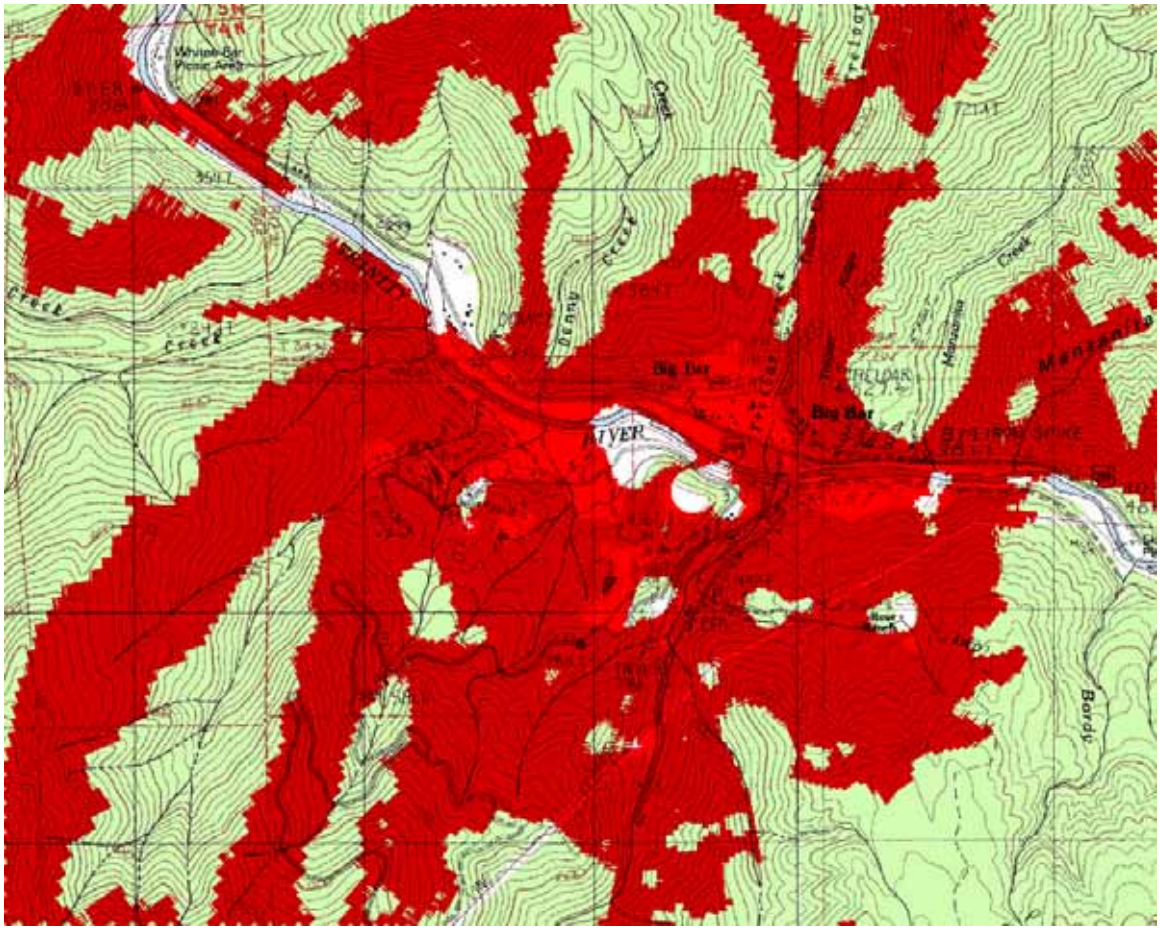
As a point of interest, Big Bar is a possible area for the construction of a new cell tower by the County of Trinity. The Solid Waste Transfer Site mentioned above has been chosen as the most likely site. Trinity County should be contacted as a possible tenant or partner in construction. Connection to the fiber optic lines would also aide in the backhaul of cellular data.

Big Bar - New Facility Construction

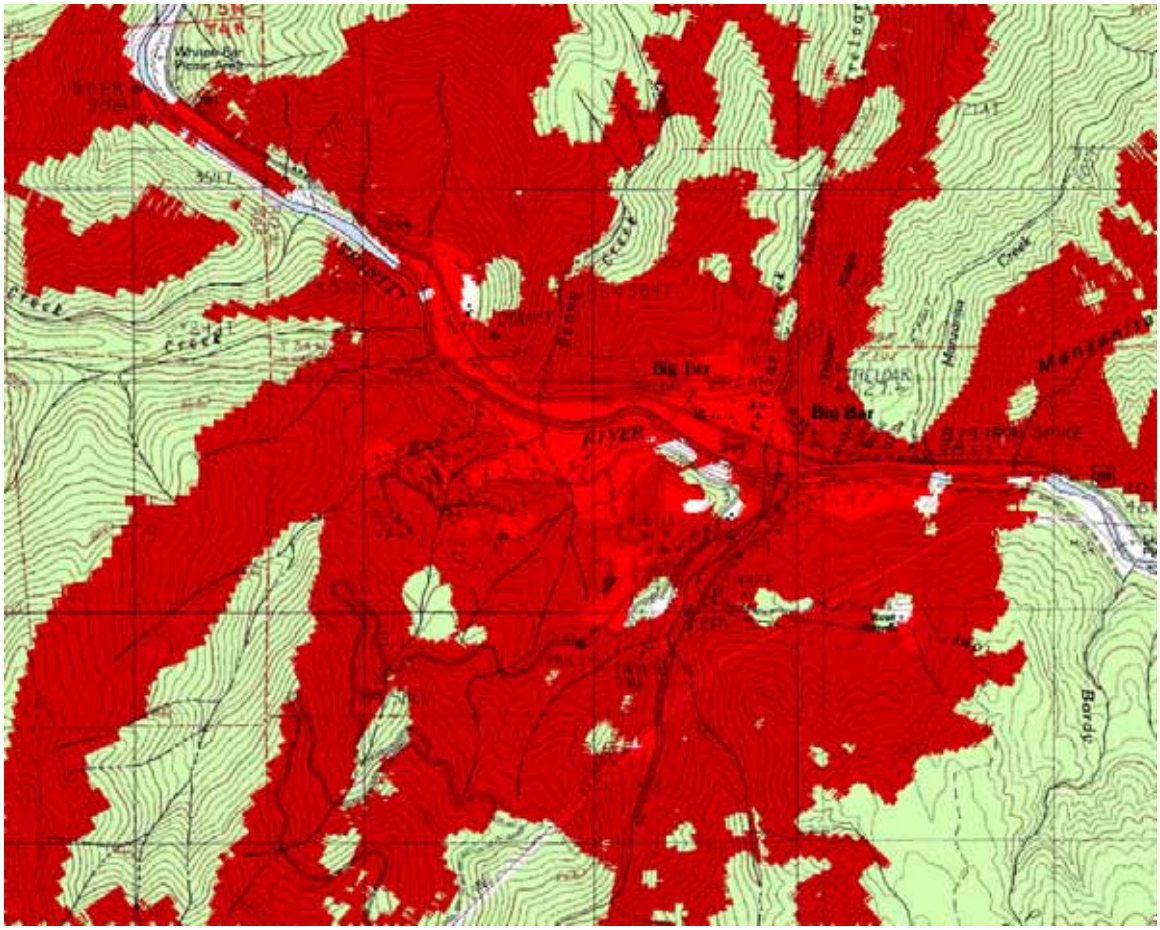
Upon analysis of the Big Bar area, no suitable existing sites were identified. The first proposed site, referred to as the "Red Horse Road site" is located on private property at approximately 40º 44' 16.54" N 123º 15' 56.52" W. The site is located near residences assumed to have utilities. See plot below.



The second Big Bar site is located at the Solid Waste Transfer Station operated by the County of Trinity at approximately 40º 44’ 16.58” N 123º 15’ 21.56” W. The land is owned by the Forest Service and leased by the County of Trinity. The site has hardline power within a few hundred feet and is approximately half a mile from Highway 299, making fiber connection somewhat easy. This site has line-of-sight to the previous site. See plot below.



The complete wireless coverage plot for Big Bar is shown below:

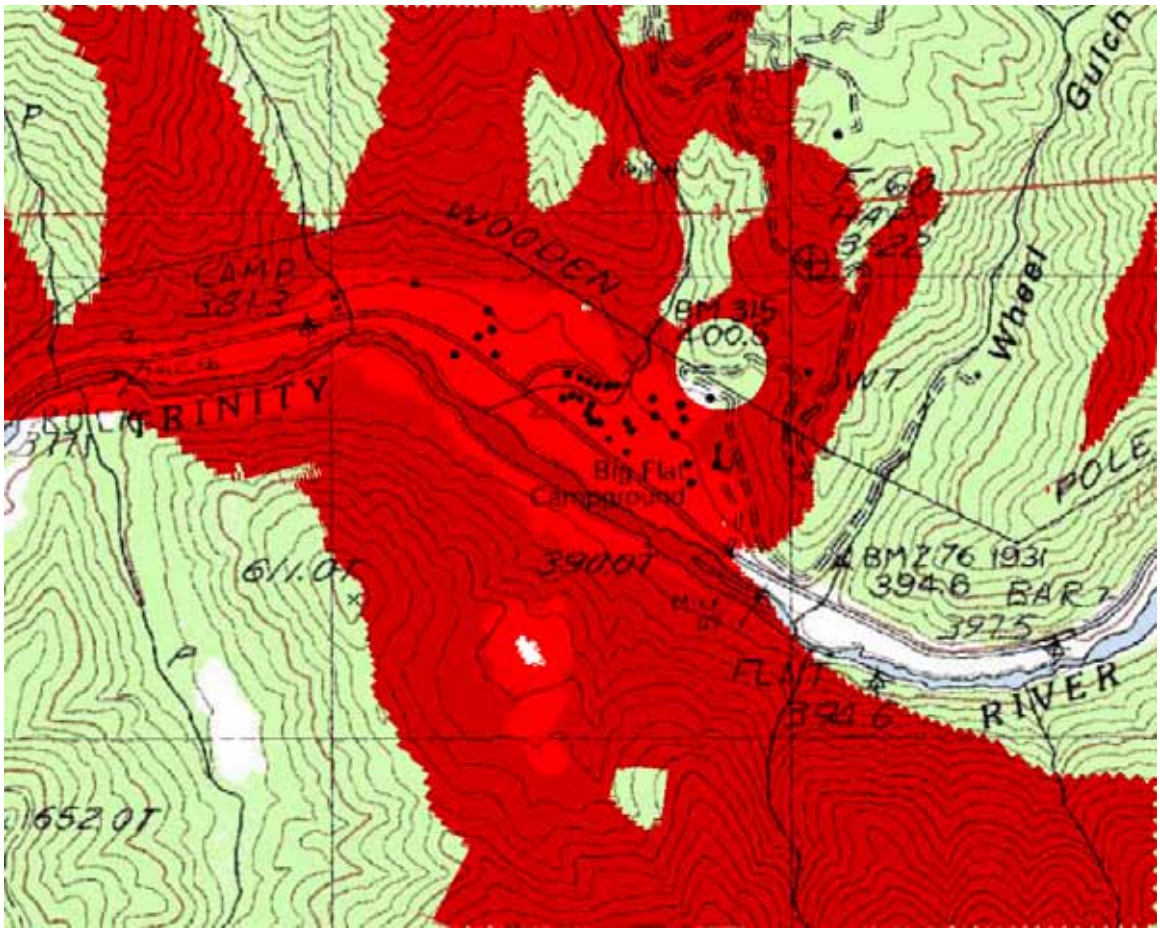


Big Flat

In order to provide contiguous wireless coverage to the Big Flat area, one new facility will need to be constructed.

Big Flat - New Facility Construction

Upon analysis of the Big Flat area, no suitable existing sites were identified. The proposed site, referred to as the "Manzanita Ridge Road site" is located on private property at approximately 40º 44' 26.86" N 123º 12' 15.33" W. The site is located near residences assumed to have utilities and is within a few hundred feet of a power substation. The site is approximately 800 feet from Highway 299 making access to fiber optics very easy. See plot below.

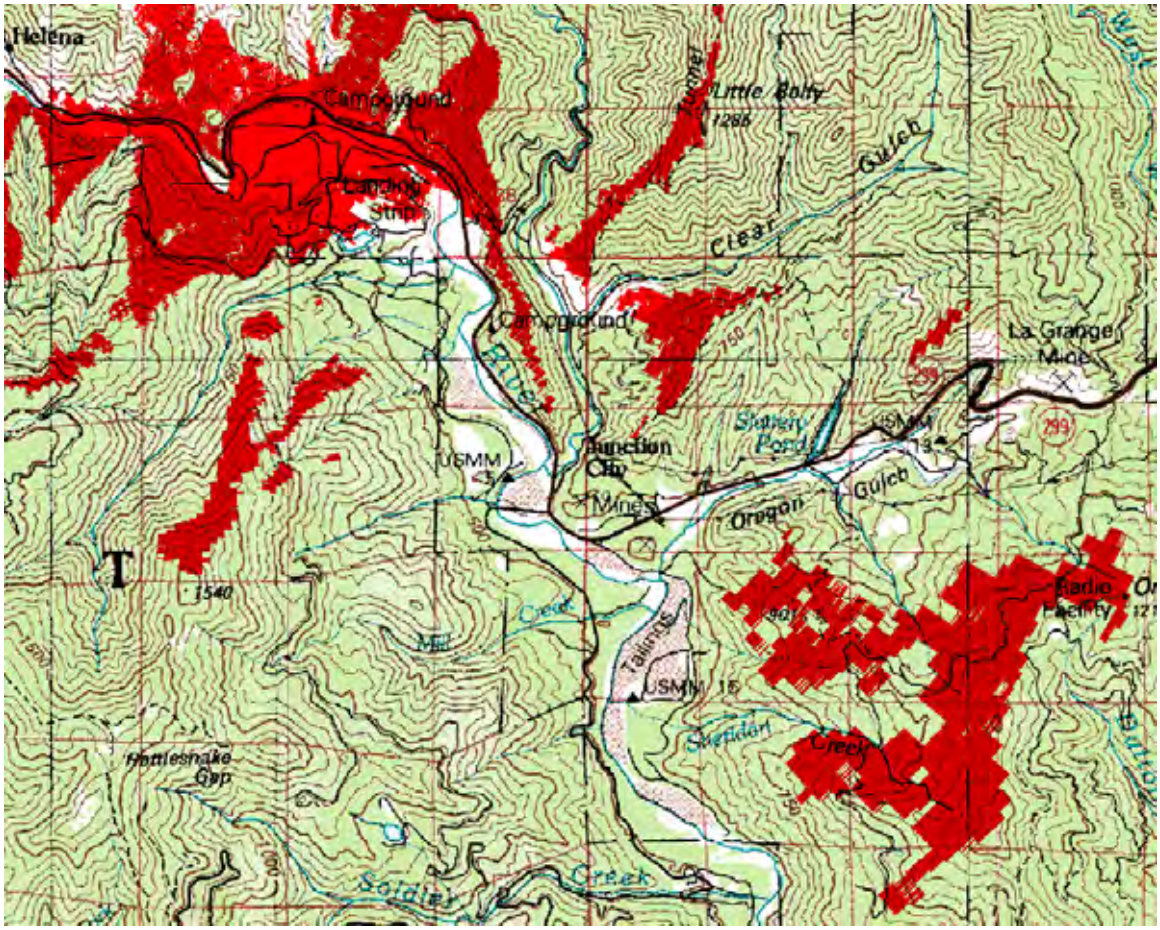


Junction City

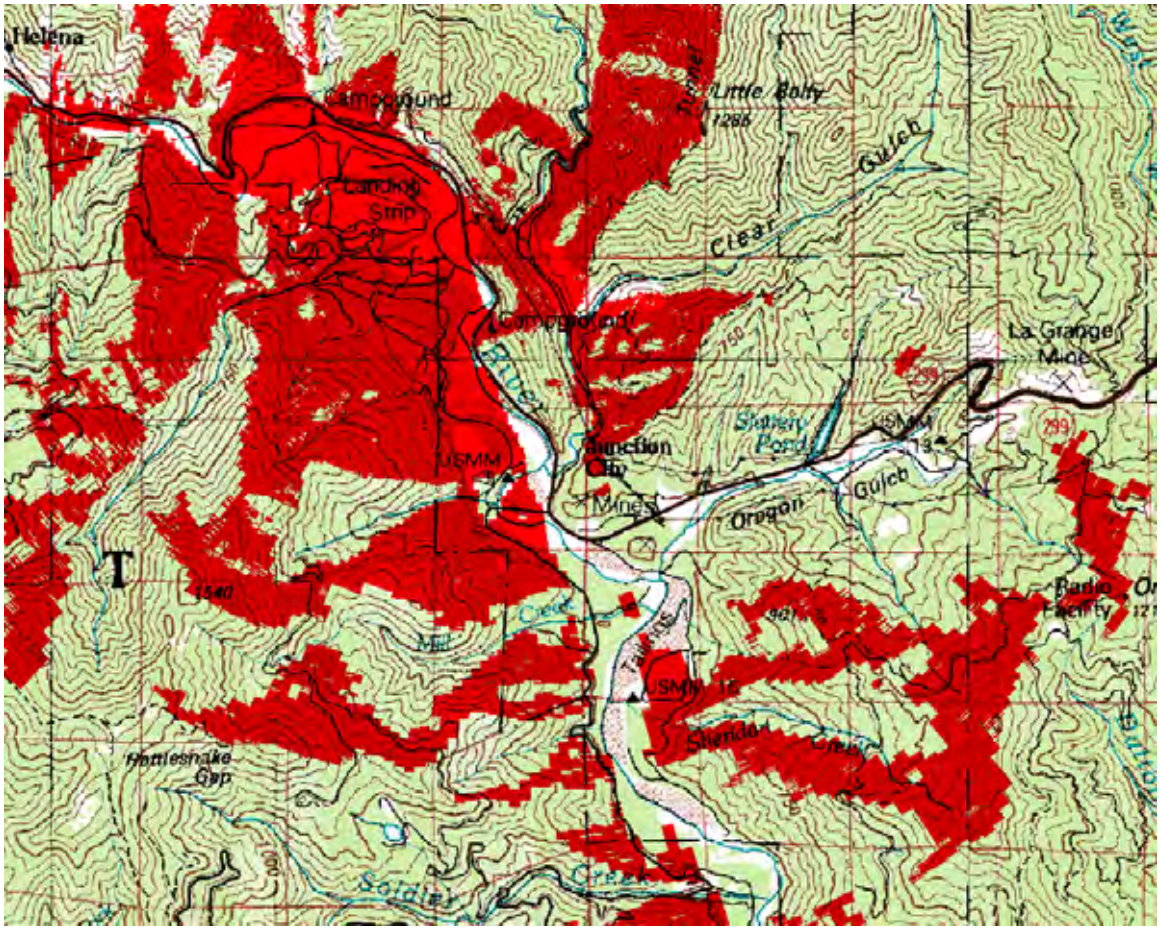
In order to provide contiguous wireless coverage to the Junction City area, four new facilities will need to be constructed.

Junction City - New Facility Construction

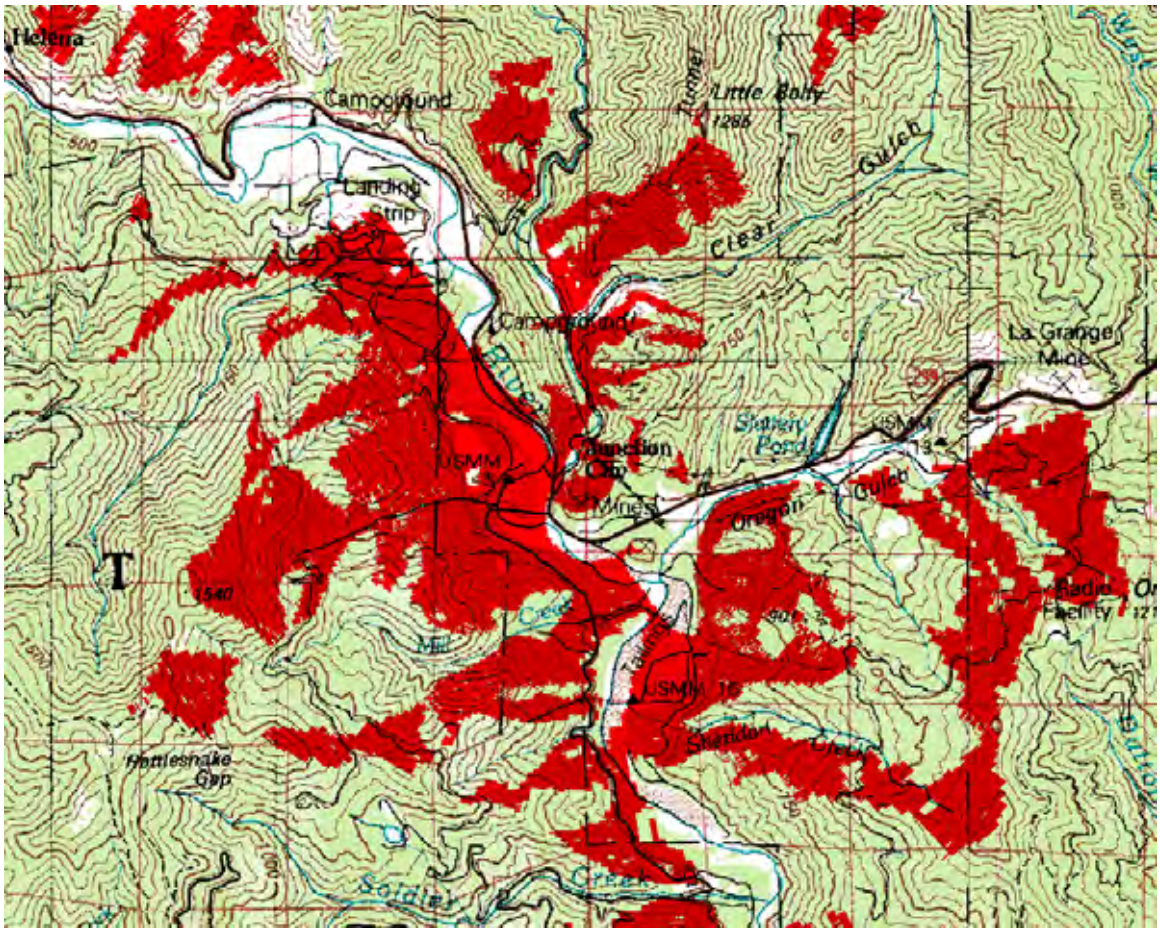
Upon analysis of the Junction City area, no suitable existing sites were identified. The first site identified for new construction, referred to as the "Baldocchi site" is located at approximately 40º 45' 58.23" N 123º 5' 50.46" W. This site is located on private property and is within 100 feet of power. There is already a road to the site. There is line-of-sight to Oregon Mountain, a major existing communications site for the area. The site is approximately 1,000 feet from Highway 299, making fiber extension to the site relatively easy. See plot below.



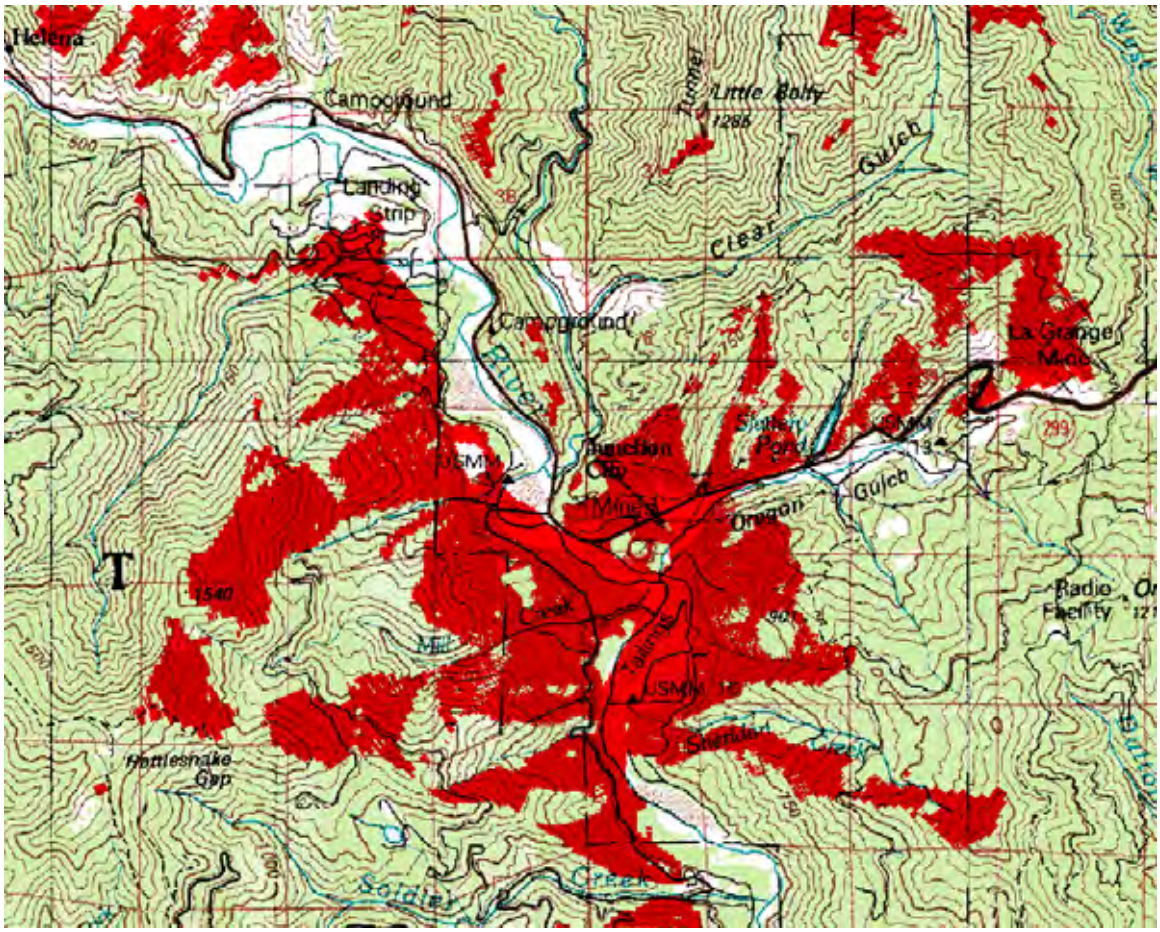
The second Junction City site identified is located at approximately 40º 45’ 38.48” N 123º 3’ 39.43” W on private property. The site, referred to as the “Dowakin site” has line-of-sight to Oregon Mountain, as well as the Baldocchi site, and is located next to a residence assumed to have power. The site is located roughly 1,700 feet from Highway 299, but the terrain is extremely rocky and steep, making extension of fiber to this site rather difficult. See plot below.



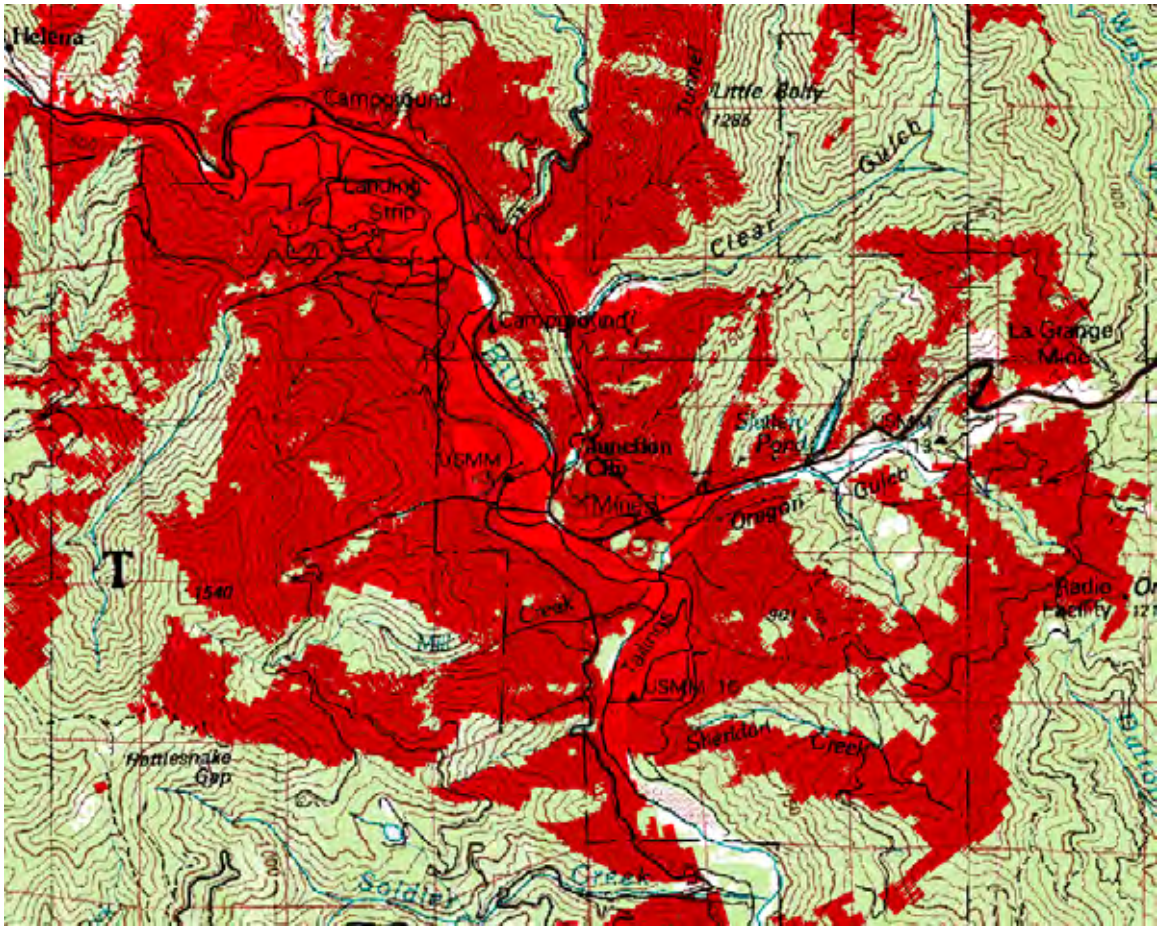
The third Junction City identified site is located at approximately 40º 43’ 53.64” N 123º 2’ 58.87” W on private property. The site, referred to as the “Downtown site” has line-of-sight to Oregon Mountain and is next to existing power lines. The site is approximately 1,800 feet from Highway 299, but use of existing power poles would make fiber extension to the site relatively easy. See plot below.



The fourth Junction City site, referred to as the “Skyranch site” is located at approximately 40º 43’ 27.87” N 123º 2’ 32.40” W on BLM property. The site is roughly 900 feet from existing power lines, which run parallel to Highway 299. It does not have line-of-sight to any other sites, making fiber extension the only option for this site. See plot below.



The complete wireless coverage plot for Junction City is shown below:

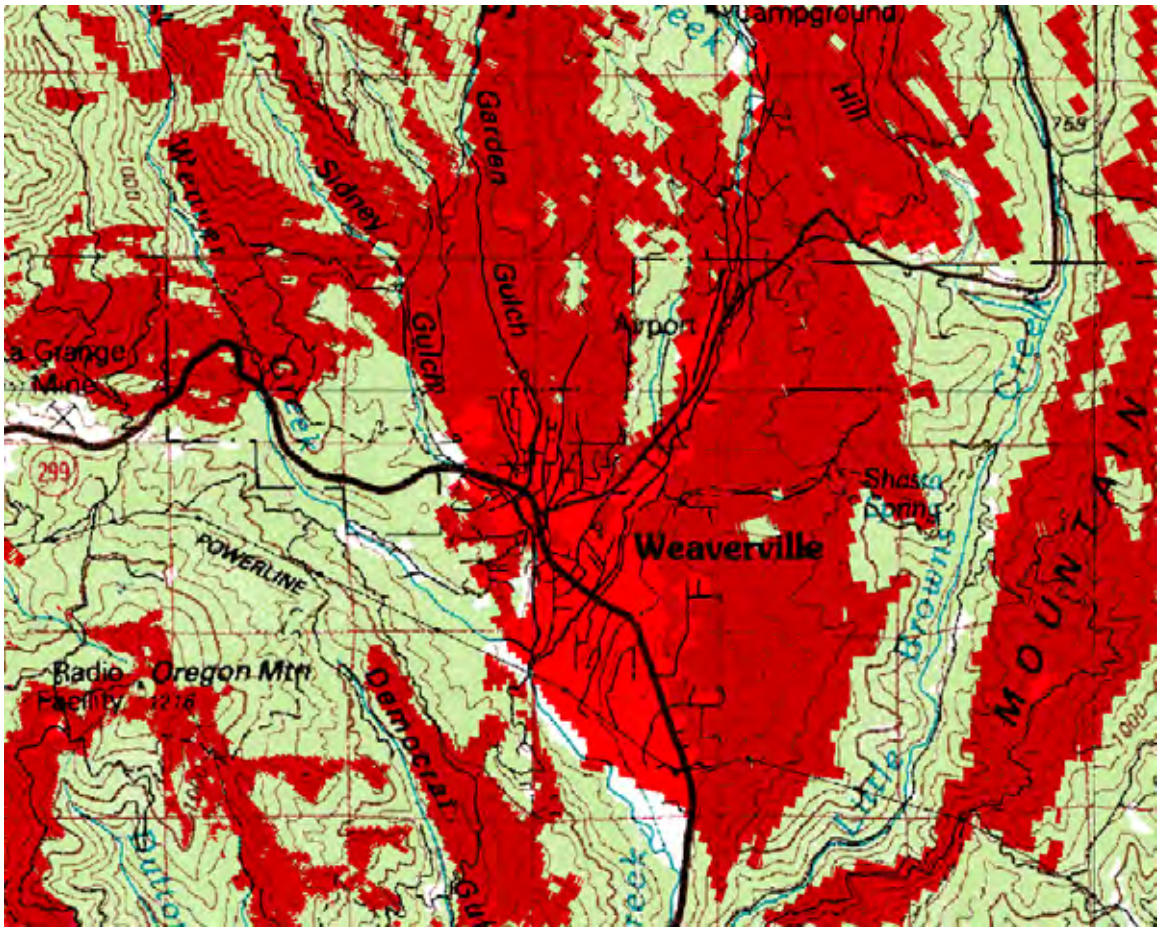


Weaverville

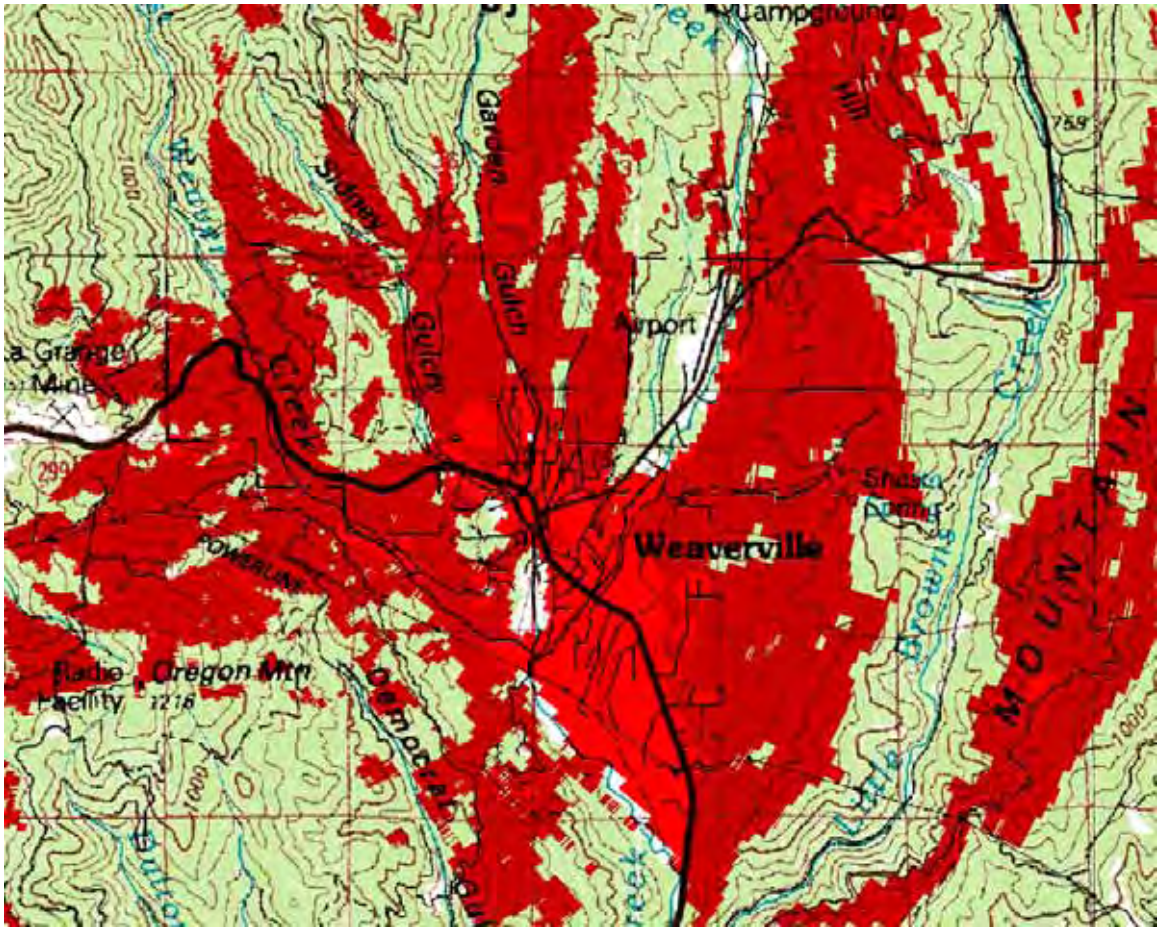
In order to provide contiguous wireless coverage to the Weaverville area, four existing facilities will need to be utilized and one new facility will need to be constructed. None of these sites are located geographically close to the Highway 299 corridor. It would be possible to backhaul into the Weaverville area via the Oregon Mountain communications site.

Weaverville - Existing Sites

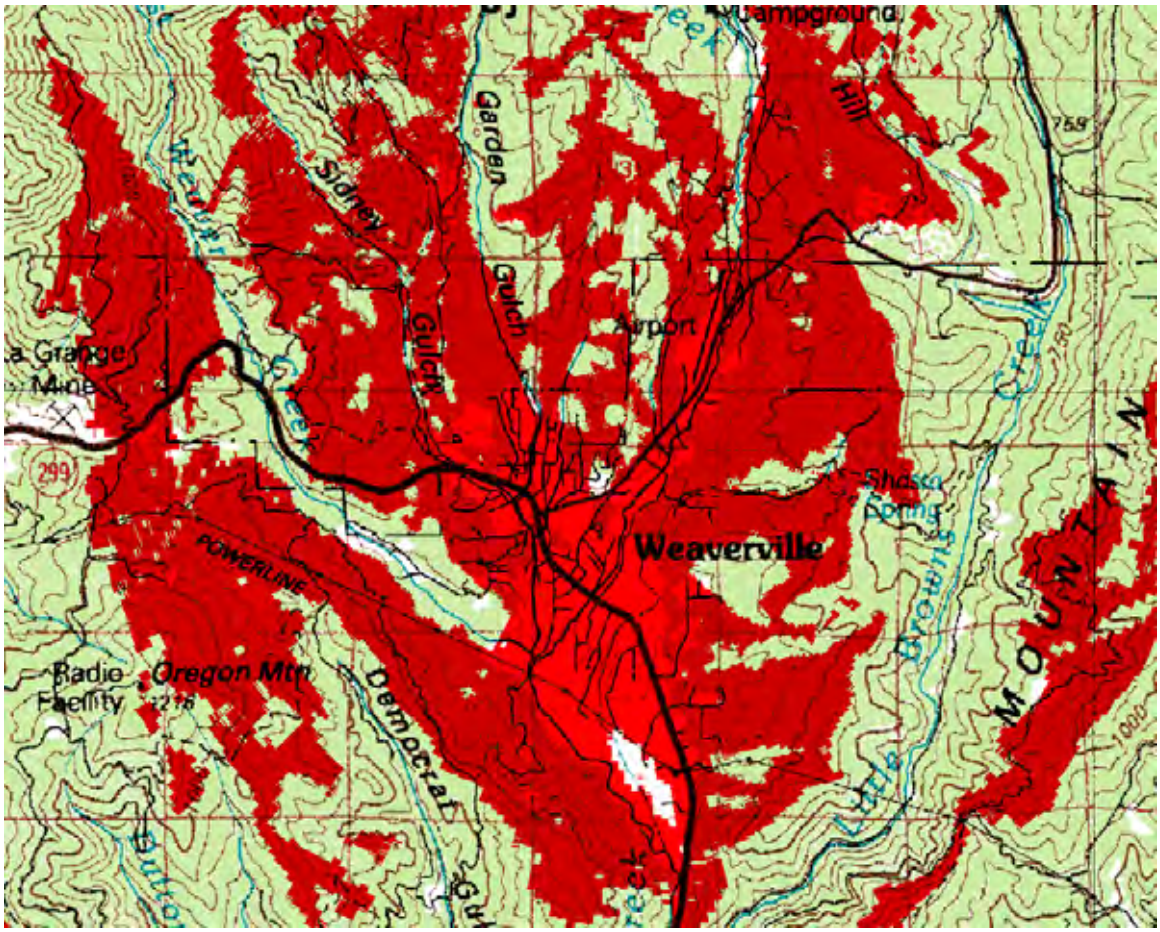
The first existing site to be utilized is the Oregon Mountain communications site. This site has hardline power and telephone. It has line-of-sight to the Horse Mountain communications site as well as Shasta Bally and all other repeater sites in the Weaverville area. There are several existing steel lattice towers with ample additional space for new tenants. See wireless plot below.



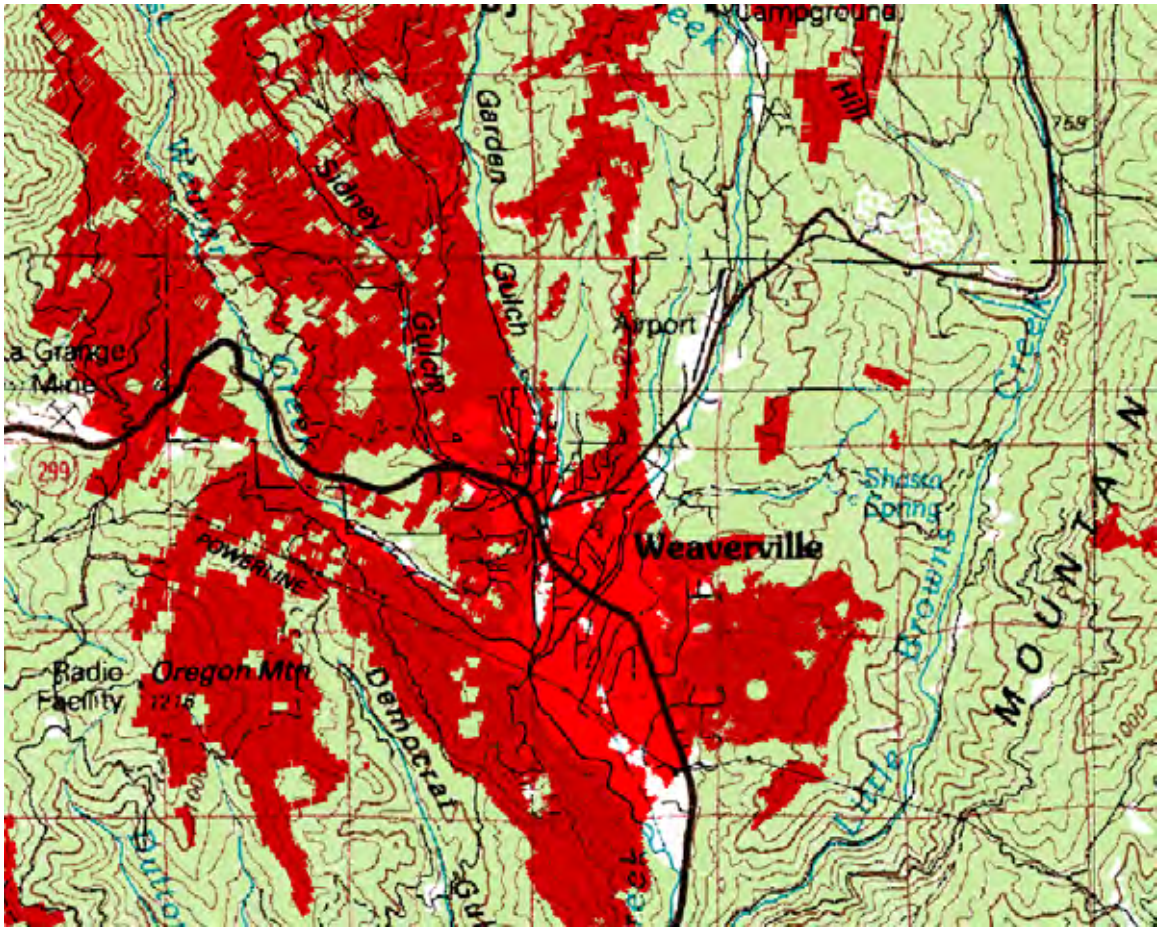
The second Weaverville site, referred to as the “Beans site” is located on private property at approximately 40º 44’ 42.85” N 122º 58’ 59.18” W. There is hardline power to this site. It has line-of-sight to Shasta Bally. There is some existing wireless infrastructure at this site. See wireless plot below.



The third Weaverville site is located near a water tank at the center of Weaverville. This site is owned by the local water district. There is also a 40-foot steel lattice tower at this site as well as a blockhouse. There is hardline power at the site. It has line of site to both the Beans site and Oregon Mountain. There is already substantial wireless infrastructure at this site. See wireless plot below.

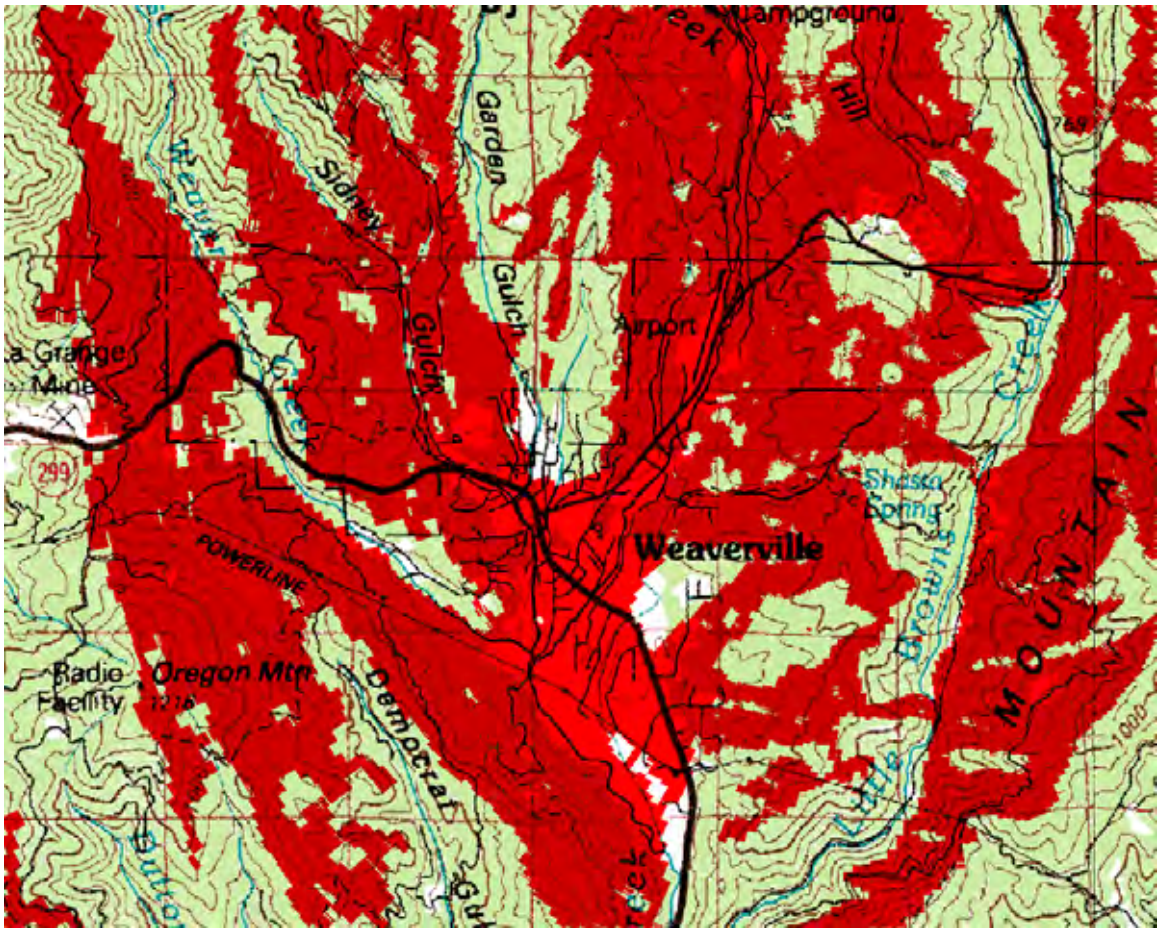


The fourth Weaverville site, referred to as the “Ransom Road site” is located on a water district owned tank at approximately 40º 43’ 7.78” N 122º 55’ 2.31” W. This site has hardline power and a line-of-sight to all other sites. There is some wireless infrastructure at this site. See wireless plot below.

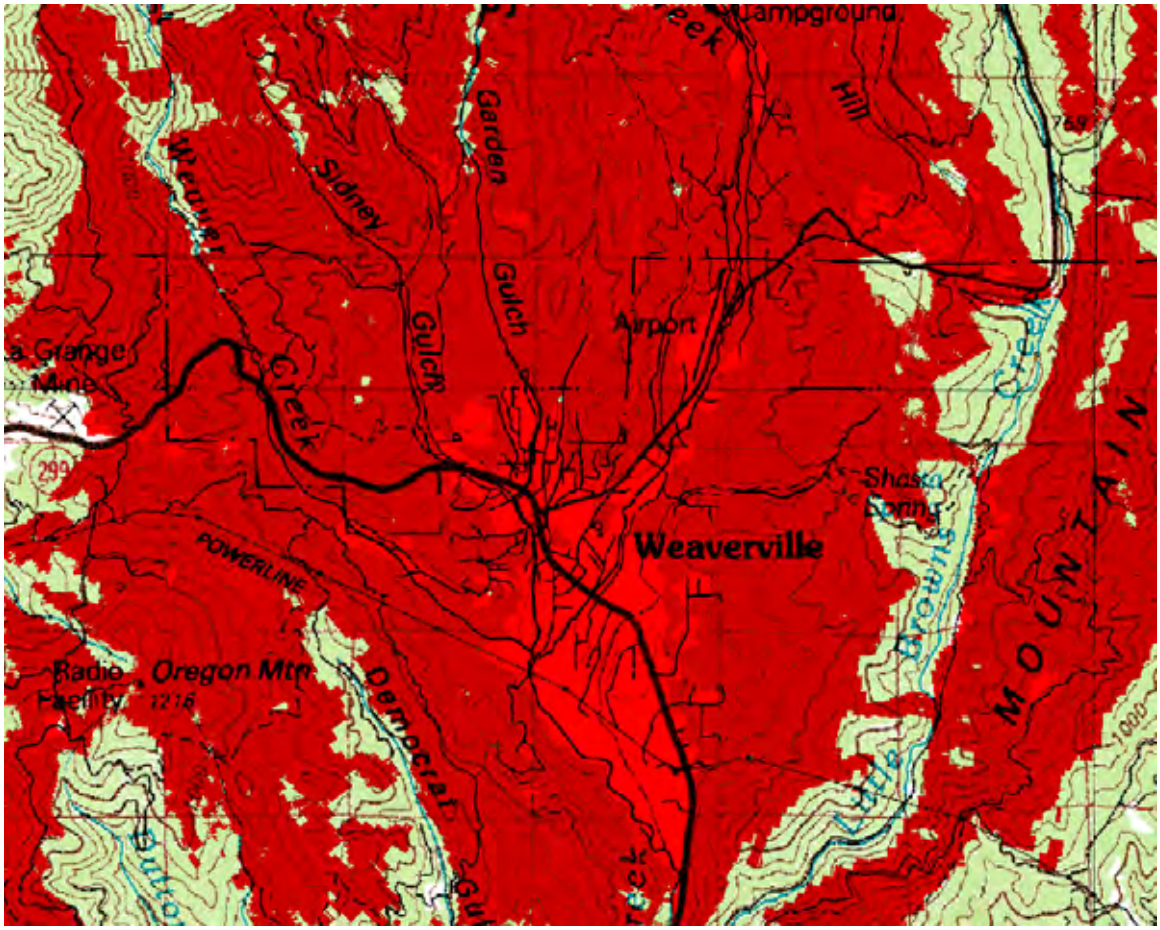


Weaverville - New Site Construction

The proposed new site, referred to as the "Musser Hill site" is located on SPI land at approximately 40º 44' 36.91" N 122º 54' 8.34" W. There is hardline power approximately 1,500 feet away. This site has line-of-sight to all other sites. See wireless plot below.



The complete wireless coverage plot for Weaverville is shown below:

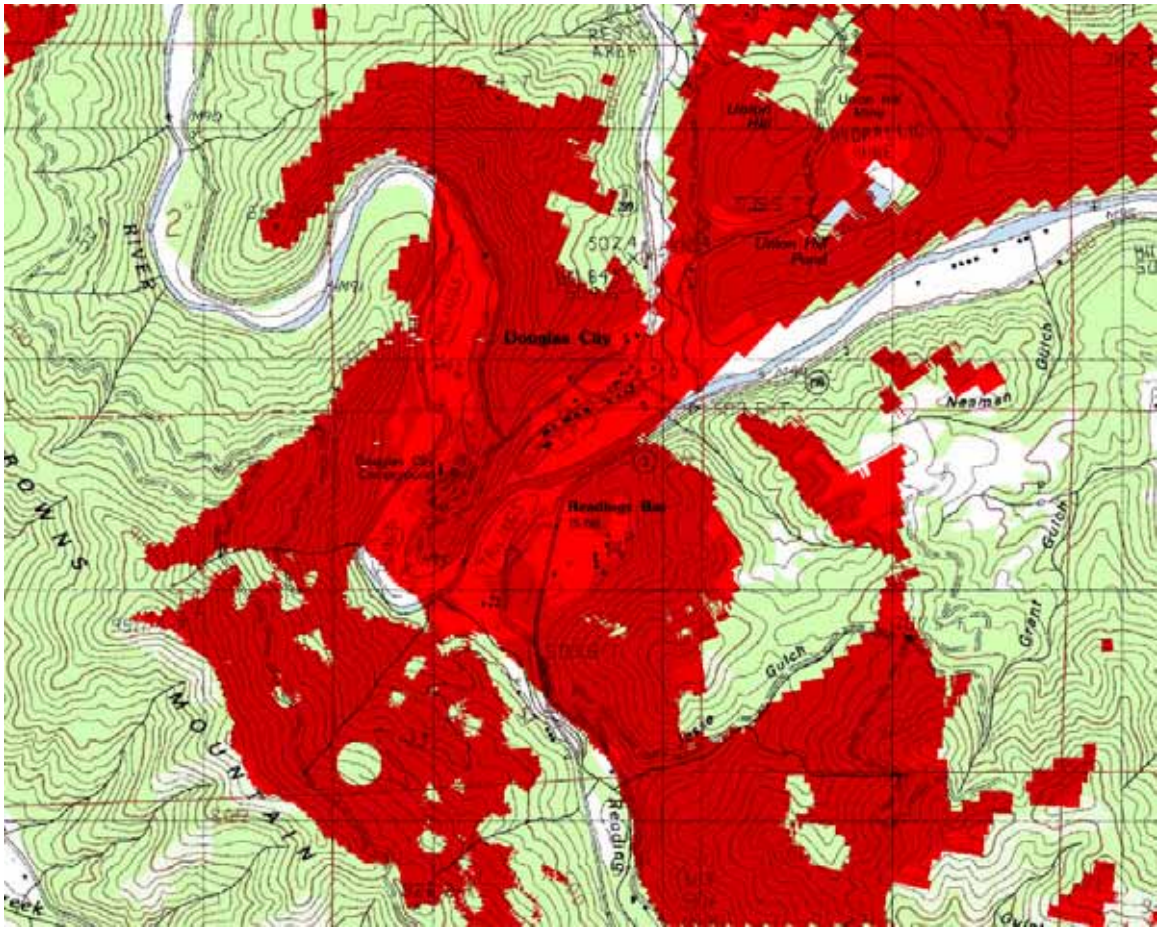


Douglas City

In order to provide wireless coverage to the Douglas City area, one new facility will need to be constructed.

Douglas City - New Construction

The site, referred to as the "Tree Farm site" is located on private property at approximately 40º 38' 12.31" N 122º 57' 27.69" W. The closest hardline power is approximately 1.5 miles away. This site has line-of-sight to Oregon Mountain. It is not located geographically close to Highway 299, making microwave backhaul the only option. See plot below.

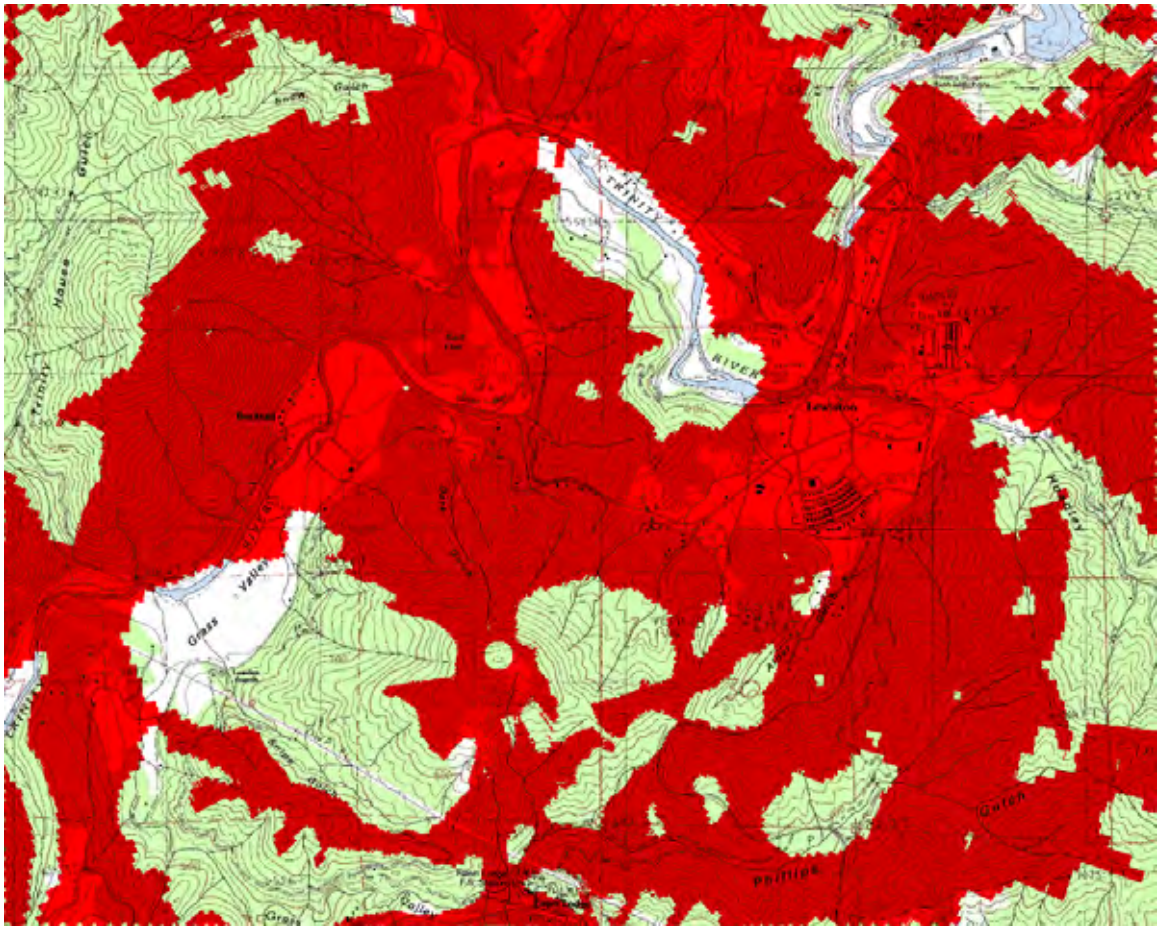


Lewiston

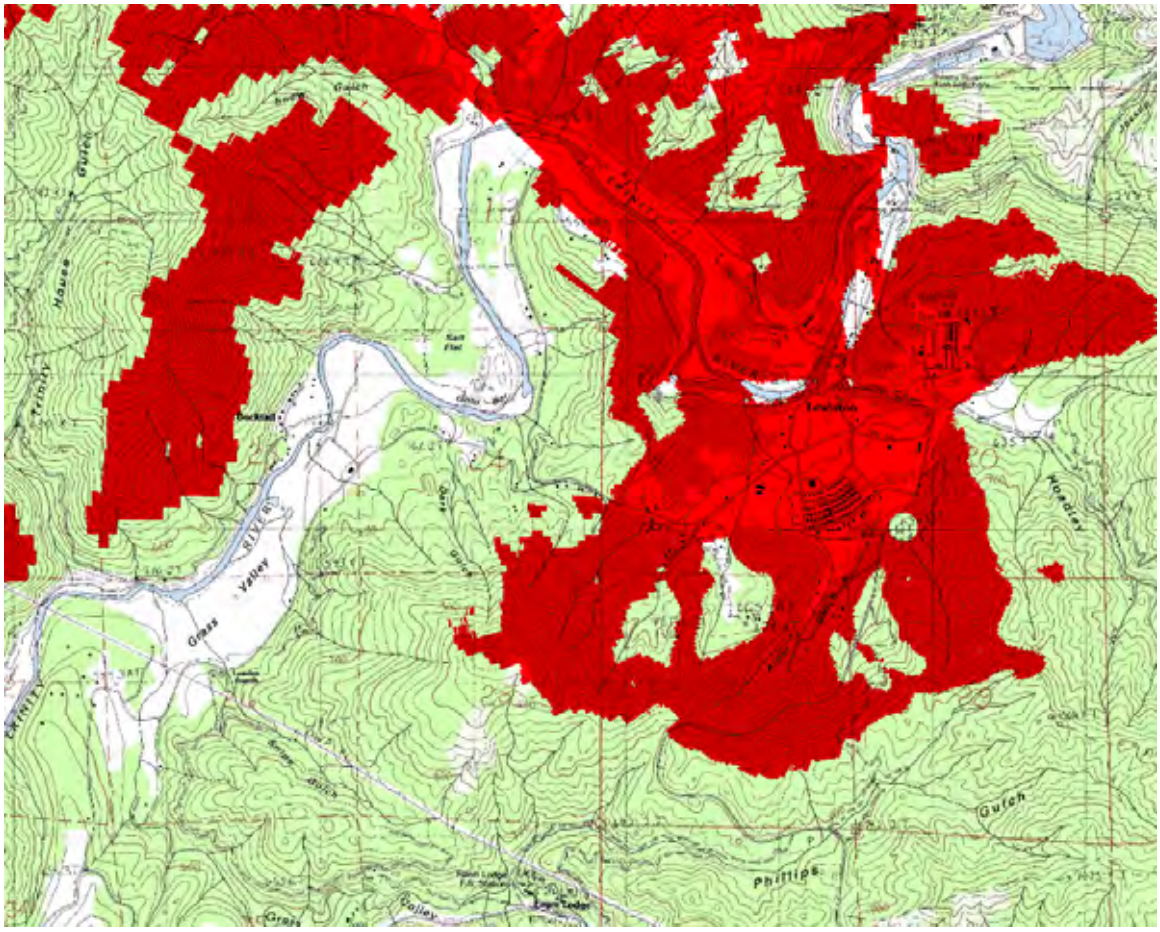
In order to provide contiguous wireless coverage to the Lewiston area, two existing sites will need to be utilized and one new facility will need to be constructed. None of these sites are located geographically close to Highway 299. The only option for backhaul to these sites is microwave.

Lewiston - Existing Sites

The first site, referred to as the "Frick's Peak site" is located on SPI property at approximately 40º 41' 24.05" N 122º 49' 56.44" W. There is hardline power to the site as well as a 40-foot steel lattice tower and a small equipment shelter. This site has line-of-sight to Oregon Mountain, Shasta Bally, and the Tree Farm site. There is already wireless infrastructure at this site. See plot below.

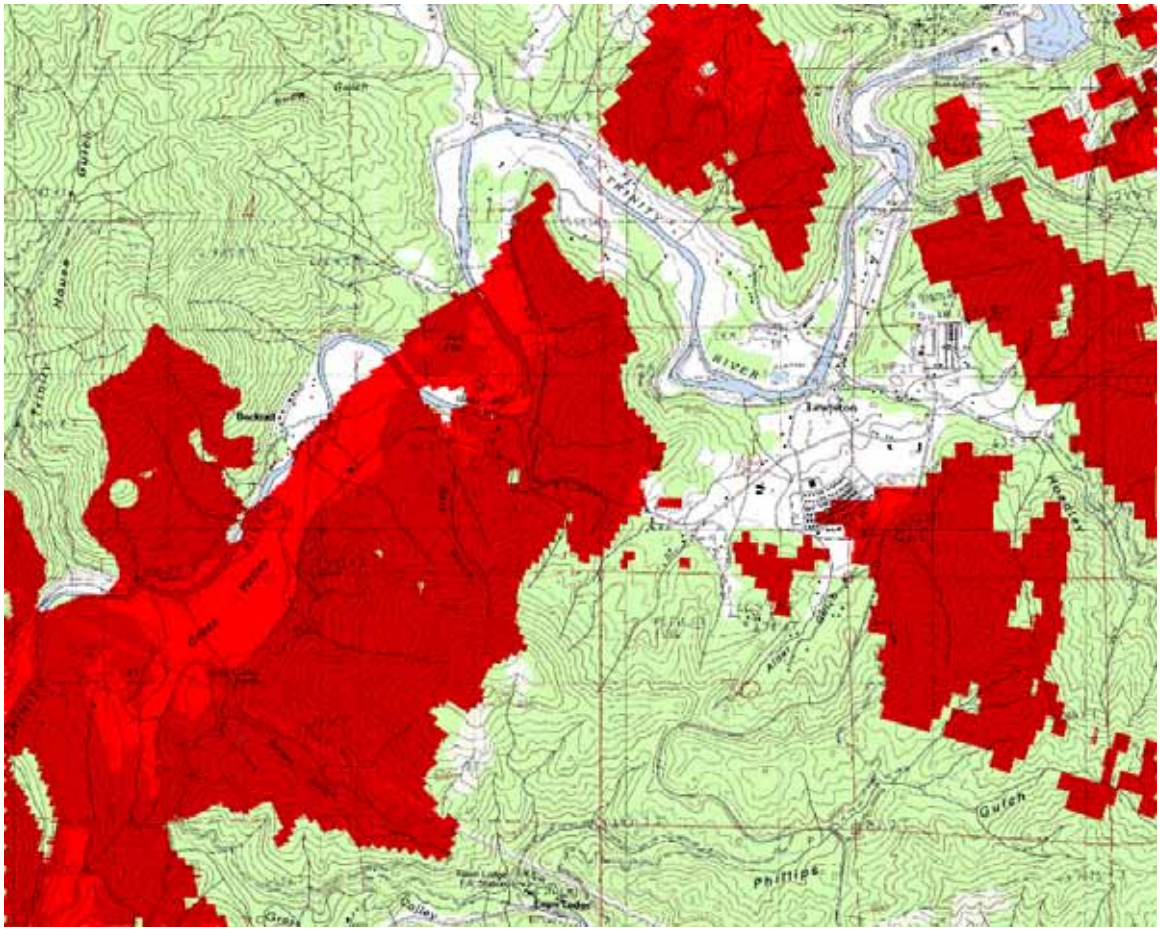


The second Lewiston site is located on a water district tank at approximately 40º 41’ 51.27” N 122º 48’ 7.81” W. There is hardline power at the site. Equipment could be mounted to the steel ladder attached to the tank, or a free-standing tower could be erected. This site has line-of-sight to the Frick’s Peak site. See plot below.

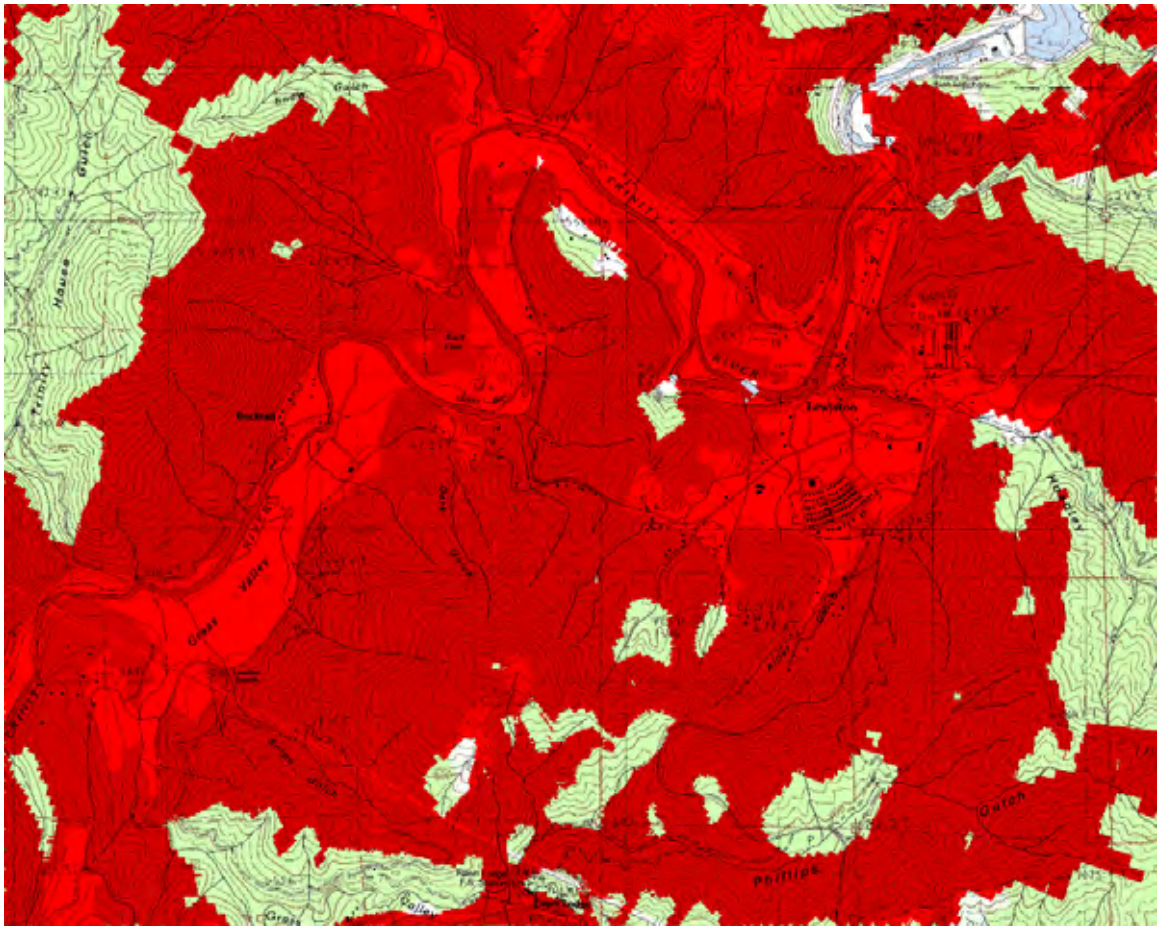


Lewiston - New Site Construction

The proposed new site, referred to as the "Bucktail site" is located on private property at approximately 40º 41' 55.76" N 122º 51' 46.84" W. This site has line-of-sight to Frick's Peak and has hardline power. See plot below.



The complete wireless coverage plot for Lewiston is shown below:

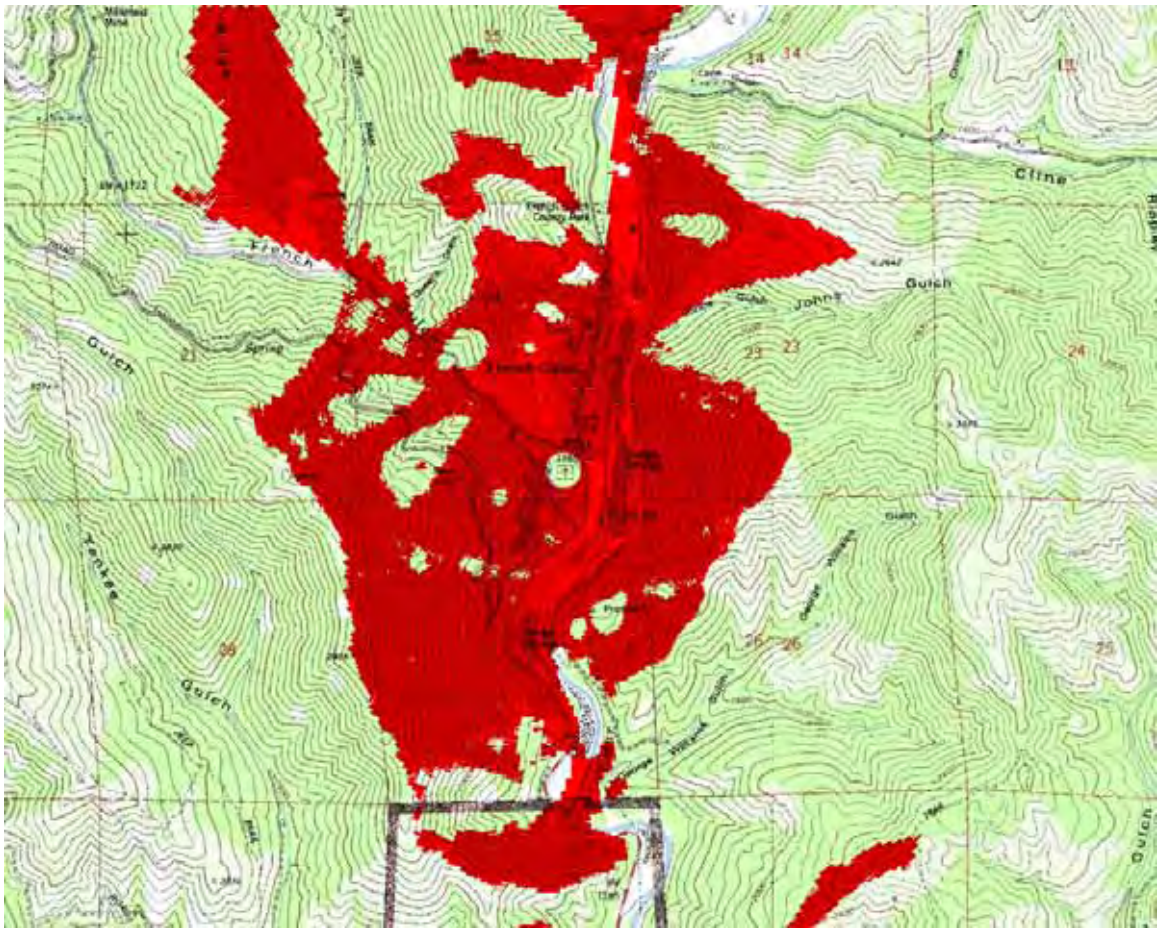


French Gulch

In order to provide contiguous wireless coverage to the French Gulch area, one new facility will need to be constructed.

French Gulch - New Site Construction

The proposed new site is located at approximately 40º 41’ 48.54” N 122º 38’ 18.17” W. The ownership of this site has not yet been determined. The site is located approximately 500 feet from hardline power and an existing road. This site is approximately 3 miles from Highway 299. Fiber could easily be hung on existing power poles to reach the highway. This site also has line-of-sight to Shasta Bally, making microwave backhaul and easier and less expensive option. See plot below.

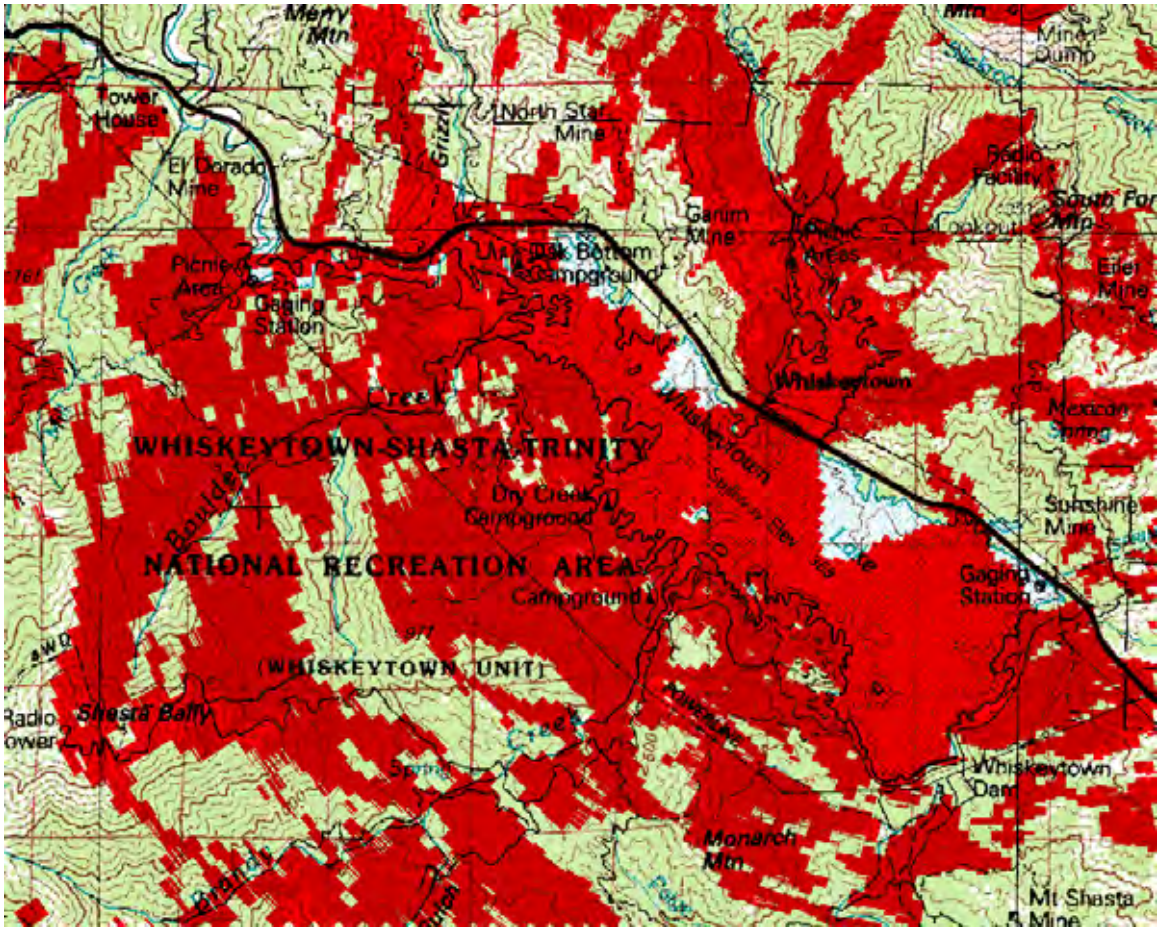


Whiskeytown

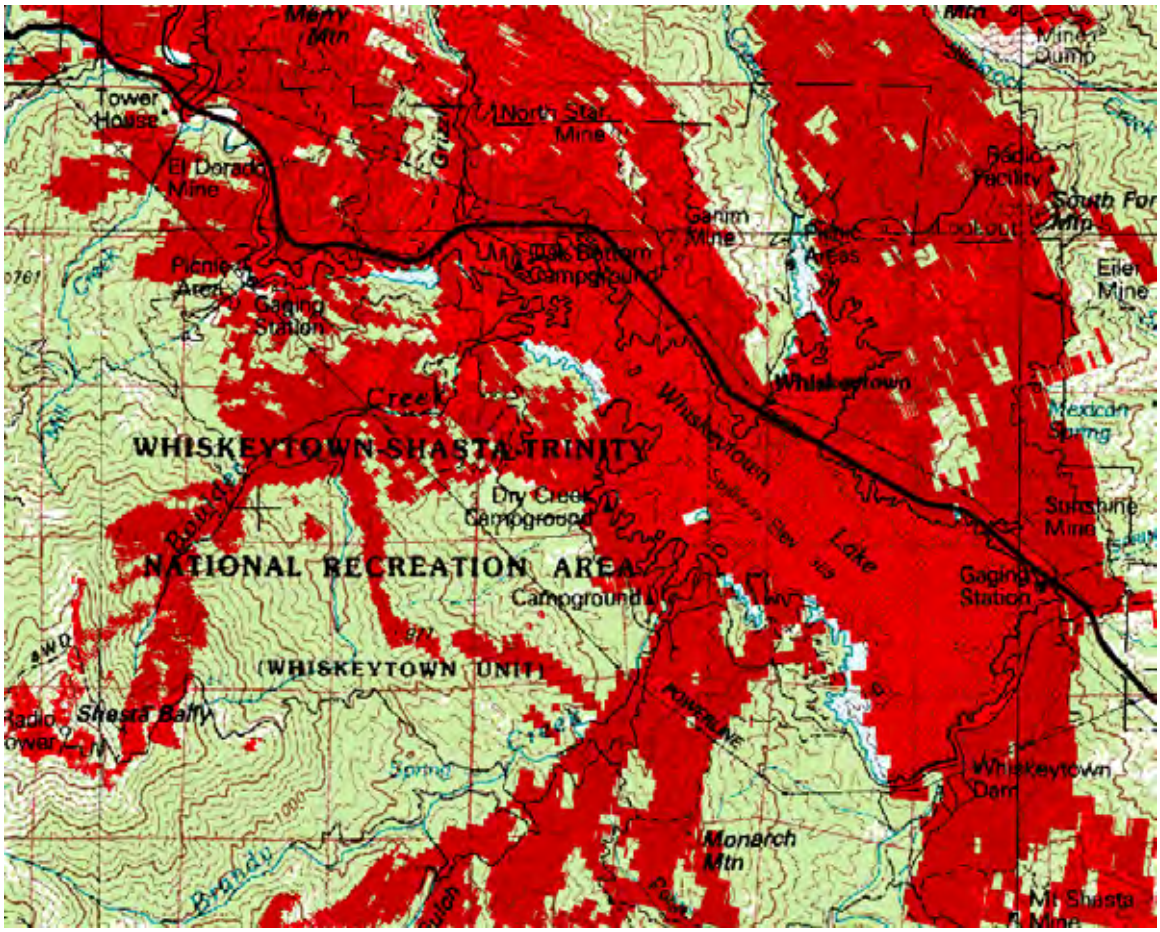
In order to provide contiguous wireless coverage to the Whiskeytown area, two existing sites will need to be utilized. None of these sites are located geographically close to Highway 299, making fiber extension cost prohibitive. Microwave backhaul from the Redding area is an excellent alternative.

Whiskeytown - Existing Sites

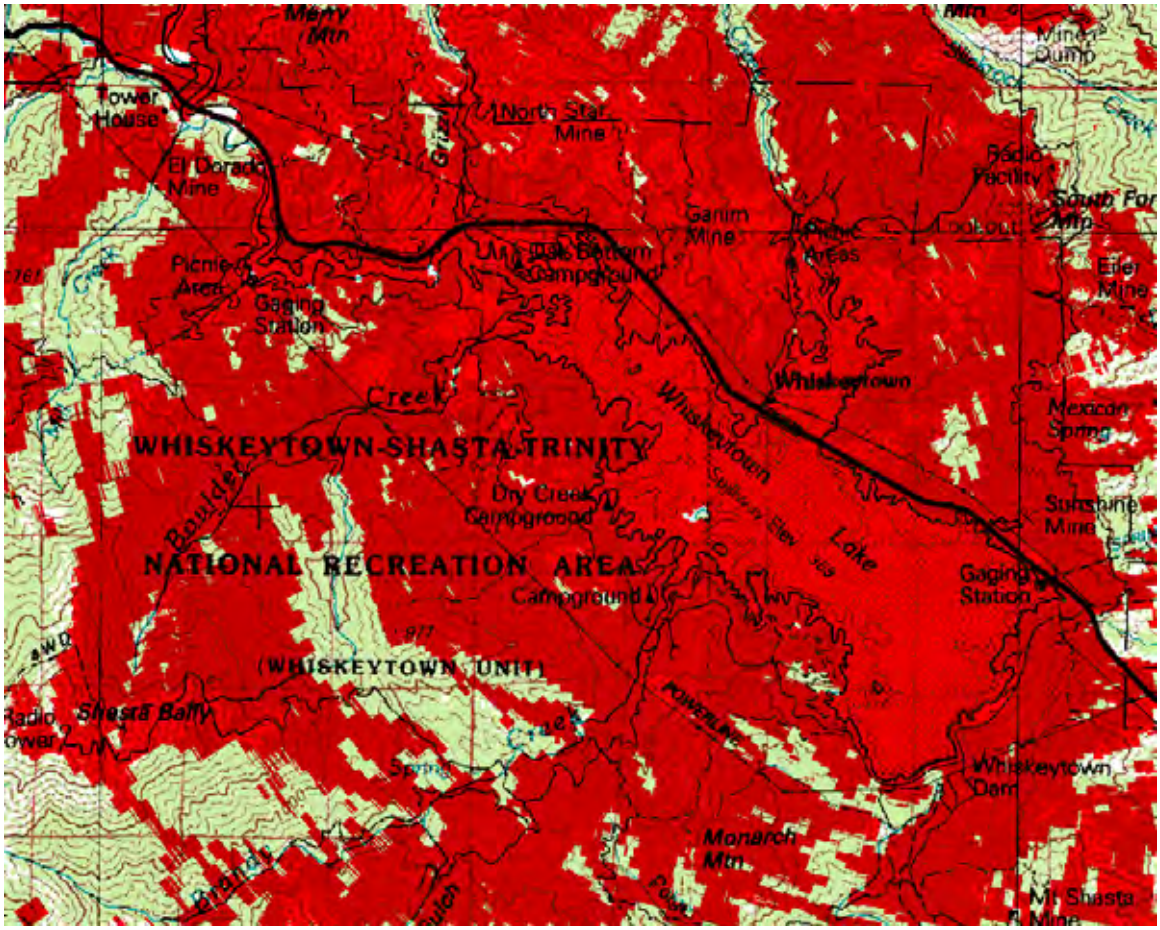
The first existing site to be used is the Southfork Mountain communications site. This site is well-developed and has extensive existing infrastructure. This site has line-of-sight to Shasta Bally and the Redding area. See plot below.



The second Whiskeytown site recommended for use is the Shasta Bally communications site. This site is also well-developed and has existing infrastructure in place. This site has line-of-sight to Southfork Mountain as well as the Redding area. See plot below.



The complete wireless coverage plot for Whiskeytown is shown below:



Permitting/Agency Challenges - Wireless

Wireless has different permitting hurdles than fiber. With the exception of one site in Burnt Ranch, one site in Big Bar, one site in Junction City, and one site in Whiskeytown, all repeater sites would be located on private property, facilitating the public agency permitting process.

The Burnt Ranch and Big Bar sites are located on USFS land. Locating facilities on undeveloped, non-electronics designated USFS sites requires an amendment to the Forest Plan, which only occurs once per year. The Forest Service has been helpful in the past, but due to the amount of study involved, it is usually a lengthy process, for this reason, USFS land was used when it was the only feasible option.

The Junction City site is located on BLM land. BLM has been helpful in the past, and their permitting process is not as complicated as the Forest Service process.

The Whiskeytown site, located on Shasta Bally is currently the subject of a NEPA study by the National Park Service (NPS.) The NPS will take over managing the site from a private company in August of 2009. The NPS is reviewing several options for managing the site including options ranging from complete removal to expansion of the site. Once the NPS takes over management, all ingress, egress and collocation of equipment will require a right-of-way permit.

Another issue to consider is the permitting process in the three counties involved with this project. Trinity County, for example, does not require a permit for any non-building structure (example: pole or tower) under 40 feet in height. Due to the magnitude of this project, perhaps special approval can be requested to streamline and expedite the permitting process.

Permitting/Agency Challenges - Fiber

There are two major fiber permitting hurdles that will need to be overcome when this project is initiated:

1. Caltrans Permitting – The entire build would occur within the Caltrans Highway 299 right-of-way. Caltrans permits would be required throughout the project. Discussions with Caltrans representatives have revealed favorable response with regard to their support of this project.
2. CEQA Compliance – CEQA, or the California Environmental Quality Act, is a statute that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts. One of the reasons why micro-trenching technology is recommended for the Construction phase of this project, is the minimal environmental impact it would impose. CEQA compliance is a requirement of the CASF grant. The interval to complete the required CEQA study for this project is estimated to be 120 days.

Implementation Schedule – Major Steps

CEQA Compliance and CalTrans Permitting are the two major unknowns when trying to calculate an implementation schedule. All other phases have a more predictable time line.

The implementation phases and best-case project calendar by quarter are listed below:

a) Funding/Bonding……...…..… Targeted Completion Q3 2009
b) Engineering/Design……...…..…… Targeted Completion Q3 2009
c) Permitting/CEQA…...……...….. Targeted Completion Q3 2009
d) Fiber Construction (11mos)..……. Start Targeted for Q3 2009
e) Node Establishment……...…..... Start Targeted for Q4 2009
f) Fiber Splicing……...……. Start Targeted for Q4 2009
g) Subscriber Network Construction (11 mos)…….... Start Targeted for Q3 2009
h) Test/Certification……...…….…. Q2 2010
i) Subscriber Acquisition……..……...……. Q2 2010

Projected best-case total implementation time for the project is 11 months.

Financial Plan - Fiber

The CASF grant will be combined with future residential, business, institutional and carrier wholesale subscriber revenues. The current economic climate in the United States and specifically the depressed US financial markets, are in their worst state since The Great Depression. With that said, the project funding assistance of the CASF grant and other government subsidies available today for rural broadband deployments should make the project financially feasible.

The estimated cost to complete this project is $20M. With the CASF grant program contributing 40% or $8M of the overall estimated project cost, $12M must be invested by the company taking this project on in order to complete it. Estimating a twenty-year loan for the entire $12M, this project would need to generate a minimum inflow of $80,000 per month (recurring) for the company to cover debt service, at an annual cost of money rate of 5%. That said, acquiring additional grants and more cost effective financing toward the $12M out of pocket costs, can have a significant impact on accelerating the return on investment for this project.

The fiber build costs break down as follows:

Cost Category	% of Total
Engineering	0.25
Permitting	0.25
Materials	19.00
Construction Labor	77.00
Splicing	1.25
Network Operations Center Buildout	0.25
Project Management	2.00

Using a 38% average take rate (for residential and business wireless broadband services) across the 5,734 residences servable via this project, we anticipate 23% of all revenue will be derived from residential subscribers. 77% of the revenue will come from wholesale and institutional subscribers.

Estimated ongoing operational costs for the fiber backbone are:

(a) Two technicians - estimated labor cost allocation per year of $100k
(b) Insurance - estimated to be $80k per year
(c) Administrative, Taxes & Regulatory Fees - $120k per year
(d) Rents & Utilities - estimated to be $36k per year

Financial Plan - Wireless

Because the CASF grant subsidizes 40% of capital costs only, this plan is focused on capital equipment required to install wireless broadband along the Highway 299 corridor. There are also two other aspects to providing wireless broadband services to residences and businesses in the region: 1) labor to install customer equipment, and 2) ongoing Operations and Maintenance (O&M).

Customer Premise Equipment (CPE) Residential/Business Installation

A typical home installation performed by a contractor will cost somewhere between $60 and $150 depending, on the community and the distance traveled. CPEs remain the property of Velocity Technology. The installation cost and CPE cost are partially offset by the installation charge to the customer. ROI for CPEs is usually achieved within 12-18 months from date of installation.

Deployment of CPEs to end users is contingent upon the completion of all towers and applicable backhauls. An average home install will take a contractor 2-3 hours to complete. Utilizing 3 contractors performing 2 installs per day, 5 days per week would result in approximately 120 customers connected per month. At this rate, for example, it would take approximately 4 months to completely saturate the Willow Creek area (500 customers) with a worst-case estimate of $75,000 for installation costs. Utilizing worst-case install costs ($150 each) and only 3 contractors it would cost approximately $411,150 and take 22 months to install all 2,741 customers.

Wireless Operations & Maintenance

Ongoing costs will vary greatly by community, though a guideline often used for wireless O&M is 5% of capital costs. These costs will include various site leases, maintenance of roads to repeater sites, battery backups, weather damage and vandalism to towers and equipment. Individual site electricity consumption will be small with use of low power equipment. However, due to the number of repeater sites, total electricity costs need to be taken into consideration. Ongoing backhaul costs will also vary by community due to differences in demand and method of connection (microwave versus fiber).

Wireless Capital Expenditure Plan

The total costs for wireless infrastructure for 18 communities is listed below. This includes fiber extended to the wireless equipment sites.

Highway 299 Broadband Network

Total estimated subscribers	2741
Total capital cost (constructing new sites where possible)	$4,772,391

Below is a community-by-community financial plan for capital purchases and installation of wireless infrastructure. This includes spare equipment to have on hand and includes end-user business/residential CPE units.

Fieldbrook Capital Expenditures

Option 1 - Utilize Existing Sites				
Power	**Est. Cost**	**Qty**	**Total**	**Location(s)**
UPS, APC SUA2200	$1,100	4	$4,400	CSD Fire Dept., CSD Water Tank, existing comm site, Eureka PoP
Radio				
Trango M900S Access Point + 1 spare	$2,000	3	$6,000	CSD Fire Dept., CSD Water Tank
Trango M900S Subscriber + 5 spare	$713	125	$89,125	
Trango T-LINK10 EXT PtP (Pair) + 1 spare	$2,600	4	$10,400	CSD Fire Dept., CSD Water Tank, existing comm site, Eureka PoP
Antennas & Support				
PacWireless 5.8gHz 32dBi Parabolic w/ Radome	$400	6	$2,400	CSD Fire Dept., CSD Water Tank, existing comm site, Eureka PoP
PacWireless 900mHz 13dBi 120-Degree Sector	$300	4	$1,200	CSD Fire Dept., CSD Water Tank
Times Microwave LMR-600 Coax (ft)	$2	360	$720	CSD Fire Dept., CSD Water Tank, existing comm site, Eureka PoP
Type N Connector Clamp-style	$6	12	$72	CSD Fire Dept., CSD Water Tank, existing comm site, Eureka PoP
Network				
Router	$3,000	1	$3,000	Eureka PoP
Construction				
Site Construction (Cabinet)	$25,000	1.5	$37,500	CSD Fire Dept., CSD Water Tank, existing comm site, Eureka PoP
Installation				
PtP Radios	$5,000	4	$20,000	CSD Fire Dept., CSD Water Tank, existing comm site, Eureka PoP
AP Radios	$2,000	2	$4,000	CSD Fire Dept., CSD Water Tank
Antennas	$1,500	4	$6,000	CSD Fire Dept., CSD Water Tank, existing comm site, Eureka PoP
Router	$500	1	$500	Eureka PoP
		TOTAL	$185,317	

Option 2 - Fieldbrook New Site Construction				
Power	**Est. Cost**	**Qty**	**Total**	**Location(s)**
UPS, APC SUA2200	$1,100	2	$2,200	New site, Eureka PoP
Radio				
Trango M900S Access Point + 1 spare	$2,000	2	$4,000	New site
Trango M900S Subscriber + 5 spare	$713	125	$89,125	
Trango T-LINK10 EXT PtP (Pair) + 1 spare	$2,600	2	$5,200	New site, Eureka PoP
Antennas & Support				
PacWireless 5.8gHz 32dBi Parabolic w/ Radome	$400	2	$800	New site, Eureka PoP
PacWireless 900mHz 13dBi 120-Degree Sector	$300	2	$600	New site
Times Microwave LMR-600 Coax (ft)	$2	180	$360	New site, Eureka PoP
Type N Connector Clamp-style	$6	6	$36	New site, Eureka PoP
Network				
Router	$3,000	1	$3,000	Eureka PoP
Construction				
Site Construction (Cabinet)	$25,000	0.5	$12,500	Eureka PoP
Site Construction (Pole+Cabinet)	$35,000	1	$35,000	New site
Electrical extension underground (ft)	$5	1700	$8,500	
Installation				
PtP Radios	$5,000	2	$10,000	New site, Eureka PoP
AP Radios	$2,000	1	$2,000	New site
Antennas	$1,500	2	$3,000	New site, Eureka PoP
Router	$500	1	$500	Eureka PoP
		TOTAL	$176,821	

Glendale-Blue Lake-Korbel Capital Expenditures

Glendale/Blue Lake - New Site Construction				
Power	**Est. Cost**	**Qty**	**Total**	**Location(s)**
UPS, APC SUA2200	$1,100	1	$1,100	New site
Radio				
Trango M900S Access Point + 1 spare	$2,000	3	$6,000	New site
Trango M900S Subscriber + 5 spare	$713	235	$167,555	
Trango T-LINK10 EXT PtP (Pair) + 1 spare	$2,600	2	$5,200	New site, existing comm site (west of Fieldbrook)
Antennas & Support				
PacWireless 5.8gHz 32dBi Parabolic w/ Radome	$400	2	$800	New site, existing comm site
PacWireless 900mHz 13dBi 120-Degree Sector	$300	2	$600	New site
Times Microwave LMR-600 Coax (ft)	$2	240	$480	New site, existing comm site
Type N Connector Clamp-style	$6	8	$48	New site, existing comm site
Network				
Router	$3,000	1	$3,000	Existing comm site
Construction				
Site Construction (Cabinet)	$25,000	1	$25,000	Existing comm site
Site Construction (Pole+Cabinet)	$35,000	1	$35,000	New site
Installation				
PtP Radios	$5,000	2	$10,000	New site, existing comm site
AP Radios	$2,000	1	$2,000	New site
Antennas	$1,500	2	$3,000	New site, existing comm site
Router	$500	1	$500	Existing comm site
		TOTAL	$260,283	

Korbel - Utilize Existing Site				
Power	**Est. Cost**	**Qty**	**Total**	**Location(s)**
UPS, APC SUA2200	$1,100	1	$1,100	Existing site (Poverty Peak)
Radio				
Trango M900S Access Point + 1 spare	$2,000	2	$4,000	Poverty Peak
Trango M900S Subscriber + 2 spare	$713	22	$15,686	
Trango T-LINK10 EXT PtP (Pair) + 1 spare	$2,600	2	$5,200	Poverty Peak, existing Fieldbrook comm site
Antennas & Support				
PacWireless 5.8gHz 32dBi Parabolic w/ Radome	$400	2	$800	Poverty Peak, existing Fieldbrook comm site
PacWireless 900mHz 13dBi 120-Degree Sector	$300	1	$300	Poverty Peak
Times Microwave LMR-600 Coax (ft)	$2	180	$360	Poverty Peak, existing Fieldbrook comm site
Type N Connector Clamp-style	$6	6	$36	Poverty Peak, existing Fieldbrook comm site
Network				
Router	$3,000	1	$3,000	Existing Fieldbrook comm site
Construction				
Site Construction (Cabinet)	$25,000	1	$25,000	Poverty Peak
Installation				
PtP Radios	$5,000	2	$10,000	Poverty Peak, existing Fieldbrook comm site
AP Radios	$2,000	1	$2,000	Poverty Peak
Antennas	$1,500	2	$3,000	Poverty Peak, existing Fieldbrook comm site
Router	$500	1	$500	Existing Fieldbrook comm site
		TOTAL	$70,982	

Korbel - New Site Construction				
Power	**Est. Cost**	**Qty**	**Total**	**Location(s)**
UPS, APC SUA2200	$1,100	1	$1,100	New site
Radio				
Trango M900S Access Point + 1 spare	$2,000	2	$4,000	New site
Trango M900S Subscriber + 2 spare	$713	22	$15,686	
Trango T-LINK10 EXT PtP (Pair) + 1 spare	$2,600	2	$5,200	New site, new Glendale/Blue Lake site
Antennas & Support				
PacWireless 5.8gHz 32dBi Parabolic w/ Radome	$400	2	$800	New site, new Glendale/Blue Lake site
PacWireless 900mHz 13dBi 120-Degree Sector	$300	2	$600	New site
Times Microwave LMR-600 Coax (ft)	$2	240	$480	New site, new Glendale/Blue Lake site
Type N Connector Clamp-style	$6	8	$48	New site, new Glendale/Blue Lake site
Network				
Router	$3,000	0	$0	
Construction				
Site Construction (Pole+Cabinet)	$35,000	1	$35,000	New site
Fiber extension underground (ft)	$30	4600	$138,000	
Electrical extension overhead (ft)	$5	950	$4,750	
Installation				
PtP Radios	$5,000	2	$10,000	New site, existing comm site
AP Radios	$2,000	1	$2,000	New site
Antennas	$1,500	2	$3,000	New site, existing comm site
Router	$500	0	$0	
		TOTAL	$220,664	

Willow Creek Capital Expenditures

Willow Creek				
Willow Creek - New Site Construction + Existing Site				
Power	**Est. Cost**	**Qty**	**Total**	**Location(s)**
UPS, APC SUA2200	$1,100	4	$4,400	New sites, existing site (PWM, Inc. tower)
Radio				
Trango M900S Access Point + 1 spare	$2,000	5	$10,000	New sites, existing site
Trango M900S Subscriber + 5 spare	$713	505	$360,065	
Trango T-LINK10 EXT PtP (Pair) + 1 spare	$2,600	4	$10,400	New sites, existing site
Antennas & Support				
PacWireless 5.8gHz 32dBi Parabolic w/ Radome	$400	6	$2,400	New sites, existing site
PacWireless 900mHz 13dBi 120-Degree Sector	$300	10	$3,000	New sites, existing site
Times Microwave LMR-600 Coax (ft)	$2	960	$1,920	New sites, existing site
Type N Connector Clamp-style	$6	32	$192	New sites, existing site
Network				
Router	$3,000	1	$3,000	New site (located nearest to 299)
Construction				
Site Construction (Cabinet)	$25,000	1	$25,000	Existing site
Site Construction (Pole+Cabinet)	$35,000	3	$105,000	New sites
Fiber Extension overhead (ft)	$30	1500	$45,000	
Electrical Extension overhead (ft)	$6	700	$4,200	
Installation				
PtP Radios	$5,000	4	$20,000	New sites, existing site
AP Radios	$2,000	4	$8,000	New sites, existing site
Antennas	$1,500	4	$6,000	New sites, existing site
Router	$500	1	$500	Existing site
		TOTAL	$609,077	

Salyer Capital Expenditures

Salyer - New Site Construction				
Power	**Est. Cost**	**Qty**	**Total**	**Location(s)**
UPS, APC SUA2200	$1,100	2	$2,200	New sites
Radio				
Trango M900S Access Point + 1 spare	$2,000	3	$6,000	New sites
Trango M900S Subscriber + 5 spare	$713	125	$89,125	
Trango T-LINK10 EXT PtP (Pair) + 1 spare	$2,600	2	$5,200	New sites
Antennas & Support				
PacWireless 5.8gHz 32dBi Parabolic w/ Radome	$400	2	$800	New sites
PacWireless 900mHz 13dBi 120-Degree Sector	$300	4	$1,200	New sites
Times Microwave LMR-600 Coax (ft)	$2	300	$600	New sites
Type N Connector Clamp-style	$6	10	$60	New sites
Network				
Router	$3,000	1	$3,000	New site (located near 299)
Construction				
Site Construction (Pole+Cabinet)	$35,000	2	$70,000	New sites
Fiber extension underground (ft)	$30	1300	$39,000	
Installation				
PtP Radios	$5,000	2	$10,000	New sites
AP Radios	$2,000	2	$4,000	New sites
Antennas	$1,500	2	$3,000	New sites
Router	$500	1	$500	New sites
		TOTAL	$234,685	

Hawkins Bar-Trinity Village Capital Expenditures

Hawkins Bar - New Site Construction				
Power	**Est. Cost**	**Qty**	**Total**	**Location(s)**
UPS, APC SUA2200	$1,100	1	$1,100	New site
Radio				
Trango M900S Access Point + 1 spare	$2,000	2	$4,000	New site
Trango M900S Subscriber + 5 spare	$713	85	$60,605	
Antennas & Support				
PacWireless 900mHz 13dBi 120-Degree Sector	$300	3	$900	New site
Times Microwave LMR-600 Coax (ft)	$2	180	$360	New site
Type N Connector Clamp-style	$6	6	$36	New site
Network				
Router	$3,000	1	$3,000	New site
Construction				
Site Construction (Pole+Cabinet)	$35,000	1	$35,000	New site
Fiber extension overhead (ft)	$30	5800	$174,000	
Electrical extension overhead (ft)	$6	900	$5,400	
Installation				
PtP Radios	$5,000	1	$5,000	New site
AP Radios	$2,000	1	$2,000	New site
Antennas	$1,500	1	$1,500	New site
Router	$500	1	$500	New site
		TOTAL	$293,401	

Burnt Ranch-Cedar Flat Capital Expenditures

Burnt Ranch/Cedar Flat - New Site Construction				
Power	**Est. Cost**	**Qty**	**Total**	**Location(s)**
UPS, APC SUA2200	$1,100	1	$1,100	New site
Radio				
Trango M900S Access Point + 1 spare	$2,000	2	$4,000	New site
Trango M900S Subscriber + 5 spare	$713	95	$67,735	
Antennas & Support				
PacWireless 900mHz 13dBi 120-Degree Sector	$300	3	$900	New site
Times Microwave LMR-600 Coax (ft)	$2	180	$360	New site
Type N Connector Clamp-style	$6	6	$36	New site
Network				
Router	$3,000	1	$3,000	New site
Construction				
Site Construction (Pole+Cabinet)	$35,000	1	$35,000	New site
Fiber extension overhead (ft)	$30	5800	$174,000	
Electrical extension overhead (ft)	$5	1500	$7,500	
Installation				
PtP Radios	$5,000	1	$5,000	New site
AP Radios	$2,000	1	$2,000	New site
Antennas	$1,500	1	$1,500	New site
Router	$500	1	$500	New site
		TOTAL	$302,631	

Del Loma Capital Expenditures

Del Loma - New Site Construction				
Power	**Est. Cost**	**Qty**	**Total**	**Location(s)**
UPS, APC SUA2200	$1,100	1	$1,100	New site
Radio				
Trango M900S Access Point + 1 spare	$2,000	2	$4,000	New site
Trango M900S Subscriber + 2 spare	$713	42	$29,946	
Antennas & Support				
PacWireless 900mHz 13dBi 120-Degree Sector	$300	3	$900	New site
Times Microwave LMR-600 Coax (ft)	$2	180	$360	New site
Type N Connector Clamp-style	$6	6	$36	New site
Network				
Router	$3,000	1	$3,000	New site
Construction				
Site Construction (Pole+Cabinet)	$35,000	1	$35,000	New site
Installation				
PtP Radios	$5,000	1	$5,000	New site
AP Radios	$2,000	1	$2,000	New site
Antennas	$1,500	1	$1,500	New site
Router	$500	1	$500	New site
		TOTAL	$83,342	

Big Bar Capital Expenditures

Big Bar - New Site Construction				
Power	**Est. Cost**	**Qty**	**Total**	**Location(s)**
UPS, APC SUA2200	$1,100	2	$2,200	New sites
Radio				
Trango M900S Access Point + 1 spare	$2,000	3	$6,000	New sites
Trango M900S Subscriber + 5 spare	$713	55	$39,215	
Trango T-LINK10 EXT PtP (Pair) + 1 spare	$2,600	2	$5,200	New sites
Antennas & Support				
PacWireless 5.8gHz 32dBi Parabolic w/ Radome	$400	2	$800	New sites
PacWireless 900mHz 13dBi 120-Degree Sector	$300	6	$1,800	New sites
Times Microwave LMR-600 Coax (ft)	$2	480	$960	New sites
Type N Connector Clamp-style	$6	16	$96	New sites
Network				
Router	$3,000	1	$3,000	New site (located near 299)
Construction				
Site Construction (Pole+Cabinet)	$35,000	2	$70,000	New sites
Fiber extension overhead (ft)	$30	3000	$90,000	
Electrical extension overhead (ft)	$6	1000	$6,000	
Installation				
PtP Radios	$5,000	2	$10,000	New sites
AP Radios	$2,000	2	$4,000	New sites
Antennas	$1,500	2	$3,000	New sites
Router	$500	1	$500	New sites
		TOTAL	$242,771	

Big Flat Capital Expenditures

Big Flat - New Site Construction				
Power	**Est. Cost**	**Qty**	**Total**	**Location(s)**
UPS, APC SUA2200	$1,100	1	$1,100	New site
Radio				
Trango M900S Access Point + 1 spare	$2,000	2	$4,000	New site
Trango M900S Subscriber + 2 spare	$713	22	$15,686	
Antennas & Support				
PacWireless 900mHz 13dBi 120-Degree Sector	$300	3	$900	New site
Times Microwave LMR-600 Coax (ft)	$2	180	$360	New site
Type N Connector Clamp-style	$6	6	$36	New site
Network				
Router	$3,000	1	$3,000	New site
Construction				
Site Construction (Pole+Cabinet)	$35,000	1	$35,000	New site
Fiber extension underground (ft)	$30	1400	$42,000	
Installation				
PtP Radios	$5,000	1	$5,000	New site
AP Radios	$2,000	1	$2,000	New site
Antennas	$1,500	1	$1,500	New site
Router	$500	1	$500	New site
		TOTAL	$111,082	

Junction City Capital Expenditures

Junction City - New Site Construction				
Power	**Est. Cost**	**Qty**	**Total**	**Location(s)**
UPS, APC SUA2200	$1,100	4	$4,400	New sites
Radio				
Trango M900S Access Point + 1 spare	$2,000	5	$10,000	New sites
Trango M900S Subscriber + 5 spare	$713	135	$96,255	
Trango T-LINK10 EXT PtP (Pair) + 1 spare	$2,600	4	$10,400	New sites
Antennas & Support				
PacWireless 5.8gHz 32dBi Parabolic w/ Radome	$400	6	$2,400	New sites
PacWireless 900mHz 13dBi 120-Degree Sector	$300	12	$3,600	New sites
Times Microwave LMR-600 Coax (ft)	$2	1080	$2,160	New sites
Type N Connector Clamp-style	$6	36	$216	New sites
Network				
Router	$3,000	1	$3,000	New site (located near 299)
Construction				
Site Construction (Pole+Cabinet)	$35,000	4	$140,000	New sites
Fiber extension overhead (ft)	$30	1000	$30,000	
Electrical extension overhead (ft)	$6	1000	$6,000	
Installation				
PtP Radios	$5,000	4	$20,000	New sites
AP Radios	$2,000	4	$8,000	New sites
Antennas	$1,500	4	$6,000	New sites
Router	$500	1	$500	New sites
		TOTAL	$342,931	

Weaverville Capital Expenditures

Weaverville - New Site Construction + Existing Sites				
Power	**Est. Cost**	**Qty**	**Total**	**Location(s)**
UPS, APC SUA2200	$1,100	5	$5,500	New site, existing sites
Radio				
Trango M900S Access Point + 1 spare	$2,000	6	$12,000	New site, existing sites
Trango M900S Subscriber + 10 spare	$713	610	$434,930	
Trango T-LINK10 EXT PtP (Pair) + 1 spare	$2,600	5	$13,000	New site, existing sites
Antennas & Support				
PacWireless 5.8gHz 32dBi Parabolic w/ Radome	$400	8	$3,200	New site, existing sites
PacWireless 900mHz 13dBi 120-Degree Sector	$300	13	$3,900	New site, existing sites
Times Microwave LMR-600 Coax (ft)	$2	1260	$2,520	New site, existing sites
Type N Connector Clamp-style	$6	42	$252	New site, existing sites
Network				
Router	$3,000	1	$3,000	Existing site (Velocity Technology office)
Construction				
Site Construction (Small Cabinets)	$5,000	4	$20,000	Existing sites
Site Construction (Pole+Cabinet)	$35,000	1	$35,000	New site
Fiber extension underground (ft)	$30	500	$15,000	
Installation				
PtP Radios	$5,000	5	$25,000	New sites, existing site
AP Radios	$2,000	5	$10,000	New sites, existing site
Antennas	$1,500	5	$7,500	New sites, existing site
Router	$500	1	$500	Existing site
		TOTAL	$591,302	

Douglas City Capital Expenditures

Douglas City - New Site Construction				
Power	**Est. Cost**	**Qty**	**Total**	**Location(s)**
UPS, APC SUA2200	$1,100	1	$1,100	New site
Radio				
Trango M900S Access Point + 1 spare	$2,000	2	$4,000	New site
Trango M900S Subscriber + 5 spare	$713	175	$124,775	
Trango T-LINK10 EXT PtP (Pair) + 1 spare	$2,600	2	$5,200	New site, Oregon Mountain comm site
Antennas & Support				
PacWireless 5.8gHz 32dBi Parabolic w/ Radome	$400	2	$800	New site, Oregon Mountain comm site
PacWireless 900mHz 13dBi 120-Degree Sector	$300	2	$600	New site
Times Microwave LMR-600 Coax (ft)	$2	240	$480	New site, Oregon Mountain comm site
Type N Connector Clamp-style	$6	8	$48	New site, Oregon Mountain comm site
Network				
Router	$3,000	1	$3,000	Oregon Mountain comm site
Construction				
Site Construction (Pole+Cabinet)	$35,000	1	$35,000	New site
Electrical extension overhead (ft)	$5	1600	$8,000	
Installation				
PtP Radios	$5,000	2	$10,000	New site
AP Radios	$2,000	2	$4,000	New site
Antennas	$1,500	2	$3,000	New site
Router	$500	1	$500	New site
		TOTAL	$200,503	

Lewiston Capital Expenditures

Lewiston - New Site Construction + Existing Site Power	**Est. Cost**	**Qty**	**Total**	**Location(s)**
UPS, APC SUA2200	$1,100	3	$3,300	New site, existing sites
Radio				
Trango M900S Access Point + 1 spare	$2,000	4	$8,000	New site, existing sites
Trango M900S Subscriber + 10 spare	$713	340	$242,420	
Trango T-LINK10 EXT PtP (Pair) + 1 spare	$2,600	4	$10,400	New site, existing sites, Oregon Mountain comm site
Antennas & Support				
PacWireless 5.8gHz 32dBi Parabolic w/ Radome	$400	6	$2,400	New site, existing sites, Oregon Mountain comm site
PacWireless 900mHz 13dBi 120-Degree Sector	$300	7	$2,100	New site, existing sites
Times Microwave LMR-600 Coax (ft)	$2	780	$1,560	New site, existing sites, Oregon Mountain comm site
Type N Connector Clamp-style	$6	26	$156	New site, existing sites, Oregon Mountain comm site
Network				
Router	$3,000	1	$3,000	Oregon Mountain comm site
Construction				
Site Construction (Pole+Cabinet)	$35,000	1	$35,000	New site
Site Construction (Cabinet)	$25,000	2	$50,000	Existing sites
Installation				
PtP Radios	$5,000	4	$20,000	New site
AP Radios	$2,000	3	$6,000	New site
Antennas	$1,500	4	$6,000	New site
Router	$500	1	$500	New site
		TOTAL	$390,836	

French Gulch Capital Expenditures

Lewiston - New Site Construction + Existing Site				
Power	**Est. Cost**	**Qty**	**Total**	**Location(s)**
UPS, APC SUA2200	$1,100	3	$3,300	New site, existing sites
Radio				
Trango M900S Access Point + 1 spare	$2,000	4	$8,000	New site, existing sites
Trango M900S Subscriber + 10 spare	$713	340	$242,420	
Trango T-LINK10 EXT PtP (Pair) + 1 spare	$2,600	4	$10,400	New site, existing sites, Oregon Mountain comm site
Antennas & Support				
PacWireless 5.8gHz 32dBi Parabolic w/ Radome	$400	6	$2,400	New site, existing sites, Oregon Mountain comm site
PacWireless 900mHz 13dBi 120-Degree Sector	$300	7	$2,100	New site, existing sites
Times Microwave LMR-600 Coax (ft)	$2	780	$1,560	New site, existing sites, Oregon Mountain comm site
Type N Connector Clamp-style	$6	26	$156	New site, existing sites, Oregon Mountain comm site
Network				
Router	$3,000	1	$3,000	Oregon Mountain comm site
Construction				
Site Construction (Pole+Cabinet)	$35,000	1	$35,000	New site
Site Construction (Cabinet)	$25,000	2	$50,000	Existing sites
Installation				
PtP Radios	$5,000	4	$20,000	New site
AP Radios	$2,000	3	$6,000	New site
Antennas	$1,500	4	$6,000	New site
Router	$500	1	$500	New site
		TOTAL	$390,836	

Whiskeytown Capital Expenditures

Whiskeytown - Existing Sites				
Power	**Est. Cost**	**Qty**	**Total**	**Location(s)**
UPS, APC SUA2200	$1,100	3	$3,300	Existing sites, Redding PoP
Radio				
Trango M900S Access Point + 1 spare	$2,000	3	$6,000	Existing sites
Trango M900S Subscriber + 5 spare	$713	85	$60,605	
Trango T-LINK10 EXT PtP (Pair) + 1 spare	$2,600	3	$7,800	Existing sites, Redding PoP
Antennas & Support				
PacWireless 5.8gHz 32dBi Parabolic w/ Radome	$400	4	$1,600	Existing sites, Redding PoP
PacWireless 900mHz 13dBi 120-Degree Sector	$300	4	$1,200	Existing sites, Redding PoP
Times Microwave LMR-600 Coax (ft)	$2	480	$960	Existing sites, Redding PoP
Type N Connector Clamp-style	$6	16	$96	Existing sites, Redding PoP
Network				
Router	$3,000	1	$3,000	Redding PoP
Construction				
Site Construction (Cabinet)	$25,000	2.5	$62,500	Existing sites, Redding PoP
Installation				
PtP Radios	$5,000	3	$15,000	Existing sites, Redding PoP
AP Radios	$2,000	2	$4,000	Existing sites
Antennas	$1,500	3	$4,500	Existing sites, Redding PoP
Router	$500	1	$500	Redding PoP
		TOTAL	$171,061	

Appendix 1 – CPUC Notice of Availability - CASF

Online at: http://docs.cpuc.ca.gov/PUBLISHED/COMMENT_RESOLUTION/96226.htm

STATE OF CALIFORNIA ARNOLD SCHWARZENEGGER, *Governor*

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 20, 2009

NOTICE OF AVAILABILITY

To: California Advanced Services Fund Unserved Area Applicants and

Parties of Record in R.06-06-028

The following draft Resolutions will be on the Commission's February 20, 2009, meeting:

_ Resolution T-17183 for Approval of Funding for the Laytonville Broadband Project of Willits OnLine LLC and its Subsidiary Company, Rural Broadband Now! LLC, from California Advanced Services Fund (CASF) Amounting to $54,000

_ Resolution T-17187 for Approval of Funding for the Highway 299 Broadband Network Project of Broadband Associates International, Inc., from California Advanced Services Fund (CASF) Amounting to $7,830,720

_ Resolution T-17195 Approval of Funding for AT&T from California Advanced Services Fund (CASF) Unserved Area Applications Amounting to $255,068

These draft resolutions are available at the Commission's website at http://www.cpuc.ca.gov. On February 20, 2009, the Commission may vote on these resolutions or it may postpone votes until later. When the Commission votes on a draft resolution, it may adopt all or part of it as written, amend or modify it, or set it aside and prepare a different resolution. Only when the Commission acts does a resolution become binding on the parties. The availability of the conformed resolutions, when adopted by the Commission, are available at the same website.

Pursuant to Public Utilities (PU) Code 311 (g), the above-identified draft resolutions are available for public comments. Comments should be focused on factual, legal, and/or technical errors in the draft resolution. Comments must be limited to five pages in length and shall include a subject index listing the recommendations to the draft resolution, a table of authorities, and an appendix setting forth the proposed revised findings and ordering paragraphs.

The date of submission is the date the comments are received by the Communications Division. Parties must serve a copy of their comments on each party set forth on the service list attached to the draft resolutions on the same date that the comments are submitted to the Communications Division.

Comments must be received no later than February 4, 2009 (which is 15 days from the date of this mailing). Reply comments may be submitted on or before February 9, 2009 (5 days after opening comments are submitted) and shall be limited to identifying misrepresentations of law, fact, or condition of the record contained in the comments of other parties. Replies shall not exceed three pages in length and shall be submitted and served in the same manner as opening comments.

Late-filed opening comments and/or reply comments will ordinarily be rejected. However, in extraordinary circumstances, a request for leave to submit comments or replies late may be filed together with proposed comments/replies. An accompanying declaration under penalty of perjury shall be submitted setting forth all the reasons for the late submission.

Appendix 2 – CPUC Resolution #T-17187 - CASF

Online at: http://docs.cpuc.ca.gov/PUBLISHED/COMMENT_RESOLUTION/96220.htm

Agenda ID# 8250

D R A F T

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Communications Division **RESOLUTION T- 17187**
Carrier Oversight and Programs Branch **February 20, 2009**

R E S O L U T I O N

Resolution T-17187 Approval of Funding for the Highway 299 Broadband Network Project of Broadband Associates International, Inc., from California Advanced Services Fund (CASF) Amounting to $7,830,720

Summary

This Resolution adopts funding for the Highway 299 Broadband Network project of Broadband Associates, International, Inc., (Broadband Associates) amounting to $7,830,720 from the California Advanced Services Fund (CASF). The amount granted represents 40% of the total project cost of this unserved area application filed in accordance with Resolution T-17143.

Background

On December 20, 2007, the Commission approved Decision (D.) 07-12-054 which established the two-year CASF program to provide matching funds of up to 40% of the total project costs for the deployment of broadband infrastructure in unserved and underserved areas in California.[1] Resolution T-17143, approved on June 12, 2008, adopted the application requirements, scoring criteria for the award of funds, and a prescribed timeline for other filings and notifications including a projected Commission Meeting date for final approval of award(s). This same Resolution directed interested applicants seeking funding for unserved projects to file their project proposals and funding requests on July 24, 2008. Twenty-three (23) project proposals were received that sought CASF funding for unserved areas. Of these, sixteen (16) were challenged by various parties contending that the areas proposed were already served. One (1) project proposed was not considered since the proponent was not a telephone corporation as defined under Public Utilities Code § 234. Six (6) unchallenged applications were approved by the Commission in Resolution T-17182.

The Highway 299 Broadband Network project was one of the 16 above-mentioned projects challenged. This resolution addresses the merits of the project and challenges and whether CASF funds should be awarded.

Notice/Protests

The CBG list appeared by county on the Commission's CASF website page under "UNSERVED areas proposed to be served as of July 24, 2008: Census Block Groups (CBGs)." The CBGs covered by this project were formally challenged either by existing service providers or other interested parties. Therefore, CD proceeded with a review and analysis of this project area to verify that it was indeed unserved as of the applicant's filing date.

Discussion

This Resolution adopts a total of $7,830,720 in CASF funding support for the Highway 299 Broadband Network project. The project is described in detail in Appendix A.

For qualification purposes under the CASF program, unserved areas are defined as areas not served by any form of facilities-based broadband or where Internet connectivity is available only through dial-up service or satellite. CD reviewed this project's eligibility in the unserved review phase through the analysis of the required data submitted. These data include, but are not limited to: proof of CPCN registration; descriptions of current and proposed broadband infrastructure; Geographic Information System (GIS) formatted Shapefiles mapping the subject areas; assertion that the area is unserved; potential subscriber size and household incomes; project construction schedule; project budget; proposed pricing and commitment period for new subscribers; and, financial qualifications of the applicant. In addition, CD reviewed the Shapefiles submitted which mapped the broadband deployment proposed using United States 2000 Census data and the January, 2008, Broadband Task Force Report (BBTF) including its on-line maps, among others. Comparisons of submitted maps to that of the BBTF verified the existence or non-existence of broadband service as well as speeds in areas where broadband services are available.

When necessary, CD performed further verification with the applicant which included the submission of additional data and/or holding meetings with the applicant in order to clarify its project proposal.

Broadband Associates, a wireless corporation registered with the Commission since September, 2007, submitted its proposal for the Highway 299 Broadband Network project to provide broadband coverage in portions of Humboldt, Trinity, and Shasta Counties. Broadband Associates plans to offer wireless internet access via a backhaul constructed of new fiber optic lines connected to towers that will transmit signal to communities along the route. Potential subscribers include educational institutions, businesses, government entities, and residents along the 150 mile road. This project will be able to serve approximately 5,734 households covering an area of about 1,000 square miles in 18 CBGs at average speeds of 2 Megabits Per Second (MPBS) download and 2 MBPS upload. The 40% CASF subsidy for the project is $7,830,720 of the total project cost of $19,576,800.

Of the 40 CBGs proposed, 24 were challenged by other parties. The challenging parties asserted that some Census Block Groups (CBGs) and ZIP codes in the proposed area are already served. After additional analysis and review including, but not limited to, requesting information from challenger(s) and applicant, Communications Division (CD) resolved 2 challenged CBGs and Broadband Associates removed the remaining 22

challenged CBGs. In summary, CD has determined that 18 CBGs covering the proposed area, as modified, are qualified as unserved as defined in Resolution T-17143.

The Highway 299 Broadband Network project was evaluated using the scoring criteria adopted in Resolution T-17143. While the project's metrics did not meet the 3 MBPS download and 1 MBPS upload speed, this project was the only proposal submitted for this unserved northern area of the State. As such, this proposal will expand broadband service to some unserved communities along Highway 299. Further, given that there is $100 million available for the CASF projects and the amount approved to date for CASF projects is only $372,976, approval of this project will not significantly affect the availability of funds for future CASF applications. The Highway 299 Broadband Network project is, therefore, recommended for approval and award of CASF funding.

The Application Requirements and Guidelines on the awarding of CASF Funds[2] put forth the information required for each proposed broadband project filed including, but not limited to, documentation of an executed Performance Bond and California Environmental Quality Act (CEQA) compliance. In its application, Broadband Associates indicated that it shall obtain matching funds from outside funding sources for 60% of the total project costs and, therefore, is required to obtain a proper performance bond equal to the total amount payable under this CASF award, or 40% of the total project costs. The performance bond will ensure completion of the proposed project and does not extend to ensuring continued operations. Broadband Associates agrees to provide a copy of the executed bond within five (5) business days after the effective date of this award.

Broadband Associates is required to comply with all the other guidelines, requirements, and conditions associated with the granting of CASF funds as specified in T-17143 including the submission of FCC Form 477.

In addition, Broadband Associates agrees to comply with the CEQA requirement, essentially providing a Proponent's Environmental Assessment (PEA) prior to the first 25% payment and will include any other special permits required cross referenced to the government agencies from which said permits are obtained for the project.

Payments to CASF Recipients

Submission of invoices from and payments to Broadband Associates shall be made in accordance with Section IX of Appendix A of Resolution T-17143 and according to the guidelines and supporting documentation required in Resolution T-17143.

Since CASF funding is limited to entities with a Certificate of Public Convenience and Necessity (CPCN) that qualify as a "telephone corporation" as defined under P. U. Code

§234 or wireless carriers registered with the Commission over which the Commission has jurisdiction, payment to Broadband Associates shall essentially follow the process adopted for funds created under Public Utilities Code §270. The following table describes the timeline for processing CASF payments.

Event	Payment Cycle 1 (Day/Month)	Payment Cycle 2 (Day/Month)

Invoices due from Broadband Associates to CD	5th of Month 1	20th of Month 1
Payment letters from CD to Information and Management Services Division (IMSD) [3]	On 19th of Month 1	On 4th of Month 2
Invoices submitted from IMSD to State's Controller Office (SCO) for payments	20th through 26th of Month 1	5th through 13th of Month 2

Broadband Associates may submit its invoices under Payment Cycle 1 or 2.

If any date in this payment schedule falls on a weekend or holiday, that date will be advanced to the next business day but the remaining dates in the payment schedule will remain unchanged. SCO requires 14 to 21 days to issue payment from the day that requests are received by SCO.

Comments on Draft Resolution

In compliance with PU Code § 311(g), a notice letter was emailed on January 20, 2009, informing a) all applicants filing for unserved areas and b) parties on the service list of R.06-06-028 of the availability of the draft of this Resolution for public comments at the Commission's website http://www.cpuc.ca.gov/static/documents/index.htm. This letter also informed parties that the final conformed Resolution adopted by the Commission will be posted and will be available at this same website.

Responses to timely filed comments will be addressed in this resolution.

Findings

1. The California Advanced Services Fund (CASF) was implemented by Decision (D.) 07-12-054. The CASF was established as a two-year program that will provide matching funds of up to 40% of the total project costs for the deployment of broadband infrastructure in unserved and underserved areas in California.

2. Resolution T-17143, approved on June 12, 2008, adopts the application requirements and scoring criteria for the award of funds, a prescribed timeline for other filings, and notifications including a projected Commission Meeting date for final approval of award(s). T-17143 directed interested applicants seeking funding for unserved projects to file their project proposals and funding requests on July 24, 2008.

3. Unserved areas are defined as areas which are not served by any form of facilities-based broadband or where Internet connectivity is available only through dial-up or satellite service.

4. A list of census block groups (CBGs) appeared by county on the Commission's CASF website page under "UNSERVED areas proposed to be served as of July 24, 2008: Census Block Groups (CBGs)." The Communications Division (CD) proceeded with its independent review and analysis of this project area to verify that it was unserved as of the applicant's filing date.

5. CD reviewed the Broadband Associates International, Inc., Highway 299 Broadband Network eligibility through the analysis of required data submitted. These data include, but are not limited to: proof of CPCN registration; descriptions of current and proposed broadband infrastructure; geographic information system (GIS) formatted Shapefiles mapping the subject areas; assertion that the area is unserved; potential subscriber size and household incomes; project construction schedule; project budget; proposed pricing and commitment period for new subscribers; and, financial qualifications of the applicant.

6. Shapefiles, which mapped the broadband deployment, were reviewed by CD using sources including, but not limited to, the United States 2000 Census data and the January, 2008, Broadband Task Force Report and its available on-line maps. These maps helped to verify the existence or non-existence of broadband service areas and broadband speeds, where available.

7. CD verified this project and, when necessary, requested additional information and/or meetings with the applicant to clarify its project proposal. Of the 40 CBGs in this project, 24 were formally challenged by either existing service providers or other interested parties. Of the 24 challenged CBGs, 2 were resolved and Broadband Associates International, Inc., removed the remaining 22 challenged CBGs. CD determined that 18 CBGs covering the proposed area, as modified, are qualified as unserved as defined in Resolution T-17143.

8. After its review, CD determined the Highway 299 Broadband Network application for unserved areas covering 18 CBGs as eligible to receive funding under CASF.

9. The posting of a performance bond by Broadband Associate International, Inc., should be required for this recipient in order to compensate the CASF in the event of project failure.

10. Broadband Associates, International, Inc., should comply with all guidelines, requirements, and conditions associated with the granting of CASF funds as specified in Resolution T-17143 including the submission of FCC Form 477 and compliance with the California Environmental Quality Act, among others.

11. A notice letter was emailed on January 20, 2009 informing a) all applicants filing for unserved areas and b) parties on the service list of R.06-06-028 of the availability of the draft of this Resolution for public comments at the Commission's website http://www.cpuc.ca.gov/static/documents/index.htm. This letter also informed parties that the final conformed Resolution adopted by the Commission will be posted and available at this same website.

12. The Commission finds CD's recommendation of CASF award for the Highway 299 Broadband Network project summarized in Appendix A of this Resolution to be reasonable and consistent with Commission orders and should be adopted.

THEREFORE, IT IS ORDERED that:

1. The California Advanced Services Fund shall award $7,830,720 to Broadband Associates International, Inc., for the Highway 299 Broadband Network project for unserved areas as described in the Discussion section and summarized in Appendix A of this Resolution.

2. Broadband Associates, International, Inc., shall be required to post a performance bond.

3. The program fund payment of $7,830,720 for this Commission-approved unserved project shall be paid out of the CASF fund in accordance with the guidelines adopted in Resolution T-17143.

4. Payments to the CASF recipient shall be in accordance with Section IX of Appendix A of Resolution T-17143 and in accordance with the process defined in the "Payments to CASF Recipients" section of this Resolution.

5. The CASF fund recipient, Broadband Associates International, Inc., shall comply with all guidelines, requirements and conditions associated with the CASF funds award as specified in Resolution T-17143.

This Resolution is effective today.

I hereby certify that this Resolution was adopted by the Public Utilities Commission at its regular meeting on February 20, 2009. The following Commissioners approved it:

PAUL CLANON

Executive Director

APPENDIX A

Resolution T- 17187

Highway 299 Broadband Network Key Information

1	***Project ID***	**Broadband Associates Int., Inc.**	
2	***Project Name***	**Highway 299 Broadband Network**	
3	***Project Plan***	150 mile fiber optic infrastructure construction along Highway 299 in and through Humboldt, Trinity, and Shasta counties	
4	***Project Size (in square miles)***	1,000	
5	***Download speed***	2 Mbps	
6	***Upload speed***	2 Mbps	
7	***Location***	Hwy 299 between Redding and Eureka	
		a) Community Name	***c) Zip Codes***
		Glendale/Blue Lake	95525
		Korbel	95550
		Willow Creek	95573

		Salyer	95563
		Burnt Ranch/Hawkins Bar/Trinity Village	95527
		Big Bar/Big Flat/Del Loma	96010
		Junction City	96048
		Weaverville	96093
		Douglas City	96024
		Lewiston	96052
		French Gulch	96033
		b) CBGs	***Median Household Income***
		60230101021	$22,984
		60230101024	$42,813
		60230103003	$32,443
		60230103004	$29,583
		60230103005	$44,375
		60890124001	$30,000
		60890124002	$39,625
		61050001003	$34,853
		61050001004	$31,687
		61050001005	$41,083
		61050001006	$30,822
		61050001007	$30,144
		61050001008	$31,583
		61050001009	$26,736
		61050002002	$24,206
		61050002003	$26,696
		61050002004	$21,250
		61050002005	$34,063

APPENDIX A

Resolution T- 17187

Highway 299 Broadband Network Key Information

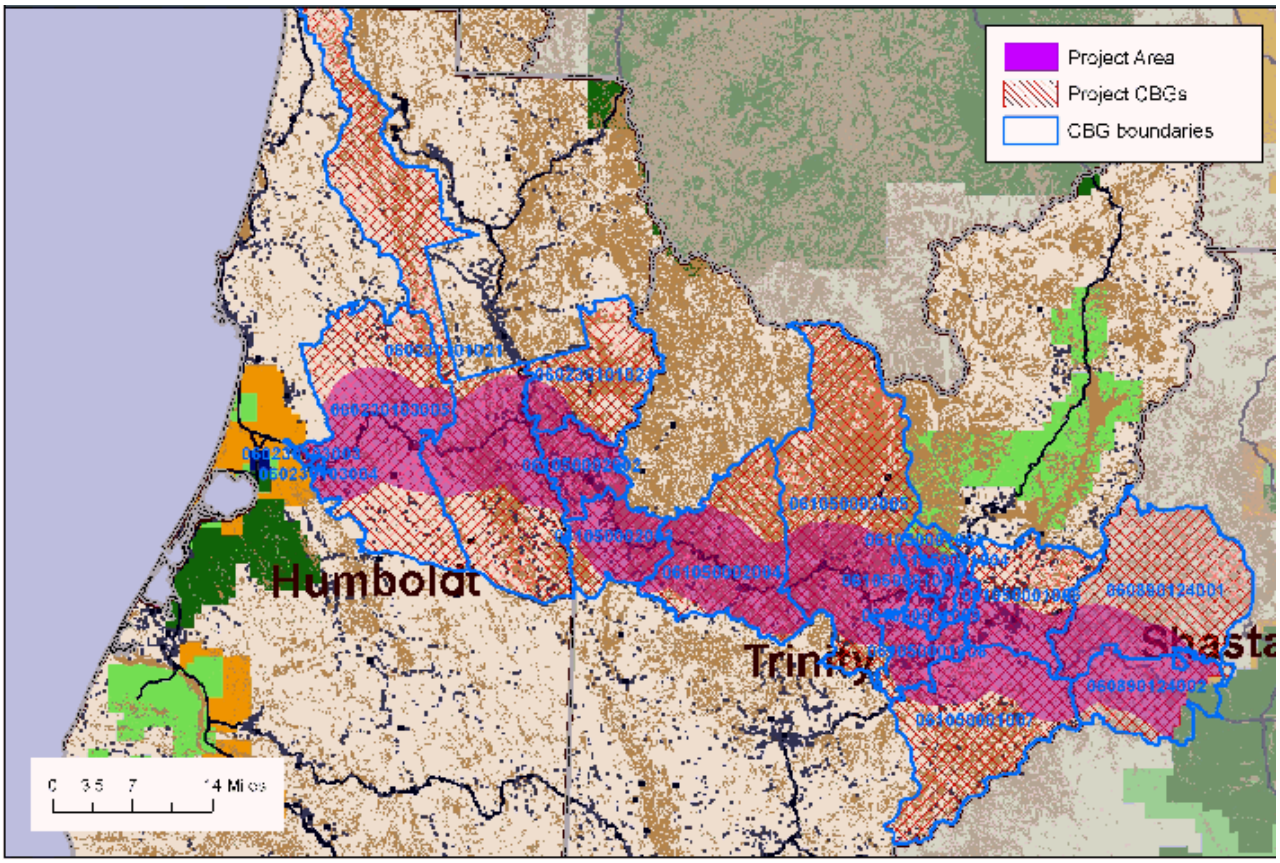
8	***Estimated Potential Subscriber Size***		
a)	***Households***	5,734	
9	***Deployment Schedule (from Commission approval)***	11 months	

10	***Proposed Project Budget***		
	CASF (40%)	$7,830,720	
	CIAC		
	Amount of CASF Funds Requested	**$7,830,720**	

APPENDIX A

Resolution T- 17187

Highway 299 Project Shapefiles



APPENDIX A

Resolution T- 17187

Highway 299 Statewide Map

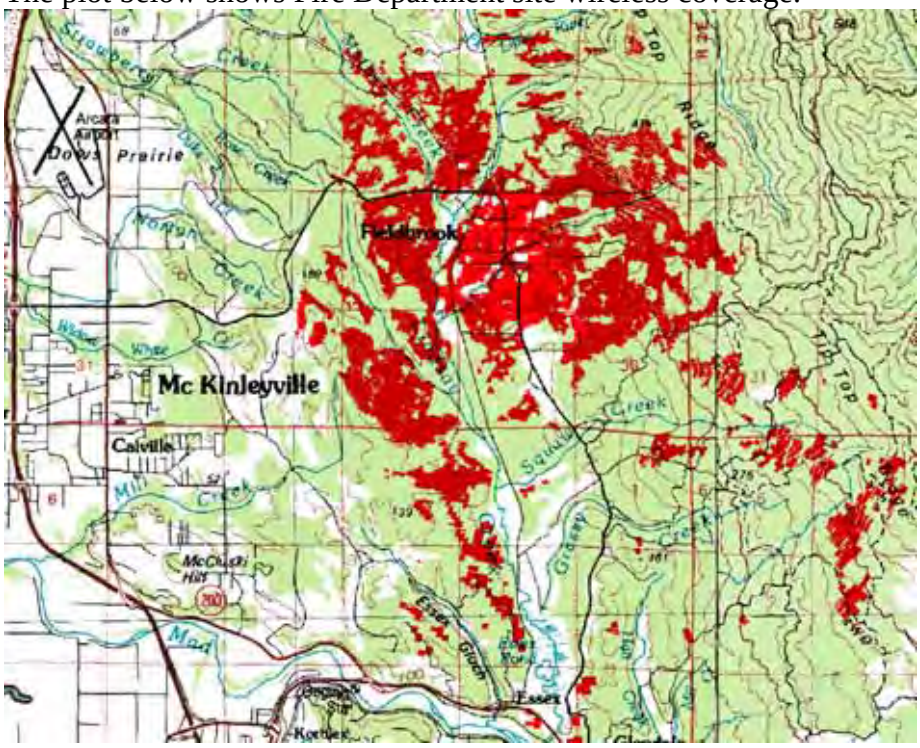
[1] SB 1193 (Chapter 393, Statutes of 2008) established the California Advanced Services Fund as a new public purpose program.

[2] Resolution T-17143

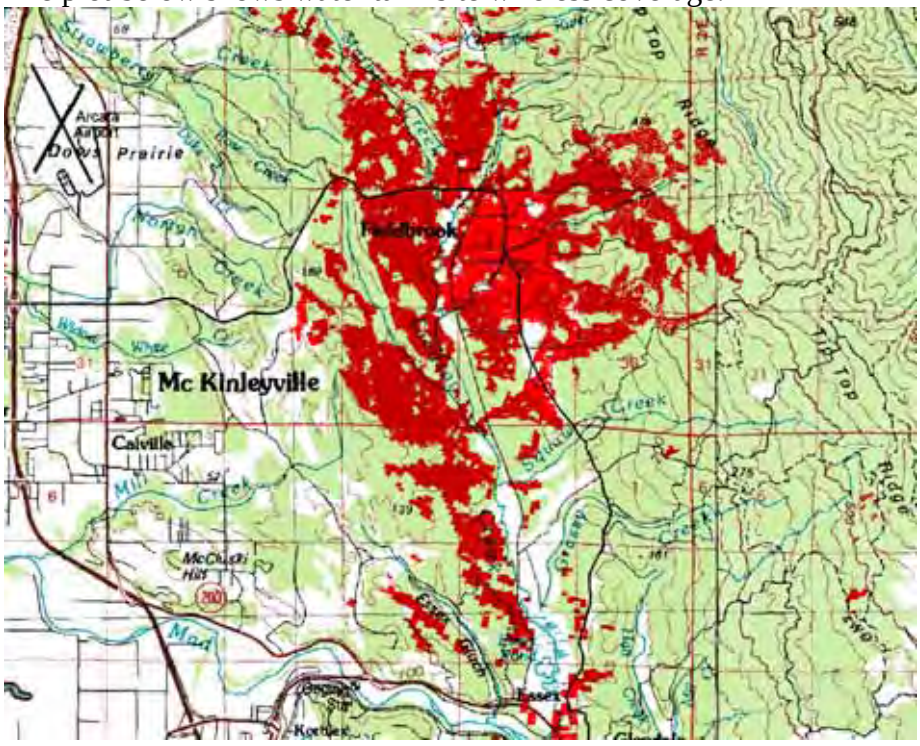
[3] The above schedule is contingent on the CASF recipient submitting clear, complete, an error free invoices to CD. Additional time to process payments may be necessary if CD finds problems with the submitted invoices.

Appendix 3 – Fieldbrook CSD Wireless Plots

The plot below shows Fire Department site wireless coverage.



The plot below shows water tank site wireless coverage.



Appendix 4 – Government Code Section 61100 – CSD Powers

61100. Within its boundaries, a district may do any of the following:

(a) Supply water for any beneficial uses, in the same manner as a municipal water district, formed pursuant to the Municipal Water District Law of 1911, Division 20 (commencing with Section 71000) of the Water Code. In the case of any conflict between that division and this division, the provisions of this division shall prevail.

(b) Collect, treat, or dispose of sewage, wastewater, recycled water, and storm water, in the same manner as a sanitary district, formed pursuant to the Sanitary District Act of 1923, Division 6 (commencing with Section 6400) of the Health and Safety Code. In the case of any conflict between that division and this division, the provisions of this division shall prevail.

(c) Collect, transfer, and dispose of solid waste, and provide solid waste handling services, including, but not limited to, source reduction, recycling, and composting activities, pursuant to Division 30 (commencing with Section 40000), and consistent with Section 41821.2 of the Public Resources Code.

(d) Provide fire protection services, rescue services, hazardous material emergency response services, and ambulance services in the same manner as a fire protection district, formed pursuant to the Fire Protection District Law, Part 2.7 (commencing with Section 13800) of Division 12 of the Health and Safety Code.

(e) Acquire, construct, improve, maintain, and operate recreation facilities, including, but not limited to, parks and open space, in the same manner as a recreation and park district formed pursuant to the Recreation and Park District Law, Chapter 4 (commencing with Section 5780) of Division 5 of the Public Resources Code.

(f) Organize, promote, conduct, and advertise programs of community recreation, in the same manner as a recreation and park district formed pursuant to the Recreation and Park District Law, Chapter 4 (commencing with Section 5780) of Division 5 of the Public Resources Code.

(g) Acquire, construct, improve, maintain, and operate street lighting and landscaping on public property, public rights-of-way, and public easements.

(h) Provide for the surveillance, prevention, abatement, and control of vectors and vectorborne diseases in the same manner as a mosquito abatement and vector control district formed pursuant to the Mosquito Abatement and Vector Control District Law, Chapter 1 (commencing with Section 2000) of Division 3 of the Health and Safety Code.

(i) Provide police protection and law enforcement services by establishing and operating a police department that employs peace officers pursuant to Chapter 4.5 (commencing with Section 830) of Title 3 of Part 2 of the Penal Code.

(j) Provide security services, including, but not limited to, burglar and fire alarm services, to protect lives and property.

(k) Provide library services, in the same manner as a library district formed pursuant to either Chapter 8 (commencing with Section 19400) or Chapter 9 (commencing with Section 19600) of Part 11 of the Education Code.

(l) Acquire, construct, improve, and maintain streets, roads, rights-of-way, bridges, culverts, drains, curbs, gutters, sidewalks, and any incidental works. A district shall not acquire, construct, improve, or maintain any work owned by another public agency unless that other public agency gives its written consent.

(m) Convert existing overhead electric and communications facilities, with the consent of the public agency or public utility that owns the facilities, to underground locations pursuant to Chapter 28 (commencing with Section 5896.1) of Part 3 of Division 7 of the Streets and Highways Code.

(n) Provide emergency medical services pursuant to the Emergency Medical Services System and the Prehospital Emergency Medical Care Personnel Act, Division 2.5 (commencing with Section 1797) of the Health and Safety Code.

(o) Provide and maintain public airports and landing places for aerial traffic, in the same manner as an airport district formed pursuant to the California Airport District Act, Part 2 (commencing with Section 22001) of Division 9 of the Public Utilities Code.

(p) Provide transportation services.

(q) Abate graffiti.

(r) Plan, design, construct, improve, maintain, and operate flood protection facilities. A district shall not plan, design, construct, improve, maintain, or operate flood protection facilities within the boundaries of another special district that provides those facilities unless the other special district gives its written consent. A district shall not plan, design, construct, improve, maintain, or operate flood protection facilities in unincorporated territory unless the board of supervisors gives its written consent. A district shall not plan, design, construct, improve, maintain, or operate flood protection facilities within a city unless the city council gives its written consent.

(s) Acquire, construct, improve, maintain, and operate community facilities, including, but not limited to, community centers, libraries, theaters, museums, cultural facilities, and child care facilities.

(t) Abate weeds and rubbish pursuant to Part 5 (commencing Section 14875) of the Health and Safety Code. For that purpose, the board of directors shall be deemed to be a "board of supervisors" and district employees shall be deemed to be the "persons" designated by Section 14890 of the Health and Safety Code.

(u) Acquire, construct, improve, maintain, and operate hydroelectric power generating facilities and transmission lines, consistent with the district's water supply and wastewater operations. The power generated shall be used for district purposes, or sold to a public utility or another public agency that generates, uses, or sells electrical power. A district shall not acquire hydroelectric power generating facilities unless the facilities' owner agrees.

(v) Acquire, construct, improve, maintain, and operate television translator facilities.

(w) Remove snow from public streets, roads, easements, and rights-of-way. A district may remove snow from public streets, roads, easements, and rights-of-way owned by another public agency, only with the written consent of that other public agency.

(x) Provide animal control services pursuant to Section 30501 of the Food and Agricultural Code. Whenever the term "board of supervisors," "county," "county clerk," or "animal control officer" is used in Division 14 (commencing with Section 30501) of the Food and Agricultural Code, those terms shall also be deemed to include the board of directors of a district, a district, the general manager of the district, or the animal control officer of a district, respectively. A district shall not provide animal control services in unincorporated territory unless the county board of supervisors gives its written consent. A district shall not provide animal control services within a city unless the city council gives its written consent.

(y) Control, abate, and eradicate pests, in the same manner as a pest abatement district, formed pursuant to Chapter 8 (commencing with Section 2800) of Division 3 of the Health and Safety Code. A district's program to control, abate, or eradicate local pine bark beetle infestations shall be consistent with any required plan or program approved by the Department of Forestry and Fire Protection.

(z) Construct, maintain, and operate mailboxes on a district's property or rights-of-way.

(aa) Provide mail delivery service under contract to the United States Postal Service.

(ab) Own, operate, improve, and maintain cemeteries and provide interment services, in the same manner as a public cemetery district, formed pursuant to the Public Cemetery District Law, Part 4 (commencing with Section 9000) of Division 8 of the Health and Safety Code.

(ac) Finance the operations of area planning commissions formed pursuant to Section 65101.

(ad) Finance the operations of municipal advisory councils formed pursuant to Section 31010.

(ae) Acquire, own, improve, maintain, and operate land within or without the district for habitat mitigation or other environmental protection purposes to mitigate the effects of projects undertaken by the district.

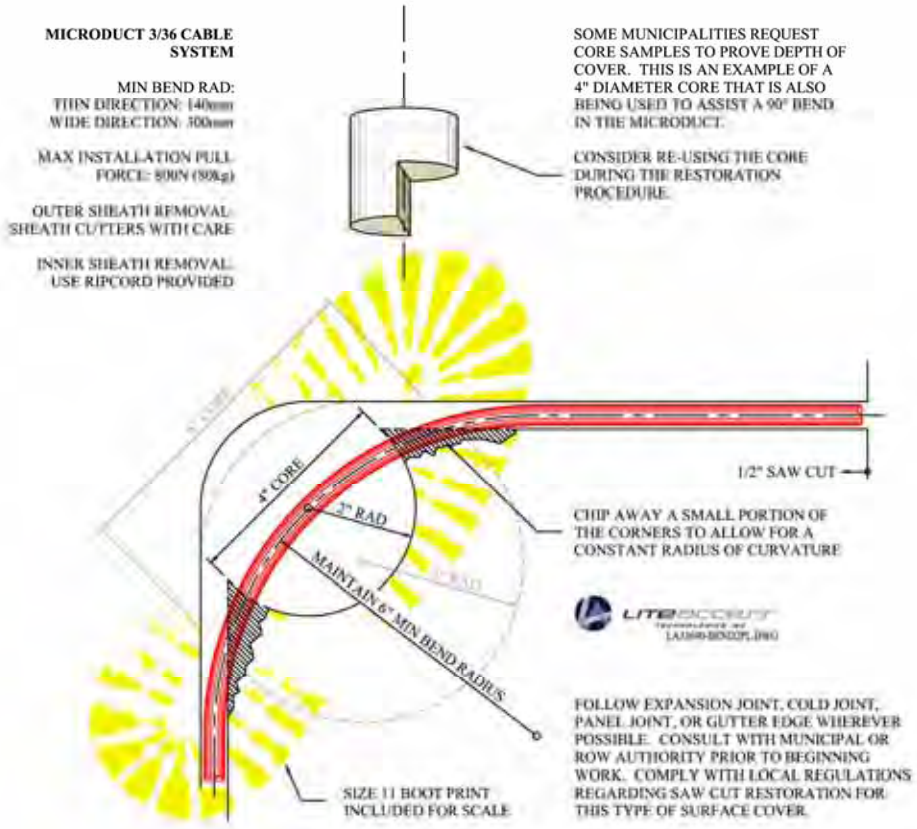
(af) If a private person or entity is unable or unwilling to deploy broadband service, construct, own, improve, maintain, and operate broadband facilities and to provide broadband services. For purposes of this section, broadband has the same meaning as in subdivision (a) of Section 5830 of the Public Utilities Code. The district shall first make a reasonable effort to identify a private person or entity willing to deploy service. The authority granted by this subdivision shall expire when a private person or entity is ready, willing, and able to acquire, construct, improve, maintain, and operate broadband facilities and to provide broadband services, and to sell those services at a comparable cost and quality of service as provided by the district. At that time, the district shall do one of the following:

(1) Diligently transfer its title, ownership, maintenance, control, and operation of those broadband facilities and services at a fair market value to that private person or entity.

(2) Lease the operation of those broadband facilities at a fair market value to that private person or entity.

Appendix 5 – Sawcut Detail

LITEACCESS TECHNOLOGIES INC



SAWCUT DETAIL - 90° BEND

- PLAN VIEW - SCALE: N.T.S. - UPDATED 2007/09/04

DISCLAIMER

THE LOCATIONS OF UTILITIES OR STRUCTURES SHOWN ON THIS DRAWING ARE APPROXIMATE ONLY. LITE ACCESS TECHNOLOGIES INC. HEREBY DISCLAIMS ANY RESPONSIBILITY TO THIRD PARTIES FOR THE ACCURACY OF THIS INFORMATION. PERSONS PERFORMING SURFACE INLAY WORK MUST CONTACT THE APPROPRIATE CALL-BEFORE-YOU-DIG SYSTEM TO ASCERTAIN THE LOCATION OF UNDERGROUND UTILITIES PRIOR TO PERFORMING ANY EXCAVATION, DRILLING, OR SAWCUTTING

www.liteaccess.com Details created by Lite Access to show product installation guidelines where surface inlay requirements are not defined by municipal or other Right-of-Way authorities. Lite Access is always looking to add or improve upon our product information. Please feel free to contact Michael Plotnikoff, CTO, with your comments and suggestions. mailto:mplotnikoff@liteaccess.com (604) 247-4704

Appendix 6 – Outdoor Enclosures

DDB UNLIMITED

NEMA OUTDOOR WEATHERPROOF ENCLOSURES FOR WIFI, WIMAX, HOMELAND SECURITY, CELL SITES, AND MORE
FOR BOTH YOUR SMALL AND LARGE BUILDOUTS

REQUEST QUOTE

800-753-8459
OPEN 8-12, 1-5 CST
READ ABOUT THE MIRACLE

Home | Outdoor Racking | Indoor Racking | Pole or Wall Small Box | CLIMATE CONTROL | ACCESSORIES

Contact Us
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OUTDOOR

EIA 19 or 23" Racking
OD-Series
16"H 9RU/RAIL
30"H 17RU/RAIL
46"H 26RU/RAIL
50"H 28RU/RAIL
62"H 35RU/RAIL
78"H 44RU/RAIL
Pole or Wall
10"H 5RU/RAIL
19"H 10RU/RAIL
30"H 17RU/RAIL
20D-Series
Traffic
36"H 17RU/RAIL
46"H 27RU/RAIL
Battery Box
Pole or Wall Small Box
14"H
18"H
24"H
26"H
30"H
40"H

INDOOR

EIA 19" Racking

CLIMATE CONTROL

Air Conditioners
Backup Fan Unit
Fan Kits
Heaters
AC/DC DISTRIBUTION

Outdoor Enclosure / Cabinet 62"H x 34"D

OOD-62DD-GP6
62"H X 25"W X 34"D (19" or 23" Racking)
2 1/2 SETS OF 19" RAILS

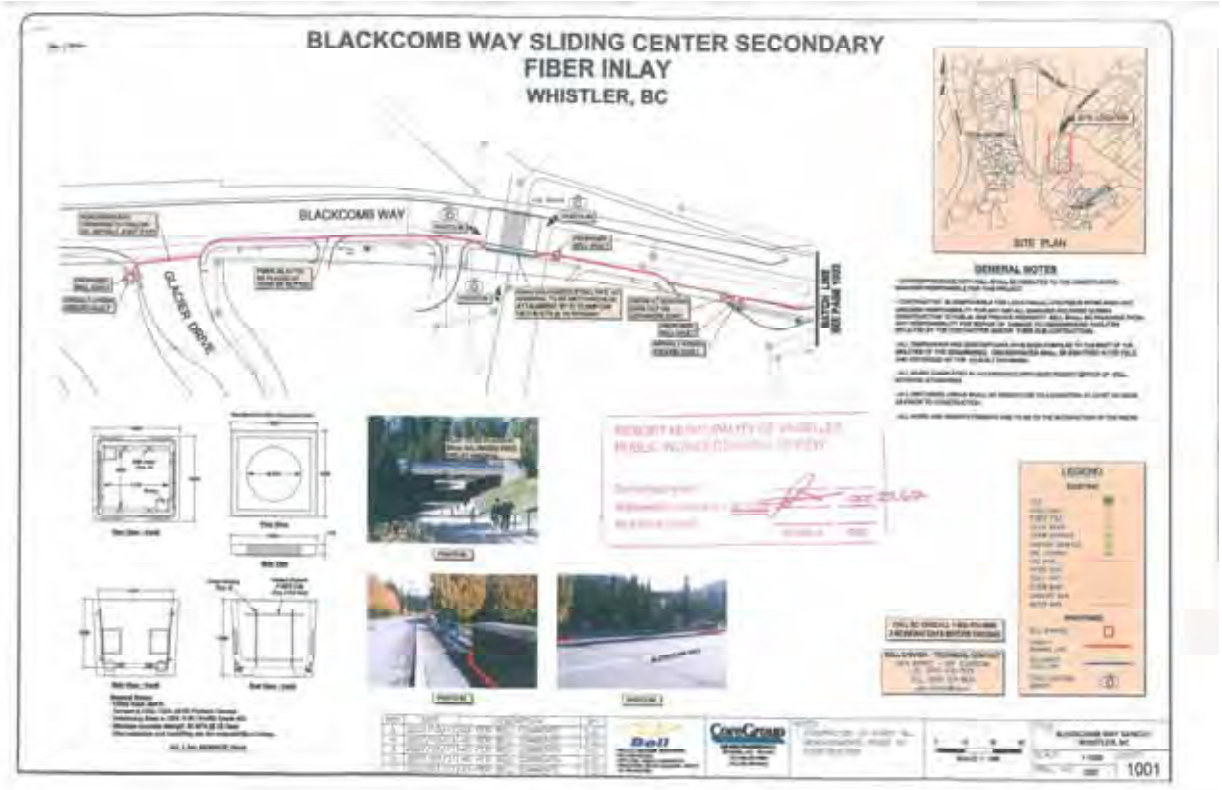
100 AMP MAIN LOAD CENTER W/ GENERATOR PLUG & MANUAL TRANSFER SWITCH W/ SPOOL UP BOX FOR FIBER OR CABELING

Request Quote or More Info

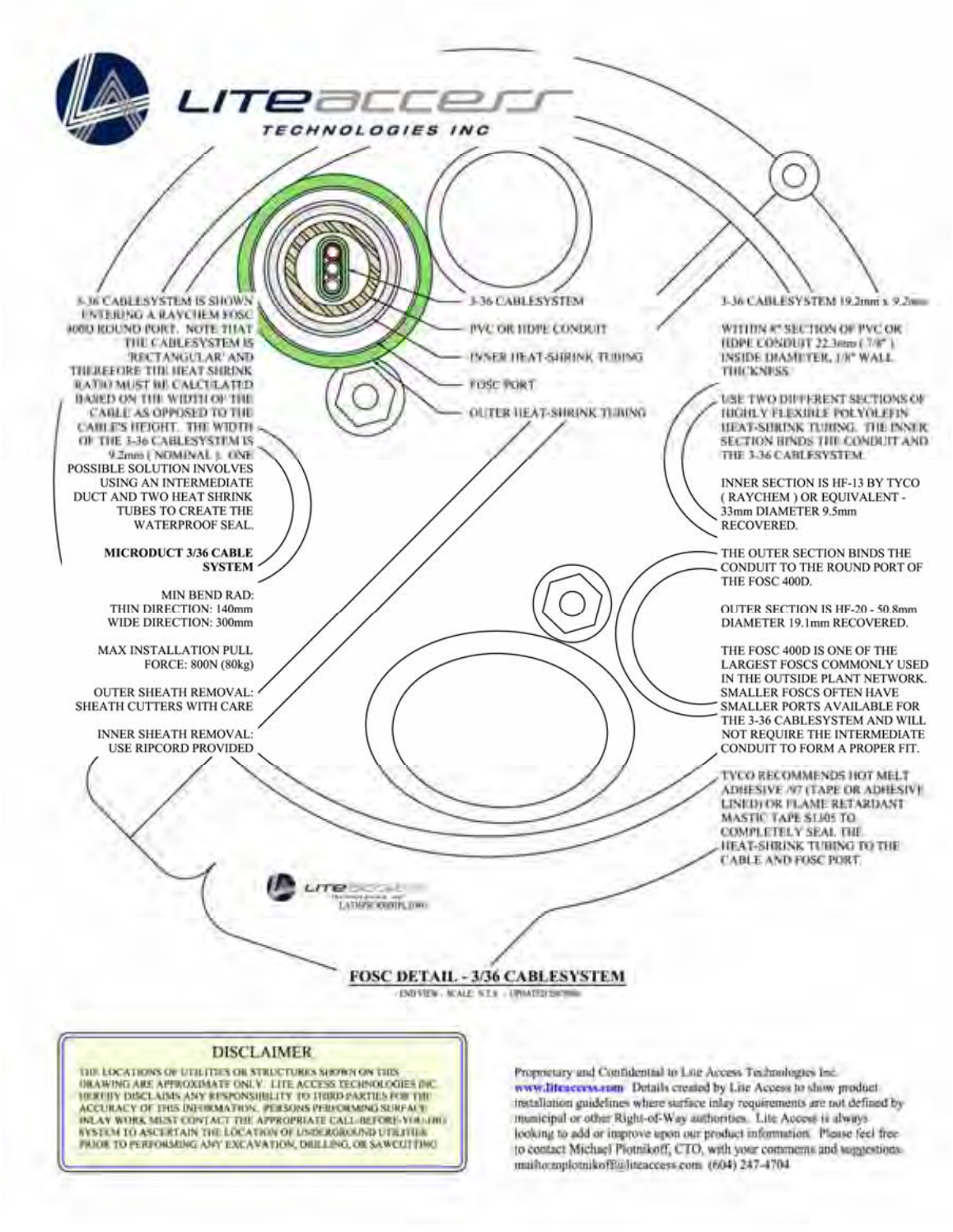
OEM Nema Outdoor Cabinet Enclosure Manufacture. Providing Adjustable 19" or 23" Racking Front and Rear Doors with 3 Point Locking System. NEMA 4, 4X. Air Conditioner's, Heaters. Fans, Batteries. Power options available

62"H x 25"W x 34"D
OUTDOOR ENCLOSURE UNPAINTED

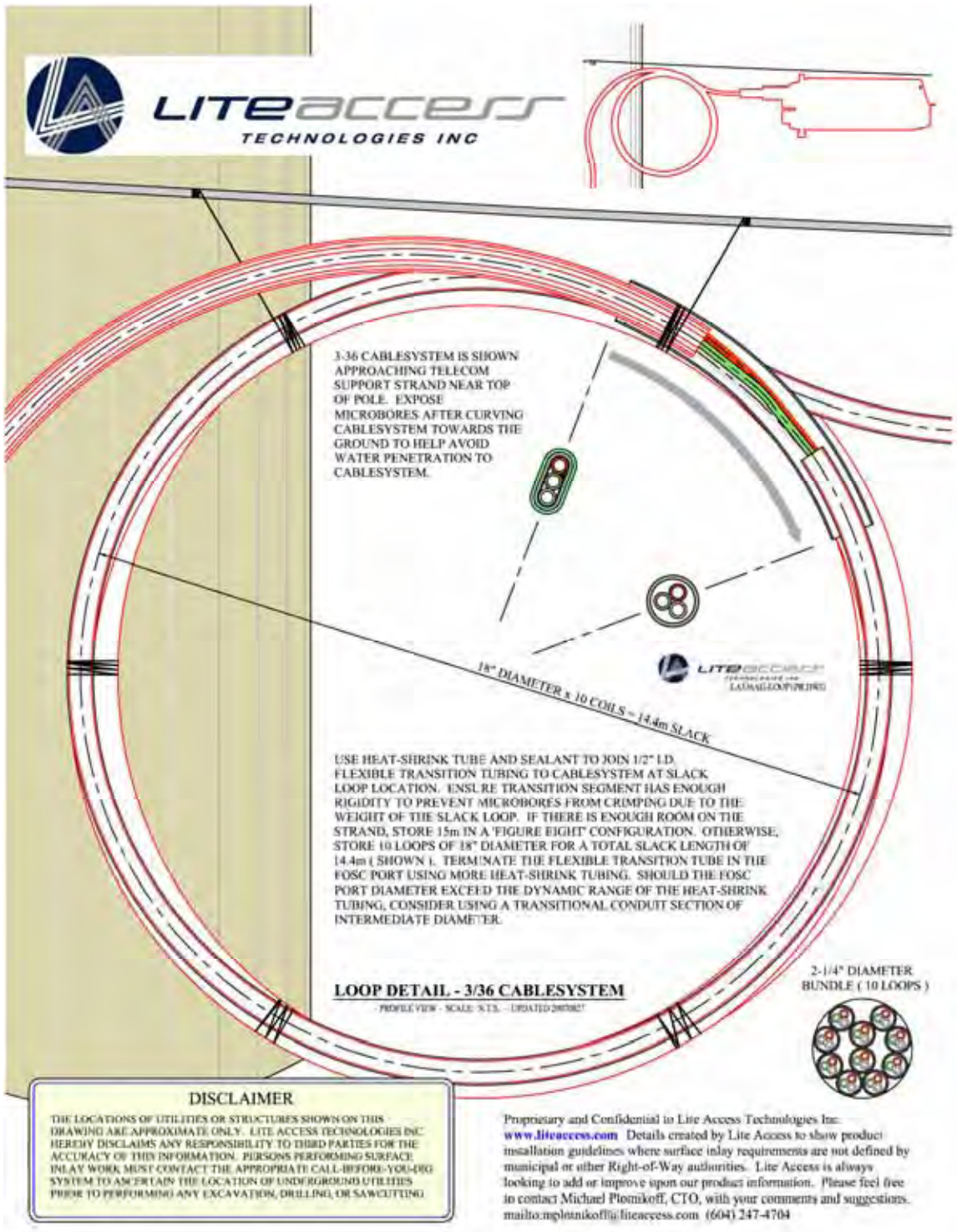
Appendix 7 – Fiber Inlay Example



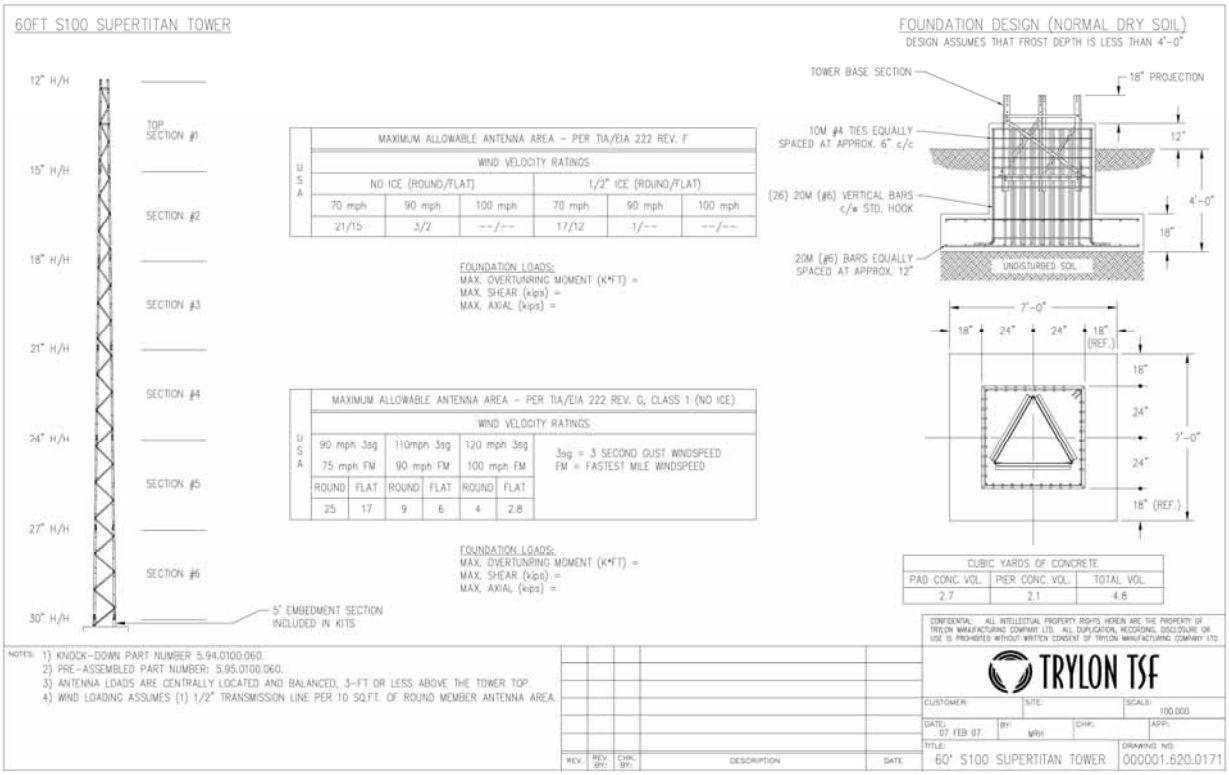
Appendix 8 – Splice Case



Appendix 9 – Aerial Loop Detail



Appendix 10 – Tower Design



Appendix 11 – CEQA Project Description

Hwy 299 Project Description

1. The Hwy 299 project is approximately 150 miles of new underground construction from the city of Palo Cedro to the city of Eureka.
2. 100% of the fiber construction will be completed utilizing micro-trench/micro-duct technology.
3. Micro-trench technology consists of a saw blade making a ½ inch cut in the existing road service asphalt, approximately 6 to 9 inches deep. The micro-duct is then slipped into the slot and then it is reinstated with asphalt, compacted and sealed. (see attached engineering drawing from another project)
4. There will be a 36” by 24” locked vault installed approximately every mile for ease of installation and for service points.
5. The fiber installation will encounter approximately 38 bridges along the path. The fiber will cross each bridge through a steel galvanized pipe attached to the bridge. (see attached engineering drawing from another project)
6. Known permitting agencies include Caltrans, National Parks Services, and Forestry Services.
7. 90 to 95% of the construction will occur in the Caltrans right of way.
8. The new fiber will pass through 18 communities.
9. There will be a splice point in each community.
10. The splice point in each community will be used to break out fiber, which will terminate at a patch panel. The patch panel will be used to connect ethernet switches, which will provide the backhaul bandwidth to the wireless internet towers.
11. There will be wireless internet towers installed in each community.
12. There will be 30 total towers feeding the communities.
13. 10 towers already exist and 20 towers will be new installations.
14. All but four of the towers will be on private property.
15. The towers are 60feet tall with a triangular base of 18”x18”x18”.
16. The towers are set in a concrete slab 4’ deep and either 7’ or 10’ square, depending on the wind-loading requirements.
17. Within 10’ of the concrete slab will be a climate-controlled enclosure, which will house the wireless equipment, the Ethernet switches, and the patch panels. (see link: http://www.ddbunlimited.com/OOD-62DD-GP6.html)