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Appeal Filed:	2/28/2012
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Staff Report:	7/19/2012
Hearing Date:	8/10/2012

APPEAL STAFF REPORT: SUBSTANTIAL ISSUE DETERMINATION

Appeal No.:	**A-3-SCO-12-006**
Applicant:	**NextG Networks, Inc.**
Appellants:	Commissioners Mark Stone & Brian Brennan; Joshua Hart
Local Government:	Santa Cruz County
Local Decision:	Approved by the Santa Cruz County Planning Commission on January 25, 2012 (Coastal Development Permit (CDP) Application Number 111114).
Location:	Five locations on the inland side of the Highway 1 right-of-way between the City of Santa Cruz and the San Mateo County line; one location in the Swanton Road right-of-way; one location on an agricultural parcel on Swanton Road (APN 058-022-11); all locations are in north Santa Cruz County.
Project Description:	Install six new microcell facilities, each to be located on existing utility poles (5 sites in Caltrans' Highway 1 right-of-way, 1 site in County's Swanton Road right-of-way) and install a 192 square foot, 13' 6" tall equipment shelter (telecommunications hub) on an agricultural parcel.
Staff Recommendation:	No Substantial Issue.

SUMMARY OF STAFF RECOMMENDATION

On January 25, 2012, Santa Cruz County approved a CDP to install six new microcell facilities (including antennas and equipment boxes), five to be located on existing utility poles located on the inland side of Highway 1 along the rural north coast of Santa Cruz County, and one to be located on two adjacent existing utility poles (i.e., some of the equipment on one pole and some on the other pole) on Swanton Road, just off of Highway 1. The County also approved construction of an equipment shelter (also referred to as a telecommunications hub) on an agricultural parcel on Swanton Road. The Appellants contend that the approved project is inconsistent with the LCP because: 1) the project includes development of wireless communications facilities on land zoned CA (Commercial Agriculture), which is specifically prohibited under the LCP; 2) the Applicant has not provided evidence that co-location with existing AT&T microcell antennas is not technologically feasible; 3) the project may not be necessary to fill a "significant gap" in cell coverage; 4) the project will result in impacts to visual resources along the County's sensitive north coast public viewshed; 5) the wireless microwave radiation produced by the project will have negative health impacts on humans, and this will have a harmful impact on public access by preventing people who suffer from electro-sensitivity from accessing this area of the coast, and; 6) the project will create public safety problems due to people using their phones while driving on Highway 1.

After reviewing the local record, Commission staff has concluded that while some aspects of the project are not fully consistent with the LCP, the approved project does not raise a substantial issue with respect to the project's conformance with the Santa Cruz County LCP because the project alternative chosen has the fewest coastal resource impacts, and the impacts that remain are not significant. Specifically, the appeal contentions are addressed as follows: 1) the Applicant has agreed to forgo the telecommunications hub component of the project, and the remaining project components located on CA-zoned land are located on utility poles in the County's public right-of-way and thus will not impact agriculture; 2) the Applicant has now demonstrated that there is not enough space on the AT&T utility poles to allow for co-locating additional microcell antennas and equipment; 3) the project will allow NextG to provide radio frequency signal transport to its customer (Verizon) in an area where Verizon services are currently not present; 4) co-locating relatively small microcellular antennas and equipment (note that the Applicant has agreed to reduce the scale of some of the equipment to be installed) with existing utility infrastructure will not substantially alter or degrade the visual impacts of the existing poles and infrastructure, or the visual aesthetic of the north coast; 5) the County conditioned its approval to require post-construction monitoring of wireless facilities to ensure they are operated in compliance with the Federal Communication Commission's (FCC) radio frequency radiation exposure standards, and; 6) California law already prohibits persons from driving a motor vehicle while using a wireless telephone unless that telephone is specifically designed and configured to allow hands-free listening and talking, and California law also prohibits texting while driving.

As a result, staff recommends that the Commission determine that the appeal contentions do not raise a substantial LCP conformance issue, and that the Commission decline to take jurisdiction over the CDP for this project. The single motion necessary to implement this recommendation is found below.

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EXHIBITS

I. MOTION AND RESOLUTION

Motion:

*I move that the Commission determine that Appeal Number A-3-SCO-12-006 raises **no substantial issue** with respect to the grounds on which the appeal has been filed under Section 30603. I recommend a **yes** vote.*

Staff recommends a **YES** vote on the foregoing motion. Passage of this motion will result in a finding of No Substantial Issue and adoption of the following resolution and findings. If the Commission finds No Substantial Issue, the Commission will not hear the application de novo and the local action will become final and effective. The motion passes only by an affirmative vote by a majority of the Commissioners present.

Resolution:

The Commission finds that Appeal Number A-3-SCO-12-006 does not present a substantial issue with respect to the grounds on which the appeal has been filed under Section 30603 of the Coastal Act regarding consistency with the Certified Local Coastal Plan and/or the public access and recreation policies of the Coastal Act.

II. FINDINGS AND DECLARATIONS

A. PROJECT LOCATION AND DESCRIPTION

Santa Cruz County approved a coastal development permit (CDP) to install six new microcell wireless communication facilities, five to be located on existing utility poles located on the inland side of Highway 1 along the rural north coast of Santa Cruz County, and one to be located on two adjacent existing utility poles on Swanton Road, just off of Highway 1. Each approved microcell facility includes new antennas to be mounted at the ends of new cross-bar members on each pole, and two equipment cabinets to be mounted on each pole below the antennas.[1] The wireless equipment cabinet measures 47" high x 14" wide x 8" deep. The battery backup equipment cabinet measures about 37" high x 31" wide x 16" deep. The County also approved construction of a 192 square-foot, 13'-6" tall equipment shelter (also referred to as a telecommunications hub) on an agricultural parcel on Swanton Road.[2]

[1] At the Swanton Road site, the antennas and one equipment box would be mounted on one utility pole, with the antennas being mounted on top of the pole on a two-foot-tall pole extension; the second equipment box would be mounted on an adjacent utility pole.

[2] The County excluded from coastal permitting requirements NextG's request to string fiber optic cable between existing utility poles in the north coast area. Thus, the fiber optic installation is not a part of the County's approved project. However, according to County staff, the development done under the exclusion exceeded what was allowed by the exclusion, i.e. more fiber optic cable was strung than had been described by NextG as being necessary and

The specific geographic locations of the five County-approved microcell wireless communication facilities sites located on Highway 1 are described in relation to their distance from Western Drive in the City of Santa Cruz as follows: 1) DAV02 – Approximately 3.8 northwest (just past the 4-mile beach pullout); 2) DAV03 – Approximately 5.8 northwest (about 300 feet northwest of the northernmost Highway 1 intersection with Scaroni Road); 3) DAV04 – Approximately 6.5 miles northwest (about 250 feet south of the southernmost intersection of Laguna Road and Highway 1); 4) DAV09 – Approximately 16.3 miles northwest (about 500 feet north of the northernmost intersection of Swanton Road and Highway 1); 5) DAV10 – Approximately 16.9 miles northwest (about 0.4 miles north of the entrance to the Big Creek Lumber yard).

DAV05 is proposed to be located on two utility poles in the County right-of-way along Swanton Road, about 1.1 miles north of the southernmost Swanton Road intersection with Highway 1. The proposed telecommunications hub would be located on an agricultural parcel on Swanton Road near its southernmost intersection with Highway 1.

See Exhibit 1 for a project location map, an aerial photograph of the project sites, and for photographs of mock-ups[3] of the approved project components at each site (except for the telecommunications hub). See Exhibit 2 for the County's Final Local Action Notice. See Exhibit 3 for the project plans.

Next G Networks, Inc.

NextG Networks, Inc. (NextG) provides point-to-point radio frequency signal transport. NextG itself does not provide cellular or broadband services, but by providing point-to-point radio frequency signal transport, NextG's customers are able to provide cellular and broadband services to their customers (i.e., end users/retail customers). In other words, NextG itself is not a wireless carrier but its radio frequency equipment supports the transmission and/or receipt of electromagnetic/radio signals that are used by wireless carriers and their customers. The proposed project will allow NextG to provide radio frequency signal transport, which will in turn allow its customer (in this case, Verizon) to provide wireless voice and data services along approximately seven miles of northern Santa Cruz County, intermittently between the City of Santa Cruz and the San Mateo County line.

NextG is regulated by the California Public Utilities Commission (CPUC), which granted NextG a Certificate of Public Convenience and Necessity, which authorizes it to operate in public rights-of-way consistent with California Public Utilities Code section 7901.[4] It is under this

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some new utility poles were installed to carry the fiber optic cable, which were not allowed under the exclusion. This issue has been referred to County enforcement staff.

[3] The County required the Applicant to install nonfunctional "mock ups" of the equipment boxes and antennas on each of the six utility poles to demonstrate the visual impact of the proposed project, as required by LCP Section 13.10.662(D). See pages 4-9 of Exhibit 1 for photographs of these mock ups.

[4] California Public Utilities Code section 7901 states: "Telegraph or telephone corporations may construct lines of telegraph or telephone lines along and upon any public road or highway, along or across any of the waters or lands within this State, and may erect poles, posts, piers, or abutments for supporting the insulators, wires, and other

authority that NextG seeks to construct the proposed microcell wireless communication facilities within the Highway 1 and Swanton Road rights-of-way, given that NextG is not itself a wireless service provider.

B. SANTA CRUZ COUNTY CDP APPROVAL

The Santa Cruz County Zoning Administrator (ZA) approved the proposed project on December 2, 2011 subject to multiple conditions. At that time, the proposed project included the installation of seven new microcell wireless communication facilities, six on existing utility poles along the inland side of Highway 1 and one in the County's right-of-way on Swanton Road, as well as the telecommunications hub on Swanton Road. The ZA approval was appealed to the County's Planning Commission by a neighbor of one of the proposed microcell wireless communications facilities (site DAV01). Although County planning staff recommended that the Planning Commission uphold the ZA's approval without changes, the Applicant agreed to remove site DAV01 from the project (see the Planning Commission's final conditions on the project on pages 4-8 of Exhibit 2).

The Planning Commission approved the project on January 25, 2012. Notice of the Planning Commission's action on the CDP was received in the Coastal Commission's Central Coast District Office on February 13, 2012. The Coastal Commission's ten-working day appeal period for this action began on February 14, 2012 and concluded at 5pm on February 28, 2012. Two valid appeals (see below) were received during the appeal period.

C. APPEAL PROCEDURES

Coastal Act Section 30603 provides for the appeal to the Coastal Commission of certain CDP decisions in jurisdictions with certified LCPs. The following categories of local CDP decisions are appealable: (a) approval of CDPs for development that is located (1) between the sea and the first public road paralleling the sea or within 300 feet of the inland extent of any beach or of the mean high tide line of the sea where there is no beach, whichever is the greater distance, (2) on tidelands, submerged lands, public trust lands, within 100 feet of any wetland, estuary, or stream, or within 300 feet of the top of the seaward face of any coastal bluff, and (3) in a sensitive coastal resource area; or (b) for counties, approval of CDPs for development that is not designated as the principal permitted use under the LCP. In addition, any local action (approval or denial) on a CDP for a major public works project (including a publicly financed recreational facility and/or a special district development) or an energy facility is appealable to the Commission. This project is appealable because it is located between the sea and the inland extent of the first public road right-of-way (for those project components located in the Highway 1 right-of-way) and it is not a principally permitted use of the underlying zoning (for those project components located on Swanton Road).

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necessary fixtures of their lines, in such manner and at such points as not to incommode the public use of the road or highway or interrupt the navigation of the waters."

The grounds for appeal under Section 30603 are limited to allegations that the development does not conform to the certified LCP or to the public access policies of the Coastal Act. Section 30625(b) of the Coastal Act requires the Commission to conduct a de novo CDP hearing on an appealed project unless a majority of the Commission finds that "no substantial issue" is raised by such allegations.[5] Under Section 30604(b), if the Commission conducts a de novo hearing and ultimately approves a CDP for a project, the Commission must find that the proposed development is in conformity with the certified LCP. If a CDP is approved for a project that is located between the nearest public road and the sea or the shoreline of any body of water located within the coastal zone, Section 30604(c) also requires an additional specific finding that the development is in conformity with the public access and recreation policies of Chapter 3 of the Coastal Act. This project includes components that are located between the nearest public road and the sea (i.e. the project components in the Highway 1 right-of-way), and thus this additional finding would need to be made if the Commission were to approve the project following a de novo hearing.

The only persons qualified to testify before the Commission on the substantial issue question are the Applicant, persons who made their views known before the local government (or their representatives), and the local government. Testimony from other persons regarding substantial issue must be submitted in writing. Any person may testify during the de novo CDP determination stage of an appeal.

D. SUMMARY OF APPEAL CONTENTIONS

The Commissioner Appellants contend that the County-approved project raises LCP consistency questions relating to protection of visual resources, including with respect to consistency with the LCP's wireless communication facilities standards, especially because the project is located within the particularly important and sensitive north Santa Cruz County coast public viewshed, which consists of a largely undeveloped agrarian wilderness coastline and is designated in the LCP as a visual resource area.

The Commissioner Appellants also contend that the County-approved project raises LCP consistency questions relating to protection of agricultural resources because the County-approved telecommunications hub (a non-agricultural structure and use) is located off of Swanton Road on land zoned CA (Commercial Agriculture), and site DAV05 is located on County right-of-way land that is also zoned CA. Please see page 4 of Exhibit 4 for the Commissioners' appeal contentions.

[5] The term "substantial issue" is not defined in the Coastal Act or in its implementing regulations. In previous decisions on appeals, the Commission has generally been guided by the following factors in making substantial issue determinations: the degree of factual and legal support for the local government's decision; the extent and scope of the development as approved or denied by the local government; the significance of the coastal resources affected by the decision; the precedential value of the local government's decision for future interpretations of its LCP; and, whether the appeal raises only local issues as opposed to those of regional or statewide significance. Even when the Commission chooses not to hear an appeal, appellants nevertheless may obtain judicial review of a local government's CDP decision by filing a petition for a writ of mandate pursuant to the Code of Civil Procedure, Section 1094.5. In this case, for the reasons discussed further below, the Commission exercises its discretion and determines that the development approved by the County does not raise a substantial issue with regard to the Appellants' contentions.

Appellant Joshua Hart makes a number of contentions regarding the County-approved project. Specifically, Mr. Hart contends that: 1) the project may not be necessary to fill a "significant gap" in cell coverage; 2) the project Applicant has not provided third-party evidence that co-location with existing AT&T antennas along this stretch of Highway 1 is not technologically feasible; 3) the approved project will create public safety problems due to people using their phones while driving on Highway 1; 4) the approved project will negatively impact views along the north coast; 5) the wireless microwave radiation produced by the project will have negative health impacts on humans, and this will result in a harmful impact on public access by preventing people who suffer from electro-sensitivity from accessing this area of the coast. Please see pages 12-16 of Exhibit 4 for Mr. Hart's appeal contentions and Exhibit 5 for supplemental appeal materials from Mr. Hart.

E. SUBSTANTIAL ISSUE DETERMINATION

Agricultural Resources

The Santa Cruz County LCP is extremely protective of agricultural lands and is reflective of the policies of the Coastal Act by its encouragement of agricultural uses to the exclusion of other land uses that may conflict with them. The LCP's wireless communications ordinance generally prohibits wireless communication facilities on CA-zoned land (unless this prohibition results in a conflict with the Federal Telecommunications Act (FTA)). The Commissioner Appellants contend that it is not clear that the approved components that are located on CA-zoned land are required to be sited at that location to avoid a violation of the FTA. Please see pages 2-3 of Exhibit 6 for the applicable LCP policies that pertain to agriculture and see pages 11-12 of Exhibit 6 for the LCP's wireless ordinance sections that prohibit wireless communication facilities on land designated and zoned for agricultural use.

The County-approved project includes two project components located on Swanton Road on land zoned CA (Commercial Agriculture). One of these approved components is a 192 square foot, 13'-6" tall telecommunications hub to be disguised as a farm outbuilding and proposed to be located among other agriculturally-related structures on an actively farmed parcel (see pages 20-22 of Exhibit 3 for photo simulations of the approved telecommunications hub). The Applicant has agreed to forgo this component of the project and has written a letter to this effect (see Exhibit 7). The County has also written a letter stating that the County will not issue a building permit for the telecommunications hub component of the project (see Exhibit 8). Thus, the telecommunications hub will not be constructed on this CA-zoned parcel and the appeal contention raised about the telecommunications hub project component with respect to agricultural resources is moot.

The second component located on CA-zoned land consists of a microcell antenna and two equipment boxes that would be mounted on two adjacent existing utility poles located in the County's right-of-way along Swanton Road[6,7] (site DAV05 – see page 3 of Exhibit 1 for the

[6] NextG proposed to use poles on Swanton Road at a location near Highway 1 because there are no utility poles on this area of Highway 1 that could be used for the project.

location of this site and page 7 of Exhibit 1 for mock-ups of the proposed project at this site). For site DAV05, instead of the antenna being mounted on a crossbar, the County approved a 2-foot tall flush-mounted antenna mounted on a two-foot pole extension due to wireless coverage limitations of the crossbar design in this area. To approve this component of the project on CA-zoned land, the County granted a Federal Telecommunications Act Exception pursuant to LCP Section 13.10.661(b)(4) (see page 35 of Exhibit 6 for this section of the wireless ordinance). It is not clear that this exception was appropriate in this case, given that NextG is not a wireless service provider, and NextG has not established that denial of this project would be inconsistent with the provisions of the FTA related to establishing wireless service. Nevertheless, the DAV05 components (i.e. antenna and equipment boxes) will be mounted on two adjacent existing utility poles (one pole will have the antennas and one equipment box; the second pole will have one equipment box only) and thus these components will not occupy or cover any additional agricultural land. Furthermore, although the land on which the utility pole sits is zoned CA, this land constitutes a public right-of-way that is owned by Santa Cruz County, so it is highly doubtful that this land will ever be used for agricultural purposes. For these reasons, although the DAV05 components are not fully consistent with the LCP, they are consistent with the purpose of these LCP standards, thus this non-conformity with the agricultural resource policies of the LCP does not rise to the level of a substantial issue.

Co-Locate with AT&T

LCP policy 13.10.661(g) (see page 15 of Exhibit 6) encourages co-location of wireless communications facilities. The Appellant Joshua Hart contends that there already exists a series of pole-mounted AT&T antennas between Western Drive in Santa Cruz and Waddell Creek, north of the town of Davenport, and that several of the County-approved NextG sites are located near these AT&T sites, and that these NextG antennas and equipment boxes should be co-located with AT&T's antennae.

In 2005, AT&T installed a system of six "microcell" wireless communications facilities on existing utility poles on the inland side of the Highway 1 right-of-way north of the City of Santa Cruz, between Western Drive and the City of Davenport. Two of NextG's approved sites (sites DAV03 and DAV04) are located in the vicinity of two of the existing AT&T sites. The Appellant contends that the antennas and equipment approved for sites DAV03 and DAV04 should be co-located on the same utility poles as the existing AT&T antennas and equipment in the same area. However, attachments to utility poles are governed by California Public Utility Commission General Order 95 ("GO 95").[8] GO 95 requires a certain amount of space between different attachments on a utility pole. There is not enough space on the AT&T utility poles to allow for both sets of antennas (AT&T's and NextG's) in the "communications" space, which is the space midway up the pole. If one set of antennas were placed on a 6-foot[9] pole extension at the top of the pole, then GO 95 clearances may be able to be achieved, but this option would

[7] One of the equipment boxes would be placed on an adjacent pole to reduce the visual impacts of two equipment boxes and antennas on one pole at this location.

[8] http://docs.cpuc.ca.gov/gos/GO95/go_95_rule_94_4-Figure94-1.html

[9] Per GO 95, this is the height of the pole extension that would be needed to provide the required separation between the antennas and power lines.

have increased visual resources impacts (see discussion below in the "Visual Resources" section). For these reasons, it is infeasible for the NextG microcell sites to be co-located with the AT&T antennae, so NextG's failure to co-locate does not raise an LCP inconsistency, and this contention does not rise to the level of a substantial issue.

Significant Gap in Coverage

Appellant Joshua Hart contends that the project is not necessary to fill a "significant gap" in cell coverage.

LCP Section 13.10.661(C)(2) (see pages 13-14 of Exhibit 6) discourages wireless communications facilities from being installed in the right-of-way of the first through public road parallel to the sea (Restricted Coastal Right-of-Way Area). LCP Section 13.10.661(C)(3)(a) allows for exceptions to the above if the proposed wireless communication facility would eliminate or substantially reduce one or more significant gaps in the applicant carrier's network. Per LCP Section 13.10.660(D) (see page 9 of Exhibit 6) "significant gap" means a gap in the service provider's (applicant carrier's) own personal wireless services network within the County of Santa Cruz, as defined in Federal case law interpretations of the Federal Telecommunications Act of 1996. However, NextG, the Applicant in this case, does not directly provide wireless communication services, so it is unclear how this LCP policy related to filling the gap in an applicant's wireless coverage should be applied. In any event, the proposed project will allow NextG to provide radio frequency signal transport, which will in turn allow its customer (in this case, Verizon) to provide wireless voice and data services along approximately seven miles of northern Santa Cruz County, intermittently between the City of Santa Cruz and the San Mateo County line, in an area where these Verizon services are currently not present. Accordingly, the approved project will fill a "gap" (whether "significant" or otherwise) in Verizon's coverage in this area. Thus, although the Applicant is not a wireless service provider, and so the project will technically not fill a significant gap in its network, consistent with the relevant LCP policy, the project will allow a wireless service provider to fill a gap in coverage. This contention therefore does not rise to the level of a substantial issue in terms of the project's conformance with the certified LCP.

Visual Resources

The Santa Cruz County LCP is highly protective of coastal zone visual resources, particularly views from public roads, on ridgelines, and in rural scenic areas. The LCP's wireless communications ordinance provides specific guidance and standards for siting, designing, and operating wireless communications facilities. Please see pages 1-2 of Exhibit 6 for the LCP's visual protection policies, and pages 4-35 of Exhibit 6 for the LCP's wireless communications ordinance.

Location of Communication Facilities

The Appellants contend that the approved wireless facilities project raises LCP consistency questions relating to protection of visual resources, including with respect to consistency with the LCP's wireless communication facilities standards, especially because the project is located within the particularly important and sensitive north Santa Cruz County coast public viewshed, which consists largely of an undeveloped agrarian wilderness coastline. In particular, the project is located on both Highway 1 and Swanton Road, which are designated in the LCP as "visual

resource areas" (i.e., areas assigned regional public importance for their natural beauty and rural agricultural character), and both Highway 1 and Swanton Road are designated as scenic roads.

The project includes wireless communication facilities to be located in an area that is called out as a "Prohibited Area" (i.e., CA-zoned land – see LCP Section 13.10.661(B) on pages 11-12 of Exhibit 6) and in an area that is called out as a "Restricted Coastal Right-of-Way Area" (i.e., the Highway 1 right-of-way – see LCP Section 13.10.661(C) on pages 13-14 of Exhibit 6) by the LCP's wireless ordinance. These LCP sections require that any application for wireless communication facilities proposed to be located in either a prohibited or restricted area must demonstrate that the proposed facility would eliminate or substantially reduce a "significant gap" in a carrier's network and that there are no alternative projects outside the prohibited/restricted areas that would eliminate or reduce said "significant gap." The "significant gap" issue was addressed above, and LCP Section 13.10.662(C) (see pages 22-23 of Exhibit 6) describes the elements of the required alternatives analysis.

The Applicant provided the County with an alternatives analysis (see pages 12-47 of Exhibit 9), which basically stated that NextG is a telephone corporation with the right to operate in the public rights-of-way under state and federal law in order provide its telecommunications services. NextG explained to the County that it is not a wireless carrier and that it cannot construct traditional wireless sites, such as towers or monopoles, and that "Prohibiting NextG from attaching to existing utility poles would be like telling the power company it was not allowed to attach its transformers to the utility pole…" This analysis did not, however, consider alternatives that would allow wireless service in this area using traditional wireless sites.

Commission staff requested that NextG perform an additional alternatives analysis as is required by the LCP's wireless ordinance to evaluate a full-range of project alternatives that would provide similar wireless coverage as the County-approved project, while making the assumption that NextG is not restricted to constructing on existing poles in the public rights-of-way. NextG provided such an alternatives analysis (see pages 1-10 of Exhibit 9), which included: 1) constructing six new poles in the public right-of-way; 2) constructing a new 50-foot tower (to replace sites DAV02, 03, and 04); 3) constructing a new 20-foot tower (to replace site DAV05); and 4) increasing the height of the existing Sprint monopole at the Big Creek Lumber site (to replace sites DAV09 and 10). The conclusion was that these alternatives would increase public viewshed impacts (all alternatives), would (except for alternative #1) require permission of surrounding landowners, would require roads to be developed for ingress and egress (except for alternatives #1 and #4), and would be located on CA-zoned land (except for alternative #4, which would be on private land zoned for timber production). NextG asserted, however, that alternative #4 was infeasible because it was unable to obtain landowner approval. Given this analysis, it appears the County-approved project is superior to all of the feasible evaluated project alternatives. Thus the location of the proposed microcell sites does not raise a significant issue with respect to LCP conformity.

Pole and Antenna Heights

LCP Section 13.10.661(C)(2)(a)(ii) (see page 13 of Exhibit 6) requires that wireless communication facilities in the Restricted Coastal Right-of-Way Area have flush-mounted antennas that are no larger than 1' x 2'. The approved antennas meet the size restriction but are

not flush-mounted (the antennas are mounted on a crossbar and there is a distance of 24 inches between each antenna and the center of the pole). With the exception of site DAV05, NextG did not propose to flush-mount the antennas on the poles because to do so would violate a CPUC order. Specifically, CPUC GO 95[10] requires that antennas maintain a 2-foot horizontal clearance from the centerline of a pole when affixed below communication lines. The only way to meet this requirement and flush mount the antennas would be to extend the existing poles by about 6 feet (this amount of extension would be needed to provide the GO 95-required clearance between the antennas and power lines) and mount the antennas on top of the extended poles. The County determined that this alternative would have more visual impacts than the crossbar approach (extending the poles would also be inconsistent with LCP Section 13.10.661(C)(2)(a)(i) (see page 13 of Exhibit 6) because the pole dimensions would be increased). Neither alternative was fully consistent with the LCP, so the County approved the project with fewer visual impacts. It found that the non-flush-mounted antennas warranted an FTA exception pursuant to LCP Section 13.10.668 (see page 35 of Exhibit 6), stating that not allowing the non-flush-mounted antennas would prevent the filling of a "significant gap" in coverage. As described above, NextG does not provide wireless service, so it is unclear that this exception applies. The alternative chosen by the County does, however, reduce the project's impacts on visual resources.

Regarding site DAV05, the pole at this site only carries communication lines, not power lines. Thus, under GO 95, it is only necessary to extend the pole two feet to provide the necessary distance between the antennas and the communication lines (see page 7 of Exhibit 1 for the mock-up at this site). The County determined that a 2-foot pole extension with a flush-mounted antenna atop the pole would have less visual impact than the crossbar option at this location. However, extending the pole height is inconsistent with LCP Section 13.10.661(C)(2)(a)(i) because the pole dimensions would be increased. Although the approved antenna height at DAV05 is inconsistent with the relevant LCP policy, the approved project will not have a significant adverse visual impact in this location, so this LCP non-conformity does not rise to the level of a significant issue.

Equipment Box Dimensions
LCP Section 13.10.661(C)(2)(a)(iii) (see page 13 of Exhibit 6) requires that equipment cabinets on poles in the Restricted Coastal Right-of-Way Area be no more than 24" high x 18" wide x 10" deep. The project includes two new equipment boxes on each pole: the battery backup equipment cabinet measures about 37" high x 31" wide x 16" deep (which exceeds all allowable dimensions provided for by the LCP's wireless ordinance); the wireless equipment cabinet measures about 47" high x 14" wide x 8" deep (which exceeds the height limitation provided for by the LCP's wireless ordinance).

To address the visual impacts of the antennas and equipment boxes, the County conditioned its approval to require that the antennas and equipment boxes be painted in colors similar to the background in the area (i.e., green or light brown, where the light brown color appears to best limit visual impacts), and to require that the battery backup equipment box be mounted below the more narrow wireless equipment cabinet and as close to the ground as feasible to make this larger equipment box less visually prominent (see Special Conditions II.A.3 and II.A.4 on pages

[10] See specifically California Public Utilities Commission General Order 95 Section IX, Part 94.4E.

5-6 of Exhibit 2). As with the antennas, the County found that the equipment boxes warranted an FTA exception pursuant to LCP Section 13.10.668.

To further address the visual impacts of the equipment boxes, since the County's approval, NextG has agreed to reduce the size of one of the wireless equipment cabinets to 32" high x 8.6" wide x 9.6" deep (see Exhibit 7). This box would still exceed the LCP's height limitation but will be consistent with the LCP's width and depth requirements. The County has stated that it will require the reduced-size wireless equipment cabinet (see Exhibit 8). Thus, although the equipment boxes are not fully consistent with all of the LCP requirements related to equipment box dimensions, their visual impact has been reduced sufficiently that this issue does not rise to the level of a significant LCP conformance issue.

Summary of Visual Resource Impact Issues
Within the Highway 1 and Swanton Road rights-of-way, existing utility poles provide electric and telephone service to north coast farms and residences. The utility poles can be seen on both sides of Highway 1 and along Swanton Road and include typical electric and phone facilities (i.e., wiring, transformers, insulators, etc.). The approved project includes installation of micro-cellular antennas and equipment on these existing utility poles on the inland side of the Highway 1 right-of-way and on a pole on Swanton Road. Although the project is inconsistent with various LCP requirements described above, such as flush-mounting the antennas and the size of the equipment boxes, the Applicant is unable to both comply with the LCP and with the CPUC requirements laid out in GO 95.

Furthermore, the County has conditioned the project to reduce its visual impacts by requiring the equipment boxes to be painted appropriate colors and to require the placement of the larger equipment box on the pole as low to the ground as feasible. In addition, the Applicant has agreed to reduce the size of one of the equipment boxes per installation, and the County has acknowledged this change. Also, as previously discussed in the "Agricultural Resources" section above, the Applicant has agreed to forego development of the telecommunications hub on Swanton Road, which will greatly reduce the project's visual impact on this scenic road, and the County has agreed to not issue a building permit for the telecommunications hub. Finally, the project has been conditioned (see condition IV.C on page 8 of Exhibit 2) to require removal of all permanent facilities if the pole-based utilities are relocated underground or if the microcell facilities are rendered unnecessary due to technological advances, as is required by the LCP's wireless ordinance.

In its deliberations on the wireless ordinance, the County found that the proliferation of wireless communication towers and antennas had the potential to create significant adverse visual impacts. The County recognized the need to regulate the siting, design, and construction of wireless communication facilities to ensure that the appearance and integrity of the unincorporated areas of Santa Cruz County would not be marred by the cluttering of unsightly facilities. The ordinance deliberately included the use of existing utility poles within the definition of co-location in order to minimize visual clutter. This approach is consistent with the overall objective of more than one service provider sharing a single facility, which includes existing PG&E or other utility towers or poles (see the definition of "co-location" on page 6 of Exhibit 6).

Although the County-approved project is not totally consistent with the LCP's wireless ordinance in terms of the non-flush-mounted antennas at the four Highway 1 sites and the 2-foot pole extension at the Swanton Road site, the poles, wiring, transformers, and other equipment already exist along Highway 1 and Swanton Road. This existing infrastructure already imposes a visual impact on the local area. Co-locating relatively small, relatively unobtrusive, micro-cellular antennas and equipment with the existing utility infrastructure will not substantially alter or degrade the visual impacts of the existing poles and infrastructure, or the visual aesthetic of the north coast. The use of co-located micro-cellular facilities in place of larger wireless communication facilities also minimizes visual and environmental impacts associated with construction of wireless facilities due to the small size of the facilities and the presence of existing poles and utility infrastructure. For all of the above reasons, while the project does not meet all LCP visual resource requirements, its visual impacts have been reduced to the point that they are not expected to significantly impact the visual aesthetics of the north coast area. The project therefore does not raise a substantial issue of LCP conformance with respect to visual resources.

Health

Appellant Joshua Hart contends that the County-approved project threatens the health of the public who are or will be in the vicinity of the County-approved project. His contention is that the wireless facilities broadcast electromagnetic radiation at unsafe levels that will have negative impacts to area residents, hikers, and others, and especially to the estimated 5-10% (the Appellant's estimation) of the population that suffers from what is known as "electro-sensitivity."[11] This Appellant also contends that those who are especially sensitive to this type of radiation will no longer be able to access this area of the coast if the County-approved project goes forward because these areas will no longer be free from electromagnetic radiation, and that the County-approved project constitutes a violation of the Americans with Disabilities Act by restricting access to a class of citizens with a medical condition ("electro-sensitivity"). See Exhibit 4 and Exhibit 5 for the Appellant's contentions with respect to the project's potential health effects.

There is definite controversy and concern about the potential health affects from electromagnetic radiation that is emitted from wireless communication devices and equipment. Numerous studies have been conducted on these effects, often with contradictory or inconclusive results. The Commission believes that the Appellant is sincere in his stated concerns regarding the potential health affects of the County-approved project. However, the standard of review for this contention is the Santa Cruz County LCP. Specifically, LCP Section 13.10.660(C)(3) (see page 5 of Exhibit 6) addresses the applicability of the wireless communications ordinance and in particular states that the ordinance is not intended to have the effect of prohibiting wireless services on the basis of the environmental or health effects of radio frequency emissions as long as the wireless services comply with the FCC's regulations regarding such emissions. Section 13.10.661(D) (see page 14 of Exhibit 6) requires that County inhabitants be protected from the possible adverse health effects associated with exposure to harmful levels of NIER (non-ionizing

[11] Those with electro-sensitivity complain of headaches, immune disorders, nausea, and sleep disturbances in the presence of electromagnetic fields.

electromagnetic radiation) by ensuring that all wireless communication facilities comply with NIER standards set by the FCC. Section 13.10.664(A) (see page 32 of Exhibit 6) of the LCP's wireless ordinance states that no wireless facility shall be located or operated in a manner that poses, either by itself or in combination with other such facilities, a potential threat to public health. Taken together, these LCP sections require that no telecommunications facility or combination of facilities may produce power densities in any area that exceed the FCC adopted standards for human exposure.

Preliminary Radio Frequency (RF) Exposure Studies have been done and a subsequent engineering report has been prepared for the project by a qualified consulting engineer (see Exhibit 10). The studies were performed using predictions/calculations to determine if the analyzed area of RF fields for the approved project's antenna configurations comply with the Maximum Permissible Exposure (MPE) limits for human exposure to RF fields adopted by the FCC and also recognized by the Occupational Safety and Health Administration (OSHA). If a ground-level area of RF fields for the approved antenna configurations is predicted to be greater than 100% of an FCC MPE limit, then the RF fields in this area would be considered as exceeding the respective MPE limit. If a prediction reveals a level of RF fields to be 90%-100% of an FCC MPE limit, then the RF fields at the ground-level location would be considered to be approaching the respective FCC MPE limit. The predictions presented in the studies were based on a "worst-case" scenario of the highest possible RF fields that could exist at ground level near the approved antenna sites. The studies' reports concluded that the County-approved project will not approach or exceed the FCC MPE limits for RF exposure. Thus, it is consistent with LCP requirements related to health effects of wireless facilities.

Also, to implement Section 13.10.664(A) of the LCP, post-construction monitoring of wireless communication facility RF radiation exposures is required for all wireless communication facilities to prove that all new wireless communication facilities operate in compliance with the FCC's RF radiation exposure standards. The County conditioned its permit to require that, within 90 days after commencement of normal operations, a report documenting radiation measurements and comparing the results to the FCC standards for such facilities will be submitted to the Planning Director (see condition IV(B) on pages 6-7 of Exhibit 2). Failure to supply the required reports or failure to remain in continued compliance with the established FCC standards is grounds for review of the use permit and could result in the initiation of permit revocation proceedings by the County. For all of the above reasons, this issue does not rise to the level of a substantial issue in terms of the project's conformance with the certified LCP.

Other Contentions[12]

Appellant Hart contends that the County-approved project will provide Verizon's customers with streaming data on their "smart" phones, and that some of these customers will use these phone services without a hands-free headset while driving, thus creating a safety hazard for other drivers, cyclists, and pedestrians along Highway 1 (see pages 12-13 of Exhibit 4). California Vehicle Code Section 23123 prohibits persons from driving a motor vehicle while using a wireless telephone unless that telephone is specifically designed and configured to allow hands-free listening and talking, and is used in that manner while driving. California Vehicle Code Section 23123.5 prohibits a person from driving a motor vehicle while using an electronic wireless communications device to write, send, or read a text-based communication. In any event, this contention does not raise an LCP-consistency issue and therefore no substantial issue exists with respect to this contention.

F. CONCLUSION

When considering a project that has been appealed to it, the Commission must first determine whether the project raises a substantial issue of LCP conformity, such that the Commission should assert jurisdiction over a de novo CDP for such development. At this stage, the Commission has the discretion to find that the project does not raise a substantial issue of LCP conformance, even if the project is not entirely consistent with the applicable certified LCP. As explained above, the Commission is guided in its decision of whether the issues raised in a given case are "substantial" by the following five factors: the degree of factual and legal support for the local government's decision; the extent and scope of the development as approved or denied by the local government; the significance of the coastal resources affected by the decision; the precedential value of the local government's decision for future interpretations of its LCP; and, whether the appeal raises only local issues as opposed to those of regional or statewide significance.

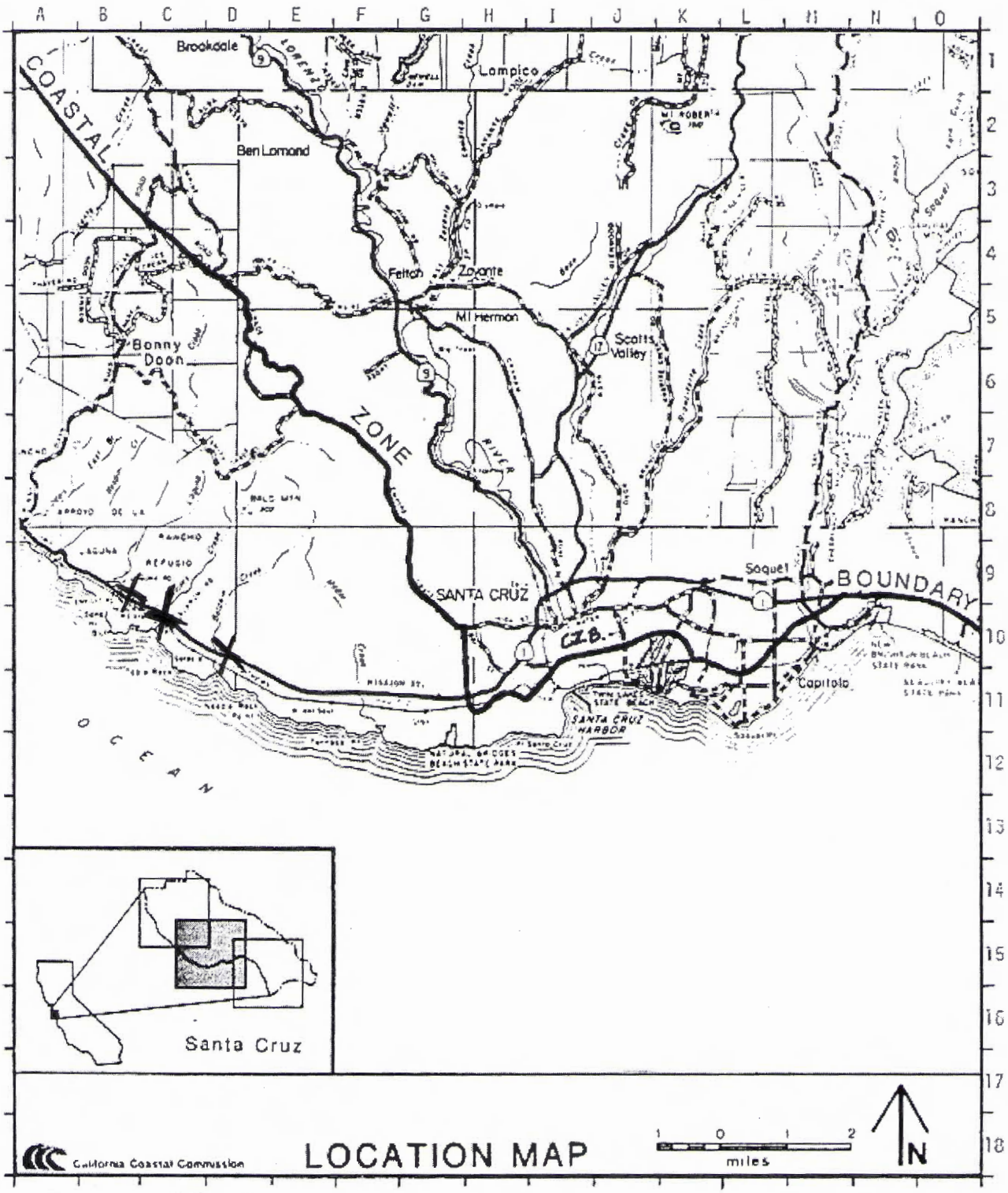
In this case, these five factors, considered together, support a conclusion that this project does not raise a substantial issue of LCP conformance. First, the County-approved project is for the installation of wireless antennas and equipment on existing utility poles in the public right-of-way. Thus, the extent and scope of this project weigh in favor of a finding of no substantial issue. Second, while the County's findings do not show full LCP consistency regarding the flush-mounting of antennas, the size of the equipment boxes, and locating some project elements on CA-zoned land, the County has provided sufficient factual support for its decision to allow these inconsistent project components, given that the impacts of these components have been minimized, and the Applicant is unable to both comply with the LCP and the CPUC requirements laid out in GO 95. While there are questions about the degree of legal support for

[12] The Appellant raised additional new contentions in supplemental materials (dated May 22, 2012 – see Exhibit 5) provided to Commission staff after the 10-working-day appeal period for the project had closed. Only the appeal contentions raised during the 10-working-day appeal period may be evaluated in terms of the project's consistency with the LCP. Some of the information provided in the supplemental materials provided by the Appellant supports the contentions raised in his initial appeal document and it is thus appropriate to evaluate this supplemental information in this appeal. However, the new contentions raised in the supplemental materials that were not raised in the initial appeal (i.e., risk to federally listed endangered species, fire safety, community outreach, rural access to broadband, and emergency communication) are not evaluated in this appeal because these contentions were not made during the 10-working-day appeal period and thus are not properly before the Commission.

the County's analysis regarding the Federal Telecommunications Act Exceptions for the project, the project otherwise does not raise a substantial issue with respect to LCP conformance. Therefore, given that the facts support the County's action and the County's questionable legal analysis did not result in the approval of a project with major coastal resource impacts, this factor still weighs in favor of a finding of no substantial issue. Third, co-locating relatively small and relatively unobtrusive cellular antennas and equipment with existing utility pole infrastructure will not significantly impact visual resources, and the components located in the public right-of-way on CA-zoned land will not impact agricultural resources; thus there are no significant coastal resources affected by the decision. Fourth, given that the project components will be co-located on existing utility poles with existing utility infrastructure, and will not have significant visual impacts to visitors traveling along this portion of the coast, the project does not raise issues of regional or statewide significance.

Fifth, in terms of the precedential value of the local government's decision with respect to future interpretations of its LCP, the Commission notes that it appears that it may be technologically and legally impossible for wireless service providers to fully comply with the LCP. The Commission finds that it would make good planning and public policy sense for the County to update the wireless communications ordinance through the LCP amendment process to reflect the changes in the utility pole equipment clearance requirements of CPUC GO 95. Such an amendment process should also include updates to recognize any other changes in State or Federal laws or regulations or changes in wireless technology that may have taken place since the ordinance was certified in 2004, and which may affect the siting, design, and construction of wireless communication facilities. Thus, although the County's interpretation of the LCP in this case is not consistent with the Commission's, the primary issue raised here is an outdated LCP, not just the County's interpretation of the LCP. Given these considerations, the Commission finds that although this decision could form the basis of a poor precedent, this factor still does not weigh heavily towards a finding of substantial issue, especially when the remaining four factors support a finding of no substantial issue.

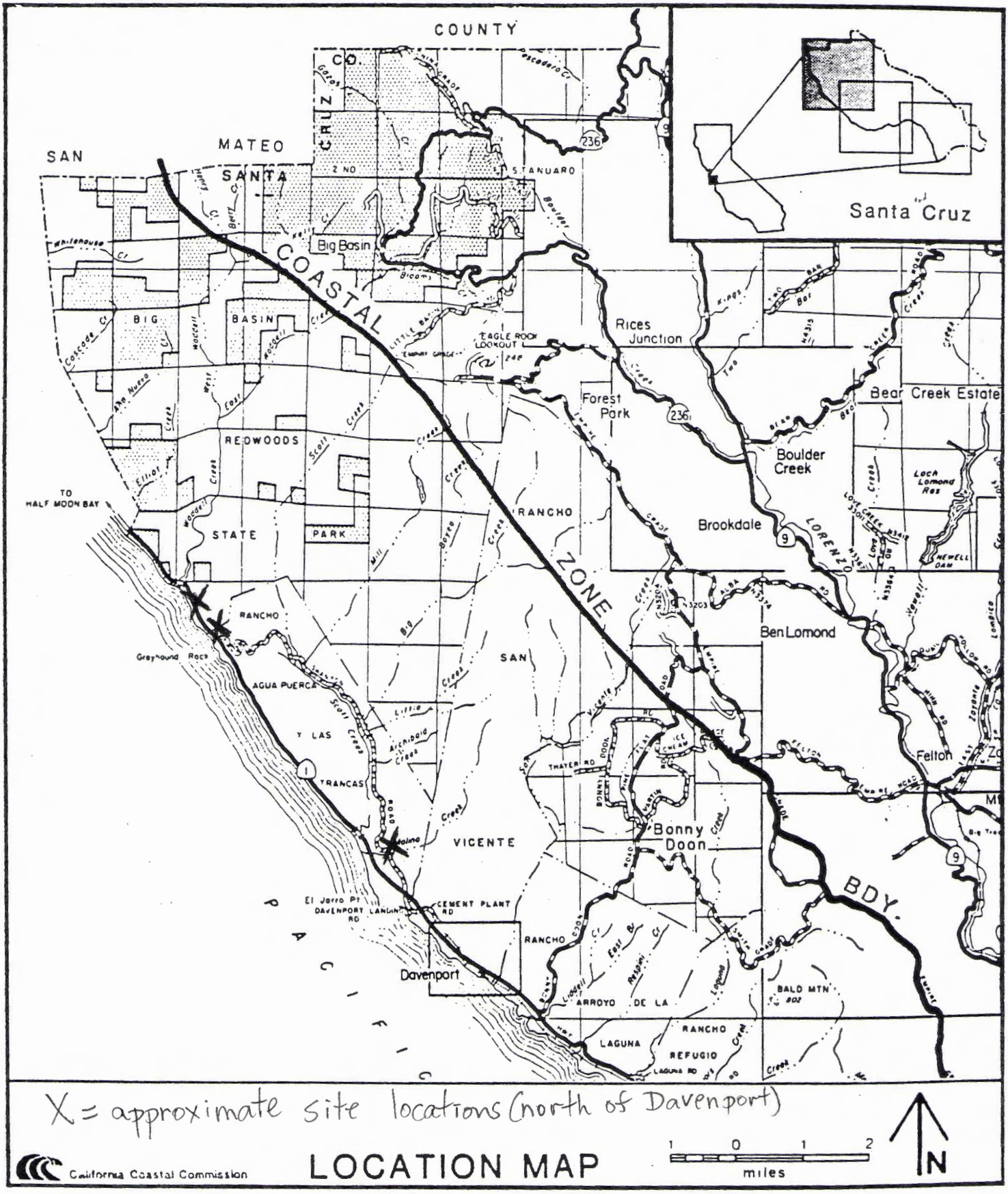
Based on the foregoing, when all five substantial issue factors are weighed together, the appeal contentions do not raise a substantial LCP conformance issue and thus the Commission declines to take jurisdiction over the CDP for this project.



County of Santa Cruz

Sheet 2 of 3

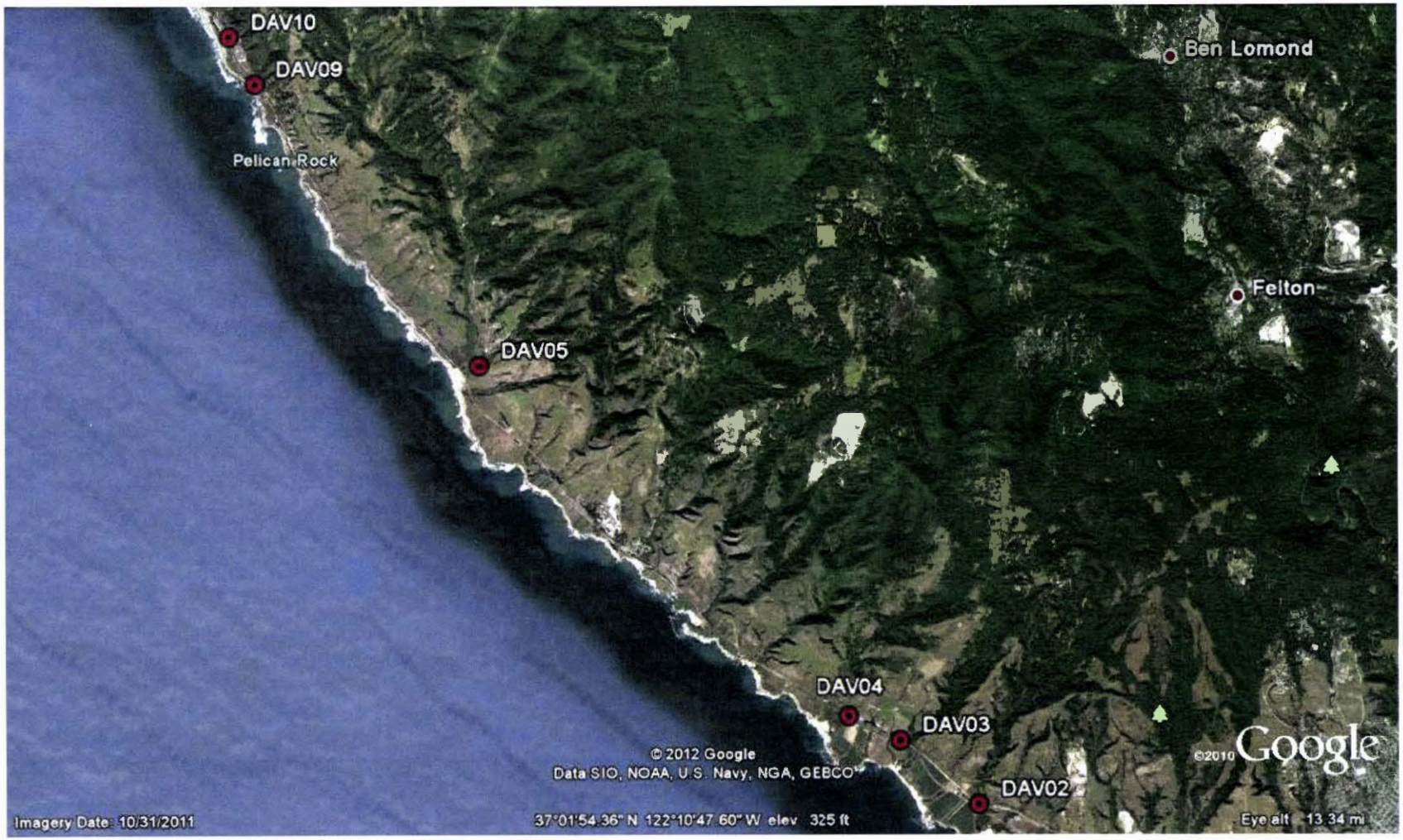
X = approximate site locations (south of Davenport)



County of Santa Cruz

Sheet 1 of 3

Crown Castle NG West Inc—Overview Map for Davenport Nodes DAV02, 03, 04, 05, 09, 10



Site DAV02

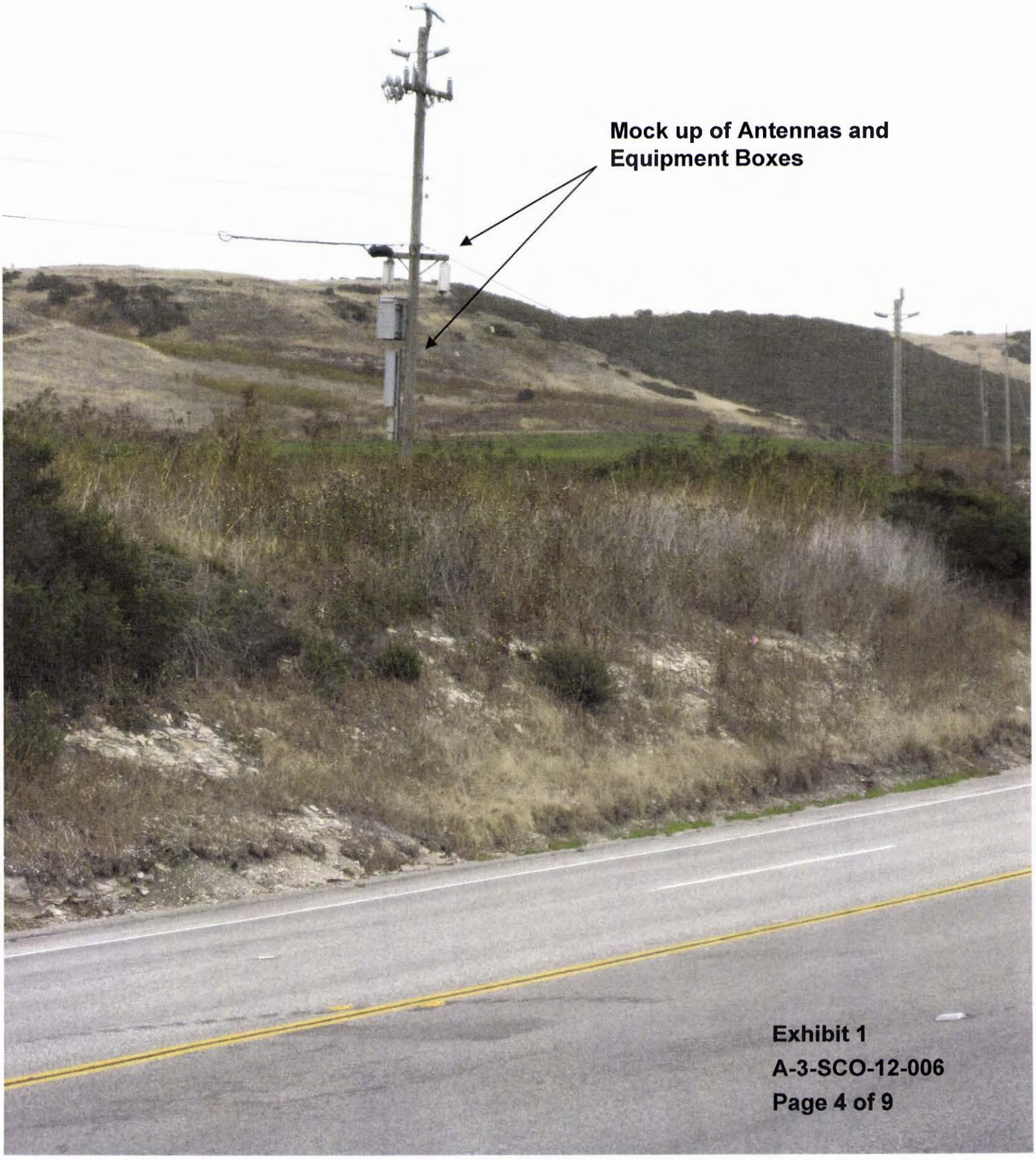


Exhibit 1
A-3-SCO-12-006
Page 4 of 9

Site DAV03

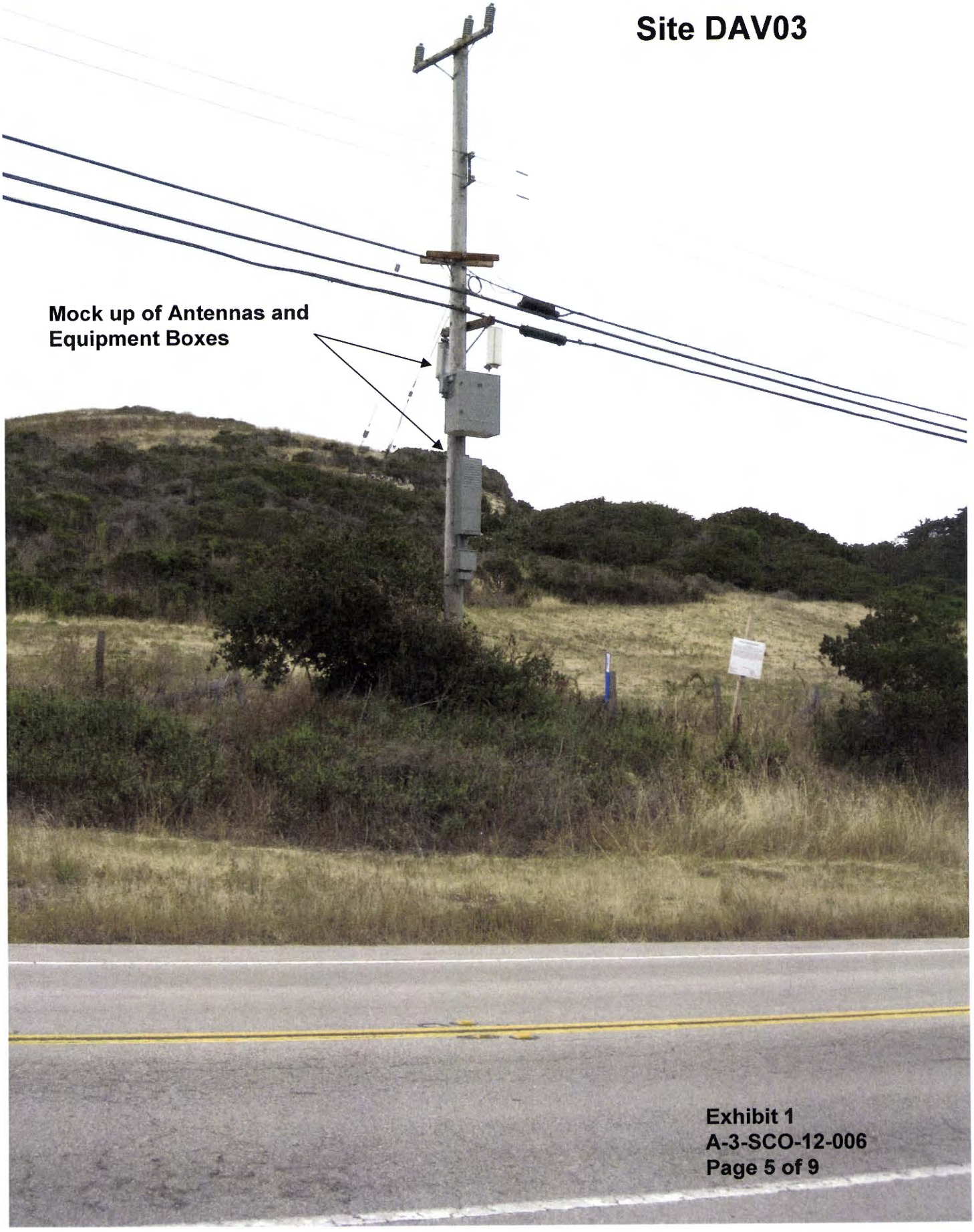
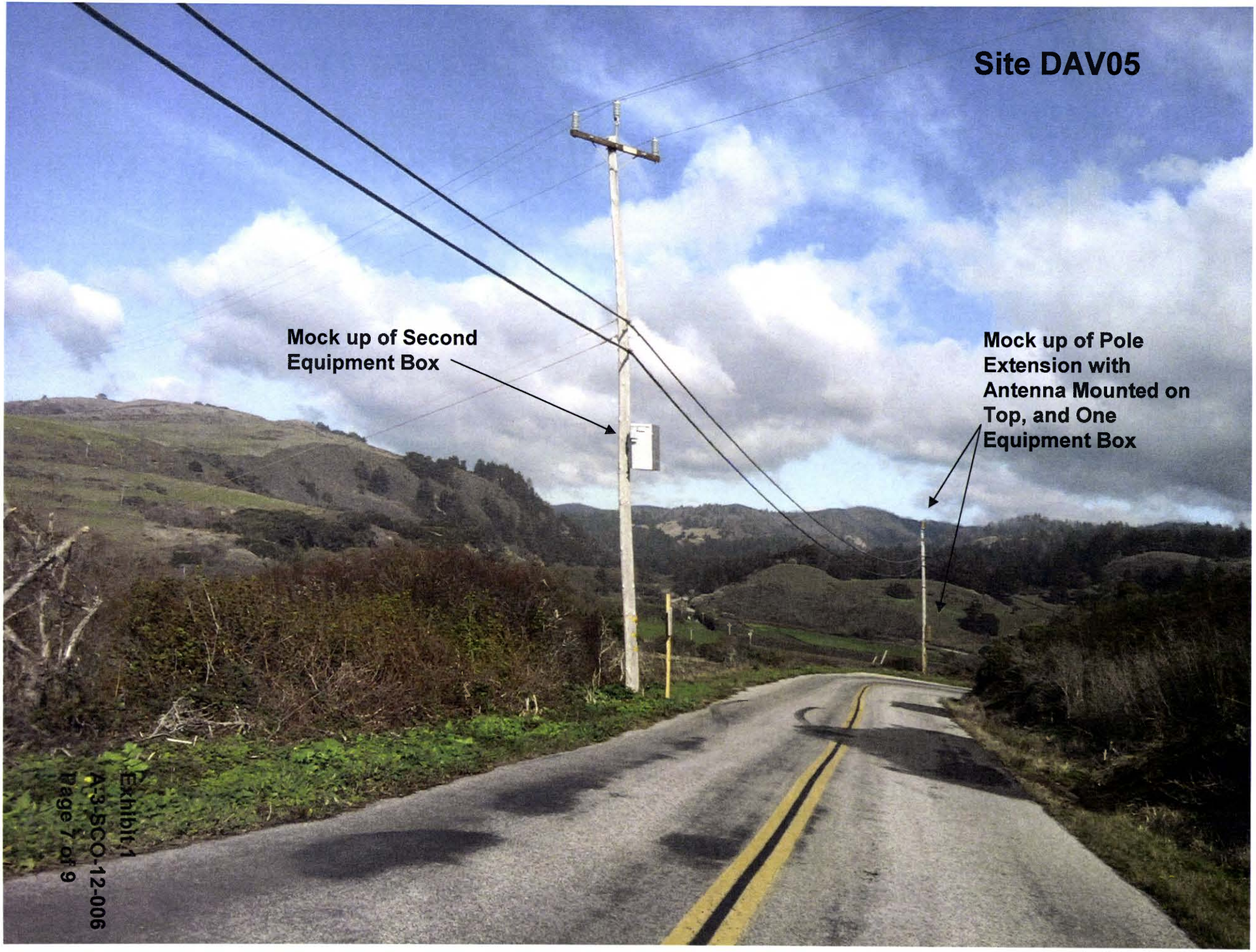


Exhibit 1
A-3-SCO-12-006
Page 5 of 9

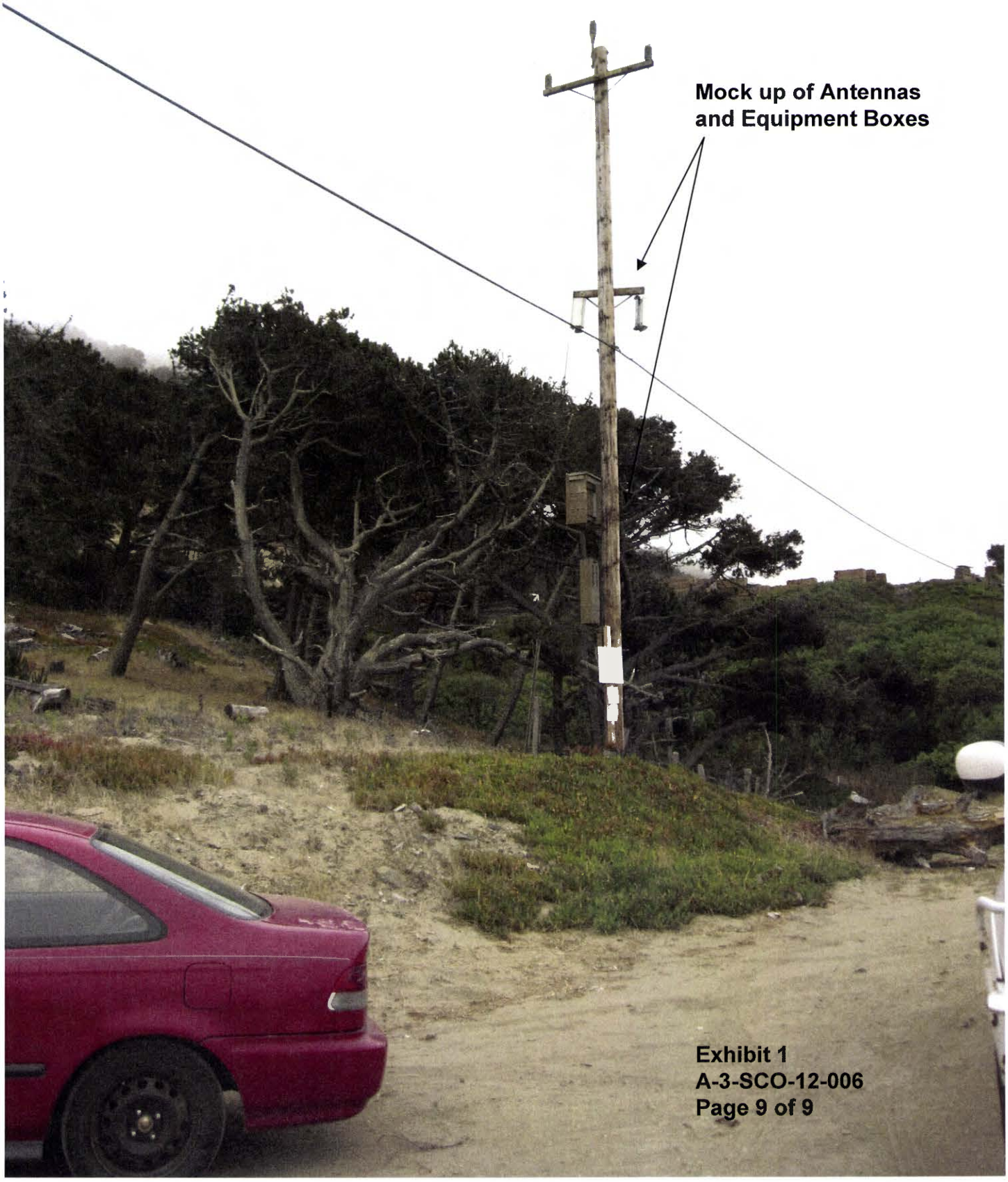
Site DAV04

Exhibit 1
A-3-SCO-12-006
Page 6 of 9


Site DAV05
Mock up of Second Equipment Box
Mock up of Pole Extension with Antenna Mounted on Top, and One Equipment Box

Site DAV09

Site DAV10



NOTICE OF FINAL LOCAL ACTION ON COASTAL PERMIT

County of Santa Cruz

FINAL LOCAL ACTION NOTICE

REFERENCE # 3-SCO-12-032

APPEAL PERIOD 2/14-2/28/2012

Date of Notice: Feb. 9, 2012

Notice Sent (via certified mail) to:
California Coastal Commission
Central Coast Area Office
725 Front Street, Ste. 300
Santa Cruz, CA 95060

Please note the following **Final Santa Cruz County Action** on a coastal permit, coastal permit amendment or coastal permit extension application (all local appeals have been exhausted for this matter):

Project Information

RECEIVED
FEB 13 2012
CALIFORNIA COASTAL COMMISSION CENTRAL COAST AREA

Application No.: 111114
Project Applicant: NextG Networks of Calif.
Address: 890 Tasman Dr. Milpitas, CA 95035
Phone/E-mail: (408) 409-6606 nernst@nextgnetworks.net
Applicant's Representative: Natasha Ernst
Address: 890 Tasman Dr. Milpitas, CA 95035
Phone/E-mail: (408) 409-6606 nernst@nextgnetworks.net

Project Location: Six of the 7 microcell wireless communication facility sites would be located along the inland side of Highway 1 in the Caltrans right-of-way, and one would be located in County right-of-way along Swanton Road. The proposed utility pole microcell sites on Caltrans right-of-way are located as follows, as measured from the intersection of Hwy. 1 and Western Drive: DAV01: Approx. 3.2 miles north/west (NE of 3-Mile Beach pullout); DAV02: Approx. 3.8 miles north/west (just past 4-Mile Beach pullout); DAV03: Approx. 5.8 miles north/west (approx. 300 ft. north/west of northernmost Hwy. 1 intersection with Scaroni Rd.); DAV04: Approx. 6.5 miles north/west (approx. 250 ft. south of southernmost intersection of Laguna Rd. and Hwy 1); DAV09: Approx. 16.3 miles north/west (approx. 500 ft. north of northernmost intersection of Swanton Rd. and Hwy 1); DAV10: Approx. 16.9 miles north/west (approx. 0.4 miles north of entrance to Big Creek Lumber yard). DAV05 is proposed to be located in County right-of-way along Swanton Rd. on a utility pole approx. 1.1 miles north of the southernmost Swanton Road intersection with Hwy. 1.

Project Description: Proposal to install 7 new microcell wireless communication facilities, each to be co-located on existing utility poles along inland side of Hwy. 1 (6 sites in Caltrans Hwy. 1 right-of-way, 1 site in County's Swanton Rd. right-of-way). Proposal includes a 192 square foot, 13'-6" tall equipment shelter (Telecommunications Hub) on an agricultural parcel (APN 058-022-11).

Final Action Information

Final Local Action: Approved with Revised Conditions

Final Action Body:
__ Zoning Administrator
X Planning Commission (on Appeal)
__ Board of Supervisors

Required Materials Supporting the Final Action	Enclosed	Previously sent (date)
Staff Report	X	
Adopted Findings	X	
Adopted Conditions	X	
Site Plans	X	
Elevations	X	

Additional Materials Supporting the Final Action	Enclosed	Previously sent (date)
CEQA Document	X	
Geotechnical Reports		
Biotic Reports		
Other:		
Other:		

Coastal Commission Appeal Information

This Final Action is appealable to the California Coastal Commission. The Coastal Commission's 10-working day appeal period begins the first working day after the Coastal Commission receives adequate notice of this Final Action. The Final Action is not effective until after the Coastal Commission's appeal period has expired and no appeal has been filed. Any such appeal must be made directly to the California Coastal Commission Central Coast Area Office in Santa Cruz; there is no fee for such an appeal. Should you have any questions regarding the Coastal Commission appeal period or process, please contact the Central Coast Area Office at the address listed above, or by phone at (831) 427-4863.

Copies of this notice have also been sent via first-class mail to:

- Applicant
- Interested parties who requested mailing of notice

COUNTY OF SANTA CRUZ
Planning Department

LEVEL V COMMERCIAL DEVELOPMENT PERMIT AND LEVEL V COASTAL DEVELOPMENT PERMIT

Owner: NEXT G NETWORKS
Address: ATTN: NATASHA ERNST
890 TASMAN DR.
MILPITAS, CA 95035

Permit Number: 111114
Parcel Number(s): N/A (7 SITES IN CALTRANS & COUNTY RIGHT-OF-WAY) (EQUIPMENT SHELTER ON APN 058-022-11)

PROJECT DESCRIPTION AND LOCATION

Proposal to install 7 new microcell wireless communication facilities, each to be co-located on existing utility poles along inland side of Hwy. 1 (6 sites in Caltrans Hwy. 1 right-of-way, 1 site in County's Swanton Rd. right-of-way). Proposal includes a 192 square foot, 13'-6" tall equipment shelter (Telecommunications Hub) on an agricultural parcel (APN 058-022-11) Requires a Level 5 Commercial Development Permit, a Level 5 Coastal Development Permit, and three Telecommunications Act Exceptions to requirements contained in the County Wireless Communications Facilities Ordinance.
Six of the proposed utility pole microcell sites on Caltrans right-of-way are located along an approximately 13 mile stretch of Hwy. 1, beginning 3.8 miles northwest of Western Drive and ending .4 miles northwest of the entrance to Big Creek Lumber. The 7th site is proposed to be located in County right-of-way along Swanton Rd. on a utility pole approx. 1.1 miles north of the southernmost Swanton Road intersection with Hwy.1. The equipment shelter is proposed to be located immediately northwest of the southernmost intersection of Highway 1 and Swanton Road.

SUBJECT TO ATTACHED CONDITIONS

Approval Date: 1/25/2012
Effective Date: 2/8/2012
Exp. Date (if not exercised): see conditions
Coastal Appeal Exp. Date: Call Coastal Com
Denial Date:
Denial Date:

___ This project requires a Coastal Zone Permit, which is not appealable to the California Coastal Commission. It may be appealed to the Board of Supervisors. The appeal must be filed within 14 calendar days of action by the decision body.

__X__ This project requires a Coastal Zone Permit, the approval of which is appealable to the California Coastal Commission. (Grounds for appeal are listed in the County Code Section 13.20.110.) The appeal must be filed with the Coastal Commission within 10 business days of receipt by the Coastal Commission of notice of local action. Approval or denial of the Coastal Zone Permit is appealable. The appeal must be filed within 14 calendar days of action by the decision body.

This permit cannot be exercised until after the Coastal Commission appeal period. That appeal period ends on the above indicated date. Permittee is to contact Coastal staff at the end of the above appeal period prior to commencing any work.

A Building Permit must be obtained (if required) and construction must be initiated prior to the expiration date in order to exercise this permit. **THIS PERMIT IS NOT A BUILDING PERMIT.**

By signing this permit below, the owner agrees to accept the terms and conditions of this permit and to accept responsibility for payment of the County's costs for inspections and all other actions related to noncompliance with the permit conditions. This permit shall be null and void in the absence of the owner's signature below.

Signature of Owner/Agent _____ Date _____

Staff Planner _____ Date _____

Recording requested by:

COUNTY OF SANTA CRUZ

When recorded, return to:
Planning Department
Attn: Frank Barron
County of Santa Cruz
701 Ocean Street
Santa Cruz, CA 95060

Conditions of Approval

Development Permit No. 111114
Property Owner: Caltrans, County of Santa Cruz and Coast Dairies and Land
Assessor's Parcel No.: 7 Microcell sites in Caltrans (Hwy. 1) and County (Swanton Rd.) Rights-of-Way. Equipment shelter on APN 058-022-11.

Conditions of Approval

Exhibit A: Revised project plans for 7 utility pole-mounted microcell sites, 3 sheets per site, prepared by NextG Networks, dated 8/17/11, and project plans for Davenport Hub equipment shelter, 6 sheets, prepared by Connell Design Group, LLC, dated 6/13/11.

I. This permit authorizes the construction of a wireless communications Distributed Antenna System (DAS), consisting of 6 microcell wireless communication facilities mounted upon existing utility poles in the rights-of-way of Hwy. 1 (5 sites) and Swanton Rd. (1 site) and a 192 square foot "Telecommunications Hub" equipment shelter on APN 058-022-11. The construction and operation of one of the originally proposed microcell sites, site DAV01, proposed to be located at the 3-Mile Beach turnout, is NOT authorized by this permit due to neighbor opposition. Prior to exercising any rights granted by this permit including, without limitation, any construction or site disturbance, the applicant/owner shall:

A. Sign, date, and return to the Planning Department one copy of the approval to indicate acceptance and agreement with the conditions thereof.

B. Obtain a Building Permit from the Santa Cruz County Building Official.

1. Any outstanding balance due to the Planning Department must be

paid prior to making a Building Permit application. Applications for Building Permits will not be accepted or processed while there is an outstanding balance due.

C. Obtain an Encroachment Permit from the Department of Public Works for all work performed in the County road right-of-way.

D. Submit proof that these conditions have been recorded in the official records of the County of Santa Cruz (Office of the County Recorder) within 30 days from the effective date of this permit.

II. Prior to issuance of a Building Permit the applicant/owner shall:

A. Submit final architectural plans for review and approval by the Planning Department. The final plans shall be in substantial compliance with the plans marked Exhibit "A" on file with the Planning Department. Any changes from the approved Exhibit "A" for this development permit on the plans submitted for the Building Permit must be clearly called out and labeled by standard architectural methods to indicate such changes. Any changes that are not properly called out and labeled will not be authorized by any Building Permit that is issued for the proposed development. The final plans shall include the following additional information:

1. One elevation (for each site) shall indicate materials and colors as they were approved by this Discretionary Application. If specific materials and colors have not been approved with this Discretionary Application, in addition to showing the materials and colors on the elevation, the applicant shall supply a color and material board in 8 1/2" x 11" format for Planning Department review and approval.

2. Details showing compliance with fire department requirements. The proposed structure(s) are located within the State Responsibility Area (SRA) and the requirements of the Wildland-Urban Interface code (WUI), California Building Code Chapter 7A, shall apply.

3. Final plans must show that the "alpha power supply and battery back-up" equipment box (approx. 3' high, by 2.5' wide, by 1' deep) on each pole in a position below the other more narrow boxes, and as close to the ground as feasible, to make the "alpha power supply and battery back-up" equipment box less visually prominent.

4. Final plans must show that all antennas and equipment boxes to be placed on utility poles be painted in colors similar to the

background colors (e.g., light brown, forest green, etc.).

B. Submit four copies of the approved Discretionary Permit with the Conditions of Approval attached. The Conditions of Approval shall be recorded prior to submittal, if applicable.

C. Meet all requirements and pay any applicable plan check fee of the appropriate County Fire Protection District.

D. Pay the current fees for Roadside and Transportation improvements (as applicable).

III. All construction shall be performed according to the approved plans for the Building Permit. Prior to final building inspection, the applicant/owner must meet the following conditions:

A. All site improvements shown on the final approved Building Permit plans shall be installed.

B. All inspections required by the building permit shall be completed to the satisfaction of the County Building Official.

C. The project must comply with all recommendations of the approved soils reports.

D. Pursuant to Sections 16.40.040 and 16.42.100 of the County Code, if at any time during site preparation, excavation, or other ground disturbance associated with this development, any artifact or other evidence of an historic archaeological resource or a Native American cultural site is discovered, the responsible persons shall immediately cease and desist from all further site excavation and notify the Sheriff-Coroner if the discovery contains human remains, or the Planning Director if the discovery contains no human remains. The procedures established in Sections 16.40.040 and 16.42.100, shall be observed.

IV. Operational Conditions

A. In the event that future County inspections of the subject property disclose noncompliance with any Conditions of this approval or any violation of the County Code, the owner shall pay to the County the full cost of such County inspections, including any follow-up inspections and/or necessary enforcement actions, up to and including permit revocation.

B. Post-Construction Non-Ionizing Electromagnetic Radiation (NIER) Measurement and Reporting: Post-construction monitoring of NIER/Radio-Frequency (RF) radiation to verify compliance with the

FCC's NIER standards is required for all 6 new wireless communication facilities built as part of this proposal. This requirement shall be met through submission of a report documenting NIER measurements at the facility site within 90-days after the commencement of normal operations. The NIER measurements shall be made, at the applicant's expense, by a qualified third-party telecommunications or radio-frequency engineer, during typical peak-use periods, utilizing the Monitoring Protocol described in County Code Section 13.10.660(d). The report shall list and describe each transmitter/antenna present at the facility, indicating the effective radiated power of each. The report shall include field measurements of NIER emissions generated by the facility and also other emission sources, from various directions and particularly from adjacent areas with residential dwellings. The report shall compare the measured results to the FCC NIER standards for such facilities. The report documenting the measurements, and the findings with respect to compliance with the established FCC NIER exposure standards, shall be submitted to the Planning Director within 90-days of commencement of operation. Failure to comply with this requirement may result in the initiation of permit revocation proceedings by the County.

C. The microcell facilities shall be removed and the sites restored by the applicant if informed by the owner and operator of the right-of-way that the utility poles are to be removed because the utilities the pole supports are to be relocated underground, or if the microcell facility is rendered unnecessary due to technological advances.

D. The sites shall be restored as nearly as possible to its natural or pre-construction state within six months of termination of use or abandonment of the sites.

V. As a condition of this development approval, the holder of this development approval ("Development Approval Holder"), is required to defend, indemnify, and hold harmless the COUNTY, its officers, employees, and agents, from and against any claim (including attorneys' fees), against the COUNTY, it officers, employees, and agents to attack, set aside, void, or annul this development approval of the COUNTY or any subsequent amendment of this development approval which is requested by the Development Approval Holder.

A. COUNTY shall promptly notify the Development Approval Holder of any claim, action, or proceeding against which the COUNTY seeks to be defended, indemnified, or held harmless. COUNTY shall cooperate fully in such defense. If COUNTY fails to notify the Development Approval Holder within sixty (60) days of any such claim, action, or proceeding, or fails to cooperate fully in the defense thereof, the Development Approval Holder shall not thereafter be responsible to defend, indemnify, or hold harmless the COUNTY if such failure to notify or cooperate was

significantly prejudicial to the Development Approval Holder.

B. Nothing contained herein shall prohibit the COUNTY from participating in the defense of any claim, action, or proceeding if both of the following occur:

1. COUNTY bears its own attorney's fees and costs; and

2. COUNTY defends the action in good faith.

C. Settlement. The Development Approval Holder shall not be required to pay or perform any settlement unless such Development Approval Holder has approved the settlement. When representing the County, the Development Approval Holder shall not enter into any stipulation or settlement modifying or affecting the interpretation or validity of any of the terms or conditions of the development approval without the prior written consent of the County.

D. Successors Bound. "Development Approval Holder" shall include the applicant and the successor'(s) in interest, transferee(s), and assign(s) of the applicant.

Minor variations to this permit which do not affect the overall concept or density may be approved by the Planning Director at the request of the applicant or staff in accordance with Chapter 18.10 of the County Code.

Please note: This permit expires three years from the effective date listed below unless a building permit (or permits) is obtained for the primary structures described in the development permit (does not include demolition, temporary power pole or other site preparation permits, or accessory structures unless these are the primary subject of the development permit). Failure to exercise the building permit and to complete all of the construction under the building permit, resulting in the expiration of the building permit, will void the development permit, unless there are special circumstances as determined by the Planning Director.

Approval Date: _____

Effective Date: _____

Expiration Date: _____

Appeals: Any property owner, or other person aggrieved, or any other person whose interests are adversely affected by any act or determination of the Zoning Administrator, may appeal the act or determination to the Planning Commission in accordance with chapter 18.10 of the Santa Cruz County Code.

COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT

701 OCEAN STREET - 4TH FLOOR, SANTA CRUZ, CA 95060
(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123

KATHLEEN MALLOY PREVISICH, PLANNING DIRECTOR

December 20, 2011

Agenda Date: January 25, 2012

Planning Commission
County of Santa Cruz
701 Ocean Street
Santa Cruz, CA 95060

Subject: Appeal of Zoning Administrator Approval of Application #111114 for Seven Microcell Sites on North Coast

Planning Commissioners:

This item is an appeal of a December 2, 2011 Zoning Administrator's decision to approve Application #111114 (see Appeal Letter – Attachment 1) to install seven new microcell wireless communication facilities (WCFs), all to be co-located on existing utility poles along inland side of Hwy. 1 (Six sites in Caltrans Highway 1 right-of-way, and one site in County's Swanton Road right-of-way) (see ZA staff report - Attachment 2). The proposal also included a 192 square foot, 13'-6" tall equipment shelter (Telecommunications Hub) on an agricultural parcel (APN 058-022-11). The approval included a Level 5 Commercial Development Permit, a Level 5 Coastal Development Permit, and three Telecommunications Act Exceptions to requirements contained in the County WCF Ordinance. The exceptions were proposed to address new requirements of the Public Utilities Commission (PUC) for the design of the antennas and to allow the location of one antenna and equipment cabinet on land zoned for Commercial Agriculture (CA). The appeal of the Zoning Administrator's approval of this application was filed by a neighbor of one of the proposed microcell WCFs (site "DAV01" - located at the 3-Mile Beach turnout), and is based on viewshed and safety concerns at that single microcell site (they did not express concern with any of the other proposed sites).

Project Description

This proposal to install seven new microcell WCF sites, as a "Distributed Antenna System" or DAS, is the first DAS proposal in the unincorporated area (there is currently a DAS on the UCSC campus, inside Santa Cruz city limits). As a DAS, each of the seven proposed wireless communication facilities are to be linked together by a new approximately 1" diameter fiber optic cable line that will be strung along the existing utility pole line parallel to Hwy. 1. The seven new WCF microcell sites are to be located on existing utility poles. Six of the poles are located along the inland side of Hwy. 1 in the Caltrans right-of-way. These poles are located along an approximately 13 mile stretch of Hwy. 1, beginning 3.2 miles west of Western Drive (location of DAV01) and ending 0.4 miles north of the entrance to Big Creek Lumber yard near Big Basin State Park - Rancho del Oso Unit. The seventh site (DAV05) is located in the County's Swanton Rd. right-of-way, approximately 1.1 miles north of the southernmost Swanton Road intersection with Hwy. 1.

Reasons for Appeal

The appeal was filed by Andrew and Wan-Jean Hsu, neighbors of the proposed microcell site identified as "DAV01", located in the Highway 1 right-of-way (inland side) at the 3-Mile Beach turnout, 3.2 miles west of Western Drive (see Attachment 1). Their appeal is based on the following issues/concerns raised by the appellants regarding this single microcell site only:

1. The proposed microcell (DAV01) would be in direct view of a residence (theirs): The appellants are planning to build their new house some 20 yards to the north of the subject utility pole and the microcell antennas and equipment will be visually obtrusive.

2. The proposed microcell would be in the public viewshed: The proposed location next to a heavily used parking area and trailhead will be a visual blight for the many people who frequent the site.

3. The proposed microcell may cause safety issues (from radio-frequency radiation): The close proximity of the antennas to the proposed new house and other nearby residences could have a detrimental health effect from radio-frequency (RF) radiation on residents, especially children and seniors.

4. The proposed microcell equipment may cause traffic problems: The appellants are concerned that a microcell at this site will cause potentially dangerous traffic problems due to large trucks accessing the site for installation and maintenance and blocking the views of oncoming traffic for other users of the parking area.

5. There are less problematic potential sites for DAV01 on adjacent poles, either to the north or south of the proposed utility pole location: These adjacent poles are surrounded by agricultural land and do not pose the same problems as the proposed location.

The appellants were present at the Zoning Administrator hearing on December 2, 2011 and aired their concerns during the public hearing. The applicant, Natasha Ernst of NextG Networks, agreed to meet with the appellants and with NextG's RF engineers, to work with them and explore the possibility of moving DAV01 to another adjacent (and less problematic) pole. We were not informed as to the result of that meeting prior to the deadline for preparation of the Planning Commission agenda.

Staff Analysis of Appeal

1. The proposed microcell (DAV01) would be in direct view of a residence.

   As a microcell-type WCF this project will have only minimal visual impacts. The proposed equipment is comparable to that which is installed by utility providers on utility poles.

2. The proposed microcell would be in the public viewshed.

   As a small microcell-type WCF, this project will have only a minimal impact on public

views, even at this relatively heavily used location (see Attachment 3 for photo-simulations of DAV01). The equipment to be added to the existing utility pole is comparable to other types of equipment that are typically found on utility poles, such as transformers. The proposed microcell will not look out of place or be visually obtrusive.

3. The proposed microcell may cause safety issues (from radio-frequency radiation).

   The highest levels of radio-frequency (RF) radiation exposure to the general public are predicted to be only 28% of the FCC limit for such exposures (see page 4 of Attachment 4). Federal law prohibits the County from considering the potential health effects of RF exposure as a reason for denial of this project, as exposure limits are regulated by the FCC.

4. The proposed microcell equipment may cause traffic problems.

   Trucks used for installation and maintenance of the proposed microcell site will be present very infrequently and at this site can be parked away from the highway in such an manner as to not create any visual obstructions for cars entering the highway from this parking area.

5. There are less problematic potential sites for DAV01 on adjacent poles, either to the north or south of the proposed utility pole location.

   This may be true, but it must be determined by the applicant if those other potential sites are feasible from a technical and practical standpoint. It is not clear that these other sites have the required vehicle access for the aforementioned installation and maintenance vehicles.

Staff Recommendation

Based on the foregoing analysis of the reasons given by the appellant for this appeal, Planning Department staff recommends that your Commission **UPHOLD** the Zoning Administrator's action to approve application #111114 as conditioned (Attachment 2, Exhibit C), based on the findings made as part of the previous approval (Attachment 2, Exhibit B).

Sincerely,

Frank Barron, AICP
Project Planner
Development Review Section

Reviewed By: _____
Cathy Graves
Principal Planner
Development Review Section

Attachments:

1. Appeal Letter of Dec. 15, 2001 from Andrew and Wan-Jean Hsu

2. Staff report to the Zoning Administrator, heard on 12/2/11.
   a. Exhibit A: Project plans
   b. Exhibit B: Findings
   c. Exhibit C: Conditions of Approval
   d. Exhibit D: CEQA Notice of Exemption
   e. Exhibit E: Assessor's, Location, Zoning and General Plan Maps
   f. Exhibit F: Comments & Correspondence
   g. Exhibit G: Alternatives Analysis

3. Photo of Mock-up of Microcell Site DAV01

4. NIER (RF) Calculations Report

ATTACHMENT 1

2011 DEC 16 PM 4 41

Andrew & Wan-Jean Hsu
3050 Coast Road
Santa Cruz, CA 95060
December 15, 2011

Planning Commission
Planning Department,
Attn: Frank Barron
County of Santa Cruz
701 Ocean Street
Santa Cruz, CA 95060

Re: Appeal for the relocation of the microcell wireless communication facility on site DAV01
Approval of Application # 111114

Dear Planning Commissioners,

We are writing regarding the recent changes to a utility pole fitted with a microcell wireless communication facility (WCF) on November 4, 2011. This utility pole is next to our commercial agriculture property (Parcel Number 059-121-09) located at 3050 Coast Road, Santa Cruz, CA 95060. The utility pole's modification was brought to our attention only after the installation of the WCF equipment was completed.

The said utility pole with the newly placed WCF was built only yards away from our property and extremely close to our house. It is located across from the current entrance and proposed future parking lot for the Three-mile surf beach of the Wilder State Park. A tabulation chart can be found below with the site of the utility pole with the WCF in relation to specific areas of the surrounding properties:

Specific Location on 3050 Coast Road	Distance from Utility Pole with WCF
Owner's property fence	3-5 yards
Driveway and entrance gate	15-20 yards
Owner's main living quarters (house)	35-40 yards
Owner's future living quarters (house)	20-25 yards
Entrance to Three-mile surf beach	30 yards

On November 4, 2011, a microcell and its associated equipment (currently inactive) was installed on the said utility pole and named site DAV01. The following month on December 2, 2011, a public hearing was given by the county Planning Department for concerned citizens to

voice their opinion of the said utility pole's reconstruction. We attended that meeting and shared our concerns and requested that the said WCF on DAV01 be relocated onto the next utility pole, 0.2 miles North West into an agricultural zone with no nearby residents.

We are appealing the relocation of the WCF for the following reasons:

1. The microcell equipment is in direct view of a residence:
    - An additional residence is currently being planned to be constructed on the hilltop, about 20 yards north of the DAV01. The property was originally purchased for its proximity to the ocean and its picturesque views. The said microcell blocks the future residence house's ocean view and creates a visually obtrusive appearance.
2. The microcell equipment is in the public view:
    - Many hikers, bikers, and surfers park their vehicles by the entrance of both the park and our driveway. They park on both sides of Highway 1 to access the beach and the nearby hiking trails. This microcell equipment is clearly visible to them and its visual impact will take away from the natural beauty of the surrounding areas.
3. The microcell equipment may cause safety issues:
    - The proximity of the microcell to a residence that houses children and senior citizens exposes them to excessive radio-frequency radiation (RFR). Over long term periods, that may lead to future health issues. Despite the proposed fact that a microcell emits no more than 3% RFR of the most restrictive applicable Federal Communication Commission's limit, there are several studies that report long term exposure of RFR can increase a person's risk for cancer.
4. The microcell equipment may cause traffic issues:
    - Any work that will need to be completed on the said microcell equipment may cause a traffic bottle neck, increasing the risk for traffic collisions. We have personally witnessed several collisions between traffic heading east on Highway 1 and persons trying to exit our driveway to return toward downtown Santa Cruz. Accidents happen because cars that park on the north side of Highway 1 obstruct the view of oncoming eastbound traffic for those exiting the said property's driveway. Having large sized utility repair trucks parked on the north side of Highway 1 will just cause further traffic concerns for the residents and visitors of the property.
5. A microcell equipment placed on the next utility pole (0.2 miles North West of DAV01) would be in an agricultural zone:

ATTACHMENT 1

- This proposed alternative site has no residences and seldom has any visitors. Relocating the microcell will have a lower visual impact for a nonresidential area compared to space that has residential properties.

We feel very strongly regarding this issue of the newly placed WCF at site DAV01. We hope that you seriously consider our reasons for the appeal and have the microcell equipment moved to a better suited location that will not visually impact our property nor hurt our health and the health of other residents and visitors of Wilder State Park.

Thank you for your time in reviewing our appeal.

Sincerely,

Andrew C. Hsu DEC. 15, 2011

Andrew Hsu Date

Wan-Jean Hsu Dec. 15, 2011

Wan-Jean Hsu Date

Property owners of: 3050 Coast Road, Santa Cruz, CA 95060
Home: (626) 795-6124
Cellular: (626) 390-8446
Email: thehsufits@yahoo.com

Dec. 2, 2011

By Hand Delivery
to Santa Cruz County Zoning Administrator
Re: Application No. 111114

Dear Sir,

As a resident of the area affected by the development proposal before you, I want to express my support for efforts to provide greater access to broadband for underserved rural neighborhoods like ours on Coast Road . However, for residents who may want to choose Verizon wireless as a broadband source, this project is unlikely to provide adequate service due to the placement of the proposed microcell antennas. The location of the antennae pursuant to the staff recommendation for "communication space" siting instead of pole top antenna siting means that topography will interfere with or prevent coverage to most neighborhood residents . These placements are the result of staff opinion about visual impacts which are debatable, but here, are being given more weight than the public's need for access to service. On page 5 of the staff report, staff notes "the coverage limitations of the crossbar design" (in the communications space). I therefore request that the Zoning Administrator allow the applicant the option to use pole top antennas when their engineers feel they will enhance coverage and avoid coverage gaps.

Topography and County Code requirements make antenna siting difficult. Some advantageous locations have already been chosen by AT&T wireless for the DAS they installed along Highway One. In some locations colocation on a utility pole might be desirable yet, on Page 11 paragraph – staff asserts that colocation is not possible for technical reasons. This assertion would seem to contradict and conflict with the colocation requirements found in the Code's WCF ordinance, and the staff report does not adequately explain this assertion. Clarification of this matter would be desirable to guide and inform future applicants who might seek to install DAS.

While not part of this application it should be noted that this development proposal depends on the installation of miles of new fiber optic cable along Highway One. While less that half of it will apparently be seaward of the highway, is is unfortunate that the County's permitting process, containing many requirements for viewshed protection, is precluded by State and Federal law from considering the visual impacts of the new cable and the many "temporary" new poles that have been installed to support it.

While your office might have desired more time to consider these remarks, it should be noted that the staff report was not available online until Tues. Nov. 29, as evidenced by the attached e-mail from County staff. That was followed by power outages caused by the windstorm, leaving little time for consideration of the staff report.

Sincerely yours,

Marty Demare

Marty Demare

Staff Report to the Zoning Administrator

Application Number: 111114

Applicant: Natasha Ernst, Next G Networks
Owner: Rights of way owned by Caltrans (Hwy. 1) and County of Santa Cruz (Swanton Rd.). Coast Dairies & Land Co. owns equipment shelter site.
APN: 7 Microcell sites in Caltrans (Hwy. 1) and County (Swanton Rd.) Rights-of-Way. Equipment shelter on APN 058-022-11.

Agenda Date: November 18, 2011
Agenda Item #:

Time: After 10:00 a.m.

Project Description: Proposal to install 7 new microcell wireless communication facilities, each to be co-located on existing utility poles along inland side of Hwy. 1 (6 sites in Caltrans Hwy. 1 right-of-way, 1 site in County's Swanton Rd. right-of-way). Proposal includes a 192 square foot, 13'-6" tall equipment shelter (Telecommunications Hub) on an agricultural parcel (APN 058-022-11). Requires a Level 5 Commercial Development Permit, a Level 5 Coastal Development Permit, and three Telecommunications Act Exceptions to requirements contained in the County Wireless Communications Facilities Ordinance.

Location: Six of the 7 sites would be located along the inland side of Highway 1 in the Caltrans right-of-way, and one would be located in County right-of-way along Swanton Road. The proposed utility pole microcell sites on Caltrans right-of-way are located as follows, as measured from the intersection of Hwy. 1 and Western Drive: DAV01: Approx. 3.2 miles north/west (NE of 3-Mile Beach pullout); DAV02: Approx. 3.8 miles north/west (just past 4-Mile Beach pullout); DAV03: Approx. 5.8 miles north/west (approx. 300 ft. north/west of northernmost Hwy. 1 intersection with Scaroni Rd.); DAV04: Approx. 6.5 miles north/west (approx. 250 ft. south of southernmost intersection of Laguna Rd. and Hwy 1); DAV09: Approx. 16.3 miles north/west (approx. 500 ft. north of northernmost intersection of Swanton Rd. and Hwy 1); DAV10: Approx. 16.9 miles north/west (approx. 0.4 miles north of entrance to Big Creek Lumber yard). DAV05 is proposed to be located in County right-of-way along Swanton Rd. on a utility pole approx. 1.1 miles north of the southernmost Swanton Road intersection with Hwy. 1.

Supervisoral District: 3rd District (District Supervisor: Neal Coonerty)

Permits Required: Requires a Level 5 Commercial Development Permit and a Level 5 Coastal Development Permit.

Technical Reviews: None

Staff Recommendation:

- Approval of Application # 111114, based on the attached findings and conditions.

Exhibits

A.	Project plans	E.	Assessor's, Location, Zoning and General Plan Maps
B.	Findings	F.	Comments & Correspondence
C.	Conditions	G.	Alternatives Analysis
D.	CEQA Notice of Exemption (Lead Agency: Cal. Public Utilities Commission)		

Parcel Information

Parcel Size:	N/A – Hwy. 1 and Swanton Road rights-of-way
Existing Land Use - Parcel:	State Highway (Hwy. 1) and roadway (Swanton Rd.), lined with utility poles and associated equipment
Existing Land Use - Surrounding:	Primarily agricultural
Project Access:	Highway One and Swanton Road
Planning Area:	North Coast
GP/LCP Land Use Designation:	DAV01 & 02 are Parks, Recreation & Open Space (O-R) DAV03, 04 and 05 are Agricultural (AG) DAV09 & 10 are Mountain Residential (R-M) Equipment shelter is on Agricultural (AG)
Zone District:	All sites are zoned Special Use (SU), except for DAV05 which is zoned Commercial Agricultural (CA). Proposed Telecommunications Hub equipment shelter is also in the Commercial Agricultural (CA) zone.
Coastal Zone:	_X_ Inside __ Outside
Appealable to Calif. Coastal Comm.	_X_ Yes __ No

Environmental Information

Geologic Hazards:	DAV01 lies within Liquifaction Zone "D" and DAV09 is within a mapped County Fault Zone
Soils:	N/A
Fire Hazard:	DAV05 (only) lies within a mapped Fire Hazard Area
Slopes:	N/A
Env. Sen. Habitat:	All 7 sites are within mapped Biotic Resource Areas. All sites except for DAV09 and 10 are within the mapped Special Grasslands area.
Grading:	No grading proposed
Tree Removal:	No trees proposed to be removed
Scenic:	All 7 sites are in mapped Scenic Areas (i.e., within the viewsheds of Hwy. 1 and/or Swanton Rd., both of which are designated Scenic Roads)

Drainage:	Existing drainage adequate
Archeology:	All 7 sites are within mapped potential Archeological Resource Areas however no soil disturbance is proposed.

Services Information

Urban/Rural Services Line:	__ Inside _X_ Outside
Water Supply:	N/A – Project will not require water service
Sewage Disposal:	N/A – Project will not require sewer service
Fire District:	Davenport CDF
Drainage District:	N/A - Out of zone

History & Discussion

This proposal to install 7 new microcell wireless communication facility (WCF) sites, as a "Distributed Antenna System" or DAS, is the first DAS proposal in the unincorporated area (there is currently a DAS on the UCSC campus, inside Santa Cruz city limits). As a DAS, each of the 7 proposed wireless communication facilities are to be linked together by a new approximately 1" diameter fiber optic cable line that will be strung along the existing utility pole line parallel to Hwy. 1. The 7 new WCF microcell sites are to be located on existing utility poles. Six of the poles are located along the inland side of Hwy. 1 in the Caltrans right-of-way. These poles are located along an approximately 13 mile stretch of Hwy. 1, beginning 3.2 miles west of Western Drive and ending 0.4 miles north of the entrance to Big Creek Lumber yard near Big Basin State Park - Rancho del Oso Unit. The seventh site (DAV05) is located in the County's Swanton Rd. right-of-way, approximately 1.1 miles north of the southernmost Swanton Road intersection with Hwy. 1.

At the 6 sites along Hwy. 1 in Caltrans right-of-way, the antennas are proposed to be mounted hanging at the ends of new cross-bar members, which are to be attached to the 6 existing utility poles. At the one site on Swanton Road, in County right-of-way (site DAV05), the 2-foot tall antenna is proposed to be mounted atop a 2-foot height extension to the existing pole. In addition to the antennas, mounted upon each of the 7 poles will be two narrow equipment boxes (approximately the width of the subject poles) and one larger more bulky equipment box.

This proposal also involves the construction of a 192 square foot, 13'-6" tall, equipment shelter or "Telecommunications Hub", to be disguised as a farm outbuilding, and located amongst other agriculturally-related structures on an agricultural parcel (APN 058-022-11) immediately northwest of the southernmost intersection of Highway 1 and Swanton Road. The new DAS network antennas initially will be utilized by users of the Verizon Wireless network, but the system can be enhanced to accommodate additional carriers in the future with no need for additional antennas, only a larger Telecommunications Hub equipment shelter.

The proposal requires a Level 5 Commercial Development Permit, a Level 5 Coastal Development Permit, and 3 Federal Telecommunications Act (TCA) Exceptions for deviations from three of the requirements of the County's Wireless Communication Facilities (WCF) Ordinance for three separate aspects of the project. These three aspects are: (1) the need to deviate from the required microcell design standards; (2) the necessity of locating one of the microcell sites on an area of County controlled right-of-way (on Swanton Rd.) that is zoned

Commercial Agriculture (CA) which is one of the "prohibited" zone districts; and (3) the necessity of locating the proposed "Telecommunications Hub" equipment shelter on "prohibited" CA-zoned land.

A Federal TCA Exception is a provision in the County's WCF Ordinance (County Code Sec. 13.10.660-668) requires exceptions from the WCF Ordinance if the application any of the requirements or limitations set forth in the WCF Ordinance would have the effect of violating the Federal Telecommunications Act. The WCF Ordinance states that the approving body shall grant a Federal TCA Exception to allow an exception to the offending requirement in such cases. The WCF Ordinance states that applicant shall have the burden of proving that application of the requirement or limitation would violate the Federal Telecommunications Act, and that no alternatives exist which would render the approval of a Federal TCA Exception unnecessary. This proof has been provided in the attached Alternatives Analysis provided by the applicant (Exhibit G). This issue is discussed in detail under "Consistency with Wireless Communications Facilities (WCF) Ordinance" below.

Project Setting

All 7 sites are in mapped Scenic Areas within the viewsheds of Hwy. 1 and/or Swanton Rd., both of which are designated Scenic Roads. This North Coast area is one of the most scenic areas of the County and lies entirely within the Coastal Zone. Due to their uncommon aesthetic beauty, the scenic resources of this area are afforded a higher level of protection than most other areas of the County. However all 7 proposed sites are located on the inland side of Hwy. 1 on existing utility poles and thus will not impact views from the highway towards the ocean.

The 4 southernmost proposed utility pole microcell sites in the Caltrans Hwy. 1 rights-of-way (i.e., DAV01 through DAV04) are all located in Coastal scrub habitat, backed by low hills. DAV05 in County right-of-way along Swanton Road is located in Coastal scrub habitat on the flanks of a hillside overlooking Scott Creek Valley and Hwy. 1 where it crosses Scott Creek. DAV09 and DAV10 are located on the fringe of Monterey Pine forest habitat, backed by low hills. The proposed 192 square foot "Telecommunications Hub" equipment shelter is to be located on flat uncultivated land, where is will be surrounded by similar farm outbuildings on a site (Swanton Berry Farm) containing a residential structure.

Zoning & General Plan Consistency

General Plan/LCP Land Use Designations: Microcell sites DAV01 & 02 are proposed on Caltrans right-of-way (ROW) land that is designated Parks, Recreation & Open Space (O-R). DAV03, 04 and 05 are proposed on Caltrans ROW (and County ROW in the case of DAV05) areas that are designated Agricultural (AG). DAV09 & 10 are proposed on Caltrans ROW land that is designated Mountain Residential (R-M). The proposed Telecommunications Hub equipment shelter is proposed for land designated Agricultural (AG). None of the microcell or equipment shelter uses as proposed are inconsistent with the allowed uses in their respective General Plan/LCP land use categories

Zoning Districts: All proposed microcell sites are on ROW areas that are zoned Special Use (SU), except for DAV05 which is on ROW land zoned Commercial Agricultural (CA). The

proposed Telecommunications Hub equipment shelter is also proposed to be on land zoned Commercial Agricultural (CA). None of the microcell or equipment shelter uses as proposed are inconsistent with the allowed uses in their respective zone districts.

Consistency with Wireless Communications Facilities (WCF) Ordinance

While the proposed microcell WCFs in rights-of-way are largely consistent with the County's WCF Ordinance, being allowed and, moreover, encouraged by the Ordinance, as noted above in History & Discussion section, approval of this project will require three Federal Telecommunications Act (TCA) Exceptions to be granted by the County.

Proposed Federal Telecommunications Act (TCA) Exception Regarding Design Standards

The first Federal TCA Exception is needed because the proposed design of the 7 microcells do not conform to the requirement set out in the WCF Ordinance that microcells in the Coastal Right-of-Way must be flush-mounted on utility poles. The applicant proposes that the antennas not be flush mounted because flush mounting of WCF antennas to utility poles is no longer allowed by the California Public Utilities Commission (PUC) (General Order 95, Section IX, Part 94.4 E), which is the controlling authority regarding utility pole requirements/regulations in California, unless the pole is extended in height (by a distance that varies depending on the level of power being transmitted along the wires the pole supports) and the antennas are mounted at the top. The applicant originally proposed such a height extension design of each of the 7 sites, but staff determined that the visual impact of such height extensions would be too great (see Alternatives Analysis – Exhibit G).

The applicant subsequently proposed a design that instead adds a crossbar to each of the subject poles (except DAV05), without increasing their height, with two 2-foot long antennas hanging down, one from each end of the crossbar. In the case of DAV05 on Swanton Road which, due to coverage limitations of the crossbar design, the pole must have a 2-foot pole height extension with a single 2-foot tall antenna mounted on top of that. Such pole height extensions are also not allowed by the WCF Ordinance so this deviation from the design standards will have to be covered under this TCA Exception.

In addition to the antennas, mounted upon each of the 7 poles will be two long and narrow equipment boxes (approximately the width of the subject poles – i.e., approx. 1' wide, 4' high and 8" deep) and one larger more bulky "alpha power supply and battery back-up" equipment box (approx. 3' high, by 2.5' wide, by 1' deep), all of which also exceed the maximum size dimensions allowed for such boxes by the WCF Ordinance in the "Restricted Coastal Right-of-Way Area" (i.e., not to exceed 2' high, by 1.5' wide, by 10" deep). Therefore, a TCA Exception is needed to allow this aspect of the proposed design as well. As proposed, the design for each of the 7 poles has the larger more bulky "power supply and battery back-up" box mounted on the pole above the narrower boxes, creating a somewhat visually obtrusive appearance. To reduce this effect, the applicant has agreed to a Condition of Approval that will move the larger "power supply and batter back-up" boxes down to a position on each pole that is below the more narrow boxes, and also paint them and the antennas in colors similar to the background colors (e.g., light brown, forest green, etc.), making them less visually prominent.

A Federal TCA Exception is needed in this case because if the County were to strictly adhere to the design standards for microcells in the "coastal right-of-way" in the WCF Ordinance and

require flush mounting of the antennas to the poles, the microcells could not be built because they would violate PUC requirements, meaning that the County would be preventing the filling of a "significant gap" in the carrier's (in this case Verizon's) coverage, which would be a violation of the Federal Telecommunications Act. Any alternative means of filling the carrier's "significant gap", such as constructing an equal number of full macrocell cell towers along the North Coast would have a much greater visual impact than the proposed utility pole co-located microcell sites, and would not be feasible, as a significant portion of the North Coast has "prohibited area" zoning. Moreover, the applicant, NextG Networks of California, does not install macro-cell sites, only microcells mounted upon utility poles. Therefore, the granting of a Federal TCA Exception is warranted and necessary in this case.

It should be noted that the stretch of Hwy. 1 between the City of Santa Cruz and Davenport already contains another series of utility pole-mounted microcell WCFs, these ones providing coverage for AT&T Wireless network. However, the option of co-locating the new proposed NextG DAS network on these poles is not viable because of the need for separation of the Verizon and AT&T antennas due to differing technologies. Moreover, it is not clear that doubling the number of antennas and related equipment on the AT&T poles would have less visual impact than having the new antennas and equipment installed on different poles.

Proposed TCA Exception Regarding Microcell Site Located on Property Zoned "CA"

A second Federal TCA Exception is also needed to allow the locating one of the microcell sites (DAV05) on an area of County controlled right-of-way (on Swanton Rd.) that is zoned Commercial Agriculture (CA), which is one of the "prohibited" zone districts. WCFs cannot be constructed in "prohibited areas" except as follows (as per Sec. 13.10.661[b][4]):

> "If a Telecommunications Act Exception is approved pursuant to Section 13.10.668(a) that allows for siting a wireless communications facility within any of the ....prohibited areas, then such facility shall comply with the remainder of Sections 13.10.660 through 13.10.668 inclusive, and shall be co-located. Applicants proposing new wireless communication facilities in any of the above-listed prohibited areas must submit as part of their application an Alternatives Analysis, as described in Section 13.10.662(c) below. Non-collocated wireless communication facilities may be sited in the prohibited areas listed above only in situations where the applicant can prove that:
>
> (i) The proposed wireless communication facility would eliminate or substantially reduce one or more significant gaps in the applicant carrier's network; and
>
> (ii) There are no viable, technically feasible, and environmentally (e.g., visually) equivalent or superior potential alternatives (i.e., sites and/or facility types and/or designs) outside the prohibited areas identified in Section 13.10.661(b) that could eliminate or substantially reduce said significant gap(s).
>
> Any wireless communications facility and any associated development allowed in a prohibited area: (1) shall be sited and designed so that it is not visible from public vantage points to the maximum extent feasible; or (2) where some portion or all of such a facility and/or any associated development is unavoidably sited and/or designed in a manner that

makes it visible from public vantage points (and cannot be sited and/or designed to not be visible), that portion shall be screened and/or camouflaged so that it is inconspicuous and designed to blend seamlessly into the existing public view."

The Swanton Road site (DAV05) is necessary to close a "significant gap" in the carrier's network, and other potential alternative sites in allowed zone districts that could close that gap would be more visually obtrusive. The alternative method to closing this gap would require the construction of a new pole or tower (also not allowed by the WCF Ordinance) on Hwy. 1 near the Scott Creek Bridge in a highly scenic stretch of coast that currently does not contain utility poles. The proposed location of this microcell on an existing utility pole along Swanton Road in the 'prohibited" CA zone district is an alternative that is environmentally superior to the alternative of placing an entirely new tower/pole along a pristine stretch of Hwy. 1, therefore the granting of a TCA Exceptions to allow placement in the "prohibited" CA-zone is warranted.

Proposed TCA Exception Regarding Location of Equipment Shelter on Land Zoned "CA"

The third TCA Exception is needed to allow the placement of the Telecommunication Hub equipment shelter also on land that is zoned CA (APN 058-022-11), where such equipment can be allowed, pursuant to a TCA Exception, only if it is "...camouflaged so that it is inconspicuous and designed to blend seamlessly into the existing public view." Since the Telecommunications Hub is proposed to be located inside a small 192 sq. ft. structure disguised to look like a typical small agricultural outbuilding or tool shed, it will be indistinguishable from the other agricultural outbuildings on the parcel, and will blend-in seamlessly as viewed from Swanton Rd. and Hwy 1. The structure will not be built on currently cultivated or otherwise agriculturally viable land. In addition, the main intent of the Prohibited Area is to prohibit the construction of new cell towers in these visually sensitive areas, not small equipment shelters such as the one proposed. In addition, any alternative site for the Telecommunications Hub in an allowed zone district not on CA-zoned land would likely have greater visual impacts than the one in the proposed location, since the shelter would be standing alone and not located amongst other farm outbuildings. Finally, the Alternatives Analysis (Exhibit G) documents that other possible locations for this equipment shelter are either unavailable or would result in a stand-alone structure that would be more visually conspicuous than the proposed location. It is clear that this location is the environmentally (i.e., visually) superior alternative site for this equipment shelter, which is a necessary component in eliminating the significant gap in the carriers (i.e., Verizon's) network. Therefore, the granting of a Federal TCA Exception is warranted for this aspect of the project as well.

Local Coastal Program Consistency

The 7 proposed microcell WCFs and proposed 192 square foot Telecommunications Hub are generally in conformance with the County's certified Local Coastal Program, in that they are sited and designed to be visually compatible, in scale with, and integrated with the character of their surroundings, and they will not interfere with public access to the beach, ocean, or other nearby bodies of water. However, as described above, the proposed microcell design is not consistent with the requirements of the County's WCF Ordinance, which is part of the LCP Implementation Plan, a Federal TCA Exception will be needed to allow approval. A second Federal TCA Exception will be needed to approve the proposed location of the Swanton Rd. site on CA-zoned right-of-way. And a third TCA Exception will be needed to approve the location of the Telecommunications Hub, also on CA-zoned land.

Design Review

The 7 proposed WCFs comply with the requirements of the County Design Review Ordinance, in that they will be relatively small and inconspicuous microcell designs mounted to existing utility poles and thus will have much less of a visual impact as compared with typical cell towers (i.e., macro-cell sites). The proposed 192 square foot "Telecommunications Hub" equipment shelter is also small, similar to a pre-fabricated tool shed, and will blend in very well with the surrounding agriculture-related outbuildings.

Environmental Review

As lead agency for all utility pole-mounted microcell WCFs in California, the California Public Utilities Commission (PUC) has determined that all such project are Categorically Exempt from the requirements of the California Environmental Quality Act (CEQA). The PUC's blanket Categorical Exemption form is attached as Exhibit D.

Conclusion

As proposed (with the three proposed Federal Telecommunications Act Exceptions) and conditioned, the project is consistent with all applicable codes and policies of the Zoning Ordinance and General Plan/LCP. Please see Exhibit "B" ("Findings") for a complete listing of findings and evidence related to the above discussion.

Staff Recommendation

- **APPROVAL** of Application Number **111114,** based on the attached findings and conditions.

Supplementary reports and information referred to in this report are on file and available for viewing at the Santa Cruz County Planning Department, and are hereby made a part of the administrative record for the proposed project.

The County Code and General Plan, as well as hearing agendas and additional information are available online at: www.co.santa-cruz.ca.us

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Coastal Development Permit Findings

1. That the project is a use allowed in one of the basic zone districts, other than the Special Use (SU) district, listed in section 13.10.170(d) as consistent with the General Plan and Local Coastal Program LUP designation.

This finding can be made for DAV01, 02, 03, 04, 09 and 10 in that these proposed microcell sites are on right-of-way (ROW) areas on land that is zoned Special Use (SU), and the microcell use as proposed is consistent with the allowed uses in the SU zone district, and each site's zoning district is consistent with its corresponding General Plan/LCP land use designation. Further, this finding can be made for proposed microcell site DAV05 and for the proposed Telecommunications Hub equipment shelter, which are to be located on land zoned Commercial Agricultural (CA), with approval of the proposed Federal Telecommunications Act Exception, as supported by Wireless Communications Facility Use Permit Finding number 7.

2. That the project does not conflict with any existing easement or development restrictions such as public access, utility, or open space easements.

This finding can be made, in that the proposal does not conflict with any existing easement or development restriction such as public access, utility, or open space easements as no such easements or restrictions are known to encumber the project sites.

3. That the project is consistent with the design criteria and special use standards and conditions of this chapter pursuant to section 13.20.130 et seq.

This finding can be made, in that the proposed microcells and equipment shelter are compatible with their surroundings. The microcell antennas and equipment will likely be indistinguishable to most passersby from the various other types of telecommunications and power supply equipment that are typically attached to utility poles along Hwy. 1 and Swanton Road. In terms of architectural style, the proposed Telecommunications Hub equipment shelter, to be housed in a structure similar in appearance to a tool shed, is surrounded by similar agricultural-related outbuildings on a developed CA-zoned site. The colors will be natural in appearance and complementary to the site; and the development site is not on a prominent ridge, beach, or bluff top.

4. That the project conforms with the public access, recreation, and visitor-serving policies, standards and maps of the General Plan and Local Coastal Program land use plan, specifically Chapter 2: figure 2.5 and Chapter 7, and, as to any development between and nearest public road and the sea or the shoreline of any body of water located within the coastal zone, such development is in conformity with the public access and public recreation policies of Chapter 3 of the Coastal Act commencing with section 30200.

This finding can be made, in that the project sites are located on the inland side of Hwy. 1, and thus not located between the shoreline and the first public road (which is Hwy. 1 for most of this stretch of coast). Consequently, the proposed microcells and Telecommunications Hub will not interfere with public access to the beach, ocean, or any nearby body of water. Further, none of

the project sites are identified as a priority acquisition sites in the County Local Coastal Program.

5. That the proposed development is in conformity with the certified local coastal program.

This finding can be made, in that the proposed microcell WCFs and Telecommunications Hub are to be sited and designed to be visually compatible, in scale with, and integrated with the character of the surrounding areas. Additionally, microcell WCFs and associated equipment are allowed uses in the respective zone districts of each site (pursuant to the granting of the 3 TCA Exceptions as discussed above), as well as the General Plan and Local Coastal Program land use designations for each site. The proposed microcells and equipment shelter are not visually inconsistent or incompatible with the existing equipment found on utility poles in this area, and the proposed equipment shelter will blend in with the existing outbuildings on its proposed site.

Wireless Communication Facility Use Permit Findings

1. That the development of the proposed wireless communications facility as conditioned will not significantly affect any designated visual resources, environmentally sensitive habitat resources (as defined in the Santa Cruz County General Plan/LCP Sections 5.1, 5.10, and 8.6.6.), and/or other significant County resources, including agricultural, open space, and community character resources; or there are no other environmentally equivalent and/or superior and technically feasible alternatives to the proposed wireless communications facility as conditioned (including alternative locations and/or designs) with less visual and/or other resource impacts and the proposed facility has been modified by condition and/or project design to minimize and mitigate its visual and other resource impacts.

This finding can be made, in that all 7 of the proposed WCFs are of the microcell type which, due to their small size and co-location onto existing utility poles, are the least visually obtrusive type of WCF. Moreover, their installation and use in highway/road rights-of-way will not impact any sensitive habitat resources or other significant County resources, including agricultural, open space, and community character resources. Finally, there are no other environmentally equivalent and/or superior and technically feasible alternatives to the proposed microcell designs that have less visual and/or other resource impacts, and the design of the proposed microcells has been modified to minimize and mitigate their visual impact (i.e., by going from a design involving pole height extension to mounting of the antennas to be hanging down at the ends of crossbars (see Alternatives Analysis – Exhibit G).

As for the proposed "Telecommunications Hub" equipment shelter, this finding can be made, in that, as conditioned, the small (192 sq. ft.) tool shed-like equipment shelter will blend in with several other nearby agricultural outbuildings on the same parcel and will not significantly affect any designated visual resources, environmentally sensitive habitat resources (as defined in the Santa Cruz County General Plan/LCP Sections 5.1, 5.10, and 8.6.6.), nor significantly affect other County resources, including agricultural (i.e., will not displace any viable agricultural land), open space, or community character resources. Moreover, as shown in the applicant's Alternatives Analysis (Exhibit G), there are no other environmentally equivalent and/or superior and technically feasible alternatives to the proposed shelter (including alternative locations and/or designs) with less visual and/or other resource impacts, and the proposed facility has been modified by the attached conditions to minimize and mitigate its visual and other resource impacts.

2. That the proposed sites are adequate for the development of the proposed wireless communications facilities and, for sites located in one of the prohibited and/or restricted areas set forth in Sections 13.10.661(b) and 13.10.661 (c), that the applicant has demonstrated that there are not environmentally equivalent or superior and technically feasible: (1) alternative sites outside the prohibited and restricted areas; and/or (2) alternative designs for the proposed facility as conditioned.

This finding can be made, in that the 7 proposed microcells are to consist of antennas mounted upon existing utility poles in the rights-of-way of Hwy. 1 and Swanton Road, areas where numerous utility poles are already located, including several poles that have microcell WCFs of a different carrier (AT&T) installed upon them. Microcell WCF installations co-located on existing utility poles, such as these, are encouraged in the WCF Ordinance as the preferred WCF design, due to their relatively inconspicuous nature.

As for the proposed "Telecommunications Hub" equipment shelter, this finding can be made, in that, as conditioned, the small (192 sq. ft.) tool shed-like equipment shelter will blend in with several other nearby agricultural outbuildings on the same parcel and will not significantly affect any designated visual resources, environmentally sensitive habitat resources (as defined in the Santa Cruz County General Plan/LCP Sections 5.1, 5.10, and 8.6.6.), nor significantly affect other County resources, including agricultural (i.e., will not displace any viable agricultural land), open space, or community character resources. Moreover, as shown in the applicant's Alternatives Analysis (Exhibit G), there are no other environmentally equivalent and/or superior and technically feasible alternatives to the proposed shelter (including alternative locations and/or designs) with less visual and/or other resource impacts, and the proposed facility has been modified by the attached conditions to minimize and mitigate its visual and other resource impacts.

3. The subject properties upon which the wireless communications facilities are to be built are in compliance with all rules and regulations pertaining to zoning uses, subdivisions and any other applicable provisions of this title (County Code 13.10.660) and that all zoning violation abatement costs, if any, have been paid.

This finding can be made, in that the existing infrastructure uses of the subject rights-of-way, and the existing agricultural-related uses on the proposed Telecommunications Hub site (APN 058-022-11) are in compliance with the requirements of the zone districts and General Plan designations, in which they are located, and that there are no outstanding or unpaid zoning violation abatement costs.

4. The proposed wireless communication facilities as conditioned will not create a hazard for aircraft in flight.

This finding can be made, in that the proposed wireless communications facilities will be located on existing utility poles, the tops of which are at heights too low to interfere with aircraft in flight.

5. The proposed wireless communication facility as conditioned is in compliance with all FCC and California PUC standards and requirements.

This finding can be made, in that the maximum ambient RF levels at ground level due to the proposed WCF operations are calculated to be no more than 3% of the most restrictive applicable (i.e., FCC) limit.

6. The proposed wireless communication facilities as conditioned are consistent with the all applicable requirements of the Local Coastal Program.

This finding can be made, in that the proposed microcell wireless communication facilities are designed and located in a manner that will minimize potential impacts to scenic and biotic resources, and that the construction of the proposed facilities will not impede access to the beach or other recreational resources.

7. Federal Telecommunications Act (TCA) Exception Finding: If the application of the requirements or limitations set forth in Sections 13.10.660 through 13.10.668 inclusive, including but not limited to applicable limitations on allowed land uses, would have the effect of violating the Federal Telecommunications Act as amended, the approving body shall grant a Telecommunications Act Exception to allow an exception to the offending requirement or application. The applicant shall have the burden of proving that application of the requirement or limitation would violate the Federal Telecommunications Act, and that no alternatives exist which would render the approval of a Telecommunications Act Exception unnecessary.

This finding can be made in that the applicant has provided sufficient evidence in their submitted Alternatives Analysis (Exhibit G) to show that Federal TCA Exceptions must be granted for 3 aspects of this project in order to avoid violations of the Federal Telecommunications Act. One Federal TCA Exception is needed because the proposed design of the 7 microcells do not precisely conform to the design standards set out in the WCF Ordinance for microcells in the Coastal Right-of-Way, as those standards are now out of date due to new statewide requirements for microcells on utility pole promulgated by the California Public Utilities Commission. A Federal TCA Exception allowing the alternative design is necessary to prevent a violation of the Federal TCA (see History and Discussion section above for details).

A second TCA Exception is required to allow the placement of one of the microcells (DAV05) in a portion of the Swanton Rd. right-of-way that is zoned Commercial Agriculture (CA). A TCA Exception is needed because the CA zone is one of the "prohibited area" zones listed in the WCF Ordinance where WCFs cannot be constructed except as per Sec. 13.10.661[b][4], which allows only co-located WCFs in prohibited areas, and only if it can be shown that there are no environmentally equivalent or superior alternatives in allowed zone districts. As with the other 6 proposed microcell sites, DAV05 is a co-location, and the attached Alternatives Analysis provides this evidence that there are no environmentally equivalent or superior alternative sites for DAV05 in any of the allowed zone districts, thus providing justification for the granting of a TCA Exception for this aspect of the project.

And a third TCA Exception is needed to allow the placement of the Telecommunication Hub equipment shelter also on land that is zoned CA (APN 058-022-11), where such equipment can be allowed, pursuant to a TCA Exception, only if it is "...camouflaged so that it is inconspicuous and designed to blend seamlessly into the existing public view." Since this is the case, and the Alternatives Analysis (Exhibit G) shows that other possible locations for this equipment shelter on non-CA zoned land are either unavailable or would stand alone and thus be more visually conspicuous than in the proposed location, the granting of a TCA Exception for this aspect of the

project is warranted as well. Moreover, because the required Coastal Development Findings for the more visually conspicuous alternative locations cannot be made, use of the proposed site is the only feasible alternative for siting the equipment shelter. No feasible alternatives exist that would render the approval of a TCA Exception unnecessary, therefore the granting of this exception is warranted.

Development Permit Findings

1. That the proposed locations of the microcells and equipment shelter, and the conditions under which they would be operated or maintained, will not be detrimental to the health, safety, or welfare of persons residing or working in the neighborhood or the general public, and will not result in inefficient or wasteful use of energy, and will not be materially injurious to properties or improvements in the vicinity.

This finding can be made, in that the proposed microcell installations are to be located on utility poles in public right-of-way areas designated for telecommunications and other utility uses. The proposed poles have room for the proposed microcells and are not encumbered by physical constraints to microcell development, and the maximum ambient radio-frequency (RF) radiation at ground level in the immediate vicinity of each microcell are calculated to be no more than 3% of the most restrictive applicable (FCC) limit. The location and operation of the Telecommunications Hub in a small (192 sq. ft.) equipment structure will not result in any negative effects on public health, safety or welfare. Construction will comply with prevailing building technology, the California Building Code, and the County Building ordinance to insure the optimum in safety and the conservation of energy and resources. The proposed microcells will not deprive adjacent properties or their neighborhood of light, air, or open space, in that the installation of the microcells will involve small additions to existing utility poles that are all located far away from other structures. Similarly the small Telecommunications Hub equipment shelter will be located on a large parcel and will comply with all site standards, including setbacks. No structures on other parcels are located in the vicinity of the equipment shelter.

2. That the proposed locations of the microcells and equipment shelter, and the conditions under which they would be operated or maintained. will be consistent with all pertinent County ordinances and the purpose of the zone districts in which the sites are located.

This finding can be made, in that the proposed locations of the microcells and equipment shelter, and the conditions under which they would be operated and maintained, will be consistent with all pertinent County ordinances (upon the granting of the 3 proposed TCA Exceptions) and the purpose of the zone districts, as the primary uses of the subject properties will meet all current site standards for the pertinent zone districts.

3. That the proposed DAS microcell and equipment shelter uses are consistent with all elements of the County General Plan and with any specific plan which has been adopted for the area.

This finding can be made, in that the proposed microcell DAS system is consistent with the use and density requirements specified for the General Plan/LCP land use designations of all the subject sites. The proposed project will not adversely impact the light, solar opportunities, air, and/or open space available to other structures or properties, and meets all current site and development standards for the zone districts, as specified in the General Plan/LCP, in that the project will not adversely shade adjacent properties, and will meet current setbacks for the zone districts that ensure access to light, air, and open space in the surrounding vicinity.

The proposed DAS project will be properly proportioned to the subject parcel sizes, as the proposed microcells and equipment shelter will comply with the site standards for the pertinent zone districts (including setbacks, lot coverage, floor area ratio, height, and number of stories) and will result in structures consistent with a design that could be approved on any similarly sized lot in the vicinity.

A specific plan has not been adopted for this portion of the County.

4. That the proposed use will not overload utilities and will not generate more than the acceptable level of traffic on the streets in the vicinity.

This finding can be made, in that the proposed DAS microcells and equipment shelter project is to be constructed on existing utility poles, and in the case of the equipment shelter, on an already developed agricultural parcel. There is no additional traffic expected to be generated by the proposed project.

5. That the proposed project will complement and harmonize with the existing and proposed land uses in the vicinity and will be compatible with the physical design aspects, land use intensities, and dwelling unit densities of the neighborhood.

This finding can be made, in that the proposed DAS microcells and equipment shelter project will be compatible with the existing and proposed land uses in the vicinity, and will be compatible with the physical design aspects, land use intensities, and dwelling unit densities of nearby neighborhoods. The proposed equipment shelter will blend in and harmonize with the other existing structures on the proposed site.

6. The proposed development project is consistent with the Design Standards and Guidelines (sections 13.11.070 through 13.11.076), and any other applicable requirements of this chapter.

This finding can be made, in that the proposed DAS project will be of an appropriate scale and type of design that will not diminish the aesthetic qualities of the surrounding properties and will not reduce or visually impact available open space in the surrounding area.

These conditions were revised to eliminate Site DAV01 — see pages 4-8 of this exhibit for the County's final conditions

Conditions of Approval

Exhibit A: Revised project plans for 7 utility pole-mounted microcell sites, 3 sheets per site, prepared by NextG Networks, dated 8/17/11, and project plans for Davenport Hub equipment shelter, 6 sheets, prepared by Connell Design Group, LLC, dated 6/13/11.

I. This permit authorizes the construction of a wireless communications Distributed Antenna System (DAS), consisting of 7 microcell wireless communication facilities mounted upon existing utility poles in the rights-of-way of Hwy. 1 (6 sites) and Swanton Rd. (1 site) and a 192 square foot "Telecommunications Hub" equipment shelter on APN 058-022-11. Prior to exercising any rights granted by this permit including, without limitation, any construction or site disturbance, the applicant/owner shall:

A. Sign, date, and return to the Planning Department one copy of the approval to indicate acceptance and agreement with the conditions thereof.

B. Obtain a Building Permit from the Santa Cruz County Building Official.

1. Any outstanding balance due to the Planning Department must be paid prior to making a Building Permit application. Applications for Building Permits will not be accepted or processed while there is an outstanding balance due.

C. Obtain an Encroachment Permit from the Department of Public Works for all work performed in the County road right-of-way.

D. Submit proof that these conditions have been recorded in the official records of the County of Santa Cruz (Office of the County Recorder) within 30 days from the effective date of this permit.

II. Prior to issuance of a Building Permit the applicant/owner shall:

A. Submit final architectural plans for review and approval by the Planning Department. The final plans shall be in substantial compliance with the plans marked Exhibit "A" on file with the Planning Department. Any changes from the approved Exhibit "A" for this development permit on the plans submitted for the Building Permit must be clearly called out and labeled by standard architectural methods to indicate such changes. Any changes that are not properly called out and labeled will not be authorized by any Building Permit that is issued for the proposed development. The final plans shall include the following additional information:

1. One elevation (for each site) shall indicate materials and colors as they were approved by this Discretionary Application. If specific materials and colors have not been approved with this Discretionary Application, in

addition to showing the materials and colors on the elevation, the applicant shall supply a color and material board in 8 1/2" x 11" format for Planning Department review and approval.

2. Details showing compliance with fire department requirements. The proposed structure(s) are located within the State Responsibility Area (SRA) and the requirements of the Wildland-Urban Interface code (WUI), California Building Code Chapter 7A, shall apply.

3. Final plans must show that the "alpha power supply and battery back-up" equipment box (approx. 3' high, by 2.5' wide, by 1' deep) on each pole in a position below the other more narrow boxes, and as close to the ground as feasible, to make the "alpha power supply and battery back-up" equipment box less visually prominent.

4. Final plans must show that all antennas and equipment boxes to be placed on utility poles be painted in colors similar to the background colors (e.g., light brown, forest green, etc.).

B. Submit four copies of the approved Discretionary Permit with the Conditions of Approval attached. The Conditions of Approval shall be recorded prior to submittal, if applicable.

C. Meet all requirements of and pay drainage fees to the County Department of Public Works, Stormwater Management: Drainage fees will be assessed on the net increase in impervious area.

D. Obtain an Environmental Health Clearance for this project from the County Department of Environmental Health Services.

E. Meet all requirements and pay any applicable plan check fee of the appropriate County Fire Protection District.

F. Pay the current fees for Roadside and Transportation improvements (as applicable).

G. Submit a written statement signed by an authorized representative of the school district in which the project is located confirming payment in full of all applicable developer fees and other requirements lawfully imposed by the school district.

III. All construction shall be performed according to the approved plans for the Building Permit. Prior to final building inspection, the applicant/owner must meet the following conditions:

A. All site improvements shown on the final approved Building Permit plans shall be installed.

B. All inspections required by the building permit shall be completed to the satisfaction of the County Building Official.

C. The project must comply with all recommendations of the approved soils reports.

D. Pursuant to Sections 16.40.040 and 16.42.100 of the County Code, if at any time during site preparation, excavation, or other ground disturbance associated with this development, any artifact or other evidence of an historic archaeological resource or a Native American cultural site is discovered, the responsible persons shall immediately cease and desist from all further site excavation and notify the Sheriff-Coroner if the discovery contains human remains, or the Planning Director if the discovery contains no human remains. The procedures established in Sections 16.40.040 and 16.42.100, shall be observed.

IV. Operational Conditions

A. In the event that future County inspections of the subject property disclose noncompliance with any Conditions of this approval or any violation of the County Code, the owner shall pay to the County the full cost of such County inspections, including any follow-up inspections and/or necessary enforcement actions, up to and including permit revocation.

B. Post-Construction Non-Ionizing Electromagnetic Radiation (NIER) Measurement and Reporting: Post-construction monitoring of NIER/Radio-Frequency (RF) radiation to verify compliance with the FCC's NIER standards is required for all 7 new wireless communication facilities built as part of this proposal. This requirement shall be met through submission of a report documenting NIER measurements at the facility site within 90-days after the commencement of normal operations. The NIER measurements shall be made, at the applicant's expense, by a qualified third-party telecommunications or radio-frequency engineer, during typical peak-use periods, utilizing the Monitoring Protocol described in County Code Section 13.10.660(d). The report shall list and describe each transmitter/antenna present at the facility, indicating the effective radiated power of each. The report shall include field measurements of NIER emissions generated by the facility and also other emission sources, from various directions and particularly from adjacent areas with residential dwellings. The report shall compare the measured results to the FCC NIER standards for such facilities. The report documenting the measurements, and the findings with respect to compliance with the established FCC NIER exposure standards, shall be submitted to the Planning Director within 90-days of commencement of operation. Failure to comply with this requirement may result in the initiation of permit revocation proceedings by the County.

C. The microcell facilities shall be removed and the sites restored by the applicant if informed by the owner and operator of the right-of-way that the utility poles are to

be removed because the utilities the pole supports are to be relocated underground, or if the microcell facility is rendered unnecessary due to technological advances.

D. The sites shall be restored as nearly as possible to its natural or pre-construction state within six months of termination of use or abandonment of the sites.

V. As a condition of this development approval, the holder of this development approval ("Development Approval Holder"), is required to defend, indemnify, and hold harmless the COUNTY, its officers, employees, and agents, from and against any claim (including attorneys' fees), against the COUNTY, it officers, employees, and agents to attack, set aside, void, or annul this development approval of the COUNTY or any subsequent amendment of this development approval which is requested by the Development Approval Holder.

A. COUNTY shall promptly notify the Development Approval Holder of any claim, action, or proceeding against which the COUNTY seeks to be defended, indemnified, or held harmless. COUNTY shall cooperate fully in such defense. If COUNTY fails to notify the Development Approval Holder within sixty (60) days of any such claim, action, or proceeding, or fails to cooperate fully in the defense thereof, the Development Approval Holder shall not thereafter be responsible to defend, indemnify, or hold harmless the COUNTY if such failure to notify or cooperate was significantly prejudicial to the Development Approval Holder.

B. Nothing contained herein shall prohibit the COUNTY from participating in the defense of any claim, action, or proceeding if both of the following occur:

1. COUNTY bears its own attorney's fees and costs; and

2. COUNTY defends the action in good faith.

C. Settlement. The Development Approval Holder shall not be required to pay or perform any settlement unless such Development Approval Holder has approved the settlement. When representing the County, the Development Approval Holder shall not enter into any stipulation or settlement modifying or affecting the interpretation or validity of any of the terms or conditions of the development approval without the prior written consent of the County.

D. Successors Bound. "Development Approval Holder" shall include the applicant and the successor'(s) in interest, transferee(s), and assign(s) of the applicant.

Minor variations to this permit which do not affect the overall concept or density may be approved by the Planning Director at the request of the applicant or staff in accordance with Chapter 18.10 of the County Code.

Please note: This permit expires three years from the effective date listed below unless a

building permit (or permits) is obtained for the primary structures described in the development permit (does not include demolition, temporary power pole or other site preparation permits, or accessory structures unless these are the primary subject of the development permit). Failure to exercise the building permit and to complete all of the construction under the building permit, resulting in the expiration of the building permit, will void the development permit, unless there are special circumstances as determined by the Planning Director.

Approval Date: _____

Effective Date: _____

Expiration Date: _____

Steven Guiney, AICP
Deputy Zoning Administrator

Frank Barron, AICP
Project Planner

Appeals: Any property owner, or other person aggrieved, or any other person whose interests are adversely affected by any act or determination of the Zoning Administrator, may appeal the act or determination to the Planning Commission in accordance with chapter 18.10 of the Santa Cruz County Code.

NOTE:
A COPY OF ALL REQUIRED PERMITS MUST BE PRESENT DURING ANY WORK ON THIS LOCATION AND PERFORMING WORK AT THIS LOCATION INDICATES THAT THE CONTRACTOR HAS READ AND COMPLIED WITH THE REQUIREMENTS STATED IN THE PERMITS

SIGNATURE:

NextG Networks of California, Inc.

DAVENPORT
DAV02
CABRILLO HWY / HWY1
SANTA CRUZ, CA. 95060

Call Before you Dig!

811

Know what's below.
Call before you dig.
Call 811 Before you Dig!

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE AREAS GOVERNING CODES.

1. STATE ADMINISTRATIVE CODE
2. STATE BUILDING CODE
3. ANSI/EIA-222-F LIFE SAFETY CODE NFPA-101-1990
4. STATE MECHANICAL CODE
5. STATE PLUMBING CODE
6. STATE ELECTRIC CODE
7. LOCAL BUILDING CODE
8. CITY/COUNTY ORDINANCES

CODE COMPLIANCE

VICINITY MAP

ALL POLE MOUNTED EQUIPMENT TO BE PAINTED WITH SHERMAN WILLIAMS #6108 PAINT

PROPERTY INFORMATION

CUSTOMER:	NEXTG
PROJECT:	DAVENPORT
NODE:	DAV02
LATITUDE:	38.97105
LONGITUDE:	-122.12444
STREET ADDRESS:	CABRILLO HWY / HWY1
CITY, STATE:	SANTA CRUZ, CA 95060
POLES / TYPE:	6692 / WOOD POLE POLE # 1161179 / CCP 8627
RAD CENTER / ANTENNA HEIGHT:	20'-4" TO RAD CENTER
ANTENNA TYPE:	PANEL ANTENNA(S)
AZIMUTH FOR ANTENNA:	100°, 280°
POWER TO POLE:	EXISTING PG&E
POLE ACCESS:	ACCESS ROAD
POLE LOCATION & DESCRIPTION:	APPROX. 6,250' NW OF OMEO LN. AND CABRILLO 1

PROJECT SUMMARY

THE PROJECT CONSISTS OF THE INSTALLATION AND OPERATION OF WIRELESS EQUIPMENT AND ANTENNAS FOR NEXTG ON EXISTING WOOD UTILITY POLES.

PROJECT DESCRIPTION

INSTALL NEW WIRELESS EQUIPMENT AND ANTENNAS AND ALL ASSOCIATED BRACKETS IN ACCORDANCE TO CONSTRUCTION SPECIFICATIONS. REARRANGE ANY EXISTING FACILITIES IN ACCORDANCE TO GOVERNING CONSTRUCTION GUIDELINES.

PROJECT SCOPE

SHEET	DESCRIPTION	REV.
1	TITLE SHEET	1
2	UTILITY POLE EQUIPMENT PROFILES	1
3	UTILITY POLE EQUIPMENT TYPICALS	1

SHEET INDEX

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

GENERAL CONTRACTOR NOTES

NextG Networks of California, Inc.

PROJECT INFORMATION:
CABRILLO HWY / HWY1
SANTA CRUZ CA. 95060

CURRENT ISSUE DATE: 11/18/11

PERMIT SUBMISSION:

REV.:	DATE:	DESCRIPTION:	BY:
1	5/9/11	SHEET INDEX REV.	MZ

PLANS PREPARED BY:
HP COMMUNICATIONS INC.
13341 Temescal Cyn. Rd.
Corona, CA. 92883
PHONE (951) 471-1919

PLANS APPROVED BY:
NextG Networks of California, Inc.
REP:

COMMENTS:

SHEET TITLE:
NextG Networks of California, Inc.
NEXTG DAVENPORT NETWORK
POLE PROFILE DAV02

SHEET NUMBER: 1
REVISION: 1

Exhibit 3
A-3-SCO-12-006
1 of 22

pln782

AZIMUTH	DOWNTILT
150°	0°
255°	0°

MAKE READY

STEP POLE ACCORDING TO GO-95 STANDARDS.
PG&E TO REFRAME POLE AND SET NEW TRANSFORMER.

NEW CONSTRUCTION

CONSTRUCTION:
PG&E TO REFRAME POLE AND PLACE NEW TRANSFORMER
(PG&E TO DETERMINE HEIGHT)
NEXTG TO ATTACH CABLE ARM FOR ANTENNAS @ 22'-0"
NEXTG TO ATTACH GUARD ARM @ 24'-0"

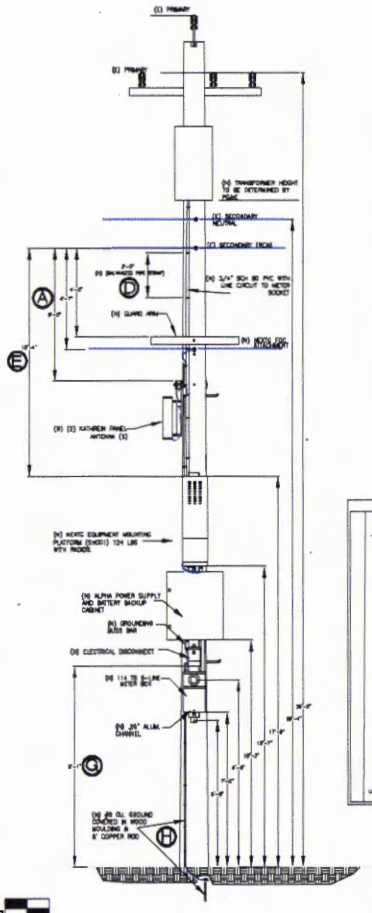
NOTES:

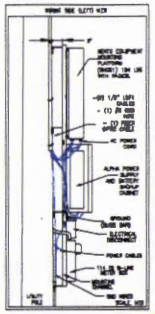
TOP OF POLE 37'-4"
EXISTING PRIMARY H.O.A: 38'-7" THRU 36'-0"
PROPOSED TRANSFORMER H.O.A: TBD
EXISTING SECONDARY H.O.A: 29-4" THRU 28'-0"
PROPOSED NEXTG FOC H.O.A 23'-5"
PROPOSED NEXTG ANTENNA CABLE ARM H.O.A: 22'-0"
PROPOSED NEXTG GUARD ARM H.O.A: 24'-0"
ANTENNA RAD CENTER: 20'-4"

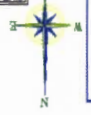
ANTENNA OUTPUT DOES NOT EXCEED GENERAL POPULATION EXPOSURE LIMITS.

RF EMISSION PLACARDS / SIGNAGE MEETING THE FCC REQUIREMENTS SHALL BE IN A LOCATION VISIBLE FROM CLIMBING SPACE AND BE AFFIXED TO THE POLE NO LOWER THAN 9'-0" ABOVE GROUND LINE & NO HIGHER THAN 3'-0" BELOW THE ANTENNA.

PLACARDS / SIGNAGE ARE UVA RESISTANT AND SHALL BE ATTACHED TO THE POLE WITH GALVANIZED NAILS OR GALVANIZED SCREWS.

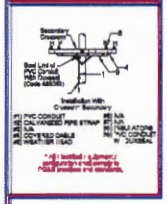






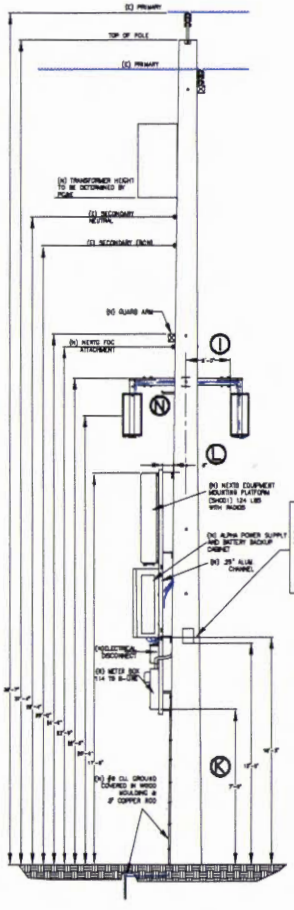
- (A) – 72" MIN. CLEARANCE BETWEEN SECONDARY POWER AND CLOSEST LEVEL OF ANTENNA ASSEMBLY.
- (B) – POLE TOP EXTENSION UPPER AND LOWER BRACKET STEPS ARE TO BE INSTALLED WITH THE POLE TOP EXTENSION BRACKET ASSEMBLY. STEPS ARE NOT TO BE INSTALLED ON WOOD EXTENSION BAYONET. (N/A)
- (C) – 72" MIN CLEARANCE REQ'D. (N/A)
- (D) – 24" SPACING MAX. (GALVANIZED PIPE STRAP)
- (E) – 72" MIN. TO SECONDARY LEVEL.
- (F) – 12" MIN. SPACING FOR EQUIP TO CURB. (N/A)
- (G) – 15' MIN. (MAY BE REDUCED TO 9' WHEN NOT EXPOSED TO TRAFFIC).
- (H) – GROUND INSTALLED BY COMM COMPANY (INCLUDES 8' COPPER ROD).
- (I) – 24" MIN. FROM CENTER OF POLE
- (J) – 24" MIN. CLEARANCE REQ'D. (N/A)
- (K) – 7' MIN. / 8' MAX. REQ'D.
- (L) – 4" MIN. CLEARANCE BETWEEN EQUIPMENT AND POLE.
- (M) – PROTECTIVE COVERING MUST EXTEND A MINIMUM OF 3'-0" BEYOND ENERGIZED 0-750 VOLTS. (N/A)
- (N) – POLE STEPS TO BE INSTALLED FROM 8'-6" ABOVE GRADE TO NEXTG ATTACHMENT.

SCALE: 1/4"=1'-0" — UTILITY POLE DETAIL — POLE# 5923 — LOOKING SOUTH — A

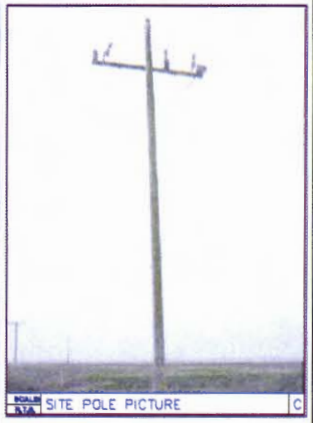


AZIMUTH	DOWNTILT
150°	0°
255°	0°

Call Before you Dig! 811
Know what's below. Call before you dig.
Call 811 Before you Dig!

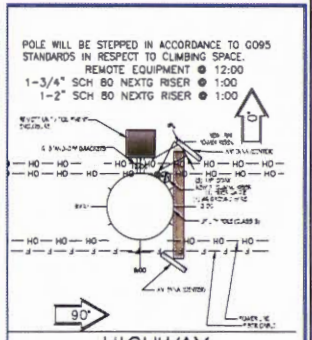


SCALE: 1/4"=1'-0" — UTILITY POLE DETAIL — POLE# 5923 — LOOKING EAST — B



SCALE: N/A — SITE POLE PICTURE — C

POLE WILL BE STEPPED IN ACCORDANCE TO GO95 STANDARDS IN RESPECT TO CLIMBING SPACE.
REMOTE EQUIPMENT @ 12:00
1-3/4" SCH 80 NEXTG RISER @ 1:00
1-2" SCH 80 NEXTG RISER @ 1:00



POLE# 5923

SCALE: N/A — RISER POLE DETAIL — D

SCALE: N/A — POWER SUPPLY ENCLOSURE — E

NextG Networks of California, Inc.
2007 TARAVAL DRIVE
MILPITAS, CA. 95035-7439
PHONE: (408) 954-1580

PROJECT INFORMATION:
CABRILLO HWY / HWY1
SANTA CRUZ, CA. 95060

CURRENT ISSUE DATE:
11/18/11

PERMIT SUBMISSION:

REV.:	DATE:	DESCRIPTION:	BY:
1	5/3/11	POLE HEIGHT CHANGES TO SECTION A,B &C	MZ

PLANS PREPARED BY:
HP COMMUNICATIONS INC.
13341 Tomasco Qtr. Rd
Corona, CA 92883
PHONE: (951) 471-1819

PLANS APPROVED BY:
NextG Networks of California, Inc.
REP.:

COMMENTS:
PG&E POLE # 136176
COS 9927

SHEET TITLE:
NextG Networks of California, Inc.
NEXTG DAVENPORT NETWORK
POLE PROFILE DAV02

SHEET NUMBER: 2 — REVISION: 1

UTILITY POLE EQUIPMENT PROFILES

Exhibit 3
A-3-SCO-12-006
2 of 22

p1n7782

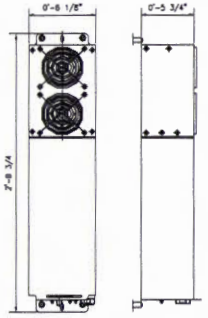
ION-M19P

ANDREW ION-19P IS A MULTI-BAND MULTI-OPERATOR REMOTE UNIT WITH VARIOUS EXTENSION UNITS. IT IS USED IN CONJUNCTION WITH A MASTER UNIT IN THE ION OPTICAL DISTRIBUTION SYSTEM. THIS SYSTEM TRANSPORTS MULTIPLE FREQUENCY BANDS SIMULTANEOUSLY (1900 MHZ AND 1700/2100 MHZ), PROVIDING A COST-EFFECTIVE SOLUTION FOR DISTRIBUTING CAPACITY FROM ONE OR MORE BASE STATIONS.

ELECTRICAL:

POWER SUPPLY	
MAINS POWER, VAC	85 TO 264 115 OR 230
POWER CONSUMPTION, WATTS	300
OPTICAL	
CONNECTORS	E2000/APC 8°
OPTICAL RETURN LOSS, DB	45 MINIMUM
FIBER TYPE, MM	SINGLE MODE E9/125
OPTICAL LINK BUDGET, DB	0 TO 10
COMPOSITE INPUT POWER	
@ OTRX MASTER SIDE, DBM	
1900MHZ	+3 COMPOSITE
1700/2100 MHZ	+3 COMPOSITE
INTERFACE	
BTS SIDE	
NUMBER OF CONNECTORS	
1900MHZ	4
1700/2100 MHZ	4
SYSTEM OPTIMIZED FOR BTS POWER, DBM	50 43
ANTENNA PORT	
CONNECTOR	N FEMALE
OUTPUT POWER	SEE BAND SPECIFICATION
1900 MHZ	
FREQUENCY RANGE, MHZ	
UPLINK	1850 TO 1913
DOWNLINK	1930 TO 1996
OUTPUT POWER PER CARRIER*, DBM	
NUMBER OF CARRIERS	1 2 4 8
CDM	43 40 37 34
TDMA/ EDGE	43 40 37 34
CDMA/EV-DO	43 40 37 34
WCDMA/HSDPA	43 40 37 34
SPURIOUS EMISSION	<-13 DBM, / 1MHZ
DL OUTPUT TOLERANCE OVER FREQUENCY, DB	±1
DL OUTPUT TOLERANCE OVER TEMPERATURE, DB	±0.5
INPUT ICP	
IOP3 OPTIMIZED	-12
NOISE FIGURE OPTIMIZED	-18
NOISE FIGURE, DB	
IOP3 OPTIMIZED	11
NOISE FIGURE OPTIMIZED	6
1700/2100 MHZ (IN EXTENSION UNIT)	
FREQUENCY RANGE, MHZ	
UPLINK	1710 TO 1755
DOWNLINK	2110 TO 2155
OUTPUT POWER PER CARRIER*, DBM	
CDMA/EV-DO	WCDMA/GMTS/HSDPA
+43	+43 @ 1 CARRIER
+40	+40 @ 2 CARRIERS
+37	+37 @ 4 CARRIERS
+34	+34 @ 8 CARRIERS
SPURIOUS EMISSION	<- 13 DBM / 1 MHZ
ADJACENT CHANNEL POWER, DBC	-48
DL OUTPUT TOLERANCE OVER FREQ, DB	±1
DL OUTPUT TOLERANCE OVER TEMP, DB	±0.5
INPUT IOP3, DBM	
IOP3 OPTIMIZED	-12
NOISE FIGURE OPTIMIZED	-18

* APPLICABLE TO SINGLE MODULATION MODE ONLY
** WITH ACTIVE COOLING



ION-M19P MULTI-BAND, MULTI-OPERATOR REMOTE OPTICAL SYSTEM

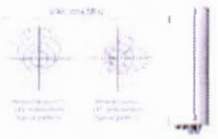
REPEATER EQUIPMENT DIMENSIONS — F

KATHREIN
SCALA DIVISION

840 10525
65° Dualband Directional Antenna

Kathrein's dual band antennas are ready for 3G applications, covering all existing wireless bands as well as all spectrum under consideration for future systems, LTE, PCS and 3G/UMTS. These cross-polarized antennas offer diversity operation in the same space as a conventional 700 MHz antenna, and are mountable on our compact sector brackets

- Wide band operation.
- Exceptional intermodulation characteristics.
- Various gain, beamwidth and downtilt ranges.
- High strength pultruded fiberglass radome.



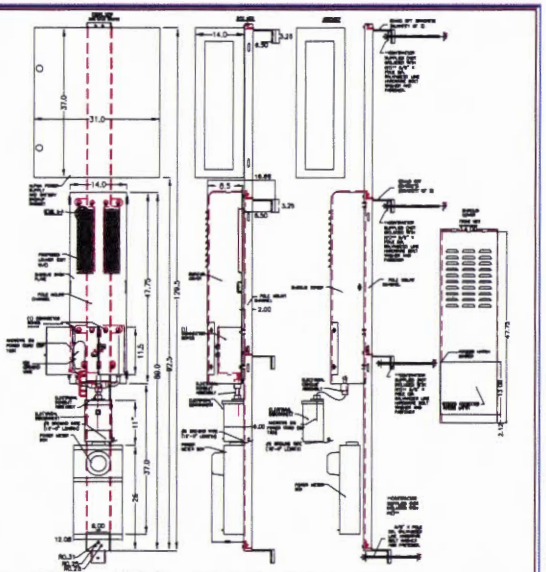
General specifications:
Frequency range 698-894 MHz
1710-2170 MHz
Impedance 50 ohms
VSWR <1.5:1
Intermodulation (2x20W) IM3: <-150 dBc
Polarization +45° and -45°
Connector 4 x 7-16 DIN female
Isolation intrasystem >30 dB
Weight (15.9 lb / 7.2 kg)
Dimensions 23.3 x 10.5 x 6.2 inches
(593 x 270 x 157 mm)
Wind load at 93 mph (150kph)
Front/Side/Rear: 23 lbf / 18 lbf / 41 lbf
(100 N) / (80 N) / (180 N)
Wind survival rating* 120 mph (200 kph)
Shipping dimensions 29 x 11.9 x 7.8 inches
(738 x 303 x 198 mm)
Shipping weight 19.2 lb (8.7 kg)
Mounting Fixed and tilt mount systems are available for 2 to 4.8 inch (50 to 115 mm) OD masts

Specifications 698-806 MHz 806-894 MHz 1710-1755 MHz 1850-1990 MHz 2110-2170 MHz
Gain 10.5 dBi 11 dBi 13.3 dBi 13.5 dBi 12.8 dBi
Front-to-back ratio >25 dB (co-pol) >25 dB (co-pol) >30 dB (co-pol) >30 dB (co-pol) >30 dB (co-pol)
Maximum input power 250 watts (at 50°C) 250 watts (at 50°C) 250 watts (at 50°C) 200 watts (at 50°C) 200 watts (at 50°C)
+45° and -45° polarization 71° (half-power) 66° (half-power) 61° (half-power) 62° (half-power) 70° (half-power)
horizontal beamwidth
+45° and -45° polarization 37° (half-power) 31° (half-power) 19° (half-power) 19° (half-power) 15.3° (half-power)
vertical beamwidth
Cross polar ratio (typical)
Main direction 0° 30 dB 30 dB 25 dB 25 dB 25 dB
Sector ±60° >8 dB >8 dB >8 dB >8 dB >8 dB >8 dB

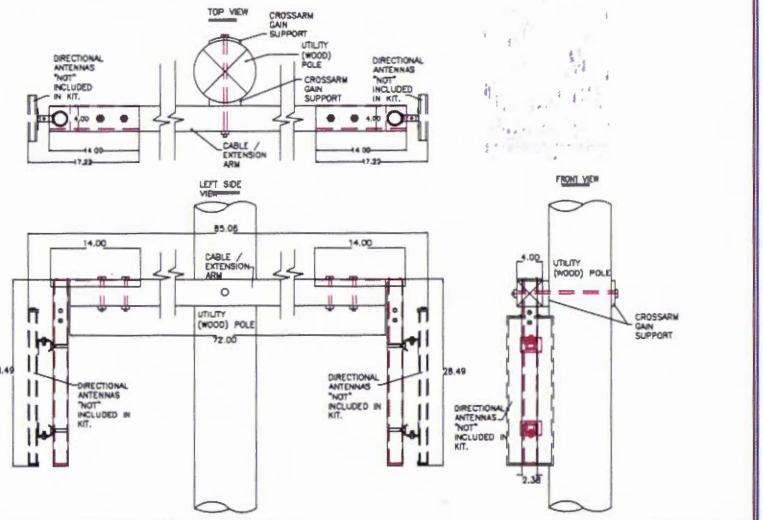
Mechanical design is based on environmental conditions as stipulated in EIA-222-F (June 1996) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by 160 km/h maximum velocity. See the Engineering Section of the catalog for further details.

Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone: (541) 779-6500 Fax: (541) 779-3991
Email: communications@kathrein.com Internet: www.kathrein-scala.com

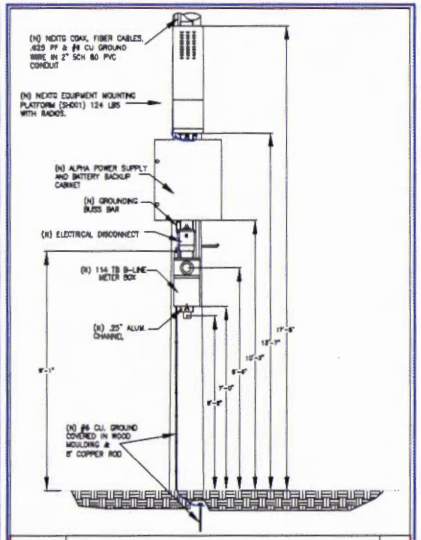
ANTENNA SPECIFICATIONS — G



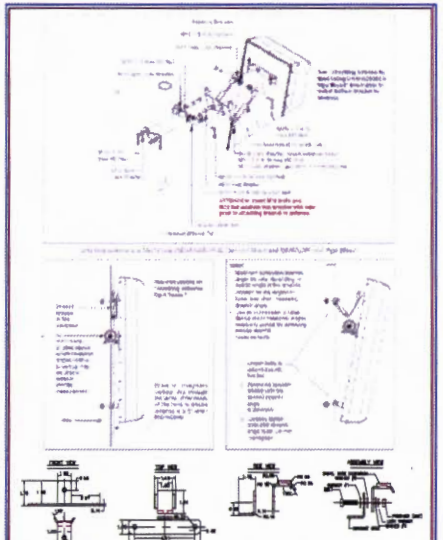
REPEATER EQUIPMENT AND MOUNTING CHASSIS CONFIGURATION — H



BRACKET ASSEMBLY / CONFIGURATION — I



UTILITY POLE EQUIPMENT AND MOUNTING CONFIGURATION — J



ANTENNA MOUNTING BRACKETS — K

UTILITY POLE EQUIPMENT TYPICALS

NextG Networks of California, Inc.
691 Gibraltar Drive
Milpitas, CA 95035-7439
Phone: (408) 954-1590

PROJECT INFORMATION:

CABRILLO HWY / HWY1
SANTA CRUZ, CA, 95060

CURRENT ISSUE DATE: 11/18/11

PERMIT SUBMISSION:

REV.:	DATE:	DESCRIPTION:	BY:
1	5/3/11	ADDED MEASUREMENT TO SECTION H & K	MZ

PLANS PREPARED BY:

HP COMMUNICATIONS INC.
13341 Tamarind Cyn. Rd
Corona, CA 92883
PHONE: (951) 471-1915

PLANS APPROVED BY:

NextG Networks of California, Inc.
REP:

COMMENTS:

SHEET TITLE:

NextG Networks of California, Inc.
NEXTG DAVENPORT NETWORK
POLE PROFILE DAV02

SHEET NUMBER: 3 REVISION: 1

Exhibit 3
A-3-SCO-12-006
3 of 22

pln782

NOTE:
A COPY OF ALL REQUIRED PERMITS MUST BE PRESENT DURING ANY WORK ON THIS LOCATION AND PERFORMING WORK AT THIS LOCATION INDICATES THAT THE CONTRACTOR HAS READ AND COMPLIED WITH THE REQUIREMENTS STATED IN THE PERMITS

SIGNATURE

NextG Networks of California, Inc.

DAVENPORT
DAV03
CABRILLO HWY / HWY1
SANTA CRUZ, CA. 95060

Call Before you Dig!
811
Know what's below.
Call before you dig.
Call 811 Before you Dig!

VICINITY MAP

ALL POLE MOUNTED EQUIPMENT
TO BE PAINTED WITH SHERMAN WILLIAMS
#6108 PAINT

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE AREAS GOVERNING CODES.

1. STATE ADMINISTRATIVE CODE
2. STATE BUILDING CODE
3. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) LIFE SAFETY CODE NFPA-101-1995
4. STATE MECHANICAL CODE
5. STATE PLUMBING CODE
6. STATE ELECTRIC CODE
7. LOCAL BUILDING CODE
8. CITY/COUNTY ORDINANCES

CODE COMPLIANCE

PROPERTY INFORMATION

CUSTOMER:	NEXTG
PROJECT:	DAVENPORT
NODE:	DAV03
LATITUDE:	36.981246
LONGITUDE:	-122.140224
STREET ADDRESS:	CABRILLO HWY / HWY1
CITY, STATE:	SANTA CRUZ, CA. 95060
POLES / TYPE:	1S0 / WOOD POLE
RAD CENTER / ANTENNA HEIGHT:	18'-1" TO RAD CENTER
ANTENNA TYPE:	PANEL ANTENNA(S)
AZIMUTH FOR ANTENNA:	110°, 250°
POWER TO POLE:	EXISTING PG&E
POLE ACCESS:	ROAD SIDE
POLE LOCATION & DESCRIPTION:	APPROX. 1,0/3' S/E OF BACK RANCH RD. AND CABRILLO 1 S/S CABRILLO HWY 2 POLES N/O SCARONI RD.)

PROJECT SUMMARY

THE PROJECT CONSISTS OF THE INSTALLATION AND OPERATION OF WIRELESS EQUIPMENT AND ANTENNAS FOR NEXTG ON EXISTING WOOD UTILITY POLES.

PROJECT DESCRIPTION

INSTALL NEW WIRELESS EQUIPMENT AND ANTENNAS AND ALL ASSOCIATED BRACKETS IN ACCORDANCE TO CONSTRUCTION SPECIFICATIONS. REARRANGE ANY EXISTING FACILITIES IN ACCORDANCE TO GOVERNING CONSTRUCTION GUIDELINES.

PROJECT SCOPE

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

GENERAL CONTRACTOR NOTES

SHEET	DESCRIPTION	REV.
1	TITLE SHEET	1
2	UTILITY POLE EQUIPMENT PROFILES	1
3	UTILITY POLE EQUIPMENT TYPICALS	1

SHEET INDEX

NextG Networks of California, Inc.
900 Tasman Drive
Milpitas, CA 95035-7451
PHONE (408) 954-1580

PROJECT INFORMATION:
CABRILLO HWY / HWY1
SANTA CRUZ, CA. 95060

CURRENT ISSUE DATE:
11/18/11

PERMIT SUBMISSION:

REV.:	DATE:	DESCRIPTION:	BY:
1	5/9/11	SHEET INDEX REV.	MZ

PLANS PREPARED BY:
HP COMMUNICATIONS INC.
13341 Tennessee Cyn. Rd.
Corona, CA. 92883
PHONE (951) 471-1818

PLANS APPROVED BY:
NextG Networks of California, Inc.
REP:

COMMENTS:

SHEET TITLE:
NextG Networks of California, Inc.
NEXTG DAVENPORT NETWORK
POLE PROFILE DAV03

SHEET NUMBER: 1
REVISION: 1

Exhibit 3
A-3-SCO-12-006
4 of 22

pln782

AZIMUTH	DOWNTILT
118°	0°
298°	0°

MAKE READY

STEP POLE ACCORDING TO GO-95 STANDARDS.

NEW CONSTRUCTION

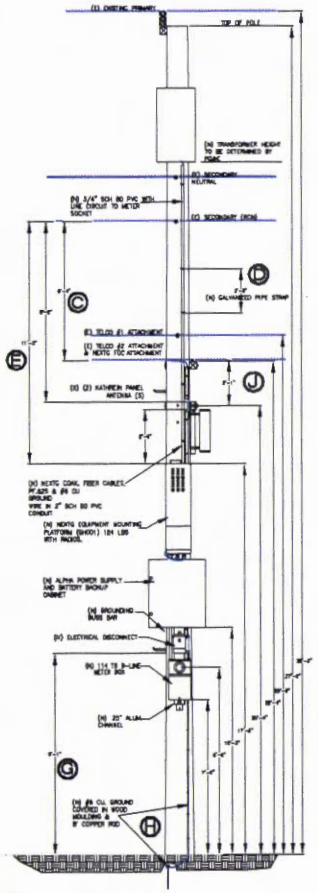
CONSTRUCTION:
PG&E TO REFRAME POLE AND PLACE NEW TRANSFORMER (PG&E TO DETERMINE HEIGHT)
NEXTG TO ATTACH CABLE ARM FOR ANTENNAS @ 20'-6"
NEXTG PROPOSES TO REARRANGE TELCO#2 AND NEXTG TO CABLE ARM H.O.A: 22'-4"

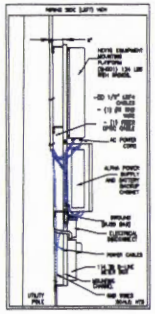
NOTES:

TOP OF POLE 37'-6"
EXISTING PRIMARY H.O.A: 38'-2"
PROPOSED TRANSFORMER H.O.A: TBD
EXISTING SECONDARY H.O.A: 28'-8" THRU 30'-8"
EXISTING TELCO#1 H.O.A: 23'-6"
EXISTING TELCO#2 AND NEXTG FOC ATT. ON CABLE ARM H.O.A: 22'-4"
PROPOSED NEXTG CABLE ARM (ANTENNAS) H.O.A: 20'-6"
ANTENNA RAD CENTER: 19'-1"
ANTENNA OUTPUT DOES NOT EXCEED GENERAL POPULATION EXPOSURE LIMITS.

RF EMISSION PLACARDS / SIGNAGE MEETING THE FCC REQUIREMENTS SHALL BE IN A LOCATION VISIBLE FROM CLIMBING SPACE AND BE AFFIXED TO THE POLE NO LOWER THAN 9'-0" ABOVE GROUND LINE & NO HIGHER THAN 3'-0" BELOW THE ANTENNA.

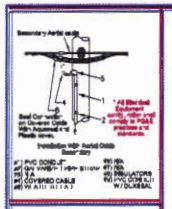
PLACARDS / SIGNAGE ARE UVA RESISTANT AND SHALL BE ATTACHED TO THE POLE WITH GALVANIZED NAILS OR GALVANIZED SCREWS.

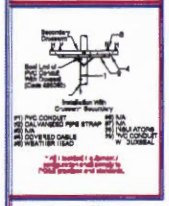




- Ⓐ - 72" MIN. CLEARANCE BETWEEN SECONDARY POWER AND CLOSEST LEVEL OF ANTENNA ASSEMBLY.
- Ⓑ - POLE TOP EXTENSION UPPER AND LOWER BRACKET STEPS ARE TO BE INSTALLED WITH THE POLE TOP EXTENSION BRACKET ASSEMBLY. STEPS ARE NOT TO BE INSTALLED ON WOOD EXTENSION BAYONET. (N/A)
- Ⓒ - 72" MIN CLEARANCE REQ'D.
- Ⓓ - 24" SPACING MAX. (GALVANIZED PIPE STRAP)
- Ⓔ - 72" MIN. TO SECONDARY LEVEL.
- Ⓕ - 12" MIN. SPACING FOR EQUIP TO CURB. (N/A)
- Ⓖ - 15' MIN. (MAY BE REDUCED TO 9' WHEN NOT EXPOSED TO TRAFFIC). (N/A)
- Ⓗ - GROUND INSTALLED BY COMM COMPANY (INCLUDES 8' COPPER ROD).
- Ⓘ - 24" MIN. FROM CENTER OF POLE
- Ⓙ - 24" MIN. CLEARANCE REQ'D.
- Ⓚ - 7' MIN. / 8' MAX. REQ'D.
- Ⓛ - 4" MIN. CLEARANCE BETWEEN EQUIPMENT AND POLE.
- Ⓜ - PROTECTIVE COVERING MUST EXTEND A MINIMUM OF 3'-0" BEYOND ENERGIZED 0-750 VOLTS. (N/A)
- Ⓝ - POLE STEPS TO BE INSTALLED FROM 8'-6" ABOVE GRADE TO NEXTG ATTACHMENT.

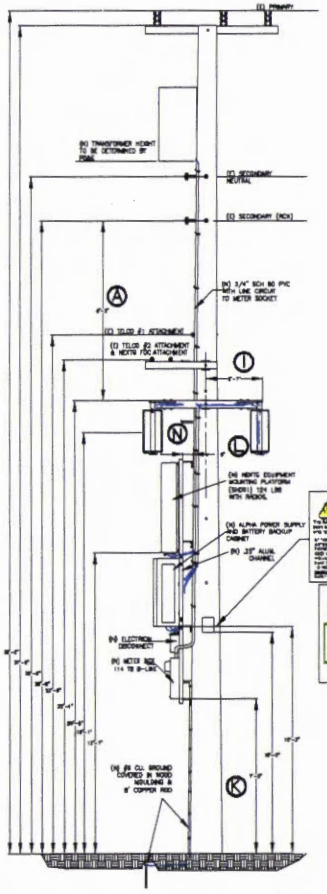
UTILITY POLE DETAIL | POLE# 150 | LOOKING SOUTH | A



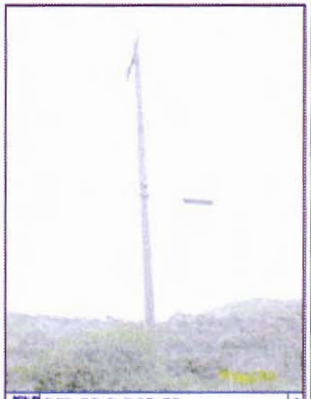


AZIMUTH	DOWNTILT
118°	0°
298°	0°

Call Before you Dig! 811
Know what's below. Call before you dig.
Call 811 Before you Dig!

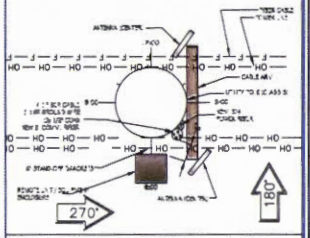


UTILITY POLE DETAIL | POLE# 150 | LOOKING EAST | B



SITE POLE PICTURE | C

POLE WILL BE STEPPED IN ACCORDANCE TO GO95 STANDARDS IN RESPECT TO CLIMBING SPACE.
REMOTE EQUIPMENT @ 6:00
1-3/4" SCH 80 NEXTG RISER @ 5:00
1-2" SCH 80 NEXTG RISER @ 5:00



HIGHWAY

POLE# 150

RISER POLE DETAIL | D

POWER SUPPLY ENCLOSURE | E

NextG Networks of California, Inc.

PROJECT INFORMATION:
CABRILLO HWY / HWY1
SANTA CRUZ, CA, 95060

CURRENT ISSUE DATE:
11/18/11

PERMIT SUBMISSION:

REV.:	DATE:	DESCRIPTION:	BY:
1	5/3/11	POLE HEIGHT CHANGES TO SECTION A,B &D	MZ

PLANS PREPARED BY:
HP COMMUNICATIONS INC.
13341 Tomasal Cyn. Rd
Corona, CA 92883
PHONE: (951) 471-1818

PLANS APPROVED BY:
NextG Networks of California, Inc.
REP:

COMMENTS:
S/B CABRILLO HWY (E) POLE9
N/O SCARONI RD.

SHEET TITLE:
NextG Networks of California, Inc.
NEXTG DAVENPORT NETWORK
POLE PROFILE DAV03

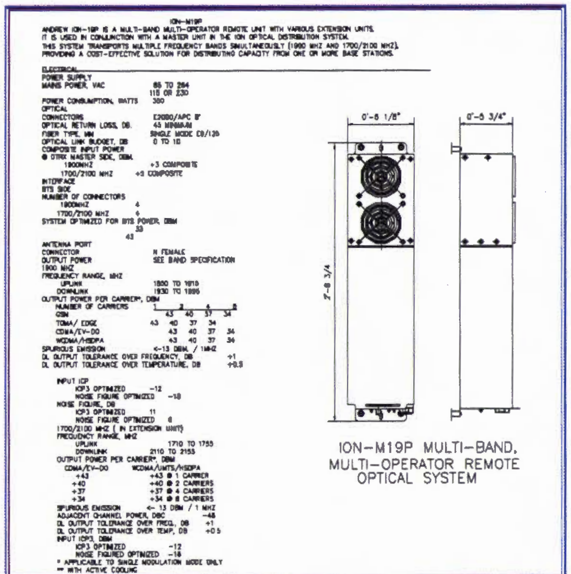
SHEET NUMBER: 2 | REVISION: 1

UTILITY POLE EQUIPMENT PROFILES

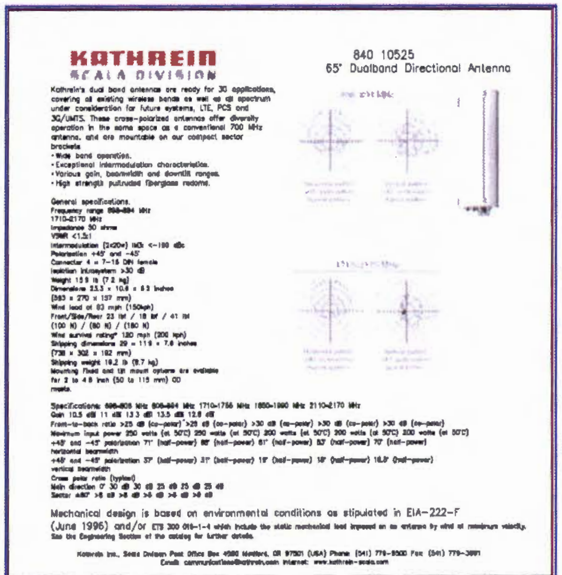
Exhibit B
A-9-SCO-12-006
5 of 22

p1n782

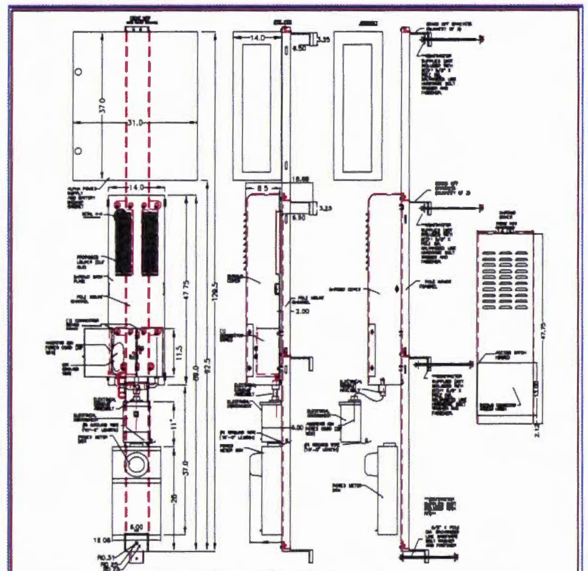
UTILITY POLE EQUIPMENT TYPICALS



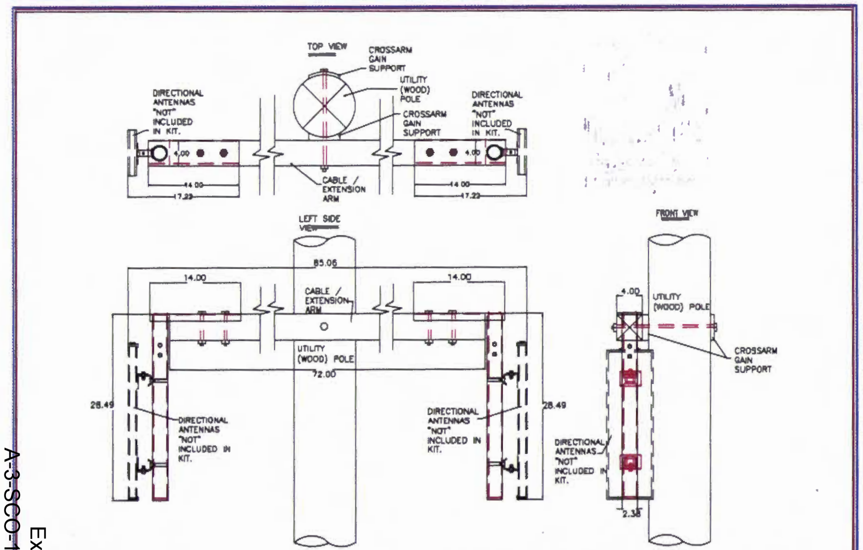
SCALE: N.T.S. REPEATER EQUIPMENT DIMENSIONS F



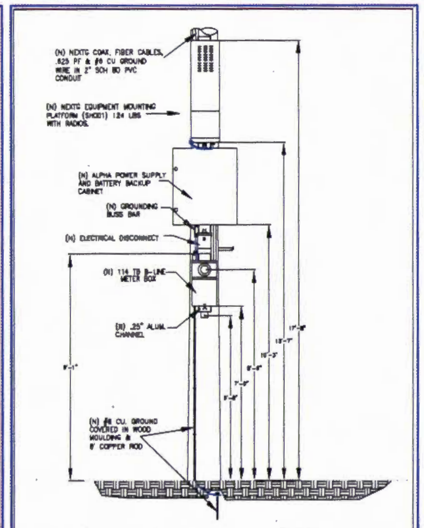
SCALE: N.T.S. ANTENNA SPECIFICATIONS G



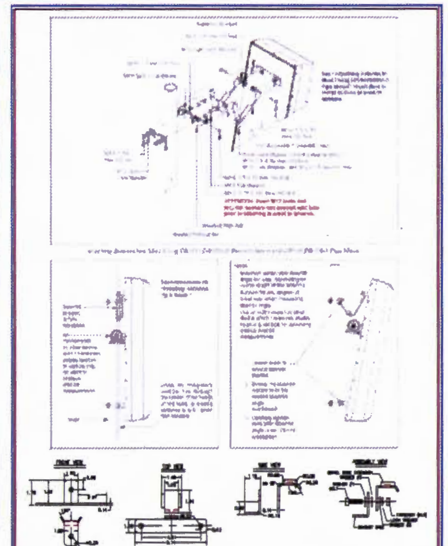
SCALE: N.T.S. REPEATER EQUIPMENT AND MOUNTING CHASSIS CONFIGURATION H



SCALE: N.T.S. BRACKET ASSEMBLY / CONFIGURATION I



SCALE: N.T.S. UTILITY POLE EQUIPMENT AND MOUNTING CONFIGURATION J



SCALE: N.T.S. ANTENNA MOUNTING BRACKETS K

NextG Networks of California, Inc.

PROJECT INFORMATION:

CABRILLO HWY / HWY1
SANTA CRUZ, CA. 95060

CURRENT ISSUE DATE: 11/18/11

PERMIT SUBMISSION:

REV.:	DATE:	DESCRIPTION:	BY:
1	5/3/11	ADDED MEASUREMENT TO SECTION H & K	MZ

PLANS PREPARED BY:

HP COMMUNICATIONS INC.
13341 Temescal Cyn. Rd
Corona, CA 92883
PHONE: (951) 471-1919

PLANS APPROVED BY:

NextG Networks of California, Inc.

REP:

COMMENTS:

SHEET TITLE:

NextG Networks of California, Inc.
NEXTG DAVENPORT NETWORK
POLE PROFILE DAV63

SHEET NUMBER	REVISION
3	1

Exhibit 3
A-3-SCO-12-006
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p1n782

NOTE:
A COPY OF ALL REQUIRED PERMITS MUST BE PRESENT DURING ANY WORK ON THIS LOCATION AND PERFORMING WORK AT THIS LOCATION INDICATES THAT THE CONTRACTOR HAS READ AND COMPLIED WITH THE REQUIREMENTS STATED IN THE PERMITS

SIGNATURE:

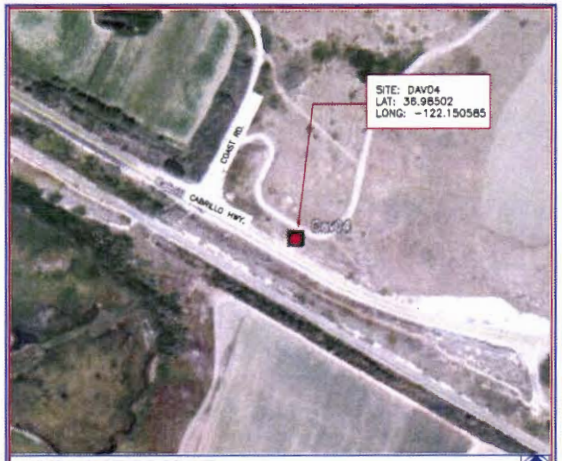
NextG Networks of California, Inc.

DAVENPORT
DAV04
CABRILLO HWY / HWY1
SANTA CRUZ, CA. 95060

Call Before you Dig!

811

Know what's below.
Call before you dig.
Call 811 Before you Dig!



VICINITY MAP

ALL POLE MOUNTED EQUIPMENT TO BE PAINTED WITH SHERMAN WILLIAMS #6108 PAINT

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE AREAS GOVERNING CODES.

1. STATE ADMINISTRATIVE CODE
2. STATE BUILDING CODE
3. AMERICAN LIFE SAFETY CODE NFPA101-1995
4. STATE MECHANICAL CODE
5. STATE PLUMBING CODE
6. STATE ELECTRIC CODE
7. LOCAL BUILDING CODE
8. CITY/COUNTY ORDINANCES

CODE COMPLIANCE

PROPERTY INFORMATION

CUSTOMER:	NEXTG
PROJECT:	DAVENPORT
NODE:	DAV04
LATITUDE:	36.98502
LONGITUDE:	-122.150585
STREET ADDRESS:	CABRILLO HWY / HWY1
CITY, STATE:	SANTA CRUZ, CA, 95060
POLE# / TYPE:	184 / WOOD POLE
RAD CENTER / ANTENNA HEIGHT:	19'-0" TO RAD CENTER
ANTENNA TYPE:	PANEL ANTENNA(S)
AZIMUTH ORIENTATION:	109°, 229°
POWER TO POLE:	EXISTING POLE
POLE ACCESS:	ACCESS ROAD
POLE LOCATION & DESCRIPTION:	APPROX. 270' S/E OF COAST RD. AND CABRILLO 1

PROJECT SUMMARY

SHEET	DESCRIPTION	REV.
1	TITLE SHEET	1
2	UTILITY POLE EQUIPMENT PROFILES	1
3	UTILITY POLE EQUIPMENT TYPICALS	1

SHEET INDEX

THE PROJECT CONSISTS OF THE INSTALLATION AND OPERATION OF WIRELESS EQUIPMENT AND ANTENNAS FOR NEXTG ON EXISTING WOOD UTILITY POLES.

PROJECT DESCRIPTION

INSTALL NEW WIRELESS EQUIPMENT AND ANTENNAS AND ALL ASSOCIATED BRACKETS IN ACCORDANCE TO CONSTRUCTION SPECIFICATIONS, REARRANGE ANY EXISTING FACILITIES IN ACCORDANCE TO GOVERNING CONSTRUCTION GUIDELINES.

PROJECT SCOPE

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

GENERAL CONTRACTOR NOTES

NextG Networks of California, Inc.
100 Tamal Plaza
Mill Valley, CA 94941
PHONE (408) 954-1580

PROJECT INFORMATION:
CABRILLO HWY / HWY1
SANTA CRUZ, CA, 95060

CURRENT ISSUE DATE:
11/18/11

PERMIT SUBMISSION:

REV.:	DATE:	DESCRIPTION:	BY:
1	5/9/11	SHEET INDEX REV.	MZ

PLANS PREPARED BY:
HP COMMUNICATIONS INC.
12341 Tamarack Cyn. Rd.
Corona, CA. 92883
PHONE: (951) 471-1919

PLANS APPROVED BY:
NextG Networks of California, Inc.
REP:

COMMENTS:

SHEET TITLE:
NextG Networks of California, Inc.
NEXTG DAVENPORT NETWORK
POLE PROFILE DAV04

SHEET NUMBER: 1
REVISION: 1

Exhibit 3
A-3-SCO-12-006
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p1n782

AZIMUTH	DOWNTILT
100°	0°
280°	0°

MAKE READY

STEP POLE ACCORDING TO GO-95 STANDARDS.

NEW CONSTRUCTION

CONSTRUCTION:
PG&E TO REFRAME POLE AND PLACE NEW TRANSFORMER
(PG&E TO DETERMINE HEIGHT)
PG&E TO RELOCATE EXISTING SECONDARY TO 30'-1" THRU 28'-10"
NEXTG TO ATTACH CABLE ARM FOR ANTENNAS @ 20'-10"
NEXTG TO RELOCATE TELCO #1, #2, #3 & NEXTG FIBER ON PROPOSED CABLE ARM H.O.A: 22'-10"

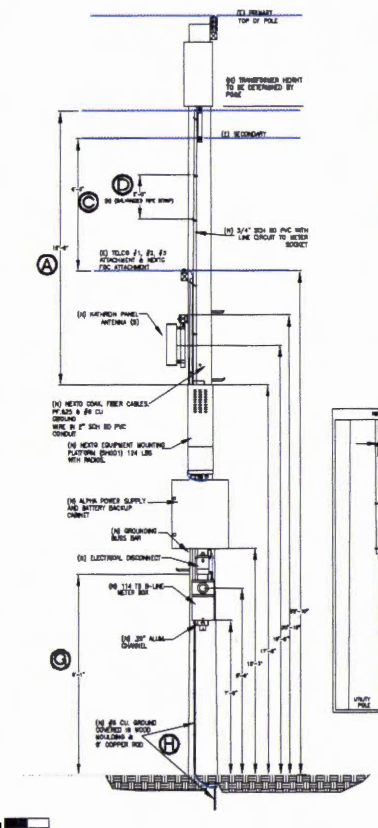
NOTES:

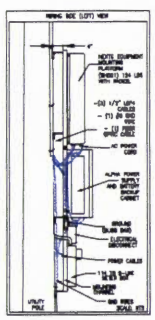
TOP OF POLE 34'-0"
EXISTING PRIMARY H.O.A: 34'-4"
PROPOSED SECONDRY H.O.A: 30'-1" THRU 28'-10"
PROPOSED TRANSFORMER H.O.A: TBD
PROPOSED TELCO #1,#2,#3 & NEXTG FOC H.O.A: 22'-10"
PROPOSED NEXTG ANTENNA CABLE ARM H.O.A: 20'-10"
ANTENNA RAD CENTER: 19'-5"

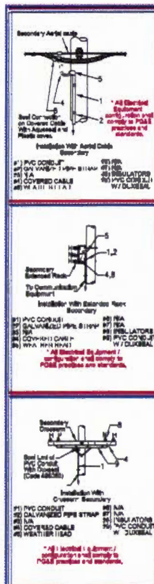
ANTENNA OUTPUT DOES NOT EXCEED GENERAL POPULATION EXPOSURE LIMITS.

RF EMISSION PLACARDS / SIGNAGE MEETING THE FCC REQUIREMENTS SHALL BE IN A LOCATION VISIBLE FROM CLIMBING SPACE AND BE AFFIXED TO THE POLE NO LOWER THAN 9'-0" ABOVE GROUND LINE & NO HIGHER THAN 3'-0" BELOW THE ANTENNA.

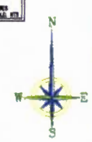
PLACARDS / SIGNAGE ARE UVA RESISTANT AND SHALL BE ATTACHED TO THE POLE WITH GALVANIZED NAILS OR GALVANIZED SCREWS.





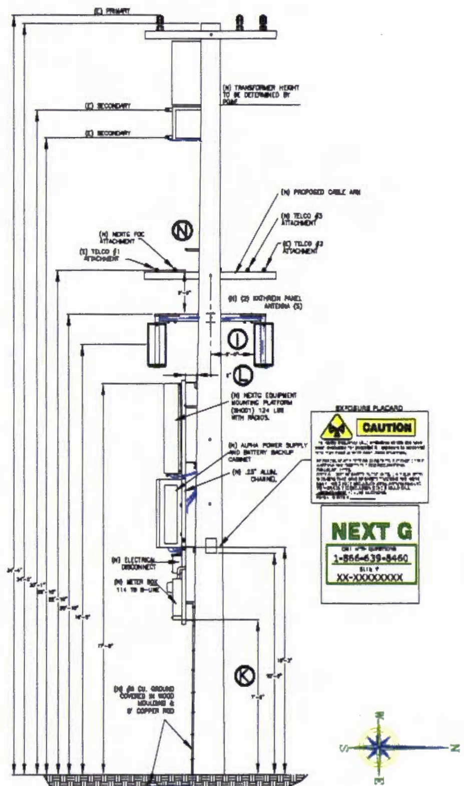


UTILITY POLE DETAIL — POLE# 164 — LOOKING NORTH — A



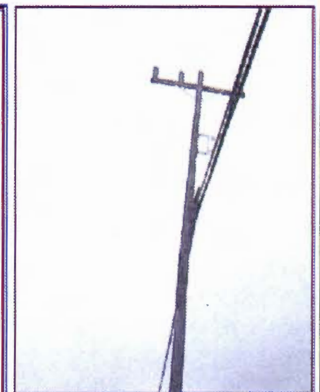
AZIMUTH	DOWNTILT
100°	0°
280°	0°

Call Before you Dig!
811
Know what's below.
Call before you dig.
Call 811 Before you Dig!



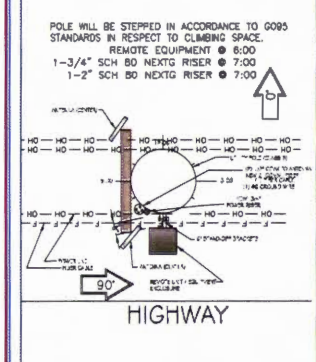
Ⓐ - 72" MIN. CLEARANCE BETWEEN SECONDARY POWER AND CLOSEST LEVEL OF ANTENNA ASSEMBLY.
Ⓑ - POLE TOP EXTENSION UPPER AND LOWER BRACKET STEPS ARE TO BE INSTALLED WITH THE POLE TOP EXTENSION BRACKET ASSEMBLY. STEPS ARE NOT TO BE INSTALLED ON WOOD EXTENSION BAYONET. (N/A)
Ⓒ - 72" MIN CLEARANCE REQ'D.
Ⓓ - 24" SPACING MAX. (GALVANIZED PIPE STRAP)
Ⓔ - 72" MIN. TO SECONDARY LEVEL. (N/A)
Ⓕ - 12" MIN. SPACING FOR EQUIP TO CURB. (N/A)
Ⓖ - 15' MIN. (MAY BE REDUCED TO 9' WHEN NOT EXPOSED TO TRAFFIC).
Ⓗ - GROUND INSTALLED BY COMM COMPANY (INCLUDES 8' COPPER ROD).
Ⓘ - 24" MIN. FROM CENTER OF POLE
Ⓙ - 24" MIN. CLEARANCE REQ'D. (N/A)
Ⓚ - 7' MIN. / 8' MAX. REQ'D.
Ⓛ - 4" MIN. CLEARANCE BETWEEN EQUIPMENT AND POLE.
Ⓜ - PROTECTIVE COVERING MUST EXTEND A MINIMUM OF 3'-0" BEYOND ENERGIZED 0-750 VOLTS. (N/A)
Ⓝ - POLE STEPS TO BE INSTALLED FROM 8'-6" ABOVE GRADE TO NEXTG ATTACHMENT.

UTILITY POLE DETAIL — POLE# 164 — LOOKING WEST — B



SITE POLE PICTURE — C

POLE WILL BE STEPPED IN ACCORDANCE TO GO95 STANDARDS IN RESPECT TO CLIMBING SPACE.
REMOTE EQUIPMENT @ 6:00
1-3/4" SCH 80 NEXTG RISER @ 7:00
1-2" SCH 80 NEXTG RISER @ 7:00



POLE# 164
RISER POLE DETAIL — D

POWER SUPPLY ENCLOSURE — E

UTILITY POLE EQUIPMENT PROFILES

NextG Networks of California, Inc.

PROJECT INFORMATION:
CABRILLO HWY / HWY1
SANTA CRUZ, CA, 95060

CURRENT ISSUE DATE:
11/18/11

PERMIT SUBMISSION:

REV.:	DATE:	DESCRIPTION:	BY:
1	5/3/11	POLE HEIGHT CHANGES TO SECTION A,B &D	MZ

PLANS PREPARED BY:
HP COMMUNICATIONS INC.
13341 Temescal Cyn. Rd
Corona, CA 92883
PHONE: (951) 471-1918

PLANS APPROVED BY:
NextG Networks of California, Inc.
REP.

COMMENTS:
S/B (2) POLES S/O LAGUNA

SHEET TITLE:
NextG Networks of California, Inc.
NEXTG DAVENPORT NETWORK
POLE PROFILE DAV04

SHEET NUMBER: 2
REVISION: 1

Exhibit 3
A-3-SCO-12-006
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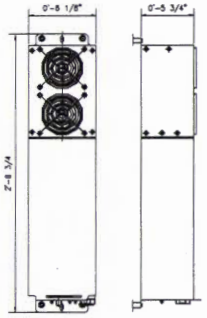
p1n782

ION-M19P

ANDREW ION-M19P IS A MULTI-BAND MULTI-OPERATOR REMOTE UNIT WITH VARIOUS EXTENSION UNITS. IT IS USED IN CONJUNCTION WITH A MASTER UNIT IN THE ION OPTICAL DISTRIBUTION SYSTEM. THIS SYSTEM TRANSPORTS MULTIPLE FREQUENCY BANDS SIMULTANEOUSLY (1900 MHZ AND 1700/2100 MHZ), PROVIDING A COST-EFFECTIVE SOLUTION FOR DISTRIBUTING CAPACITY FROM ONE OR MORE BASE STATIONS.

ELECTRICAL	
POWER SUPPLY	
MAINS POWER, VAC	85 TO 264 115 OR 230
POWER CONSUMPTION, WATTS	300
OPTICAL	
CONNECTORS	E2000/APC 8°
OPTICAL RETURN LOSS, DB	45 MINIMUM
FIBER TYPE, MM	SINGLE MODE OS1/2S
OPTICAL LINK BUDGET, DB	0 TO 10
COMPOSITE INPUT POWER	
@ DTRX MASTER SIDE, DBM	
1900MHZ	+3 COMPOSITE
1700/2100 MHZ	+5 COMPOSITE
INTERFACE	
RTS DSX	
NUMBER OF CONNECTORS	
1900MHZ	4
1700/2100 MHZ	4
SYSTEM OPTIMIZED FOR BTS POWER, DBM	33 43
ANTENNA PORT	
CONNECTOR	N FEMALE
OUTPUT POWER	SEE BAND SPECIFICATION
1900 MHZ	
FREQUENCY RANGE, MHZ	
UPLINK	1850 TO 1910
DOWNLINK	1930 TO 1990
OUTPUT POWER PER CARRIER, DBM	
NUMBER OF CARRIERS	1 2 4 8
CDM	43 40 37 34
TDMA/ EDGE	43 40 37 34
CDMA/EV-DO	43 40 37 34
WCDMA/HSDPA	43 40 37 34
SPURIOUS EMISSION	<-13 DBM / 1MHZ
DL OUTPUT TOLERANCE OVER FREQUENCY, DB	+1
DL OUTPUT TOLERANCE OVER TEMPERATURE, DB	+0.5
INPUT (P	
IIP3 OPTIMIZED	-12
NOISE FIGURE OPTIMIZED	-18
NOISE FIGURE, DB	
IIP3 OPTIMIZED	11
NOISE FIGURE OPTIMIZED	8
1700/2100 MHZ (IN EXTENSION UNIT)	
FREQUENCY RANGE, MHZ	
UPLINK	1710 TO 1755
DOWNLINK	2110 TO 2155
OUTPUT POWER PER CARRIER, DBM	
CDMA/EV-DO	WCDMA/AWTS/HSDPA
+43	+43 @ 1 CARRIER
+40	+40 @ 2 CARRIERS
+37	+37 @ 4 CARRIERS
+34	+34 @ 8 CARRIERS
SPURIOUS EMISSION	<- 13 DBM / 1 MHZ
ADJACENT CHANNEL POWER, DBC	-48
DL OUTPUT TOLERANCE OVER FREQ, DB	+1
DL OUTPUT TOLERANCE OVER TEMP, DB	+0.5
INPUT (IIP3, DBM	
IIP3 OPTIMIZED	-12
NOISE FIGURE OPTIMIZED	-18

* APPLICABLE TO SINGLE MODULATION MODE ONLY
** WITH ACTIVE COOLING

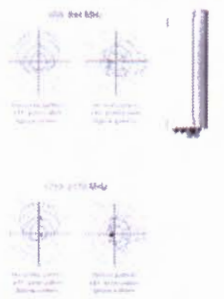


ION-M19P MULTI-BAND, MULTI-OPERATOR REMOTE OPTICAL SYSTEM

SCALE: N.T.A. — REPEATER EQUIPMENT DIMENSIONS — F

KATHREIN
SCALA DIVISION

840 10525
65° Dualband Directional Antenna



Kathrein's dual band antennas are ready for 3G applications, covering all existing wireless bands as well as all spectrum under consideration for future systems, LTE, PCS and 3G/UMTS. These cross-polarized antennas offer diversity operation in the same space as a conventional 700 MHz antenna, and are mountable on our compact sector brackets

- Wide band operation
- Exceptional intermodulation characteristics.
- Various gain, beamwidth and downtilt ranges.
- High strength pultruded fiberglass radome.

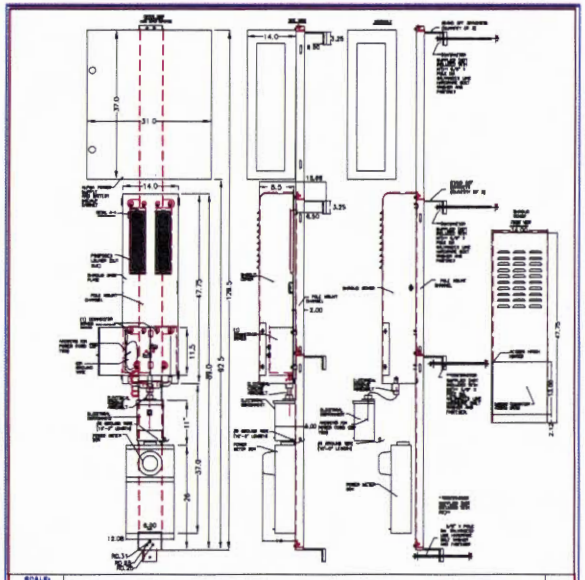
General specifications
Frequency range 806-894 MHz
1710-2170 MHz
Impedance 50 ohms
VSWR <1.5:1
Intermodulation (2x20W) IM3: <-150 dBc
Polarization +45° and -45°
Connector 4 x 7-16 DIN female
Isolation intersystem >30 dB
Weight 13.9 lb (7.2 kg)
Dimensions 23.3 x 10.9 x 6.2 inches
(593 x 270 x 157 mm)
Wind load at 93 mph (150kph)
front/side/rear 23 lbf / 18 lbf / 41 lbf
(100 N) / (80 N) / (180 N)
Wind survival rating* 120 mph (200 kph)
Shipping dimensions 29 x 11.8 x 7.8 inches
(736 x 302 x 198 mm)
Shipping weight 18.2 lb (8.7 kg)
Mounting Fixed and tilt mount options are available for 2 to 4.8 inch (50 to 115 mm) OD masts.

Specifications 698-806 MHz 806-894 MHz 1710-1755 MHz 1850-1990 MHz 2110-2170 MHz
Gain 10.5 dBi 11 dBi 13.3 dBi 13.5 dBi 12.8 dBi
Front-to-back ratio >25 dB (co-pol) >25 dB (co-pol) >30 dB (co-pol) >30 dB (co-pol) >30 dB (co-pol)
Maximum input power 250 watts (at 50°C) 250 watts (at 50°C) 200 watts (at 50°C) 200 watts (at 50°C) 200 watts (at 50°C)
+45° and -45° polarization 71° (half-power) 68° (half-power) 67° (half-power) 63° (half-power) 70° (half-power)
horizontal beamwidth
+45° and -45° polarization 37° (half-power) 31° (half-power) 19° (half-power) 18° (half-power) 16.5° (half-power)
vertical beamwidth
Cross pole ratio (typical)
Main direction 0° 30 dB 30 dB 25 dB 25 dB 25 dB
Sector ±60° >9 dB >9 dB >9 dB >9 dB >9 dB

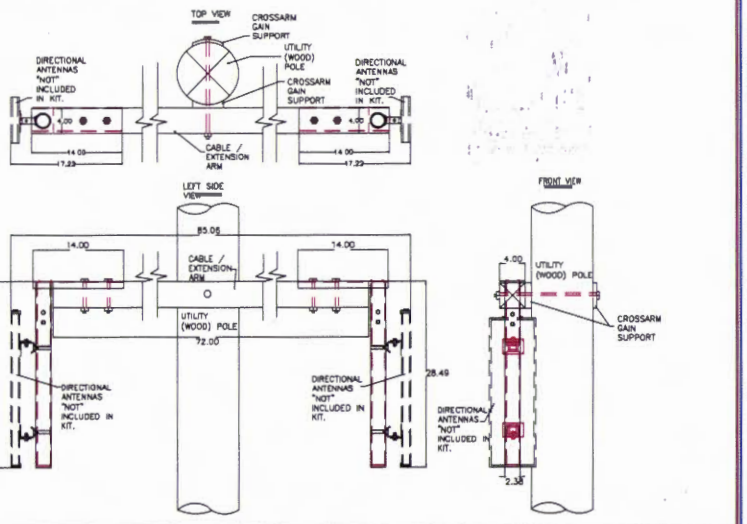
Mechanical design is based on environmental conditions as stipulated in EIA-222-F (June 1996) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.

Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone (541) 779-6500 Fax (541) 779-3991
Email: communicationsandbroadcast@kathrein.com Internet: www.kathrein-scala.com

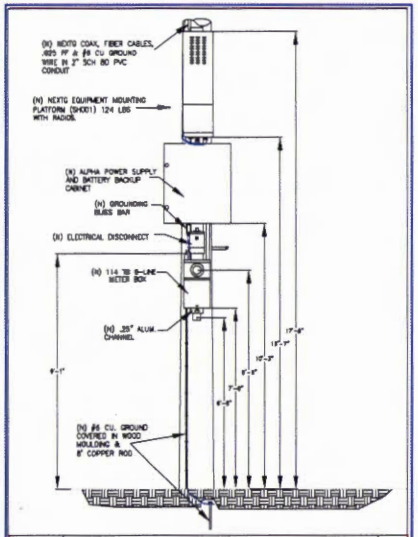
SCALE: N.T.S. — ANTENNA SPECIFICATIONS — G



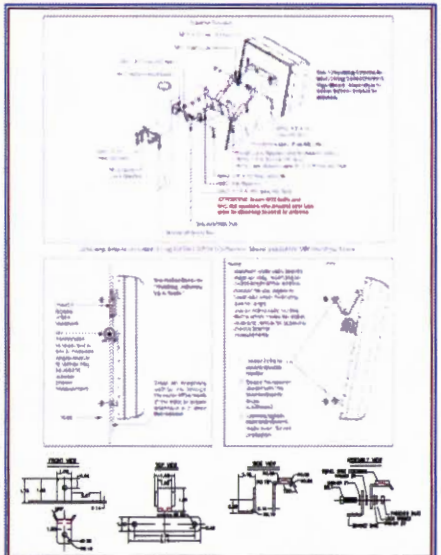
SCALE: N.T.A. — REPEATER EQUIPMENT AND MOUNTING CHASSIS CONFIGURATION — H



SCALE: N.T.A. — BRACKET ASSEMBLY / CONFIGURATION — I



SCALE: N.T.A. — UTILITY POLE EQUIPMENT AND MOUNTING CONFIGURATION — J



SCALE: N.T.A. — ANTENNA MOUNTING BRACKETS — K

UTILITY POLE EQUIPMENT TYPICALS

NextG Networks of California, Inc.
499 TASMAN DRIVE
MILPITAS, CA 95035-7433
PHONE: (408) 954-1580

PROJECT INFORMATION:

CABRILLO HWY / HWY1
SANTA CRUZ, CA. 95060

CURRENT ISSUE DATE:
11/18/11

PERMIT SUBMISSION:

REV.	DATE:	DESCRIPTION:	BY:
1	5/3/11	ADDED MEASUREMENT TO SECTION H & K	MZ

PLANS PREPARED BY:

HP COMMUNICATIONS INC.
13341 Tamiosol Cyn. Rd
Corona, CA 92883
PHONE: (951) 471-1918

PLANS APPROVED BY:

NextG Networks of California, Inc.

REP:

COMMENTS:

SHEET TITLE:

NextG Networks of California, Inc.
NEXTG DAVENPORT NETWORK
POLE PROFILE DAV04

SHEET NUMBER: 3 — REVISION: 1

A-3-SCO-12-006
Exhibit 3
9 of 22

p1n782

NOTE:
A COPY OF ALL REQUIRED PERMITS MUST BE PRESENT DURING ANY WORK ON THIS LOCATION AND PERFORMING WORK AT THIS LOCATION INDICATES THAT THE CONTRACTOR HAS READ AND COMPLIED WITH THE REQUIREMENTS STATED IN THE PERMITS

SIGNATURE:

NextG Networks of California, Inc.

DAVENPORT
DAV05
SWANTON ROAD
SANTA CRUZ, CA. 95060

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ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE AREAS GOVERNING CODES.

1. STATE ADMINISTRATIVE CODE
2. STATE BUILDING CODE
3. ANSI/EIA-222-F LIFE SAFETY CODE NFPA-101-1990
4. STATE MECHANICAL CODE
5. STATE PLUMBING CODE
6. STATE ELECTRIC CODE
7. LOCAL BUILDING CODE
8. CITY/COUNTY ORDINANCES

CODE COMPLIANCE

PROPERTY INFORMATION

CUSTOMER:	NEXTG
PROJECT:	DAVENPORT
NODE:	DAV05
LATITUDE:	37.040861
LONGITUDE:	-122.224282
STREET ADDRESS:	SWANTON ROAD
CITY, STATE:	SANTA CRUZ, CA, 95060
POLE# / TYPE:	#20 / WOOD POLE
RAD CENTER / ANTENNA HEIGHT:	33'-7" TO RAD CENTER
ANTENNA TYPE:	OMNI ANTENNA
AZIMUTH FOR ANTENNA:	N/A
POWER TO POLE:	EXISTING PG&E (LOW VOLTAGE)
POLE ACCESS:	ROAD SIDE
POLE LOCATION & DESCRIPTION:	REFER TO GPS COORDINATES FOR ACTUAL LOCATION.

PROJECT SUMMARY

VICINITY MAP

ALL POLE MOUNTED EQUIPMENT
TO BE PAINTED WITH SHERMAN WILLIAMS
#6108 PAINT

SHEET	DESCRIPTION	REV.
1	TITLE SHEET	1
2	UTILITY POLE EQUIPMENT PROFILES	1
3	UTILITY POWER POLE EQUIPMENT TYPICALS	1

SHEET INDEX

THE PROJECT CONSISTS OF THE INSTALLATION AND OPERATION OF WIRELESS EQUIPMENT AND ANTENNAS FOR NEXTG ON EXISTING WOOD UTILITY POLES.

PROJECT DESCRIPTION

INSTALL NEW WIRELESS EQUIPMENT AND ANTENNAS AND ALL ASSOCIATED BRACKETS IN ACCORDANCE TO CONSTRUCTION SPECIFICATIONS. REARRANGE ANY EXISTING FACILITIES IN ACCORDANCE TO GOVERNING CONSTRUCTION GUIDELINES.

PROJECT SCOPE

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

GENERAL CONTRACTOR NOTES

NextG Networks of California, Inc.
890 TASMAN DRIVE
MILPITAS, CA. 95035-7439
PHONE: (408) 954-1580

PROJECT INFORMATION:
SWANTON ROAD
SANTA CRUZ, CA. 95060

CURRENT ISSUE DATE:
10/14/11

PERMIT SUBMISSION:

REV.:	DATE:	DESCRIPTION:	BY:
1	5/9/11	SHEET INDEX REV.	MZ

PLANS PREPARED BY:
HP COMMUNICATIONS INC.
13341 Temescal Cyn. Rd.
Corona, CA. 92883
PHONE: (951) 471-1919

PLANS APPROVED BY:
NextG Networks of California, Inc.
REP:

COMMENTS:

SHEET TITLE:
NextG Networks of California, Inc.
NEXTG DAVENPORT NETWORK
POLE PROFILE DAV05

SHEET NUMBER: 1 REVISION: 1

Exhibit 3
A-3-SCO-12-006
10 of 22

MAKE READY

STEP POLE ACCORDING TO GO-95 STANDARDS.

NEW CONSTRUCTION

CONSTRUCTION:
NEXTG TO ATTACH ANTENNA BRACKET @ 30'-0"

NOTES:

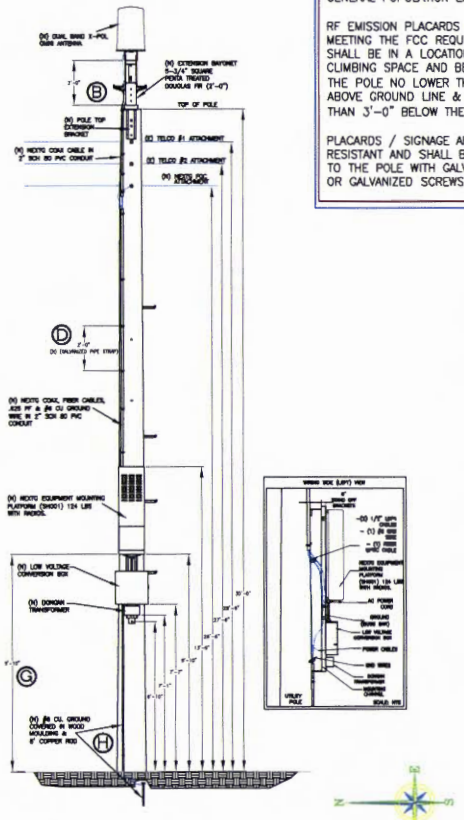
TOP OF POLE 30'-0"
TELCO#1 H.O.A: 28'-6"
TELCO#2 H.O.A: 27'-6"
PROPOSED NEXTG FOC H.O.A 26'-6"
PROPOSED NEXTG (PG&E) APPROVED
ANTENNA KIT H.O.A: 30'-0"
ANTENNA RAD CENTER: 33'-7"

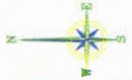
ANTENNA OUTPUT DOES NOT EXCEED GENERAL POPULATION EXPOSURE LIMITS.

RF EMISSION PLACARDS / SIGNAGE MEETING THE FCC REQUIREMENTS SHALL BE IN A LOCATION VISIBLE FROM CLIMBING SPACE AND BE AFFIXED TO THE POLE NO LOWER THAN 9'-0" ABOVE GROUND LINE & NO HIGHER THAN 3'-0" BELOW THE ANTENNA.

PLACARDS / SIGNAGE ARE UVA RESISTANT AND SHALL BE ATTACHED TO THE POLE WITH GALVANIZED NAILS OR GALVANIZED SCREWS.

8'-0" WOOD POLE TOP BAYONET / EXTENSION SHALL BE CUT TO SIZE. PER DESIGN





SCALE: 1/8"=1'-0" | UTILITY POLE DETAIL | POLE# #20 | LOOKING EAST | A

- (A) – 72" MIN. CLEARANCE BETWEEN SECONDARY POWER AND CLOSEST LEVEL OF ANTENNA ASSEMBLY.
- (B) – POLE TOP EXTENSION UPPER AND LOWER BRACKET STEPS ARE TO BE INSTALLED WITH THE POLE TOP EXTENSION BRACKET ASSEMBLY. STEPS ARE NOT TO BE INSTALLED ON WOOD EXTENSION BAYONET.
- (C) – 72" MIN CLEARANCE REQ'D.
- (D) – 24" SPACING MAX. (GALVANIZED PIPE STRAP)
- (E) – 72" MIN. TO SECONDARY LEVEL.
- (F) – 12" MIN. SPACING FOR EQUIP TO CURB.
- (G) – 15' MIN. (MAY BE REDUCED TO 9' WHEN NOT EXPOSED TO TRAFFIC).
- (H) – GROUND INSTALLED BY COMM COMPANY (INCLUDES 8' COPPER ROD).
- (I) – 24" MIN. FROM CENTER OF POLE
- (J) – 24" MIN. CLEARANCE REQ'D.
- (K) – 7' MIN. / 8' MAX. REQ'D.
- (L) – 4" MIN. CLEARANCE BETWEEN EQUIPMENT AND POLE.
- (M) – PROTECTIVE COVERING MUST EXTEND A MINIMUM OF 3'-0" BEYOND ENERGIZED 0-750 VOLTS.
- (N) – POLE STEPS TO BE INSTALLED FROM 8'-6" ABOVE GRADE TO NEXTG ATTACHMENT.

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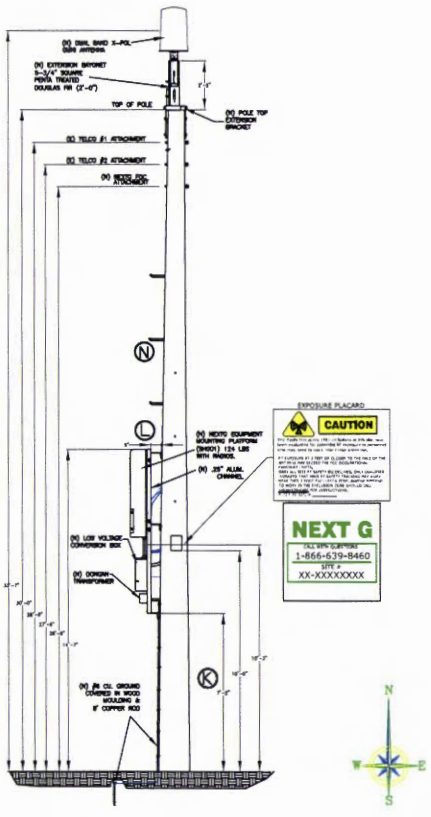
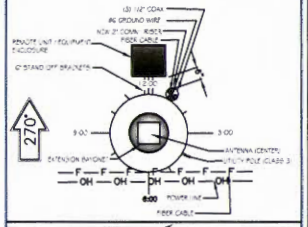
8'-0" WOOD POLE TOP BAYONET / EXTENSION SHALL BE CUT TO SIZE. PER DESIGN



SCALE: 3/8"=1'-0" | UTILITY POLE DETAIL | POLE# #20 | LOOKING NORTH | B

SCALE: N.T.S. | SITE POLE PICTURE | C

POLE WILL BE STEPPED IN ACCORDANCE TO GO95 STANDARDS IN RESPECT TO CLIMBING SPACE.
REMOTE EQUIPMENT @ 12:00
1-2" SCH 80 NEXTG RISER @ 1:00



POLE# #20

SCALE: N.T.S. | RISER POLE DETAIL | D

NextG Networks of California, Inc.
890 TASMAN DRIVE
MILPITAS, CA. 95035-7439
PHONE: (408) 954-1580

PROJECT INFORMATION:
SWANTON ROAD
SANTA CRUZ, CA. 95060

CURRENT ISSUE DATE:
10/14/11

PERMIT SUBMISSION:

REV.	DATE:	DESCRIPTION:	BY:
1	5/3/11	POLE HEIGHT CHANGES TO SECTION A,B AND	MZ

PLANS PREPARED BY:
HP COMMUNICATIONS INC.
13341 Tamescal Cyn. Rd.
Corona, CA. 92883
PHONE: (951) 471-1918

PLANS APPROVED BY:
NextG Networks of California, Inc.
REP:

COMMENTS:

SHEET TITLE:
NextG Networks of California, Inc.
NEXTG DAVENPORT NETWORK
POLE PROFILE DAV05

SHEET NUMBER: 2 REVISION: 1

UTILITY POLE EQUIPMENT PROFILES

Exhibit 3
A-3-SCO-12-006
11 of 22

ION–M19P

ANDREW ION–19P IS A MULTI–BAND MULTI–OPERATOR REMOTE UNIT WITH VARIOUS EXTENSION UNITS. IT IS USED IN CONJUNCTION WITH A MASTER UNIT IN THE ION OPTICAL DISTRIBUTION SYSTEM. THIS SYSTEM TRANSPORTS MULTIPLE FREQUENCY BANDS SIMULTANEOUSLY (1900 MHZ AND 1700/2100 MHZ), PROVIDING A COST–EFFECTIVE SOLUTION FOR DISTRIBUTING CAPACITY FROM ONE OR MORE BASE STATIONS.

ELECTRICAL	
POWER SUPPLY	
MAINS POWER, VAC	85 TO 264 115 OR 230
POWER CONSUMPTION, WATTS	300
OPTICAL	
CONNECTORS	E2000/APC 8°
OPTICAL RETURN LOSS, DB	45 MINIMUM
FIBER TYPE, MM	SINGLE MODE E9/125
OPTICAL LINK BUDGET, DB	0 TO 10
COMPOSITE INPUT POWER	
@ OTOX MASTER 30C, DBM,	
1900MHZ	+3 COMPOSITE
1700/2100 MHZ	+5 COMPOSITE
INTERFACE	
BTS SIDE	
NUMBER OF CONNECTORS	
1900MHZ	4
1700/2100 MHZ	4
SYSTEM OPTIMIZED FOR BTS POWER, DBM	33 43
ANTENNA PORT	
CONNECTOR	N FEMALE
OUTPUT POWER	SEE BAND SPECIFICATION
1900 MHZ	
FREQUENCY RANGE, MHZ	
UPLINK	1850 TO 1915
DOWNLINK	1930 TO 1995

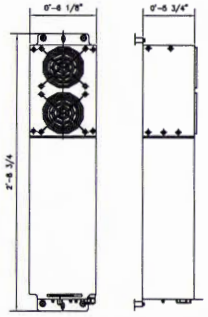
OUTPUT POWER PER CARRIER*, DBM				
NUMBER OF CARRIERS	1	2	3	8
CDM	43	40	37	34
TDMA/ EDGE	43	40	37	34
CDMA/EV–DO	43	40	37	34
WCDMA/HSDPA	43	40	37	34

SPURIOUS EMISSION	<–13 DBM / 1MHZ
DL OUTPUT TOLERANCE OVER FREQUENCY, DB	±1
DL OUTPUT TOLERANCE OVER TEMPERATURE, DB	+0.5
INPUT ICP	
ICP3 OPTIMIZED	–12
NOISE FIGURE, OPTIMIZED	–16
NOISE FIGURE, DB	
ICP3 OPTIMIZED	11
NOISE FIGURE OPTIMIZED	6
1700/2100 MHZ (IN EXTENSION UNIT)	
FREQUENCY RANGE, MHZ	
UPLINK	1710 TO 1755
DOWNLINK	2110 TO 2155

OUTPUT POWER PER CARRIER*, DBM		
CDMA/EV–DO	WCDMA/AWTS/HSDPA	
+43	+43 @ 1 CARRIER	
+40	+40 @ 2 CARRIERS	
+37	+37 @ 4 CARRIERS	
+34	+34 @ 8 CARRIERS	

SPURIOUS EMISSION	<– 13 DBM / 1 MHZ
ADJACENT CHANNEL POWER, DBC	–48
DL OUTPUT TOLERANCE OVER FREQ., DB	±1
DL OUTPUT TOLERANCE OVER TEMP, DB	+0.5
INPUT ICP1, DBM	
ICP3 OPTIMIZED	–12
NOISE FIGURE OPTIMIZED	–16

* APPLICABLE TO SINGLE MODULATION MODE ONLY
** WITH ACTIVE COOLING



ION–M19P MULTI–BAND, MULTI–OPERATOR REMOTE OPTICAL SYSTEM

SCALE: N.T.S. REPEATER EQUIPMENT DIMENSIONS E

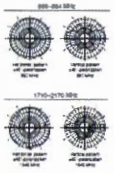
KATHREIN SCALA DIVISION

840 10510 840 10511
Dualband 700 MHz X–pol Omni Antenna

Kathrein's dual band antennas are ready for 3G and 4G applications, covering all existing wireless bands as well as all spectrum under consideration for future systems.

- Wide band operation.
- Exceptional intermodulation characteristics.
- High strength fiberglass radome.

General specifications:
Frequency range 698–894 MHz/1710–2170 MHz
Gain 698–894 MHz 5 dBi (with 3–5 dB nulls, typical)/1710–2170 MHz 8 dBi (with 6–8 dB nulls, typical)
VSWR <1.5:1
Impedance 50 ohms
Intermodulation (2x20w) IM3: <–150 dBc
Polarization +45° upper and lower band–45° upper and lower band
Connector 4 x 7–16 DIN female
Isolation intrasystem >30 dBinterasystem >40 dB (698–894 // 1710–2170 MHz)
Maximum input power 698–894 MHz 250 watts (at 50°C)1710–2170 MHz 200 watts (at 50°C)
Radome color Brown or gray
Weight 45 lb (20.4 kg)
Height 24 inches (609 mm)
Radome diameter 18 inches (407 mm)
Wind load at 93 mph (150kph) Side 32 lbf (138 N)
Wind survival rating* 100 mph (160 kph)
Shipping dimensions 32 x 20 x 19 inches (813 x 505 x 483 mm)
Shipping weight 52 lb (23.6 kg)
Mounting Designed to be mounted on top of a utility pole using a custom mounting bracket supplied by the customer.
See reverse for order information.

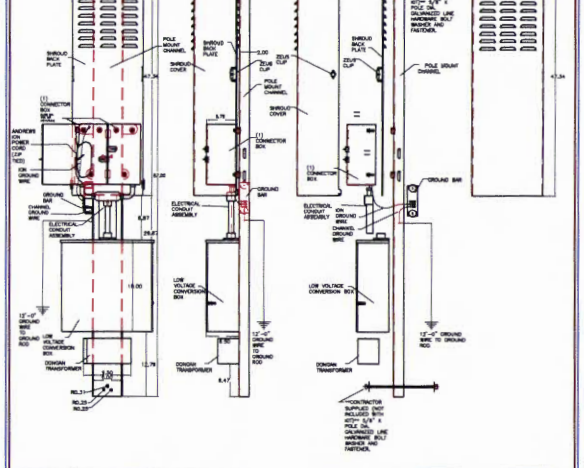


* Mechanical design is based on environmental conditions as stipulated in TIA–222–G–2 (December 2009) and/or ETS 300 019–1–4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.

Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone: (541) 779–6500 Fax: (541) 779–3991

Email: communications@kathrein.com Internet: www.kathrein–scala.com

SCALE: N.T.S. ANTENNA SPECIFICATIONS F



SCALE: N.T.S. REPEATER EQUIPMENT AND MOUNTING CHASSIS CONFIGURATION G

Pole–Top Extension for Wood Poles

Wood Pole–Top Extension

Notes:
1. This unit meets General Order (G.O.) 95 requirements for strength in Class 3 through Class 6 poles and therefore may be used to support equipment on these poles. It may be used on large class poles, but may not support equipment on them.

2. The unit may be guyed.

3. The bracket is made to fit poles with diameters of 8" to 11". Therefore, depending upon the actual pole–top diameter, to fit poles of class 3 and smaller, a bracket adaptor may be required.

4. Units are supplied with the wood bayonet assembled.

5. A pole step kit is required.

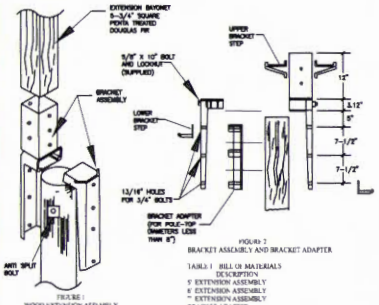


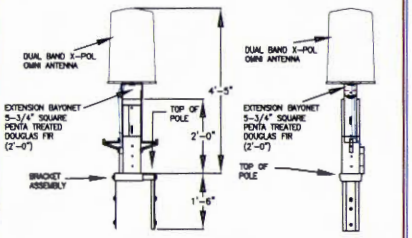
FIGURE 1
WOOD EXTENSION ASSEMBLY

FIGURE 2
BRACKET ASSEMBLY AND BRACKET ADAPTER

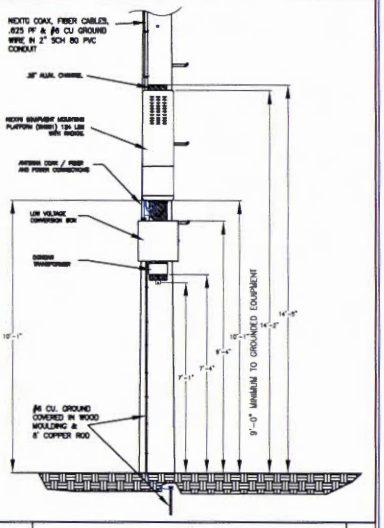
TABLE 1 BILL OF MATERIALS

DESCRIPTION
5' EXTENSION ASSEMBLY
8' EXTENSION ASSEMBLY
11' EXTENSION ASSEMBLY
BRACKET ADAPTER
3/4" X 10" MACHINE BOLTS
POLE STEP KIT (2 UPPER, 2 LOWER)

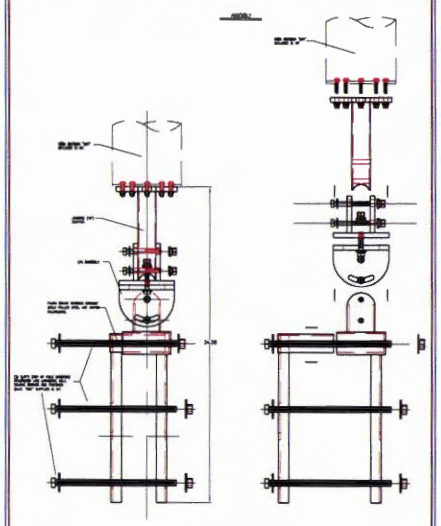
SCALE: N.T.S. POLE TOP EXT. / BRACKET ASSEMBLY H



SCALE: N.T.S. MOUNTING CONFIGURATIONS I



SCALE: N.T.S. UTILITY POLE EQUIPMENT AND MOUNTING CONFIGURATION J



SCALE: N.T.S. ANTENNA MOUNTING BRACKETS K

UTILITY POLE EQUIPMENT TYPICALS

NextG Networks of California, Inc.
890 TASMAN DRIVE
MILPITAS, CA. 95035–7439
PHONE: (408) 954–1580

PROJECT INFORMATION:

SWANTON ROAD
SANTA CRUZ, CA. 95060

CURRENT ISSUE DATE:

10/14/11

PERMIT SUBMISSION:

REV.:	DATE:	DESCRIPTION:	BY:
1	5/3/11	ADDED MEASUREMENT TO SECTION H & K	MZ

PLANS PREPARED BY:

HP COMMUNICATIONS INC.
13341 Temescal Cyn. Rd.
Corona, CA. 92883
PHONE: (951) 471–1919

PLANS APPROVED BY:

NextG Networks of California, Inc.

REP:

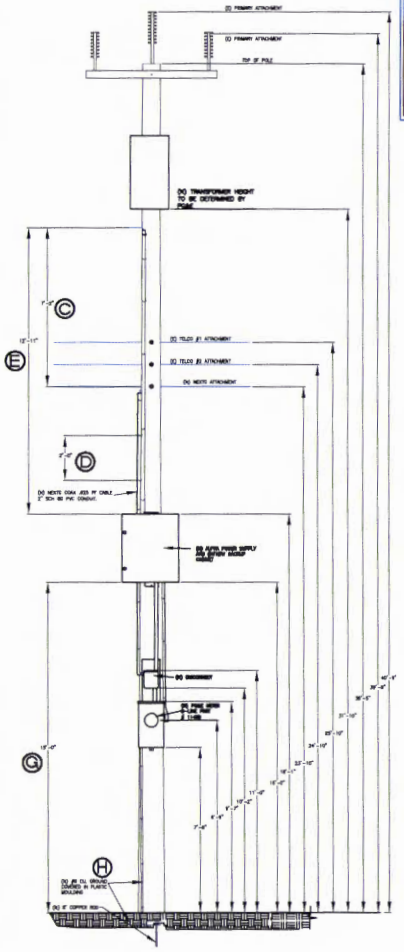
COMMENTS:

SHEET TITLE:

NextG Networks of California, Inc.
NEXTG DAVENPORT NETWORK
POLE PROFILE DAV05

SHEET NUMBER: **3** REVISION: **1**

MAKE READY
QUARTER STEP POLE
NEW CONSTRUCTION
INSTALL POWERING EQUIPMENT ACCORDING TO PRINT.
NOTES:
TOP OF POLE: 38'-5"
PRIMARY H.O.A: 40'-9"
PROPOSED TRANSFORMER H.O.A: TBD
TELCO #1 H.O.A: 25'-10"
TELCO #2 H.O.A: 24'-10"
PROPOSED NEXTG H.O.A: 23'-10"



Ⓐ – 72" MIN. CLEARANCE BETWEEN SECONDARY POWER AND CLOSEST LEVEL OF ANTENNA ASSEMBLY.

Ⓑ – STEP POLE TOP EXTENSION AS PER DETAIL DWG.

Ⓒ – 72" MIN CLEARANCE REQ'D.

Ⓓ – 24" SPACING MAX.

Ⓔ – 72" MIN. TO SECONDARY LEVEL.

Ⓕ – 12" MIN. SPACING FOR EQUIP TO CURB.

Ⓖ – 15' MIN. (MAY BE REDUCED TO 9' WHEN NOT EXPOSED TO TRAFFIC).

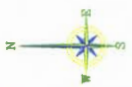
Ⓗ – GROUND INSTALLED BY COMM COMPANY (INCLUDES 8' COPPER ROD).

Ⓘ – 24" MIN. FROM CENTER OF POLE

Ⓙ – 24" MIN. CLEARANCE REQ'D.

Ⓚ – 7' MIN. / 8' MAX. REQ'D.

Ⓛ – 4" MIN. CLEARANCE BETWEEN EQUIPMENT AND POLE.



SCALE: 1"=1'-0" 2"=1'-0" | UTILITY POLE DETAIL POLE# 19 | LOOKING EAST | A

Call Before you Dig!

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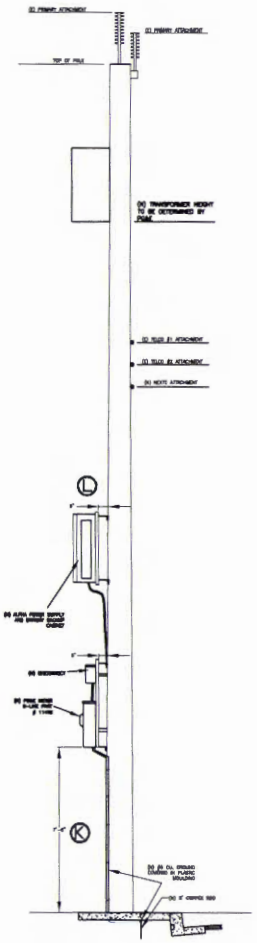
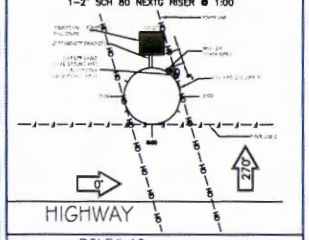


SCALE: 3/8"=1' | UTILITY POLE DETAIL POLE# 19 | LOOKING NORTH | B

SCALE: N.T.S. | SITE POLE PICTURE | C

POLE WILL BE STEPPED IN ACCORDANCE TO GO95 STANDARDS IN RESPECT TO CLIMBING SPACE.
REMOTE EQUIPMENT @ 12:00
1-3/4" SCH 80 NEXTG RISER @ 1:00
1-2" SCH 80 NEXTG RISER @ 1:00



POLE# 19

SCALE: N.T.S. | RISER POLE DETAIL | D

Enclosure Specifications

Dimensions	4 Battery	8 Battery
Width (in/mm)	24/610	31/794
Height (in/mm)	36/914	37/956
Depth (in/mm)	14/56	16/407
Weight (lb/kg)*	350/158	812/368
Finish	Powder coat white over aluminum	

* Weight dependent upon size of battery choice

Note: The RR enclosure is resistant to the harshest weather conditions including wind driven rain

Backup time depends on load, battery and operating temperature

Optional DC Generator provides up to 100hrs backup

SCALE: N.T.S. | POWER SUPPLY ENCLOSURE | E

NextG Networks of California, Inc.
190 TASMAN DRIVE
MILPITAS, CA. 95035-7439
PHONE: (408) 954-1580

PROJECT INFORMATION:

SWANTON ROAD
SANTA CRUZ, CA. 95060

CURRENT ISSUE DATE:

10/14/11

PERMIT SUBMISSION:

REV.:	DATE:	DESCRIPTION:	BY:

PLANS PREPARED BY:

HP COMMUNICATIONS INC.
13341 Temescal Cyn. Rd.
Corona, CA. 92883
PHONE: (951) 471-1919

PLANS APPROVED BY:

NextG Networks of California, Inc.

REP:

COMMENTS:

POLE ON SWANTON (SOUTHERN ENTRANCE) ANTENNA (1) POLE N/O PG&E POLE

SHEET TITLE:

NextG Networks of California, Inc.
NEXTG SAN JOSE NETWORK
POLE PROFILE NODE SP01
(POWER SUPPLY LOCATION)

SHEET NUMBER:	REVISION:
4	1

UTILITY POLE POWERING EQUIPMENT PROFILES

Exhibit 3
A-3-SCO-12-006
13 of 22

NOTE:
A COPY OF ALL REQUIRED PERMITS MUST BE PRESENT DURING ANY WORK ON THIS LOCATION AND PERFORMING WORK. AT THIS LOCATION INDICATES THAT THE CONTRACTOR HAS READ AND COMPLIED WITH THE REQUIREMENTS STATED IN THE PERMITS

SIGNATURE:

NextG Networks of California, Inc.

DAVENPORT
DAV09
CABRILLO HWY / HWY1
SANTA CRUZ, CA. 95060

Call Before you Dig!

811

Know what's **below.**
Call before you dig.
Call 811 Before you Dig!

VICINITY MAP

ALL POLE MOUNTED EQUIPMENT
TO BE PAINTED WITH SHERMAN WILLIAMS
#6108 PAINT

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE ANSAS GOVERNING CODES.

1. STATE ADMINISTRATIVE CODE
2. STATE BUILDING CODE
3. ANSI/NFPA-222-F LIFE SAFETY CODE NFPA101-1990
4. STATE MECHANICAL CODE
5. STATE PLUMBING CODE
6. STATE ELECTRIC CODE
7. LOCAL BUILDING CODE
8. CITY/COUNTY ORDINANCES

CODE COMPLIANCE

PROPERTY INFORMATION

CUSTOMER:	NEXTG
PROJECT:	DAVENPORT
NODE:	DAV09
LATITUDE:	37.085514
LONGITUDE:	-122.269159
STREET ADDRESS:	CABRILLO HWY / HWY1
CITY, STATE:	SANTA CRUZ, CA, 95060
POLE# / TYPE:	142 / WOOD POLE
RAD CENTER / ANTENNA HEIGHT:	29'-0" TO RAD CENTER
ANTENNA TYPE:	PANEL ANTENNA(S)
AZIMUTH FOR ANTENNA:	120°, 300°
POWER TO POLE:	EXISTING PG&E
POLE ACCESS:	ROAD SIDE
POLE LOCATION & DESCRIPTION:	APPROX. 510' N/E OF BACK RANCH RD. AND CABRILLO 1

PROJECT SUMMARY

THE PROJECT CONSISTS OF THE INSTALLATION AND OPERATION OF WIRELESS EQUIPMENT AND ANTENNAS FOR NEXTG ON EXISTING WOOD UTILITY POLES.

PROJECT DESCRIPTION

INSTALL NEW WIRELESS EQUIPMENT AND ANTENNAS AND ALL ASSOCIATED BRACKETS IN ACCORDANCE TO CONSTRUCTION SPECIFICATIONS. REARRANGE ANY EXISTING FACILITIES IN ACCORDANCE TO GOVERNING CONSTRUCTION GUIDELINES.

PROJECT SCOPE

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

GENERAL CONTRACTOR NOTES

SHEET	DESCRIPTION	REV.
1	TITLE SHEET	1
2	UTILITY POLE EQUIPMENT PROFILES	1
3	UTILITY POLE EQUIPMENT TYPICALS	1

SHEET INDEX

NextG Networks of California, Inc.

PROJECT INFORMATION:
CABRILLO HWY / HWY1
SANTA CRUZ, CA, 95060

CURRENT ISSUE DATE:
11/18/11

PERMIT SUBMISSION:

REV.:	DATE:	DESCRIPTION:	BY:
1	5/9/11	SHEET INDEX REV.	MZ

PLANS PREPARED BY:
HP COMMUNICATIONS INC.
12341 Tamiami Cyn. Rd.
Gerber, CA. 93063
PHONE (661) 471-1919

PLANS APPROVED BY:
NextG Networks of California, Inc.
REP:

COMMENTS:
200' N/O ROAD MARKER 3896.

SHEET TITLE:
NextG Networks of California, Inc.
NEXTG DAVENPORT NETWORK
POLE PROFILE DAV09

SHEET NUMBER: 1
REVISION: 1

Exhibit 3
A-3-SCO-12-006
14 of 22

plm782

AZIMUTH	DOWNTILT
138°	0°
308°	0°

MAKE READY

STEP POLE ACCORDING TO GO-95 STANDARDS.

NEW CONSTRUCTION

CONSTRUCTION:
PG&E TO REFRAME POLE AND PLACE NEW TRANSFORMER
(PG&E TO DETERMINE HEIGHT)
NEXTG TO ATTACH CABLE ARM FOR ANTENNAS @ 30'-7"

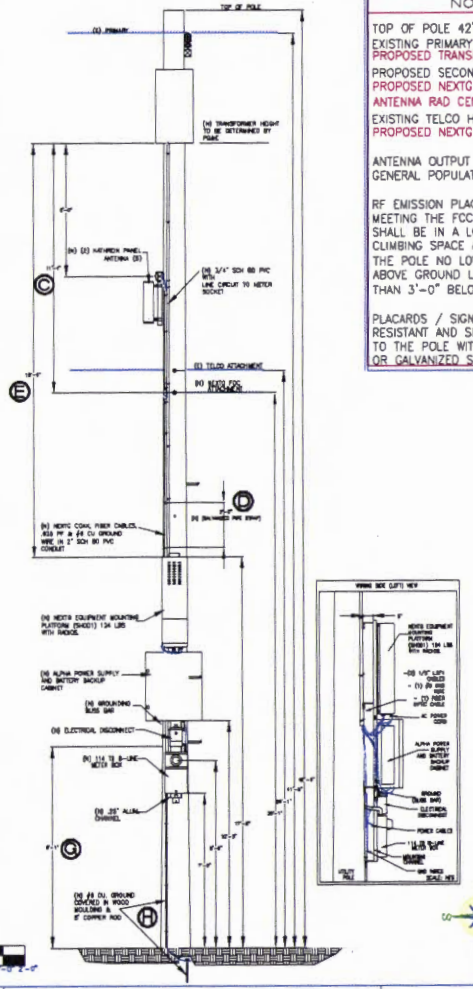
NOTES:

TOP OF POLE 42'-5"
EXISTING PRIMARY H.O.A: 41-5"
PROPOSED TRANSFORMER H.O.A: TBD
PROPOSED SECONDARY H.O.A: 36'-5"
PROPOSED NEXTG CABLE ARM H.O.A: 30'-7"
ANTENNA RAD CENTER: 29'-2"
EXISTING TELCO H.O.A: 26'-1"
PROPOSED NEXTG FOC H.O.A 25'-1"

ANTENNA OUTPUT DOES NOT EXCEED GENERAL POPULATION EXPOSURE LIMITS.

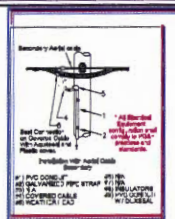
RF EMISSION PLACARDS / SIGNAGE MEETING THE FCC REQUIREMENTS SHALL BE IN A LOCATION VISIBLE FROM CLIMBING SPACE AND BE AFFIXED TO THE POLE NO LOWER THAN 9'-0" ABOVE GROUND LINE & NO HIGHER THAN 3'-0" BELOW THE ANTENNA.

PLACARDS / SIGNAGE ARE UVA RESISTANT AND SHALL BE ATTACHED TO THE POLE WITH GALVANIZED NAILS OR GALVANIZED SCREWS.

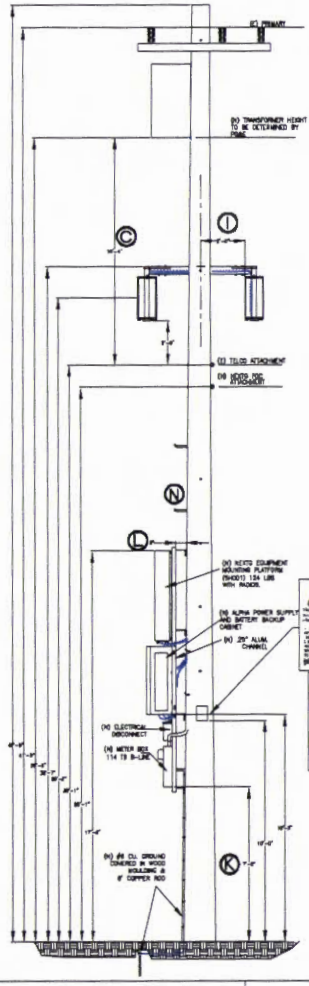


- A – 72" MIN. CLEARANCE BETWEEN SECONDARY POWER AND CLOSEST LEVEL OF ANTENNA ASSEMBLY. (N/A)
- B – POLE TOP EXTENSION UPPER AND LOWER BRACKET STEPS ARE TO BE INSTALLED WITH THE POLE TOP EXTENSION BRACKET ASSEMBLY, STEPS ARE NOT TO BE INSTALLED ON WOOD EXTENSION BAYDONET. (N/A)
- C – 72" MIN CLEARANCE REQ'D.
- D – 24" SPACING MAX. (GALVANIZED PIPE STRAP)
- E – 72" MIN. TO SECONDARY LEVEL.
- F – 12" MIN. SPACING FOR EQUIP TO CURB. (N/A)
- G – 15' MIN. (MAY BE REDUCED TO 9' WHEN NOT EXPOSED TO TRAFFIC).
- H – GROUND INSTALLED BY COMM COMPANY (INCLUDES 8' COPPER ROD).
- I – 24" MIN. FROM CENTER OF POLE
- J – 24" MIN. CLEARANCE REQ'D. (N/A)
- K – 7' MIN. / 8' MAX. REQ'D.
- L – 4" MIN. CLEARANCE BETWEEN EQUIPMENT AND POLE.
- M – PROTECTIVE COVERING MUST EXTEND A MINIMUM OF 3'-0" BEYOND ENERGIZED 0-750 VOLTS. (N/A)
- N – POLE STEPS TO BE INSTALLED FROM 8'-6" ABOVE GRADE TO NEXTG ATTACHMENT.

SCALE: 3/4"=1'-0" | UTILITY POLE DETAIL | POLE# 142 | LOOKING WEST | A



AZIMUTH	DOWNTILT
138°	0°
308°	0°

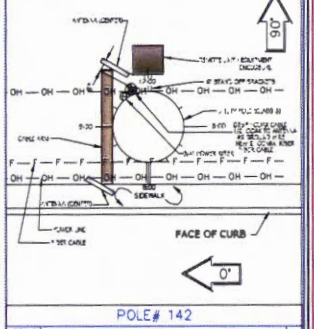


SCALE: 3/4"=1'-0" | UTILITY POLE DETAIL | POLE# 142 | LOOKING SOUTH | B

Call Before you Dig!
811
Know what's below.
Call before you dig.
Call 811 Before you Dig!

SCALE: N/A | SITE POLE PICTURE | C

POLE WILL BE STEPPED IN ACCORDANCE TO GO95 STANDARDS IN RESPECT TO CLIMBING SPACE.
REMOTE EQUIPMENT @ 12:00
1-3/4" SCH 80 NEXTG RISER @ 11:00
1-2" SCH 80 NEXTG RISER @ 11:00



POLE# 142

SCALE: N/A | RISER POLE DETAIL | D

SCALE: N/A | POWER SUPPLY ENCLOSURE | E

NextG Networks of California, Inc.
777 Tasman Drive
Milpitas, CA 95035-7453
PHONE (408) 954-1585

PROJECT INFORMATION:
CABRILLO HWY / HWY1
SANTA CRUZ, CA. 95060

CURRENT ISSUE DATE:
11/18/11

PERMIT SUBMISSION:

REV.:	DATE:	DESCRIPTION:	BY:
1	5/3/11	POLE HEIGHT CHANGES TO SECTION A,B &D	MZ

PLANS PREPARED BY:
HP COMMUNICATIONS INC.
13341 Temescal Cyn. Rd
Corona, CA 92883
PHONE: (951) 471-1919

PLANS APPROVED BY:
NextG Networks of California, Inc.
REF:

COMMENTS:
200' N/O ROAD MARKER 3098.

SHEET TITLE:
NextG Networks of California, Inc.
NEXTG DAVENPORT NETWORK
POLE PROFILE DAV09

SHEET NUMBER: 2 | REVISION: 1

UTILITY POLE EQUIPMENT PROFILES

Exhibit 3
A-3-SCO-12-006
15 of 22

plm782

ION-M19P

ANDREW ION-19P IS A MULTI-BAND MULTI-OPERATOR REMOTE UNIT WITH VARIOUS EXTENSION UNITS. IT IS USED IN CONJUNCTION WITH A MASTER UNIT IN THE ION OPTICAL DISTRIBUTION SYSTEM. THIS SYSTEM TRANSPORTS MULTIPLE FREQUENCY BANDS SIMULTANEOUSLY (1900 MHZ AND 1700/2100 MHZ), PROVIDING A COST-EFFECTIVE SOLUTION FOR DISTRIBUTING CAPACITY FROM ONE OR MORE BASE STATIONS

ELECTRICAL
POWER SUPPLY
MAINS POWER, VAC — 85 TO 264; 115 OR 230
POWER CONSUMPTION, WATTS — 200
OPTICAL
CONNECTORS — E2000/APC 8°
OPTICAL RETURN LOSS, DB — 45 MINIMUM
FIBER TYPE, MM — SINGLE MODE E9/125
OPTICAL LINK BUDGET, DB — 0 TO 10
COMPOSITE INPUT POWER
@ OTR1 MASTER SIDE, DBM
1900MHZ — +3 COMPOSITE
1700/2100 MHZ — +5 COMPOSITE
INTERFACE
BTS SIDE
NUMBER OF CONNECTORS
1900MHZ — 4
1700/2100 MHZ — 4
SYSTEM OPTIMIZED FOR BTS POWER, DBM — 33; 43

ANTENNA PORT
CONNECTOR — N FEMALE
OUTPUT POWER — SEE BAND SPECIFICATION
1900 MHZ
FREQUENCY RANGE, MHZ
UPLINK — 1850 TO 1910
DOWNLINK — 1930 TO 1990
OUTPUT POWER PER CARRIER*, DBM

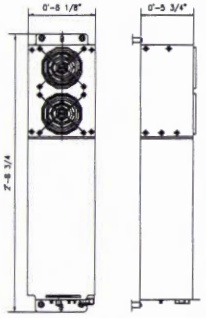
NUMBER OF CARRIERS	1	2	3	4
GSM	43	40	37	34
TDMA / EDGE	43	40	37	34
CDMA/EV-DO	43	40	37	34
WCDMA/HSDPA	43	40	37	34

SPURIOUS EMISSION — <-13 DBM / 1MHZ
DL OUTPUT TOLERANCE OVER FREQUENCY, DB — +1
DL OUTPUT TOLERANCE OVER TEMPERATURE, DB — +0.5

INPUT IOP
IOP3 OPTIMIZED — -12
NOISE FIGURE OPTIMIZED — -16
NOISE FIGURE, DB
IOP3 OPTIMIZED — 11
NOISE FIGURE OPTIMIZED — 8
1700/2100 MHZ (W EXTENSION UNIT)
FREQUENCY RANGE, MHZ
UPLINK — 1710 TO 1755
DOWNLINK — 2110 TO 2155
OUTPUT POWER PER CARRIER*, DBM

CDMA/EV-DO	WCDMA/UMTS/HSDPA
+43	+43 @ 1 CARRIER
+40	+40 @ 2 CARRIERS
+37	+37 @ 4 CARRIERS
+34	+34 @ 8 CARRIERS

SPURIOUS EMISSION — <-13 DBM / 1 MHZ
ADJACENT CHANNEL POWER, DBC — -48
DL OUTPUT TOLERANCE OVER FREQ, DB — +1
DL OUTPUT TOLERANCE OVER TEMP, DB — +0.5
INPUT (OP3, DBM
IOP3 OPTIMIZED — -12
NOISE FIGURE OPTIMIZED — -18
* APPLICABLE TO SINGLE MODULATION MODE ONLY
** WITH ACTIVE COOLING



ION-M19P MULTI-BAND, MULTI-OPERATOR REMOTE OPTICAL SYSTEM

SCALE: N.T.S. — REPEATER EQUIPMENT DIMENSIONS — F

KATHREIN SCALA DIVISION

840 10525
65° Dualband Directional Antenna

Kathrein's dual band antennas are ready for 3G applications, covering all existing wireless bands as well as all spectrum under consideration for future systems, LTE, PCS and 3G/UMTS. These cross-polarized antennas offer diversity operation in the same space as a conventional 700 MHz antenna, and are mountable on our compact sector brackets

- Wide band operation.
- Exceptional intermodulation characteristics.
- Various gain, beamwidth and downtilt ranges.
- High strength pultruded fiberglass radome.

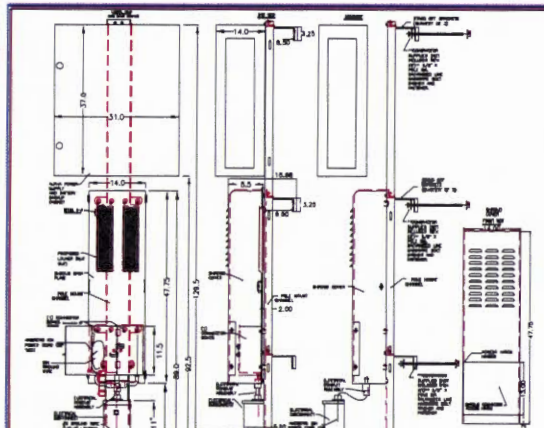
General specifications:
Frequency range 698-894 MHz
1710-2170 MHz
Impedance 50 ohms
VSWR <1.5:1
Intermodulation (2x20W) IM3: <-150 dBc
Polarization +45° and -45°
Connector 4 x 7-16 DIN female
Isolation intersystem >30 dB
Weight 15.8 lb (7.2 kg)
Dimensions 23.3 x 10.6 x 6.8 inches (593 x 270 x 197 mm)
Wind load at 93 mph (150kph)
Front/Side/Rear 23 lbf / 18 lbf / 41 lbf (100 N) / (80 N) / (180 N)
Wind survival rating* 120 mph (200 kph)
Shipping dimensions 26 x 11.8 x 7.6 inches (736 x 302 x 192 mm)
Shipping weight 19.2 lb (8.7 kg)
Mounting Fixed and tilt mount options are available for 2 to 4.8 inch (50 to 115 mm) OD masts.

Specifications 698-806 MHz 806-894 MHz 1710-1755 MHz 1850-1990 MHz 2110-2170 MHz
Gain 10.5 dBi 11 dBi 13.3 dBi 13.5 dBi 12.8 dBi
Front-to-back ratio >25 dB (co-polar) >25 dB (co-polar) >30 dB (co-polar) >30 dB (co-polar) >30 dB (co-polar) >30 dB (co-polar)
Maximum input power 250 watts (at 50°C) 250 watts (at 50°C) 200 watts (at 50°C) 200 watts (at 50°C) 200 watts (at 50°C)
+45° and -45° polarization 71° (half-power) 68° (half-power) 81° (half-power) 63° (half-power) 70° (half-power)
horizontal beamwidth
+45° and -45° polarization 37° (half-power) 31° (half-power) 19° (half-power) 16° (half-power) 18.5° (half-power)
vertical beamwidth
Cross polar ratio (typical)
Main direction 0° 30 dB 30 dB 25 dB 25 dB 25 dB
Sector ±60° >8 dB >8 dB >6 dB >6 dB >6 dB

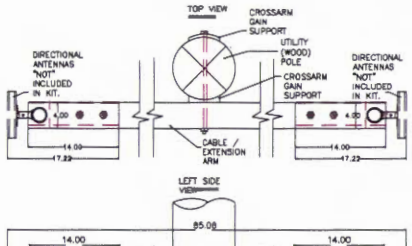
Mechanical design is based on environmental conditions as stipulated in EIA-222-F (June 1996) and/or ETS 300 019-1-4 which includes the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.

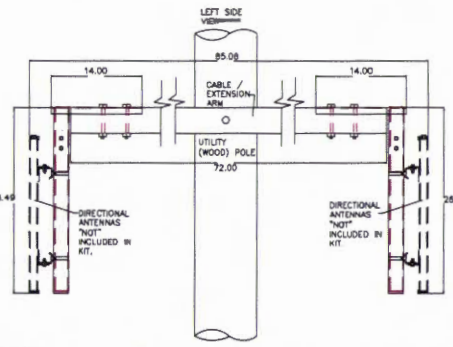
Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone: (541) 779-6500 Fax: (541) 779-3991
Email: communications@scala.com Internet: www.kathrein-scala.com

SCALE: N.T.S. — ANTENNA SPECIFICATIONS — G

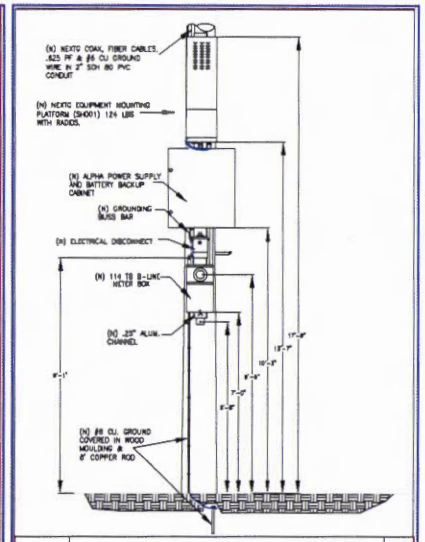


SCALE: N.T.S. — REPEATER EQUIPMENT AND MOUNTING CHASSIS CONFIGURATION — H

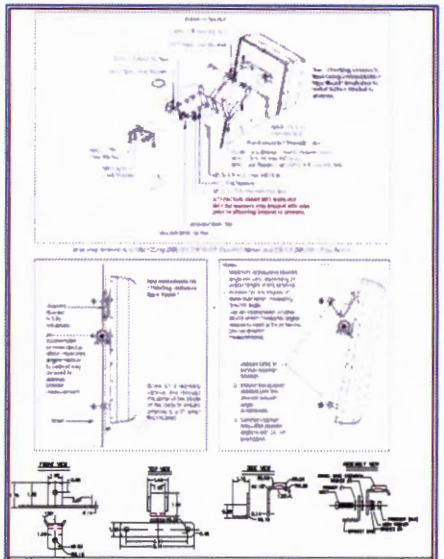




SCALE: N.T.S. — BRACKET ASSEMBLY / CONFIGURATION — I



SCALE: N.T.S. — UTILITY POLE EQUIPMENT AND MOUNTING CONFIGURATION — J



SCALE: N.T.S. — ANTENNA MOUNTING BRACKETS — K

UTILITY POLE EQUIPMENT TYPICALS

NextG Networks of California, Inc.
691 Tasman Drive
Milpitas, CA 95035-7430
(408) 954-1580

PROJECT INFORMATION:
CABRILLO HWY / HWY1
SANTA CRUZ, CA, 95060

CURRENT ISSUE DATE:
11/18/11

PERMIT SUBMISSION:

REV.:	DATE:	DESCRIPTION:	BY:
1	5/3/11	ADDED MEASUREMENT TO SECTION H & K	MZ

PLANS PREPARED BY:
HP COMMUNICATIONS INC.
13341 Tamiami Cyn. Rd
Corona, Ca. 92883
PHONE: (951) 471-1919

PLANS APPROVED BY:
NextG Networks of California, Inc.
REP:

COMMENTS:

SHEET TITLE:
NextG Networks of California, Inc.
NEXTG DAVENPORT NETWORK
POLE PROFILE DAV08

SHEET NUMBER: 3 — REVISION: 1

Exhibit 3
A-3-SCO-12-006
16 of 22

plm782

NOTE:
A COPY OF ALL REQUIRED PERMITS MUST BE PRESENT DURING ANY WORK ON THIS LOCATION AND PERFORMING WORK AT THIS LOCATION INDICATES THAT THE CONTRACTOR HAS READ AND COMPLIED WITH THE REQUIREMENTS STATED IN THE PERMITS

SIGNATURE:

NextG Networks of California, Inc.

DAVENPORT
DAV10M
CABRILLO HWY / HWY1
SANTA CRUZ, CA. 95060

Call Before you Dig!

811

Know what's below.
Call before you dig.
Call 811 Before you Dig!

VICINITY MAP

ALL POLE MOUNTED EQUIPMENT
TO BE PAINTED WITH SHERMAN WILLIAMS
#6108 PAINT

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE AREAS GOVERNING CODES.

1. STATE ADMINISTRATIVE CODE
2. STATE BUILDING CODE
3. ANSI/NFPA-222-F LIFE SAFETY CODE NFPA-101-1985
4. STATE MECHANICAL CODE
5. STATE PLUMBING CODE
6. STATE ELECTRIC CODE
7. LOCAL BUILDING CODE
8. CITY/COUNTY ORDINANCES

CODE COMPLIANCE

PROPERTY INFORMATION

CUSTOMER:	NEXTG
PROJECT:	DAVENPORT
NODE:	DAV10M
LATITUDE:	37.09298
LONGITUDE:	-122.274363
STREET ADDRESS:	CABRILLO HWY / HWY1
CITY, STATE:	SANTA CRUZ, CA. 95060
POLE# / TYPE:	437 / WOOD POLE
RAD CENTER / ANTENNA HEIGHT:	39'-0" TO RAD CENTER
ANTENNA TYPE:	PANEL ANTENNA(S)
AZIMUTH FOR ANTENNA:	195°, 300°
POWER TO POLE:	EXISTING PG&E
POLE ACCESS:	ROAD SIDE
POLE LOCATION & DESCRIPTION:	REFER TO GPS COORDINATES FOR LOCATION.

PROJECT SUMMARY

THE PROJECT CONSISTS OF THE INSTALLATION AND OPERATION OF WIRELESS EQUIPMENT AND ANTENNAS FOR NEXTG ON EXISTING WOOD UTILITY POLES.

PROJECT DESCRIPTION

INSTALL NEW WIRELESS EQUIPMENT AND ANTENNAS AND ALL ASSOCIATED BRACKETS IN ACCORDANCE TO CONSTRUCTION SPECIFICATIONS, REARRANGE ANY EXISTING FACILITIES IN ACCORDANCE TO GOVERNING CONSTRUCTION GUIDELINES.

PROJECT SCOPE

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

GENERAL CONTRACTOR NOTES

SHEET	DESCRIPTION	REV.
1	TITLE SHEET	1
2	UTILITY POLE EQUIPMENT PROFILES	1
3	UTILITY POLE EQUIPMENT TYPICALS	1

SHEET INDEX

NextG Networks of California, Inc.
950 TASMAN DRIVE
MILPITAS, CA 95035
PHONE (408) 954-1580

PROJECT INFORMATION:
CABRILLO HWY / HWY1
SANTA CRUZ, CA. 95060

CURRENT ISSUE DATE:
11/18/11

PERMIT SUBMISSION:

REV.:	DATE:	DESCRIPTION:	BY:
1	5/9/11	SHEET INDEX REV.	MZ

PLANS PREPARED BY:
HP COMMUNICATIONS INC.
12341 Tamarack Cyn. Rd.
Corona, CA. 92883
PHONE (951) 471-1919

PLANS APPROVED BY:
NextG Networks of California, Inc.
REP:

COMMENTS:

SHEET TITLE:
NextG Networks of California, Inc.
NEXTG DAVENPORT NETWORK
POLE PROFILE DAV10M

SHEET NUMBER: 1
REVISION: 1

Exhibit 3
A-3-SCO-12-006
17 of 22

plm782

AZIMUTH	DOWNTILT
155°	0°
300°	0°

MAKE READY

STEP POLE ACCORDING TO GO-95 STANDARDS.

NEW CONSTRUCTION

CONSTRUCTION:
PG&E TO REFRAME POLE AND PLACE NEW TRANSFORMER
(PG&E TO DETERMINE HEIGHT)
NEXTG TO ATTACH CABLE ARM FOR ANTENNAS @ 39'-5"
NEXTG TO ATTACH GUARD ARM @ 40'-3"

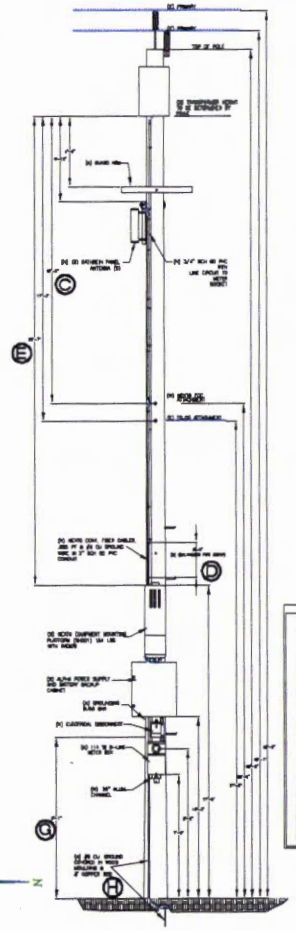
NOTES:

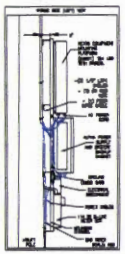
TOP OF POLE 48'-0"
EXISTING PRIMARY H.O.A: 50'-2" THRU 49'-1"
PROPOSED TRANSFORMER H.O.A: TBD
PROPOSED SECONDARY H.O.A: 44'-3"
PROPOSED NEXTG GUARD ARM H.O.A: 40'-3"
PROPOSED NEXTG ANTENNA CABLE ARM H.O.A: 39'-5"
ANTENNA RAD CENTER: 38'-0"
PROPOSED NEXTG FOC H.O.A 28'-0"
EXISTING TELCO H.O.A: 27'-0"

ANTENNA OUTPUT DOES NOT EXCEED GENERAL POPULATION EXPOSURE LIMITS.

RF EMISSION PLACARDS / SIGNAGE MEETING THE FCC REQUIREMENTS SHALL BE IN A LOCATION VISIBLE FROM CLIMBING SPACE AND BE AFFIXED TO THE POLE NO LOWER THAN 9'-0" ABOVE GROUND LINE & NO HIGHER THAN 3'-0" BELOW THE ANTENNA.

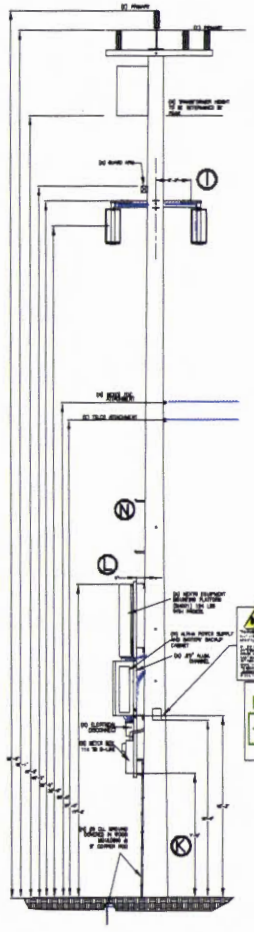
PLACARDS / SIGNAGE ARE UVA RESISTANT AND SHALL BE ATTACHED TO THE POLE WITH GALVANIZED NAILS OR GALVANIZED SCREWS.





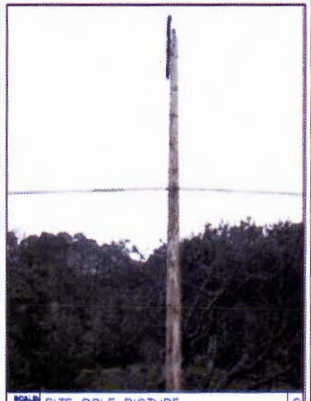
- (A) – 72" MIN. CLEARANCE BETWEEN SECONDARY POWER AND CLOSEST LEVEL OF ANTENNA ASSEMBLY. (N/A)
- (B) – POLE TOP EXTENSION UPPER AND LOWER BRACKET STEPS ARE TO BE INSTALLED WITH THE POLE TOP EXTENSION BRACKET ASSEMBLY, STEPS ARE NOT TO BE INSTALLED ON WOOD EXTENSION BAYONET. (N/A)
- (C) – 72" MIN CLEARANCE REQ'D.
- (D) – 24" SPACING MAX. (GALVANIZED PIPE STRAP)
- (E) – 72" MIN. TO SECONDARY LEVEL.
- (F) – 12" MIN. SPACING FOR EQUIP TO CURB. (N/A)
- (G) – 15' MIN. (MAY BE REDUCED TO 9' WHEN NOT EXPOSED TO TRAFFIC).
- (H) – GROUND INSTALLED BY COMM COMPANY (INCLUDES 8' COPPER ROD).
- (I) – 24" MIN. FROM CENTER OF POLE
- (J) – 24" MIN. CLEARANCE REQ'D. (N/A)
- (K) – 7' MIN. / 8' MAX. REQ'D.
- (L) – 4" MIN. CLEARANCE BETWEEN EQUIPMENT AND POLE.
- (M) – PROTECTIVE COVERING MUST EXTEND A MINIMUM OF 3'-0" BEYOND ENERGIZED 0-750 VOLTS. (N/A)
- (N) – POLE STEPS TO BE INSTALLED FROM 8'-6" ABOVE GRADE TO NEXTG ATTACHMENT.

UTILITY POLE DETAIL POLE# 437 LOOKING WEST A



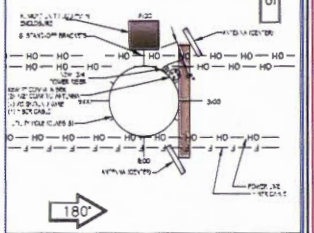
Call Before you Dig!
811
Know what's below.
Call before you dig.
Call 811 Before you Dig!

UTILITY POLE DETAIL POLE# 437 LOOKING SOUTH B



SITE POLE PICTURE C

POLE WILL BE STEPPED IN ACCORDANCE TO GO95 STANDARDS IN RESPECT TO CLIMBING SPACE.
REMOTE EQUIPMENT @ 1200
1-3/4" SCH 80 NEXTG RISER @ 1:00
1-2" SCH 80 NEXTG RISER @ 1:00



HIGHWAY

POLE# 437

RISER POLE DETAIL D

POWER SUPPLY ENCLOSURE E

NextG Networks of California, Inc.

PROJECT INFORMATION:
CABRILLO HWY / HWY 1
SANTA CRUZ, CA. 95060

CURRENT ISSUE DATE:
11/18/11

PERMIT SUBMISSION:

REV.:	DATE:	DESCRIPTION:	BY:
1	5/3/11	POLE HEIGHT CHANGES TO SECTION A,B &D	MZ

PLANS PREPARED BY:
HP COMMUNICATIONS INC.
13341 Tamarind Cyn. Rd
Corona, CA 92883
PHONE: (951) 471-1918

PLANS APPROVED BY:
NextG Networks of California, Inc.
REP:

COMMENTS:
200' N/O ROAD MARKER 3896

SHEET TITLE:
NextG Networks of California, Inc.
NEXTG DAVENPORT NETWORK
POLE PROFILE DAV10M

SHEET NUMBER: 2
REVISION: 1

UTILITY POLE EQUIPMENT PROFILES

Exhibit 3
A-3-SCO-12-006
18 of 22

plm782

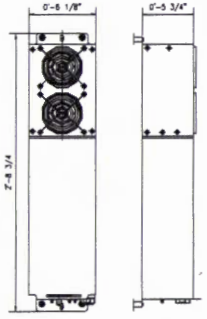
ION-M19P

ANDREW ION-19P IS A MULTI-BAND MULTI-OPERATOR REMOTE UNIT WITH VARIOUS EXTENSION UNITS. IT IS USED IN CONJUNCTION WITH A MASTER UNIT IN THE ION OPTICAL DISTRIBUTION SYSTEM. THIS SYSTEM TRANSPORTS MULTIPLE FREQUENCY BANDS SIMULTANEOUSLY (1900 MHZ AND 1700/2100 MHZ), PROVIDING A COST-EFFECTIVE SOLUTION FOR DISTRIBUTING CAPACITY FROM ONE OR MORE BASE STATIONS

ELECTRICAL

POWER SUPPLY	
MAINS POWER, VAC	85 TO 264 115 OR 230
POWER CONSUMPTION, WATTS	350
OPTICAL	
CONNECTORS	E2000/APC 8°
OPTICAL RETURN LOSS, DB	45 MINIMUM
FIBER TYPE, MM	SINGLE MODE E9/125
OPTICAL LINK BUDGET, DB	0 TO 10
COMPOSITE INPUT POWER	
@ DTRX MASTER SDC, DBM	
1900MHZ	+3 COMPOSITE
1700/2100 MHZ	+5 COMPOSITE
INTERFACE	
BTS SIDE	
NUMBER OF CONNECTORS	
1900MHZ	4
1700/2100 MHZ	4
SYSTEM OPTIMIZED FOR BTS POWER, DBM	33 43
ANTENNA PORT	
CONNECTOR	N FEMALE
OUTPUT POWER	SEE BAND SPECIFICATION
1900 MHZ	
FREQUENCY RANGE, MHZ	
UPLINK	1850 TO 1915
DOWNLINK	1930 TO 1995
OUTPUT POWER PER CARRIER*, DBM	
NUMBER OF CARRIERS	1 2 3 4
GSM	43 40 37 34
TDMA/ EDGE	43 40 37 34
CDMA/EV-DO	43 40 37 34
WCDMA/HSDPA	43 40 37 34
SPURIOUS EMISSION	<-13 DBM / 1MHZ
DL OUTPUT TOLERANCE OVER FREQUENCY, DB	±1
DL OUTPUT TOLERANCE OVER TEMPERATURE, DB	±0.5
INPUT (CP)	
IOP3 OPTIMIZED	-12
NOISE FIGURE OPTIMIZED	-18
NOISE FIGURE, DB	
IOP3 OPTIMIZED	11
NOISE FIGURE OPTIMIZED	6
1700/2100 MHZ (IN EXTENSION UNIT)	
FREQUENCY RANGE, MHZ	
UPLINK	1710 TO 1755
DOWNLINK	2110 TO 2155
OUTPUT POWER PER CARRIER*, DBM	
CDMA/EV-DO	WCDMA/UMTS/HSDPA
+43	+43 @ 1 CARRIER
+40	+40 @ 2 CARRIERS
+37	+37 @ 4 CARRIERS
+34	+34 @ 8 CARRIERS
SPURIOUS EMISSION	<- 13 DBM / 1 MHZ
ADJACENT CHANNEL POWER, DBC	-45
DL OUTPUT TOLERANCE OVER FREQ, DB	±1
DL OUTPUT TOLERANCE OVER TEMP, DB	±0.5
INPUT (CP), DBM	
IOP3 OPTIMIZED	-12
NOISE FIGURE OPTIMIZED	-18

* APPLICABLE TO SINGLE MODULATION MODE ONLY
** WITH ACTIVE COOLING

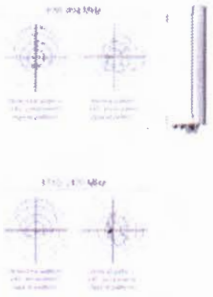


ION-M19P MULTI-BAND, MULTI-OPERATOR REMOTE OPTICAL SYSTEM

SCALE: N.T.A. — REPEATER EQUIPMENT DIMENSIONS — F

KATHREIN SCALA DIVISION

840 10525
65° Dualband Directional Antenna



Kathrein's dual band antennas are ready for 3G applications, covering all existing wireless bands as well as all spectrum under consideration for future systems, LTE, PCS and 3G/UMTS. These cross-polarized antennas offer diversity operation in the same space as a conventional 700 MHz antenna, and are mountable on our compact sector brackets.

- Wide band operation
- Exceptional intermodulation characteristics
- Various gain, beamwidth and downtilt ranges
- High strength pultruded fiberglass radome.

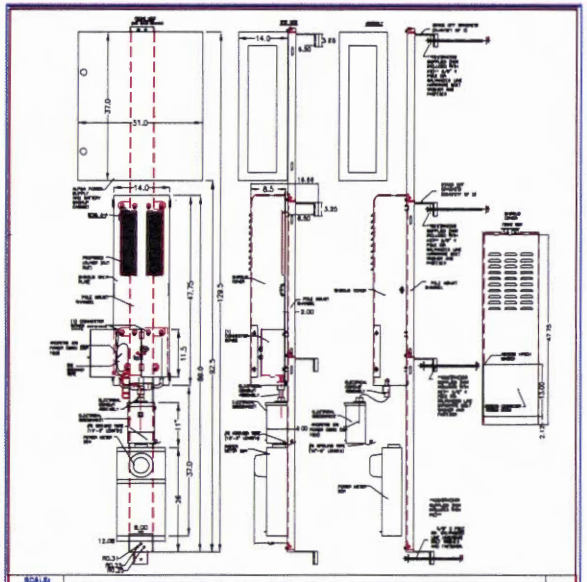
General specifications:
Frequency range 698-894 MHz
1710-2170 MHz
Impedance 50 ohms
VSWR <1.5:1
Intermodulation (2x20w) IM3: <-150 dBc
Polarization +45° and -45°
Connector 4 x 7-16 DIN female
Isolation intrasystem >30 dB
Weight 15.9 lb (7.2 kg)
Dimensions 23.5 x 10.6 x 6.2 inches
(583 x 270 x 157 mm)
Wind load at 93 mph (150kph)
Front/Side/Rear 23 lbf / 10 lbf / 41 lbf
(100 N) / (80 N) / (180 N)
Wind survival rating* 120 mph (200 kph)
Shipping dimensions 29 x 11.9 x 7.6 inches
(736 x 302 x 193 mm)
Shipping weight 18.2 lb (8.7 kg)
Mounting: Fixed and tilt mount options are available for 2 to 4.8 inch (50 to 115 mm) OD masts.

Specifications: 698-806 MHz 806-894 MHz 1710-1755 MHz 1850-1990 MHz 2110-2170 MHz
Gain 10.5 dBi 11 dBi 13.3 dBi 13.5 dBi 12.8 dBi
Front-to-back ratio >25 dB (co-polar) >25 dB (co-polar) >30 dB (co-polar) >30 dB (co-polar) >30 dB (co-polar)
Maximum input power 250 watts (at 50°C) 250 watts (at 50°C) 200 watts (at 50°C) 200 watts (at 50°C) 200 watts (at 50°C)
+45° and -45° polarization 71° (half-power) 68° (half-power) 81° (half-power) 63° (half-power) 70° (half-power)
horizontal beamwidth
+45° and -45° polarization 37° (half-power) 31° (half-power) 19° (half-power) 19° (half-power) 16.5° (half-power)
vertical beamwidth
Cross polar ratio (typical)
Main direction 0° 30 dB 30 dB 25 dB 25 dB 25 dB 25 dB
Sector ±60° >15 dB >15 dB >15 dB >15 dB >15 dB >15 dB

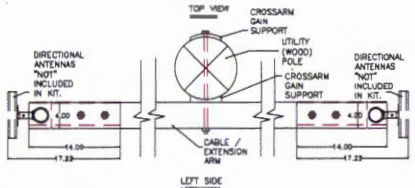
Mechanical design is based on environmental conditions as stipulated in EIA-222-F (June 1996) and/or ETS 300 019-1-4 class [illegible] the static maximum load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.

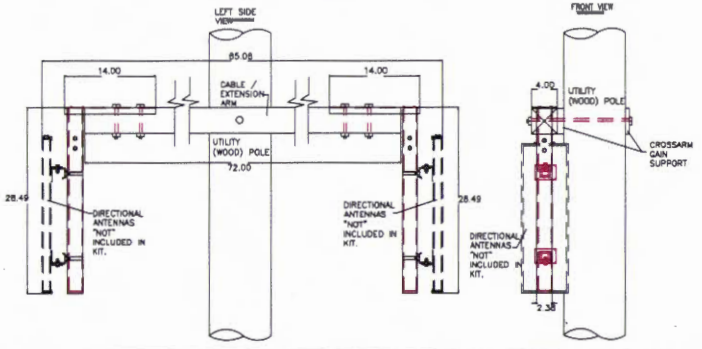
Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone: (541) 779-6500 Fax: (541) 779-3991
Email: communications@kathrein-scala.com Internet: www.kathrein-scala.com

SCALE: N.T.A. — ANTENNA SPECIFICATIONS — G

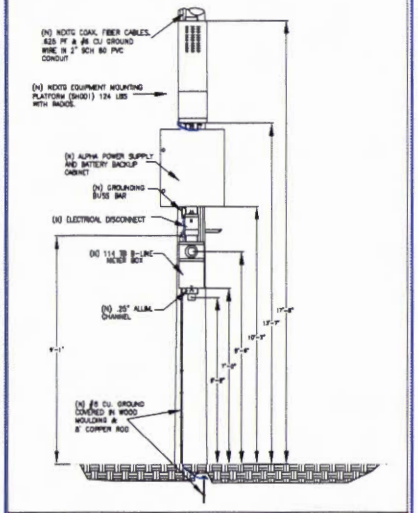


SCALE: N.T.A. — REPEATER EQUIPMENT AND MOUNTING CHASSIS CONFIGURATION — H

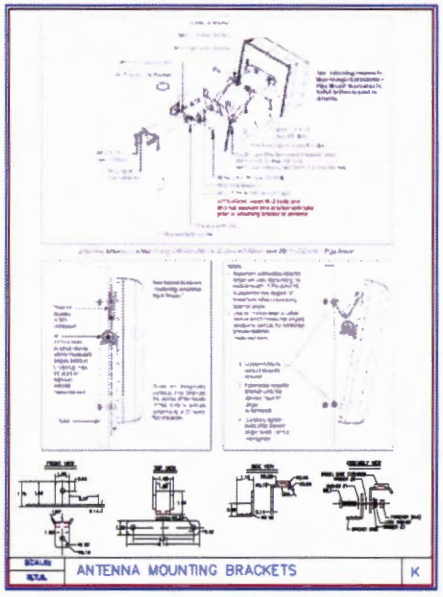




SCALE: N.T.A. — BRACKET ASSEMBLY / CONFIGURATION — I



SCALE: N.T.A. — UTILITY POLE EQUIPMENT AND MOUNTING CONFIGURATION — J



SCALE: N.T.A. — ANTENNA MOUNTING BRACKETS — K

NextG Networks of California, Inc.
470 Vallombrosa Drive
Milpitas, CA 95035-7453
Phone: (408) 954-1580

PROJECT INFORMATION:

CARRILLO HWY / HWY1
SANTA CRUZ, CA, 95060

CURRENT ISSUE DATE:
11/18/11

PERMIT SUBMISSION:

REV.:	DATE:	DESCRIPTION:	BY:
1	5/3/11	ADDED MEASUREMENT TO SECTION H & K	MZ

PLANS PREPARED BY:

HP COMMUNICATIONS INC.
13341 Tamasaki Cyn. Rd
Corona, CA 92883
PHONE: (951) 471-1919

PLANS APPROVED BY:

NextG Networks of California, Inc.

REP:

COMMENTS:

SHEET TITLE:

NextG Networks of California, Inc.
NEXTG DAVENPORT NETWORK
POLE PROFILE DAV100M

SHEET NUMBER: 3 REVISION: 1

UTILITY POLE EQUIPMENT TYPICALS

Exhibit 3
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p1n782

DAVENPORT HUB

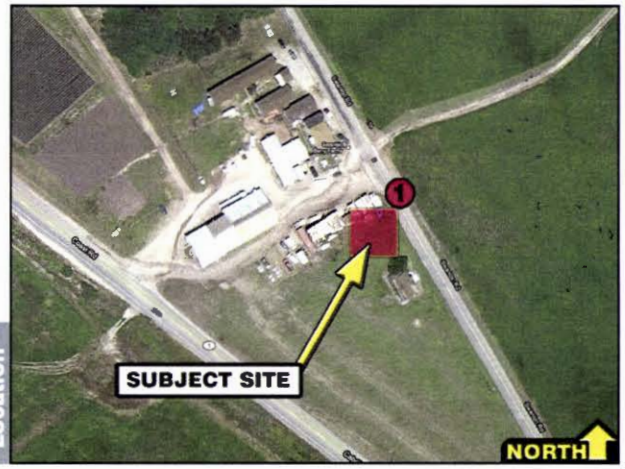
STRAWBERRY FARM
25 SWANTON ROAD
DAVENPORT, CA 95017

NextG Networks

View #: 1

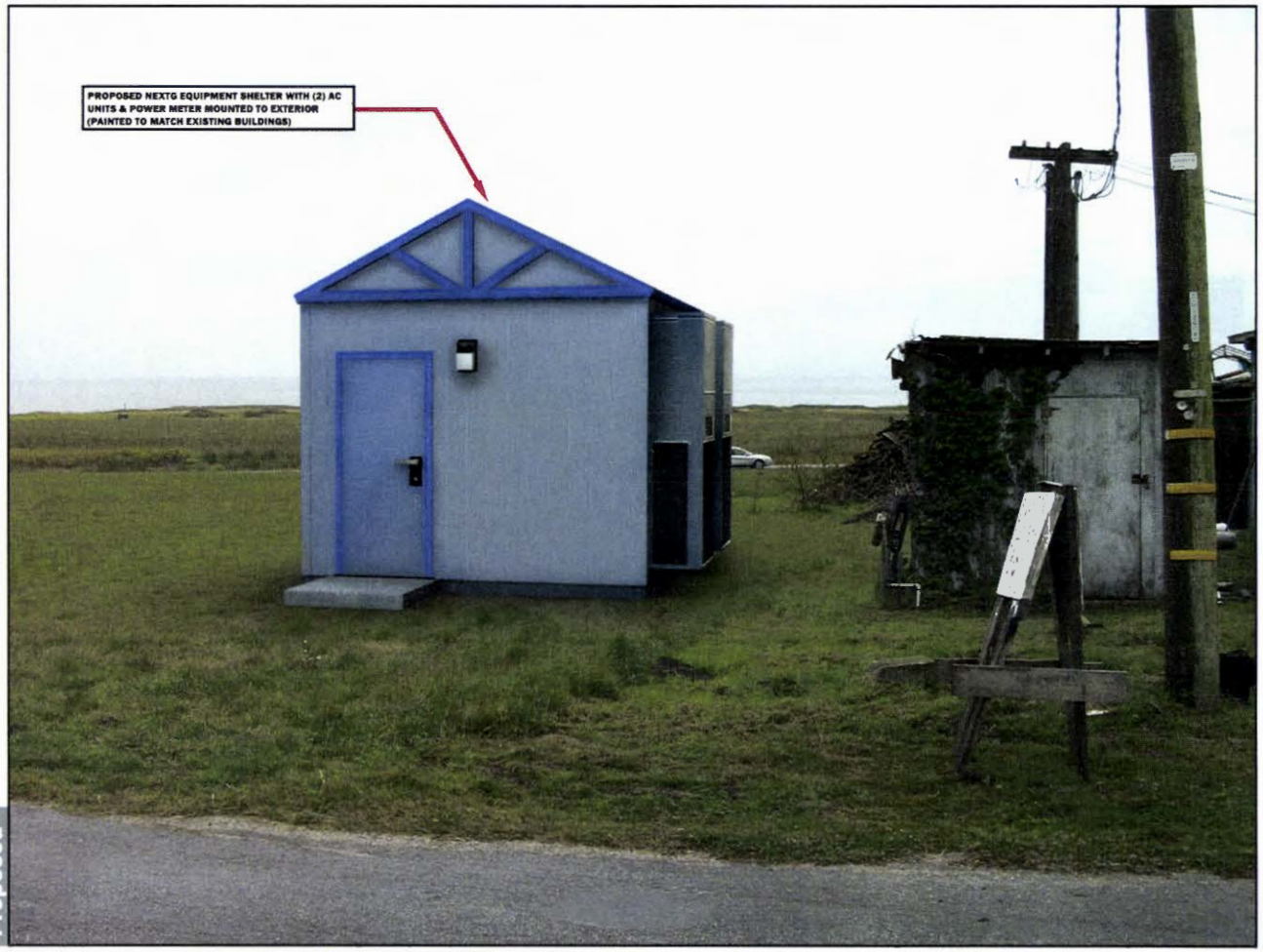
July 13, 2011

Location



Existing

Proposed



The illustration above is a representation of the proposed project based on information provided by the client. Actual construction may vary dependent on approved construction plans and therefore the A&E firm will not be held responsible for any post production design changes.

NextG Networks of California, Inc.
2216 O'Toole Avenue
San Jose, CA 95131
Chad Rasmussen - Phone: (703) 201-7066

RT GRAPHICS
Contact: Ryan Thigpen - (949) 307-3120
web - http://rtgraphics.net

Prepared by: RLT
Approved by: RLT

EDG
Connell Design Group, LLC
26455 Rancho Parkway South, Lake Forest, CA 92630
Office: (949) 753-8807 | Fax: (949) 753-8833

REV: 2

Exhibit 3
A-3-SCO-12-006
20 of 22

DAVENPORT HUB

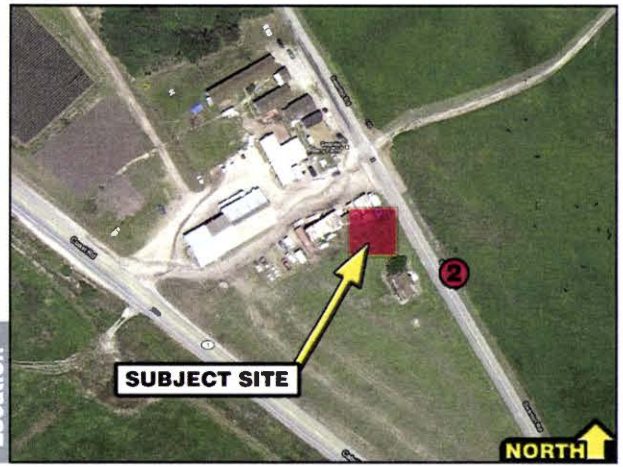
STRAWBERRY FARM
25 SWANTON ROAD
DAVENPORT, CA 95017

NextG Networks

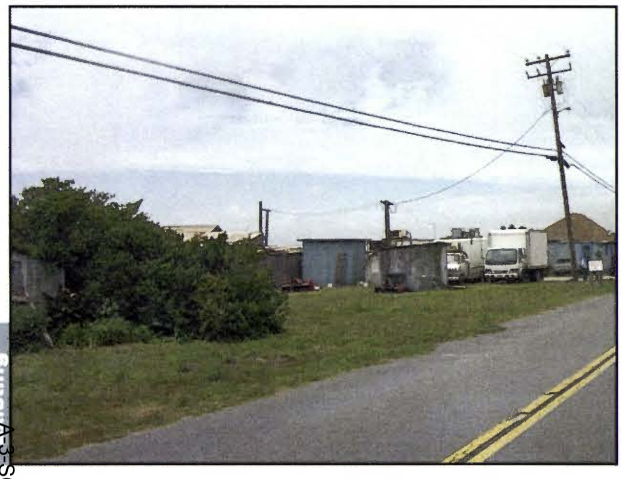
View #: 2

July 13, 2011

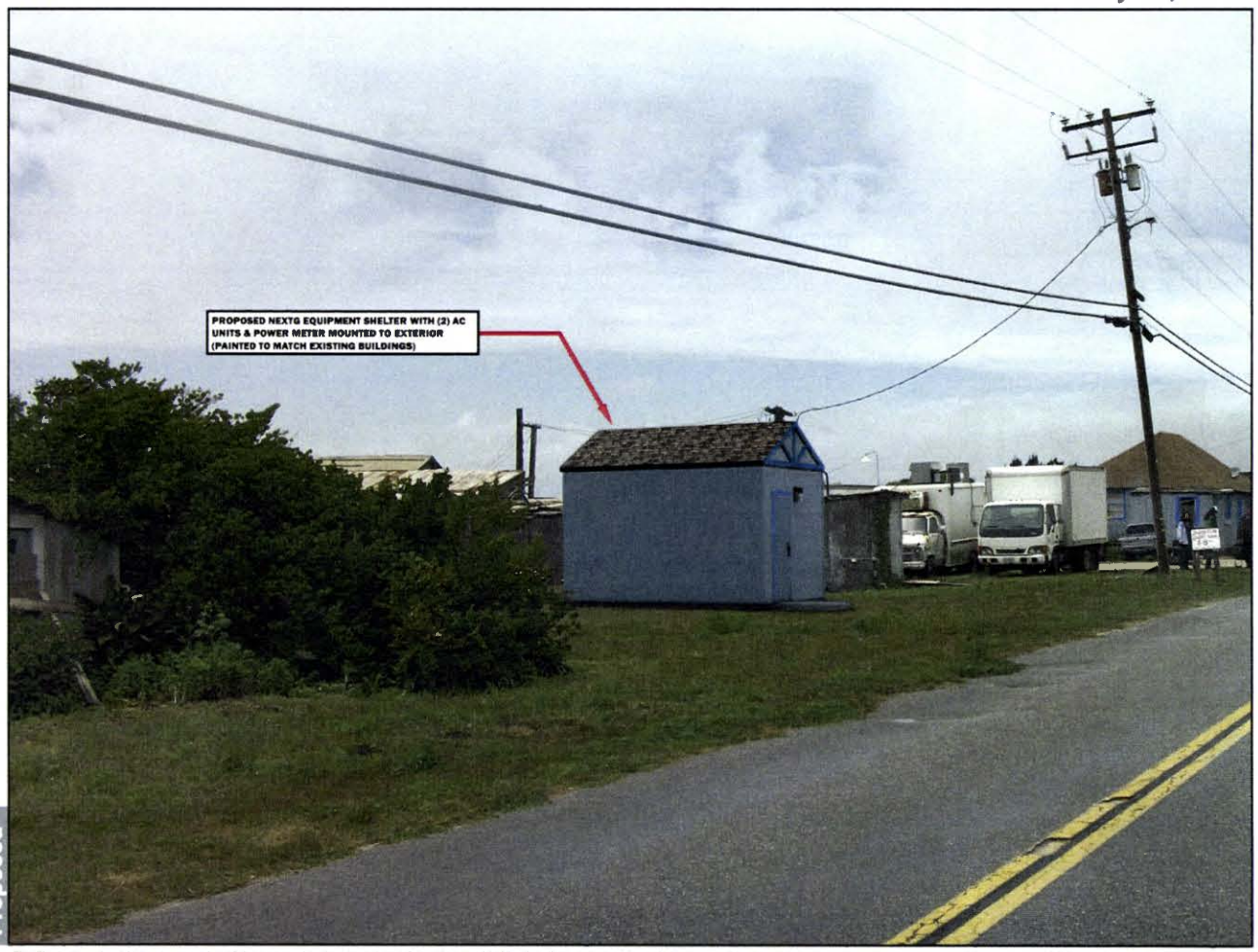
Location



Existing



Proposed



The illustration above is a representation of the proposed project based on information provided by the client. Actual construction may vary dependent on approved construction plans and therefore the A&E firm will not be held responsible for any post production design changes.

NextG Networks of California, Inc.
2216 O'Toole Avenue
San Jose, CA 95131
Chad Rasmussen - Phone: (703) 201-7066

RTGRAPHICS
Contact: Ryan Thigpen - (949) 307-3120
web - http://rtgraphics.net

Prepared by: RLT
Approved by: RLT

CDG
Connell Design Group, LLC
26455 Rancho Parkway South, Lake Forest, CA 92630
Office: (949) 753-8807 | Fax: (949) 753-8833

REV: 2

Exhibit 3
A-3-SCO-12-006
21 of 22

DAVENPORT HUB

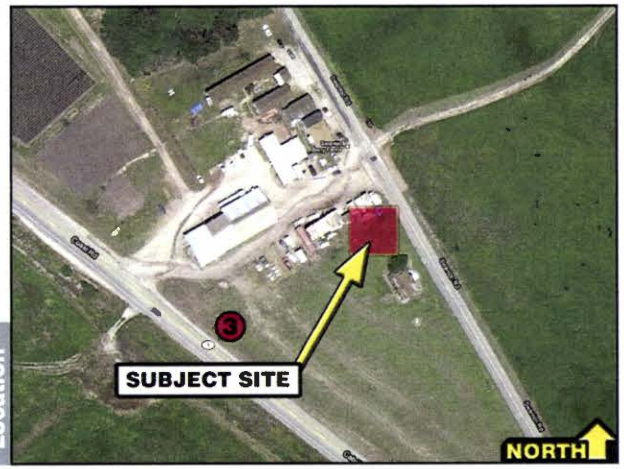
STRAWBERRY FARM
25 SWANTON ROAD
DAVENPORT, CA 95017

NextG Networks

View #: 3

July 13, 2011

Location



Existing

Proposed

The illustration above is a representation of the proposed project based on information provided by the client. Actual construction may vary dependent on approved construction plans and therefore the A&E firm will not be held responsible for any post production design changes.

NextG Networks of California, Inc.
2216 O'Toole Avenue
San Jose, CA 95131
Chad Rasmussen - Phone: (703) 201-7066

RTGRAPHICS
Contact: Ryan Thigpen - (949) 307-3120
web - http://rtgraphics.net

Prepared by: RLT
Approved by: RLT

CDG
Connell Design Group, LLC
26455 Rancho Parkway South, Lake Forest, CA 92630
Office: (949) 753-8807 | Fax: (949) 753-8833

REV: 2

Exhibit 3
A-3-SCO-12-006
22 of 22

CALIFORNIA COASTAL COMMISSION
CENTRAL COAST DISTRICT OFFICE
725 FRONT STREET, SUITE 300
SANTA CRUZ, CA 95060
(831) 427-4863 FAX (831) 427-4877
www.coastal.ca.gov

COMMISSION NOTIFICATION OF APPEAL

DATE: February 29, 2012

TO: Kathy M. Previsich, Planning Director
County of Santa Cruz, Planning Department
701 Ocean Street, 4th Floor
Santa Cruz, CA 95060

FROM: Madeline Cavalieri, District Manager

RE: **Commission Appeal No. A-3-SCO-12-006**

Please be advised that the coastal development permit decision described below has been appealed to the California Coastal Commission pursuant to Public Resources Code Sections 30603 and 30625. Therefore, the decision has been stayed pending Commission action on the appeal pursuant to Public Resources Code Section 30623.

Local Permit #:	**111114**
Applicant(s):	**Next G Networks Of California**
Description:	**Install six new microcell wireless communications facilities, each to be co-located on existing utility poles (5 sites in Caltrans Hwy. right-of-way, 1 site in County's Swanton Road right-of-way) and install a 192 s.f., 13', 6" tall equipment shelter (telecommunications hub) on an agricultural parcel.**
Location:	**Highway 1 (inland within Caltrans right-of-way and county right-of-way along Swanton Road), Santa Cruz County (APN(s) 058-022-11)**
Local Decision:	**Approved w/ Conditions**
Appellant(s):	**California Coastal Commission, Attn: Commissioner Mark Stone; California Coastal Commission, Attn: Commissioner Brian Brennan; Joshua Hart**
Date Appeal Filed:	**2/28/2012**

The Commission appeal number assigned to this appeal is A-3-SCO-12-006. The Commission hearing date has not yet been established for this appeal. Within 5 working days of receipt of this Commission Notification of Appeal, copies of all relevant documents and materials used in the County of Santa Cruz's consideration of this coastal development permit must be delivered to the Central Coast District office of the Coastal Commission (California Administrative Code Section 13112). Please include copies of plans, relevant photographs, staff reports and related documents, findings (if not already forwarded), all correspondence, and a list, with addresses, of all who provided verbal testimony.

A Commission staff report and notice of the hearing will be forwarded to you prior to the hearing. If you have any questions, please contact Susan Craig at the Central Coast District office.

cc: Natasha Ernst, NextG Networks
Joshua Hart

CALIFORNIA COASTAL COMMISSION
CENTRAL COAST DISTRICT OFFICE
725 FRONT STREET, SUITE 300
SANTA CRUZ, CA 95060-4508
VOICE (831) 427-4863 FAX (831) 427-4877

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT

Please Review Attached Appeal Information Sheet Prior To Completing This Form.

SECTION I. Appellant(s)

Name: California Coastal Commission; Commisioners Mark Stone and Brian Brennan

Mailing Address: 45 Fremont Street, Suite 2000

City: San Francisco, CA Zip Code: 94105 Phone: (415) 904-5200

SECTION II. Decision Being Appealed

1. Name of local/port government:

Santa Cruz County

2. Brief description of development being appealed:

Install six new microcell wireless communication facilities, each to be located on existing utility poles (5 sites in Caltrans highway right-of-way, 1 site in County's Swanton Road right-of-way) and install a 192 square foot, 13 ft., 6 inch tall equipment shelter (telecommunications hub) on an agricultural parcel.

3. Development's location (street address, assessor's parcel no., cross street, etc.):

Highway 1 inland within Caltrans right-of-way and county right-of-way along Swanton Road (APN 058-022-11), Santa Cruz County

4. Description of decision being appealed (check one.):

RECEIVED
FEB 28 2012
CALIFORNIA
COASTAL COMMISSION
CENTRAL COAST AREA

☐ Approval; no special conditions

☒ Approval with special conditions:

☐ Denial

Note: For jurisdictions with a total LCP, denial decisions by a local government cannot be appealed unless the development is a major energy or public works project. Denial decisions by port governments are not appealable.

TO BE COMPLETED BY COMMISSION:

APPEAL NO: A-3-SCO-12-006

DATE FILED: February 28, 2012

DISTRICT: Central Coast

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (Page 2)

5. Decision being appealed was made by (check one):

- ☐ Planning Director/Zoning Administrator
- ☐ City Council/Board of Supervisors
- ☒ Planning Commission
- ☐ Other

6. Date of local government's decision: January 25, 2012

7. Local government's file number (if any): 111114

SECTION III. Identification of Other Interested Persons

Give the names and addresses of the following parties. (Use additional paper as necessary.)

a. Name and mailing address of permit applicant:

NextG Networks of California, attention Natasha Ernst
890 Tasman Drive, Milpitas, CA 95035

b. Names and mailing addresses as available of those who testified (either verbally or in writing) at the city/county/port hearing(s). Include other parties which you know to be interested and should receive notice of this appeal.

(1) Kathy Previsich, Planning Director
Santa Cruz County Planning Department
701 Ocean St., 4th Floor, Santa Cruz, CA 95060

(2)

(3)

(4)

Attachment A: Appeal Reasons

Santa Cruz County approved a coastal development permit (CDP) to install six new microcell wireless communication facilities, each to be located on existing utility poles located on the inland side of Highway 1 along the rural north coast of Santa Cruz County. Each approved microcell facility includes new antennas to be mounted at the ends of new cross-bar members, two smaller equipment boxes (each approximately the width of the existing utility poles) and one larger equipment box (about 3' high x 2.5' wide x 1' deep). The County also approved construction of a 192 square-foot, 13'-6" tall equipment shelter (telecommunications hub) on an agricultural parcel on Swanton Road near the southernmost intersection of Highway 1 and Swanton Road. The County-approved project (County CDP 111114) raises LCP consistency questions relating to protection of visual and agricultural resources, including with respect to consistency with the LCP's wireless communication facilities standards, as follows:

The LCP protects public viewsheds from impacts due to development, including requiring that development be sited and designed to be visually compatible and integrated with the character of the surrounding area, and including requiring exacting standards for the siting and development of wireless communications facilities in particular (including LUP Objectives and Policies 5.10 et seq., LCP Chapter 13.20, and LCP Sections 13.10.660 – 13.10.668). The County-approved development is located within the particularly important and sensitive north Santa Cruz County coast public viewshed, which consists of a largely undeveloped agrarian wilderness coastline. Both Highway 1 and Swanton Road are designated in the LCP as "visual resource areas," which are defined as areas assigned regional public importance for their natural beauty and rural agricultural character, and the LCP prohibits development along Swanton Road from being visible in the Swanton Road and Highway 1 viewsheds. In addition, the LCP discourages wireless communications facilities in the Highway 1 right-of-way, and only allows them under certain circumstances (including related to siting and sizing standards). The County-approved project introduces additional development in the Highway 1 and Swanton Road viewsheds to the degradation of these resource areas, and it is not clear that such development is allowed in the approved form (including in terms of allowed siting and sizing) pursuant to the LCP's viewshed and wireless facilities standards.

The LCP protects agricultural lands, including in terms of limiting non-agricultural development on them, and prohibiting wireless communications facilities (unless in conflict with the Federal Telecommunications Act (FTA)) on CA-zoned agricultural land. The approved equipment shelter (telecommunications hub) is located off of Swanton Road on land zoned CA, and it is not clear that it is required to be sited at that location to avoid a violation of the FTA.

In short, the LCP only allows facilities of the type approved under very specific circumstances, and only then when they are sited and designed subject to very specific criteria (including related to allowed types and sizes of equipment). The LCP goes to such lengths to avoid visual degradation and other land use incompatibility issues (in this case related to agricultural lands). The County-approved project results in exactly these types of resource impacts and outcomes; it is not clear that it meets the LCP criteria that would allow for these types of project impacts in the first place; and it warrants careful consideration of such issues to ensure appropriate protection for the sensitive north Santa Cruz County coastline consistent with the protections afforded it by the LCP.

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (Page 3)

SECTION IV. Reasons Supporting This Appeal

PLEASE NOTE:

- Appeals of local government coastal permit decisions are limited by a variety of factors and requirements of the Coastal Act. Please review the appeal information sheet for assistance in completing this section.
- State briefly **your reasons for this appeal**. Include a summary description of Local Coastal Program, Land Use Plan, or Port Master Plan policies and requirements in which you believe the project is inconsistent and the reasons the decision warrants a new hearing. (Use additional paper as necessary.)
- This need not be a complete or exhaustive statement of your reasons of appeal; however, there must be sufficient discussion for staff to determine that the appeal is allowed by law. The appellant, subsequent to filing the appeal, may submit additional information to the staff and/or Commission to support the appeal request.

State briefly your reasons for this appeal. Include a summary description of Local Coastal Program, Land Use Plan, or Port Master Plan policies and requirements in which you believe the project is inconsistent and the reasons the decision warrants a new hearing. (Use additional paper as necessary.)

See Attached.

Note: The above description need not be a complete or exhaustive statement of your reasons of appeal; however, there must be sufficient discussion for staff to determine that the appeal is allowed by law. The appellant, subsequent to filing the appeal, may submit additional information to the staff and/or Commission to support the appeal request.

SECTION V. Certification

The information and facts stated above are correct to the best of my/our knowledge.

Signed: _____
Appellant or Agent

Date: February 28, 2012

Agent Authorization: I designate the above identified person(s) to act as my agent in all matters pertaining to this appeal.

Signed: _____

Date: _____

(Document2)

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (Page 4)

SECTION V. Certification

The information and facts stated above are correct to the best of my/our knowledge.

Signature of Appellant(s) or Authorized Agent

Date: 2/28/12 - 3:50 pm

Note: If signed by agent, appellant(s) must also sign below.

Section VI. Agent Authorization

I/We hereby
authorize _____
to act as my/our representative and to bind me/us in all matters concerning this appeal.

Signature of Appellant(s)

Date: _____

STATE OF CALIFORNIA – THE RESOURCES AGENCY
EDMUND G. BROWN JR., *Governor*

CALIFORNIA COASTAL COMMISSION
CENTRAL COAST DISTRICT OFFICE
725 FRONT STREET, SUITE 300
SANTA CRUZ, CA 95060-4508
VOICE (831) 427-4863 FAX (831) 427-4877

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT

Please Review Attached Appeal Information Sheet Prior To Completing This Form.

SECTION I. Appellant(s)

Name: Joshua Hart

Mailing Address: P.O. Box 30 Davenport, CA 95017

City: Zip Code: Phone: (831) 421 0822

SECTION II. Decision Being Appealed

1. Name of local/port government: Santa Cruz County

2. Brief description of development being appealed: Santa Cruz Planning Commission Item # 111114 to install seven (7) new microcell wireless communication facilities along a section of Highway One between Davenport and Big Basin State Park, and along Swanton Rd.

3. Development's location (street address, assessor's parcel no., cross street, etc.): Development is proposed to take place along Caltrans and County right-of-way and on Swanton Berry Farm land (APN 058-022-11)

4. Description of decision being appealed (check one.):

- ☐ Approval; no special conditions
- ☒ Approval with special conditions:
- ☐ Denial

Note: For jurisdictions with a total LCP, denial decisions by a local government cannot be appealed unless the development is a major energy or public works project. Denial decisions by port governments are not appealable.

TO BE COMPLETED BY COMMISSION:

APPEAL NO: A-3-SCO-12-006

DATE FILED: February 29, 2012

DISTRICT: Central Coast

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (Page 2)

5. Decision being appealed was made by (check one):

- ☐ Planning Director/Zoning Administrator
- ☐ City Council/Board of Supervisors
- ☒ Planning Commission
- ☐ Other

6. Date of local government's decision: Jan. 25th, 2012

7. Local government's file number (if any): 111114

SECTION III. Identification of Other Interested Persons

Give the names and addresses of the following parties. (Use additional paper as necessary.)

a. Name and mailing address of permit applicant:

~~Sharon James~~ Natasha Ernst
NextG Networks Inc.
~~2216 O'Toole Avenue~~ 890 Tasman Dr.
~~San Jose, CA 95131~~ Milpitas, CA 95035

b. Names and mailing addresses as available of those who testified (either verbally or in writing) at the city/county/port hearing(s). Include other parties which you know to be interested and should receive notice of this appeal.

(1) Jim Cochran
Swanton-Berry Farm
25 Swanton Rd.
Davenport, CA 95017

(2) Marilyn Garrett
351 Redwood Heights Rd.
Aptos, CA 95003

x

(3) Laura and Stephen Brooks
5351 Coast Rd.
Santa Cruz, CA 95060

(4) Jay and Kay Todd
906 Swanton View Rd.
Davenport, CA 95017

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (Page 3)

SECTION IV. Reasons Supporting This Appeal

PLEASE NOTE:

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Please see attached

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (Page 4)

SECTION V. Certification

The information and facts stated above are correct to the best of my/our knowledge.

Signature of Appellant(s) or Authorized Agent

Date: February 28th, 2012

Note: If signed by agent, appellant(s) must also sign below.

Section VI. Agent Authorization

I/We hereby
authorize _____
to act as my/our representative and to bind me/us in all matters concerning this appeal.

Signature of Appellant(s)

Date: _____

Appeal of Santa Cruz County Project #111114: North Coast NextG Project

My name is Joshua Hart and I am a Swanton Rd. resident. I am spokesperson for a newly formed group of residents opposed to NextG's proposed development- Coastal Neighbors Against Unnecessary Wireless Facilities. I personally have standing on this project application as I have been in communication with members of the Santa Cruz County Board of Supervisors regarding this project.

Introduction

Overall, this project is not needed, is poorly designed, and will negatively impact the coastal zone in a number of ways that will be outlined below. More importantly, as far as the jurisdiction of this Commission is concerned, the project violates Santa Cruz County's Local Coastal Program and public access policies contained within the Coastal Act. The seven antennae and large equipment shelter- if allowed by this commission to be constructed- will harm irreplaceable visual corridors, threaten health and environmental integrity, and hinder public accessibility to some of the last few places in the Bay Area without microwave pollution.

Need for Project

At the outset we question the need for this project at all. This is the first Distributed Antenna System (or DAS) project in unincorporated Santa Cruz County, and quite possibly along any remote section of California's coast. In other words, this is a potentially precedent-setting decision by the Coastal Commission and should be carefully considered. There already exists a series of pole-mounted AT&T antennae between Western Dr. in Santa Cruz and Waddell Creek, north of Davenport. These antennae provide emergency access to any cell phone user, regardless of their carrier. Several of the existing antennae are located within close proximity of proposed antennae. Many adopted plans and programs- including Santa Cruz County's adopted wireless ordinance require consideration of co-location of all proposed new antennae. The project applicant claims that co-location with AT&T's antennae is not "technologically feasible" yet no independent evidence or third party study has been provided to back up this claim. If AT&T's installations were built in such a way to eliminate the possibility of future co-location, then that is a violation of the County's wireless ordinance in and of itself. No third party study was prepared to support the assertion that this project is necessary to fill a "significant gap" in cell coverage. (more on this below)

Public Safety

This 4G DAS system is designed to provide (only Verizon) cellular customers with streaming data, video, and voice service on their smart phones. The National Highway Traffic Safety Administration- based on a thorough analysis of crash data- recently called for a law banning drivers from simply speaking on their phones- with or without a hands-free headset, because of the distraction created by carrying on a phone conversation and navigating an automobile safely. Use of "smart" phones- with all their additional

distractions- can be reasonably expected to create safety hazards for drivers, cyclists, and walkers along this windy and remote section of coast.

Aesthetic and Visual Impacts

The locations proposed for these 7 antennae and 1 equipment shelter are among the most protected scenic byways and critical habitat areas in our state. Because of these designations, every effort must be made to minimize the visual impact of new telecommunications facilities proposed for these areas. It is not clear from the project description that this has in fact been carried out. After careful study of the project, and applicable plans and programs, it is our determination that this project violates sections of the Coastal Act and the Local Coastal Program dedicated to preserving viewsheds and the existing, uncluttered character of this section of coast.

First, the equipment shelter proposed to be placed directly alongside Highway One at the Swanton Berry Farm. This is a large structure: 13'6" high and 192 square feet. Though the project description claims that the structure will "blend seamlessly into the existing public view" it is likely that any new structure designed to look old and weather worn- to fit into the existing architectural scheme- will end up looking like a new pre-fab structure, affecting the charm of one of the North Coast's most cherished destinations. We are all too familiar with fake trees, windmills, and other structures designed to 'blend into' the existing landscape. Often, half-hearted attempts at blending in result in a broken and fractured landscape. This section of the coast is too precious to risk the wireless industry's faux rustic charm attempts.

Though the Trust for Public Land- as landowner- agreed to NextG's proposal for an equipment shelter, consultation with the long-term tenant- Jim Cochran of Swanton Berry Farm- was insufficient. As a result, Mr. Cochran has some serious concerns about the project's impact on his farm and the surrounding environment.

While the impact of additional fibre optic cable strung between power poles has not been analyzed in the Planning Department's report, we believe that this will add significant clutter to the coastal viewshed and should have been analyzed more thoroughly. An alternatives analysis considering undergrounding of these wires was never carried out.

The visual impact of the antennae themselves is highly problematic. A cursory look at the project may support the claim that this is an appropriate development, as the 6 antennae along Highway One are all located on the North/ East side of the road, unlike the plan for a series of cell towers in the same area, rejected in 2002. However, a more detailed examination of the infrastructure plans indicate that these antennae will create visual pollution in areas where it should be prevented. Specifically, section 30251 of the CA Coastal Act states:

> "Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas…"

The six antennae proposed for the Highway One corridor negatively impact "views... along the ocean" and DAV05, located 1.1 miles north of Swanton Berry Farm, interrupts the stunning views of the Swanton Valley as one rounds the bend. This particular antenna is proposed to be encased in a drum-like construction, raised 2 feet above the existing utility pole (which violates the County's wireless ordinance), introducing inappropriate industrial equipment that will obscure the views of a heritage farming community and a rare pristine, coastal redwood valley adjacent to the coast. Swanton Rd. is a designated scenic road and is an inappropriate location for this development.

According to the Planning Department's analysis, a TCA exception is required for DAV05, as well as the equipment shelter proposed for Swanton Berry Farm as these are located on land zoned Commercial Agricultural- a 'prohibited zone district' in the County's WCF ordinance. These exceptions are made in order to comply with the Federal Telecommunications Act that allows wireless carriers to override local regulations in order to fill a 'significant gap' in coverage. However, no third party analysis of cell coverage has been completed or submitted by the applicant. Therefore insufficient evidence exists to support the need for these exceptions in the first place. Anecdotally, many residents of Swanton Rd. already have adequate cell service, even inside their homes, and several have questioned the need for new wireless facilities in such a sensitive area when existing coverage is adequate. Additionally, we assert that the 7 antennae will violate section 13.10.661 (3) of the County's wireless ordinance as the project would significantly increase the visual impact of the existing pole in a restricted area.

The LCP requires that utility boxes- such as the "Alpha" power supply and backup- must be located as close to the ground as feasible, yet it is not clear that this has in fact been included in the plan.

Health Impacts of Wireless 4G Technology

While we realize that the Federal Telecommunications Act prohibits local governments from rejecting wireless facilities based on impacts to health and environment, the Commission should be aware of recent scientific findings about the carcinogenicity of wireless, microwave radiation. In May 2011, the World Health Organization classified radiofrequency (RF) as a Class 2B carcinogen[1], in the same category as lead and DDT. This finding applies to personal cell phone use, as well as ambient, involuntary sources of microwave radiation such as wi-fi, DAS systems such as the one proposed here, and so-called 'smart' meters. The National Institutes of Health (NIH) also found last year that cell phone radiation is responsible for significant increases in brain glucose metabolism- at levels far below existing FCC limits.[2] The increasing evidence that FCC limits are wholly ineffective at protecting human health and the environment from pulsed microwave radiation is becoming more accepted by mainstream professionals. In a

[1] http://www.iarc.fr/en/media-centre/pr/2011/pdfs/pr208_E.pdf
[2] http://well.blogs.nytimes.com/2011/02/22/cellphone-use-tied-to-changes-in-brain-activity/

January 2012 report to the Santa Cruz County Board of Supervisors, County Health Officer Poki Namkung cites a number of studies that found damage to DNA, breaks in the blood-brain barrier, and cancer as a result of exposure to RF fields.[3] Anecdotally, 4G towers have resulted in serious disruptions to human health, including neurological and cognitive disruption.

Public Accessibility

While we acknowledge that this evidence of health damage alone does not form the basis for a rejection of this project, it does affect the Commission's adopted policies on public access, per requirements of the Coastal Act:

> "...development shall not interfere with the public's right of access to the sea..." (sec. 30211) and "new development should maintain and enhance public access to the coast." (sec. 30252)

An estimated 5-10% of the population suffers from what is known as "electro-sensitivity" (EHS) meaning they suffer a variety of symptoms- most often headaches, immune disorders, nausea, and sleep disturbances- in the presence of electro-magnetic fields. Evidence is accumulating that this condition is a result of over-exposure to such fields. While the existence of EHS has been disputed by industry, recent peer-reviewed scientific studies that have appeared in respected international journals have found that EHS is a "bona fide neurological condition."[4] Thousands of people from the Bay Area and beyond have been made electro-hyper-sensitive because of the recent installation of PG&E's 'smart' meters. More than 10,000 written complaints have been filed with the CPUC, detailing mild to severe adverse health impacts from these new wireless meters. Signed affidavits alleging health harm from wireless facilities and doctors letters backing up this health harm are available upon request.

For such people sensitized by powerful wireless transmitters on their homes, at present the beach and coastal corridor provide the only escape from cell towers, wi-fi and other signals. Such wireless facilities degrade public accessibility, and violate the Americans with Disabilities Act. Providing continuous 4G mobile video coverage along a remote section of California's coast is *not* a public safety priority. At issue is whether the requirements in the 1996 Telecommunications Act supercede the rights protected under the Americans with Disabilities Act and 14th Amendment, a dispute currently being appealed to* the Tenth Circuit Court of Appeals in Denver, CO.[5]

If this project is allowed to proceed, a significant portion of the population will be essentially barred from accessing public open spaces and coastal areas nearby, a violation

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[3] http://emfsafetynetwork.org/wp-content/uploads/2012/01/Santa-Cruz-Public-Health-Official-Smart-Meter-report.pdf

[4] http://www.ncbi.nlm.nih.gov/pubmed/21793784

[5] see http://cellphonetaskforce.org for updates on this case

of the Americans with Disabilities Act and of the numerous adopted policies of the CA Coastal Commission.

Conclusion

We assert that the Santa Cruz County Planning Commission and Board of Supervisors failed to exercise due diligence in working with the project applicant- NextG- to minimize visual impacts along this pristine stretch of California's coast. We assert that the need for the project has not been established adequately by the project applicant, and that there are serious safety, health, and public accessibility impacts that need to be more thoroughly assessed. We urge the Commission to withhold a permit for this project for all these reasons. Thank you for taking our comments into consideration.

May 22nd, 2012

Susan Craig
Supervising Coastal Planner
California Coastal Commission
725 Front St. Suite 300
Santa Cruz, CA 95060

Re: Appeal A-3-SCO-12-006 (filed Feb. 28, 2012) of Santa Cruz County Application #111114

Dear Ms. Craig,

Thank you for considering the following response to the letter submitted March 7th 2012 from Natasha Ernst of NextG Networks regarding the series of 4G wireless antennas proposed for Santa Cruz County's remote North Coast. We'd like to take this opportunity to correct several incorrect assumptions made by Ms. Ernst as well as factual errors in her letter to the Commission.

We maintain that the proposed project will degrade the visual character of the coast, pose safety risks, interfere with public accessibility, deteriorate the health of nearby residents and pose a risk to endangered species who make this area their home. We respectfully request that you deny the permit for this project and require that the project mock-ups be removed from the coast without delay.

Aesthetics

On behalf of Coastal Neighbors Against Unnecessary Wireless Facilities, we strongly object to Ms. Ernst's assertion that "any reference to 'aesthetics' is only a proxy for (our) opposition to radio frequency and desire that the Coastal Commission deny the application for alleged impact on 'human health." We can assure you that our concern over aesthetic impacts very much stands on its own. Our group, which includes many residents who have lived in the area for decades, is legitimately opposed to the current damage done to viewsheds by the mock ups placed within the public right of way which are proposed to be made permanent if the final project is given approval by your commission. We maintain that the proposed project poses deleterious impacts to coastal views, and represents a substantial impact that significantly exceeds the existing impact of electrical transmission infrastructure. Utility poles and electrical wires have become so commonplace that (for better or worse) they often blend seamlessly into the background landscape. Cellular panels and battery boxes- as novel additions to the landscape –stick out and draw attention to themselves. There should be no argument that the proposed development will degrade the landscape and add to the clutter that the Coastal Commission is charged with preventing. We question what evidence Ms. Ernst can cite to back up her assertion ~~that~~ our taking issue with aesthetics is "only a proxy" for environmental and health effects. We have multiple concerns about the proposed project, and each stands very much on its own as a legitimate reason to deny the permit.

In terms of aesthetics, the impact of the proposed project on the surrounding landscape is not insubstantial. Our group is particularly concerned about the infrastructure proposed for Swanton Road, a designated scenic road according to the County's LCP. Specifically, the pole-top antenna and associated infrastructure proposed for Swanton Rd. would directly interfere with public views of a Coastal Special Scenic Area (the area between Highway 1 and Swanton Rd.). As demonstrated by photographs included in Appendix A, the antenna and infrastructure is being planned in the most conspicuous location possible, interfering with a view of the Swanton Valley

and adding industrial development to an area it should be prevented. The distribution of two boxes on separate poles, as well as the cylindrical pole-top antenna just adds to the sense of clutter. Painting the infrastructure brown- in an attempt to make it blend into the background- simply makes it that much more obvious that an attempt is being made to disguise the equipment. Note the similar cell sites deployed along Highway 84 in San Mateo County. Instead of reducing visual impact, the attempt to hide them has only made them more evident. The last thing we need throughout this rural area are ubiquitous cell sites, unnecessarily cluttering views, even of the inland side of the highway.

The northernmost antenna- located adjacent to Waddell Creek and Big Basin State Park's new Rancho del Oso Nature Center, impacts the views from the park, as well as Waddell Beach. Photos in Appendix C demonstrate how the facility is visible from the state park, the wetlands, and adjacent beach.

The other five antennas impact the coastal zone in similar ways, obstructing views and eroding the natural, wild feel of the landscape. We urge the commission to acknowledge that even facilities on the inland side of the highway impact views, and obstruct views of the ocean from areas north/east of the highway. According to the application filed with the county (#111114), NextG proposes to place seven antennas, yet Ms. Ernst says in her letter that there will only be six. It is not clear at this point if NextG has decided to drop one of the installations from the application, in addition to the telecommunications hub, or whether this is simply an error on their part.

Ms. Ernst claims that "NextG is a partner in preserving the rustic beauty of this portion of Highway 1." By the same token, we would question whether this "partnership" is simply a proxy for getting something the company needs to make a profit- in this case convincing this Commission to issue a permit for their project. We question what form this "partnership" has taken other than using legal bullying language to attempt to force the hand of a Commission with broad authority to regulate development for the purpose of preserving the coast for future generations.

Ms. Ernst claims incorrectly that "it is clear that (local governments) may not deny permits based solely on aesthetics." This is an incomplete and biased reading of case law. In the 2009 Sprint v. Palos Verdes Estates decision, a 3 judge panel of the Ninth Circuit Court of Appeals ruled that local governments can indeed reject local cellular infrastructure based on aesthetics. The CPUC itself favorably cited this decision in its own Dec. 19, 2011 decision. Therefore, contrary to what Ms. Ernst writes, the Coastal Commission would be well within its legal authority to reject this project in its entirety, based on aesthetic impacts.

Community Outreach

A consensus is emerging in the community that NextG's community outreach efforts have been inadequate at best, and obstructive at worst. No community meetings were scheduled by the project sponsor to identify community wishes. Only minimal, legally required outreach was conducted and this was carried out by the County Planning Dept. The only meeting in the subject area was organized by our group, who volunteered many hours reaching out to the community. In the Santa Cruz Sentinel's April 25th article about the project (attached as Appendix H) community leader Noel Bock is quoted a saying "(NextG) could have done better informing residents of the pending project." Ms. Bock, who was previously in favor of the project, now says she is neutral.

Rather than simply failing to conduct adequate community outreach, NextG has in fact gone to some lengths to obstruct it. In her March letter to the Commission, Ms. Ernst includes a copy of one of our flyers that was posted on a public bulletin board along the North Coast. Since it appears that this was not a photograph, but an original, we must assume that it was removed either by NextG or their proxies. We protest at the unsanctioned removal of one of our flyers. Our group does not remove posted notice boards that provide details of the project to the public. Likewise, if NextG wishes to place notices on public bulletin boards proclaiming the benefits of their cell sites, we would not consider it appropriate to take down those notices from boards. We rely on the strength of our arguments to make our case to the public, rather than censorship of public notices, which we consider immoral and unacceptable.

Our group recently held a publicly advertised community meeting on April 19th at the Davenport Resource Center (attached as appendix E). We appreciate Ms. Ernst's attendance at the meeting and her engagement with the many residents present who raised similar concerns to those contained within our appeal. Many of those present at the meeting reported that they experience adverse health consequences when exposed to wireless facilities or devices. Ms. Ernst replied to these concerns by stating that she understood what electrosensitivity was like because her "sister suffered from a cat allergy." Those present asked her to imagine what it would be like if the last few areas free of cat hair were to be inundated with cat populations so that- for those afflicted- there would be nowhere left to go without experiencing an allergic reaction. We appreciate Ms. Ernst's acknowledgment of the widespread illness that her company's activities are responsible for, and remind the Commission that electrosensitivity has been documented in peer-reviewed, published scientific studies[1] and acknowledged as a disability and functional impairment by a growing number of governments around the world, including Spain and Sweden. Lack of access resulting from adverse health consequences of wireless technology is subject to the rules and regulations of the Americans with Disabilities Act. We will be providing the Commission with signed declarations from a number of California residents who currently enjoy access to coastal facilities, yet who would be essentially denied access to areas adjacent to the proposed facilities, if they were to be constructed.

Radiation Exposure Safety

We are concerned that in its rush to install wireless facilities in this area, NextG is failing to adequately protect the public from unsafe exposure levels. It is not clear from NextG's electromagnetic emissions report that consideration has been given to public exposure along hillsides around each proposed antenna. This is hilly terrain, and hikers often go off trail in the area, potentially putting themselves at risk from exposure to higher levels of radiation than at ground level, potentially exceeding the Federal Communications Commission's already inadequate guidelines for safe human exposure. As depicted in Appendix A, you can see that at least one of the antenna exposes nearby hillsides to greater levels of radiation- being directly opposite the antenna panels. This should be addressed by any radiation study, and is within the scope of possible public exposure.

Rural Access to Broadband

Ms. Ernst says in her letter that "this area of rural Santa Cruz County lacks adequate, much less advanced, wireless voice and broadband services." That is precisely the reason why many residents choose to inhabit this remote area of the county. There is also a lack of muffler shops, "big box" stores, and freeways in this area. That doesn't mean that these developments should be

[1] http://www.ncbi.nlm.nih.gov/pubmed/21793784

encouraged simply because they are lacking. Their absence is what makes this part of Santa Cruz County special. To clarify NextG's incomplete statements, broadband is actually widely available to homes and businesses in this area, through wired high speed DSL service. Any improvement to digital access in this area should be in the form of safe, secure wired technology. With the advances in hacking technology, and documented vulnerability in wireless connections, residents- especially those running a business- need secure, reliable wired connections. Many residents have expressed a desire to see fiber optic technology extended to the area. With the World Health Organization's designation of wireless as a Class 2B carcinogen last May[2], we should be removing cell towers- as Taiwan has been doing[3]- rather than adding more.

Emergency Communication

Emergency communication is an important issue. There already exists service for Sprint and AT&T customers along much of this corridor. A Verizon customer can pay roaming charges to utilize these services. And of course 911 service is freely available to any cell phone user regardless of carrier. Regular call boxes exist in areas not served by cell sites. (see Appendix D) Claiming that 4G service- with its streaming video and internet access- is a critical emergency access service- is like claiming that a six lane freeway is necessary along the coast to handle the traffic. Streaming video on handheld mobile devices is not a legitimate emergency access requirement.

Health Risks of Wireless Technology

Ms. Ernst is incorrect when she states that "Mr. Hart also seems to confuse wireless handsets (i.e., cell phones) with wireless service related infrastructure located on utility poles and not proximate to people…"

There is no confusion here, at least on our part. Perhaps Ms. Ernst is not aware that the World Health Organization's International Agency for Research on Cancer (IARC) has declared all sources of non-ionizing radiation as a Class 2B carcinogen- including cell phone handsets, cell sites, wi-fi, and so-called "smart" meters. This is verified by the attached statement from Dr. Jonathan Samet, a member of the IARC committee which made the designation based on significant evidence of cancer caused by such radiation. (see Appendix G)

We acknowledge the existence of USC § 332©(7)(B)(iv) that states:

> *"No state or local government or instrumentality thereof may regulate the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the Commission's regulations concerning such emissions."*

However, we maintain that section 704 of the Telecommunications Act is unconstitutional- to the extent that Federal Communications Commission regulations fail to be informed by a growing body of evidence showing harm at non-thermal levels far below these arbitrary limits. Any law that seeks to deprive local or state governments of the ability to protect the health and safety of the public- a task that officeholders are sworn to carry out- despite overwhelming evidence that

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[2] http://www.iarc.fr/en/media-centre/pr/2011/pdfs/pr208_E.pdf

[3] http://www.chinapost.com.tw/taiwan/2007/11/06/129715/1500-cellphone.htm

demonstrates that harm is being caused, is a violation of the 14th amendment of the US constitution which states:

> *"No State shall deprive any person of life, liberty, or property, without due process of law"*

It is also not clear whether "environmental effects" referred to in the Telecommunications Act also refers to human health damage, which is increasingly being reported by medical professionals (see Appendices I and J).

Any decision made by a local or state government that restricts access granted to, or mobility of a class of citizens because of a medical condition or disability is a violation of the Americans with Disabilities Act, and of Coastal Access provisions in sections 30211 and 30252 of the Coastal Act:

> *"...development shall not interfere with the public's right of access to the sea..." (sec. 30211) and "new development should maintain and enhance public access to the coast." (sec. 30252)*

Risk to Federally Listed Endangered Species

It appears that the proximity to wetlands at Scott and Waddell Creeks was not considered during the County's review of this project. Both watersheds are conservation success stories. The wetlands at Waddell Creek are home to endangered species such as the red-legged frog, the Western Pond Turtle and Coho Salmon. The Red-Legged Frog population at Waddell Creek is the subject of ongoing research by Dr. Jerry Smith of the Biological Sciences Dept. at San Jose State University. The threat to these vulnerable species from wireless radiation is not just theoretical. Peer-reviewed studies on tadpoles placed within 140 meters of a cell tower reported a 90% mortality rate compared to an adjacent tank protected by a faraday cage (an enclosure that blocks radiation). The northernmost antenna is about the same distance to the Waddell Creek wetlands which is teeming with life. It would be extraordinarily short sighted- not to mention a potential violation of federal law protecting endangered species- to expose these vulnerable populations to 4G radiation. Dr. Smith's study is ongoing, so in the event that this project does receive approval from your agency, we will have data to demonstrate any impact of the nearby cell site on frog populations. We intend to work with Dr. Smith to publicize these effects if they do occur in an effort to educate the public and protect other vulnerable ecological habitats.

Section 30240(b) of the CA Coastal Act states:

> *"Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas."*

Fire Safety

The Commission should also be aware that NextG is currently a defendant in a lawsuit filed by the residents of Malibu who suffered more than $14.5 million in losses from the 2007 Malibu fire

caused by overloading of power poles with telecommunications equipment, much like the project before you for approval.[4] In high winds, which are very common along this portion of the coast, overloaded power poles are at risk of toppling, endangering the public and potentially sparking a wildfire as occurred with tragic consequences in Malibu. In addition, the presence of lead-acid battery back up boxes are vulnerable to corrosion from moist sea air and could cause shorts, arcing, and potential fires or other hazards. The northern Santa Cruz County coast is particularly vulnerable to wildfire.

Project Already Underway Without a Permit

We were dismayed to discover that NextG has in fact already installed miles of cabling required for this project without obtaining regulatory approval for the overall project. We believe this action is not only arrogant and premature- it is disrespectful of the Commission's authority to regulate such projects. NextG- contrary to their claims- does not have the "right" to install telecommunications equipment where and when they like. They do have the right to submit to the relevant public authorities for approval of their projects, and to the extent that they meet (or do not meet) laws, codes, and regulations- have their projects duly considered. NextG's installation of new transmission lines appears to violate section 5.10.24 of the LCP, which "requires underground placement of all other new or supplementary transmission lines within views from scenic roads where it is technically feasible..."

It is our understanding that the Commission will be holding its August meeting in the Santa Cruz area. We respectfully request that this item be considered at that time so as to allow local residents to participate in the hearing and offer their opinions and insights into this project. We understand you have moved the issue back a month to July to accommodate Ms. Ernst's personal vacation schedule. We only ask that you show the public the same respect, and move consideration of this project back to August, so locals- who are often unable to travel due to cost and employment considerations- will have the ability to participate in the democratic process.

For reasons outlined above and in our original appeal, we renew our request that you deny approval of a coastal permit for this project. Your commission would be well within your legal rights to do so for any of the reasons outlined above. I would be happy to provide additional evidence to support any of the assertions made in our original appeal or in the letter above.

Sincerely,

Joshua Hart
Spokesperson, Coastal Neighbors Against Unnecessary Wireless Facilities
PO Box 30
Davenport, CA 95017
(831) 421 0822
joshuahart@baymoon.com

Cc: Natasha Ernst, NextG
Frank Barron, Santa Cruz County Planning Dept.
Chris Spohrer, Big Basin State Park
Dr. Kerry Kriger, Save the Frogs

[4] http://www.malibutimes.com/articles/2011/04/20/news/news1.txt

Aaron Hebert, Sempervirens Fund
Greg McPheeters, Sierra Club Ventana Chapter
Jason Hoppin, Santa Cruz Sentinel
Jerry Smith, San Jose State University
Noel Bock, Davenport
Coastal Neighbors Against Unnecessary Wireless Facilities
CalFire Big Creek Station
Cal Poly Swanton Rd.
Poki Namkung MD MPH, Santa Cruz Public Health Dept.
Santa Cruz County Board of Supervisors
San Mateo County Board of Supervisors

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Appendix K: Evidence for Electromagnetic Hypersensitivity

Appendix A

First view of Swanton Valley heading northbound on Swanton Rd.

Infrastructure proposed to be placed on ocean side of Scenic Road

Photo illustrating how radiation exposure to publicly accessible hillsides may exceed ground level radiation forecasts

Appendix B: Hwy 1/ Swanton Rd. Mock Up Photographs

Appendix C: Waddell Creek Mock Up Photographs

Waddell Creek Cell site is visible from wetlands- home to several endangered species

Vanishing Wetlands

Threatened Species:

This protected marsh as well as Waddell Creek nearby, provides habitat crucial to the survival of many animal species protected under the State and Federal Endangered Species Act. This law works for the recovery of plants and animals as well as the environment that they depend on.

Over one third of the threatened or endangered animal species in the U.S. either live in or depend on wetlands. In the U.S. over 95% of this valuable habitat has been destroyed or degraded due to dredging, pollution and construction.

The western pond turtle, the red-legged frog, and the San Francisco garter snake are just some of the animals that are threatened, endangered and species of special concern that make this freshwater marsh their home.

Appendix D: Hwy 1 Emergency Call Boxes

Call boxes at regular intervals provide emergency communication along remote stretches of coastline

Appendix E: Coastal Neighbors Community Meeting Flyer

4G AT WHAT PRICE?

ALERT! BIG BASIN AND NORTH COAST UNDER THREAT

NEXTG NETWORKS- FOR VERIZON WIRELESS- PLANS TO CONSTRUCT 7 NEW CELL ANTENNAS ALONG SWANTON ROAD AND HIGHWAY 1 BETWEEN SANTA CRUZ AND WADDELL BEACH INCLUDING ONE WITHIN YARDS OF BIG BASIN'S WADDELL CREEK WETLANDS, HOME TO AT-RISK SPECIES, INCLUDING THE RED LEGGED FROG, CALIFORNIA NEWTS, STEELHEAD SALMON, AND MANY OTHERS.

COMMUNITY MEETING

7PM THURSDAY APRIL 19TH

AT DAVENPORT RESOURCE CTR 150 CHURCH STREET, DAVENPORT CA 95017
TALK BY JOSHUA HART, LOCAL RESIDENT AND DIRECTOR OF STOP SMART METERS!

- RADIATION FROM CELL TOWERS HAS BEEN LINKED TO INCREASED MORTALITY OF MANY PLANT AND ANIMAL SPECIES, LIKE BEES, FROGS, TREES, AND HUMANS.[1]
- WIRELESS RADIATION FROM CELL ANTENNAS, WI-FI, CELL PHONES AND "SMART" METERS HAS BEEN CATEGORIZED BY THE WORLD HEALTH ORGANIZATION AS A CLASS 2B CARCINOGEN, IN THE SAME CATEGORY AS DDT AND ENGINE EXHAUST. [2]
- ISRAEL HAS NOW MANDATED CANCER WARNING LABELS ON ALL CELL PHONES[3]

FIND OUT MORE ABOUT WHAT NEXTG'S PROPOSED DEVELOPMENT MEANS FOR YOUR HEALTH, THE ENVIRONMENT, AND THE BEAUTY OF THE NORTH COAST, AND LEARN ABOUT THE DARK SIDE OF THE WIRELESS INDUSTRY, AND HOW TO PROTECT YOURSELF.

EXISTING STRUCTURES AT THE SEVEN PROPOSED CELL SITES ARE MOCK UPS AND ARE NOT ACTIVE. THE CA COASTAL COMMISSION MAKES THE FINAL DECISION.

CONTACT THE CA COASTAL COMMISSION TO OPPOSE THE PROJECT,
BY PHONE OR POSTAL MAIL – AT 831 427 4863 OR COASTAL.CA.GOV

[1] Balmor, A. (2009). Electromagnetic pollution from phone masts. Effects on wildlife. Pathophysiology, 16(2-3), 99. DOI: 10.1016/j.pathophys.2009.01.007
[2] http://www.iarc.fr/en/media-centre/pr/2011/pdfs/pr208_E.pdf
[3] http://www.haaretz.com/business/knesset-backs-bill-requiring-cell-phones-to-bear-health-hazard-warning-1.415677

Appendix F

Electromagnetic Biology and Medicine, 29: 31–35, 2010
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healthcare

Mobile Phone Mast Effects on Common Frog (*Rana temporaria*) Tadpoles: The City Turned into a Laboratory

ALFONSO BALMORI

C/Navarra, Valladolid, Spain

*An experiment has been made exposing eggs and tadpoles of the common frog (*Rana temporaria*) to electromagnetic radiation from several mobile (cell) phone antennae located at a distance of 140 meters. The experiment lasted two months, from the egg phase until an advanced phase of tadpole prior to metamorphosis. Measurements of electric field intensity (radiofrequencies and microwaves) in V/m obtained with three different devices were 1.8 to 3.5 V/m. In the exposed group (*n = 70*), low coordination of movements, an asynchronous growth, resulting in both big and small tadpoles, and a high mortality (90%) was observed. Regarding the control group (*n = 70*) under the same conditions but inside a Faraday cage, the coordination of movements was normal, the development was synchronous, and a mortality of 4.2% was obtained. These results indicate that radiation emitted by phone masts in a real situation may affect the development and may cause an increase in mortality of exposed tadpoles. This research may have huge implications for the natural world, which is now exposed to high microwave radiation levels from a multitude of phone masts.*

Keywords Electromagnetic pollution; Microwaves; Phone masts; *Rana temporaria*; Tadpoles.

Introduction

In recent years, a large number of mobile phone antennae have been installed, especially in urban areas. The scientific literature review shows that pulsed telephony microwave radiation may produce effects, especially on nervous, cardiovascular, immune, and reproductive systems (Balmori, 2009), but few studies on effects from phone masts on wildlife in the cities have been conducted (Balmori, 2005; Balmori and Hallberg, 2007; Everaert and Bauwens, 2007).

Concerning the effects of electromagnetic radiation on amphibians, several investigations in the laboratory have been conducted (Levengood, 1969; Landesman and Douglas, 1990; Grefner et al., 1998), but as far as we know there have not been any published studies on effects from phone antennae on amphibian populations in their natural habitat.

Address correspondence to Alfonso Balmori, Junta de Castilla y Leon, C/Rigoberto Cortejoso, 14, Valladolid 47071, Spain; E-mail: abalmori@ono.com

Balmori (2006) suggested that microwaves from phone masts might be responsible along with other factors in the decline of some populations of amphibians.

The objective of this research was to investigate the possible effects of phone mast radiation on exposed tadpoles (*Rana temporaria*) in a real situation.

Materials and Methods

The experiment has been made in Valladolid (Spain) exposing eggs and tadpoles of the common frog (*Rana temporaria*) obtained from an anonymous supplier to several mobile (cell) phone antennae.

The tadpoles were placed in two tanks with oxygen and food every day, which were set out in the fifth floor terrace at a distance of 140 meters from four base stations located opposite. The base stations are on the roof of an eight story high building (see the picture at http://www.hese-project.org/hese-uk/en/issues/nature.php?id = frogs).

In both experimental and control groups ($n = 70$ in each) the experiment lasted two months, from the egg phase until an advanced phase of tadpole prior to metamorphosis. The control group was inside a Faraday cage (metallic shielding component: EMC-reinforcement fabrics 97442 Marburg Technic).

According to official database (Ministerio de Industria Turismo y Comercio, 2009), the type and frequency range of emissions was:

- Vodafone: GSM 948.0–959.8 MHz.
- Vodafone: DCS 1,830.2–1,854.8 MHz.
- Vodafone: UMTS 1,905–1,910; 1,950–1,965; 2,140–2,155 MHz.
- Amena (Orange): DCS 1,855.2–1,879.8 MHz.

However, as we shall see later, in reality there exist more frequencies than this, which do not correspond with the frequencies contained in the database official.

The measurements of electric field intensity (radiofrequencies and microwaves in V/m) in the two tanks containing the tadpoles were made with the following meters:

- Nuova Elettronica device Model LX 1435 with 10% sensitivity, with unidirectional probe (range: 1 MHz–3 GHz).
- PCE–EM 29 device with an isotropic probe and calibration certificate (range: 50 MHz–3.5 GHz). Resolution: 0.1 mV/m. Absolute error: $\pm$ 1.0 dB.
- Spectrum analyzer Advantest R-3272 (range: 9 KHz–26 GHz), probe Rhode & Schwarz HE-200 (Official measurements of the Ministry of Science and Technology from Spain).

Results

The results of electric field intensity to which the tadpoles were exposed with the different devices were:

- LX 1435: Electromagnetic field intensity 2.5–3.5 V/m.
- PCE–EM 29: Electromagnetic field intensity 1,847–2,254 V/m.
- Advantest R-3272: Results in decibels (Table 1).

Table 1
Results of spectrum analyzer advantest R-3272 (official measurements of the ministry of science and technology from Spain)

VODAFONE		VODAFONE		AMENA	
Frequency (MHz)	Decibels	Frequency (MHz)	Decibels	Frequency (MHz)	Decibels
88,5	69	93,1	67	98,1	67
104,5	64	487,25	43	671,25	43,9
727,25	37	751,25	37	949,2	81
953,8	77	957,2	76	958,8	57
935	57	1875,4	63	1875,6	61
1873,6	60	1871,2	62	1869	61

Note: The frequencies that exist in reality are several more and do not correspond with the frequencies contained in the database official.

Some observations on the tadpoles were as follows (Balmori, 2008; see the video clips at http://www.hese-project.org/hese-uk/en/issues/nature.php?id):

- Experimental group ($n = 70$).

Low coordination of movements, an asynchronous growth, resulting in both big and small tadpoles, and a high mortality (90%) was observed. Most of the deaths occurred after six weeks of continuous exposure.

The tadpoles' tails waved only slowly. Only about half of them reacted to a sudden stimulus in the form of a stroke on the wall of the aquarium. Some remained sideways or tilted and swam describing closed circles (Balmori, 2008; http://www.hese-project.org/hese-uk/en/issues/nature.php?id). Generally, their movements were uncoordinated. They showed low interest and few tadpoles reacted to the food. For lack of resources, we could not investigate the anatomical or physiological reasons for the problems observed.

- Control group ($n = 70$, under the same conditions but inside a Faraday cage).

The coordination of movements was normal, the development was synchronous, and a mortality of 4.2% was obtained. No deaths occurred at a particular time.

The tail moved fast and they reacted quickly to a sudden stimulus (a stroke on the wall of the aquarium). No tadpoles remained sideways or tilted and the direction of swimming was correct. Their movements were coordinated. When food was supplied most of them reacted quickly.

Discussion

The literature contains much data hinting at an important role for bioelectromagnetic phenomena as a mediator of morphogenetic information in many contexts relevant to embryonic development (Levin, 2003). The underlying mechanism by which an

endogenous electrical field may exert an influence on development remains to be discovered. Most prevailing hypotheses suggest that a field acts to directionally guide the growth and migration of some embryonic cells (Hotary and Robinson, 1992).

Strong magnetic fields (1.74–16.7 T) disrupt cell division of exposed frog eggs (*Xenopus laevis*) (Denegre et al., 1998). Valles (2002) proposed a model to explain their influence.

Several studies on effects of electromagnetic fields on amphibians have been conducted in laboratories. When amphibian eggs and embryos of *Ambystoma maculatum* and *Rana sylvatica* were exposed to high magnetic fields (6.3×10^3 G), a brief treatment of early embryos produced several types of abnormalities, incuding microcephaly, retarded (abnormal) growth, edema, and scoliosis (Levengood, 1969).

Adult newts (*Notophthalmus viridescens*) exposed to a pulsed electromagnetic field (1 T and 0.15 V/m, approx.) for the first 30 days post forelimbs were amputated and produced more abnormalities in their skeletal patterns than the native limbs or the normal regenerates. Twelve percent exhibited unique abnormalities not observed in either the native or regenerate limb population. These forelimbs demonstrated one or more of the following gross defects: acheiria (lack of carpus and digits), aphalangia, or oligodactylia (loss of digits) as well as carpal bone and long bone (radius and ulna) abnormalities (Landesman and Douglas, 1990).

Exposed frog tadpoles (*Rana temporaria*) developed under electromagnetic field (50 Hz, 260 A/m) show an increase in mortality. Exposed tadpoles developed more slowly and less synchronously than control tadpoles and remained at the early stages for longer. Tadpoles developed allergies and EMF caused changes in their blood counts (Grefner et al., 1998). These results are consistent with the observations of this work.

Deformities and disappearance of amphibians and other organisms is part of the global biodiversity crisis (Blaustein and Johnson, 2003). Some authors consider that the electromagnetic pollution is destroying nature (Warnke, 2007; Firstenberg, 1997). Balmori (2006) proposed that electromagnetic pollution (in the microwave and radiofrequency range) along with other environmental factors is a possible cause for decline and deformations of some wild amphibian populations exposed. The results of this experiment conducted in a real situation in the city of Valladolid (Spain) indicate that the tadpoles that live near such facilities, exposed to relatively low levels of environmental electromagnetic fields (1.8–3.5 V/m) may suffer adverse effects (low coordination of movements, asynchronous growth, and high mortality), and this may be a cause (together with other environmental factors) of decline of amphibian populations.

Acknowledgment

The author is grateful to Sarah Wright and Denise Ward.

Declaration of Interest: The author report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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Appendix G: Statement by Dr. Jonathan Samet, World Health Organization International Agency for Research on Cancer

Dr. Jonathan Samet, UC California, was a member of the IARC working group. In a press conference following the IARC announcement that radio-frequency electromagnetic fields is a 2b carcinogen he states, " The designation for group 2b is radio frequency electromagnetic fields that is unspecified as to source, so the group 2b classification would have broad applicability to sources with this type of emissions."

Starts at 2:44-3:30 http://www.youtube.com/watch?v=s4E2i5XFX9M

PROPOSED TRANSMITTERS

North Coast cellular project goes to commission

Wireless foes fight 4G network expansion

By JASON HOPPIN

BONNY DOON — Having retreated to the North Coast for what might be called wireless-less solitude, Stop Smart Meters' Josh Hart is finding himself chased by the network.

To help bring high-speed video and other next-generation cellular technologies to Highway 1 and the Bonny Doon area, a Verizon affiliate is proposing seven new 4G transmitters along the coast, bolstering coverage in an area where cell service is spotty.

HART

Having battled PG&E over SmartMeters, Hart is now taking on Verizon, the country's largest wireless company, saying the new transmitters would bring environmental problems and be an eyesore.

"There is no app for fixing environmental damage," Hart said.

Hart's chief argument — that wireless technologies could cause cancer, an idea disputed by many health authorities but one that remains the subject of research — is irrelevant to whether the transmitters go in. Federal law bars local governments from weighing the health impacts of cell proposals.

But his protest — that they are inappropriate for a gorgeous stretch of coastal highway — might make more headway. The project was approved by the county Planning Commission, but Hart has appealed it straight to the California Coastal Commission.

SEE CELLULAR ON A3

CELLULAR

Continued from A1

Commission Vice Chairman Mark Stone, a county supervisor, also appealed.

The transmitters are black boxes, about the size of a transformer, that would be mounted on existing utility poles.

While they would not require new structures, there are some neighborhood concerns that mounting too much electrical and telecommunications equipment on poles could block views. Furthermore, an overloaded utility pole that snapped in gusty winds is blamed for sparking the 2007 Malibu Fire in Southern California.

But fires are actually one reason why some neighbors favor the project. In recent years, Bonny Doon was threatened by both the Lockheed and Martin fires, and people are increasingly relying on cellphones as their sole means of communication.

"When you live in the back hills and you rely on emergency services, you need to be able to communicate," said Davenport resident Noel Bock.

Bock said she is neutral on the plan. While she does favor more cell coverage, Verizon's affiliate, NextG, could have done better informing residents of the pending project, she said.

Hart, who claims the wireless signals could threaten endangered species, wants to see some portion of the county stay wireless-free. That would not be without precedent: Authorities overseeing many state and national parks have restricted cellphone coverage.

"Do we need to have streaming video on our smartphones on remote areas of the California Coast?" Hart said. "Do we really want to cover our remote wilderness areas with wireless?"

Like the county, the Coastal Commission cannot weigh environmental factors in passing judgment on the North Coast transmitters. But it can make visual determinations, and county code is protective of the North Coast when it comes to cellular infrastructure.

However, the project appears to fit with visual protections written into the code, which include a desire to have transmitters added to existing structures.

Stone said that was why he appealed the decision. The original proposal included a telecommunications shed that was next to an agricultural field, but NextG is no longer pursuing the shed.

Stone said he has no other objections, and has no problem with expanding wireless services. The proposal likely will go before the Coastal Commission over the summer.

Follow Sentinel reporter Jason Hoppin on Twitter @scsnewsdude.

Appendix I

0249

County of Santa Cruz

COUNTY ADMINISTRATIVE OFFICE

701 OCEAN STREET, SUITE 520, SANTA CRUZ, CA 95060-4073

(831) 454-2100 FAX: (831) 454-3420 TDD: (831) 454-2123

SUSAN MAURIELLO, J.D., COUNTY ADMINISTRATIVE OFFICER

January 18, 2012

AGENDA: January 24, 2012

Board of Supervisors
County of Santa Cruz
701 Ocean Street
Santa Cruz, California 95060

SmartMeter Moratorium

Dear Members of the Board:

On December 13, 2011, your Board directed this office to return today with a report on issues associated with the current SmartMeter moratorium ordinance, and information on the possible extension of the moratorium for an additional year. Your Board also directed the Public Health Officer to return with an analysis of the research on the health effects of SmartMeters, and directed County Counsel to return with a report regarding the legality of a public utility refusing service to customers who are willing to pay for service and are willing to have an analog meter.

As your Board is aware, the California Public Utility Commission is considering PG&E's application for modification to PG&E's SmartMeter proposal to include an option for residential customers who do not wish to have a wireless SmartMeter. The item was scheduled on the January 12, 2012 agenda, but the commission anticipates that a vote on the proposal will not happen prior to February 1, 2012.

Moratorium Ordinance

Your Board has heard significant amounts of testimony regarding SmartMeters and concerns about their possible impact on health, questions about their accuracy, their inability to recover real-time data, privacy concerns, and the lack of safety standards for chronic long-term exposure to electromagnetic frequency radiation. In addition, PG&E has not presented studies to support their primary justification that the SmartMeter program will encourage customers to more effectively manage their utilization of electricity.

Given the broad concern about SmartMeter technology and your Board's desire to go on record, this office and County Counsel believe that notwithstanding the enforcement challenges, that it is in the best interest of public health, safety, and welfare for your Board to adopt the attached ordinance (Attachment A) implementing a temporary moratorium on the installation of SmartMeters in or on any home, apartment, condominium or business within the unincorporated area of the County. The purpose of the moratorium is to allow additional time to educate the CPUC about these concerns and allow time for adequate study of the impacts resulting from the SmartMeter technology.

PG&E, asserting that local governments do not have jurisdiction on the installation of the meters, has ignored the previous Santa Cruz County ordinance as well as similar ordinances adopted in other jurisdictions. PG&E believes that only the California Public Utilities Commission (CPUC) has the authority to stop installation of the meters. Elected representatives, including the Board of Supervisors of Marin County, have acknowledged the limits of their ordinances to actually stop the installation of the meters. However, jurisdictions have adopted their ordinances with statements that such ordinances play an important role by informing the CPUC of significant community concerns.

Health Officer Report

The Public Health Officer's report is provided as Attachment B. The report discusses the health risks associated with SmartMeters, the scientific reports and actions the public might take to mitigate potential harm.

PG&E Shutoff Update

At the December 13, 2011, meeting, your Board questioned the PG&E representative about the utility company's decision to shut off power to the homes of residents who removed their SmartMeters. Subsequent to that meeting, PG&E restored power to those residences with the intent of charging them based on past electrical bills.

Petition

At your January 10, 2012 meeting, your Board was presented with a petition to the California Public Utilities Commission regarding PG&E SmartMeter Opt-out Application, (Petition A.11-03-014). The petition provides the opportunity for local elected officials to urge the Commission to continue Petition A.11-03-014 for further public hearings. The petition is provided as Attachment C. It is recommended that your Board direct the Chair to sign the petition on behalf of the Board and submit it to the PUC.

IT IS THEREFORE RECOMMENDED THAT YOUR BOARD:

(1) Direct the Chair to send a letter to the PUC calling for independent testing and monitoring of SmartMeters in place to determine duty cycles and frequency, especially in the following circumstances
- Where both gas and electric meters are located closely together
- Where there is a bank of SmartMeters such as on a multi-family residential building or apartment building
- Where there is a collector meter on a home that serves the home, plus as many as 5000 other residential units in the area
- Where a SmartMeter on a home acts as a relay for other local neighborhood meters

(2) Direct the Chair to send a letter to the PUC and PG&E allowing any Santa Cruz County resident to request removal of a previously installed SmartMeter and the replacement with an analog meter
(3) Accept and file the report from the Public Health Officer
(4) Direct the Chair to sign the petition to the California Public Utilities Commission on behalf of the Board urging the Commission to delay consideration of a preliminary decision on PG&E's SmartMeter application until further public hearing and input are completed, and
(5) Adopt the attached ordinance imposing a temporary moratorium on the installation of SmartMeters within the unincorporated area of Santa Cruz County and direct the Clerk of the Board to place the ordinance on the February 7, 2012 agenda for final consideration.

Very truly yours,

SUSAN A. MAURIELLO
County Administrative Officer
Attachments:

A. Proposed Ordinance
B. Report from Public Health Officer
C. Petition to CPUC

cc: PG&E
California Public Utilities Commission

ORDINANCE NO. _____

AN UNCODIFIED ORDINANCE OF THE COUNTY OF SANTA CRUZ IMPOSING A TEMPORARY MORATORIUM ON THE INSTALLATION OF SMARTMETERS AND RELATED EQUIPMENT IN, ALONG, ACROSS, UPON, UNDER AND OVER THE PUBLIC STREETS AND OTHER PLACES WITHIN THE UNINCORPORATED AREA OF SANTA CRUZ COUNTY

The Board of Supervisors of the County of Santa Cruz find as follows:

WHEREAS, the County of Santa Cruz (the "County"), through its police powers granted by Article XI of the California Constitution, retains broad discretion to legislate for public purposes and for the general welfare, including but not limited to matters of public health, safety and consumer protection; and

WHEREAS, the County of Santa Cruz has a franchise agreement with PG&E that has been in effect since 1955; and

WHEREAS, in addition, the County retains authority under Article XII, Section 8 of the Constitution to grant franchises for public utilities, and pursuant to California Public Utilities Code section 6203, "may in such a franchise impose such other and additional terms and conditions..., whether governmental or contractual in character, as in the judgment of the legislative body are to the public interest;" and

WHEREAS, Public Utilities Code section 2902 reserves the County's right to supervise and regulate public utilities in matters affecting the health, convenience and safety of the general public, "such as the use and repair of public streets by any public utility, the location of the poles, wires, mains, or conduits of any public utility, on, under, or above any public streets, and the speed of common carriers operating within the limits of the municipal corporation;" and

WHEREAS, Pacific Gas & Electric Company ("PG&E") is now installing SmartMeters in Central and Northern California and is installing these meters within the County of Santa Cruz; and

WHEREAS, concerns about the impact and accuracy of SmartMeters have been raised nationwide, leading the Maryland Public Service Commission to deny permission on June 21, 2010 for the deployment of SmartMeters in that state. The State of Hawaii Public Utility Commission also recently declined to adopt a smart grid system in that state. The CPUC currently has pending before it a petition from the City and County of San Francisco, and other municipalities, seeking to delay

the implementation of SmartMeters until the questions about their accuracy can be evaluated; and

WHEREAS, major problems and deficiencies with SmartMeters in California have been brought to the attention of the Board of Supervisors of the County of Santa Cruz, including PG&E's confirmation that SmartMeters have provided incorrect readings costing ratepayers untold thousands of dollars in overcharges and PG&E's records outlined "risks" and "issues" including an ongoing inability to recover real-time data because of faulty hardware originating with PG&E vendors; and

WHEREAS, the ebb and flow of gas and electricity into homes discloses detailed information about private details of daily life. Energy usage data, measured moment by moment, allows the reconstruction of a household's activities: when people wake up, when they come home, when they go on vacation, and even when they take a hot bath. SmartMeters represent a new form of technology that relays detailed hitherto confidential information reflecting the times and amounts of the use of electrical power without adequately protecting that data from being accessed by unauthorized persons or entities and as such pose an unreasonable intrusion of utility customers' privacy rights and security interests. Indeed, the fact that the CPUC has not established safeguards for privacy in its regulatory approvals may violate the principles set forth by the U.S. Supreme Court in *Kyllo v. United States* (2001), 533 U.S. 27; and

WHEREAS, significant health questions have been raised concerning the increased electromagnetic frequency radiation (EMF) emitted by the wireless technology in SmartMeters, which will be in every house, apartment and business, thereby adding additional human-made EMF to our environment around the clock to the already existing EMF from utility poles, individual meters and telephone poles; and

WHEREAS, FCC safety standards do not exist for chronic long-term exposure to EMF or from multiple sources, and reported adverse health effects from electromagnetic pollution include sleep disorders, irritability, short term memory loss, headaches, anxiety, nausea, DNA breaks, abnormal cell growth, cancer, premature aging, etc. Because of untested technology, international scientists, environmental agencies, advocacy groups and doctors are calling for the use of caution in wireless technologies; and

WHEREAS, the primary justification given for the SmartMeters program is the assertion that it will encourage customers to move some of their electricity usage from daytime to evening hours; however, PG&E has conducted no actual pilot projects to determine whether this assumption is in fact correct. Non-transmitting time-of-day meters are already available for customers who desire

them, and enhanced customer education is a viable non-technological alternative to encourage electricity use time shifting. Further, some engineers and energy conservation experts believe that the SmartMeters program--in totality--could well actually increase total electricity consumption and therefore the carbon footprint; and

WHEREAS, this Board of Supervisors sent a letter to the CPUC on September 15, 2010 expressing concern about reports that SmartMeter technology was interfering with the proper functioning of common household devices and requesting a response from the CPUC; and

WHEREAS, there has been no response by the CPUC to the letter sent by the Board of Supervisors; and

WHEREAS, because the potential risks to the health, safety and welfare of County residents are so great, the Board of Supervisors wishes to adopt a moratorium on the installation of SmartMeters and related equipment within the unincorporated area of the County of Santa Cruz. The moratorium period will allow the Council on Science and Technology and legislative process referenced above to be completed and for additional information to be collected and analyzed regarding potential problems with SmartMeters; and

WHEREAS, there is a current and immediate threat to public health, safety and welfare because, without this urgency ordinance, SmartMeters or supporting equipment will be installed or constructed or modified in the County without PG&E's complying with the CPUC process for consultation with the local jurisdiction, the County's Code requirements, and subjecting residents of Santa Cruz County to the privacy, security, health, accuracy and consumer fraud risks of the unproven SmartMeter technology; and

WHEREAS, the Board of Supervisors hereby finds that it can be seen with certainty that there is no possibility that the adoption and implementation of this Ordinance may have a significant effect on the environment. This Ordinance does not authorize construction or installation of any facilities and, in fact, imposes greater restrictions on such construction and installation in order to protect the public health, safety and general welfare. This Ordinance is therefore exempt from the environmental review requirements of the California Environmental Quality Act (CEQA) pursuant to Section 15061(b)(3) of Title 14 of the California Code of Regulations; and

WHEREAS, there is no feasible alternative to satisfactorily study the potential impact identified above as well or better with a less burdensome or restrictive effect than the adoption of this interim urgency moratorium ordinance; and

WHEREAS, based on the foregoing it is in the best interest of public health, safety and welfare to allow adequate study of the impacts resulting from the SmartMeter technology; therefore it is appropriate to adopt a temporary moratorium that would remain in effect from the date of its adoption until December 31, 2012, unless your Board acts to repeal it prior to that date.

NOW, THEREFORE BE IT ORDAINED by the Board of Supervisors of the County of Santa Cruz as follows:

SECTION I

Moratorium. From and after the effective date of this Ordinance, no SmartMeter may be installed in or on any home, apartment, condominium or business of any type within the unincorporated area of the County of Santa Cruz, and no equipment related to SmartMeters may be installed in, on, under, or above any public street or public right of way within the unincorporated area of the County of Santa Cruz.

SECTION II

Violations of the Moratorium may be charged as infractions or misdemeanors as set forth in Chapter 1.12 of the Santa Cruz County Code. In addition, violations may be deemed public nuisances, with enforcement by injunction or any other remedy authorized by law.

SECTION III

This Board of Supervisors finds and determines that: (a) there is a current and immediate threat to the public peace, health, or safety; (b) the moratorium must be imposed in order to protect and preserve the public interest, health, safety, comfort and convenience and to preserve the public welfare; and (c) it is necessary to preserve the public health and safety of all residents or landowners adjacent to such uses as are affected by this interim ordinance as well as to protect all of the citizens of Santa Cruz County by preserving and improving the aesthetic and economic conditions of the County.

SECTION IV

If any provision of this interim ordinance is held to be unconstitutional, it is the intent of the Board of Supervisors that such portions of such ordinance are severable from the remainder and the remainder is given full force and effect.

SECTION V

This interim ordinance is not subject to the California Environmental Quality Act (CEQA) pursuant to Section 15060(c) (2) – the activity will not result in a direct or reasonably foreseeable indirect physical change in the environment and Section 15060(c) (3) – the activity is not a project as defined in Section 15378 of the CEQA Guidelines, because it has no potential for resulting in physical change to the environment, directly or indirectly.

SECTION VI

This ordinance shall take effect on the 31st day after the date of final passage.

PASSED AND ADOPTED THIS _____ day of _____, 2012, by the Board of Supervisors of the County of Santa Cruz by the following vote:

AYES: SUPERVISORS
NOES: SUPERVISORS
ABSENT: SUPERVISORS
ABSTAIN: SUPERVISORS

_____
Chairperson of the Board of Supervisors

Attest: _____
Clerk of the Board

APPROVED AS TO FORM:

_____
County Counsel

41

County of Santa Cruz

0257

HEALTH SERVICES AGENCY

POST OFFICE BOX 962, 1060 EMELINE AVE., SANTA CRUZ, CA 95061-0962
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Poki Stewart Namkung, M.D., M.P.H.
Health Officer
Public Health Division

Memorandum

Date: January 13, 2012

To: Santa Cruz County Board of Supervisors

From: Poki Stewart Namkung, M.D., M.P.H. PSN
Health Officer

Subject: Health Risks Associated With SmartMeters

Overview

On December 13, 2011, Santa Cruz County Board of Supervisors directed the Public Health Officer to return on January 24, 2012, with an analysis of the research on the health effects of SmartMeters.

Background

In order to analyze the potential health risks associated with SmartMeters, the following questions should be asked:

1) What is the SmartMeter system and what is the potential radiation exposure from the system?
2) What scientific evidence exists about the potential health risks associated with SmartMeters?
3) Are there actions that the public might take to mitigate any potential harm from SmartMeters?

SmartMeters are a new type of electrical meter that will measure consumer energy usage and send the information back to the utility by a wireless signal in the form of pulsed frequencies within the 800 MHz to 2400MHz range, contained in the microwave portion of the electromagnetic spectrum. SmartMeters are considered part of 'smart grid' technology that includes: a) a mesh network or series of pole-mounted wireless antennas at the neighborhood level to collect and transmit wireless information from all SmartMeters in that area back to the utility; b) collector meters, which are a special type of SmartMeter that collects the radiofrequency or microwave radiation signals from many surrounding

buildings (500-5000 homes or buildings) and sends the information back to the utility; and c) proposed for the future, a power transmitter to measure the energy use of individual appliances (e.g. washing machines, clothes dryers, dishwasher, etc) and send information via wireless radio frequency signal back to the SmartMeter. The primary rationale for SmartMeters and grid networks is to more accurately monitor and direct energy usage.

The public health issue of concern in regard to SmartMeters is the involuntary exposure of individuals and households to electromagnetic field (EMF) radiation. EMFs are everywhere, coming from both natural and man-made sources. The three broad classes of EMF are:

- extremely low frequency, ELF (from the sun or powerlines)
- radio frequency, RF (from communication devices, wireless devices, and SmartMeters)
- extremely high frequency, known as ionizing radiation (x-rays and gamma rays)

Much of this exposure is beyond our control and is a matter of personal choice; however, public exposure to RF fields is growing exponentially due to the proliferation of cell phones, and wireless fidelity (Wi-Fi) technology. To understand the relationship between EMF from SmartMeters and other sources, it is helpful to view the electromagnetic spectrum:

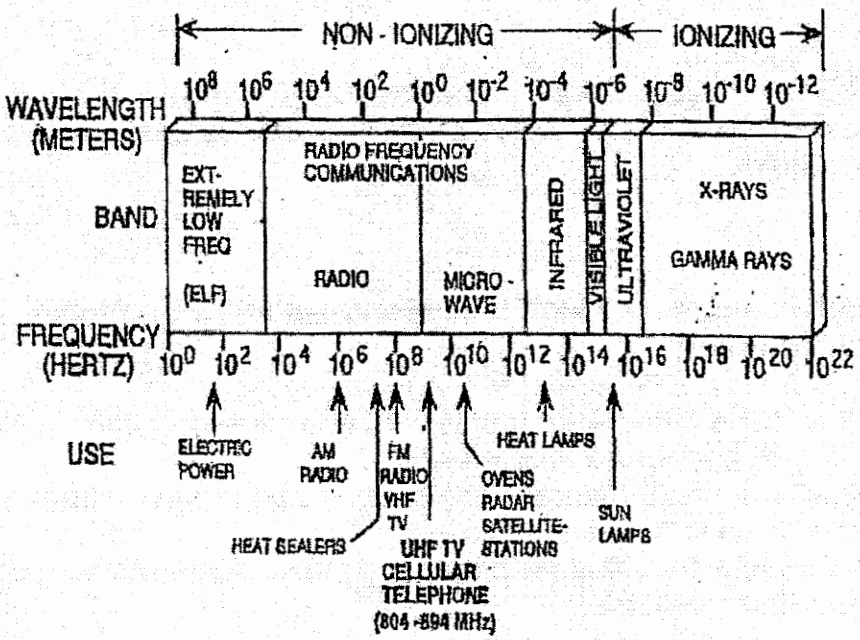

Fig. 1: The electromagnetic spectrum, showing the relation s between ELF and RF fields, wavelength and frequency, and the ionizing and non-ionizing portions of the spectrum.

The Federal Communications Commission (FCC) has adopted limits for Maximum Permissable Exposure (MPE) that are based on exposure guidelines published by the National Council on Radiation Protection and Measurements (NCRP). The limits vary with

the frequency of the electromagnetic radiation and are expressed in units of microwatts per centimeter squared. A SmartMeter contains two antennas whose combined time-averaged public safety limit of exposure is 655μW/cm² (Sage, 2011). According to the California Council on Science and Technology (CCST) Report (2011), within distances of three to ten feet, SmartMeters would not exceed this limit. However, CCST did not account for the frequency of transmissions, reflection factors, banks of SmartMeters firing simultaneously, and distances closer than three feet. There are numerous situations in which the distance between the SmartMeters and humans is less than three feet on an ongoing basis, e.g. a SmartMeter mounted on the external wall to a bedroom with the bed placed adjacent to that mounting next to the internal wall. That distance is estimated to be one foot. The CCST Report also states that SmartMeters will generally transmit data once every four hours, and once the grid is fully functional, may transmit "more frequently." It has been aptly demonstrated by computer modeling and real measurement of existing meters that SmartMeters emit frequencies almost continuously, day and night, seven days a week. Furthermore, it is not possible to program them to not operate at 100% of a duty cycle (continuously) and therefore it should not be possible to state that SmartMeters do not exceed the time-averaged exposure limit. Additionally, exposure is additive and consumers may have already increased their exposures to radiofrequency radiation in the home through the voluntary use of wireless devices such as cell and cordless phones, personal digital assistants (PDAs), routers for internet access, home security systems, wireless baby surveillance (baby monitors) and other emerging devices. It would be impossible to know how close a consumer might be to their limit, making safety a uncertainty with the installation of a mandatory SmartMeter.

This report will focus on the documented health risks of EMF in general, the relevance of that data to SmartMeters exposure, the established guidelines for RF safety to the public at large, and then provide recommendations to ameliorate the risk to the public's health.

Evidence-based Health Risks of EMFs

There is no scientific literature on the health risks of SmartMeters in particular as they are a new technology. However, there is a large body of research on the health risks of EMFs. Much of the data is concentrated on cell phone usage and as SmartMeters occupy the same energy spectrum as cell phones and depending on conditions, can exceed the whole body radiation exposure of cell phones phones (see Attachment B1, Figure 4). In terms of health risks, the causal factor under study is RF radiation whether it be from cell phones, Wi-Fi routers, cordless phones, or SmartMeters. Therefore all available, peer-reviewed, scientific research data can be extrapolated to apply to SmartMeters, taking into consideration the magnitude and the intensity of the exposure.

Since the mid-1990's the use of cellular and wireless devices has increased exponentially exposing the public to massively increased levels of RF. There is however, debate regarding the health risks posed to the public given these increased levels of radiation. It must be noted that there is little basic science funding for this type of research and it is largely funded by industry. An intriguing divide, noted by Genuis, 2011 is that most

research carried out by independent non-government or non-industry affiliated researchers suggests potentially serious effects from many non-ionizing radiation exposures; most research carried out by independent non-government or non-industry affiliated researchers suggests potentially serious effects from many non-ionizing radiation exposures research funded by industry and some governments seems to cast doubt on the potential for harm. Elements of the controversy stem from inability to replicate findings consistently in laboratory animal studies. However, analysis of many of the conflicting studies is not valid as the methodology used is not comparable. Despite this controversy, evidence is accumulating on the results of exposure to RF at non-thermal levels including increased permeability of the blood-brain barrier in the head (Eberhardt, 2008), harmful effects on sperm, double strand breaks in DNA which could lead to cancer genesis (Phillips, 2011), stress gene activation indicating an exposure to a toxin (Blank, 2011), and alterations in brain glucose metabolism (Volkow, 2011).

In terms of meta-analyzed epidemiological studies, all case–control epidemiological studies covering >10 years of cell phone use have reported an increased risk of brain tumors from the use of mobile phones (Hallberg, 2011). Other studies have pointed to an increasing risk of acoustic neuroma, salivary gland tumors, and eye cancer after several years of cell phone use and the tumors occur predominantly on the same side of the head as the phone is used. The analysis of brain cancer statistics since the mid 20th century in several countries reveals that brain tumor formation has a long latency time, an average of over 30 years to develop from initial damage.(Hallberg, 2011). Therefore using studies such as the Interphone Study which looked as shorter latency periods for the development of specific brain cancers will result in inconclusive data.

Another potential health risk related to EMF exposure, whose legitimacy as a phenomen remains contentious, is electromagnetic hypersensitivity (EHS). In the 1950's, various centers in Eastern Europe began to describe and treat thousands of workers, generally employed in jobs involving microwave transmission. The afflicted individuals often presented with symptoms such as headaches, weakness, sleep disturbance, emotional instability, dizziness, memory impairment, fatigue, and heart palpitations. Clinical research to verify the physiological nature of this condition did not begin in earnest until the 1990's and found that the EMF involved was usually within the non-ionizing range of the electromagnetic spectrum. In the early 2000's, estimates of the occurrence of EHS began to swell with studies estimating the prevalence of this condition to be about 1.5% of the population of Sweden (Hilleert et al., 2002), 3.2% in California (Levallios et al., 2002), and 8% in Germany (infas Institut fur angewandte Sozialwissenschaft GmbH, 2003).

In 2004, WHO declared EHS "a phenomenon where individuals experience adverse health effect while using or being in the vicinity of devices emanating electric, magnetic, or electromagnetic fields (EMFs)...Whatever its cause, EHS is a real and sometimes debilitating problem for the affected persons (Mild et al., 2004)."

Currently, research has demonstrated objective evidence to support the EHS diagnosis, defining pathophysiological mechanisms including immune dysregulation in vitro, with

increased production of selected cytokines and disruption and dysregulation of catecholamine physiology (Genuis, 2011).

Until recently, the diagnosis of EHS has not received much support from the medical community due to lack of objective evidence. In an effort to determine the legitimacy of EHS as a neurological disorder, however, a collection of scientists and physicians recently conducted a double-blinded research study that concluded that "EMF hypersensitivity can occur as a bona fide environmentally-inducible neurological syndrome (McCarty et al., 2011).

Safety Guidelines

The guidelines currently used by the FCC were adopted in 1996, are thermally based, and are believed to protect against injury that may be caused by acute exposures that result in tissue heating or electric shock. FCC guidelines have a much lower certainty of safety than standards. Meeting the current FCC guidelines only assures that one should not have heat damage from SmartMeter exposure. It says nothing about safety from the risk of many chronic diseases that the public is most concerned about such as cancer, miscarriage, birth defects, semen quality, autoimmune diseases, etc. Therefore, when it comes to nonthermal effects of RF, FCC guidelines are irrelevant and cannot be used for any claims of SmartMeter safety unless heat damage is involved (Li, 2011).

There are no current, relevant public safety standards for pulsed RF involving chronic exposure of the public, nor of sensitive populations, nor of people with metal and medical implants that can be affected both by localized heating and by electromagnetic interference (EMI) for medical wireless implanted devices. Many other countries (9) have significantly lower RF/MW exposure standards ranging from 0.001 to 50 $\mu W/cm^2$ as compared with the US guideline of 200-1000 $\mu W/cm^2$. Note that these recommended levels are considerably lower that the approximately 600 $\mu W/cm^2$. (time-averaged) allowed for the RFR from SmartMeters operating in the low 900 MHz band mandated by the FCC based on only thermal consideration.

In summary, there is no scientific data to determine if there is a safe RF exposure level regarding its non-thermal effects. The question for governmental agencies is that given the uncertainty of safety, the evidence of existing and potential harm, should we err on the side of safety and take the precautionary avoidance measures? The two unique features of SmartMeter exposure are: 1) universal exposure thus far because of mandatory installation ensuring that virtually every household is exposed; 2) involuntary exposure whether one has a SmartMeter on their home or not due to the already ubiquitous saturation of installation in Santa Cruz County. Governmental agencies for protecting public health and safety should be much more vigilant towards involuntary environmental exposures because governmental agencies are the only defense against such involuntary exposure. Examples of actions that the public might take to limit exposure to electromagnetic radiation can be found in Attachment B2.

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Figure 4 from Hirsch; 2011

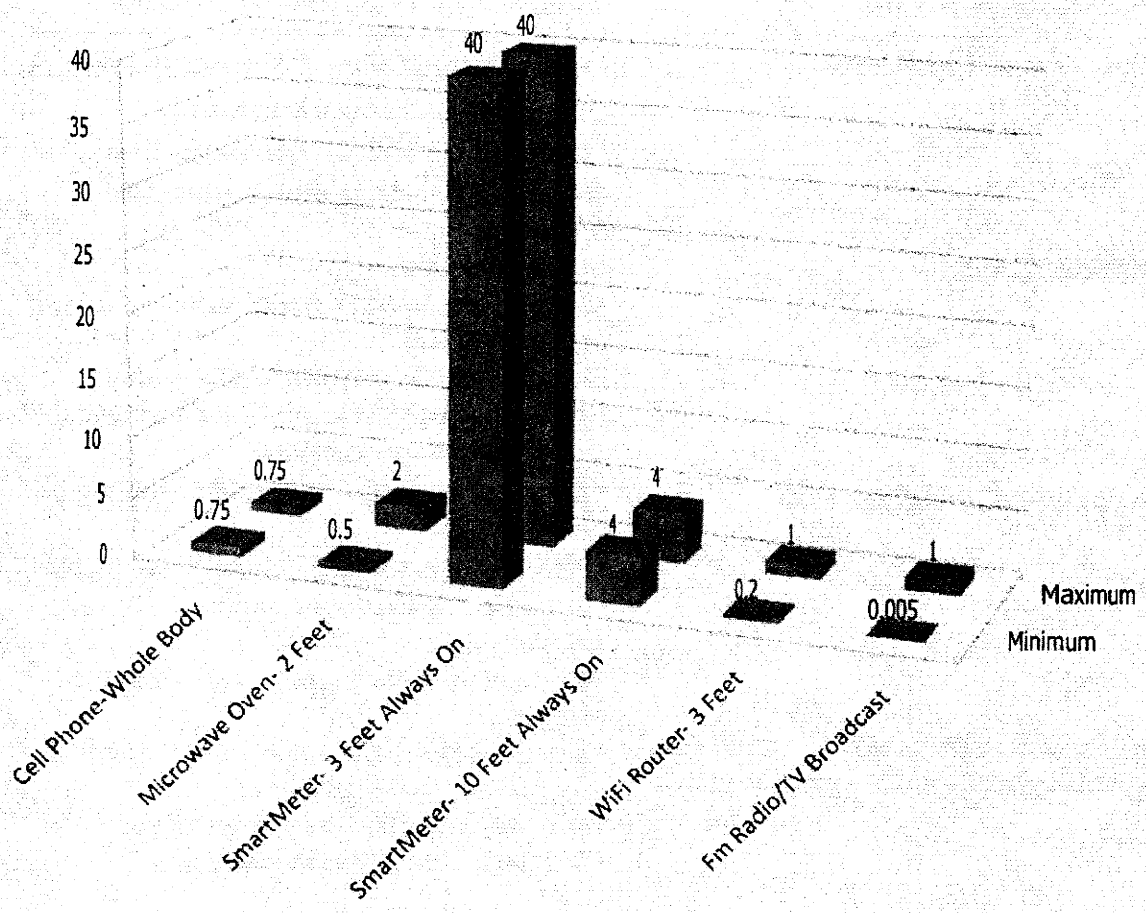

Figure 4. Comparison of Radio-Frequency Levels to the Whole Body from Various Sources in μ W/cm^2 over time [corrected for assumed duty cycle and whole body exposure extrapolated fro m EPRI/CCST SmartMeter estimated levels at 3 feet].

Examples of strategies to reduce electromagnetic radiation. (Genuis SJ, 2011)

Sources of adverse EMR	Considerations to reduce EMR exposure
Cell phones and cordless phones	• Minimize use of cell and cordless phones and *use* speaker phones when possible • Leave cell or cordless phone away from the body rather than in pocket or attached at the hip.
Wireless internet	• Use wired internet • Turn off the internet router when not in use (e.g. night-time) • Use power line network kits to achieve internet access by using existing wiring and avoiding wireless emissions.
Computers releasing high EMR	• Limit the amount of time spent working on a computer • Avoid setting a laptop computer on the lap • Increase the distance from the transformer. • Stay a reasonable distance away from the computer
Handheld electronics (electric toothbrush, hair dryer, Smart phone, electronic tablets, etc.)	• Limit the use of electronics and/or revert to using power-free devices • Turn devices off before going to sleep • Minimize electronics in bedrooms
Fluorescent lights	• Consider using alternate lighting such as incandescent (Uncertainty exists about the safety of LED lights) • Rely on natural sunlight for reading
Household power	• Measure levels of EMR and modify exposures as possible • Avoid sleeping near sites of elevated EMR • Filters can be used to mitigate dirty power
High voltage power lines substations, transmission towers, and emitters (cell phone tower, radar, etc.)	• Consider relocating to an area not in close proximity to high voltage power lines • Maintain considerable distance from emitters • Consider forms of shielding (shielding paints; grounded metal sheets)
Utility neutral-to-ground bonded to water pipes	• Increase size of neutral-wire to substation and install dielectric coupling in water pipe.

Petition to the California Public Utilities Commission Re: PG&E SmartMeter Opt-out Application, A.11-03-014

We the undersigned elected officials urge the Commission to delay consideration of President Peevey's preliminary decision until further public hearing and input are completed. The decision, which calls for charging fees to customers who elect to opt out of the SmartMeter program, conflicts with local planning authority, does not protect the health or safety of all residents and imposes a prejudicial financial burden on ratepayers who chose to opt out of the program. We therefore urge the Commission to continue consideration of this matter until further public hearings are completed to ensure the due process rights of all stakeholders.

The order does not provide an empirical basis for the amount of the fees to be charged to opt out customers nor does it consider the net financial impact of PG&E's latest proposal to permit customer retention of analogue meters. Hence the order effectively eliminates a full and fair hearing process for these contested issues of fact to be considered and resolved.

Historically, telecommunications carriers throughout this state have complied with local planning codes which provide notice to residents as to the construction of transmission facilities. Pacific Gas and Electric Company ignored such codes in the deployment of the Smart Meter telecommunications network. Currently many of our jurisdictions have passed ordinances which impose a moratorium on wireless SmartMeters and have petitioned to opt out on a jurisdictional basis. The current order is silent on these issues and effectively discards them without consideration.

The decision also ignores the longstanding controversy and concern about the health impacts associated with electro-magnetic fields. A 1998 California Department of Health Services study commissioned by the California Public Utility Commission itself found that 3.2% of Californians reported hypersensitivity to electro-magnetic fields. A May 2011 study released by the World Health Organization/International Agency for Research on Cancer reclassified RF radiation of the type emitted by wireless equipment throughout the Smart Meter system as "possibly carcinogenic" to humans. President Peevey's order effectively imposes a different rate on many utility customers who need to avoid exposure in violation of California Public Utilities Code section 453(b) which states in pertinent part that "No public utility shall prejudice, disadvantage, or require different rates or deposit amounts from a person because of ancestry, medical condition, marital status or change in marital status, occupation..."

President Peevey's decision does not address these concerns nor does it the financial viability of wired equipment alternatives. In so doing, it eliminates a much anticipated public hearing process.

For all of the foregoing reasons, we respectfully urge the Commission to continue Petition A.11-03-014 matter for further hearings.

_____	_____
Signature	Jurisdiction
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Maureen McCarty 0268

From: Mark Stone [BDS050@co.santa-cruz.ca.us]
Sent: Monday, January 09, 2012 1:30 PM
To: Maureen McCarty
Subject: FW: smart meter opt-out letter and moratorium on smart meters

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From: theodora kerry[SMTP:THEKERRY@COMCAST.NET]
Sent: Monday, January 09, 2012 1:30:14 PM
To: Mark Stone
Subject: re: smart meter opt-out letter and moratorium on smart meters
Auto forwarded by a Rule

This letter is directed to the whole Board of Supervisors, and, as such, should be included in the public record.

Dear Chairperson Stone,

Having attended the board meeting on Dec. 13, and witnessed the Board's active interrogation of the P.G.&E. rep's woeful defense of her employer's shutting off of electricity to customers who dared to protect their health and that of their children by removing their smart meters, I'm very disappointed to read the agenda for tomorrow's meeting only to find that the expected follow-through re: smart meters was no where to be found. While you did approve a letter to the CPUC expressing your opposition to opt-out charges, many of us need you to go further and protect our right to analog meters, as many health problems have been linked to smart meters that have their wireless component turned off. Despite PG&E's crying "public safety concerns", the analog meters have proven to be safe for decades, unlike the recently installed smart meters which have already been linked to health problems, fires, and overcharging. Unfortunately, the CPUC is supposed to decide this issue as early as Jan.12, leaving you no time to write a stronger letter to the CPUC given that the issue is not on the agenda. While I applaud the strong stance you took with the PG&E's rep at the last meeting, that in itself does little to protect us, your constituents. Even the smart meter moratorium as been little more than window dressing as the Sheriff continues to use his power to protect PG&E contractors, instead of the local citizenry. I reiterate my call for you, the Board of Supervisors, to use your power of the purse strings to make it clear to the Sheriff that he is expected to support the moratorium/citizens, not the profiteering corporations.

Regardless of what you eventually decide, you, like the rest of us, are equally at the mercy of these meters. What you allow to be done unto us by PG&E is also being done unto you.

Theodora Kerry
Santa Cruz, CA 95060

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Appendix J

American Academy of Environmental Medicine

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January 19, 2012

Decision Proposed Decision of Commissioner Peevy (Mailed 11/22/2011)
BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA
On the proposed decision 11-03-014

Dear Commissioners:

The Board of the American Academy of Environmental Medicine opposes the installation of wireless "smart meters" in homes and schools based on a scientific assessment of the current medical literature (references available on request). Chronic exposure to wireless radiofrequency radiation is a preventable environmental hazard that is sufficiently well documented to warrant immediate preventative public health action.

As representatives of physician specialists in the field of environmental medicine, we have an obligation to urge precaution when sufficient scientific and medical evidence suggests health risks which can potentially affect large populations. The literature raises serious concern regarding the levels of radio frequency (RF - 3KHz – 300 GHz) or extremely low frequency (ELF – 300Hz) exposures produced by "smart meters" to warrant an immediate and complete moratorium on their use and deployment until further study can be performed. The board of the American Board of Environmental Medicine wishes to point out that existing FCC guidelines for RF safety that have been used to justify installation of "smart meters" only look at thermal tissue damage and are obsolete, since many modern studies show metabolic and genomic damage from RF and ELF exposures below the level of intensity which heats tissues. The FCC guidelines are therefore inadequate for use in establishing public health standards. More modern literature shows medically and biologically significant effects of RF and ELF at lower energy densities. These effects accumulate over time, which is an important consideration given the chronic nature of exposure from "smart meters". The current medical literature raises credible questions about genetic and cellular effects, hormonal effects, male fertility, blood/brain barrier damage and increased risk of certain types of cancers from RF or ELF levels similar to those emitted from "smart meters". Children are placed at particular risk for altered brain development, and impaired learning and behavior. Further, EMF/RF adds synergistic effects to the damage observed from a range of toxic chemicals. Given the widespread, chronic, and essentially inescapable ELF/RF exposure of everyone living near a "smart meter", the Board of the American Academy of Environmental Medicine finds it unacceptable from a public health standpoint to implement this technology until these serious medical concerns are resolved. We consider a moratorium on installation of wireless "smart meters" to be an issue of the highest importance.

The Board of the American Academy of Environmental Medicine also wishes to note that the US NIEHS National Toxicology Program in 1999 cited radiofrequency radiation as a potential carcinogen. Existing safety limits for pulsed RF were termed "not protective of public health" by the Radiofrequency Interagency Working Group (a federal interagency working group including the FDA, FCC, OSHA, the EPA and others). Emissions given off by "smart meters" have been *classified by the World Health Organization International Agency for Research on Cancer (IARC) as a Possible Human Carcinogen*.

Hence, we call for:

- An immediate moratorium on "smart meter" installation until these serious public health issues are resolved. Continuing with their installation would be extremely irresponsible.

- Modify the revised proposed decision to include hearings on health impact in the second proceedings, along with cost evaluation and community wide opt-out.

- Provide immediate relief to those requesting it and restore the analog meters.

Members of the Board
American Academy of Environmental Medicine

Appendix K

International Journal of Neuroscience, 00, 1–7, 2011

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informa
healthcare

Electromagnetic Hypersensitivity: Evidence for a Novel Neurological Syndrome

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ABSTRACT

Objective: We sought direct evidence that acute exposure to environmental-strength electromagnetic fields (EMFs) could induce somatic reactions (EMF hypersensitivity). *Methods*: The subject, a female physician self-diagnosed with EMF hypersensitivity, was exposed to an average (over the head) 60-Hz electric field of 300 V/m (comparable with typical environmental-strength EMFs) during controlled provocation and behavioral studies. *Results*: In a double-blinded EMF provocation procedure specifically designed to minimize unintentional sensory cues, the subject developed temporal pain, headache, muscle twitching, and skipped heartbeats within 100 s after initiation of EMF exposure ($p < .05$). The symptoms were caused primarily by field transitions (off–on, on–off) rather than the presence of the field, as assessed by comparing the frequency and severity of the effects of pulsed and continuous fields in relation to sham exposure. The subject had no conscious perception of the field as judged by her inability to report its presence more often than in the sham control. *Discussion*: The subject demonstrated statistically reliable somatic reactions in response to exposure to subliminal EMFs under conditions that reasonably excluded a causative role for psychological processes. *Conclusion*: EMF hypersensitivity can occur as a *bona fide* environmentally inducible neurological syndrome.

KEYWORDS: electromagnetic fields, evoked potentials, hypersensitivity, provocation study, sensory transduction, sleep study

INTRODUCTION

Man-made electromagnetic fields (EMFs) such as those produced by cell phones, powerlines, or computers are ubiquitous in the general and workplace environments. About 3%–5% of the population subjectively associates acute or subacute exposure to EMFs with departures from normal function or feeling (EMF hypersensitivity) (Levallois, Neutra, Lee, & Hristova, 2002; Schreier, Huss, & Röösli, 2006). The prevalence of self-reported EMF hypersensitivity has usually been attributed to somatization disorders (Rubin, Das Munshi, & Wessely, 2005; Rubin, Nieto-Hernandez, & Wessely, 2010).

A possible nonpsychological basis for EMF hypersensitivity was provided by the discovery of the ability of human beings to detect weak EMFs, as evidenced by the occurrence of field-onset and field-offset brain potentials (Carrubba, Frilot, Chesson, & Marino, 2007), and the induction of steady-state changes in brain electrical activity that persisted during the presence of the field (Marino, Carrubba, Frilot, Chesson, & Gonzalez-Toledo, 2010). The underlying mechanism of field sensory transduction appears to be an electric-force-sensitive ion channel (Marino, Carrubba, Frilot, & Chesson, 2009). Animal studies suggest that the electroreceptor cells and/or afferent processing cells are located in the brain stem (Frilot, Carrubba, & Marino, 2009, 2011).

Despite the physiological and biophysical evidence that could explain at least some cases of human somatic responses to EMFs without invoking psychological processes (Carrubba et al., 2007; Frilot et al., 2009, 2011; Marino et al., 2009, 2010), direct evidence of nonpsychological EMF hypersensitivity is lacking. Our purpose was to determine whether EMFs could

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produce symptomatic responses in a putatively hypersensitive subject while appropriately controlling for chance, confounders, and somatization.

METHODS

Subject

In the context of ongoing human, animal, and biophysical studies involving EMF sensory transduction in our laboratory, we were contacted by a 35-year-old female physician with multiple neurologic and somatic symptoms including headaches, hearing and visual disturbances, subjective sleep disturbances and nonrestorative sleep, and musculoskeletal complaints, all of which she reported could be precipitated by exposure to environmental EMFs and abated by withdrawal from the fields. Among the environmental triggering sources she identified were cell phones, computers, powerlines, and various common electrical devices. During extensive interviews she credibly explained the reasons for her belief that EMFs from common environmental sources could provoke her symptoms.

After she agreed to medical tests appropriate for evaluating her medical condition, she was admitted as a patient on the neurology service and underwent a physical exam including a comprehensive neurologic exam, a clinical electroencephalogram (EEG) exam, a noncontrast magnetic resonance (MR) imaging of the brain, an overnight sleep study (with video and expanded EEG montage) in which the resulting polysomnogram was scored in accordance with standardized rules (American Academy of Sleep Medicine, 2007), a standard laboratory evaluation of serum electrolytes and blood chemistries, liver function tests, serum fasting cortisol, and complete blood count, and direct evaluations of her EMF sensitivity in a series of EMF provocation and behavioral studies (see below). The institutional review board at the LSU Health Sciences Center approved all experimental procedures, and the subject gave her written informed consent.

EMF Exposure

The subject sat in a comfortable wooden chair with her eyes closed, and uniaxial 60-Hz (unless noted otherwise) sinusoidal electric fields were generated by applying a voltage to parallel 49-cm square metal plates spaced 36 cm apart (Figure 1). The equipment that controlled the field was located outside the subject's view and emitted no visual or auditory stimuli. The background electric field (the field present irrespective of whether or not a voltage was applied to the parallel plates) was about 1 V/m throughout the region occupied by the subject (HI-

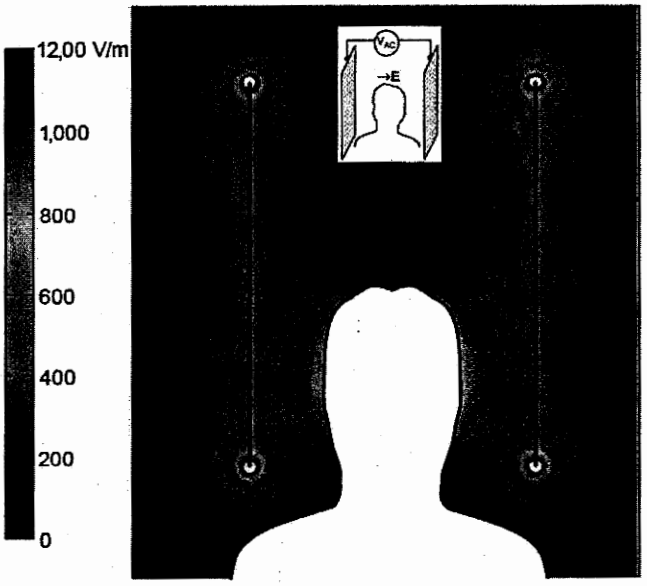

FIGURE 1. Spatial distribution of the external electric field (E) in the mid-sagittal plane. E was generated by applying $V_{AC} = 100$ volts to parallel metal plates while the subject was electrically isolated (insert), and calculated at all points in the subject's environment. Average E surrounding the head was about 300 V/m.

3603, Holaday, Eden Prairie, MN, USA). The plate arrangement did not produce magnetic fields. The continuously present background 60-Hz magnetic field was 0.1 mG, and the geomagnetic field was 599.8 mG, 68.4° below the horizontal component (component along the direction of the applied field, 360.5 mG) (MAG-03, Bartington, GMW, Redwood City, CA, USA). High-frequency signals from cell-phone towers and other distant antennae (1–10 GHz) were less than 0.1 μW/cm^2 (the background fields in the sleep-study room were similar; (Spectran, Aaronia, Euscheid, Germany).

In the provocation studies the electric field was applied for 100-s intervals with a duty cycle of 50% and a repetition rate of 10 Hz, which resulted in alternating field-on and field-off pulses of 100 ms (pulsed field); a continuous field (100% duty cycle) was used in one of the provocation studies. Duty cycle, pulse structure, and interval length were regulated by a microcontroller programmed to produce the desired signals. When the duty cycle was 50%, the actual EMF stimuli consisted of (1) 10 onset stimuli per second × 100 s = 1,000 field-onset stimuli per interval; (2) an equal number of field-offset stimuli; and (3) the presence of the EMF for a total of 50 s. When the duty cycle was 100%, there was only one field-onset stimulus and one field-offset stimulus, and the EMF was present for 100 s. In the behavioral studies, the electric field was applied in trials consisting of a 2-s epoch when a pulsed field was applied (50%

duty cycle, 10-Hz repetition rate) and a 10-s field-free control epoch.

Field Strength

The applied electric field was significantly distorted by the subject's body, resulting in strong inhomogeneities in the field surrounding the subject. To overcome the problem of measuring the external field, we used Maxwell's laws to calculate it at every point in the subject's vicinity. The subject was modeled as an electrically isolated composite of rectangular solids representing the trunk and lower extremities and an ellipsoid representing the head. The assumed conductivity was 1 S/m. The total electric field at every point was determined for V_{AC} = 100 V using finite-element analysis consisting of approximately 10^6 elements; a more detailed mesh was automatically generated in the head region (Multiphysics, Comsol, Los Angeles, CA, USA). The peak external electric field was about 1,000 V/m (see Figure 1); the average field was about 300 V/m around the head and less than 50 V/m around the body. The peak and average field strength and duration of exposure were far below the levels generally recognized as capable of producing physiological effects in human subjects (International Commission on Non-Ionizing Radiation Protection, 1998).

The external electric field resulted in an induced internal electric field in the brain in accordance with physical law. The strength of the induced brain electric field was comparable with that induced by environmental-strength power-frequency electric and magnetic fields (Carrubba, Frilot, Chesson, & Marino, 2010; Carrubba, Frilot, Hart, Chesson, & Marino, 2009).

Somatic Responses

A pulsed field (50% duty cycle) was applied for 100 s in 10 independent field-exposure intervals. The controls were ten 100-s sham-exposure intervals during which a field was not applied. The order of the field and sham intervals was determined randomly. The environmental conditions during the field-exposure and sham-exposure intervals were identical except that the wires carrying the plate voltage were disconnected during the sham-exposure intervals. At the end of each interval the subject was questioned by an interviewer blinded to whether or not the field had been applied and asked to describe any symptoms she developed during the interval, whether or not the symptoms had persisted into the interview period. She was queried using descriptive terms she had employed. Whenever she reported symptoms, commencement of the next interval was delayed until she reported that they had abated.

We used a pulsed field because we expected it would result in a stronger symptomatic response compared with a continuous field (Carrubba, Frilot, Chesson, & Marino, 2008; Frilot et al., 2011). To test this reasoning, we performed a second study to assess whether the subject developed a differential symptomatic response to the pulsed and continuous fields. The subject was exposed or sham exposed for 100-s intervals and immediately after each interval was interviewed as described above. A sham (S) field, continuous (C) field (100% duty cycle), and pulsed (P) field (50% duty cycle, 10 Hz) were applied, and the SCP pattern was repeated five times. The subject was blinded regarding the use of different EMFs; from her perspective, the laboratory procedures were identical to those followed in the first study. The interviewer was aware that the effects of C and P fields were being compared but was blinded regarding the actual sequence of the fields.

Behavioral Responses

We considered the possibility that any symptomatic response might be a result of the combined processes of conscious awareness of the EMF followed by a somatization reaction based on a fear that EMFs were harmful. We approached the issue by determining whether the subject could consciously perceive a field when it was presented in multiple independent trials. A field having the same strength and spatial distribution as previously (Figure 1) was applied in a series of trials each of which consisted of a 2-s epoch during which a pulsed field (50% duty cycle, 10-Hz repetition rate) was applied and a 10-s field-free control epoch. Eight independent sequences were employed, each with 30–50 trials. In three sequences, the frequency was 60 Hz; in two, it was 1 kHz; and in three others, the respective frequencies were 10, 100, and 500 kHz.

The subject held a small plastic box that housed a buzzer, a button labeled YES and another button labeled NO. In the middle of each on and off epoch the buzzer emitted a 4-kHz tone at 60 dB that lasted 100 ms, and she was instructed to press the YES or NO button whenever she heard the tone, depending on whether or not she had any conscious sensation of a field at that moment. Employing a custom-designed virtual instrument (LabView, National Instruments, Austin, TX, USA), we determined the number of YES and NO responses in the presence and absence of the field in each sequence. In addition, four sham sequences (minimum of 30 trials in each) were conducted in which a field was not applied. The subject had no knowledge that an off–on pattern was being used in the field sequences or that some sequences consisted of sham exposure.

TABLE 1. Polysomnography results. Comparison with usual night, per patient: "Same as usual." No epileptiform activity noted during arousals associated with unintended gross motor activity. Normal REM-related atonia

	Subject	Normal range
Sleep latency	6 min	13.4 ± 10.1 (Hirshkowitz, Moore, Hamilton, Rando, & Karacan, 1992)
Stage N1 sleep	13.8%	3%–8% (Chokroverty, Thomas, & Bhatt, 2005)
Stage N2 sleep	51.8%	44%–55% (Chokroverty et al., 2005)
Stage N3 sleep	23.6%	10%–15% (Chokroverty et al., 2005)
Stage R sleep	10.7%	20%–25% (Chokroverty et al., 2005)
REM latency	150.5 min	57%–66 min (Pressman, 2002)
WASO index	6/hr	1.3 ± 0.8 (Hirshkowitz et al., 1992)
WASO total	40.5 min	10.7 ±11 min (Naifeh, Severinghaus, & Kamiya, 1987)
Total sleep time	340.5 min	340.0 ± 70 (Hirshkowitz et al., 1992)
Sleep efficiency	88%	86.4% ± 11.6% (Hirshkowitz et al., 1992)
Arousal index	34.2/hr	16.8 ± 6.2 (Bonnet & Arand, 2007)
PLM index	7.8/hr	< 5/hr (Nicolas, Michaud, Lavigne, & Montplaisir, 1999)
AH index	0.2/hr	< 5/hr (American Academy of Sleep Medicine, 2005)

Note: REM, rapid eye movement; WASO, wake after sleep onset; PLM, periodic limb movement; AH, apnea/hypopnea.

Statistics

The frequencies of the somatic and behavioral responses in the presence and absence of the field were evaluated using the chi-square test (2 × 2 tables) or the Freeman–Halton extension of the Fisher exact probability test (2 × 3 tables; Freeman & Halton, 1951).

RESULTS

Clinical Studies

The patient's physical examination was unremarkable. The presence of frequent subjective awakenings from sleep, sometimes with unintended gross motor activity such as muscle twitching and leg jerking, prompted clinical concern for a sleep-related movement disorder, parasomnia, or nocturnal epilepsy. The polysomnogram revealed significant sleep fragmentation and discontinuity (Table 1) but no evidence of significant sleep-disordered breathing, nocturnal epilepsy, or abnormal rapid-eye-movement-related (REM-related) atonia. Periodic limb movements were noted but did not appear to be a major sleep-disrupting force.

Standard and 24-hr video-accompanied EEG recordings revealed normal-appearing background rhythms and no epileptiform activity. EEG performed in the presence of active cellular telephone use provoked a right-sided headache, but produced no unusual EEG waveforms. The MR image revealed evidence of cortical dysplasia in the right temporal lobe, and right parietal polygyria, both without interval change when compared with a study performed 19 months earlier. Laboratory evaluation for common metabolic/endocrine problems and blood count abnormalities was unremarkable.

Somatic Responses

The sequence and characteristics of the symptomological and behavioral experiments are shown in Table 2.

The question of a relation between the presence of the field and the occurrence of symptoms was directly addressed by interviewing the subject immediately following 100-s field-exposure or sham-exposure intervals; both the interviewer and the subject were blinded regarding the exposure condition. During the interviews, the subject reported a range of symptoms including localized pain in her jaw, ear, or the side of her head, a more diffuse head pain, and muscle pain or twitching in the hip, neck, and back. Sometimes she qualified the symptom as "strong" or "mild," and sometimes she denied all symptoms. We grouped the symptoms related to localized head pain as "temporal pain," those related to diffuse head pain as "headache," and those related to muscle effects as "muscle pain/twitching." Symptoms reported more rarely were indicated explicitly (see Table 3a). The subject consistently reported pronounced symptoms that occurred during the field intervals, particularly in intervals 7, 13, 14, 15, and 18. In the sham intervals, she reported no symptoms in intervals 4, 6, 8, 16, and 20; weak temporal pain in intervals 2, 3, and

TABLE 2. Sequence and characteristics of experiments

Experiment	Electric field Condition	No. of trials	Trial Duration (sec)	Response
1	Pulsed	10	100	Symptoms
	Sham	10	100	
2	Pulsed	5	100	Symptoms
	Continuous	5	100	
	Sham	5	100	
3	Pulsed	300	1	Behavior
	Sham	150	1	

TABLE 3. Evaluation of the relation between presentation of a pulsed electric field and the development of symptoms. (a) Results from the individual 100-s exposure intervals. (b) Summary table

(a)	Interval no.	Condition	Result
	1	Pulsed field	Temporal pain
	2	Sham	Mild temporal pain
	3	Sham	Mild temporal pain
	4	Sham	No symptoms
	5	Pulsed field	Temporal pain; headache
	6	Sham	No symptoms
	7	Pulsed field	Skipped heartbeats; feeling unease
	8	Sham	No symptoms
	9	Pulsed field	Headache
	10	Sham	Mild headache
	11	Pulsed field	Temporal pain
	12	Sham	Mild headache
	13	Pulsed field	Muscle twitch; feeling unease
	14	Pulsed field	Strong headache
	15	Pulsed field	Strong headache
	16	Sham	No symptoms
	17	Pulsed field	Stiff neck
	18	Pulsed field	Muscle twitch; temporal pain
	19	Sham	Mild temporal pain
	20	Sham	No symptoms

		Symptoms		
(b)	Field condition	None	Mild	≥ Mild
	Sham	5	5	0
	Pulsed field*	0	0	10

*$p < .05$.

TABLE 4. Evaluation of the comparative effect of continuous and pulsed fields relative to a sham field on the development of symptoms. (a) Results from individual 100-s exposure intervals. (b) Summary table

(a)	Interval no.	Condition	Result
	1	Sham	No symptoms
	2	Continuous field	No symptoms
	3	Pulsed field	Temporal pain
	4	Sham	No symptoms
	5	Continuous field	No symptoms
	6	Pulsed field	Mild headache
	7	Sham	Mild headache
	8	Continuous field	Muscle twitch
	9	Pulsed field	Severe pain
	10	Sham	No symptoms
	11	Continuous field	Temporal pain
	12	Pulsed field	Headache; muscle twitch
	13	Sham	No symptoms
	14	Continuous field	Mild temporal pain
	15	Pulsed field	Mild temporal pain

		Symptoms		
(b)	Condition	None	Mild	≥Mild
	Sham	4	1	0
	Continuous field	2	0	3
	*Pulsed field	0	2	3

*$p < .05$.

19; and a weak headache in intervals 10 and 12. The field and sham distributions of symptoms differed significantly ($p < .05$; see Table 3b).

In a second study, the relative role of EMF changes (number of onsets and offsets) and steady-state presence of the EMF were directly addressed by interviewing the subject immediately following 100-s exposure intervals in which either a pulsed field or a continuous field was presented. She was queried regarding her symptoms as previously and reported symptoms in both field intervals (see Table 4a). The symptoms triggered by the pulsed field were more intense compared with the sham control ($p < .05$; see Table 4b); the symptoms triggered by the continuous field did not differ from the sham control ($p = .16$). The subject reported no symptoms in four of five sham intervals (intervals 1, 4, 10, 13).

Behavioral Responses

The possible influence of conscious awareness of the EMF on the development of symptoms was investigated by assessing whether the subject could consciously perceive the field. A total of 300 independent trials involving carrier frequencies of 60 Hz to 500 kHz were used; the controls consisted of 150 sham trials. The results did not depend on the carrier frequency, and consequently the data were combined for analysis (see Table 5).

The subject failed to respond to the tone seven times while the field was on and seven times while it was off, resulting in a total of 293 responses for each of the two conditions. There were no missed responses in the sham trials. The overall YESresponse rate in the field trials was $(51/586) \times 100 = 8.7\%$. The occurrence of a YES response was significantly associated with the presence of the field ($p < .05$; see Table 5a), but the sensitivity of the YES responses was low ($[32/(32 + 261)] \times 100 = 11\%$). The YES response rate in the sham trials was slightly higher than that seen in the field trials ([27/273 = 9.9%]) (see Table 5b).

Table 5. Evaluation of conscious perception of a pulsed electric field. The subject's responses during the presence (on) and absence (off) of the field, respectively

		Pulsed field	
(a)	Response	On	Off
	Yes*	32	19
	No	261	274
		Sham	
(b)	Response	On	Off
	Yes	15	12
	No	135	138

*$p < .05$.

DISCUSSION

Appropriately controlled provocation studies are required to establish the existence of EMF hypersensitivity and to understand the relative importance of psychological and nonpsychological processes in mediating any observed symptoms. A working laboratory definition of EMF hypersensitivity formulated in symptomological terms is therefore needed to permit recognition of hypersensitivity reactions when they occur. In previous provocation studies, the assumption was made that true hypersensitive subjects would exhibit more or less the same symptoms in response to repeated provocations. The assumption led to experimental designs that involved averaging across exposed and control groups, which is an inherently insensitive statistical procedure for detecting real but variable responses (Rubin et al., 2005, 2010). The assumption is particularly inapplicable to EMF hypersensitivity because intrasubject and intersubject variabilities are its salient features (Levallois et al., 2002; Schreier et al., 2006). We defined EMF hypersensitivity as the occurrence of any medically recognized symptom in response to provocation using an environmentally relevant EMF; there was no requirement that the same symptom must reoccur when the EMF provocation was repeated. This definition avoided the problem of masking real effects and more appropriately matched the laboratory procedure to the known characteristics of EMF hypersensitivity (Levallois et al., 2002; Schreier et al., 2006). We focused on a single self-reported subject and employed a procedure in which she served as her own control. While controlling for artifacts, chance, and somatization, the question whether she reliably exhibited *any* symptomatic responses to an EMF was addressed; the alternative hypothesis was that she did not exhibit EMF-triggered symptoms. The laboratory conditions were controlled in such a way that a putative role of psychological processes could reasonably be identified.

The subject developed symptoms in association with the presentation of a pulsed electric field significantly ($p < .05$) more often than could reasonably be explained on the basis of chance (see Table 3). Several considerations suggested that the statistical link was a true causal association with a subliminal EMF. First, the subject's environment was carefully controlled to avoid putative confounding factors. The testing took place in an acoustically quiet environment, and the presence of uncontrolled environmental EMFs was nil. The environmental conditions during the field-exposure and sham-exposure intervals were identical except that during the sham-exposure intervals, at a point far removed from the subject's field of view, the wires carrying the plate voltage were disconnected. A key aspect of our laboratory procedure was the elimination of sensory cues that could serve as conscious markers of the electric field leading to a somatization reaction. All appropriate precautions were taken to eliminate potential confounders. Second, the occurrence of symptoms was significantly associated with the type of EMF (see Table 4). The symptomatic response was associated with the pulsed EMF, which maximized occurrence of the number of transient changes in the EMF (off–on and on–off), not with the presence of the field, as expected on the basis of prior animal studies where the issue of somatization was irrelevant (Frilot et al., 2011). Finally, in a behavioral study specifically designed to assess awareness of the field, YES response rates were 8.7% and 9.9% in the field and sham conditions, respectively, which provided no evidence for a psychological role in the development of the subject's symptoms. We therefore conclude with a reasonable level of certainty that the causal association we found between the presence of the EMF and the subject's symptoms was mediated by a subconscious neural process. Although chance was an unlikely explanation for the association, that possibility could not be excluded. The existence of the neurological syndrome reported here was previously suspected but not documented.

The mechanism for the subject's symptoms of headache, visual disturbances, and somatic musculoskeletal discomfort following exposure to EMFs is unknown. On the basis of clinical evaluation, intermittent seizure activity is not a credible explanation, although a deeper epileptic focus with partial seizure activity may have escaped the detection of surface EEG electrodes. The abnormal findings in the subject's medical workup included the abnormal MR image (cortical dysplasia and polygyric changes) and extensive sleep discontinuity and fragmentation manifested in the overnight polysomnogram; the possible association of these

findings with the subject's syndrome of EMF hypersensitivity is unknown.

Our aim here was to concentrate on the previously unaddressed question whether acute exposure to weak EMF could produce real but not precisely predictable somatic effects mediated by nonpsychological processes. Within the limitations of the study, we concluded that we demonstrated the neurological syndrome in the subject we studied. The question of whether EMF hypersensitivity is a significant public-health problem was not addressed here. The EMF we employed was equivalent in strength and pulse structure to EMFs pervasively present in the environment (Levallois et al., 2002; Schreier et al., 2006), and our results were consistent with the possibility that environmental EMFs can directly trigger clinical symptoms. Nevertheless resolution of the public-health issue depends on a deeper understanding of how internal EMFs caused by environmental EMFs are related to physiological process and of the role of psychological factors and comorbidities in the exposed population in exacerbating the processes resulting in disease.

***Declaration of interest*:** The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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Applicable LCP Policies - Protection of Visual Resources

LUP Objective 5.10.a (Protection of Visual Resources). *To identify, protect, and restore the aesthetic values of visual resources.*

LUP Objective 5.10.b (New Development in Visual Resource Areas). *To ensure that new development is appropriately designed and constructed to have minimal to no adverse impact upon identified visual resources.*

LUP Policy 5.10.2 (Development Within Visual Resource Areas). *Recognize that visual resources of Santa Cruz County possess diverse characteristics…. Require projects to be evaluated against the context of their unique environment and regulate structure height, setbacks and design to protect these resources consistent with the objectives and policies of this section. Require discretionary review for all development within the visual resource area of Highway One…*

LUP Policy 5.10.3 (Protection of Public Vistas). *Protect significant public vistas…from all publicly used roads and vistas points by minimizing disruption of landform and aesthetic character caused by grading operations,… inappropriate landscaping and structure design.*

LUP Policy 5.10.5 (Preserving Agricultural Vistas). *Continue to preserve the aesthetic value of agricultural vistas. Encourage development to be consistent with the agricultural character of the community. Structures appurtenant to agricultural uses on agriculturally designated parcels shall be considered to be compatible with the agricultural character of surrounding areas.*

LUP Policy 5.10.6 (Preserving Ocean Vistas). *Where public ocean vistas exist, require that these vistas be retained to the maximum extent possible as a condition of approval for any new development.*

LUP Policy 5.10.7 (Open Beaches and Blufftops). *Prohibit the placement of new permanent structures which would be visible from a public beach, except where allowed on existing parcels of record, or for shoreline protection and for public beach access. Use the following criteria for allowed structures: (a) Allow infill structures (typically residences on existing lots of record) where compatible with the pattern of existing development. (b) Require shoreline protection and access structures to use natural materials and finishes to blend with the character of the area and integrate with the landform.*

LUP Policy 5.10.10 (Scenic Roads). *The following roads and highways are valued for their vistas. The public vistas from these roads shall be afforded the highest level of protection… Route 1 – from San Mateo County to Monterey County… Swanton Road – from Route 1 at Davenport Landing to Route 1 at Greyhound Rock.*

LUP Policy 5.10.11 (Development Visible from Rural Scenic Roads). *In the viewsheds of rural scenic roads, require discretionary development, including development envelopes in proposed land divisions, to be sited out of public view, obscured by natural landforms and/or existing vegetation. Where proposed structures on existing lots are*

unavoidably visible from scenic roads, identify those visual qualities worthy of protection (see policy 5.10.2) and require the siting, architectural design and landscaping to mitigate the impacts on those visual qualities.

LUP Policy 5.10.12 (Development Visible from Urban Scenic Roads). *In the viewsheds of urban scenic roads, require new discretionary development to improve the visual quality through siting, architectural design, landscaping, and appropriate signage.*

LUP Policy 5.10.15 (Designation of Coastal Special Scenic Areas). *Designate the following as Coastal Special Scenic Areas (see Visual Resources maps) and require development to comply with design criteria set forth in the Coastal Zone Regulation ordinance… (b) The area enclosed by Swanton Road and Highway 1 scenic roads.*

LUP Policy 5.10.17 (Swanton Road Coastal Special Scenic Area). *In the Swanton Road Coastal Special Scenic area (north of Last Chance Road toward Highway 1), require new development to be hidden from public view. Utilize parcel recombinations and other techniques as appropriate to accomplish this; and at a minimum, require dense landscape screening when it would be impossible to locate otherwise permissible development so as to place it in public view. Vegetative screenings shall be consistent with patterns and types of existing vegetation and comprised of indigenous species.*

Applicable LCP Policies & Standards - Agricultural Resources

LUP Policy 2.22.1 Priority of Uses within the Coastal Zone. *Maintain a hierarchy of land use priorities within the Coastal Zone:*

> ***First Priority:*** *Agriculture and coastal-dependent industry*
> ***Second Priority:*** *Recreation, including public parks; visitor serving commercial uses; and coastal recreation facilities.*
> ***Third Priority:*** *Private residential, general industrial, and general commercial uses.*

LUP Policy 2.22.2 Maintaining Priority Uses. *Prohibit the conversion of any existing priority use to another use, except for another use of equal or higher priority.*

LUP Objective 5.13 Commercial Agricultural Land. *To maintain for exclusive agricultural use those lands identified on the County Agricultural Resources Map as best suited to the commercial production of food, fiber, and ornamental crops and livestock and to prevent conversion of commercial agricultural land to non-agricultural uses. To recognize that agriculture is a priority land use and to resolve policy conflicts in favor of preserving and promoting agriculture on designated commercial agricultural lands.*

LUP 5.13.5 Principal Permitted Uses on Commercial Agricultural (CA) Zoned Land. *Maintain a Commercial Agricultural (CA) Zone District for application to commercial agricultural lands that are intended to be maintained exclusively for long-term commercial agricultural use. Allow principal permitted uses in the CA Zone District to include only agricultural pursuits for the commercial cultivation of plant crops, including food, flower, and fiber crops and raising of animals including grazing and livestock production.*

LUP 5.13.6 Conditional Uses on Commercial Agricultural (CA) Zoned Lands. *All conditional uses shall be subject to standards which specify siting and development criteria; including size, location and density. Allow conditional uses on CA zoned lands based upon the following conditions: (a) The use constitutes the principal agricultural use of the parcel; or (b) The use is ancillary incidental, or accessory to the principal agricultural use of the parcel; or (c) The use consists of an interim public use which does not impair long term agricultural viability; and (d) The use is sited to avoid conflicts with principal agricultural activities in the area; and (e) The use is sited to avoid, where possible, or otherwise minimize the removal of land from agricultural production.*

LUP 5.13.7 Agriculturally Oriented Structures. *Allow only agriculturally oriented structures or dwellings on Commercial Agricultural Land; prohibit non-agricultural residential land use when in conflict with the fundamental objective of preserving agriculture.*

IP Section 13.10.311(a) Purposes of Agricultural Districts, "CA" Commercial Agriculture. *The purposes of the "CA" Commercial Agriculture Zone District are to preserve the commercial agricultural lands within Santa Cruz County which are a limited and irreplaceable natural resource, to maintain the economic integrity of the economic farm units comprising the commercial agricultural areas of the County, to implement the agricultural preservation policy of Section 16.50.010 of the Santa Cruz County Code, and to maintain and enhance the general welfare of the county as a whole by preserving and protecting agriculture, one of the County's major industries. Within the "CA" Commercial Agriculture Zone District, commercial agriculture shall be encouraged to the exclusion of other land uses which may conflict with it.*

SANTA CRUZ COUNTY WIRELESS COMMUNICATIONS ORDINANCE

13.10.660 Regulations for the siting, design, and construction of wireless communication facilities.

(A) Purpose. The purpose of SCCC 13.10.660 through 13.10.668, inclusive, is to establish regulations, standards and circumstances for the siting, design, construction, major modification, and operation of wireless communication facilities in the unincorporated area of Santa Cruz County. It is also the purpose of SCCC 13.10.660 through 13.10.668, inclusive, to assure, by the regulation of siting of wireless communications facilities, that the integrity and nature of residential, rural, commercial, and industrial areas are protected from the indiscriminate proliferation of wireless communication facilities, while complying with the Federal Telecommunication Act of 1996, General Order 159A of the Public Utilities Commission of the State of California and the policies of Santa Cruz County. It is also the purpose of SCCC 13.10.660 through 13.10.668, inclusive, to locate and design wireless communication towers/facilities so as to minimize negative impacts, such as, but not limited to, visual impacts, agricultural and open space land resource impacts, impacts to the community and aesthetic character of the built and natural environment, attractive nuisance, noise and falling objects, and the general safety, welfare and quality of life of the community. It is also the purpose of SCCC 13.10.660 through 13.10.668, inclusive, to provide clear guidance to wireless communication service providers regarding the siting of and design of wireless communication facilities.

(B) Findings.

(1) The proliferation of antennas, towers, satellite dishes, and other wireless communication facility structures could create significant, adverse visual impacts. Therefore, there is a need to regulate the siting, design, and construction of wireless communication facilities to ensure that the appearance and integrity of the community is not marred by unsightly commercial facilities, particularly in residential, historically significant, scenic coastal areas, and other environmentally sensitive areas.

(2) General Order 159A of the Public Utilities Commission (PUC) of the State of California acknowledges that local citizens and local government are often in a better position than the PUC to measure local impact and to identify alternative sites. Accordingly, the PUC will generally defer to local governments to regulate the location and design of cell sites, wireless communication facilities and mobile telephone switching offices (MTSOs) including (a) the issuance of land use approvals; (b) acting as lead agency for purposes of satisfying the California Environmental Quality Act (CEQA); and (c) the satisfaction of noticing procedures for both land use and CEQA procedures.

(3) While the licensing of wireless communication facilities is under the control of the Federal Communications Commission (FCC) and Public Utilities Commission (PUC) of the State of California, local government must address public health, safety, welfare, zoning, and environmental concerns where not preempted by Federal statute or regulation.

(4) In order to protect the public health, safety, and the environment, it is in the public interest for local government to establish rules and regulations addressing certain land use aspects relating to the construction, design, siting, major modification, and operation of wireless communication facilities and their compatibility with surrounding land uses.

(5) Commercial wireless communication facilities are commercial uses and as such are generally incompatible with the character of residential zones in the County and, therefore, should not be located on residentially zoned parcels unless it can be proven that there are no alternative nonresidential sites from which can be provided the coverage needed to eliminate or substantially reduce significant gaps in the applicant carrier's coverage network.

(C) Applicability. Activities and development regulated by this chapter include the siting, design, construction, major modification, and operation of all wireless communication facilities, including Federal Communications Commission (FCC) regulated dish antennas, antennas used for multi-channel, multi-point distribution services (MMDS) or "wireless cable" and personal wireless service facilities (e.g., cellular phone services, PCS—personal communication services, wireless paging services, wireless Internet services, etc.). The regulations in this chapter are intended to be consistent with State and Federal law, particularly the Federal Telecommunications Act of 1996, in that they are not intended to: (1) be used to unreasonably discriminate among providers of functionally equivalent services; (2) have the effect of prohibiting personal wireless services within Santa Cruz County; or (3) have the effect of prohibiting the siting of wireless communication facilities on the basis of the environmental/health effects of radio frequency emissions, to the extent that the regulated services and facilities comply with the regulations of the Federal Communications Commission concerning such emissions.

(D) Definitions.

"Antennas" means any system of wires, poles, rods, reflecting discs, dishes, flat panels, or similar devices, including "whip antennas," attached to a telecommunications tower, mast or other structure, which in combination with the radio-frequency radiation generating equipment associated with a base station are used for the transmission or reception of electromagnetic waves.

"Available space" means the space on a tower or structure to which antennas of a telecommunications provider are both structurally and electromagnetically able to be attached.

"Base station" means the primary sending and receiving site in a wireless telecommunications network, including all radio-frequency generating equipment connected to antennas. More than one base station and/or more than one variety of telecommunications providers can be located on a single tower or structure.

"Cellular service" means a wireless telecommunications service that permits customers to use mobile telephones and other communication devices to connect, via low-power radio transmitter sites, either to the public-switched telephone network or to other fixed or mobile communication devices.

“CEQA” means the California Environmental Quality Act.

“Channel” means the segment of the radiation spectrum from an antenna which carries one signal. An antenna may radiate on many channels simultaneously.

“Co-location” or “co-located facility” means when more than one wireless service providers share a single wireless communication facility. A co-located facility can be comprised of a single tower, mast/pole or structure that supports two or more antennas, dishes, or similar wireless communication devices, that are separately owned or used by more than one public or private entity. Co-location can consist of additions or extensions made to existing towers so as to provide enough space for more than one user, or it can involve the construction of a new replacement tower with more antenna space that supplants an older tower with less capacity. Placing new wireless communication facilities/antennas upon existing or new P. G.& E. or other utility towers or poles (e.g., “microcell” sites) is also considered co-location.

“Communication equipment shelter” means a structure located at a base station designed principally to enclose equipment used in connection with telecommunication transmissions.

“dBm” means the unit of measure of the power level of an electromagnetic signal expressed in decibels referenced to one milliwatt.

“Dish antenna” means any device incorporating a reflective surface that is solid, open mesh, or bar configured that is shallow dish, cone, horn, or cornucopia-shaped and is used to transmit and/or receive electromagnetic signals.

“Equipment building, shelter or cabinet” means a cabinet or building used to house equipment used by wireless communication providers at a facility.

“FAA” means the Federal Aviation Administration.

“Facility site” means a property, or any part thereof, which is owned or leased by one or more wireless service providers and upon which one or more wireless communication facility(s) and required landscaping are located.

“FCC” means the Federal Communications Commission, the Federal government agency responsible for regulating telecommunications in the United States.

“GHz” means gigahertz, or 1,000,000,000 hertz.

“Ground-mounted wireless communication facility” means any antenna with its base placed directly on the ground, or that is attached to a mast or pipe, with an overall height of not exceeding 16 feet from the ground to the top of the antenna.

Hertz. One hertz is a unit of measurement of an electric or magnetic field which reverses its polarity at a frequency of once per second (i.e., one cycle or wavelength per second).

“Least visually obtrusive,” with regard to wireless communication facilities, shall refer to technically feasible facility site and/or design alternatives that render the facility the most visually inconspicuous relative to other technically feasible sites and/or designs. It does not mean that the facility must be completely hidden, but it may require screening or other camouflaging so that the facility is not immediately recognizable as a wireless communication facility from adjacent properties and roads used by the public.

“Macrocell site” means a radio transceiver (i.e., transmits and receives signals) facility that is comprised of an unmanned equipment shelter (above or below ground) approximately 300 square feet per licensed provider, omni-directional whip, panel or microwave dish antennas mounted on a support structure (e.g., monopole, lattice tower) or building. A macrocell site typically includes 60 radio transmitters.

“Major modification to power output” means any of the following resulting in an increase in the wireless communication facility’s power output and/or increase in the intensity or change in the directionality of NIER propagation patterns: increase or intensification, or proposed increase or intensification, in power output or in size or number of antennas; change in antenna type or model; repositioning of antenna(s); change in number of channels per antenna above the maximum number previously approved by the County of Santa Cruz, including changes to any/all RF-generating equipment/componentry that are attached to antennas (e.g., conversion of wireless communication to wireless Internet that requires continuous transmitting at full power).

“Major modification to visual impact” means any increase or intensification, or proposed increase or intensification, in dimensions of an existing and/or permitted wireless communications facility (including, but not limited to, its telecommunications tower or other structure designed to support telecommunications transmission, receiving and/or relaying antennas and/or equipment) resulting in an increase of the visual impact of said wireless communications facility.

“MHz” means megahertz, or 1,000,000 hertz.

“Microcell site” means a small radio transceiver facility comprised of an unmanned equipment cabinet with a total volume of 100 cubic feet or less that is either under or aboveground, and one omni-directional whip antenna with a maximum length of five feet, or up to three small (approximately one foot by two feet or one foot by four feet) directional panel antennas, mounted on a single pole, an existing conventional utility pole, or some other similar support structure.

“Minor antenna” or “minor wireless communication facility” means any of the following:

(1) A ground- or building-mounted receive-only radio or television antenna that is: (a) six inches or less in diameter or width; and (b) 10 feet or less in height as measured from existing grade (including mast or pipe) or, for building mounted antennas, not exceeding the height limit for noncommercial antennas in the zoning district;

(2) A ground- or building-mounted citizens band radio antenna that is: (a) six inches or less in diameter or width; and (b) 10 feet or less in height as measured from existing grade (including mast or pipe) or, for building mounted antennas, not exceeding the height limit for noncommercial antennas in the zoning district;

(3) A ground- or building-mounted satellite receiving dish that: (a) is not more than one meter in diameter for a residential zoned parcel, or is not more than two meters in diameter for a commercial or industrial zoned parcel; and (b) does not exceed the height limit for noncommercial antennas in the zoning district; or

(4) A ground-, building-, or tower-mounted antenna operated on a noncommercial basis by a Federally licensed amateur radio operator as part of the amateur radio service, the height of which (including tower or mast) does not exceed the height limit for noncommercial antennas in the zoning district.

“MMDS” means multi-channel, multi-point distribution services (also known as “wireless cable”).

“Monitoring” means the measurement, by the use of instruments in the field, of radio-frequency/non-ionizing radiation exposure at a site as a whole, or from individual wireless communication facilities/towers/antennas/repeaters.

“Monitoring protocol” means an industry accepted radio-frequency (RF) radiation measurement protocol used to determine compliance with FCC RF radiation exposure standards, in accordance with the National Council on Radiation Protection and Measurements Reports 86 and 119 and consistent with the RF radiation modeling specifications of OET Bulletin 65 (or any superseding reports/standards), which is to be used to measure the emissions and determine radio-frequency radiation exposure levels from existing and new telecommunications facilities. RF radiation exposure measurements are to be taken at various locations, including those from which public RF exposure levels are expected to be the highest.

“Monopole” means a single pole-structure erected on the ground to support one or more wireless communication antennas.

“MTSOs” means mobile telephone switching offices.

“Non-ionizing electromagnetic radiation (NIER)” means radiation from the portion of the electromagnetic spectrum with frequencies of approximately 1,000,000 GHz and below, including all frequencies below the ultraviolet range, such as visible light, infrared radiation, microwave radiation, and radio frequency radiation.

“Nonmajor modification or maintenance activity” means a modification that is not a major modification to power output and is not a major modification to visual impact, or a maintenance activity that does not result in a major modification to power output or a major modification to visual impact.

“PCS” or “personal communications services” means digital wireless communications technology such as portable phones, pagers, faxes and computers. Also known as personal communications network (PCN).

“Personal wireless services” means commercial mobile services, unlicensed wireless services, and common carrier wireless exchange access services. These services include: cellular services, personal communication services, specialized mobile radio services, and paging services.

“PUC” or “CPUC” means the California Public Utilities Commission.

“Radio-frequency (RF) radiation” means radiation from the portion of the electromagnetic spectrum with frequencies below the infrared range (approximately 100 GHz and below), including microwaves, television VHF and UHF signals, radio signals, and low to ultra low frequencies.

“Repeater” means a small receiver/relay transmitter of relatively low power output designed to provide service to areas which are not able to receive adequate coverage directly from a base or primary station.

“Significant gap” means a gap in the service provider’s (applicant carrier’s) own personal wireless services network within the County of Santa Cruz, as defined in Federal case law interpretations of the Federal Telecommunications Act of 1996, including Sprint Spectrum v. Willoth (1999) 176 F.3d 630 and Cellular Telephone Company v. Zoning Board of Adjustment of the Borough of Ho-Ho-Kus (1999) 197 F.3d 64.

“Stealth technology/techniques” means camouflaging methods applied to wireless communication towers, antennas and/or other facilities, which render them visually inconspicuous.

“Structurally able” means the determination that a tower or structure is capable of carrying the load imposed by the new antennas under all reasonably predictable conditions as determined by professional structure engineering analysis.

“Structure-mounted wireless communication facility” means any immobile antenna (including panels and directional antennas) attached to a structure, such as a building facade or a water tower, or mounted upon a roof.

“Technically feasible” means capable of being accomplished based on existing technology compatible with an applicant’s existing network.

“Telecommunication tower (tower)” means a mast, pole, monopole, guyed tower, lattice tower, freestanding tower, or other structure designed and primarily used to support antennas.

Viable. Primarily in reference to the alternatives analysis, an alternative site for which there is a property owner/manager interested in renting, leasing, selling, or otherwise making available, space for one or more wireless communication facilities upon said site on reasonable terms commensurate with the market in Santa Cruz County.

“Visual impact” means an adverse effect on the visual and/or aesthetic environment. This may derive from blocking of a view, or introduction of elements that are incompatible with the scale, texture, form or color of the existing natural or human-made landscape, including the existing community character of the neighborhood.

“Wireless communication (or “telecommunications”) facility” means a facility, including all associated equipment, that supports the transmission and/or receipt of electromagnetic/radio signals. Wireless communication facilities include cellular radio-telephone service facilities; personal communications service facilities (including wireless Internet); specialized mobile radio service facilities and commercial paging service facilities. These types of facilities can include, but are not limited to, the following: antennas, repeaters, microwave dishes, horns, and other types of equipment for the transmission or receipt of such signals, telecommunication towers or similar structures supporting said equipment, equipment buildings, parking areas, and other accessory development.

“Wireless communication facilities GIS map” means a map maintained by the County in Geographic Information System (GIS) format that includes location and other identifying information about wireless communication facilities in the County.

(E) Exemptions. The types of wireless communications facilities, devices and activities listed below are exempt from the provisions of SCCC 13.10.660 through 13.10.668, inclusive, except that SCCC 13.10.663(A)(1) through (A)(8) shall continue to apply if the facility, device and/or activity requires a Coastal Zone approval pursuant to Chapter 13.20 SCCC. This exemption is not intended to limit or expand the scope of other Federal, State and local policies and regulations, including but not limited to the General Plan/Local Coastal Program, which apply to these facilities, devices and/or activities.

(1) A ground- or building-mounted citizens band or two-way radio antenna including any mast that is operated on a noncommercial basis.

(2) A ground-, building- or tower-mounted antenna operated on a noncommercial basis by a Federally licensed amateur radio operator as part of the amateur or business radio service.

(3) A ground- or building-mounted receive-only radio or television antenna which does not exceed the height requirements of the zoning district, and which, for a television dish antenna, does not exceed three feet in diameter if located on residential property within the exclusive use or control of the antenna user.

(4) A television dish antenna that is no more than six feet in diameter and is located in any area where commercial or industrial uses are allowed by the land use designation.

(5) Temporary mobile wireless services, including mobile wireless communication facilities and services providing public information coverage of news events, of less than two weeks’ duration. Any mobile wireless service facility intended to operate in any given location for more than two weeks is subject to the provisions of SCCC 13.10.660 through 13.10.668, inclusive.

(6) Handheld devices such as cell phones, business-band mobile radios, walkie-talkies, cordless telephones, garage door openers and similar devices.

(7) Wireless communication facilities and/or components of such facilities to be used solely for public safety purposes, installed and operated by authorized public safety agencies (e.g., County 911 emergency services, police, sheriff, and/or fire departments, first responder medical services, hospitals, etc.). Unless otherwise prohibited by law or exempted by action of the Board of Supervisors, public safety agencies shall be required to provide a map of facility locations for inclusion in the County's wireless communication facilities GIS map. If a wireless communication facility approved for an authorized public safety agency is not or ceases to be operated by an authorized public safety agency, and if a nonpublic safety agency operator proposes to use the approved facility, then the change in operator shall require that the new operator submit an application for the wireless communication facility to be evaluated as if it were a new facility subject to SCCC 13.10.660 through 13.10.668, inclusive, and the General Plan/Local Coastal Program. The facility shall not be operated by the new operator until a final decision has been rendered on the application.

(8) Any "minor" antenna or facility described under subsection (D) of this section.

(9) Any "nonmajor" modification or maintenance activities, as defined by subsection (D) of this section, carried out as part of the routine operation of existing permitted wireless communication facilities.

(10) Small scale, low powered, short-range and visually inconspicuous, wireless Internet transmitter/receivers (e.g., "wi-fi hotspots"). [Ord. 4769 § 2, 2004; Ord. 4743 § 2, 2003; Ord. 4714 § 2, 2003].

13.10.661 General requirements for wireless communications facilities.

All wireless communications facilities shall comply with all applicable goals, objectives and policies of the General Plan/Local Coastal Program, area plans, zoning regulations and development standards, are subject to Level V review (Zoning Administrator public hearing pursuant to Chapter 18.10 SCCC), are subject to the California Environmental Quality Act (CEQA), and shall comply with the following requirements:

(A) Required Permits. All new wireless communication facilities shall be subject to a commercial development permit, and also a coastal development permit if in the Coastal Zone. Additionally, a building permit will be required for construction of new wireless communication facilities.

(B) Prohibited Areas.

(1) Prohibited Zoning Districts. Wireless communication facilities are prohibited in the following zoning districts, unless a Telecommunications Act exception is approved pursuant to SCCC 13.10.668:

(a) Single-Family Residential (R-1);

(b) Multifamily Residential (RM);

(c) Single-Family Ocean Beach Residential (RB);

(d) Commercial Agriculture (CA); and

(e) The combining zone overlays for:

(i) Mobile Home Parks (MH).

(2) Prohibited Coastal Areas. Wireless communication facilities are prohibited in areas that are located between the sea and the seaward side of the right-of-way of the first through public road parallel to the sea, unless a Telecommunications Act exception is approved pursuant to SCCC 13.10.668.

(3) Prohibited School Grounds. Wireless communication facilities are prohibited on all public and private K—12 school sites, unless a Telecommunications Act Exception is approved pursuant to SCCC 13.10.668.

(4) Exceptions to Prohibited Areas Prohibition. If a Telecommunications Act exception is approved pursuant to SCCC 13.10.668 that allows for siting a wireless communications facility within any of the above-listed prohibited areas, then such facility shall comply with the remainder of SCCC 13.10.660 through 13.10.668, inclusive, and shall be co-located. Applicants proposing new wireless communication facilities in any of the above-listed prohibited areas must submit as part of their application an alternatives analysis, as described in SCCC 13.10.662(C). Non-co-located wireless communication facilities may be sited in the prohibited areas listed above only in situations where the applicant can prove that:

(a) The proposed wireless communication facility would eliminate or substantially reduce one or more significant gaps in the applicant carrier's network; and

(b) There are no viable, technically feasible, and environmentally (e.g., visually) equivalent or superior potential alternatives (i.e., sites and/or facility types and/or designs) outside the prohibited areas identified in subsection (B) of this section that could eliminate or substantially reduce said significant gap(s).

Any wireless communications facility and any associated development allowed in a prohibited area: (i) shall be sited and designed so that it is not visible from public vantage points to the maximum extent feasible; or (ii) where some portion or all of such a facility and/or any associated development is unavoidably sited and/or designed in a manner that makes it visible from public vantage points (and cannot be sited and/or designed to not be visible), that portion shall be screened and/or camouflaged so that it is inconspicuous and designed to blend seamlessly into the existing public view.

(C) Restricted Areas.

(1) Restricted Zoning Districts. Non-co-located wireless communication facilities are discouraged in the following zoning districts, subject to the exceptions described in subsection (C)(3) of this section and/or unless a Telecommunications Act exception is approved pursuant to SCCC 13.10.668:

(a) Residential Agricultural (RA);

(b) Rural Residential (RR);

(c) Special use (SU) with a residential General Plan designation; and

(d) The combining zone overlays for:

(i) Historic Landmarks (L); and

(ii) Salamander Protection Areas (SP).

(2) Restricted Coastal Right-of-Way Area. Wireless communications facilities are discouraged in the right-of-way of the first through public road parallel to the sea, subject to the exceptions described in subsection (C)(3) of this section. If a wireless communications facility is allowed within said right-of-way pursuant to subsection (C)(3) of this section, then the wireless communications facility shall, in addition to complying with the remainder of SCCC 13.10.660 through 13.10.668, inclusive, comply with all of the following:

(a) The facility shall be of the microcell site type (as defined in SCCC 13.10.660(D)) and:

(i) Shall be mounted upon an existing or replacement utility pole (where “replacement” means that there exists a utility pole in that location and it is immediately replaced with a pole that has the same or a reduced visual impact, and has the same or lesser dimensions as the existing utility pole); and

(ii) Shall have antennas no larger than one foot by two feet that are flush mounted and of a color that blends with that of the supporting utility pole; and

(iii) Shall have an equipment cabinet that is no more than 24 inches high, 18 inches wide, and 10 inches deep if mounted upon the utility pole or on the ground, or is located in an underground vault; and

(iv) Shall be fully camouflaged through stealth techniques to render the facility as visually inconspicuous as possible.

(b) The facility shall be located on the inland side of the right-of-way unless a location on the seaward side of the right-of-way would result in less visual impact; and

(c) The facility shall only be allowed in the coastal right-of-way provided the applicant's agreement(s) with the owner and operator of the right-of-way and the utility pole specifies that the facility shall be removed and the site restored by the applicant if informed by the owner and operator that the utility pole is to be removed because the utilities the pole supports are to be relocated underground.

(3) Exceptions to Restricted Area Prohibition. Wireless communication facilities (WCFs) that are co-located upon existing wireless communication facilities/towers or other utility towers/poles (e.g., P.G.&E. poles), and which do not significantly increase the visual impact of the existing facility/tower/pole, are allowed in the restricted zoning districts listed in subsection (C)(1) of this section. Proposed new wireless communication facilities at co-location/multi-carrier sites that would result in more than nine total individual antennas, and/or more than three above-ground equipment enclosures/shelters, located on the same parcel are considered to result in significant visual impacts and are prohibited, unless the applicant can prove that the proposed additional antennas/equipment will be camouflaged or otherwise made inconspicuous such that additional visual impacts are not created. Existing legal co-location/multi-carrier WCF sites that exceed these limits are allowed to retain their current number of antennas and equipment shelters/enclosures. Applicants proposing new non-co-located wireless communication facilities in the restricted areas must submit as part of their application an alternatives analysis, as described in SCCC 13.10.662(C). In addition to complying with the remainder of SCCC 13.10.660 through 13.10.668, inclusive, non-co-located wireless communication facilities may be sited in the restricted zoning districts listed above only in situations where the applicant can prove that:

(a) The proposed wireless communication facility would eliminate or substantially reduce one or more significant gaps in the applicant carrier's network; and

(b) There are no viable, technically feasible, and environmentally (e.g., visually) equivalent or superior potential alternatives (i.e., sites and/or facility types and/or designs) outside the prohibited and restricted areas identified in subsections (B) and (C) of this section that could eliminate or substantially reduce said significant gap(s).

(D) Compliance with FCC Regulations. Wireless communication facilities shall comply with all Federal Communications Commission (FCC) rules, regulations, and standards. Inhabitants of the County shall be protected from the possible adverse health effects associated with exposure to harmful levels of NIER (non-ionizing electromagnetic radiation) by ensuring that all wireless communication facilities comply with NIER standards set by the FCC.

(E) Compliance with FAA Regulations. Wireless communication facilities shall comply with all applicable criteria from the Federal Aviation Administration (FAA) and shall comply with adopted airport safety regulations for Watsonville Municipal Airport (Chapter 13.12 SCCC).

(F) Site Selection—Visual Impacts. Wireless communication facilities shall be sited in the least visually obtrusive location that is technically feasible, unless such site selection leads to other resource impacts that make such a site the more environmentally damaging location overall.

(G) Co-Location. Co-location of new wireless communication facilities into/onto existing wireless communication facilities and/or existing telecommunication towers is generally encouraged if it does not create significant visual impacts. Proposed new wireless communication facilities at co-location/multi-carrier sites that would result in more than nine total individual antennas, and/or more than three above-ground equipment enclosures/shelters, located on the same parcel are considered to result in significant visual impacts and are prohibited, unless the applicant can prove that the proposed additional antennas/equipment will be camouflaged or otherwise made inconspicuous such that additional visual impacts are not created. Existing legal co-location/multi-carrier WCF sites that exceed these limits are allowed to retain their current number of antennas and equipment shelters/enclosures. Co-location may require that height extensions be made to existing towers to accommodate additional users, or may involve constructing new multi-user capacity towers that replace existing single-user capacity towers. Where the visual impact of an existing tower/facility must be increased to allow for co-location, the potential increased visual impact shall be weighed against the potential visual impact of constructing a new separate tower/facility nearby. Where one or more wireless communication tower/facilities already exist on the proposed site location, co-location shall be required if it will not significantly increase the visual impact of the existing facilities, or result in more than nine total individual antenna panels and/or three above-ground equipment enclosures/shelters located on the same parcel, unless the applicant can prove that the proposed additional antennas/equipment will be camouflaged or otherwise made inconspicuous such that additional visual impacts are not created. This may require that the existing tower(s) on the site be dismantled and its antennas be mounted upon the new tower, particularly if the new tower would be less visually obtrusive than the existing tower(s). If a co-location agreement cannot be obtained, or if co-location is determined to be technically infeasible, documentation of the effort and the reasons why co-location was not possible shall be submitted.

(H) Public Notification. Public hearing notice shall be provided pursuant to SCCC 18.10.223. However, due to the potential adverse visual impacts of wireless communication facilities the neighboring parcel notification distance for wireless communication facility applications is increased from the normal 300 feet to 1,000 feet from the outer boundary of the subject parcel. To further increase public notification, on-site visual mock-ups as described in SCCC 13.10.662(D) are also required for all proposed wireless communication facilities, except for co-located and microcell facilities that do not represent a major modification to visual impact as defined in SCCC 13.10.660(D).

(I) Major Modification to Power Output. Any proposed major modification that would increase the power output of a wireless communication facility, as defined in SCCC 13.10.660(D), shall require the

submission of an affidavit by a professional engineer registered in the State of California that the proposed facility improvements will not result in RF exposure levels to the public in excess of the FCC's NIER exposure standard. In addition, within 90 days of commencement of operation of the modified facility, the applicant shall conduct RF exposure level monitoring at the site, utilizing the monitoring protocol, and shall submit a report to the Planning Department documenting the results of said monitoring.

(J) Major Modification to Visual Impact. Any proposed major modification that would increase the visual impact of a wireless communication facility, as defined in SCCC 13.10.660(D), shall be subject to all requirements of SCCC 13.10.660 through 13.10.668, inclusive.

(K) Transfer of Ownership. In the event that the original permittee sells its interest in a wireless communication facility, the succeeding carrier shall assume all responsibilities concerning the project and shall be held responsible to the County for maintaining consistency with all project conditions of approval, including proof of liability insurance. A new contact name for the project shall be provided by the succeeding carrier to the Planning Department within 30 days of transfer of interest of the facility. [Ord. 5020 §§ 1, 2, 2008; Ord. 4769 § 2, 2004; Ord. 4743 § 2, 2003; Ord. 4714 § 2, 2003].

13.10.662 Application requirements for wireless communication facilities.

All new wireless communication facilities must be authorized by a commercial development permit, and also by a coastal development permit if located in the Coastal Zone, and are subject to the following permit application requirements:

(A) Preapplication Meeting. All applicants for proposed wireless communication facilities are encouraged to apply for the development review group process, pursuant to Chapter 18.10 SCCC, in order to allow Planning Department staff to provide feedback to the applicant regarding facility siting and design prior to formal application submittal.

(B) Submittal Information—All Applications. For all wireless communication facilities, in addition to the submittal requirements for Level V projects as specified in SCCC 18.10.210(B), the information listed below must accompany each application (for the purpose of permit processing, the Planning Director or his/her designee may release an applicant from having to provide one or more of the pieces of information on this list upon a written finding that in the specific case involved said information is not necessary to process or make a decision on the application being submitted):

(1) The identity and legal status of the applicant, including any affiliates.

(2) The name, address, and telephone number of the officer, agent or employee responsible for the accuracy of the application information.

(3) The name, address, and telephone number of the owner, and agent representing the owner, if applicable, of the property upon which the proposed wireless communication facility is to be built and title reports identifying legal access.

(4) The address and assessor parcel number(s) of the proposed wireless communication facility site, including the precise latitude/longitude coordinates (NAD 83) in decimal degree format, of the proposed facility location on the site.

(5) A description of the applicant service provider's existing wireless communication facilities network, and the provider's currently proposed facilities and anticipated future facilities for all proposed sites for which an application has been submitted, and for all proposed sites for which site access rights or agreements have been secured by the provider. This must include a map, and a table (in hardcopy and digital formats) listing facility situs/addresses, site names/identification, facility types, and precise latitude/longitude coordinates (NAD 83) in decimal degree format, for all of the applicant carrier's existing and proposed facilities, within both the unincorporated and incorporated areas of Santa Cruz County, for inclusion on the County's wireless communication facility GIS map. In lieu of submitting this information with multiple applications, if this information has been previously submitted by the applicant, the applicant alternatively may certify in writing that none of the submitted information has changed. Information regarding proposed network expansions will be kept confidential by the County if identified in writing as trade secrets by the applicant.

(6) A description of the wireless communication services that the applicant intends to offer to provide, or is currently offering or providing, to persons, firms, businesses or institutions within both the unincorporated and incorporated areas of Santa Cruz County.

(7) Information sufficient to determine that the applicant has applied for and/or received any certificate of authority required by the California Public Utilities Commission (if applicable) to provide wireless communications services or facilities within the unincorporated areas of the County of Santa Cruz.

(8) Information sufficient to determine that the applicant has applied for and/or received any building permit, operating license or other approvals required by the Federal Communications Commission (FCC) to provide services or facilities within the unincorporated areas of the County of Santa Cruz.

(9) Compliance with the FCC's non-ionizing electromagnetic radiation (NIER) standards or other applicable standards shall be demonstrated for any new wireless communication facility through submission of a written opinion submitted, by a professional engineer registered in the State of California, at the time of application.

(10) A plan for safety/security considerations, consistent with SCCC 13.10.664. A detailed description of the proposed measures to ensure that the public would be kept at a safe distance from any NIER transmission source associated with the proposed wireless communication facility, consistent with the NIER standards of the FCC or any potential future superseding standards, must be submitted as part of the application. The submitted plans must also show that the outer

perimeter of the facility site (or NIER hazard zone in the case of rooftop antennas) will be posted with bilingual NIER hazard warning signage that also indicates the facility operator and an emergency contact. The emergency contact shall be someone available on a 24-hour-a-day basis who is authorized by the applicant to act on behalf of the applicant regarding an emergency situation. For the protection of emergency response personnel, each wireless communication facility shall have an on-site emergency shut-off switch to de-energize all RF-related circuitry/componentry at the base station site (including a single shut-off switch for all facilities at a co-location site), or some other type of emergency shut-off by emergency personnel acceptable to the local Fire Chief, unless the applicant can prove that the FCC public exposure limits cannot be exceeded in the vicinity of the proposed facility, even if firefighters or other personnel work in close proximity to the antenna(s) or other RF radiation emitting devices/components.

(11) A detailed visual analysis, including computer photo simulations of the proposed wireless communication facility, shall be provided along with a written description from the installer. Photo simulations shall be submitted of the proposed wireless communication facility from various locations and/or angles from which the public would typically view the site. All photo simulations shall include a site map indicating the location from which the photo was taken, and a description of the methodology and equipment used to generate the simulation. More in-depth visual analyses shall be required for facilities proposed in visual resource areas designated in Section 5.10 of the County General Plan/LCP. The visual analysis shall identify and include all potential mitigation measures for visual impacts, consistent with the technological requirements of the proposed telecommunication service.

(12) Detailed maps of proposed wireless communication facility site and vicinity, in full-size and eight-and-one-half-inch by 11-inch reduction formats. Reduced plans shall include a graphic scale to allow for direct measurement from them. The following maps are required at the time of application submittal:

(a) Topographic/Area Map. Copy a portion of the most recent U.S.G.S. Quadrangle topographical map (with 20-foot contour intervals), at a scale of 1:24,000, indicating the proposed wireless communication facility site, and showing the area within at least two miles from the proposed site.

(b) Proximity Map and Aerial Photo. Prepare a map and an aerial photo at a scale of approximately one inch equals 200 feet (1:2,400), with contour intervals (for map only) no greater than 20 feet, showing the entire vicinity within a 1,500-foot radius of the wireless communication facility site, and including topography (map only), public and private roads, driveways on the subject parcel, buildings and structures, bodies of water, wetlands, landscape features, and historic sites. Draw a 1,500-foot radius circle on the map and aerial photo with the proposed facility at its center and indicate all structures within 1,500 feet of the proposed tower/antennas. Indicate property lines of the proposed tower/facility site parcel and of all parcels and rights-of-way abutting the tower/facility site parcel.

(13) Detailed plans and cross sections of proposed wireless communication facility and site, in full-size and eight-and-one-half-inch by 11-inch reduction formats. Reduced plans shall include a graphic scale to allow for direct measurement from them. Full-size plans shall be on 24-inch by 36-inch sheets, on as many as necessary, and at scales which are no smaller than those listed below. Each plan/cross section sheet shall have a title block indicating the project title, sheet title, sheet number, date, revision dates, scale(s), and signature(s) of the professional(s) who prepared the plan. The following plans and cross sections are required at the time of application submittal:

(a) Proposed Site Plan. Proposed wireless communication facility site layout, grading and utilities at a scale no smaller than one inch equals 40 feet (1:480) with topography drawn at a minimum of 10-foot contour intervals, showing existing utilities, property lines, existing buildings or structures, walls or fence lines, existing trees, areas with natural vegetation, existing water wells, springs, and the boundaries of any wetlands, watercourses and/or floodplains.

(i) Proposed tower/facility location and any associated components, including supports and guy wires, if any, and any accessory building (communication equipment shelter or other). Indicate property boundaries and setback distances from those boundaries to the base(s) of the tower/mast and to each facility-related structure and/or component. Include dimensions of all proposed improvements.

(ii) Indicate existing and proposed grade elevations where the existing and proposed grade intersects the proposed tower/mast, any guy wires, and all facility-related structures and/or components.

(iii) Proposed utilities, including distance from source of power, sizes of service available and required, locations of any proposed utility or communication lines, and whether underground or above ground.

(iv) Limits of area where vegetation is to be cleared or altered, and justification for any such clearing or alteration.

(v) Any direct or indirect alteration proposed to environmentally sensitive habitat areas, including wetlands and riparian corridors. Note that such alteration is only allowed under very specific circumstances and subject to specific requirements governed by the LCP's environmentally sensitive habitat area, wetland, riparian corridor, and other similar resource protection requirements; these requirements are not suspended in any way by this section.

(vi) Detailed drainage plans designed to control and direct all site runoff, including specific measures to control erosion and sedimentation, both during construction and as a permanent measure. The plan shall incorporate structural and nonstructural best

management practices (BMPs) designed to control the volume, velocity and pollutant load of stormwater and other runoff leaving the site.

(vii) Plans indicating locations and descriptions of proposed screening, landscaping, ground cover, irrigation systems, fencing, and any exterior lighting or signs. For any vegetation proposed to be used for screening purposes, the plans shall identify the expected dimensions and other characteristics of each individual species over time (including, at a minimum, on a yearly basis until maturity and/or maximum size is reached), and the expected dimensions and other characteristics of any overall vegetation screen over time (including, at a minimum, on a yearly basis until maturity and/or maximum size is reached). All species to be planted shall be non-invasive species native to Santa Cruz County, and specifically native to the project location. See also SCCC 13.10.663(B)(9).

(viii) Plans of proposed access driveway or roadway and parking area at the facility site. Include grading, drainage, and traveled width. Include a cross section of the access drive indicating the width, depth of gravel, paving or surface materials.

(ix) Plans showing any changes to be made to an existing facility's landscaping, screening, fencing, lighting, drainage, wetlands, grading, driveways or roadways, parking, or other infrastructure as a result of a proposed modification of the facility. Note that changes to wetlands and other sensitive habitat areas are only allowed under very specific circumstances and subject to specific requirements governed by the General Plan/LCP environmentally sensitive habitat area, wetland, and other similar resource protection requirements; these requirements are not suspended in any way by this section.

(b) Proposed Tower/Facility and Related Structures and/or Components.

(i) Plans, elevations, sections and details at appropriate scales, but no smaller than one inch equals 10 feet.

(ii) Two cross sections through proposed tower/facility drawn at right angles to each other, and showing the ground profile to at least 100 feet beyond the limit of any vegetation clearing or beyond the fall zone of the tower/mast, whichever is greater, and showing any guy wires or supports. Dimension the proposed height of the tower/mast above average grade at tower/mast base. Show all proposed antennas including their location on the tower/facility.

(iii) Detail proposed exterior finish of the tower/facility. Provide precise depictions, photo examples, and/or detail drawings for all stealth features (such as "monopine" branches).

(iv) Indicate relative height of the tower/facility as compared to the tops of surrounding trees as they presently exist, and to existing and proposed finished grades.

(v) Illustration of the modular structure of the proposed tower/facility indicating the heights of sections which could be removed or added in the future to adapt to changing communications conditions or demands (including potential future co-location).

(vi) A structural professional engineer's written description of the proposed tower/facility structure and its capacity to support additional antennas or other communication facilities at different heights and the ability of the tower to be shortened if future communication facilities no longer require the original height.

(vii) A description of the available space on the tower, providing illustrations and examples of the type and number of co-located wireless communication facilities which could be mounted on the structure.

(viii) Photographs precisely depicting the tower/facility type to be installed.

(c) Proposed Communications Equipment Shelter. Including (i) floor plans, elevations and cross sections at a scale of no smaller than one-quarter-inch equals one foot (1:48) of any proposed structural component, (ii) representative elevation views, indicating the roof, facades, doors and other exterior appearance and materials, and (iii) a description of all equipment to be contained therein, including number, make and model of each electromagnetic and radio-frequency apparatus to be installed.

(d) Proposed Equipment Plan.

(i) Plans, elevations, sections and details at appropriate scales but no smaller than one inch equals 10 feet.

(ii) Number of antennas and repeaters, as well as the exact locations, of antenna(s) and all repeaters (if any) located on a map as well as by degrees, minutes and seconds of latitude and longitude (in decimal degree format).

(iii) Mounting locations on tower or structure, including height above existing and proposed finished grades.

(iv) A recent survey of the facility site at a scale no smaller than one inch equals 40 feet (1:480) showing horizontal and radial distances of antenna(s) to nearest point on property line, and to the nearest dwelling unit.

(v) For applications for new wireless communication facilities in any of the prohibited or restricted areas, as set forth in SCCC 13.10.661(B) and (C), the applicant must also disclose:

A. Number, type(s), manufacturer(s) and model number(s) for all antennas and other RF-generating equipment.

B. For each antenna, the antenna gain and antenna radiation pattern.

C. Number of channels per antenna, projected and maximum.

D. Power input to each antenna.

E. Power output, in normal use and at maximum output for each antenna and all antennas as an aggregate.

F. Output frequency of the transmitter(s).

(vi) For modification of an existing facility with multiple emitters, the results of an intermodulation study to predict the interaction of the additional equipment with existing equipment.

(14) If co-location is not proposed, the applicant shall provide information pertaining to the feasibility of joint-use antenna facilities, and discuss the reasons why such joint use is not a viable option or alternative to a new facility site. Such information shall include:

(a) Whether it is feasible to locate proposed sites where facilities currently exist;

(b) Information on the existing structure that is closest to the site of the applicant's proposed facility relative to the existing structure's structural capacity, radio frequency interface, or incompatibility of different technologies, which would include mechanical or electrical incompatibilities; and

(c) Written notification of refusal of the existing structure owner to lease space on the structure.

(15) For any application that involves a major modification to, or replacement of, an applicant's wireless communication facility, the applicant shall submit a brief narrative description and any supporting graphics (such as plans, photos, relevant literature, etc.) detailing any changes in wireless communication facility technologies that would allow the existing facility to be modified to provide for the same or increased level of service with less environmental impact, including less visual resource impact, as technically feasible.

(C) Alternatives Analysis. For applications for wireless communication facilities proposed to be located in any of the prohibited areas specified in SCCC 13.10.661(B) and non-co-located wireless communication facilities proposed to be located in any of the restricted areas specified in 13.10.661(C), an alternatives analysis must be submitted by the applicant, subject to independent RF engineering review, which shall at a minimum:

(1) Identify and indicate on a map, at a minimum two viable, technically feasible, and potentially environmentally equivalent or superior alternative locations outside the prohibited and restricted

areas which could eliminate or substantially reduce the significant gap(s) in the applicant carrier's network intended to be eliminated or substantially reduced by the proposed facility. If there are fewer than two such alternative locations, the applicant must provide evidence establishing that fact. The map shall also identify all locations where an unimpaired signal can be received to eliminate or substantially reduce the significant gap(s). For all non-co-located wireless communication facilities proposed in a restricted/prohibited area, the applicant must also evaluate the potential use of one or more microcell sites (i.e., smaller facilities often mounted upon existing or replacement utility poles), and the use of repeaters, to eliminate or substantially reduce said significant gaps in lieu of the proposed facility. For each alternative location so identified, the applicant shall describe the type of facility and design measures that could be used at that location so as to minimize negative resource impacts (e.g., the use of stealth camouflaging techniques).

(2) Evaluate the potential for co-location with existing wireless communication facilities as a means to eliminate or substantially reduce the significant gap(s) in the applicant carrier's network intended to be eliminated or substantially reduced by the proposed facility.

(3) Compare, across the same set of evaluation criteria and to similar levels of description and detail, the relative merits of the proposed site with those of each of the identified technically feasible alternative locations and facility designs. Such comparison analysis shall rank each of the alternatives (i.e., the proposed location/facility and each of the technically feasible location/design alternatives) in terms of impacts (i.e., from least to most environmentally damaging), and shall support such ranking with clear analysis and evidence.

(4) Include photo-simulations of each of the alternatives (i.e., the proposed location/facility and each of the technically feasible location/design alternatives).

(5) Document good faith and diligent attempts to rent, lease, purchase or otherwise obtain the use of at least two of the viable, technically feasible alternative sites which may be environmentally equivalent or superior to the proposed project site. The decision-making body may determine that an alternative site is not viable if good faith attempts to rent, lease, purchase or otherwise obtain the site have been unsuccessful.

The Planning Director (or his/her designee) or the decision-making body may also require an alternatives analysis for proposed wireless communication facility projects that are located in environmentally sensitive areas other than those set forth in SCCC 13.10.661(B) and/or (C), such as visual resource areas as identified in General Plan/LCP Section 5.10.

(D) On-Site Visual Demonstration Structures (Mock-Ups). On-site visual demonstration structures (i.e., mock-ups) shall be required for all proposed wireless communication facilities, except for co-located and microcell facilities that do not represent a major modification to visual impact as defined in SCCC 13.10.660(D). For proposed rooftop or ground-mounted antennas, a temporary mast approximating the dimensions of the proposed facility shall be raised at the proposed antenna/mast location. For proposed

new telecommunications towers the applicant will be required to raise a temporary mast at the maximum height and at the location of the proposed tower. At minimum, the on-site demonstration structure shall be in place prior to the first public hearing to consider project approval, on at least two weekend days and two weekdays between the hours of 8:00 a.m. to 6:00 p.m., for a minimum of 10 hours each day. A project description, including photo simulations of the proposed facility, shall be posted at the proposed project site for the duration of the mock-up display. The Planning Director or his/her designee may release an applicant from the requirement to conduct on-site visual mock-ups upon a written finding that in the specific case involved said mock-ups are not necessary to process or make a decision on the application and would not serve as effective public notice of the proposed facility.

(E) Amendment. Each applicant/registrant shall inform the County within 30 days of any change of the information required pursuant to SCCC 13.10.660 through 13.10.668, inclusive.

(F) Technical Review. The applicant will be notified if an independent technical review of any submitted technical materials is required. The Planning Director or his/her designee shall review and, in his or her discretion, procure additional information and data as may assist him/her in reviewing the following: (1) reports concerning conformance with the FCC RF radiation exposure levels; (2) reports concerning the need for a facility; and/or (3) reports concerning availability or suitability of alternatives to a proposed facility. The Planning Director may employ, on behalf of the County, an independent technical expert or experts to review any technical materials submitted including but not limited to those required under this section, and in those cases where a technical demonstration of unavoidable need or unavailability of alternatives is required. The review and procurement of such additional information/data shall be undertaken for all applications that seek approval of a facility in a prohibited or restricted area, unless the Planning Director, his/her designee, or the approving body determines in writing that such review is unnecessary to inform the decision-making process. In addition, the review and procurement of information for applications in other areas may be required if the Planning Director determines that such review is necessary to inform the decision-making process. The applicant shall pay all the costs of said review and may be required to deposit funds in advance to cover the estimated costs of said review. If clearly marked as such by the applicant, any trade secrets or proprietary information disclosed to the County, the applicant, or the expert hired shall remain confidential and shall not be disclosed to any third party.

(G) Technical Feasibility. For any technical infeasibility claims made, the applicant shall be required to conclusively demonstrate, including submitting adequate evidence to that effect, the reasons for the technical infeasibility.

(H) Fees for review of all commercial development permits for wireless communication facilities shall be established by resolution of the Board of Supervisors. [Ord. 4769 § 2, 2004; Ord. 4743 § 2, 2003; Ord. 4714 § 2, 2003].

13.10.663 General development/performance standards for wireless communication facilities.

(A) Site Location. The following criteria shall govern appropriate locations and designs for wireless communication facilities, including dish antennas and multi-channel, multi-point distribution services (MMDS)/wireless cable antennas, and may require the applicant to select an alternative site other than the site shown on an initial permit application for a wireless facility:

(1) Visual Character of Site. Site location and development of wireless communications facilities shall preserve the visual character, native vegetation and aesthetic values of the parcel on which such facilities are proposed, the surrounding parcels and road rights-of-way, and the surrounding land uses to the greatest extent that is technically feasible, and shall minimize visual impacts on surrounding land and land uses to the greatest extent feasible. Facilities shall be integrated to the maximum extent feasible to the existing characteristics of the site, and every effort shall be made to avoid, or minimize to the maximum extent feasible, visibility of a wireless communication facility within significant public viewsheds. Utilization of camouflaging and/or stealth techniques shall be encouraged where appropriate. Support facilities shall be integrated to the existing characteristics of the site, so as to minimize visual impact.

(2) Co-Location. Co-location is generally encouraged in situations where it is the least visually obtrusive option, such as when increasing the height/bulk of an existing tower would result in less visual impact than constructing a new separate tower in a nearby location. However, proposed new wireless communication facilities at co-location/multi-carrier sites that would result in more than nine total individual antennas, and/or more than three above-ground equipment enclosures/shelters, located on the same parcel are considered to result in significant visual impacts and are prohibited, unless the applicant can prove that the proposed additional antennas/equipment will be camouflaged or otherwise made inconspicuous such that additional visual impacts are not created. Existing legal co-location/multi-carrier WCF sites that exceed these limits are allowed to retain their current number of antennas and equipment shelters/enclosures.

(3) Ridgeline Visual Impacts. Wireless communication facilities proposed for visually prominent ridgeline, hillside or hilltop locations shall be sited and designed to be as visually unobtrusive as possible. Consistent with General Plan/LCP Policy 8.6.6, wireless communication facilities should be sited so the top of the proposed tower/facility is below any ridgeline when viewed from public roads in the vicinity. If the tower must extend above a ridgeline the applicant must camouflage the tower by utilizing stealth techniques and hiding it among surrounding vegetation.

(4) Site Disturbance. Disturbance of existing topography and on-site vegetation shall be minimized, unless such disturbance would substantially reduce the visual impacts of the facility.

(5) Exterior Lighting. Any exterior lighting, except as required for FAA regulations for airport safety, shall be manually operated and used only during night maintenance checks or in emergencies. The lighting shall be constructed or located so that only the intended area is illuminated and off-site glare is fully controlled.

(6) Aviation Safety. No wireless communication facility shall be installed within the safety zone or runway protection zone of any airport, airstrip or helipad within Santa Cruz County unless the airport owner/operator indicates that it will not adversely affect the operation of the airport, airstrip or helipad. In addition, no wireless communication facility shall be installed at a location where special painting or lighting will be required by the FAA regulations unless the applicant has demonstrated to the Planning Director that the proposed location is the only technically feasible location for the provision of personal wireless services as required by the FCC.

(7) Coastal Zone Considerations. New wireless communication facilities in any portion of the Coastal Zone shall be consistent with applicable policies of the County Local Coastal Program (LCP) and the California Coastal Act. No portion of a wireless communication facility shall extend onto or impede access to a publicly used beach. Power and telecommunication lines servicing wireless communication facilities in the Coastal Zone shall be required to be placed underground.

(8) Consistency with Other County Land Use Regulations. All proposed wireless communication facilities shall comply with the policies of the County General Plan/Local Coastal Plan and all applicable development standards for the zoning district in which the facility is to be located, particularly policies for protection of visual resources (i.e., General Plan/LCP Section 5.10). Public vistas from scenic roads, as designated in General Plan Section 5.10.10, shall be afforded the highest level of protection.

(9) Visual Impacts to Neighboring Parcels and Public Schools. To minimize visual impacts to surrounding residential uses and public primary or secondary schools, the base of any new freestanding telecommunications tower or building/roof-mounted wireless communication facility shall be set back from the property line of any residentially zoned parcel, or the property line for any public primary or secondary school, a distance equal to five times the height of the tower if mounted upon a telecommunications tower, or a minimum of 300 feet, whichever is greater. This requirement may be waived by the decision-making body if the applicant can prove that the wireless communication facility will be camouflaged or otherwise made inconspicuous such that visual impacts are not created, or if the applicant can prove that a significant area proposed to be served would otherwise not be provided personal wireless services by the subject carrier, including proving that there are no viable, technically feasible, environmentally equivalent or superior alternative sites outside the prohibited and restricted areas designated in SCCC 13.10.661(B) and (C).

(10) Setbacks. All components of new wireless communication facilities must comply with the setback standards for the applicable zoning district. Depending upon specific site constraints and circumstances, this requirement may not apply to antennas proposed to be co-located on existing towers or utility poles (e.g., microcell sites), nor to underground equipment shelters, if it would prohibit use of the proposed facility site.

(B) Design Review Criteria. The following criteria apply to all wireless communication facilities:

(1) Nonflammable Materials. All wireless communication facilities shall be constructed of nonflammable material, unless specifically approved and conditioned by the County to be otherwise (e.g., when a wooden structure may be necessary to minimize visual impact).

(2) Tower Type. All telecommunication towers shall be self-supporting monopoles except where satisfactory evidence is submitted to the appropriate decision-making body that a nonmonopole (such as a guyed or lattice tower) is required or environmentally superior. All guy wires must be sheathed for their entire length with a plastic or other suitable covering.

(3) Support Facilities. The County strongly encourages all support facilities, such as equipment shelters, to be placed in underground vaults, so as to minimize visual impacts. Any support facilities not placed underground shall be located and designed to minimize their visibility and, if appropriate, disguise their purpose to make them less prominent. These structures should be no taller than 12 feet in height, and shall be designed to blend with existing architecture and/or the natural surroundings in the area or shall be screened from sight by mature landscaping.

(4) Exterior Finish. All support facilities, poles, towers, antenna supports, antennas, and other components of communication facilities shall be of a color approved by the decision-making body. If a facility is conditioned to require paint, it shall initially be painted with a flat (i.e., nonreflective) paint color approved by the decision-making body, and thereafter repainted as necessary with a flat paint color, unless it is determined that flat paint color would lead to more adverse impact than would another type of paint color. Components of a wireless communication facility which will be viewed against soils, trees, or grasslands shall be of a color or colors consistent with these landscapes. All proposed stealth tree poles (e.g., “monopines”) must use bark screening that approximates natural bark for the entire height and circumference of the monopole visible to the public, as technically feasible.

(5) Visual Impact Mitigation. Special design of wireless communication facilities may be required to mitigate potentially significant adverse visual impacts, including appropriate camouflaging or utilization of stealth techniques. Use of less visually obtrusive design alternatives, such as “microcell” facility types that can be mounted upon existing utility poles, is encouraged. Telecommunication towers designed to look like trees (e.g., “monopines”) may be favored on wooded sites with existing similar looking trees where they can be designed to adequately blend with and/or mimic the existing trees. In other cases, stealth-type structures that mimic structures typically found in the built environment where the facility is located may be appropriate (e.g., small-scale water towers, barns, and other typical farm-related structures on or near agricultural areas). Rooftop or other building mounted antennas designed to blend in with the building’s existing architecture shall be encouraged. Co-location of a new wireless communication facility onto an existing telecommunication tower shall generally be favored over construction of a new tower. Owners/operators of wireless communication towers/facilities are required to maintain the appearance of the tower/facility, as approved, throughout its operational life. Public vistas from

scenic roads, as designated in General Plan/LCP Section 5.10.10, shall be afforded the highest level of protection.

(6) Height. The height of a wireless communication tower shall be measured from the existing undisturbed ground surface below the center of the base of said tower to the top of the tower itself or, if higher, to the tip of the highest antenna or piece of equipment attached thereto. In the case of building-mounted towers the height of the tower includes the height of the portion of the building on which it is mounted. In the case of "crank-up" or other similar towers whose height can be adjusted, the height of the tower shall be the maximum height to which it is capable of being raised. All towers shall be designed to be the shortest height possible so as to minimize visual impact. Any applications for towers of a height more than the allowed height for structures in the zoning district must include a written justification proving the need for a tower of that height and the absence of viable alternatives that would have less visual impact, and shall, in addition to any other required findings and/or requirements, require a variance approval pursuant to SCCC 13.10.230.

(7) Lighting. Except as provided for under subsection (A)(5) of this section, all wireless communication facilities shall be unlit except when authorized personnel are present at night.

(8) Roads and Parking. All wireless communication facilities shall be served by the minimum sized roads and parking areas feasible.

(9) Vegetation Protection and Facility Screening.

(a) In addition to stealth structural designs, vegetative screening may be necessary to minimize wireless communication facility visibility within public viewsheds. All new vegetation to be used for screening shall be compatible with existing surrounding vegetation. Vegetation used for screening purposes shall be capable of providing the required screening upon completion of the permitted facility (i.e., an applicant cannot rely on the expected future screening capabilities of the vegetation at maturity to provide the required immediate screening).

(b) Because Santa Cruz County contains many unique and threatened plant species and habitat areas, all telecommunications facilities to be located in areas of extensive natural vegetation shall be installed in such a manner so as to maintain the existing native vegetation. Where necessary, appropriate mature landscaping can be used to screen the facility. However, so as to not pose an invasive or genetic contamination threat to local gene pools, all vegetation proposed and/or required to be planted that is associated with a wireless communication facility shall be noninvasive species native to Santa Cruz County, and specifically native to the project location. Nonnative and/or invasive species shall be prohibited (such as any species listed on the California Exotic Pest Plant Council "Pest Plant List" in the categories entitled "A," "B," or "Red Alert"). Cultivars of native plants that may cause genetic pollution (such as all manzanita, oak, monkey flower, poppy, lupine, paintbrush

and ceanothus species) shall be prohibited in these relatively pristine areas. All wireless communication facility approvals in such areas shall be conditioned for the removal of nonnative invasive plants (e.g., iceplant) in the area disturbed by the facility and replanting with appropriate non-invasive native species capable of providing similar or better vegetated screening and/or visual enhancement of the facility unless the decision-making body determines that such removal and replanting would be more environmentally damaging than leaving the existing nonnative and/or invasive species in place (e.g., a eucalyptus grove that provides over wintering habitat for Monarch butterflies may be better left alone). All applications shall provide detailed landscape/vegetation plans specifying the non-invasive native plant species to be used, including identification of sources to be used to supply seeds and/or plants for the project. Any such landscape/vegetation plan shall be prepared by a qualified botanist experienced with the types of plants associated with the facility area. For purposes of this section, "mature landscaping" shall mean trees, shrubs or other vegetation of a size that will provide the appropriate level of visual screening immediately upon installation. All nursery stock, construction materials and machinery, and personnel shall be free of soil, seeds, insects, or microorganisms that could pose a hazard to the native species or the natural biological processes of the areas surrounding the site (e.g., Argentine ants or microorganisms causing sudden oak death or pine pitch canker disease). Underground lines shall be routed outside of plant drip lines to avoid damage to tree and large shrub root systems to the maximum extent feasible.

(c) No actions shall be taken subsequent to project completion with respect to the vegetation present that would increase the visibility of the facility itself or the access road and power/telecommunication lines serving it. All owners of the property and all operators of the facility shall be jointly and severally responsible for maintenance (including irrigation) and replacement of all required landscaping for as long as the permitted facility exists on the site.

(10) Fire Prevention/Emergency Response. All wireless communication facilities shall be designed and operated in such a manner so as to minimize the risk of igniting a fire or intensifying one that otherwise occurs. To this end, all of the following measures shall be implemented for all wireless communication facilities, when determined necessary by the Fire Chief:

(a) At least one-hour fire resistant interior surfaces shall be used in the construction of all buildings;

(b) Rapid entry (KNOX) systems shall be installed as required by the Fire Chief;

(c) Type and location of vegetation, screening materials and other materials within 10 feet of the facility and all new structures, including telecommunication towers, shall have review for fire safety purposes by the Fire Chief. Requirements established by the Fire Chief shall be followed;

(d) All tree trimmings and trash generated by construction of the facility shall be removed from the property and properly disposed of prior to building permit finalization or commencement of operation, whichever comes first; and

(e) For the protection of emergency response personnel, at any wireless communication facility where there is the possibility that RF radiation levels in excess of the FCC public exposure limit could be experienced by emergency response personnel working in close proximity to antennas/RF-emitting devices, said facility shall have an on-site emergency power shut-off (e.g., "kill switch") to de-energize all RF-related circuitry/componentry at the base station site, or some other method (acceptable to the local Fire Chief) for de-energizing the facility. For multi-facility (co-location) sites where there is a possibility that RF radiation levels in excess of the FCC public exposure limit could be experienced by emergency response personnel working in close proximity to antennas/RF-emitting devices, a single power shut off switch (or other method acceptable to the local Fire Chief) shall be installed that will de-energize all facilities at the site in the event of an emergency.

(11) Noise and Traffic. All wireless communication facilities shall be constructed and operated in such a manner as to minimize the amount of disruption caused to nearby properties. To that end all the following measures shall be implemented for all wireless communication facilities:

(a) Outdoor noise producing construction activities shall only take place on nonholiday weekdays between the hours of 8:00 a.m. and 6:00 p.m. unless allowed at other times by the approving body; and

(b) Backup generators shall only be operated during power outages and for testing and maintenance purposes. If the facility is located within 100 feet of a residential dwelling unit, noise attenuation measures shall be included to reduce noise levels at the facility to a maximum exterior noise level of 60 Ldn at the property line and a maximum interior noise level of 45 Ldn within nearby residences.

(12) Facility and Site Sharing (Co-Location). New wireless communication towers should be designed to accommodate multiple carriers, and/or to be readily modified to accommodate multiple carriers, so as to facilitate future co-locations and thus minimize the need to construct additional towers, if it will not create significant visual impacts. Proposed new wireless communication facilities at co-location/multi-carrier sites that would result in more than nine total individual antennas, and/or more than three above-ground equipment enclosures/shelters, located on the same parcel are considered to result in significant visual impacts and are prohibited, unless the applicant can prove that the proposed additional antennas/equipment will be camouflaged or otherwise made inconspicuous such that additional visual impacts are not created. Existing legal co-location/multi-carrier WCF sites that exceed these limits are allowed to retain their current number of antennas and equipment shelters/enclosures. New telecommunications towers should be designed and constructed to accommodate up to no more than nine total individual antennas,

unless the applicant can prove that the additional antennas/equipment will be camouflaged or otherwise made inconspicuous such that additional visual impacts are not created. New wireless communication facility components, including but not limited to parking areas, access roads, and utilities, should also be designed so as not to preclude site sharing by multiple users, as technically feasible, in order to remove potential obstacles to future co-location opportunities. The decision-making body may require the facility and site sharing (co-location) measures specified in this section if necessary to comply with the purpose, goals, objectives, policies, standards, and/or requirements of the General Plan/Local Coastal Program, including SCCC 13.10.660 through 13.10.668, inclusive, and the applicable zoning district standards in any particular case. However, a wireless service provider will not be required to lease more land than is necessary for the proposed use. If room for potential future additional users cannot, for technical reasons, be accommodated on a new wireless communication tower/facility, written justification stating the reasons why shall be submitted by the applicant. Approvals of wireless communication facilities shall include a requirement that the owner/operator agrees to the following co-location parameters:

(a) To respond in a timely, comprehensive manner to a request for information from a potential co-location applicant, in exchange for a reasonable fee not in excess of the actual cost of preparing a response;

(b) To negotiate in good faith for shared use of the wireless communication facility by third parties; and

(c) To allow shared use of the wireless communication facility if an applicant agrees in writing to pay reasonable charges for co-location.

(13) Coastal Zone Design Criteria. In addition to the requirements set forth herein, all wireless communication facilities requiring a coastal development permit shall conform with the Coastal Zone design criteria requirements of SCCC 13.20.130.

(14) Signage. A notice shall be posted at the main entrance of all buildings or structures where structure-mounted or free-standing wireless communication facilities are located on the same parcel. The notice shall be 12 inches by 12 inches and shall inform the public that a wireless communication facility is located on the building, structure or property and shall be consistent with the requirements of Federal law.

(15) Existing Facilities. Where applications involve existing wireless communication facilities, modifications to the existing facilities to reduce environmental impacts, including visual impacts, shall be pursued as technically feasible. If such modifications would reduce impacts, then such modifications shall be made as feasible, technically and otherwise, provided the reduction in impact is roughly commensurate with the cost to make the modifications.

(16) Approved Project. Approvals of wireless communication facilities shall require that the facility, including, but not limited to, all stealth design measures and vegetation screening, be

maintained in its approved state for as long as it exists on the site. Approved facility plans, detailing the approved facility and all camouflaging elements, and including all maintenance parameters designed to ensure that camouflaging is maintained over the life of the project, shall be required for all approvals.

(17) Ongoing Evaluation. Wireless communication service providers are encouraged to evaluate their wireless communication facilities on a regular basis to ensure that they are consistent with the goals, objectives, policies, and requirements of the General Plan/Local Coastal Program, including specifically siting and design standards meant to minimize any negative impacts to visual resources and the character of the built and natural environment. Wireless service providers are encouraged to individually and collectively pursue modifications to their networks and/or individual facilities to reduce environmental impacts, including visual impacts; particularly over time as new technologies may be developed that allow for less visually intrusive wireless communication facilities, and/or a lesser number of them, while still allowing for the same or better level of wireless communication service associated with both any individual wireless service provider's facilities and the overall universe of wireless communication facilities in the County. [Ord. 5020 §§ 3—5, 2008; Ord. 4769 § 2, 2004; Ord. 4743 § 2, 2003; Ord. 4714 § 2, 2003].

13.10.664 Non-ionizing electromagnetic radiation (NIER) safety and monitoring requirements for wireless communication facilities.

Initial post-construction monitoring of wireless communication facility NIER/radio-frequency (RF) radiation exposures is required for all wireless communication facilities constructed under the auspices of SCCC 13.10.660 through 13.10.668, inclusive, to prove that all new wireless communication facilities operate in compliance with the FCC RF radiation exposure standards. NIER monitoring is to be conducted utilizing the Monitoring Protocol described in SCCC 13.10.660(D). The County may require that the required NIER/RF radiation monitoring reports described below may be independently reviewed by a qualified telecommunications/RF engineer, at the applicant's expense. The following applies to all wireless communication facilities:

(A) Public Health and Safety. No wireless communication facility shall be located or operated in such a manner that it poses, either by itself or in combination with other such facilities, a potential threat to public health. To that end, no telecommunication facility or combination of facilities shall produce at any time power densities in any area that exceed the FCC-adopted standard for human exposure, as amended, or any more restrictive standard subsequently adopted or promulgated by the Federal government. Areas in the immediate vicinity of all antennas or other transmitting devices in which the FCC RF radiation exposure standards could potentially be exceeded, especially near rooftop antennas, must be clearly demarcated and/or fenced off, with warning signs in English, Spanish and international symbols clearly visible.

(B) Non-Ionizing Electromagnetic Radiation (NIER) Measurements.

(1) Consistent with SCCC 13.10.662(B)(9), all applications for new wireless communication facilities must include written certification by a professional engineer registered in the State of California that the proposed facility will comply with the FCC's RF radiation exposure standard.

(2) Post-Construction NIER Measurement and Reporting. Monitoring of NIER/RF radiation to verify compliance with the FCC's NIER standards is required for all new wireless communication facilities and for all wireless communication facilities proposing to undergo a major modification of power output (as defined in SCCC 13.10.660(D)). This requirement shall be met through submission of a report documenting NIER measurements at the facility site within 90 days after the commencement of normal operations, or within 90 days after any major modification to power output of the facility. The NIER measurements shall be made, at the applicant's expense, by a qualified third-party telecommunications or radio-frequency engineer, during typical peak-use periods, utilizing the monitoring protocol described in SCCC 13.10.660(D). The report shall list and describe each transmitter/antenna present at the facility, indicating the effective radiated power of each (for co-located facilities this would include the antennas of all other carriers at the site). The report shall include field measurements of NIER emissions generated by the facility and also other emission sources, from various directions and particularly from adjacent areas with residential dwellings. The report shall compare the measured results to the FCC NIER standards for such facilities.

The report documenting the measurements and the findings with respect to compliance with the established FCC NIER exposure standard shall be submitted to the Planning Director within 90 days of commencement of facility operation. Failure to comply with this requirement may result in the initiation of permit revocation proceedings by the County.

(3) Failed Compliance. Failure to supply the required reports, or to remain in continued compliance with the NIER standard established by the FCC, or other regulatory agency if applicable shall be grounds for review of the use permit or other entitlement and other remedy provisions. [Ord. 4769 § 2, 2004; Ord. 4743 § 2, 2003; Ord. 4714 § 2, 2003].

13.10.665 Required findings for wireless communication facilities.

In order to grant any commercial development permit for a wireless communication facility and/or any coastal development permit if the facility is located in the Coastal Zone, the approving body shall make the required development permit findings (SCCC 18.10.230) and the required coastal development permit findings if in the Coastal Zone (SCCC 13.20.110) as well as the following findings:

(A) That either: (1) the development of the proposed wireless communications facility as conditioned will not significantly affect any designated visual resources, environmentally sensitive habitat resources (as defined in the Santa Cruz County General Plan/LCP Sections 5.1, 5.10, and 8.6.6.), and/or other significant County resources, including agricultural, open space, and community character resources; or (2) there are no other environmentally equivalent and/or superior and technically feasible alternatives to the proposed wireless communications facility as conditioned (including alternative locations and/or

designs) with less visual and/or other resource impacts and the proposed facility has been modified by condition and/or project design to minimize and mitigate its visual and other resource impacts.

(B) That the site is adequate for the development of the proposed wireless communications facility and, for sites located in one of the prohibited and/or restricted areas set forth in SCCC 13.10.661(B) and (C), that the applicant has demonstrated that there are not environmentally equivalent or superior and technically feasible: (1) alternative sites outside the prohibited and restricted areas; and/or (2) alternative designs for the proposed facility as conditioned.

(C) That the subject property upon which the wireless communications facility is to be built is in compliance with all rules and regulations pertaining to zoning uses, subdivisions and any other applicable provisions of this title and that all zoning violation abatement costs, if any, have been paid.

(D) That the proposed wireless communication facility as conditioned will not create a hazard for aircraft in flight.

(E) That the proposed wireless communication facility as conditioned is in compliance with all FCC and California PUC standards and requirements.

(F) For wireless communication facilities in the Coastal Zone, that the proposed wireless communication facility as conditioned is consistent with all the applicable requirements of the Local Coastal Program.

Any decision to deny a permit for a wireless communication facility shall be in writing and shall be supported by substantial evidence and shall specifically identify the reasons for the decision, the evidence that led to the decision and the written record of all evidence. [Ord. 4769 § 2, 2004; Ord. 4743 § 2, 2003; Ord. 4714 § 2, 2003].

13.10.666 Site restoration upon termination/abandonment of wireless communication facilities.

(A) The site shall be restored as nearly as possible to its natural or preconstruction state within six months of termination of use or abandonment of the site.

(B) Applicant shall enter into a site restoration agreement, consistent with subsection (A) of this section, subject to the approval of the Planning Director. [Ord. 4769 § 2, 2004; Ord. 4743 § 2, 2003; Ord. 4714 § 2, 2003].

13.10.667 Indemnification for wireless communication facilities.

Each permit issued pursuant to SCCC 13.10.660 through 13.10.668, inclusive, shall have as a condition of the permit a requirement that the applicant defend, indemnify and hold harmless the County and its officers, agents, and employees from and against any claim (including attorney's fees) against the County, its officers, employees or agents to attack, set aside, void or annul the approval of the permit or any subsequent amendment of the permit. [Ord. 4769 § 2, 2004; Ord. 4743 § 2, 2003; Ord. 4714 § 2, 2003].

13.10.668 Telecommunications Act exception procedure.

If the application of the requirements or limitations set forth in SCCC 13.10.660 through 13.10.668, inclusive, including but not limited to applicable limitations on allowed land uses, would have the effect of violating the Federal Telecommunications Act as amended, the approving body shall grant a Telecommunications Act exception to allow an exception to the offending requirement or application. The applicant shall have the burden of proving that application of the requirement or limitation would violate the Federal Telecommunications Act, and that no alternatives exist which would render the approval of a Telecommunications Act exception unnecessary. [Ord. 4769 § 2, 2004; Ord. 4743 § 2, 2003; Ord. 4714 § 2, 2003].

VIA ELECTRONIC MAIL

July 12, 2012

Susan Craig
Supervising Coastal Planner
California Coastal Commission
725 Front Street, Suite 300
Santa Cruz, CA 95060

RE: Appeal A-3-SCO-12-006 (filed Feb. 28, 2012) of Santa Cruz County Application #111114 (submitted June 21, 2011)

Dear Ms. Craig:

Crown Castle NG West Inc., formerly known as NextG Networks of California, Inc, ("Crown") would like to confirm that it does not intend to construct the telecommunications hub that had been proposed for 25 Swanton Road, Davenport, California and described in the above referenced appeal as "a 192 s.f., 13', 6" tall equipment shelter (telecommunications hub) on an agricultural parcel."

Crown understands that the County of Santa Cruz will not be issuing any building permits for this part of the project. If at any time in the future, Crown's telecommunications network needs a telecommunications hub at this or any other location within the Coastal Zone, Crown will submit a new application to the appropriate jurisdiction and work with the Coastal Commission on finding an acceptable design.

Additionally, Crown has committed to reduce the size of the wireless base stations at the six "micro-cell" locations. The current base-station is 47" high x 14" wide x 8" deep, but it will be reduced to 32" high x 8.6" wide x 9.6" deep.

Crown hopes the Coastal Commission will find this additional information useful and requests its support of Crown's application #111114 for the pole attached equipment. I may be contacted by phone at 206-419-9800 or 408-468-5521 or by email at natasha.ernst@crowncastle.com.

Best regards,

Natasha Ernst
Government Relation & Utility Counsel

cc: Frank Barron

COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123
KATHLEEN MOLLOY PREVISICH, PLANNING DIRECTOR

July 13, 2012

Susan Craig, Coastal Planner
Calif. Coastal Commission
725 Front Street, Ste. 300
Santa Cruz, CA 95060

Re: Appeal A-3-SCO-12-006 (filed Feb. 28, 2012) of Santa Cruz County Application #111114 (submitted June 21, 2011)

Dear Ms. Craig,

We understand that the applicant of the aforementioned project, Crown Castle (formerly known as Next G Networks of California), has agreed to modify their proposal to address the concerns of your staff. Specifically, they no longer intend to construct the "Telecommunications Hub" that was proposed to be located on APN 058-022011 (25 Swanton Rd.), and they also intend to reduce the size of one of the two the equipment boxes, that are proposed to be installed upon each of the 6 microcell site utility poles, from the proposed 47" tall x 14" wide x 8" deep down to 32" tall x 8.6" wide x 9.6" deep.

This letter confirms that the County will not issue any building permit for this project that does not conform to these changes from what we originally approved.

Please feel free to contact me at (831) 454-3182, or the project planner Frank Barron (831-454-2530), if you have any questions regarding this matter.

Sincerely,

Steven Guiney
Principal Planner
Development Review Section

cc: Natasha Ernst, Crown Castle

Exhibit 8
A-3-SCO-12-006
1 of 1

VIA ELECTRONIC MAIL

May 2, 2012

Susan Craig
Supervising Coastal Planner
California Coastal Commission
725 Front Street, Suite 300
Santa Cruz, CA 95060

RE: Appeal A-3-SCO-12-006 (filed Feb. 28, 2012) of Santa Cruz County Application #111114 (submitted June 21, 2011)

Dear Ms. Craig:

As you know, on April 9, 2012, Carl Cabico, Director of DAS Implementation, and myself from NextG Networks of California, Inc., a wholly owned indirect subsidiary of Crown Castle International Corp (NYSE: CCI) ("Crown"), met with you, Madeline Cavalieri, District Manager, John Akeman, Coastal Planner, and were joined by phone by Louise Warren, Staff Counsel, to discuss the above referenced application, particularly as it pertains to six "microcell" attachments on existing utility poles in the public right of way in Santa Cruz County ("County").The purpose of this letter is to provide additional information as requested by the Coastal Commission.

During our meeting, The Coastal Commission requested additional information about how infrastructure could be constructed along this area of Highway 1 in order to provide Crown's services. As we discussed, Crown's authorized services are outlined in its Certificate of Public Convenience and Necessity ("CPCN") from the California Public Utilities Commission ("CPUC") in its Decision No. 03-01-061, issued January 30, 2003. Decision No. 03-01-061 authorizes Crown as a "limited facilities-based and resale provider of competitive local exchange services, and interexchange services." Crown provides these services by constructing distributed antenna system ("DAS") networks, which are fiber optic cable-fed networks with small wireless "node" attachments to existing utility poles, which the County of Santa Cruz ("County") characterizes roughly as "microcells" under its wireless ordinance (13.10.659 *et seq*), which was adopted in 2003 and does not contemplate DAS networks.

As you know, Crown is not a "wireless carrier." It has no Federal Communications Commission ("FCC") wireless spectrum and therefore does not and cannot provide "personal wireless services." Rather, Crown is "telephone corporation," with a statewide franchise under California Public Utilities ("P.U.") Code section 7901, which includes, but is not limited to, the right to place equipment on existing utility poles. Also, the CPUC has stated that when Crown attaches to existing utility poles, "it can be seen with certainty that there is no possibility that [it] will have an adverse effect upon the environment." CPUC, D.03-01-061 at 3. DAS networks are backbone infrastructure to provide traditional wireless carriers signal transport services over

fiber optic cable, but, again, Crown does not provide personal wireless services as contemplated by the County's wireless ordinance.

Additional Alternatives Analysis (SCCC 13.10.662(c))

During our conversation, you requested Crown provide more information regarding how Crown could support it customers with some alternative infrastructure designs. Crown's engineers have taken this request into consideration, and, at your instruction to "ignore" the actual feasibility or disfavored nature of these designs, Crown is providing supplemental information to the alternatives analysis it provided to the County as part of its Application #111114.

Scenario #1: Six New Poles in the Public Right of Way

In addition to Crown's authorization under CPUC Decision No. 03-01-061, Crown also has authorization from the CPUC to place *new* poles in the public right of way, as granted in Decision 07-04-045. Instead of using six existing utility poles, Crown could place six new utility poles in the public right of way, as allowed under P.U.Code section 7901, which states that telephone corporations may erect "poles" in the public right of way.

Crown would need to receive additional CEQA approval from the CPUC, but once that approval was obtained, Crown could conceivably construct six new poles in the public right of way in proximately to the current proposed locations for DAV02, DAV03, DAV04, DAV05, DAV09, and DAV10. These poles would need to be constructed on the opposite side of the existing utility pole line in order to avoid issues regarding physical access to the existing pole line, which could place five of them possibly on the seaward side of Highway 1, which is disfavored under County code 13.10.661(c)(2).

Each of these poles would need to be approximately 25-feet tall with the antennas mounted back-to-back at the top of the pole, for a total height of approximately 27.5 feet. If Crown constructed its own poles, it would be able to avoid the requirement to have the antennas horizontally separated two-feet from the centerline of the pole in the communication space, as required by General Order ("GO") 95. The necessary fiber and power cable connections would require new aerial crossings over the public right of way. An example of a new pole is attached.

Scenario #1 was considered as an alternative to attaching equipment to the existing poles already permitted in the public right of way. However, using existing poles was chosen because the County's wireless ordinance prefers co-located facilities, particularly in the coastal zone. *See* Santa Cruz County Zoning Regulations § 13.10.661(c)(3). Also, the existing utility pole line supports Crown's fiber optic cable, so attaching to the existing poles satisfies the technological requirements as well.

Scenario #2: Poles on Private Property

During our discussion, you also requested an analysis of how the network could be constructed by placing poles on private property entirely outside of the public right of way. Crown's radio frequency engineer examined this question as well and provides the following hypothetical analysis. As mentioned above, Crown would need to receive additional CEQA approval from the CPUC to construct any new poles.

DAV02, 03, and 04: New 50-foot Tower

The southern portion of this network is currently designed to have three DAS nodes attached to existing utility poles on the landward side of the Caltrans public right of way of Highway 1. If Crown were to build a tower on private property, it would need to construct a 50-foot tower located on a ridge near the existing DAV03 to support the same area. Crown's engineer selected a ridgeline above DAV03 in order to keep any tower as limited in height as possible (e.g., towers at lower elevations must be taller and vice versa). An illustration of the approximate height and location of the tower is attached. In addition to the tower itself, a portion of land approximately 20-feet x 20-feet would need to be leased to accommodate the foundation of the tower, and land for a new 10-foot road would need cleared and grated to provide access to the tower. There are no existing towers or similar structures in this area that may be used, other than the utility poles to which Crown has applied to attach.

The area on which this tower would need to be located is in a Commercial Agriculture (CA) zoned portion of the County. Wireless facilities are prohibited on CA-zoned land according to County code section 13.10.661(b)(1). By contrast, attaching to existing utility poles is "restricted," but not prohibited. *See* Santa Cruz County Zoning Code § 13.10.661(c)(2) (stating that "microcells" are allowed on the landward side of the public right of way). Therefore, placing three DAS nodes on existing poles is more in line with the County's wireless ordinance than building a new 50-foot tower on CA-zoned land.

Additionally, finding a willing landlord to lease a 20-foot x 20-foot area of land for the tower, along with a 10-foot wide new road for ingress in egress, is highly unlikely. Yet, that potential difficulty is overshadowed by the virtual impossibility of receiving zoning approval for the new road and tower from the County, and by extension the Coastal Commission, on CA-zoned land.

DAV05: New 20-foot Tower or Existing Utility Pole Off Public Right of Way.

The middle section of Crown's network is currently designed to have one DAS node on an existing utility pole in the public right of way of Swanton Road. The area around Swanton Road is considered a "scenic area" under the County code, with the ridgeline of this area considered "special scenic." The area surrounding DAV05 is CA-zoned land. See attached map. There is no existing wireless infrastructure in the vicinity that may be used.[1] Utility poles are the only existing infrastructure in the area.

[1] The cement factory tower in Davenport is too far south to provide any support as far north as DAV05 may.

Crown's proposed DAS node is currently located on an existing utility pole in the public right of way. If Crown were to move from this existing utility pole it could go to another existing utility pole that is off the public right of way or it could build a new pole outside the public right of way. These alternatives are illustrated as attached.

As discussed above, wireless facilities are prohibited on CA-zoned land according to County code section 13.10.661(b)(1). By contrast, attaching to existing utility poles, as currently proposed by Crown is "restricted," but not prohibited. *See* Santa Cruz County Zoning Code § 13.10.661(c)(2) (stating that microcells are allowed in the public right of way). Therefore, placing DAV05 on an existing pole is more in line with the County's wireless ordinance than constructing a new 20-foot pole or attaching to an existing pole on CA-zoned land.

Additionally, finding a willing landlord to lease land for the poles along with a 10-foot wide new road for ingress in egress is highly unlikely since this land is owned by CalPoly, which has repeatedly rejected proposals to place telecommunications infrastructure on its property. Yet, that issue is largely moot when compared to the remote likelihood of ever receiving a permit from the County, and by extension the Coastal Commission, for a new structure on or new roads over CA-zoned land, as illustrated by the Coastal Commission's objection to Crown's proposed (now withdrawn) non-wireless telecommunications hub at 25 Swanton Road.

DAV09 & 10: Increasing the Height of the Sprint Monopole

The northern section of Crown's network is currently designed to attach two DAS nodes on existing utility poles located on the landward side of the Caltrans public right of way of Highway 1. There is an existing monopole on the seaward side of Highway 1 on land owned by Big Creek Lumber. Crown has approached the owners of Big Creek Lumber about locating some non-wireless telecommunications equipment on its property, and the owners told Crown that it would not lease it any space. However, if the owners were interested in leasing Crown a portion of its property, Crown could increase the height of the existing Sprint monopole by approximately 20-feet to support the same area as nodes DAV09 and DAV10. An illustration of this tower height increase is attached.

However, this alternative is not feasible since the landowner will not grant permission. In addition, since tower is on the seaward side of Highway 1, increasing its height is disfavored in comparison with attaching to existing poles on the landward side of Highway 1, as Crown has proposed.

Due to the disfavored and prohibited nature of Scenario #2 under the County wireless ordinance, as well as the landowner opposition to leasing the required land for new and/or expanded poles, Scenario #2 was rejected because it would not be possible to get all, if any, of the necessary permits and leases.

Federal Telecommunications Act Exception (SCCC 13.10.668)

Additionally, as we discussed, a denial of Crown's permit would be an actual prohibition under the federal Telecommunications Act section 253 because Crown would not be able to provide the telecommunications services it is authorized to provide by the FCC and the CPUC. Crown has constructed 90% of its DAS network, but the network cannot operate without the related DAS nodes. The County's wireless ordinance makes an exception to its own code when it would result in a violation of the Federal Telecommunications Act. As we discussed, Crown currently has no services in this area, and this permit is essential to allowing Crown to begin providing telecommunications services to its customers. For this reason, Crown requested it be granted, and the County did grant, a Telecommunications Act exception in Application #111114. Crown requests the Coastal Commission recognize and uphold that exception.

Conclusion

Crown hopes the Coastal Commission will find this additional information useful and requests its support of Crown's application #111114 for the pole attached equipment. Please review the enclosed material and contact me to discuss how to move forward. I may be contacted by phone at 408-409-6606 or by email at nernst@nextgnetworks.net.

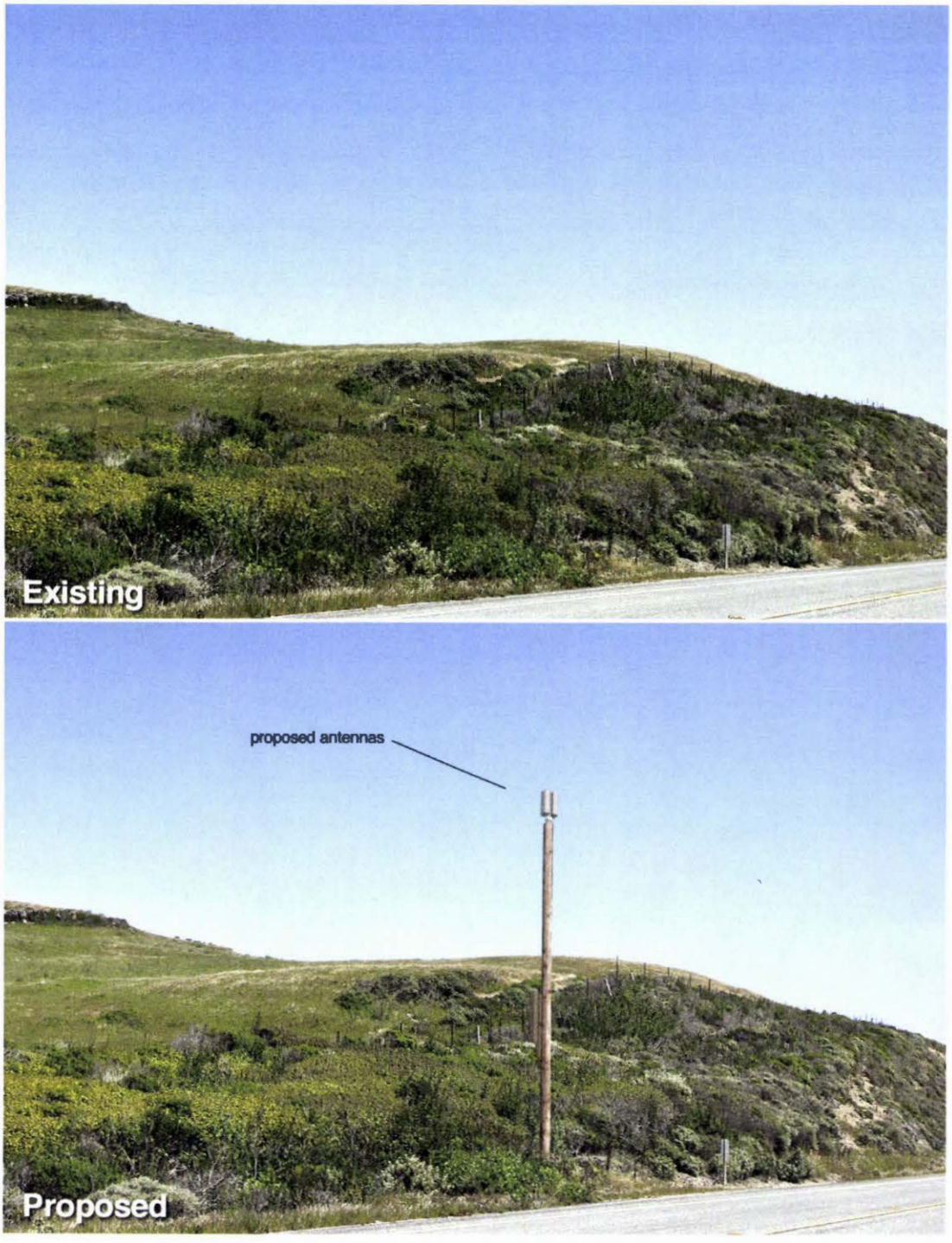
Best regards,

Natasha Ernst
Government Relation & Utility Counsel

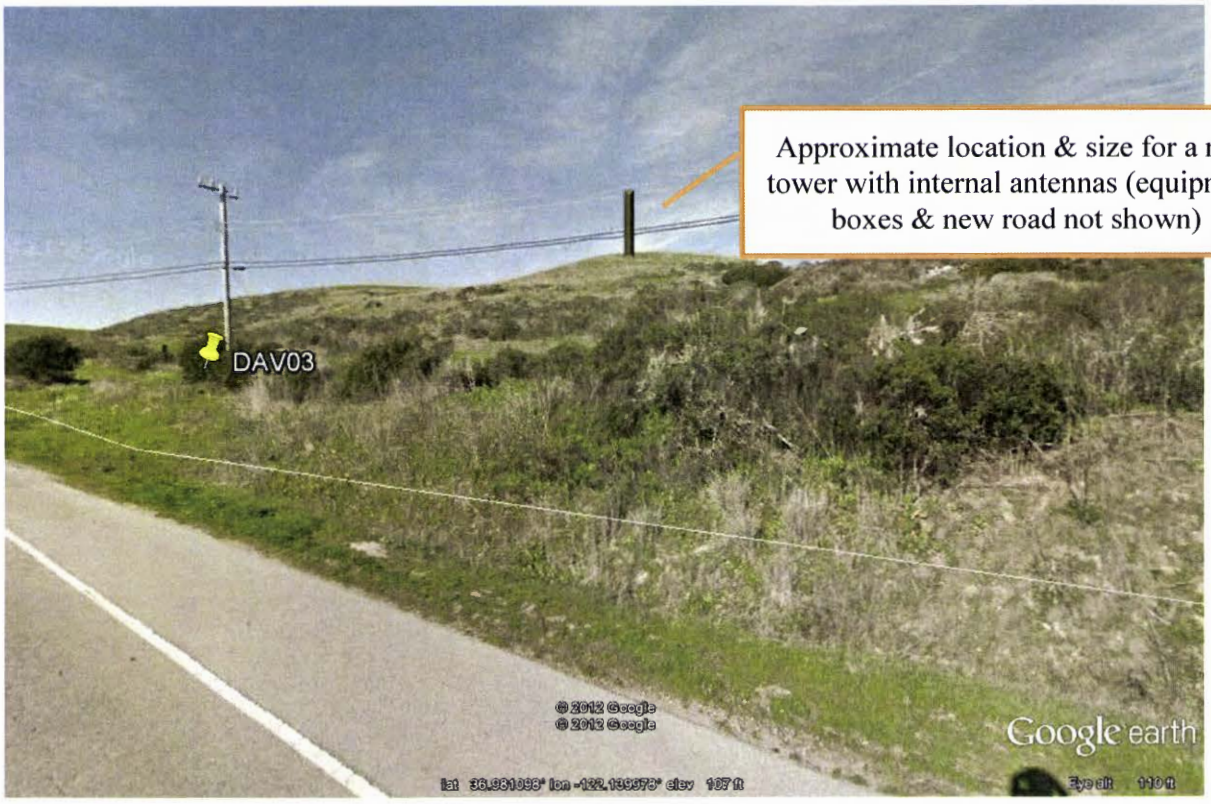
Enclosures:
Scenario #1: Six New Utility Poles in Public Right of Way: Example Pole
Scenario #2: New Tower on Ridge to Cover DAV02, 03 & 04
Scenario #2: DAV05 Surrounding Area
Scenario #2: Alternate Poles for DAV05
Scenario #2: DAV09 & 10: Increasing the Height of the Sprint Monopole

cc: Frank Barron

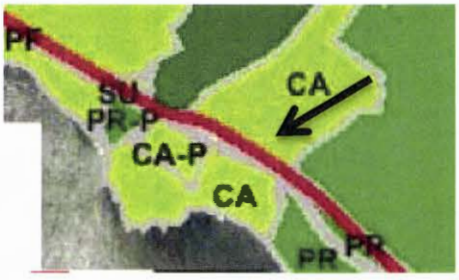
Scenario #1: Six New Utility Poles in Public Right of Way: Example Pole



Scenario #2: New Tower on Ridge for DAV02, 03 & 04

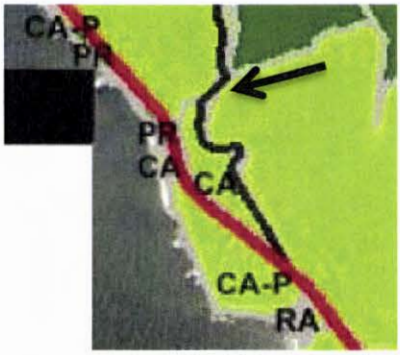


Approximate location DAV03 and alternative new tower on County Zoning Map:

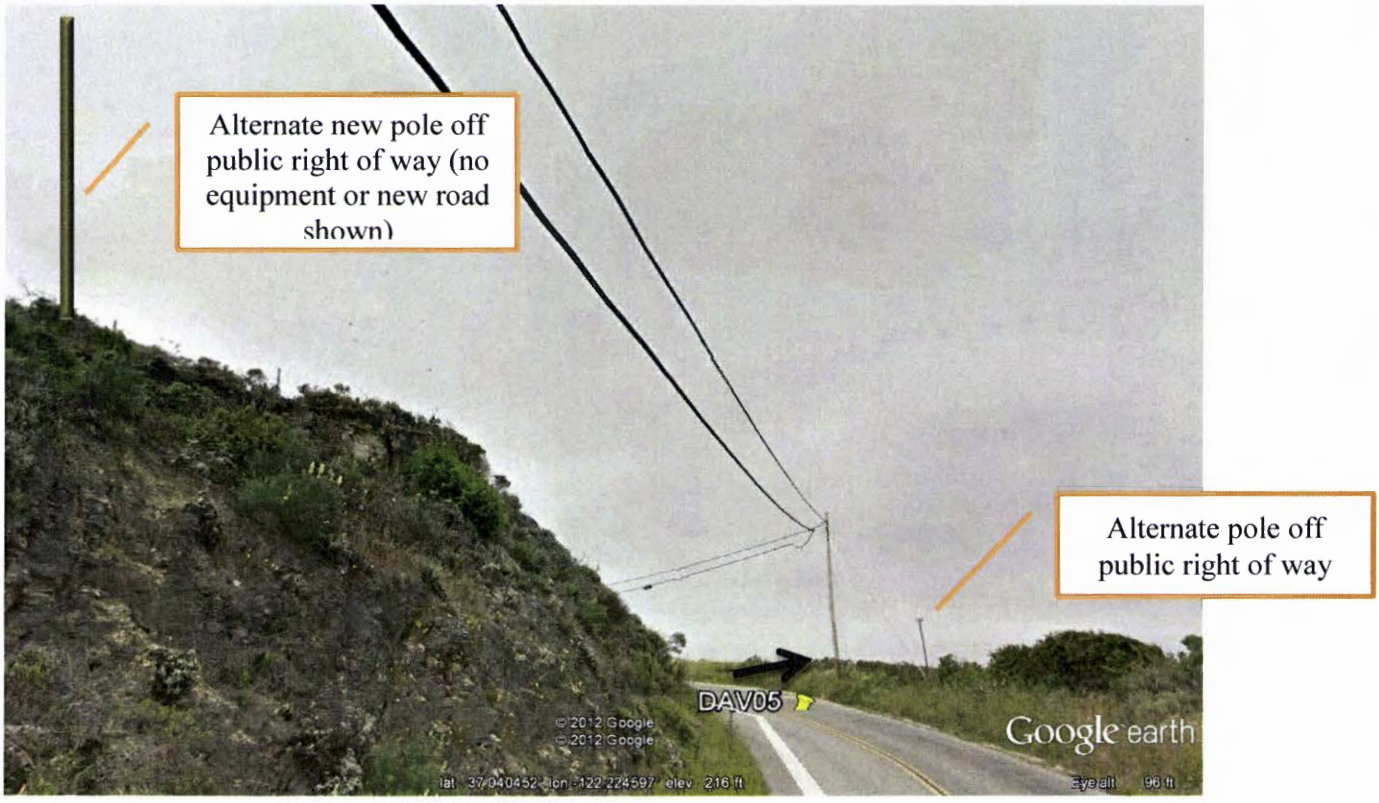


Scenario #2: DAV 05 Surrounding Area

Approximate location DAV05 on County Zoning Map:



Scenario #2: Alternate Poles for DAV05



Scenario #2: DAV09 & 10: Increasing the Height of the Sprint Monopole

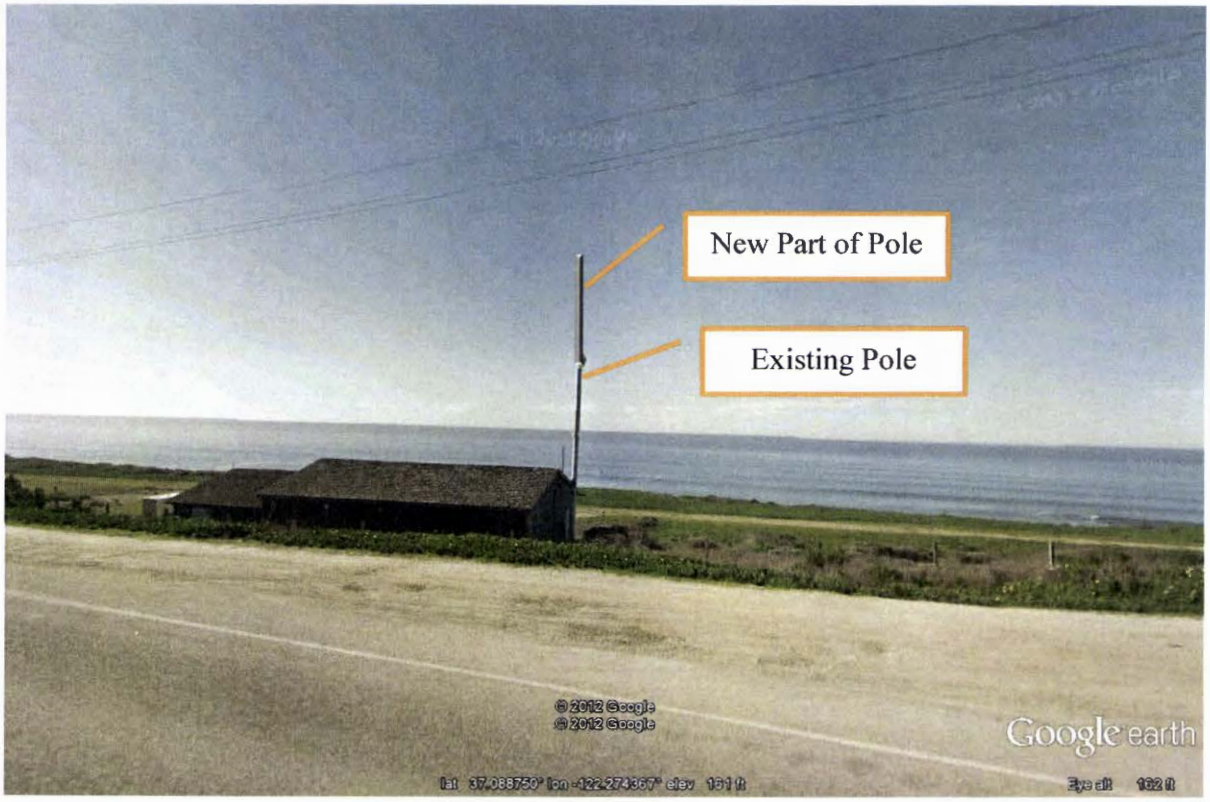


EXHIBIT G

NextG Networks

NextG Networks of California, Inc. 890 Tasman Drive, Milpitas, California 95035
Telephone 408.468.5400 – Fax 408.434.6285

VIA EMAIL

October 24, 2011

County of Santa Cruz
Planning Department
Attn: Frank Barron
701 Ocean Street, 4th Floor
Santa Cruz, CA 95060

RE: Additional Telecommunications Act Exception & Alternative Analysis
Application #: 111114 Assessor's Parcel #: N/A (Public Right of Way) & 058-022-11
Owners: Caltrans, County of Santa Cruz, Coast Dairies & Land Company

Dear Frank:

NextG Networks of California, Inc ("NextG") investigated several alternatives to the current proposed design for the application referenced above. The following is a summary analysis of the Telecommunications Act Exception and Alternatives Analysis under the Santa Cruz County Code 13.10.659 et seq. ("SCCC") for the project.

1. **Telecommunications Act Exception (SCCC 13.10.668)**

According to the Telecommunications Act, section 47 U.S.C. § 253(a), a jurisdiction's management of the public rights-of-way may not "prohibit or have the effect of prohibiting the ability of any entity to provide any interstate or intrastate telecommunications service." To the extent NextG's telecommunications infrastructure serves wireless communications, the County also must comply with section 332(c)(7)(B)(i)(II), which states that jurisdictions "shall not prohibit or have the effect of prohibiting the provision of personal wireless services."

NextG does not currently have any facilities in this area. In order to provide its customer(s) with telecommunications services, it requires access to the public rights of way for its equipment boxes. In order to support its network, it also requires construction of a small telecommunications hub (12 feet by 16 feet) on a private property parcel zoned commercial agriculture ("CA").

Under SCCC 13.10.661(c)(1)(D), wireless communications facilities are prohibited in the CA zone.[1] That prohibition violates the Telecommunications Act sections 253 and 332 if it results in a prohibition of telecommunications, including wireless, services. Denial of access to the public right of way for the wireless equipment of DAV05 and denial of the telecommunications hub at 25 Swanton Road would result in an absolute prohibition of NextG's services because, as discussed further below, it does not have any alternatives to being in the public right of way.

NextG's other wireless equipment is attached to existing utility poles located on the inland side of Cabrillo Highway in the coastal zone. As a telephone corporation, this equipment is a small part of NextG's fiber optic cable network, which will facilitate telecommunications and broadband services to this underserved area of rural Santa Cruz County. Denial of access to this portion of the public right of way would also result in a violation of section 253 and 332 because NextG would be prohibited from providing its services.

Additionally, section 253(c) of the Telecommunications Act requires that jurisdictions manage "use of public rights-of-way on a nondiscriminatory basis." If a jurisdiction has allowed the traditional telephone company ("ILEC") to operate in the public right-of-way, then it must allow competitive local exchange companies ("CLEC"), like NextG, to access utility poles for their equipment as well. *See TCG New York, Inc. v. City of White Plains*, 305 F.3d 67, 79–80 (2nd Cir. 2002) (the City of White Plains, New York ran afoul of the law when it treated the ILEC differently than a CLEC).[2]

The County has allowed different types of entities to access the public right of way along Cabrillo Highway and Swanton road in order to provide a variety of utility services. NextG has no facilities in this area, and these wireless facilities are necessary elements of its overall wired network to provide telecommunications services to its customers. Denial of these necessary elements of its network would violate the Telecommunications Act sections 253 and 332.

2. <u>Alternatives Analysis (SCCC 13.10.662(c))</u>

As mentioned above, NextG is a telephone corporation with the right to operate in the public rights-of-way under state and federal law in order to provide its telecommunications services. NextG's networks are essentially wired, fiber optic cable networks with the wire placed on existing utility poles in the public right away, similar to the traditional telephone company, power, and cable companies. It is not a wireless carrier, nor can it construct traditional wireless sites, such as towers and monopoles. It provides radio frequency signal transport over a wired network with small wireless elements, which must be directly attached to the wired network. Prohibiting NextG from attaching to existing utility poles would be like telling the power company it was not allowed to attach its transformers to the utility pole—it doesn't make sense.

13.10.662(c)(1): NextG networks require seven locations with wireless and non-wireless equipment attached to existing utility poles. NextG designed the network so that its six locations

[1] This section of the code is inconsistent with SCCC 13.10.312(b) (Agricultural Uses Chart), which allows wireless communication facilities in the CA zone with a Level V application

[2] *See also,* Public Utilities Code section 7901.1(b) (stating that the control exercised by municipalities over access to the public rights-of-way "be reasonable" and "at a minimum, be applied to all entities in an equivalent manner.")

(DAV01-04, 09, 10) along Cabrillo Highway are on the landward side of the road, rather than the seaward side. NextG presented the country with two different design alternatives—communications space antennas or pole top antennas. Both of these designs are limited to what is allowed under General Order ("GO") 95 Rule 94.4.

The seventh location (DAV05) is on Swanton Road on the landward side of Cabrillo Highway, and NextG presented two antenna heights for this location since it is on a different type of utility pole. Photos of each of these designs are attached for comparison Exhibit A. At this time, the Planning Department has expressed a preference for the communication space antenna configurations and the lower height for DAV05. There are no poles along Cabrillo Highway in this area, which is why DAV05 is on Swanton Road. NextG would need the County to allow NextG to place a new utility pole along Cabrillo Highway, and at this point, the County has not been receptive to NextG placing any new poles.

NextG requires a telecommunications hub to support its fiber optic cable network. There is no wireless equipment at the hub location, but the hub was combined with the project in the same application for streamlining purposes. The hub requires a coastal development permit, and NextG provided an alternatives analysis at the request of the Planning Department. NextG considered three locations. A list of the alternatives is attached as Exhibit B. The feasibility of a telecommunications hub is dependent on having a willing landowner. NextG contacted all three property owners and received firm rejections from the fire department and lumber mill candidates. The land owner of the Swanton Berry Farm was receptive.

NextG met with the land owner regarding a location. The land owner instructed NextG to place its 16' x 12' telecommunications hub in a triangular portion of the parcel between existing outbuildings, which is not capable of supporting agricultural production. The location of the hub along with photo simulations is attached as Exhibit C. The photos simulations show the design of the hub to blend with the existing outbuildings.

13.10.662(c)(2): There is potential for NextG's facilities to provide services to multiple customers, but traditional "co-location" may not be possible due to constructability issues on the utility pole.

13.10.662(c)(3): As mentioned in 13.10.662(c)(1), the NextG may construct its DAV01-04, 09, 10 in two configurations—pole top or communications space antennas. DAV05 is on Swanton Road because the County will not support NextG placing a new pole in the right of way of Cabrillo Highway. The County has expressed an interest in the communications space design on the utility pole. NextG looked at other hub locations, but only one landlord was receptive to the hub.

13.10.662(c)(4): Photo simulations of the two different designs are attached below.

13.10.662(c)(5): NextG's rights to operate in the public right of way is equivalent on all utility poles. NextG may locate on a different utility pole according to the safety rules in GO 95, but the design would be equivalent to that being proposed. There are no superior poles from a

design or compliance perspective. Many utility poles are located on the seaward side of Cabrillo Highway, and all of those were avoided in order to comply with SCCC 13.10.659 et seq.

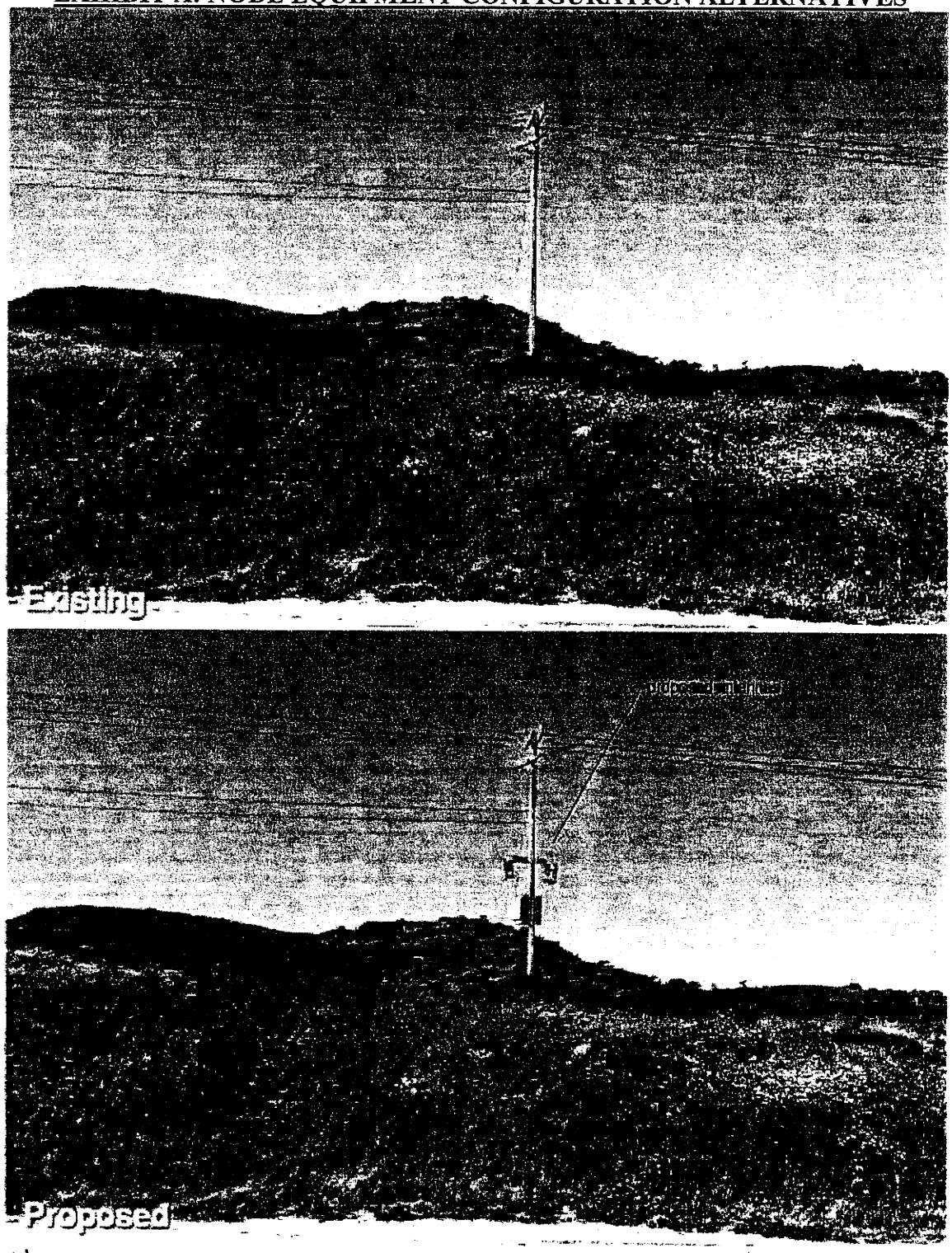
Please feel free to contact me via email or phone if you require any additional information or clarification. I can be reached at 408-409-6606 or by email at nernst@nextgnetworks.net.

Best regards,

Natasha Ernst
Director of Government Relations

EXHIBIT G

EXHIBIT A: NODE EQUIPMENT CONFIGURATION ALTERNATIVES



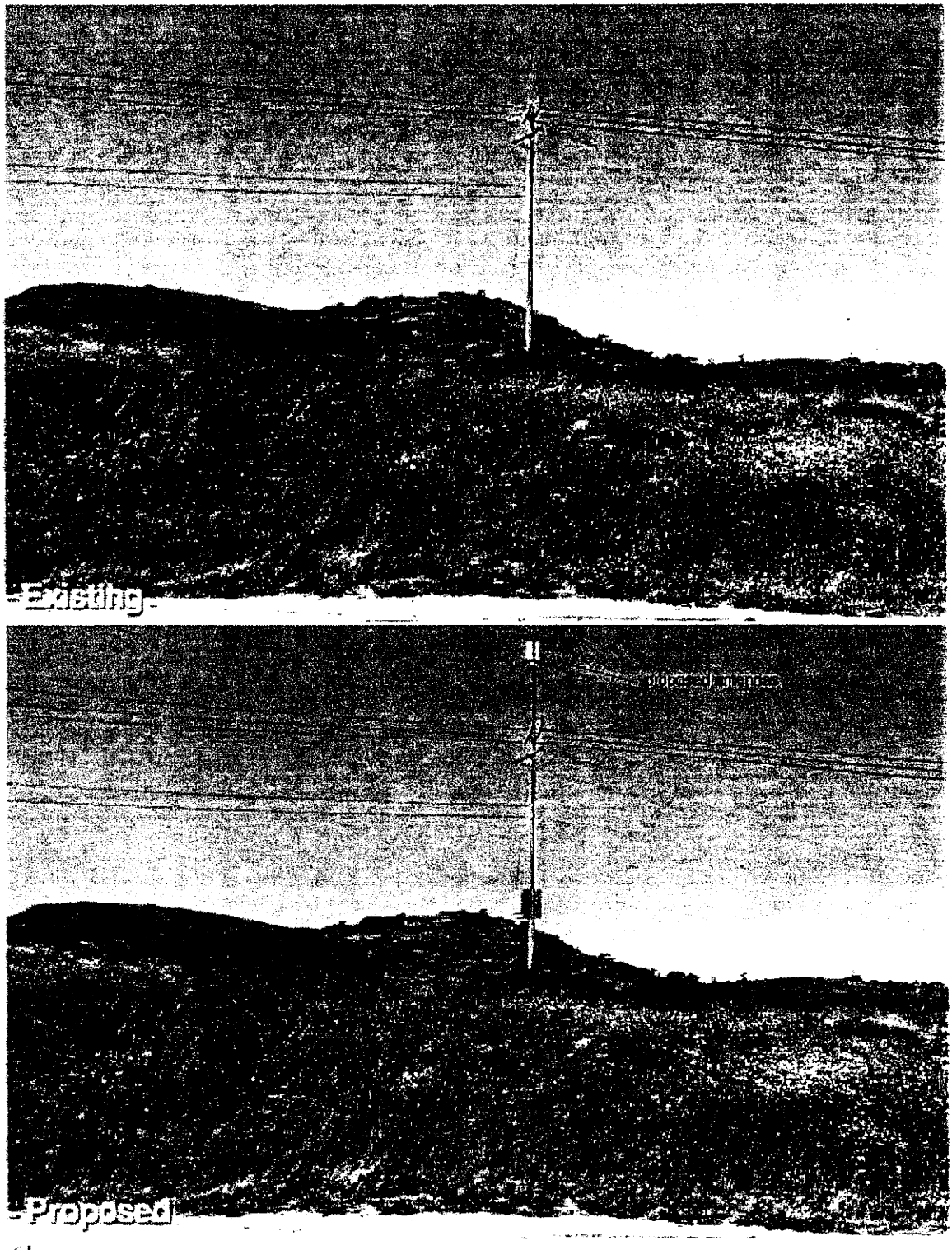
Davenport Site # DAV01

Cabrillo Hwy / Hwy1
Santa Cruz, CA 95060

8/12/11

View #1

EXHIBIT G



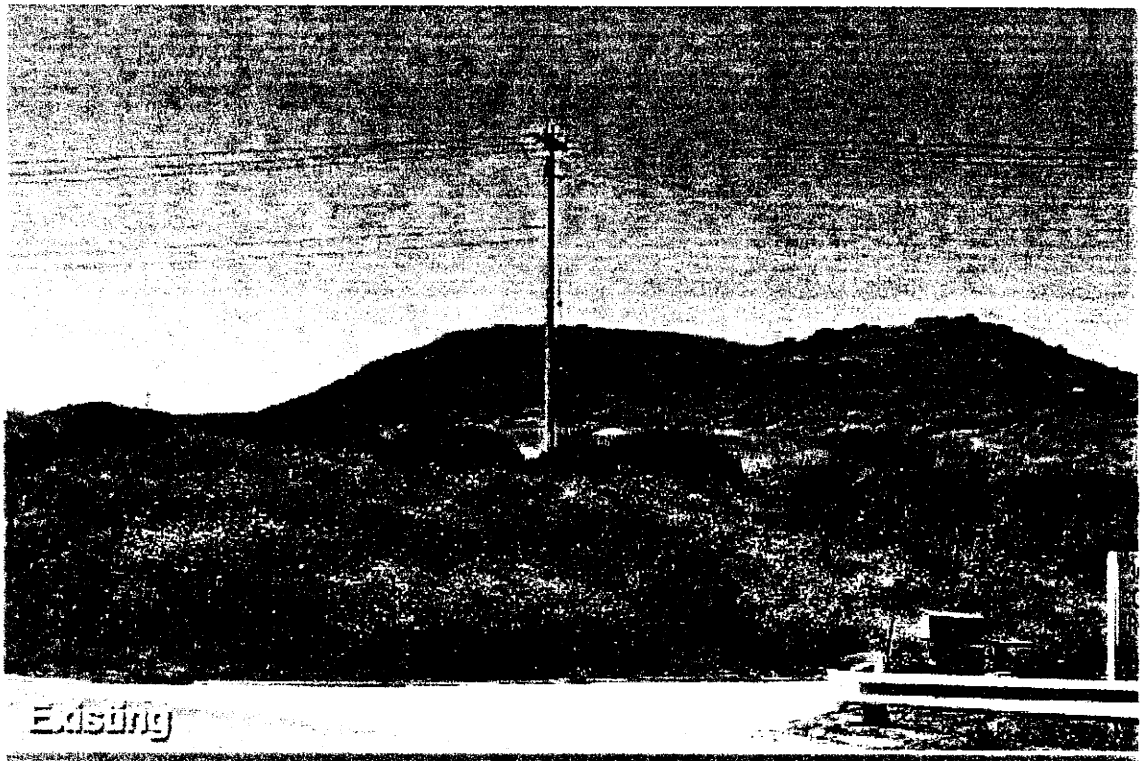
Davenport Site # DAV01

Cabrillo Hwy / Hwy 1
Santa Cruz, CA 95060

5/05/11

View #1

EXHIBIT G



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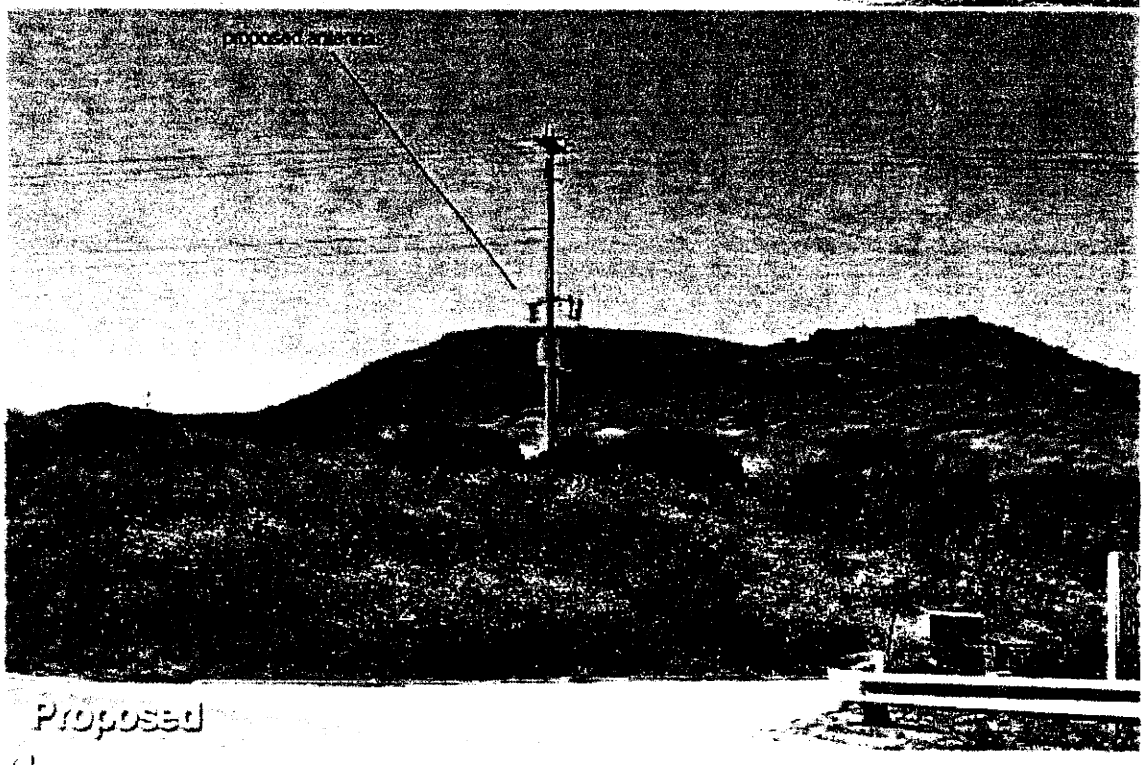


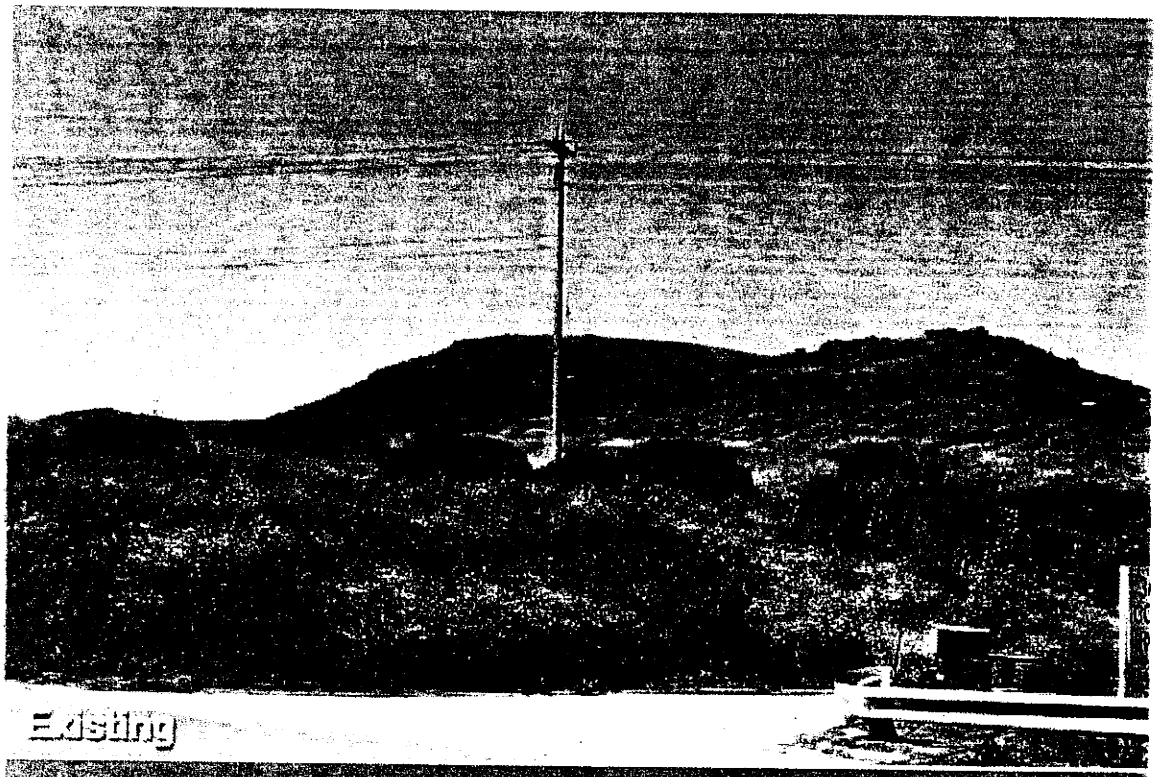
Proposed

Davenport Site # DAV01

Cabrillo Hwy / Hwy1
Santa Cruz, CA 95060

View #2

8/17/11



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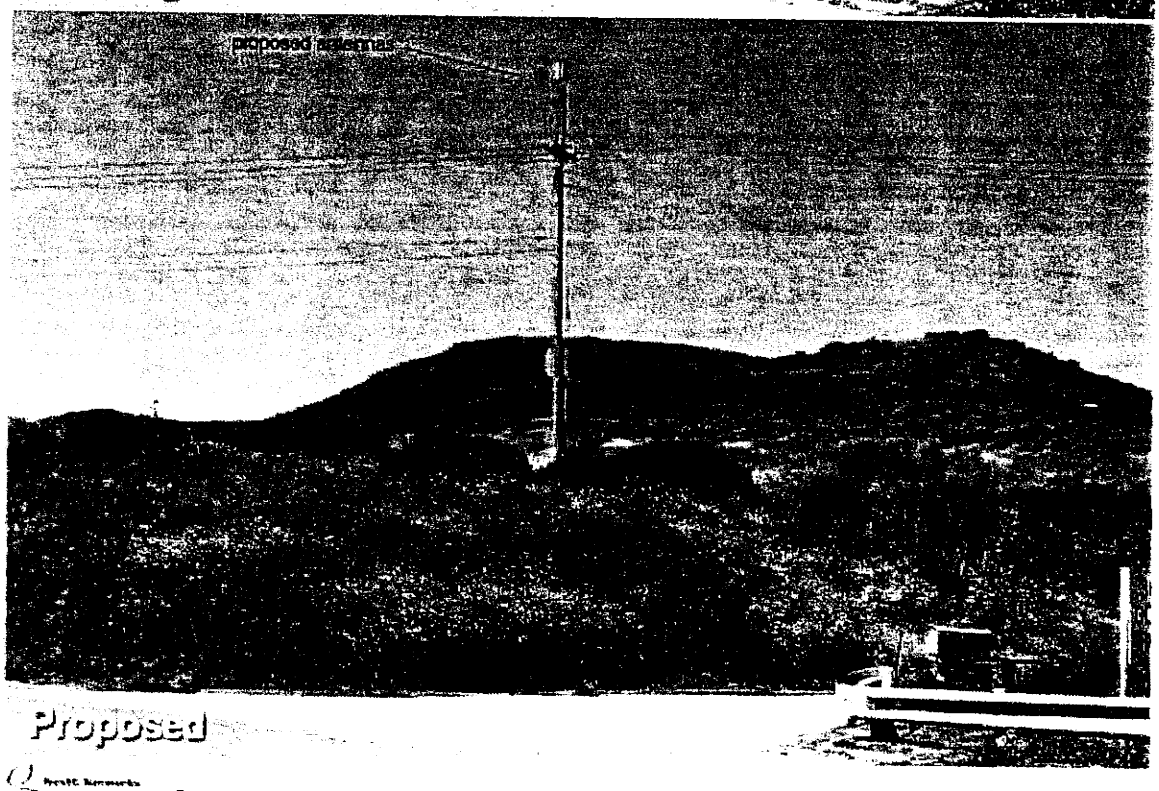


Proposed

Davenport

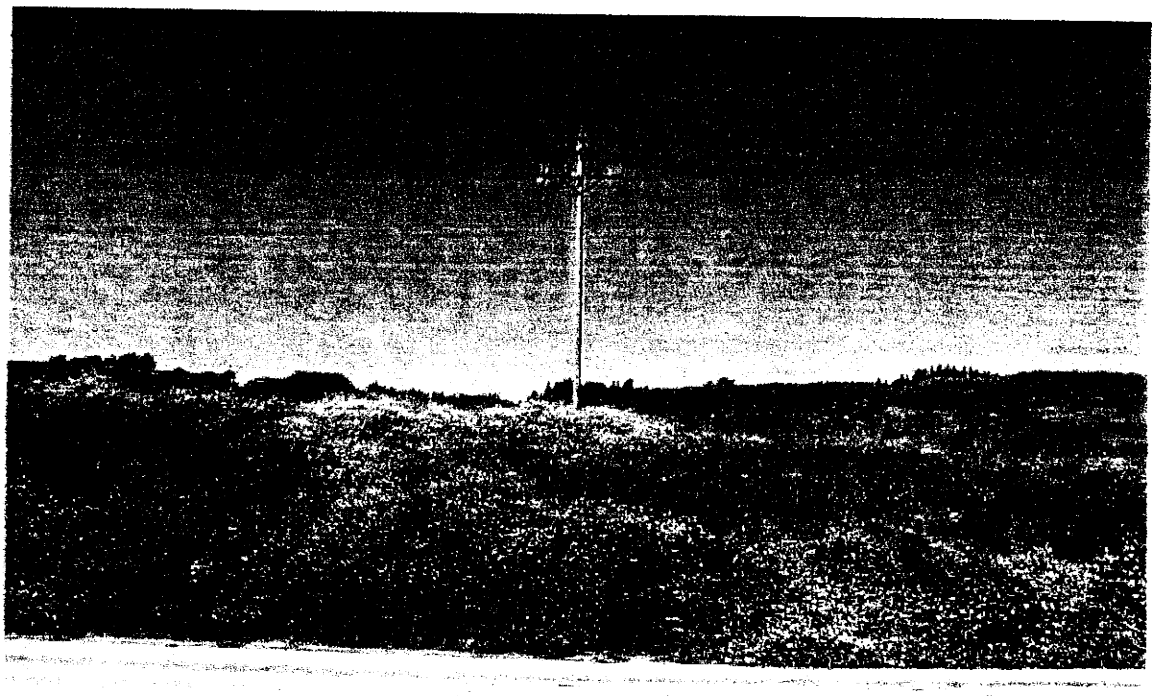
Site # DAV01

Cabrillo Hwy / Hwy1
Santa Cruz, CA 95060

5/25/11

View #2

EXHIBIT G



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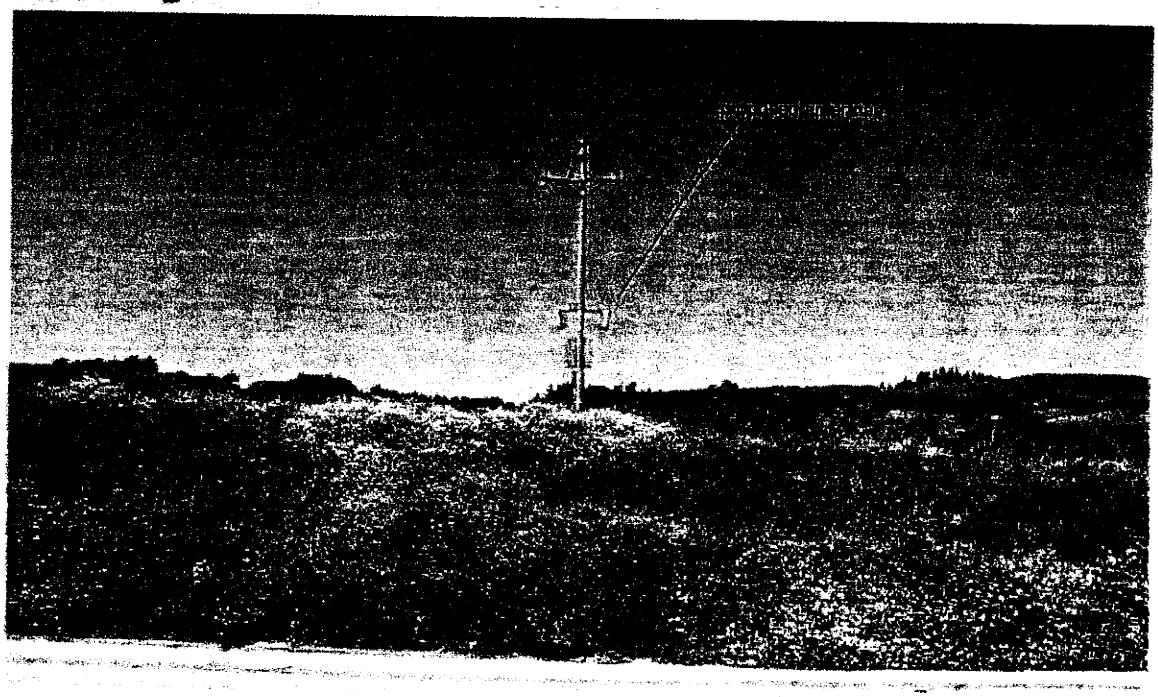


Proposed

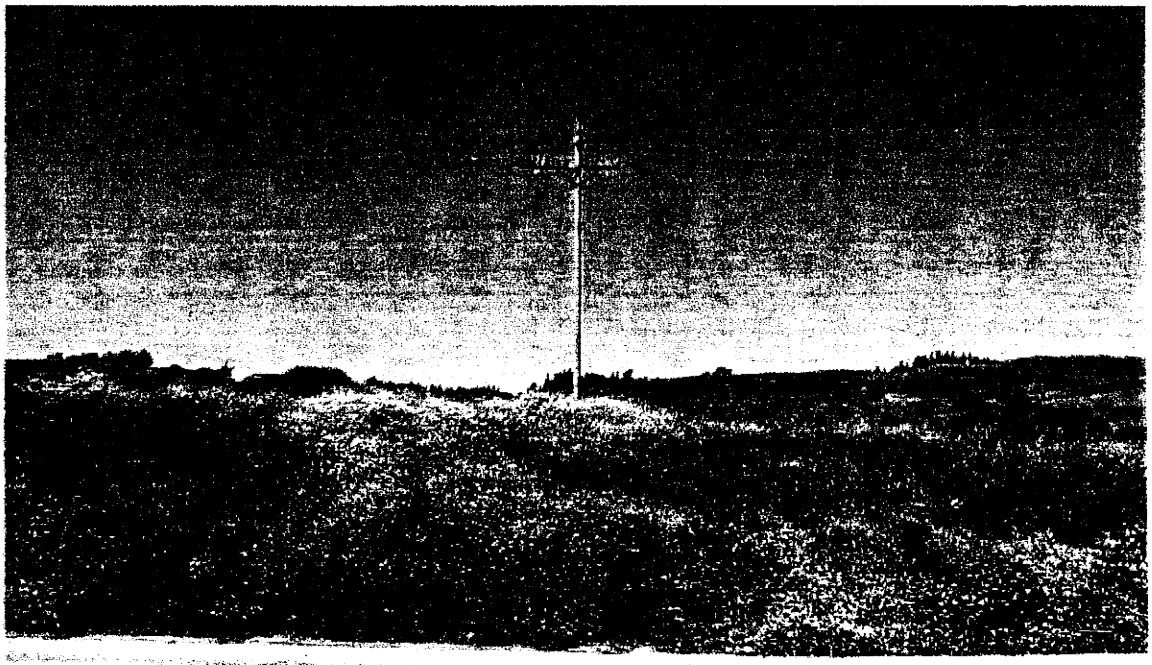
Davenport Site # DAV02

Cabrillo Hwy / Hwy1
Santa Cruz, CA 95060

8/12/11

View #1

EXHIBIT G



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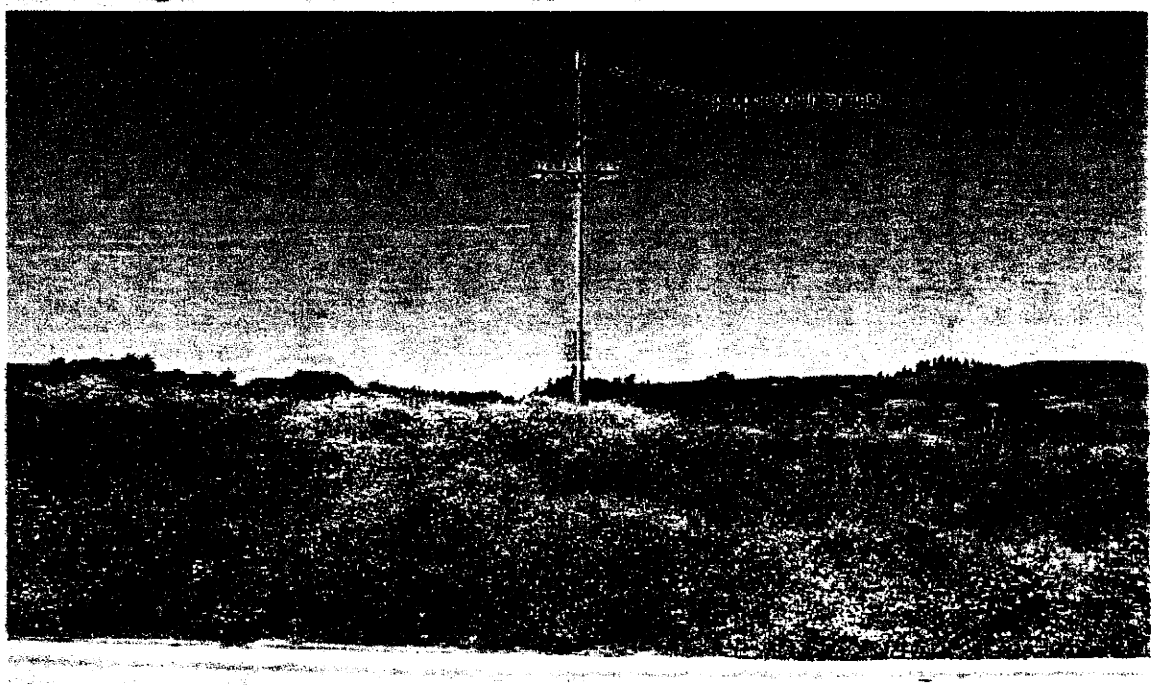


Proposed

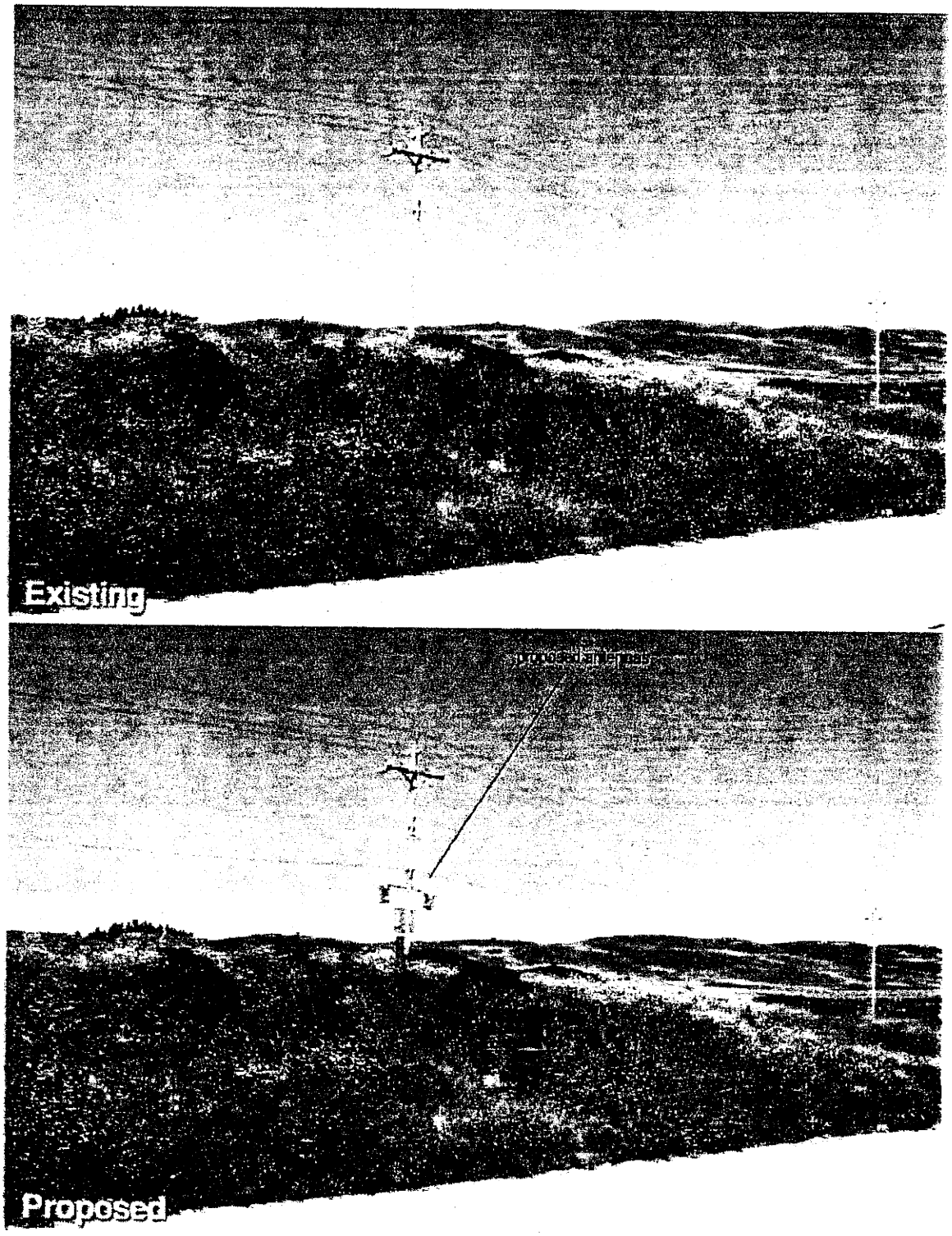
Davenport Site # DAV02

Cabrillo Hwy / Hwy1
Santa Cruz, CA 95060

5/05/11

View #1

EXHIBIT 9



Davenport Site # DAV02

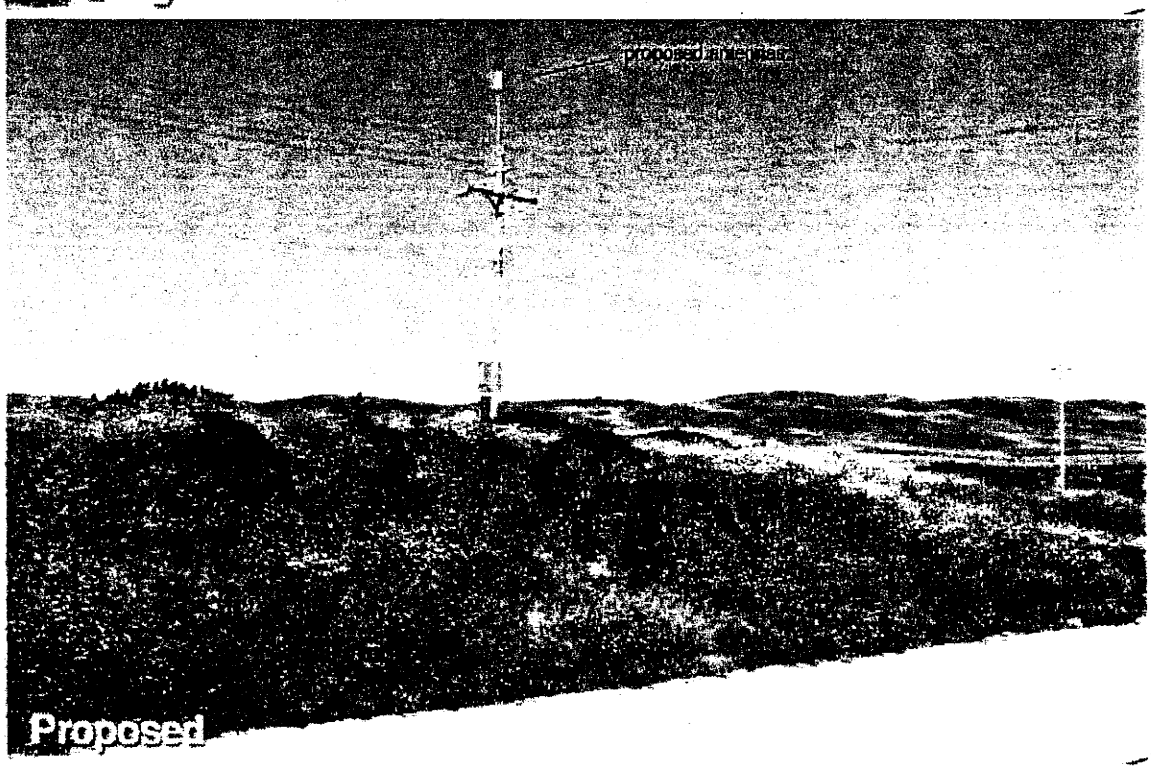
Cabrillo Hwy / Hwy1
Santa Cruz CA 95060

7/27/11

View #2

EXHIBIT 9

Existing



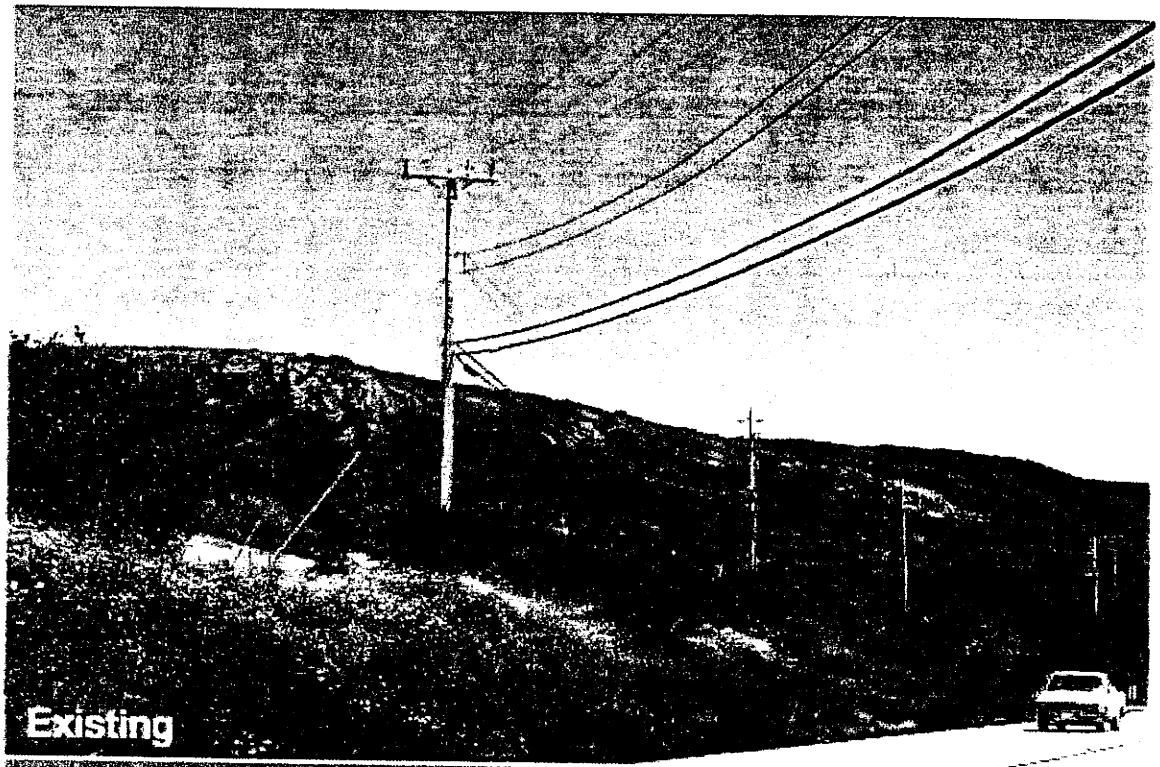
Proposed

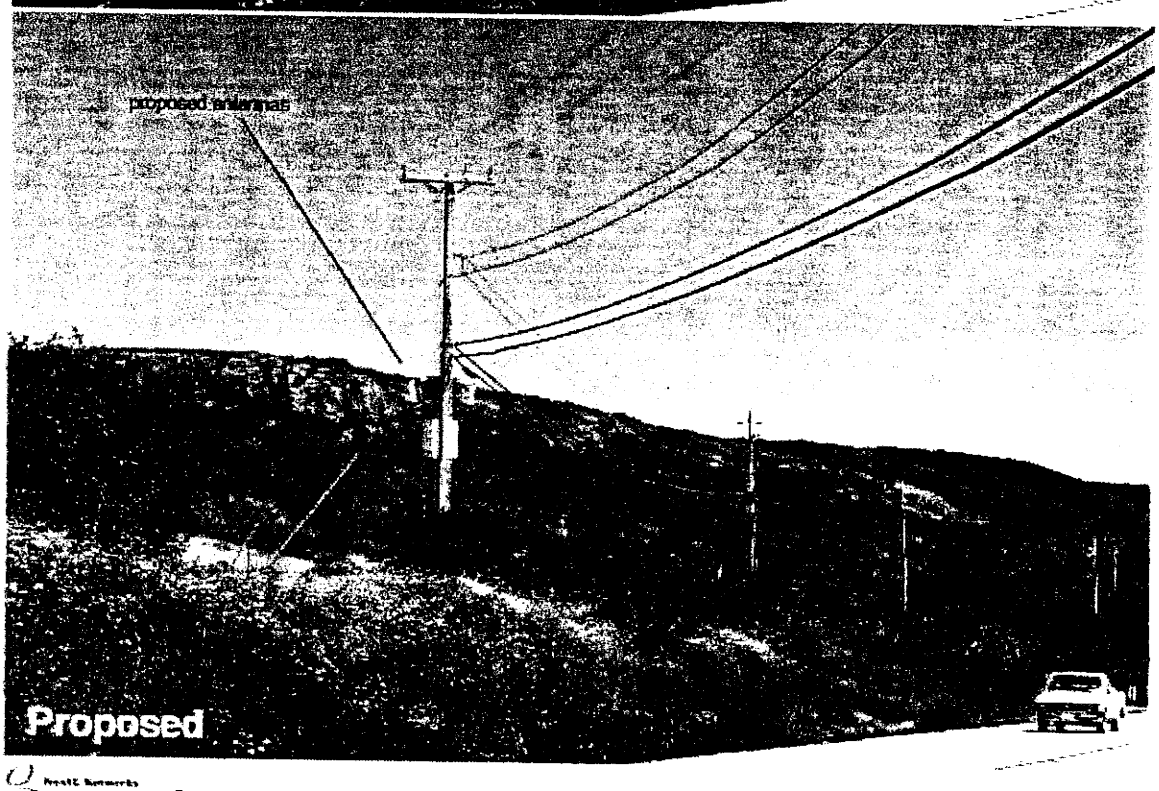
Davenport Site # DAV02

Cabrillo Hwy / Hwy1
Santa Cruz, CA 95060

View #2

EXHIBIT G





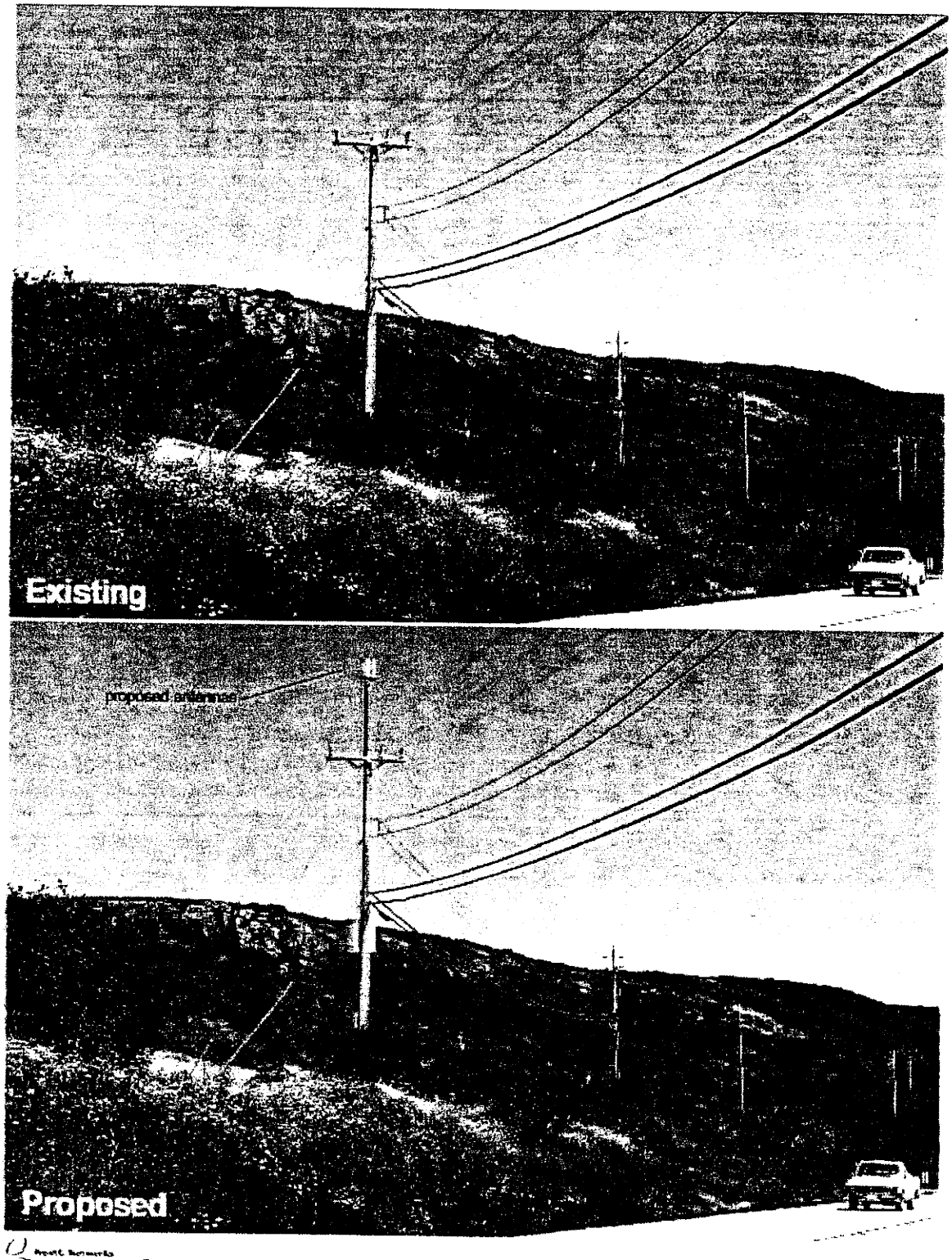
Davenport

Site # DAV03

Cabrillo Hwy / Hwy 1
Santa Cruz CA 95060

View #1

EXHIBIT G



Davenport

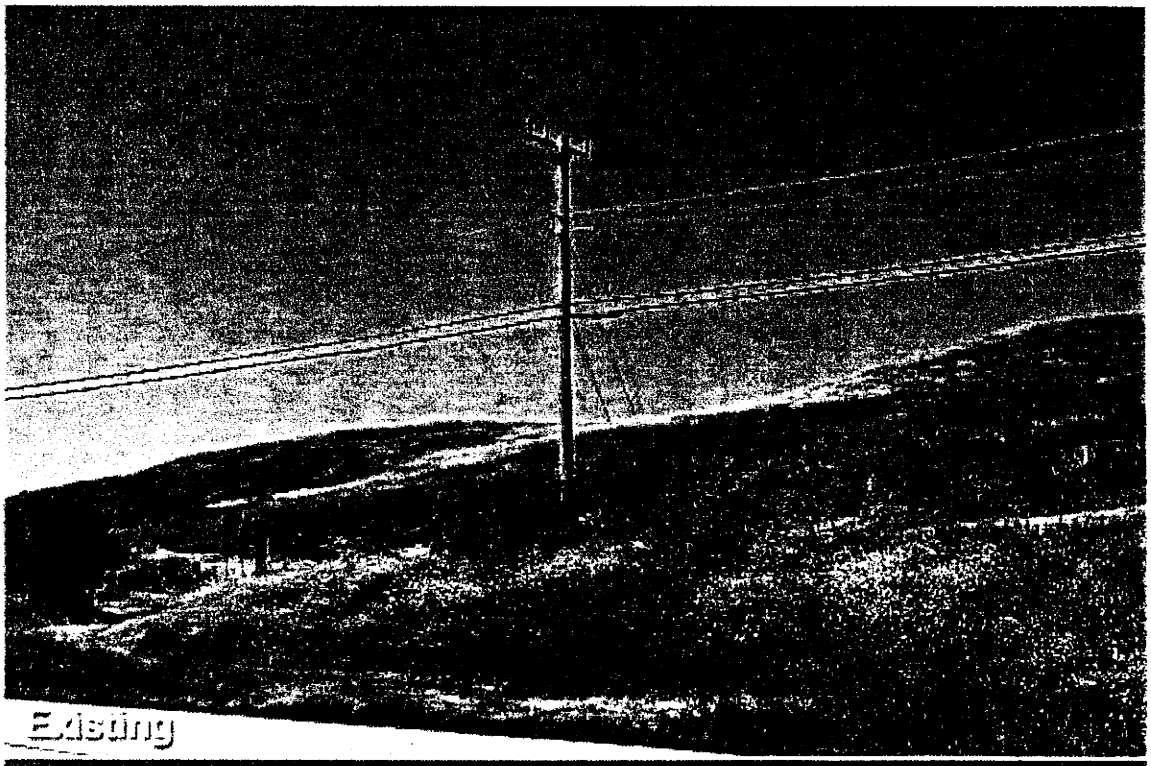
Site # DAV03

Cabrillo Hwy / Hwy1
Santa Cruz, CA 95060

5/25/11

View #1

EXHIBIT G



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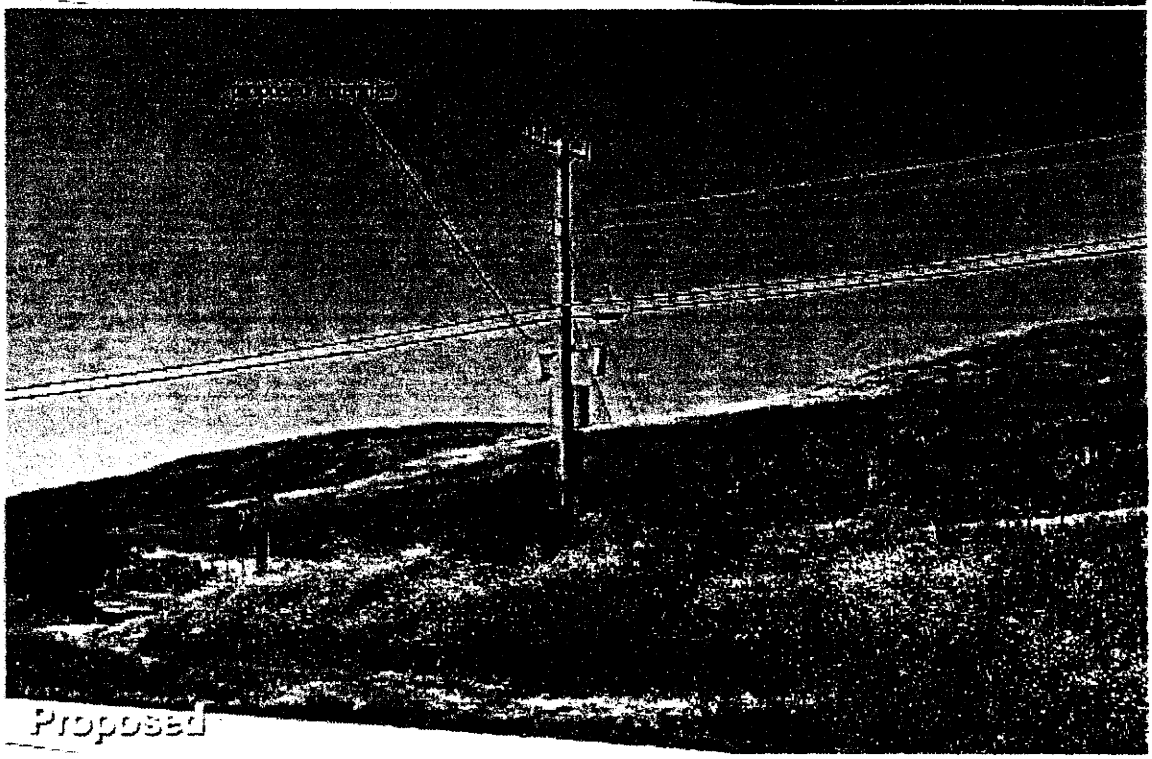


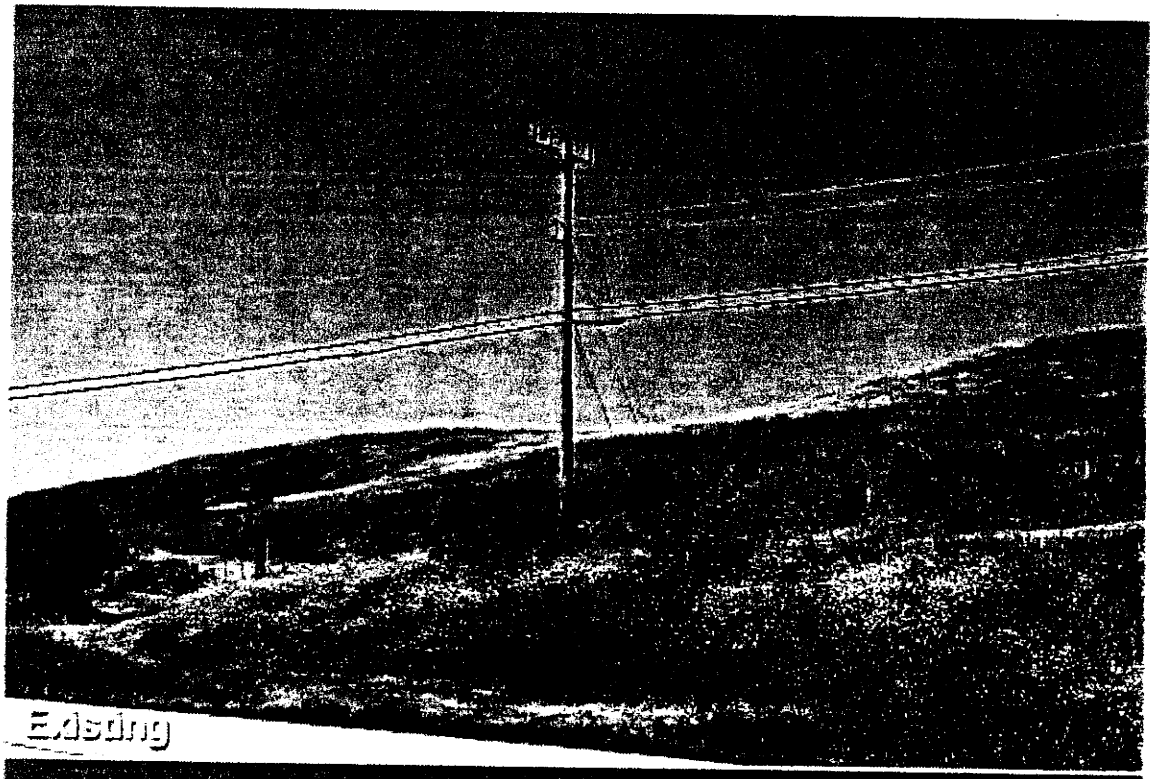
Proposed

Davenport Site # DAV03

Cabrillo Hwy / Hwy1
Santa Cruz, CA 95060

View #2

EXHIBIT



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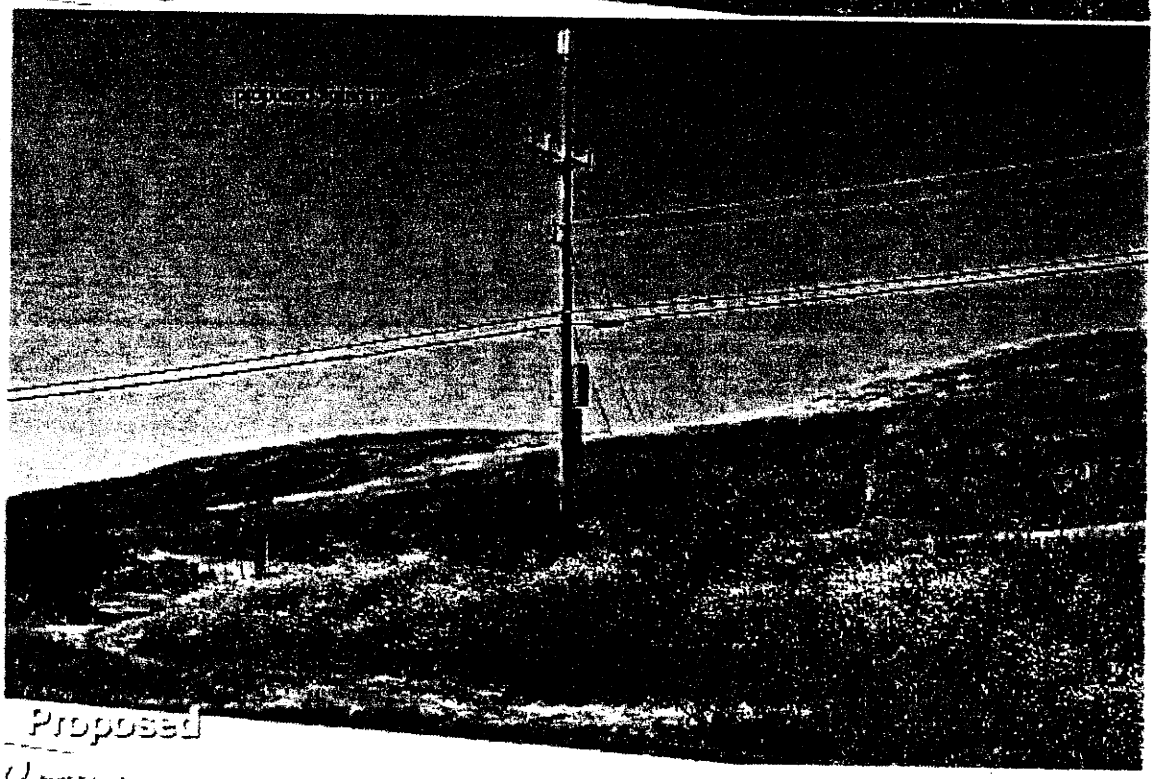


Proposed

Davenport

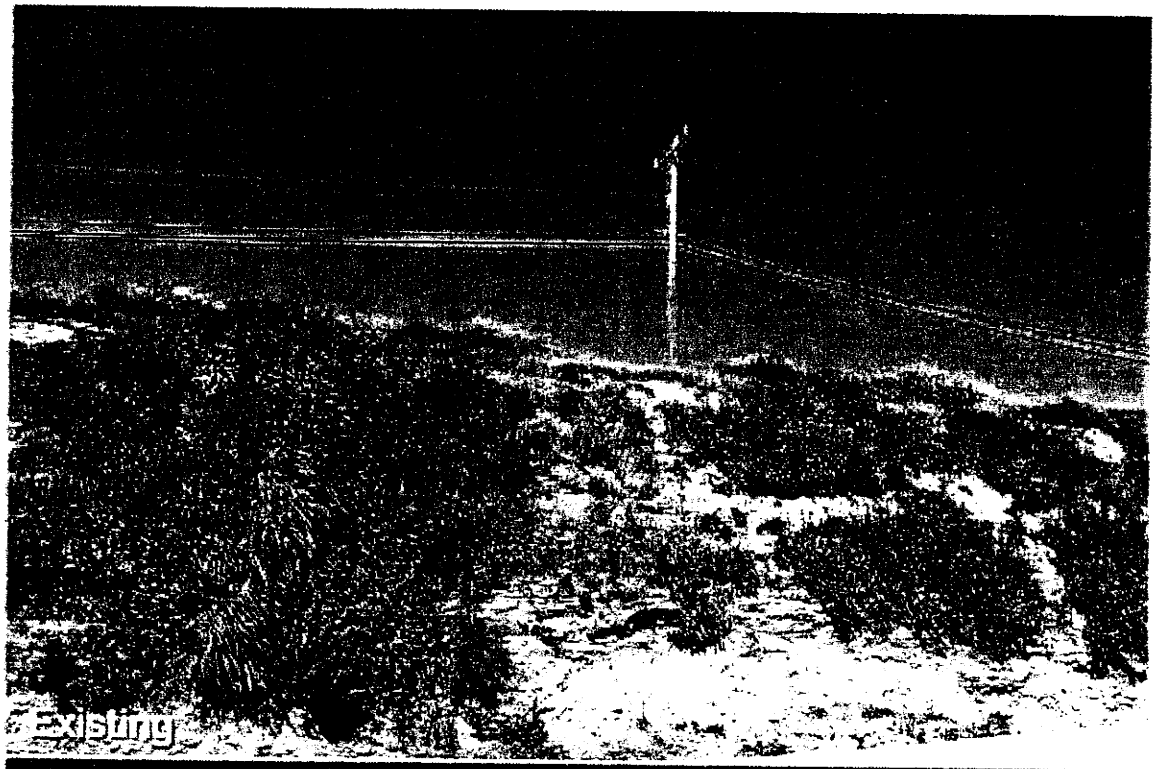
Site # DAV03

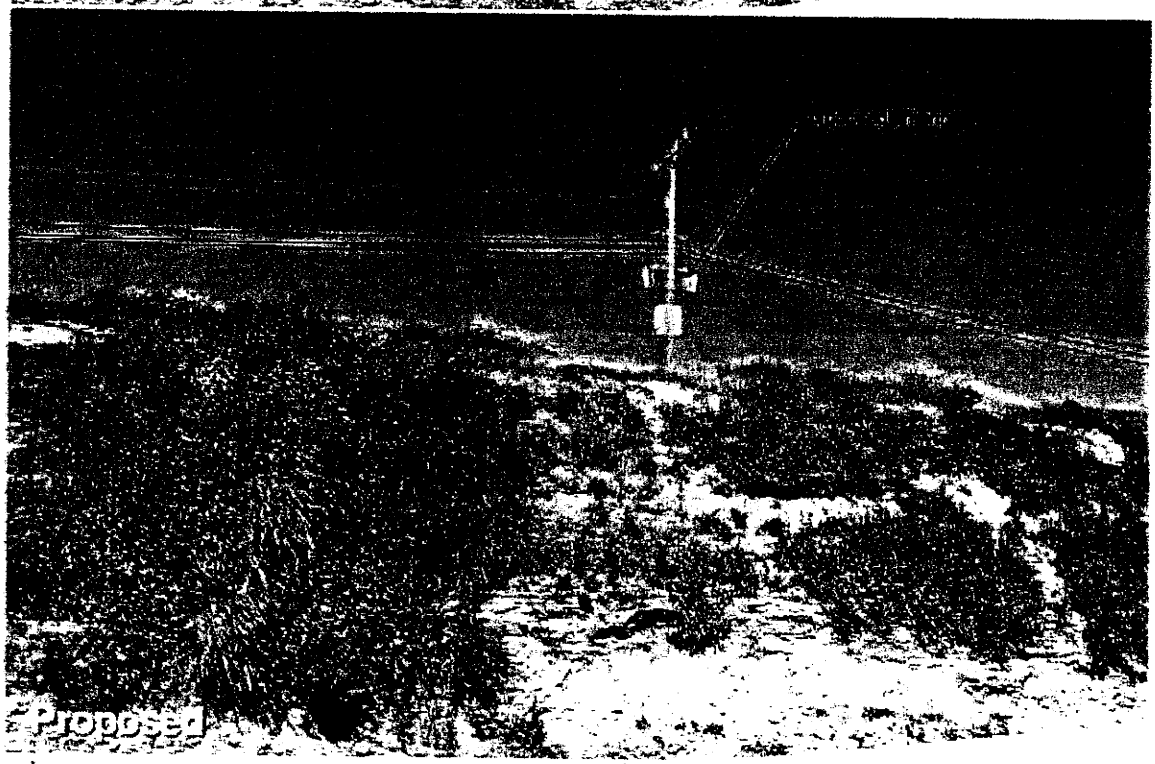
Cabrillo Hwy / Hwy 1
Santa Cruz, CA 95060

5/05/11

View #2

EXHIBIT 9





Davenport

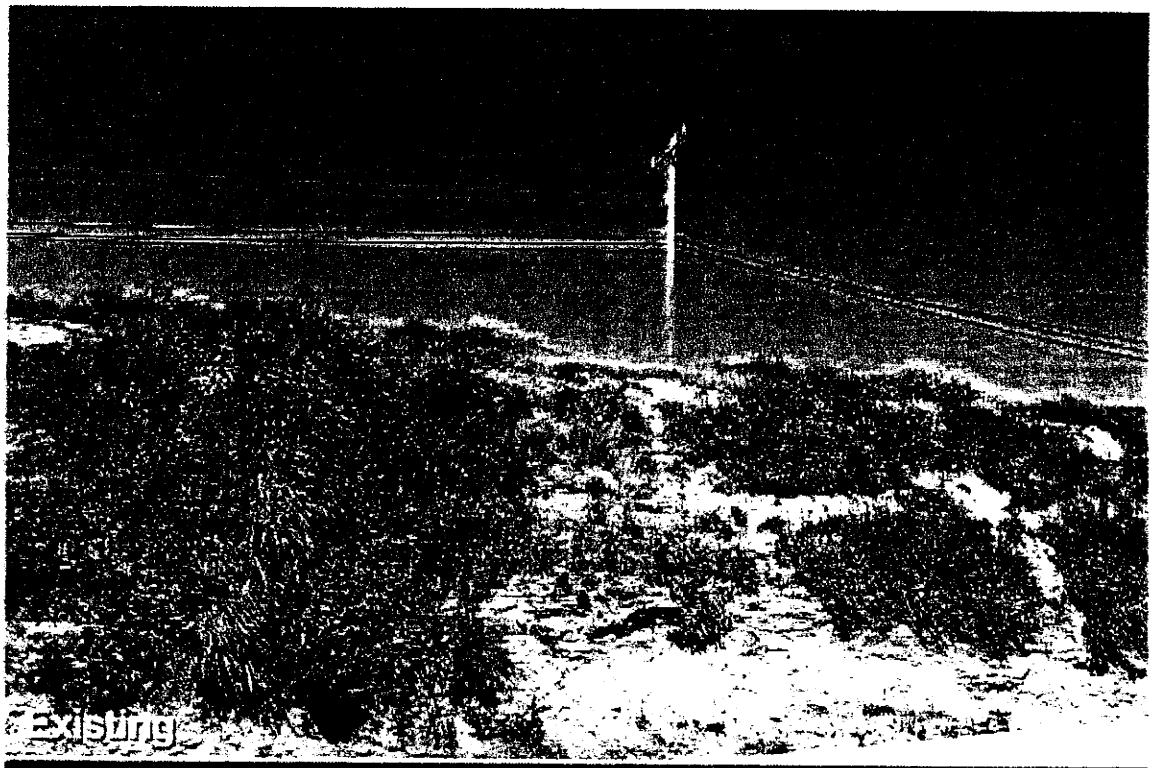
Site # DAV04

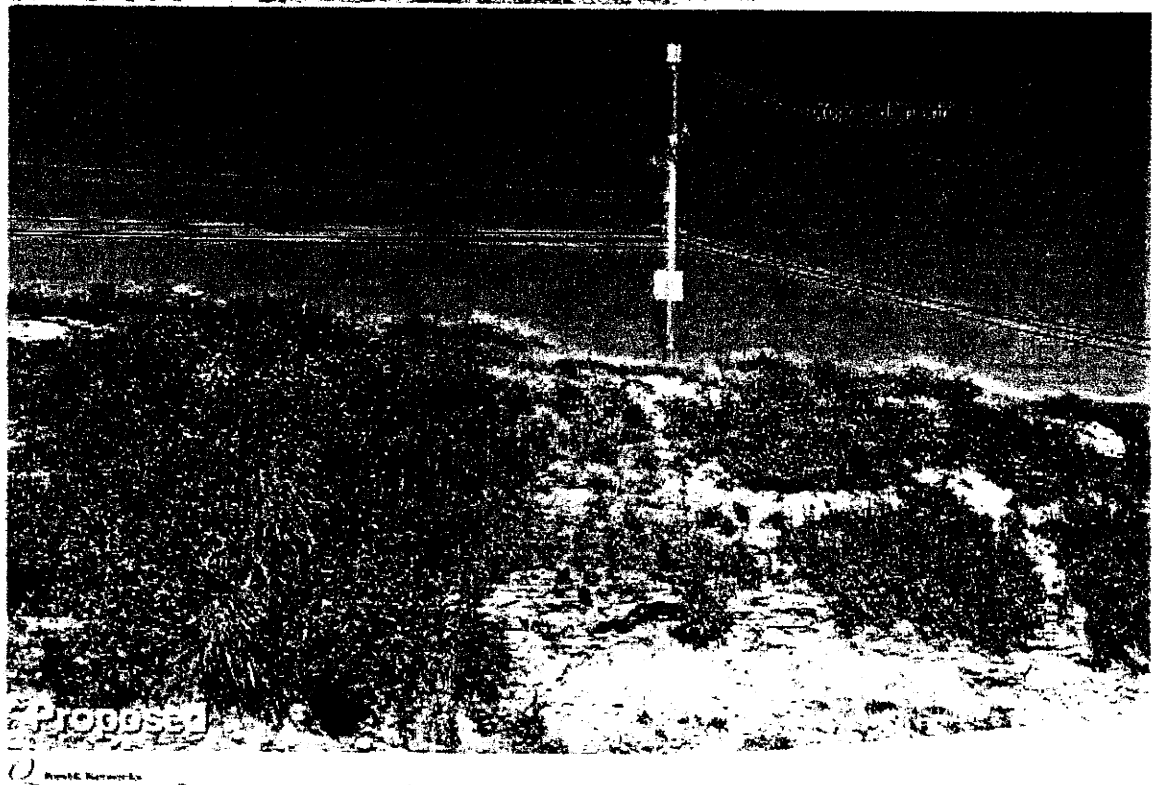
Cabrillo Hwy / Hwy1
Santa Cruz, CA 95060

6/12/11

View #1

EXHIBIT 9





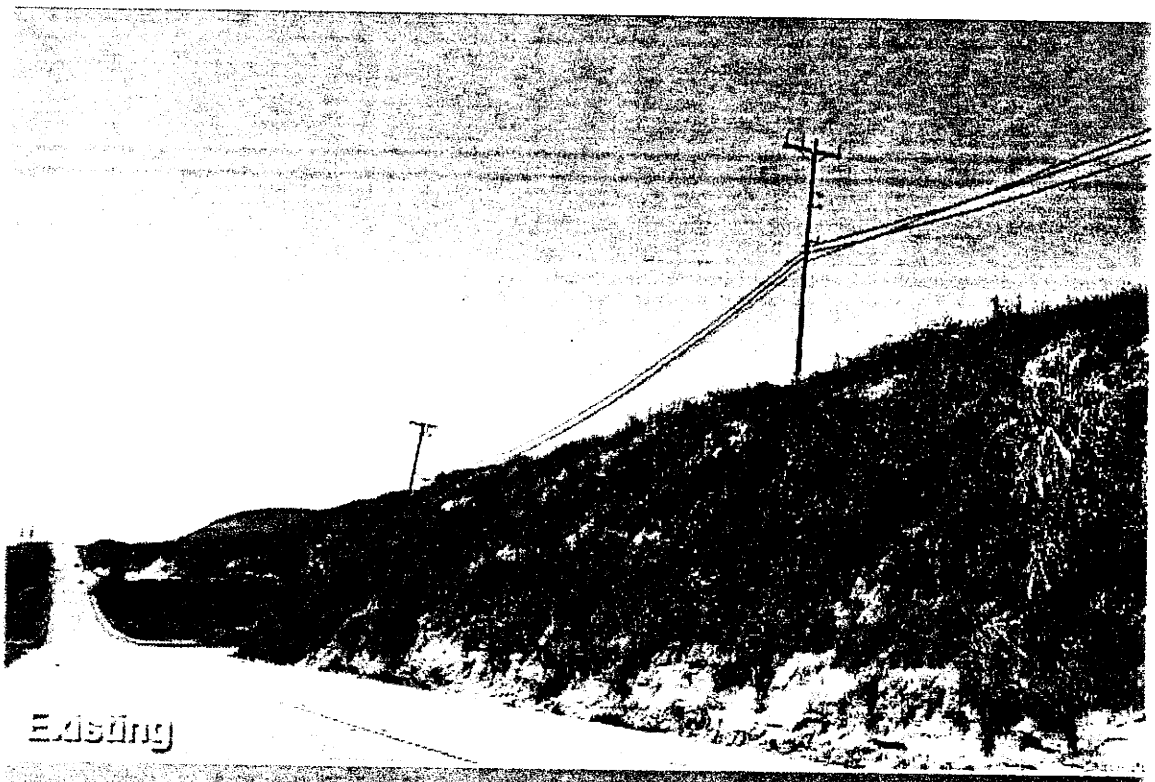
Davenport Site # DAV04

Cabrillo Hwy / Hwy1
Santa Cruz CA 95060

5/05/11

View #1

EXHIBIT E



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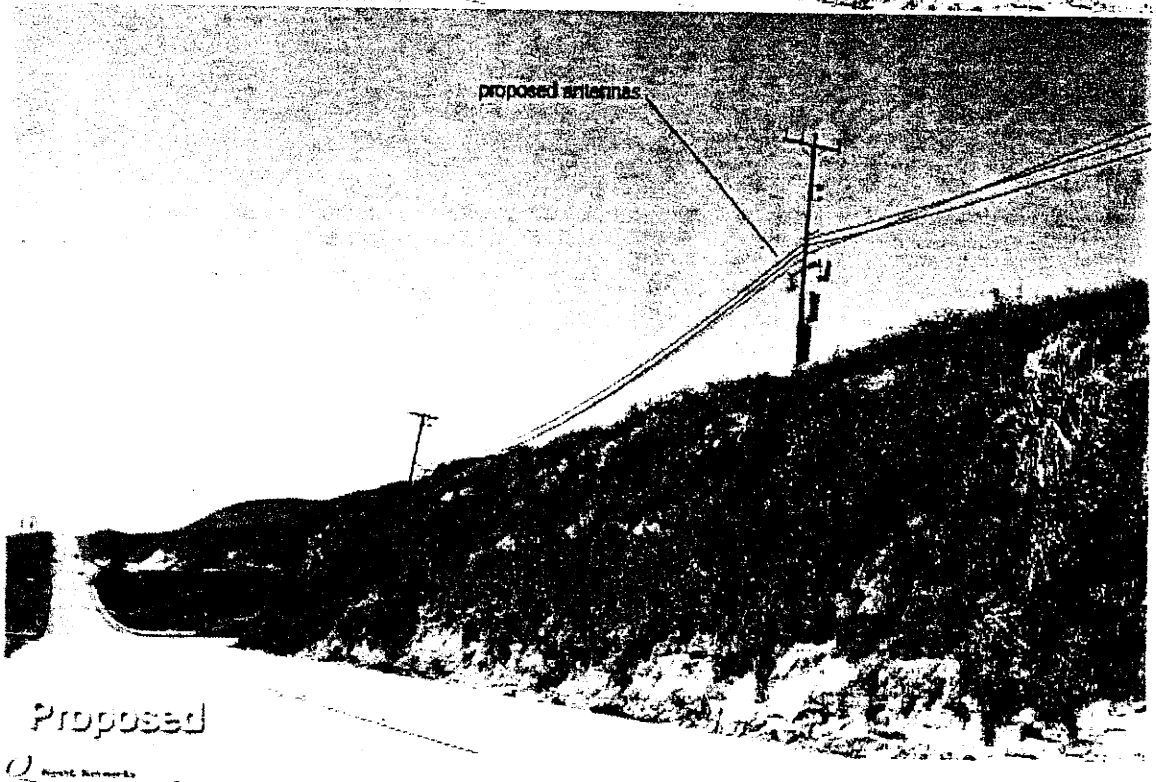


Proposed

Davenport

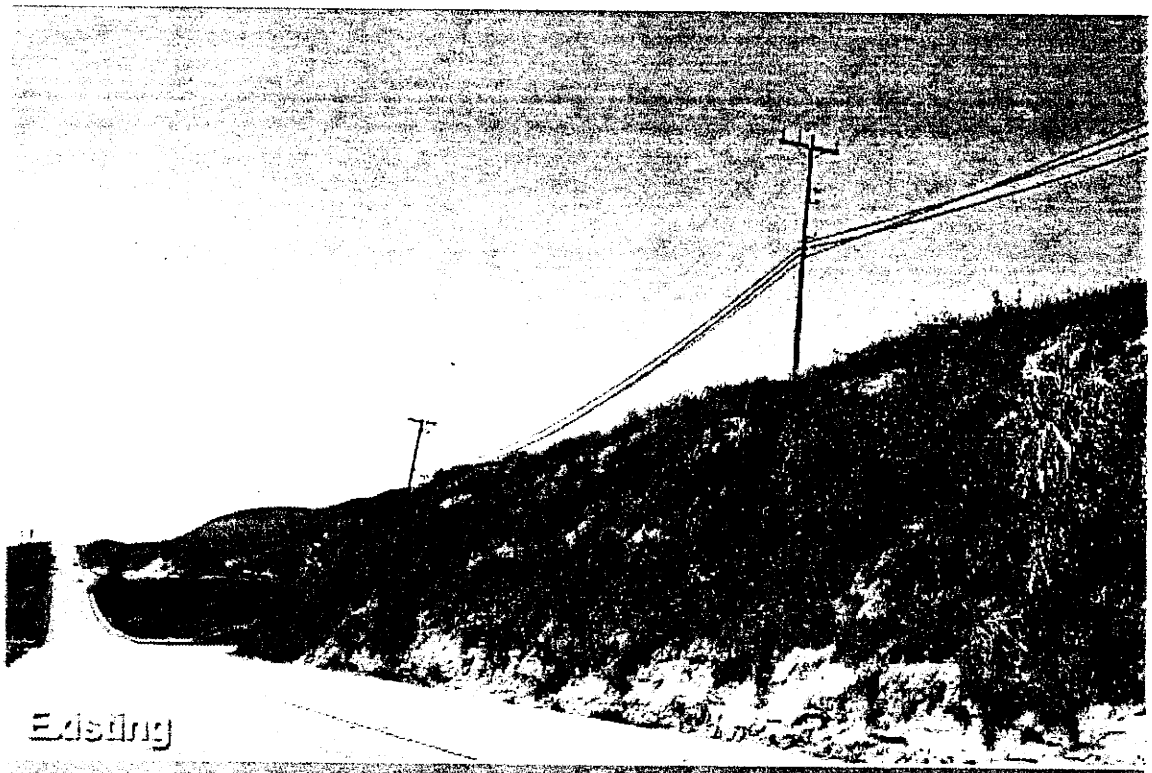
Site # DAV04

Cabrillo Hwy / Hwy 1
Santa Cruz, CA 95060

8/12/11

View #2

EXHIBIT G



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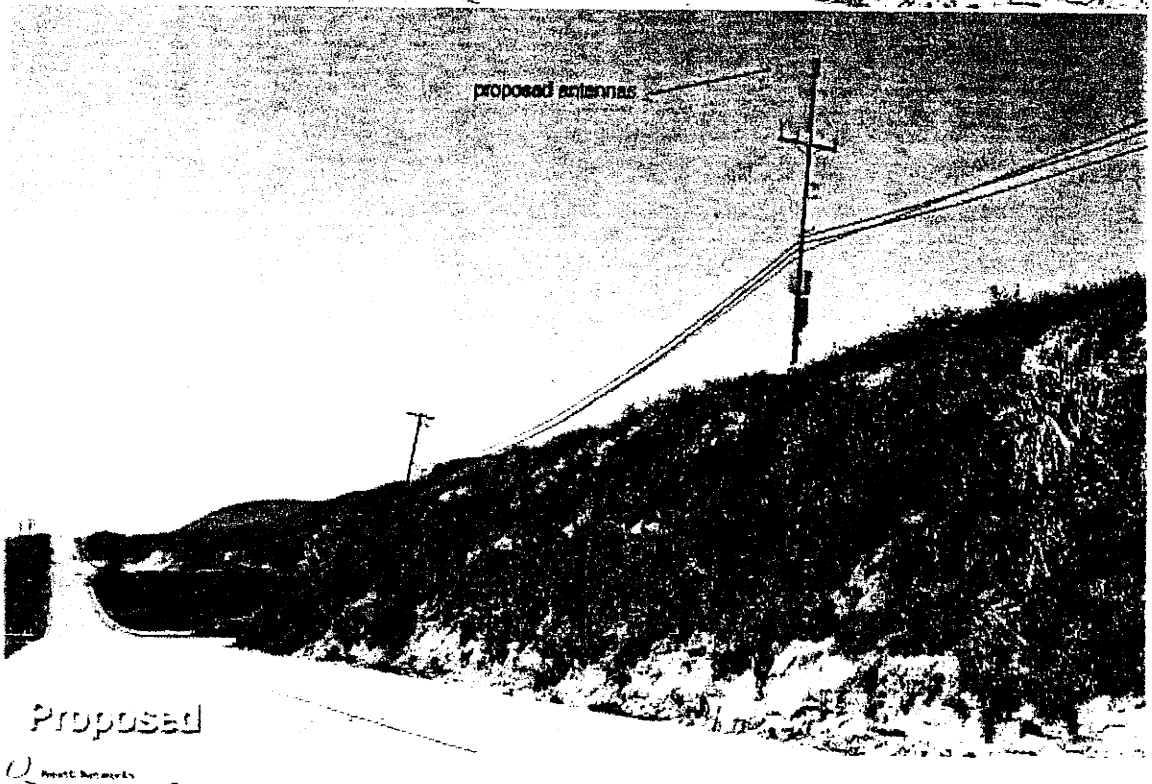

Proposed

Davenport
Cabrillo Hwy / Hwy1
Santa Cruz, CA 95060

Site # DAV04

5/25/11

View #2

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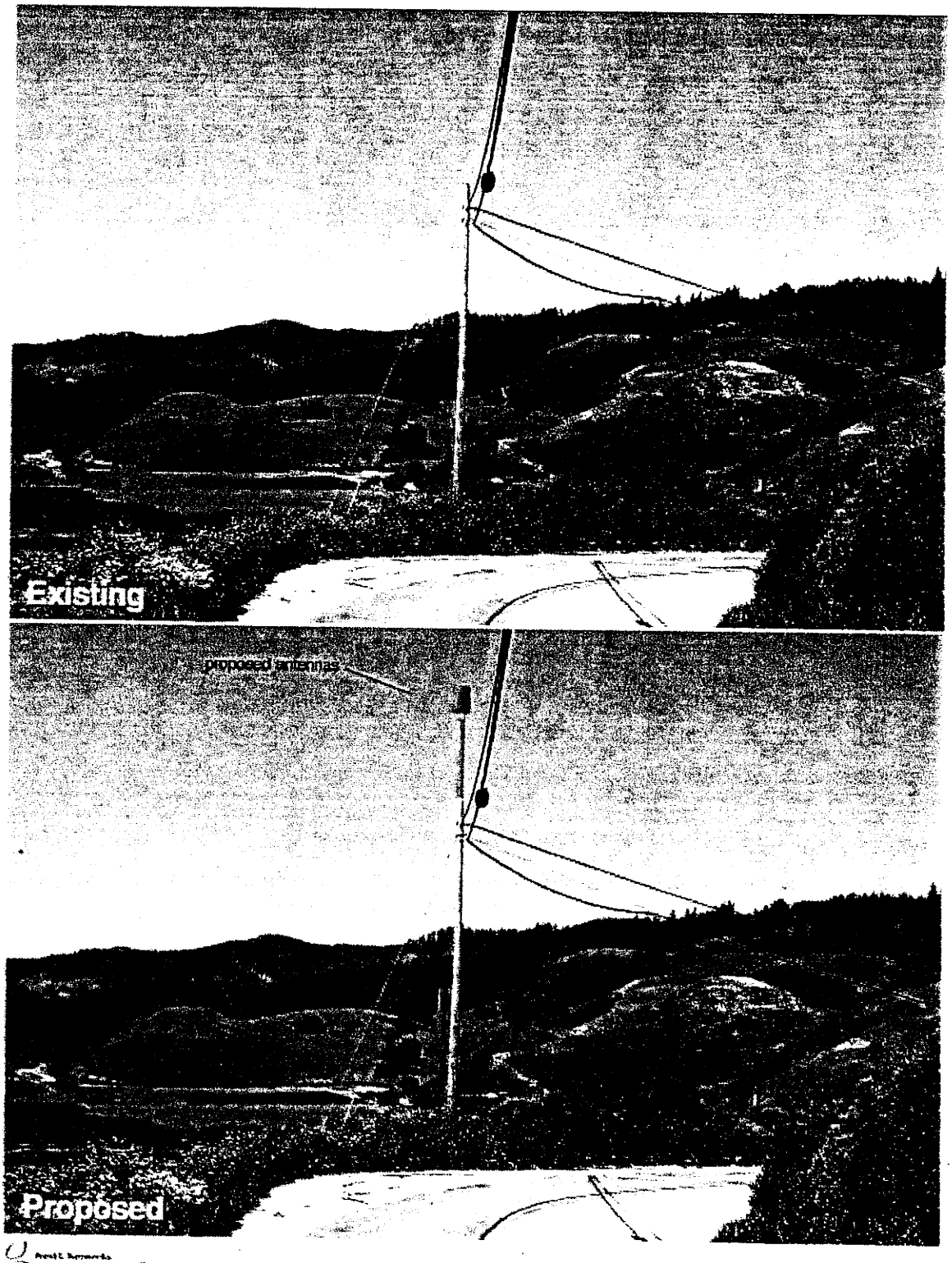

Davenport

Site # DAV05

Cabrillo Hwy / Hwy

Santa Cruz CA 95060

5/05/11

View #1

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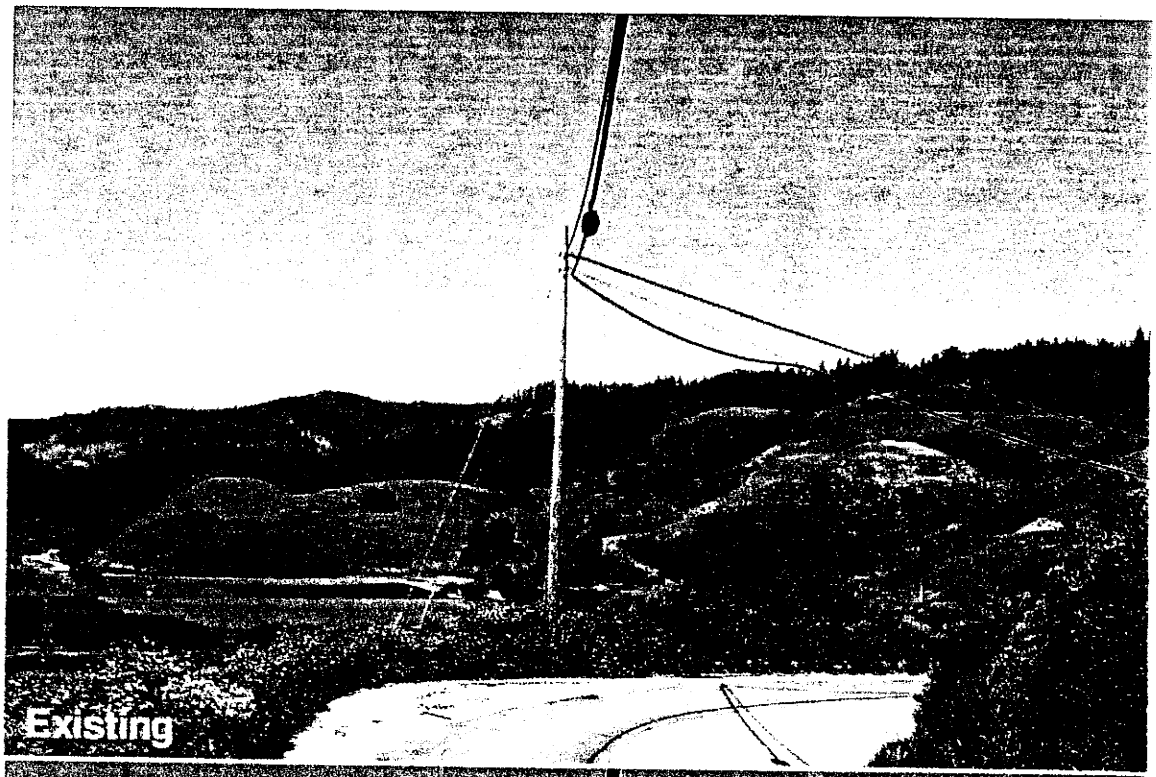
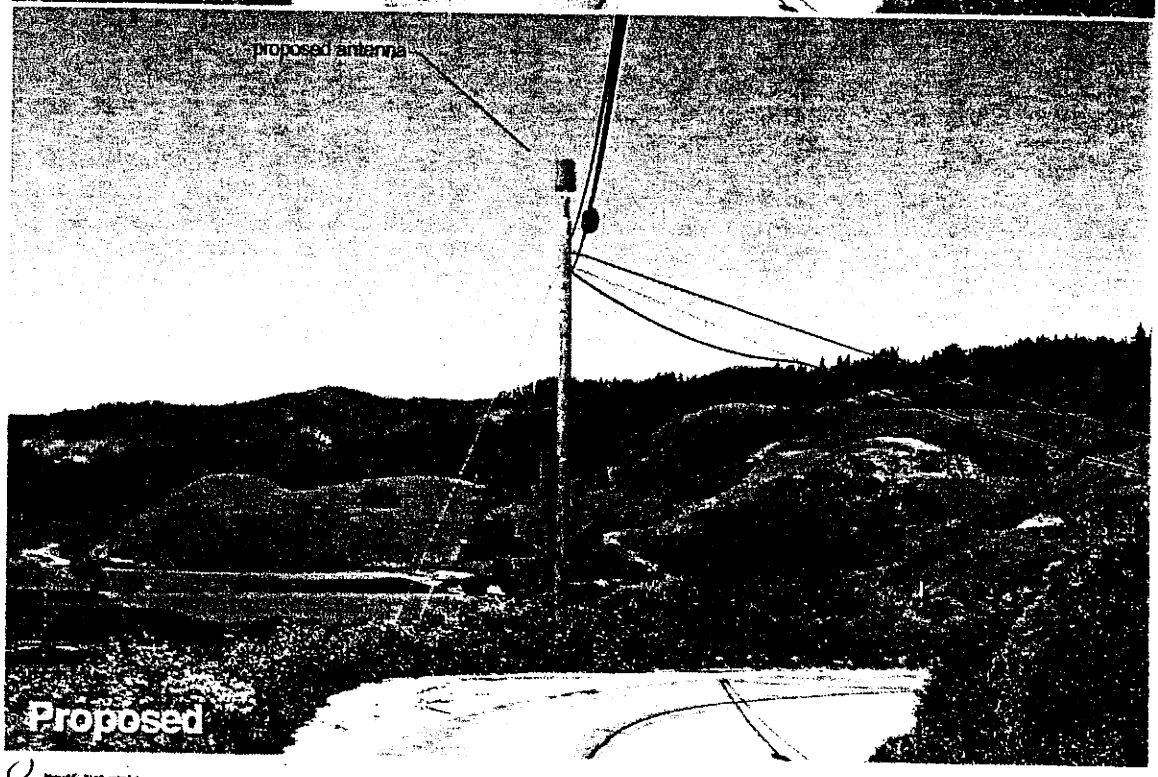




Verizon Wireless

Davenport

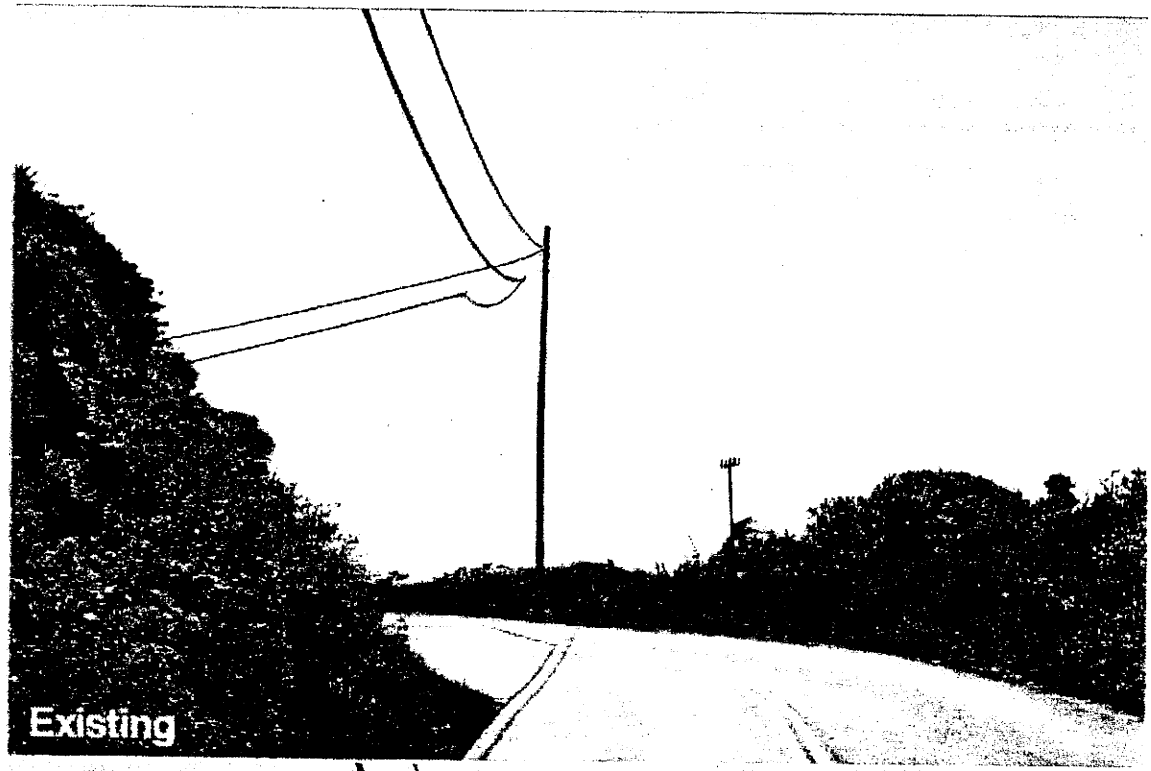
Site # DAV05

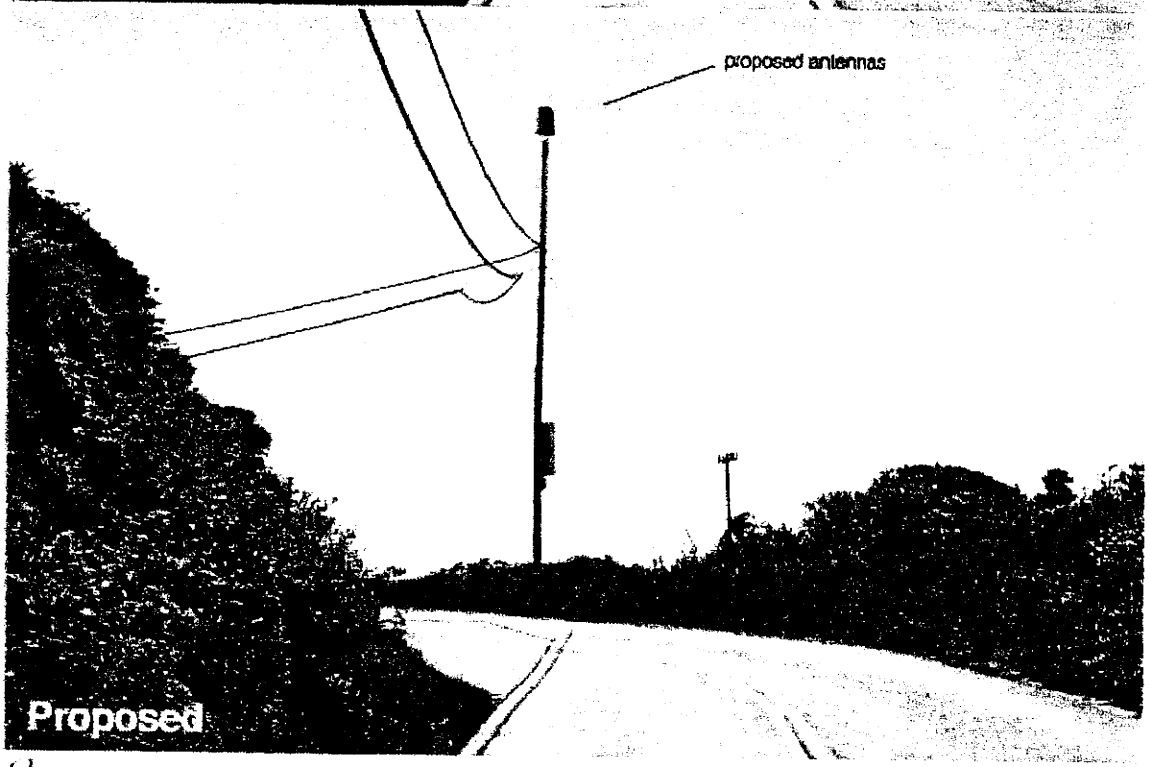
10/27/11

Cabrillo Hwy / Hwy 1
Santa Cruz, CA 95060

View #1

Applied Imagination 510 214-0600





Davenport

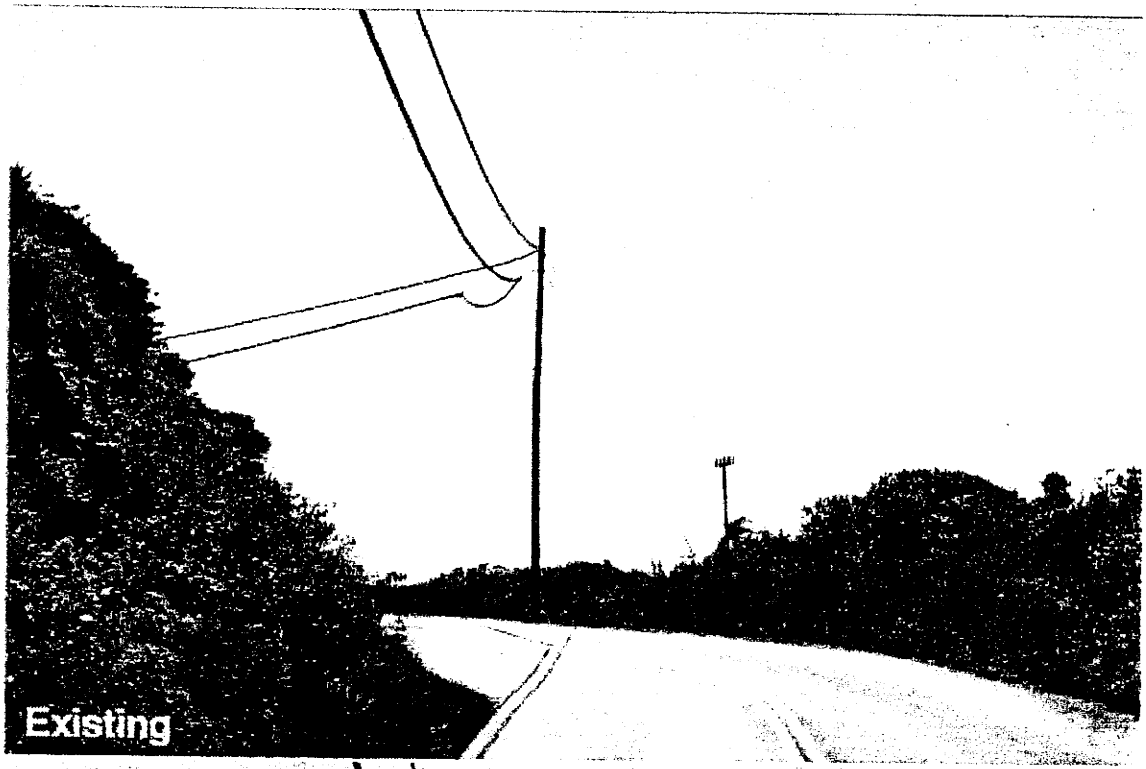
Site # DAV05

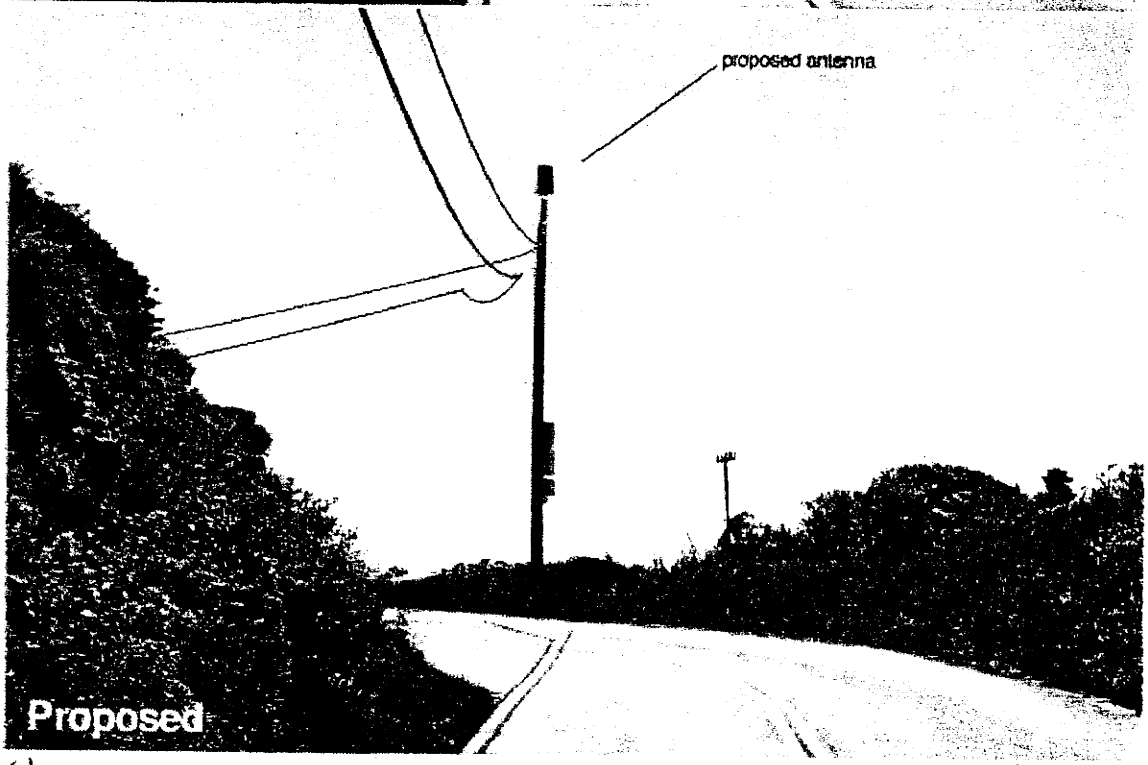
Cabrillo Hwy / Hwy1
Santa Cruz, CA 95050

5/05/11

View #2

EXHIBIT G





Davenport

Site # DAV05

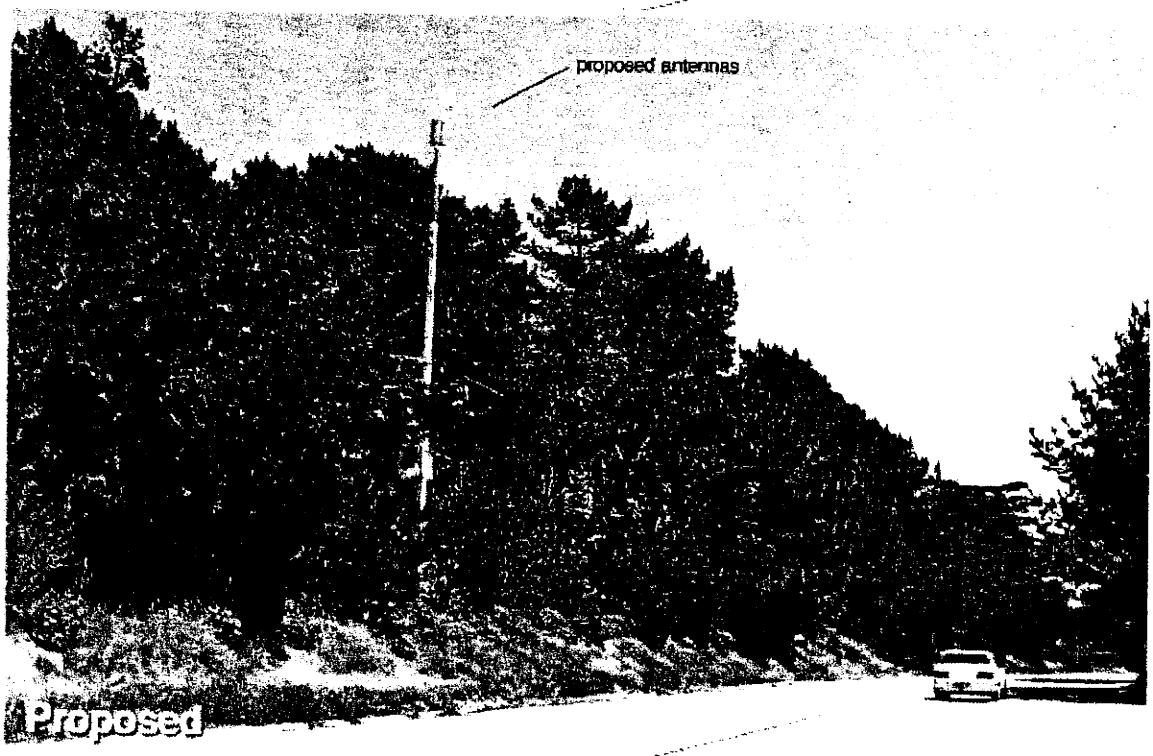
Cabrillo Hwy / Hwy1
Santa Cruz CA 95060

10/27/11

View #2

EXHIBIT C

Existing



Proposed

Davenport

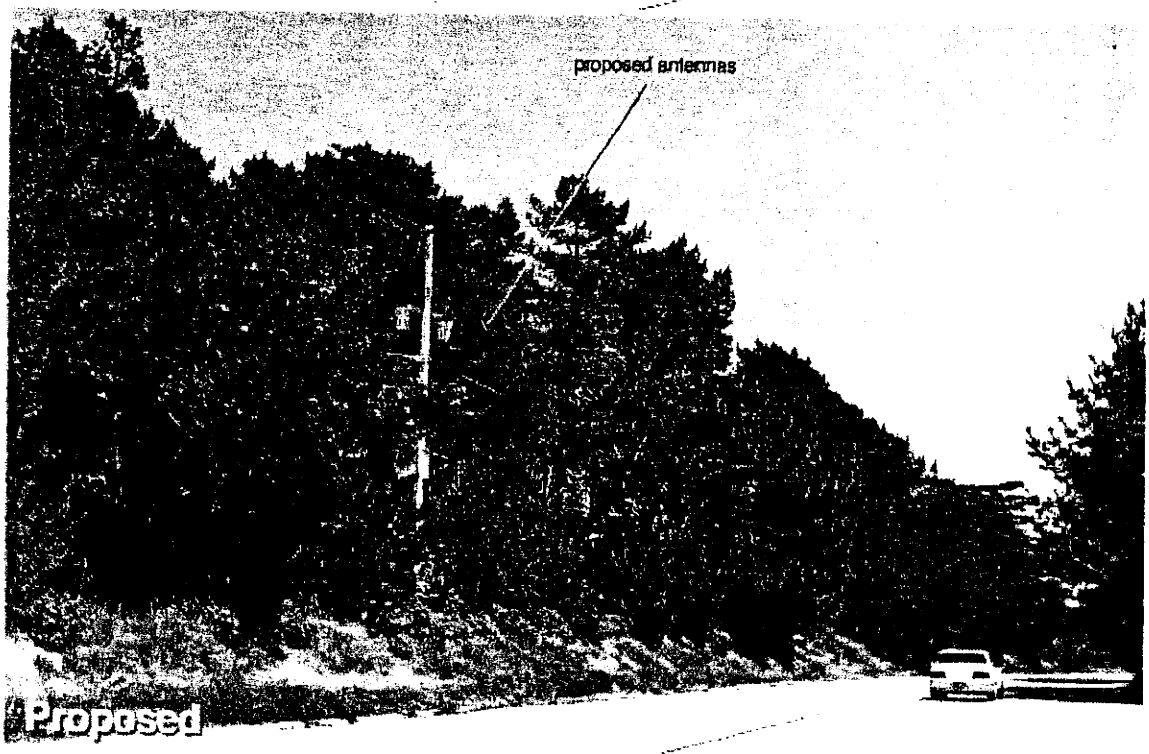
Site # DAV09

Cabrillo Hwy / Hwy 1
Santa Cruz, CA 95060

5/25/11

View #1

Existing



Proposed

Davenport

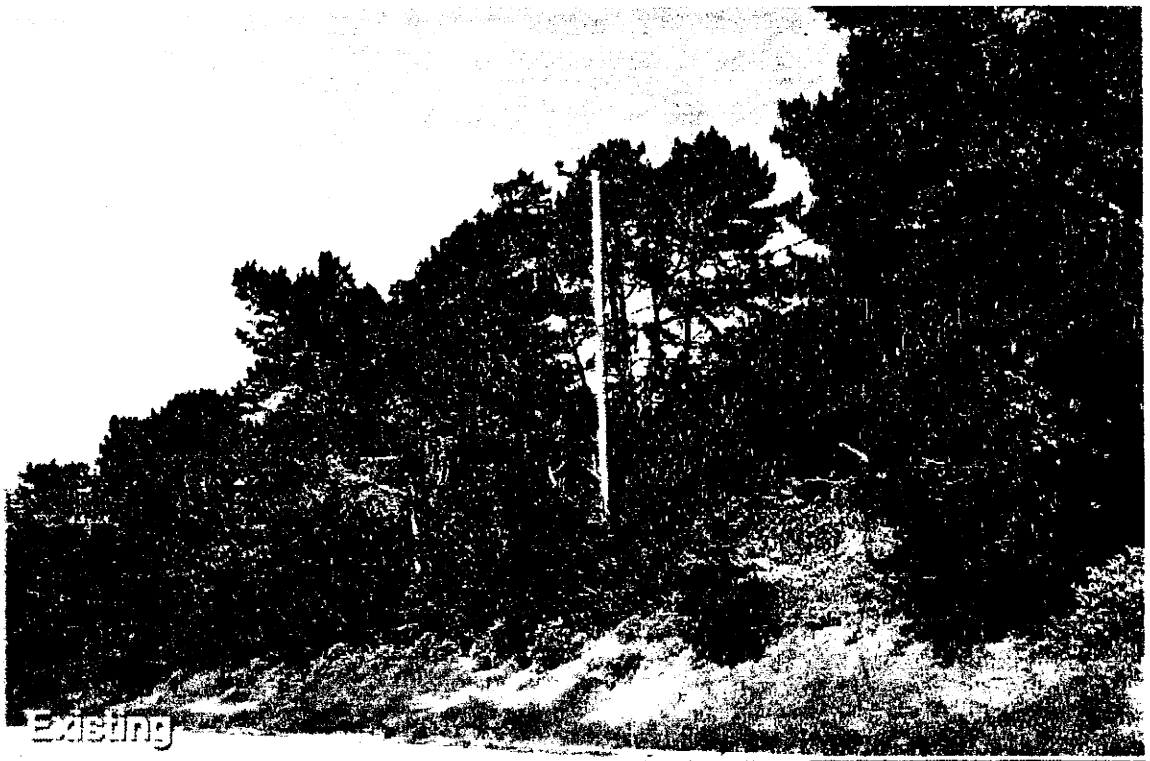
Site # DAV09

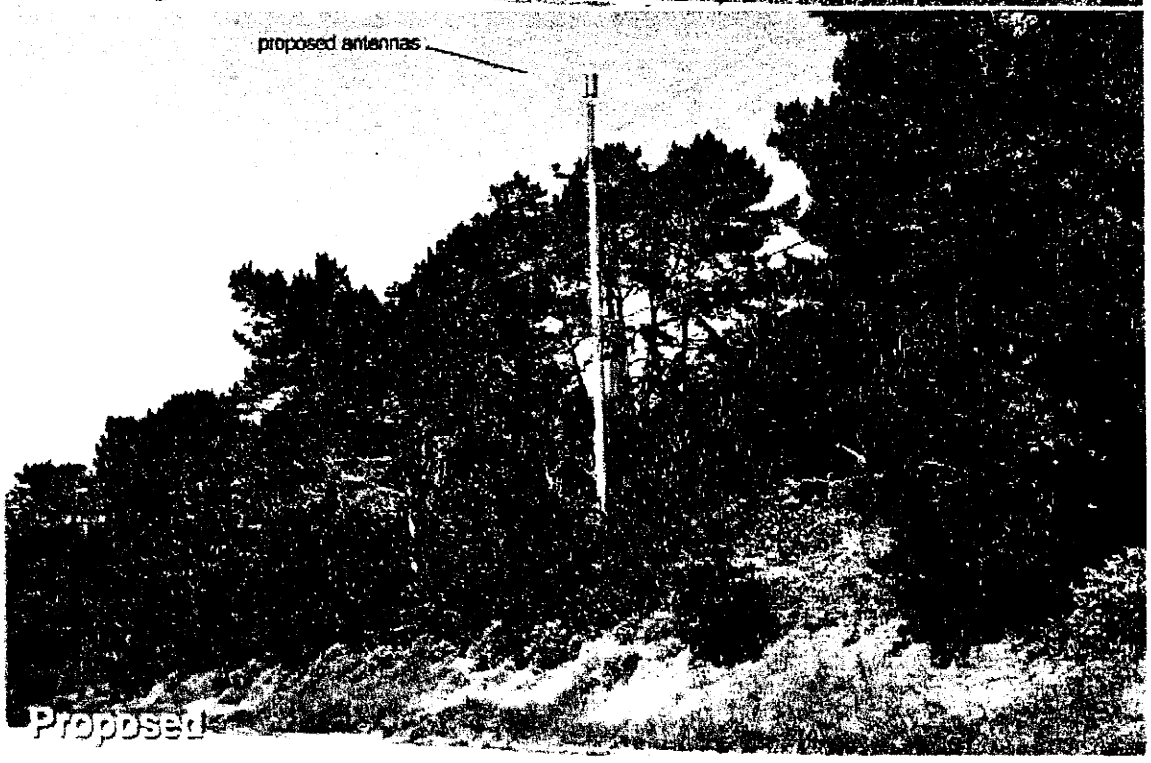
Cabrillo Hwy / Hwy1
Santa Cruz, CA 95060

8/12/11

View #1

EXHIBIT 9



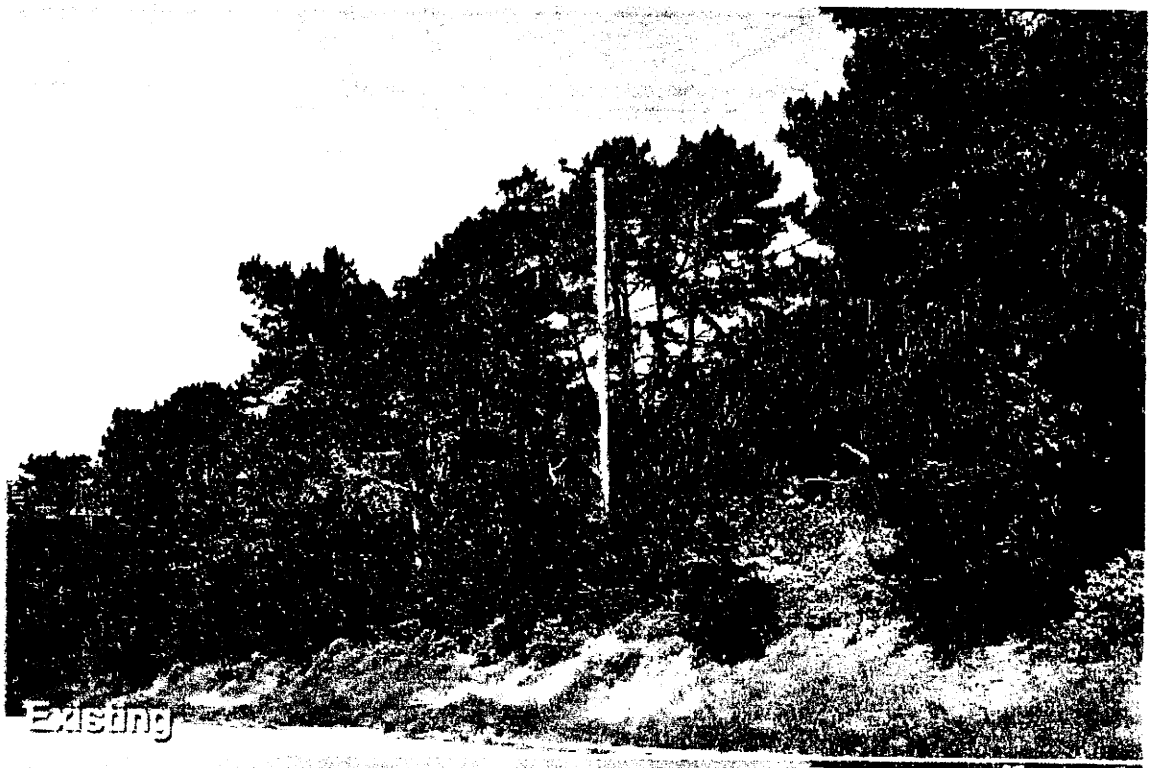


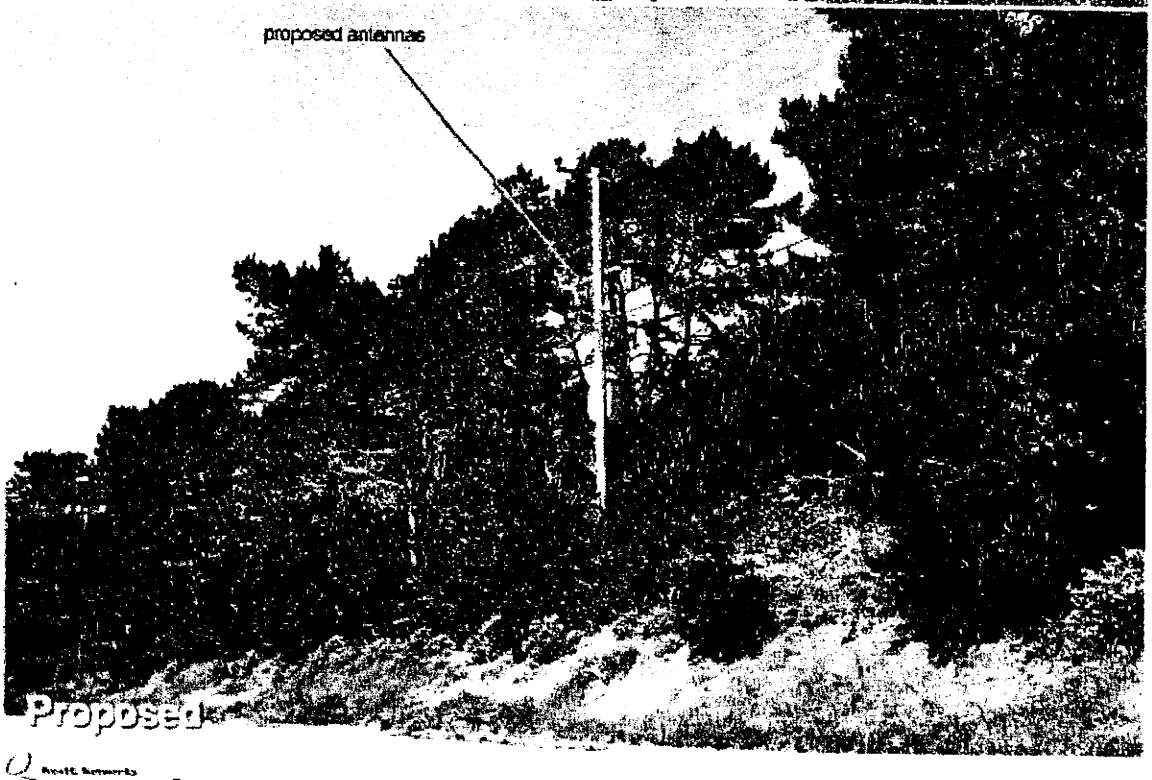
Davenport Site # DAV09

Cabrillo Hwy / Hwy1
Santa Cruz, CA 95060

5/25/11

View #2





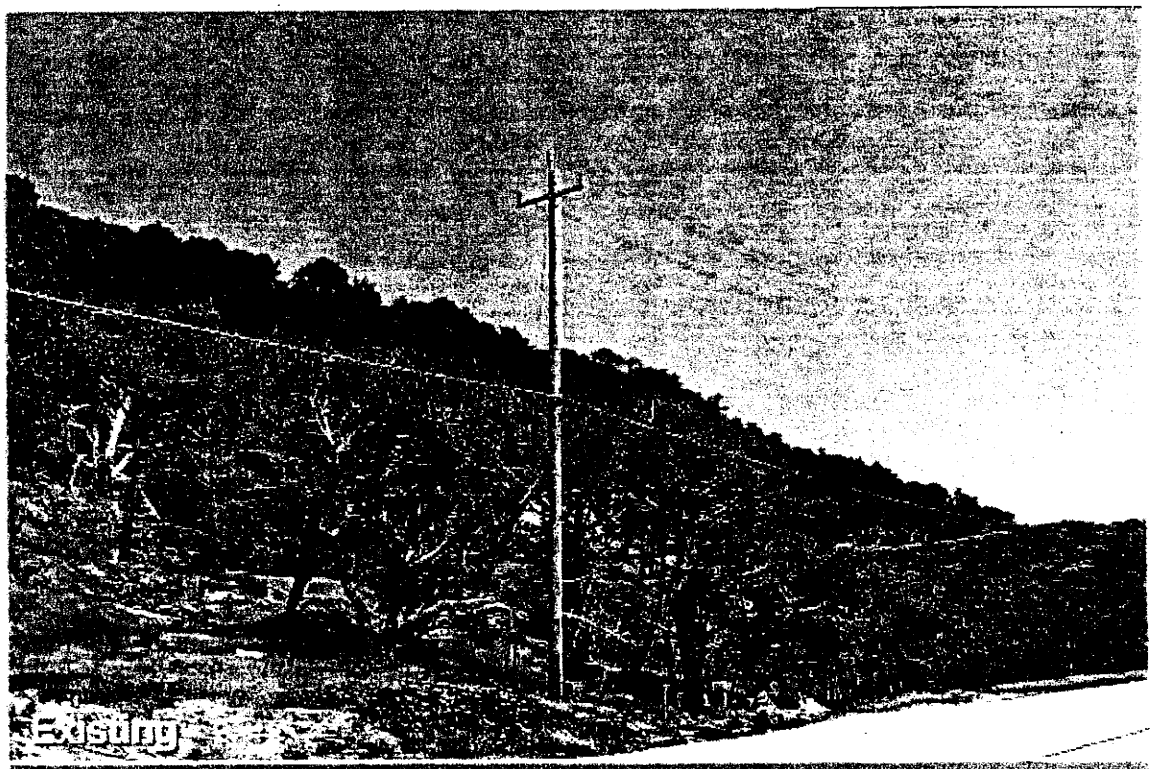
Davenport Site # DAV09

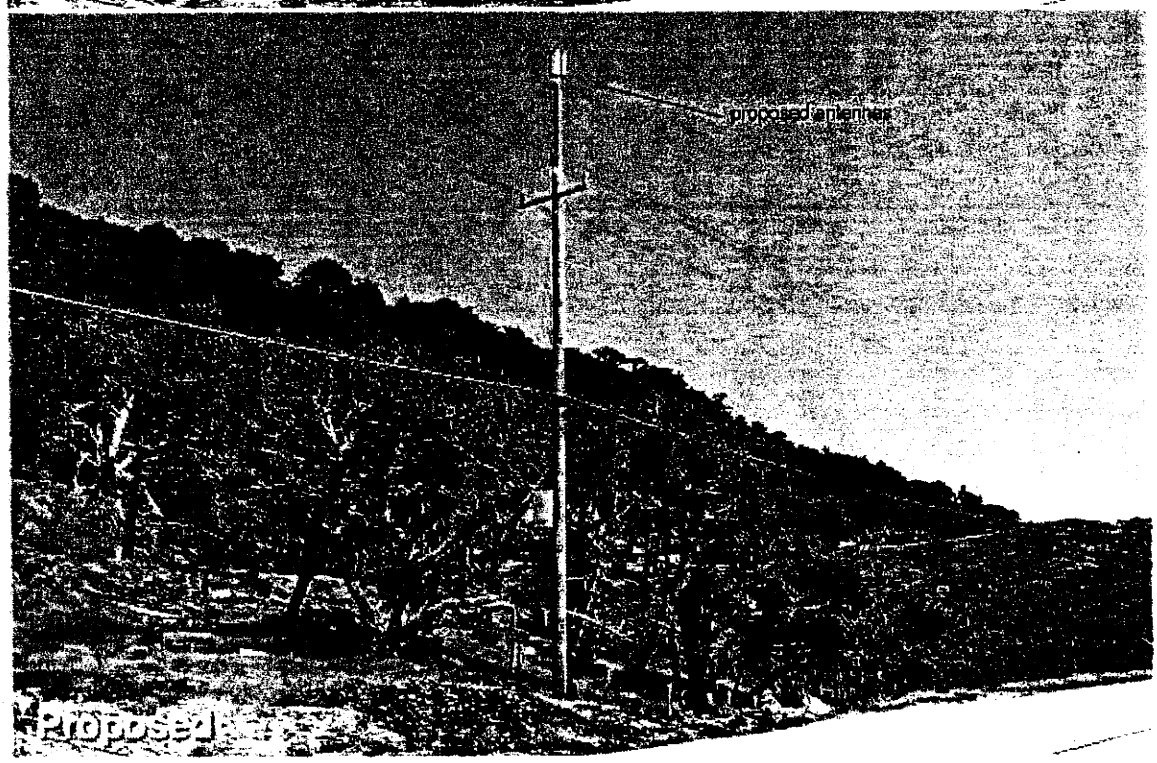
Cabrillo Hwy / Hwy1
Santa Cruz, CA 95060

8/12/11

View #2

EXHIBIT C



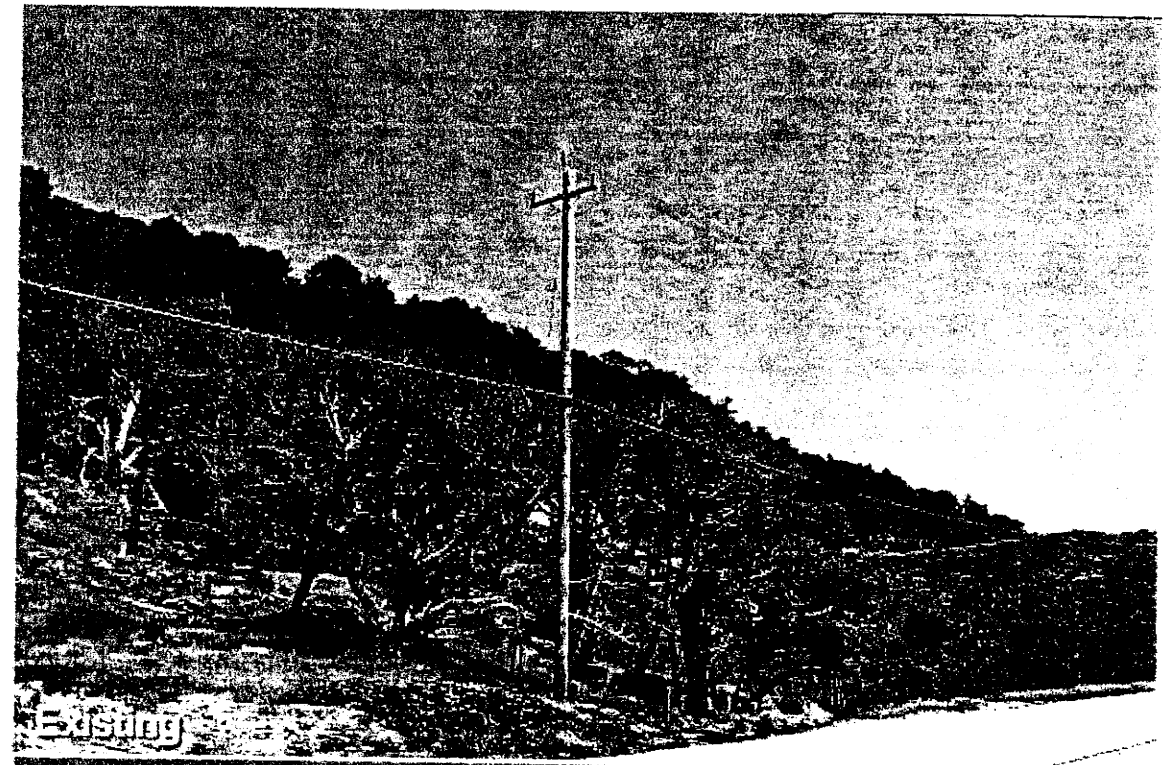


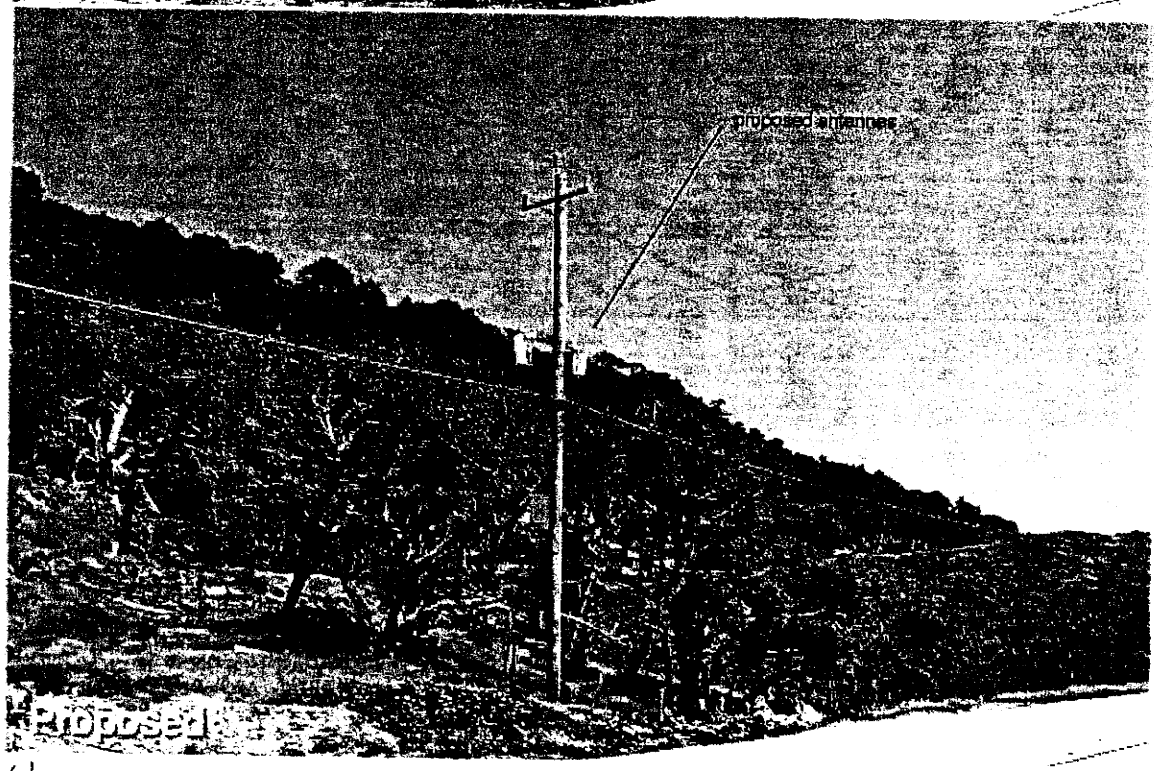
Davenport Site # DAV10

Cabrillo Hwy / Hwy1
Santa Cruz, CA 95060

5/25/11

View #1





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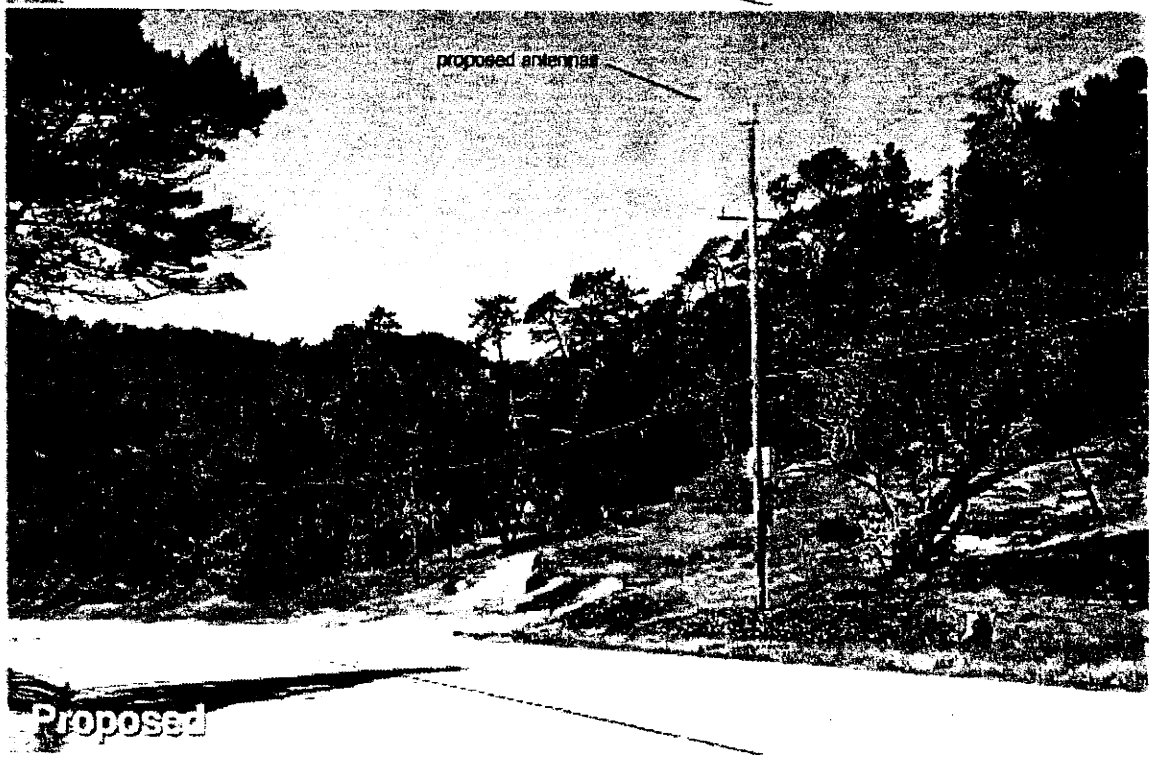
Cabrillo Hwy / Hwy 1
Santa Cruz, CA 95060

8/12/11

View #1

EXHIBIT C

Existing



Proposed

Davenport Site # DAV10

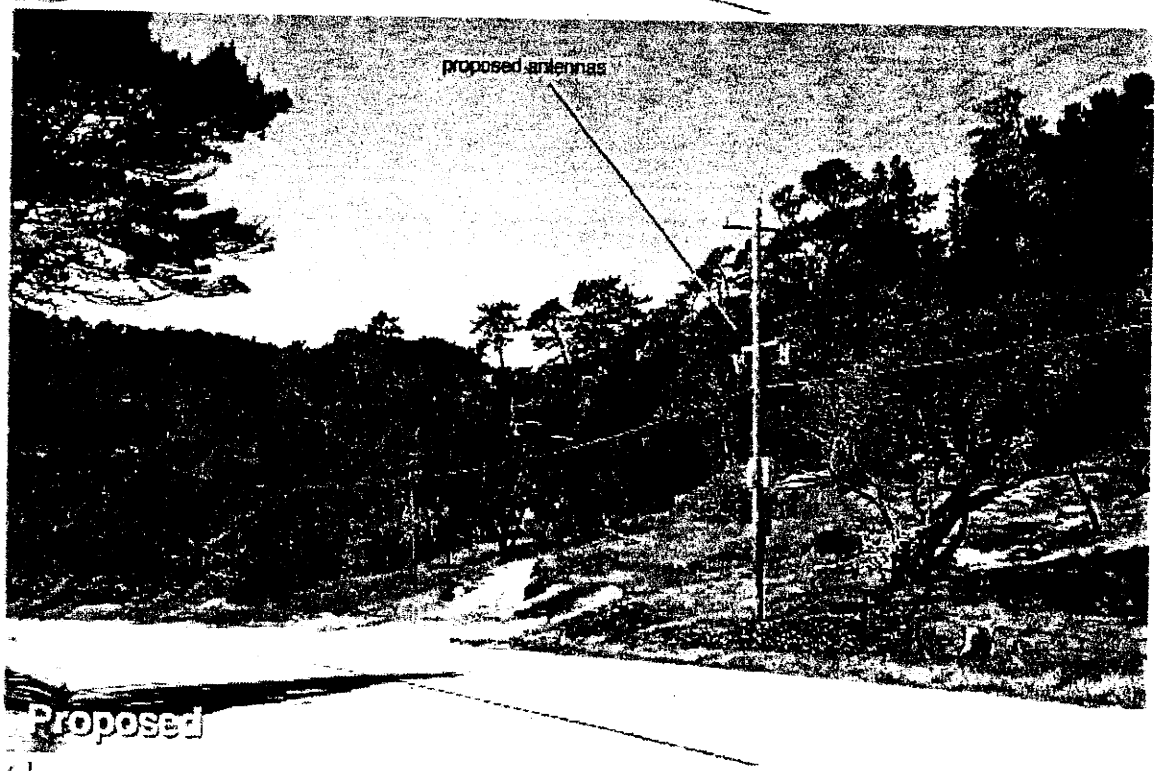
Cabrillo Hwy / Hwy 1
Santa Cruz, CA 95060

5/05/11

View #2

EXHIBIT G

Existing



Proposed

Davenport

Site # DAV10

Cemetio Hwy / Hwy1
Santa Cruz CA 95060

6/12/11

View #2

EXHIBIT G

EXHIBIT B: ALTERNATE HUB LOCATION CANDIDATES

DATE SUBMITTED: January 14, 2011

CANDIDATE LOCATION DATA	CANDIDATE A	CANDIDATE B	CANDIDATE C
Candidate name or identifier:	Davenport Fire Department	Swanton Berry Farm	Big Creek Lumber
Is the candidate in the search ring?	Yes	Yes	Yes
Street address or descriptive address:	75 Marine View	25 Swanton Road	3564 Highway 1
City, County, State, Zip:	Davenport, Santa Cruz, CA	Davenport, Santa Cruz, CA	Davenport, Santa Cruz, CA 95017
Ground Build, Roof-top, Collocate, Other:	Ground	Ground	Ground
Latitude:	37º 00' 44.31" N	37º 01' 49.67" N	37º 05' 18.99" N
Longitude:	122º 11' 46.36" W	122º 13' 05.67" W	122º 16' 23.07" W
Ground Elevation (AMSL):	89'	118'	152'
Rad Center elevations available (in feet):	N/A	N/A	N/A
Overall Tower Height:	N/A	N/A	N/A
Zoning jurisdiction:	County	County	County
Zoning required?	Yes	Yes	Yes
Zoning Timeline:	60-90 days	60-90 days	60-90 days
Other location comments:	None	None	None
Access description:	No issues	No issues	No issues
Location accessible for crane?	Yes	Yes	Yes
Will compound footprint accommodate generator?	Yes	Yes	Yes
Current carriers if collocation (if known):	N/A	N/A	N/A
Approximate distance to commercial power if known:	10'	50'	50'
Existing commercial power vendor and rating if known:	200 Amps	100 Amps	Unknown
Distance to existing telco pedestal if known:	75'	75'	Unknown
Existing Telco provider(s) if known:	TBD	TBD	TBD

Location Comments:	Zoning District: (P) - Public Facility - ALLOWED PER WIRELESS ORD.	Zoning District: (AG) zone - ALLOWED PER WIRELESS ORD.	Zoning District: (AG) zone ALLOWED PER WIRELESS ORD. (Adjacent to Existing Parks & Rec)
CANDIDATE LANDLORD DATA			
Tower Owner:	N/A	N/A	N/A
Tower Contact Name:	N/A	N/A	N/A
Tower Contact Address:	N/A	N/A	N/A
Tower Contact Phone:	N/A	N/A	N/A
Tower Contact Email:	N/A	N/A	N/A
Ground Owner:	Davenport Fire Department	Swanton Berry Farm	Big Creek Lumbar
Ground Contact Name:	Brendan Miele	Sandy/Jim	Janet Webb, President
Ground Contact Address:	75 Marine View, Davenport, CA 95017	22 Swanton Road, Davenport, CA 95017	3564 Highway 1, Davenport, CA 95017
Ground Contact Phone:	831-238-0480	(831) 469-8804	(831) 457-5015
Ground Contact Email:	davenportfire@yahoo.com	sandy@cruzio.com	N/A
Is the candidate subject to a Master Lease Agreement (MLA)?	No	No	No
Landlord Comments:	I have reached out to the landlord, and hope to be able to discussing space.	I have been in discussion with the master tenant, Swanton Berry Farm, however the property is owned by an absentee owner, who I am pursuing.	This property owner has been elusive thus far, I will keep pursuing.

GENERAL COMMENTS	
Lease:	Overall, only (3) areas which provide a viable option.
Zoning:	All (3) locations allow "wireless", and in this case, this is just the equipment HUB with a fiber feed, meaning the applicability may not be applicable, meaning planning would only need to take a "administrative" look at our proposal, which would be over the counter.

Permitting:	No permitting issues, other than clearing your compliance issues (see above, if any). BP process takes approximately 6 weeks in Santa Cruz County.
Environmental:	Candidate A - A gas tank exists on property. Candidate B - No none issues, other than standing water, and the facility is used as a farm, potential diesel issues, Candidate C - Lumber company, no known issues.
Regulatory:	Not aware of any issues.
Construction concerns:	None. New Build type construction, "stealthing" would be required, screening the equipment, blending in with the environment.
Fire or Police services:	Volunteer fire department in Davenport. County Sheriff covers Davenport area.

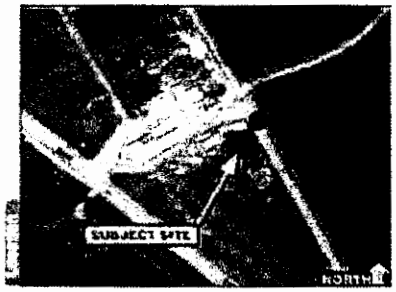
EXHIBIT C

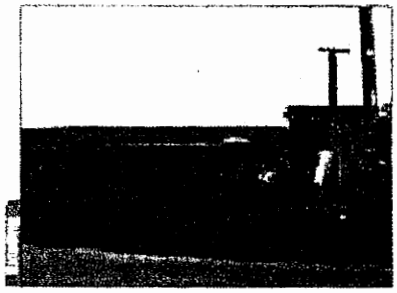
EXHIBIT C: TELECOMMUNICATIONS HUB LOCATION & SIMULATIONS

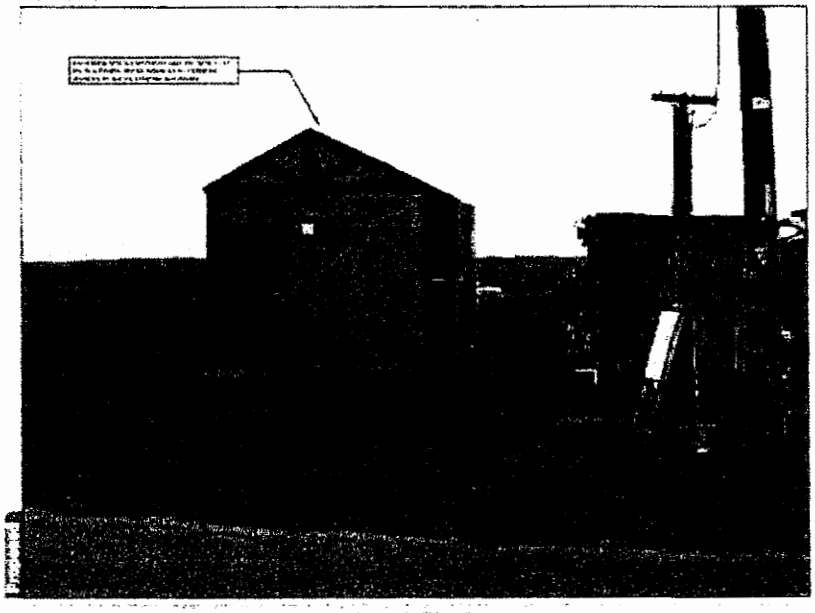
DAVENPORT HUB

NextG Networks

View #: 1







RTGRAPHICS

EDG

DAVENPORT HUB

NextG Networks

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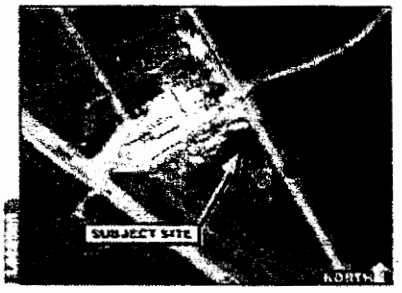
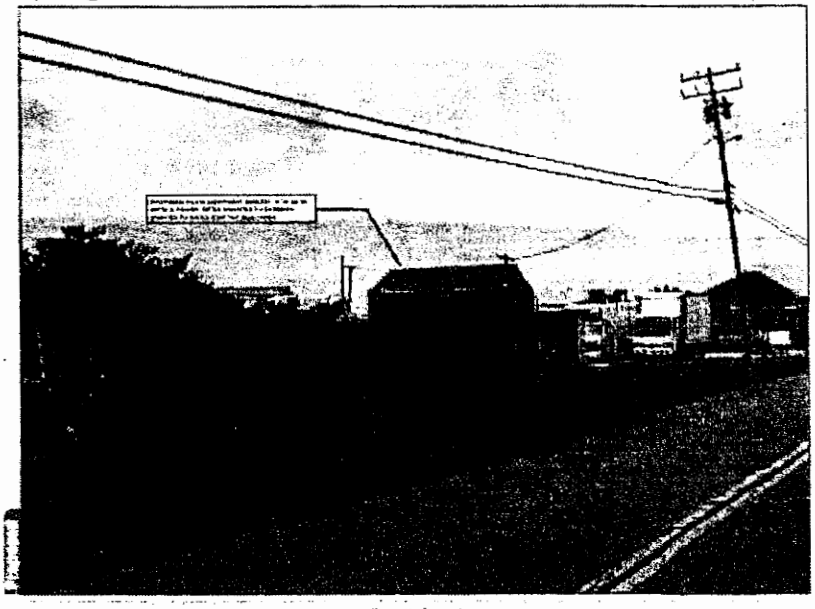




RTGRAPHICS

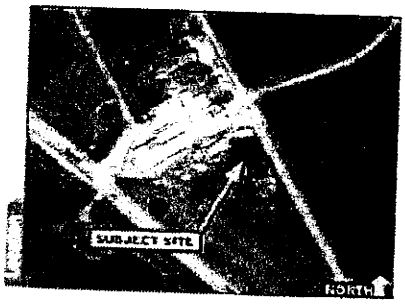
EDG

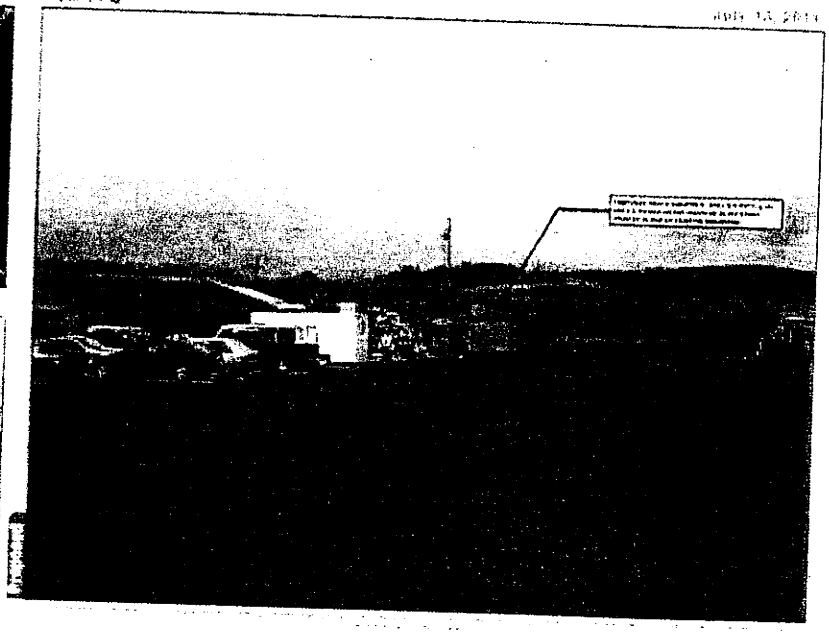
EXHIBIT G

DAVENPORT HUB

NextG Networks

View #: 3





RT GRAPHICS

CDG

Engineering Report

Radio Frequency Exposure Study
VRZ - Kathrein Scala 840 10510

Presented to:

NextG Networks

890 Tasman Drive
Milpitas, CA 95035

April 12, 2011

Trott Communications Group, Inc.
1303 W. Walnut Hill Lane, Suite 300
Irving, Texas 75038
Office: (972) 518-1811
www.trottgroup.com

VRZ - Kathrein Scala 840 10510

Table of Contents

ENGINEERING REPORT
RF EXPOSURE STUDY
(VRZ - Kathrein Scala 840 10510)

Introduction

NextG Networks, Inc. (NextG), located in Milpitas, California has contracted Trott Communications Group, Inc. (Trott), an independent RF engineering consulting firm located in Irving, Texas to conduct a Radio Frequency Exposure (RFE) Study for the NextG **Antenna Configuration** referenced below.

NextG Site Name:	VRZ - Kathrein Scala 840 10510
Site Address:	N/A
City, State:	N/A
Structure Type:	Pole
Antenna Configuration:	1 omni antenna

NextG has requested this RFE Study to analyze, using Roofview® predictions, the "worst-case" (highest possible) RF field levels that could exist at Ground-Level taking into account the NextG Antenna Configuration noted above installed atop/on a pole. In addition, NextG has informed Trott that at the time of this Study no co-located (non-NextG) antennas existed at any of the applicable NextG sites where this Antenna Configuration is installed.

This RFE Study was performed using Roofview® predictions/calculations to determine if the analyzed area of RF fields for the noted Antenna Configuration comply with the Maximum Permissible Exposure (MPE) Limits for human exposure to RF fields adopted by the Federal Communications Commission (FCC) and also recognized by the Occupational Safety and Health Administration (OSHA). The technical RF data used in the Roofview® prediction analysis for the NextG Antenna Configuration noted above is provided in the Roofview® prediction data contained in Exhibit Trott-1.

This Report describes the methodology used in this Study and documents the results of the Roofview® predictions. This Report also provides, if necessary, relevant RF compliance recommendations/options and RF safety procedures to mitigate and/or minimize human exposure to RF fields for a site(s) where the NextG Antenna Configuration analyzed in this Study is installed on a pole at the same mounting height above ground level. This Report also provides a list of general RF safety guidelines that should be followed by all persons when working at a communications site.

Methodology

Appendix B of this Report contains information and links to websites that provide details about the FCC human exposure standards (MPE Limits), information on evaluating compliance with the FCC guidelines for human exposure to radiofrequency electromagnetic fields, information on the biological effects and potential hazards of RF fields and answers to the most frequently asked questions received by the FCC concerning RF fields and their application. Also included in Appendix B is a list of vendors and distributors of RF Signs, Barriers, power breaker and electrical plug lockout devices and Personal Protective Equipment (PPE). The PPE includes personal RF monitors and RF protective clothing.

Roofview® Predictions

The Roofview® prediction analysis performed for the noted NextG Antenna Configuration took into considering a "worst-case" scenario, which assumed that all of the analyzed transmitters associated with the Antenna Configuration are broadcasting all of the time (100% duty-cycle). The Roofview® prediction software provides a means of re-analyzing the Antenna Configuration in the future if changes are made at a VRZ - Kathrein Scala 840 10510 NextG site by NextG and/or if a new FCC Licensee is added to the site that could affect the RF field levels at a particular location. Roofview® is a Microsoft Excel®-based prediction and analysis program developed by Richard Tell Associates. Roofview® produces color prediction maps of the percentage levels of the selected FCC MPE Limits that exist on each analyzed location/area (Ground-Level in this case) using a near-field/far-field spatial averaging model.

The Roofview® MPE Legend provided with the Roofview® prediction map contained in Exhibit Trott-2 of this Report specifies what each threshold color represents on the Roofview® prediction map with regards to the predicted RF field levels exceeding one or both of the FCC MPE Limits. All yellow areas shown on a Roofview® prediction map contained in this Report represent RF fields that have the potential to exceed the FCC General Population/Uncontrolled MPE Limit and all red areas shown on a Roofview® prediction map represent RF fields that have the potential to exceed both FCC MPE Limits (this includes the FCC General Population/Uncontrolled MPE Limit and the FCC Occupational/Controlled MPE Limit). The green areas depicted on a Roofview® prediction

map contained in this Report represent RF fields that are many orders of magnitude below each of the FCC MPE Limits. In addition, the blue areas depicted on a Roofview® prediction map represent RF fields that are below each of the FCC MPE Limits. However, please note that blue areas depicted on a Roofview® prediction map that are located near yellow or red areas or near an antenna could represent levels of RF fields that are approaching 100% of an FCC MPE Limit.

The Roofview® prediction analysis performed as part of this Study utilized both the FCC General Population/Uncontrolled and the FCC Occupational/Controlled MPE Limits since members of each group could have access to Ground-Level areas at a NextG site. The NextG Antenna Configuration being analyzed in this Study along with the associated transmitters were considered in the Roofview® prediction analysis.

If a Ground-Level area of RF fields for this Antenna Configuration is predicted to be greater than 100% of an FCC MPE Limit then the RF fields in this area are considered as exceeding the respective MPE Limit. If a prediction reveals a level of RF fields to be 90%-100% of an FCC MPE Limit then the RF fields at this Ground-Level location could be considered as approaching the respective FCC MPE Limit for this Antenna Configuration.

Sources of RF Data used in the Roofview® Predictions

The RF data used in this Study was provided by the NextG RF Engineer noted below.

Company Name	Contact Name / Data Source	Title / Department
NextG	David Yarlagada	NextG RF Engineer

The technical antenna/transmitter RF data used in the Roofview® predictions for this Antenna Configuration is contained in Exhibit Trott-1.

Results of Roofview® Predictions

As stated previously, the Roofview® prediction analysis performed for this Antenna Configuration took into consideration the corresponding antenna(s) and each of the transmitters connected to them. The prediction analysis evaluated the "worst-case" (highest possible) RF field levels that could exist at Ground-Level for the corresponding antennas by utilizing the FCC General Population/Uncontrolled MPE Limit and the FCC Occupational/Controlled MPE Limit. The Roofview® MPE Legend provided with the Roofview® prediction map contained in Exhibit Trott-2 specifies what each threshold color represents on the Roofview® prediction map with regards to the predicted RF field levels exceeding one or both of the FCC MPE Limits. A written description of what each Roofview® threshold color represents is also provided in the Methodology section of this Report.

A Roofview® prediction analysis was performed for the noted Antenna Configuration for the elevation/area listed in the table below. This table contains where in Appendix A of this Report the Roofview® prediction map and Roofview® statistical summary are located for each analyzed location/area.

Description of Analyzed Location/Area	Roofview® prediction map contained in:	Roofview® statistical summary contained in:
Ground-Level	Exhibit Trott-2	Exhibit Trott-3

Exhibit Trott-3 contains the Roofview® statistical summary in terms of the Occupational/Controlled MPE Limit for the analyzed elevation/area. Please note that the MPE Limit for General Population/Uncontrolled exposure is five times more stringent or greater than the MPE Limit for Occupational/Controlled exposure. For example, 10% of the FCC Occupational/Controlled MPE Limit equates to 50% of the General Population/Uncontrolled MPE Limit.

The highest predicted level of RF fields for the analyzed elevation/area for the Antenna Configuration being analyzed in this RFE Study are listed below in terms of each FCC MPE Limit. A description is also provided to define where on the analyzed elevation/area the maximum predicted RF field level exists per the results of the Roofview® prediction analysis. Also below is a description where the RF fields were predicted in Roofview® to have the potential to exceed or to approach the FCC MPE Limits for the analyzed Antenna Configuration. A notation of "N/A" below signifies that no RF fields

on the were predicted to exceed or to approach the respective MPE Limit and a notation of "(approaching)" signifies that the predicted RF fields have the potential to approach the respective FCC MPE Limit for the listed antenna(s).

Ground-Level Analysis

FCC General Population/Uncontrolled MPE Limit (Maximum Predicted):	3.0%
FCC Occupational/Controlled MPE Limit (Maximum Predicted):	0.6%
Location of Max. MPE Limits:	Within ~1' directly below the 700/800/1900MHz omni (Antenna A)

FCC Occupational/Controlled MPE Limit exceeding/approaching areas:

- N/A

FCC General Population/Uncontrolled MPE Limit exceeding/approaching areas:

- N/A

Conclusions/Recommendations

As stated previously, the RF compliance evaluation of the NextG noted Antenna Configuration installation (VRZ - Kathrein Scala 840 10510) was performed using Roofview® predictions. The following table is a summary of the Roofview® predictions that were performed for this Antenna Configuration. The use of "N/A" below denotes that no co-located (non-NextG) antennas were evaluated in this Study.

NextG Installation:	
No	The analyzed NextG installation was **predicted** in Roofview® to **exceed/approach** one or both of the FCC MPE Limits
Co-located (non-NextG) Installations:	
N/A	One or more co-located (non-NextG) installations/antennas were **predicted** in Roofview® to exceed one or both of the FCC MPE Limits

The results of the Roofview® predictions presented in the Results of Roofview® Predictions section are a "worst-case" scenario of the highest possible RF field levels that could exist at Ground-Level located near the NextG antenna installation that make up the Antenna Configuration that was analyzed in this Study. Thus, the results of the predictions will be used in this Report for developing the RF compliance/mitigation options and recommendations for this Antenna Configuration.

NextG RF Compliance Summary

The following table denotes if the Antenna Configuration that was analyzed in this Study is compliant or non-compliant with the FCC MPE Limits on the analyzed elevation/area per the results of the Roofview® predictions.

Description of Analyzed Location/Area	FCC General Population / Uncontrolled MPE Limit	FCC Occupational / Controlled MPE Limit
Ground-Level	Compliant	Compliant

The elevation/area noted above where the Antenna Configuration was determined to be "Non-Compliant" with the FCC MPE Limits are the areas at each pertinent NextG VRZ - Kathrein Scala 840 10510 site where NextG should implement RF compliance actions and/or RF mitigation measures. If the analyzed elevation/area above is designated as "Compliant" then no RF compliance/mitigation actions are required at this type of site by NextG.

It is important that all persons accessing and/or working at a NextG communications site be made aware in advance of all the active antennas that are installed and operational atop/on of this pole, that they are properly informed in advance of the high RF fields that exist or that could exist in specific Ground Level areas or on elevated locations/areas at the site due to the Antenna Configuration and that they are told in advance not to access locations/areas where the "worst-case" RF fields (if applicable) have the potential to exceed one or both of the FCC MPE Limits per the results of the Roofview® predictions.

The rules for human exposure to RF fields adopted by the FCC specify that, in general, at multiple transmitter sites actions necessary to bring an area where the RF fields exceeds one or both of the FCC MPE Limits into compliance with the guidelines are the shared responsibility of all FCC Licensees (antenna owners) whose transmitters produce RF fields (field strengths or power density levels) at the area in question in excess of 5% of the exposure limit (MPE Limit) applicable to their particular transmitter. An example of a multiple transmitter site would be a communications site where NextG is installed along with co-located antennas that are owned, licensed and operated by a another company or individual.

NextG's RF Compliance Responsibilities

In the case of this Study, **NextG** is responsible for RF compliance for the following areas for all sites where the Antenna Configuration (VRZ - Kathrein Scala 840 10510) analyzed in this Study is installed. The areas where NextG is responsible for RF compliance are based on the locations where the RF fields have the potential to exceed the FCC General Population/Uncontrolled MPE Limit.

Ground-Level

- N/A

Thus, NextG should utilize the RF compliance recommendations/options provided below to bring the NextG exceeding areas noted above for the analyzed Antenna Configuration into compliance with the FCC human exposure standards (FCC MPE Limits).

RF Safety Plan

The site owner/manager in conjunction with NextG and the actual owners (FCC Licensees) of the existing installations at each NextG VRZ - Kathrein Scala 840 10510 site may elect to implement an RF Safety Plan for the site. This Plan should be designed to completely control all access to an elevation/area at this site if RF fields thereon have the potential to exceed both of the FCC MPE Limits. The Plan should also include properly training all persons classified per the FCC human exposure standards as the General Population if they need to access am elevation/area at the site where the "worst-case" RF fields have the potential to exceed only the FCC General Population/Uncontrolled MPE Limit. The Plan should also define how persons classified per the FCC human exposure standards as Occupational Personnel can access an area at the site where the RF fields have the potential to exceed the FCC Occupational/Controlled MPE Limit if they are properly authorized and are using the appropriate Personal Protective Equipment (PPE). The two forms of PPE that are relevant to RF safety include a personal RF monitor that can be used to detect high level RF fields that exceed the FCC Occupational/Controlled MPE Limit and RF protective clothing that can be worn to attenuate (reduce) high RF fields to levels possibly below the FCC Occupational/Controlled MPE Limit. The RF Safety Plan should also specify which transmitters need to be powered down or locked out and how to coordinate and accomplish this shutdown when work is required by Occupational Personnel or the General Population in a given area at the site that exceeds the corresponding FCC MPE Limit. The RF

Safety Plan will also require posting the appropriate RF Signs in the required areas near access points and posting RF Signs and RF Barriers near all antennas that generate areas of RF fields that exceed one or both of the FCC MPE Limits.

General RF Safety Guidelines for NextG VRZ - Kathrein Scala 840 10510 Sites

If at anytime, a person who is not trained in RF Awareness and Safety (a member of the General Population) needs to work elevated above Ground-Level or in an area at a NextG VRZ - Kathrein Scala 840 10510 site where the RF fields were predicted to exceed the FCC General Population/Uncontrolled MPE Limit, if a worker who is trained in RF Awareness and Safety (Occupational Personnel) needs to work elevated above Ground-Level or in an area at a NextG site where the RF fields were predicted to exceed the FCC Occupational/Controlled MPE Limit, and/or if any person/worker (whether trained or not trained in RF Awareness and Safety) needs to work elevated above Ground-Level so that work is being performed in or near the aperture of an existing antenna, then the work should be carefully coordinated in advance by the Site Owner or Site Manager with the appropriate Wireless Carriers / FCC Licensees (Antenna Owner or Owners) so that the necessary RF safety procedures/guidelines can be implemented at the respective site. These RF safety procedures/guidelines will help to ensure that a worker does not access an area at a NextG VRZ - Kathrein Scala 840 10510 site where the RF fields could exceed one or possibly both of the FCC MPE Limits. Personnel working in an area mentioned above could include, but are not limited to, a person repairing or maintaining a portion of the pole, a person performing a visual inspection of the pole, and/or a person working on existing antennas or installing new antennas on/atop of the pole. The RF safety procedures mentioned above could include but are not limited to modifying the manner in which the work is being performed on/atop the pole in order to maximize the worker's vertical and/or horizontal separation from a specific antenna(s) or an FCC MPE Limit exceeding area, wearing a personal RF monitor to detect high levels of RF fields while working near an antenna(s), scheduling the work at the site during off-peak times (possibly late at night) when the RF fields at the site could be lower, and/or powering down or off (locking out) the radio transmitter(s) that are connected to the pertinent antenna(s) at the site while working near the antenna(s).

As a precautionary measure and as a good rule of thumb, Trott recommends that all personnel accessing a communication site should always strive to maximize their horizontal and vertical separation between

themselves and all of the existing antennas that are installed atop the pole. When an antenna's aperture is accessible from a given elevation/area at a communication site the chance that this antenna could generate RF fields on the location/area that exceeds an FCC MPE Limit when it is transmitting is much greater due to the proximity that a person can get near the RF emitting source (aperture accessibility).

Please note that the aperture of a directional antenna (i.e. panel antenna, microwave dish, yagi) is the front portion of the antenna that is emitting/generating the actual RF energy (fields) in a given direction and the aperture of an omni-directional antenna is the upper portion of the antenna above its mounting area that emits RF energy in all directions (360 degrees). The location near a transmitting antenna where its RF fields have the potential to be at their highest level is located near the aperture of the antenna. For a directional antenna this would be in front of and possibly along the sides of the antenna. When an antenna's aperture is accessible from a given area at a communication site the chance that this antenna could generate RF fields in this area that exceeds an FCC MPE Limit when it is transmitting is much greater due to the proximity that a person can get near the RF emitting source (aperture accessibility).

If work is required on any existing antenna and/or transmitter at the NextG VRZ - Kathrein Scala 840 10510 site, then the radio transmitter connected to the antenna/transmitter being worked on should be disabled for the duration of the maintenance and/or repair. All personnel working on antennas, transmitters and/or climbing the pole should be trained in RF Awareness and Safety (Occupational Personnel) and should use the proper Personal Protective Equipment (PPE) when required. It is always recommended by Trott that all NextG employees, their contractors, and all other personnel climbing the pole and/or working on the NextG radio equipment (transmitter/receivers/antenna) should follow the Guidelines for Working in Radio Frequency Environments at all times (see these Guidelines in Exhibit Trott-4 herein). All personnel **climbing the pole** or **working elevated above Ground-Level** near the pole should understand in advance if and where the RF field levels have the potential to exceed one or both of the FCC MPE Limits in relationship (horizontally and vertically) to the existing antenna(s) so that the necessary RF safety measures can be followed.

RF Signs - Please refer to Exhibit Trott-4 contained herein for details regarding the RF Signs **(if any)** that Trott recommends to be installed at a site where this Antenna Configuration is installed per the results of this Study.

Anil Jacob, RF Systems Engineer

April 12, 2011

Raymond C. Trott, P.E.

April 12, 2011

Trott Communications Group, Inc.
Texas Registration # F-000134

Appendix A - Exhibits

Roofview® Prediction Data

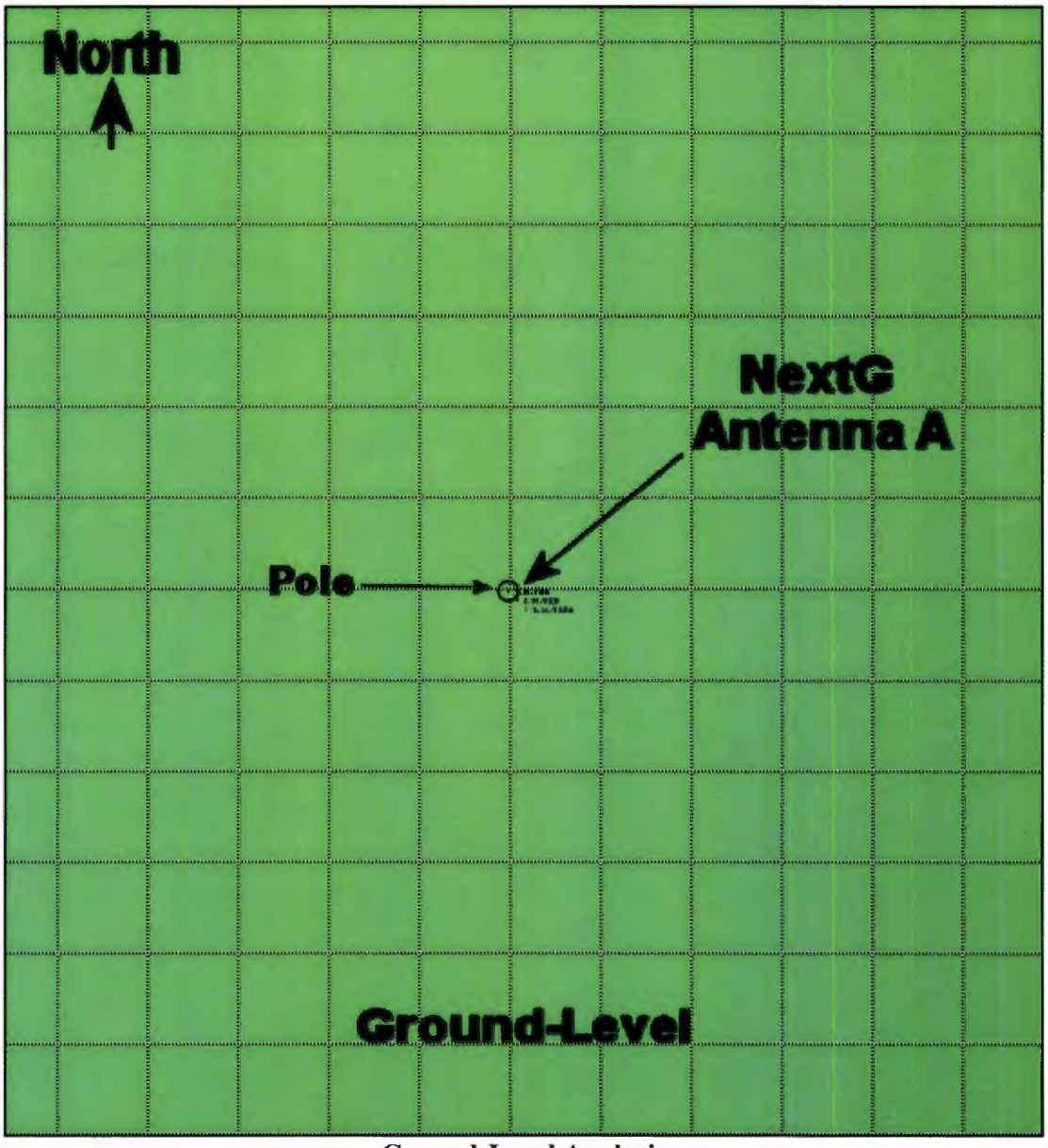
Exhibit Trott-1

	Antenna Data Table							ver 2500113086t File Imported-> NextG RV Data_KS 840 10510 (Ground-Level_2011)).xls										Date 4/12/11 12:01 PM		
Ant Num	ID	Name	(MHz) Freq	Input Power	Calc Power	Mfg	Model	(ft) X	(ft) Y	(ft) Z	Type	(ft) Aper	dBd Gain	BWdth Pt Dir	ON flag	Antenna Pixel X	Antenna Pixel Y	Antenna Pixel Z	Ant Num
1	**A.700**	Omni Antenna 1a (LTE)	746.00000	32.0	32.0	Kathrein Scala	840 10510	100.0	100.0	33.5	TX/RX	2.0	2.9	omni	ON•	100	100	33.5	1
2	**A.800**	Omni Antenna 1b (CELL)	880.50000	16.0	16.0	Kathrein Scala	840 10510	100.0	100.0	33.5	TX/RX	2.0	2.9	omni	ON•	100	100	33.5	2
3	**A.1900**	Omni Antenna 1c (PCS)	1976.25000	16.0	16.0	Kathrein Scala	840 10510	100.0	100.0	33.5	TX/RX	2.0	5.9	omni	ON•	100	100	33.5	3

Ground-Level Analysis

(The antenna z-heights listed above are referenced to the base of the pole)

Roofview® Prediction Map
Exhibit Trott-2



Ground-Level Analysis

Color	Occupational (Controlled)	General Population (Uncontrolled)
	Non-rooftop Area	Non-rooftop Area
	Non-analyzed Rooftop	Non-analyzed Rooftop
	≤ 4%	≤ 20%
	≤ 20%	≤ 100%
	≤ 100%	≤ 500%
	> 100%	> 500%

Roofview® MPE Legend

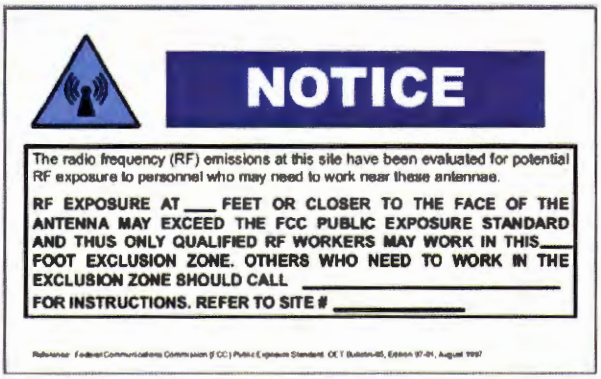
Roofview® Statistical Summary
Exhibit Trott-3

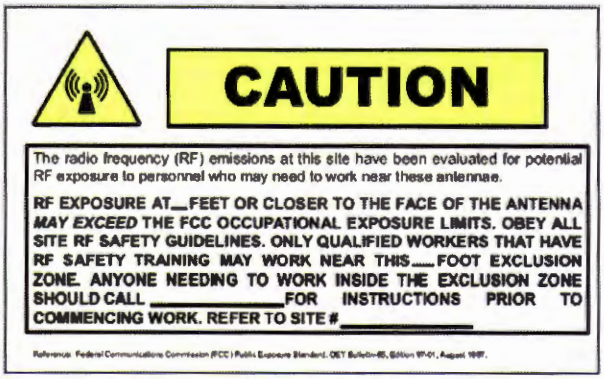
Statistical Summary			
%MPE	SQ. FT	%SQ. FT.	
	40000	100.00 %	of total ROOF Area
0 - 4	40000	100.00 %	of Selected Area
5 - 20	0	0.00 %	of Selected Area
21 - 100	0	0.00 %	of Selected Area
> 100	0	0.00 %	of Selected Area

Roof Area 40000 sq. ft.
Max %MPE 0.6 %
Min %MPE 0.0 %
Using Near/Far Spatial Avg Model
With FCC 1997 Occupational Standard

Ground-Level Analysis

Existing and Recommended RF Signage
Exhibit Trott-4





RECOMMENDED RF SIGNS:

Type of RF Sign:	Quantity:	Sign Location Description:
Blue NOTICE RF Sign *(see top-right sign above)*	0	N/A
Yellow CAUTION RF Sign *(see top-left sign above)*	0	N/A
Yellow GUIDELINES RF Sign *(see bottom sign above)*	0	N/A

Note: If applicable, the following page(s) of this Report contain(s) the NextG NOTICE and/or CAUTION RF Sign(s) noted above with the RF safety distances (exclusion zones) filled in.

N/A – No NextG NOTICE or CAUTION RF Signs Needed per this RFE Study

APPENDIX B – Background Information & RF Safety Equipment Vendors

The following two pages of information were taken from the FCC Office of Engineering and Technology (OET) Bulletin 65 -*"Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields"*.

The National Environmental Policy Act of 1969 (NEPA) requires agencies of the Federal Government to evaluate the effects of their actions on the quality of the human environment. To meet its responsibilities under NEPA, the Federal Communications Commission (FCC) has adopted requirements for evaluating/analyzing the environmental impact of its actions (see 47 CFR ' 1.1301, et seq.). One of several environmental factors addressed by these requirements is human exposure to RF energy (RF fields) emitted by FCC-regulated transmitters and facilities.

The FCC adopted guidelines to be used for evaluating human exposure to RF fields incorporates limits for Maximum Permissible Exposure (MPE) for transmitters operating at frequencies between 300 kHz and 100 GHz. The FCC MPE Limits are based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP) and, over a wide range of frequencies, the exposure limits developed by the Institute of Electrical and Electronic Engineers (IEEE) and adopted by the American National Standards Institute (ANSI).

The results of the Roofview® predictions and OET 65 calculations presented in this Report are based on the FCC MPE Limits. The FCC's two tiers of MPE Limits are dependent on the situation in which the exposure takes place and/or the status of the individuals who are subject to exposure. The decision on which tier (MPE Limit) applies in a given situation should be based on the application of the following definitions for the FCC General Population/Uncontrolled MPE Limit and the FCC Occupational/Controlled MPE Limit.

The **FCC Occupational/Controlled MPE Limit** applies to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. The Occupational/Controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general

population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over their exposure by leaving the area or by some other appropriate means.

The **FCC General Population/Uncontrolled MPE Limit** applies to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment-related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Another feature of the FCC MPE Limits is that exposures may be averaged over certain periods of time with the average not to exceed the Limit for continuous exposure. It is very important to note that for General Population/Uncontrolled exposures it is often not possible to control exposure to the extent that averaging times can be applied. In these situations (general population/uncontrolled) it is often necessary to assume continuous exposure. In general, time averaging of exposures is usually more practical in controlled situations where occupational exposure is the only issue. Since this RFE Study deals with uncontrolled situations and general population, exposure time averaging will not be addressed in this Report as a recommendation for RF compliance and thus continuous exposure will be assumed in all cases.

If an area of RF fields at communications site is predicted to be greater than 100% of an FCC MPE Limit then the RF fields in this area are considered as exceeding the respective MPE Limit. If a prediction/calculation reveals a level of RF fields to be 90%-100% of an FCC MPE Limit then the RF fields at this location could be considered as approaching the respective FCC MPE Limit.

For additional background information about radio frequency electromagnetic fields, information on the FCC's MPE Limits and information on the biological effects and potential hazards of RF fields please visit the FCC radio frequency safety website at: www.fcc.gov/oet/rfsafety/.

As you scroll down the FCC's RF safety webpage you will see links to and/or downloadable documents for the following:

▣ **Background Information** – This section contains information about the FCC policy on human exposure to RF electromagnetic fields

▣ **Radiofrequency Energy Frequently Asked Questions (FAQ)** - This section contains answers to the most frequently asked questions received by the FCC concerning RF fields and their application.

▣ **OET Bulletin 56** - *Questions and Answers about Biological Effects Potential Hazards of Radiofrequency Electromagnetic Fields (Fourth Edition, August 1999)*

This is an informative bulletin written as a result of increasing interest and concern of the public with respect to this issue. The expanding use of radio frequency technology has resulted in speculation concerning the alleged "electromagnetic pollution" of the environment and the potential dangers of exposure to non-ionizing radiation. This publication is designed to provide factual information to the public by answering some of the most commonly asked questions.

▣ **OET Bulletin 65** - *Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields*

This technical bulletin was issued to provide guidance in the implementation of the Commission's new exposure Limits and policies. The bulletin provides acceptable methods of determining compliance Commission Limits through the use of mathematical and empirical models.

▣ **A Local Government Official's Guide to Transmitting Antenna RF Emission Safety: Rules, Procedures, and Practical Guidance**. The LSGAC and the FCC have developed this guide to aid local governmental officials and citizens in understanding safety issues related to radiofrequency emissions from telecommunications towers.

▣ **Information on Human Exposure to Radiofrequency Fields from Cellular and PCS Radio Transmitters** - This page explains technical information on cellular and PCS base stations, mobile, and portable telephones.

Also please visit the FDA (Food and Drug Administration) website at the link provided below to get additional information about the safety of cell phones.

www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/default.htm

RF Safety Equipment Vendors

The following is a partial list of vendors and distributors of RF Signs, Personal Protective Equipment (PPE) including personal RF monitors and RF protective clothing, Barriers, and power breaker and electrical plug lockout devices. Please consult with the vendor and/or distributor of each product in order to select the best model or device for your particular need or application.

NARDA Microwave-East
Telephone #: (631) 231-1700 www.nardamicrowave.com
Products: *Personal RF Monitors, RF Area Monitors*

NSP America, Inc.
Telephone #: (704) 372-6620 www.nspworldwide.com
Products: *RF Protective Clothing*

TESSCO Technologies, Inc.
Telephone #: (800) 508-5444 www.tessco.com
Products: *RF Signs, Personal RF Monitors, RF Protective Clothing*

SETON Identification Products
Telephone #: (800) 571-2596 www.seton.com
Products: *Barriers, Power breaker lockouts, power cord and plug lockout devices, and more*

Engineering Report
Radio Frequency Exposure Study
VRZ - Kathrein Scala 840 10525

Presented to:

NextG Networks

890 Tasman Drive
Milpitas, CA 95035

April 12, 2011

Trott Communications Group, Inc.
1303 W. Walnut Hill Lane, Suite 300
Irving, Texas 75038
Office: (972) 518-1811
www.trottgroup.com

VRZ - Kathrein Scala 840 10525

Table of Contents

ENGINEERING REPORT
RF EXPOSURE STUDY
(VRZ - Kathrein Scala 840 10525)

Introduction

NextG Networks, Inc. (NextG), located in Milpitas, California has contracted Trott Communications Group, Inc. (Trott), an independent RF engineering consulting firm located in Irving, Texas to conduct a Radio Frequency Exposure (RFE) Study for the NextG **Antenna Configuration** referenced below.

NextG Site Name:	VRZ - Kathrein Scala 840 10525
Site Address:	N/A
City, State:	N/A
Structure Type:	Pole
Antenna Configuration:	2 panel antennas

NextG has requested this RFE Study to analyze, using Roofview® predictions, the "worst-case" (highest possible) RF field levels that could exist at Ground-Level taking into account the NextG Antenna Configuration noted above installed atop/on a pole. No site survey was performed by Trott for this RFE Study. In addition, NextG has informed Trott that at the time of this Study no co-located (non-NextG) antennas existed at any of the applicable NextG sites where this Antenna Configuration is installed.

This RFE Study was performed using Roofview® predictions/calculations to determine if the analyzed area of RF fields for the noted Antenna Configuration comply with the Maximum Permissible Exposure (MPE) Limits for human exposure to RF fields adopted by the Federal Communications Commission (FCC) and also recognized by the Occupational Safety and Health Administration (OSHA). The technical RF data used in the Roofview® prediction analysis for the NextG Antenna Configuration noted above is provided in the Roofview® prediction data contained in Exhibit Trott-1.

This Report describes the methodology used in this Study and documents the results of the Roofview® predictions. This Report also provides, if necessary, relevant RF compliance recommendations/options and RF safety procedures to mitigate and/or minimize human exposure to RF fields for a site(s) where the NextG Antenna Configuration analyzed in this Study is installed on a pole at the same mounting height above ground level. This Report also provides a list of general RF safety guidelines that should

be followed by all persons when working at a communications site.

Methodology

Appendix B of this Report contains information and links to websites that provide details about the FCC human exposure standards (MPE Limits), information on evaluating compliance with the FCC guidelines for human exposure to radiofrequency electromagnetic fields, information on the biological effects and potential hazards of RF fields and answers to the most frequently asked questions received by the FCC concerning RF fields and their application. Also included in Appendix B is a list of vendors and distributors of RF Signs, Barriers, power breaker and electrical plug lockout devices and Personal Protective Equipment (PPE). The PPE includes personal RF monitors and RF protective clothing.

Roofview® Predictions

The Roofview® prediction analysis performed for the noted NextG Antenna Configuration took into considering a "worst-case" scenario, which assumed that all of the analyzed transmitters associated with the Antenna Configuration are broadcasting all of the time (100% duty-cycle). The Roofview® prediction software provides a means of re-analyzing the Antenna Configuration in the future if changes are made at a VRZ - Kathrein Scala 840 10525 NextG site by NextG and/or if a new FCC Licensee is added to the site that could affect the RF field levels at a particular location. Roofview® is a Microsoft Excel®-based prediction and analysis program developed by Richard Tell Associates. Roofview® produces color prediction maps of the percentage levels of the selected FCC MPE Limits that exist on each analyzed location/area (Ground-Level in this case) using a near-field/far-field spatial averaging model.

The Roofview® MPE Legend provided with the Roofview® prediction map contained in Exhibit Trott-2 of this Report specifies what each threshold color represents on the Roofview® prediction map with regards to the predicted RF field levels exceeding one or both of the FCC MPE Limits. All yellow areas shown on a Roofview® prediction map contained in this Report represent RF fields that have the potential to exceed the FCC General Population/Uncontrolled MPE Limit and all red areas shown on a Roofview® prediction map represent RF fields that have the potential to exceed both FCC MPE Limits (this includes the FCC General Population/Uncontrolled MPE Limit and

the FCC Occupational/Controlled MPE Limit). The green areas depicted on a Roofview® prediction map contained in this Report represent RF fields that are many orders of magnitude below each of the FCC MPE Limits. In addition, the blue areas depicted on a Roofview® prediction map represent RF fields that are below each of the FCC MPE Limits. However, please note that blue areas depicted on a Roofview® prediction map that are located near yellow or red areas or near an antenna could represent levels of RF fields that are approaching 100% of an FCC MPE Limit.

The Roofview® prediction analysis performed as part of this Study utilized both the FCC General Population/Uncontrolled and the FCC Occupational/Controlled MPE Limits since members of each group could have access to Ground-Level areas at a NextG site. The NextG Antenna Configuration being analyzed in this Study along with the associated transmitters were considered in the Roofview® prediction analysis.

If a Ground-Level area of RF fields for this Antenna Configuration is predicted to be greater than 100% of an FCC MPE Limit then the RF fields in this area are considered as exceeding the respective MPE Limit. If a prediction reveals a level of RF fields to be 90%-100% of an FCC MPE Limit then the RF fields at this Ground-Level location could be considered as approaching the respective FCC MPE Limit for this Antenna Configuration.

Sources of RF Data used in the Roofview® Predictions

The RF data used in this Study was provided by the NextG RF Engineer noted below.

Company Name	Contact Name / Data Source	Title / Department
NextG	David Yarlagada	NextG RF Engineer

The technical antenna/transmitter RF data used in the Roofview® predictions for this Antenna Configuration is contained in Exhibit Trott-1.

Results of Roofview® Predictions

As stated previously, the Roofview® prediction analysis performed for this Antenna Configuration took into consideration the corresponding antenna(s) and each of the transmitters connected to them. The prediction analysis evaluated the "worst-case" (highest possible) RF field levels that could exist at Ground-Level for the corresponding antennas by utilizing the FCC General Population/Uncontrolled MPE Limit and the FCC Occupational/Controlled MPE Limit. The Roofview® MPE Legend provided with the Roofview® prediction map contained in Exhibit Trott-2 specifies what each threshold color represents on the Roofview® prediction map with regards to the predicted RF field levels exceeding one or both of the FCC MPE Limits. A written description of what each Roofview® threshold color represents is also provided in the Methodology section of this Report.

A Roofview® prediction analysis was performed for the noted Antenna Configuration for the elevation/area listed in the table below. This table contains where in Appendix A of this Report the Roofview® prediction map and Roofview® statistical summary are located for each analyzed location/area.

Description of Analyzed Location/Area	Roofview® prediction map contained in:	Roofview® statistical summary contained in:
Ground-Level	Exhibit Trott-2	Exhibit Trott-3

Exhibit Trott-3 contains the Roofview® statistical summary in terms of the Occupational/Controlled MPE Limit for the analyzed elevation/area. Please note that the MPE Limit for General Population/Uncontrolled exposure is five times more stringent or greater than the MPE Limit for Occupational/Controlled exposure. For example, 10% of the FCC Occupational/Controlled MPE Limit equates to 50% of the General Population/Uncontrolled MPE Limit.

The highest predicted level of RF fields for the analyzed elevation/area for the Antenna Configuration being analyzed in this RFE Study are listed below in terms of each FCC MPE Limit. A description is also provided to define where on the analyzed elevation/area the maximum predicted RF field level exists per the results of the Roofview® prediction analysis. Also below is a description where the RF fields were predicted in Roofview® to have the potential to exceed or to approach the FCC MPE Limits for the analyzed Antenna Configuration. A notation of "N/A" below signifies that no RF fields

on the were predicted to exceed or to approach the respective MPE Limit and a notation of "(approaching)" signifies that the predicted RF fields have the potential to approach the respective FCC MPE Limit for the listed antenna(s).

Ground-Level Analysis

FCC General Population/Uncontrolled MPE Limit (Maximum Predicted):	28.0%
FCC Occupational/Controlled MPE Limit (Maximum Predicted):	5.6%
Location of Max. MPE Limits:	Within ~1' directly in front of and below the 700/800/1900MHz panels (Antennas A & B)

FCC Occupational/Controlled MPE Limit exceeding/approaching areas:

- N/A

FCC General Population/Uncontrolled MPE Limit exceeding/approaching areas:

- N/A

Conclusions/Recommendations

As stated previously, the RF compliance evaluation of the NextG noted Antenna Configuration installation (VRZ - Kathrein Scala 840 10525) was performed using Roofview® predictions. The following table is a summary of the Roofview® predictions that were performed for this Antenna Configuration. The use of "N/A" below denotes that no co-located (non-NextG) antennas were evaluated in this Study.

NextG Installation:	
No	The analyzed NextG installation was **predicted** in Roofview® to **exceed/approach** one or both of the FCC MPE Limits
Co-located (non-NextG) Installations:	
N/A	One or more co-located (non-NextG) installations/antennas were **predicted** in Roofview® to exceed one or both of the FCC MPE Limits

The results of the Roofview® predictions presented in the Results of Roofview® Predictions section are a "worst-case" scenario of the highest possible RF field levels that could exist at Ground-Level located near the NextG antenna installation that make up the Antenna Configuration that was analyzed in this Study. Thus, the results of the predictions will be used in this Report for developing the RF compliance/mitigation options and recommendations for this Antenna Configuration.

NextG RF Compliance Summary

The following table denotes if the Antenna Configuration that was analyzed in this Study is compliant or non-compliant with the FCC MPE Limits on the analyzed elevation/area per the results of the Roofview® predictions.

Description of Analyzed Location/Area	FCC General Population / Uncontrolled MPE Limit	FCC Occupational / Controlled MPE Limit
Ground-Level	Compliant	Compliant

The elevation/area noted above where the Antenna Configuration was determined to be "Non-Compliant" with the FCC MPE Limits are the areas at each pertinent NextG VRZ - Kathrein Scala 840 10525 site where NextG should implement RF compliance actions and/or RF mitigation measures. If the analyzed elevation/area above is designated as "Compliant" then no RF compliance/mitigation actions are required at this type of site by NextG.

It is important that all persons accessing and/or working at a NextG communications site be made aware in advance of all the active antennas that are installed and operational atop/on of this pole, that they are properly informed in advance of the high RF fields that exist or that could exist in specific Ground Level areas or on elevated locations/areas at the site due to the Antenna Configuration and that they are told in advance not to access locations/areas where the "worst-case" RF fields (if applicable) have the potential to exceed one or both of the FCC MPE Limits per the results of the Roofview® predictions.

The rules for human exposure to RF fields adopted by the FCC specify that, in general, at multiple transmitter sites actions necessary to bring an area where the RF fields exceeds one or both of the FCC MPE Limits into compliance with the guidelines are the shared responsibility of all FCC Licensees (antenna owners) whose transmitters produce RF fields (field strengths or power density levels) at the area in question in excess of 5% of the exposure limit (MPE Limit) applicable to their particular transmitter. An example of a multiple transmitter site would be a communications site where NextG is installed along with co-located antennas that are owned, licensed and operated by a another company or individual.

NextG's RF Compliance Responsibilities

In the case of this Study, **NextG** is responsible for RF compliance for the following areas for all sites where the Antenna Configuration (VRZ - Kathrein Scala 840 10525) analyzed in this Study is installed. The areas where NextG is responsible for RF compliance are based on the locations where the RF fields have the potential to exceed the FCC General Population/Uncontrolled MPE Limit.

Ground-Level

- N/A

Thus, NextG should utilize the RF compliance recommendations/options provided below to bring the NextG exceeding areas noted above for the analyzed Antenna Configuration into compliance with the FCC human exposure standards (FCC MPE Limits).

RF Safety Plan

The site owner/manager in conjunction with NextG and the actual owners (FCC Licensees) of the existing installations at each NextG VRZ - Kathrein Scala 840 10525 site may elect to implement an RF Safety Plan for the site. This Plan should be designed to completely control all access to an elevation/area at this site if RF fields thereon have the potential to exceed both of the FCC MPE Limits. The Plan should also include properly training all persons classified per the FCC human exposure standards as the General Population if they need to access am elevation/area at the site where the "worst-case" RF fields have the potential to exceed only the FCC General Population/Uncontrolled MPE Limit. The Plan should also define how persons classified per the FCC human exposure standards as Occupational Personnel can access an area at the site where the RF fields have the potential to exceed the FCC Occupational/Controlled MPE Limit if they are properly authorized and are using the appropriate Personal Protective Equipment (PPE). The two forms of PPE that are relevant to RF safety include a personal RF monitor that can be used to detect high level RF fields that exceed the FCC Occupational/Controlled MPE Limit and RF protective clothing that can be worn to attenuate (reduce) high RF fields to levels possibly below the FCC Occupational/Controlled MPE Limit. The RF Safety Plan should also specify which transmitters need to be powered down or locked out and how to coordinate and accomplish this shutdown when work is required by Occupational Personnel or the General Population in a given area at the site that exceeds the corresponding FCC MPE Limit. The RF

Safety Plan will also require posting the appropriate RF Signs in the required areas near access points and posting RF Signs and RF Barriers near all antennas that generate areas of RF fields that exceed one or both of the FCC MPE Limits.

General RF Safety Guidelines for NextG VRZ - Kathrein Scala 840 10525 Sites

If at anytime, a person who is not trained in RF Awareness and Safety (a member of the General Population) needs to work elevated above Ground-Level or in an area at a NextG VRZ - Kathrein Scala 840 10525 site where the RF fields were predicted to exceed the FCC General Population/Uncontrolled MPE Limit, if a worker who is trained in RF Awareness and Safety (Occupational Personnel) needs to work elevated above Ground-Level or in an area at a NextG site where the RF fields were predicted to exceed the FCC Occupational/Controlled MPE Limit, and/or if any person/worker (whether trained or not trained in RF Awareness and Safety) needs to work elevated above Ground-Level so that work is being performed in or near the aperture of an existing antenna, then the work should be carefully coordinated in advance by the Site Owner or Site Manager with the appropriate Wireless Carriers / FCC Licensees (Antenna Owner or Owners) so that the necessary RF safety procedures/guidelines can be implemented at the respective site. These RF safety procedures/guidelines will help to ensure that a worker does not access an area at a NextG VRZ - Kathrein Scala 840 10525 site where the RF fields could exceed one or possibly both of the FCC MPE Limits. Personnel working in an area mentioned above could include, but are not limited to, a person repairing or maintaining a portion of the pole, a person performing a visual inspection of the pole, and/or a person working on existing antennas or installing new antennas on/atop of the pole. The RF safety procedures mentioned above could include but are not limited to modifying the manner in which the work is being performed on/atop the pole in order to maximize the worker's vertical and/or horizontal separation from a specific antenna(s) or an FCC MPE Limit exceeding area, wearing a personal RF monitor to detect high levels of RF fields while working near an antenna(s), scheduling the work at the site during off-peak times (possibly late at night) when the RF fields at the site could be lower, and/or powering down or off (locking out) the radio transmitter(s) that are connected to the pertinent antenna(s) at the site while working near the antenna(s).

As a precautionary measure and as a good rule of thumb, Trott recommends that all personnel accessing a communication site should always strive to maximize their horizontal and vertical separation between

themselves and all of the existing antennas that are installed atop the pole. When an antenna's aperture is accessible from a given elevation/area at a communication site the chance that this antenna could generate RF fields on the location/area that exceeds an FCC MPE Limit when it is transmitting is much greater due to the proximity that a person can get near the RF emitting source (aperture accessibility).

Please note that the aperture of a directional antenna (i.e. panel antenna, microwave dish, yagi) is the front portion of the antenna that is emitting/generating the actual RF energy (fields) in a given direction and the aperture of an omni-directional antenna is the upper portion of the antenna above its mounting area that emits RF energy in all directions (360 degrees). The location near a transmitting antenna where its RF fields have the potential to be at their highest level is located near the aperture of the antenna. For a directional antenna this would be in front of and possibly along the sides of the antenna. When an antenna's aperture is accessible from a given area at a communication site the chance that this antenna could generate RF fields in this area that exceeds an FCC MPE Limit when it is transmitting is much greater due to the proximity that a person can get near the RF emitting source (aperture accessibility).

If work is required on any existing antenna and/or transmitter at the NextG VRZ - Kathrein Scala 840 10525 site, then the radio transmitter connected to the antenna/transmitter being worked on should be disabled for the duration of the maintenance and/or repair. All personnel working on antennas, transmitters and/or climbing the pole should be trained in RF Awareness and Safety (Occupational Personnel) and should use the proper Personal Protective Equipment (PPE) when required. It is always recommended by Trott that all NextG employees, their contractors, and all other personnel climbing the pole and/or working on the NextG radio equipment (transmitter/receivers/antenna) should follow the Guidelines for Working in Radio Frequency Environments at all times (see these Guidelines in Exhibit Trott-4 herein). All personnel **climbing the pole** or **working elevated above Ground-Level** near the pole should understand in advance if and where the RF field levels have the potential to exceed one or both of the FCC MPE Limits in relationship (horizontally and vertically) to the existing antenna(s) so that the necessary RF safety measures can be followed.

RF Signs - Please refer to Exhibit Trott-4 contained herein for details regarding the RF Signs **(if any)** that Trott recommends to be installed at a site where this Antenna Configuration is installed per the results of this Study.

Anil Jacob, RF Systems Engineer

April 12, 2011

Raymond C. Trott, P.E.

April 12, 2011

Trott Communications Group, Inc.
Texas Registration # F-000134

Appendix A - Exhibits

Roofview® Prediction Data

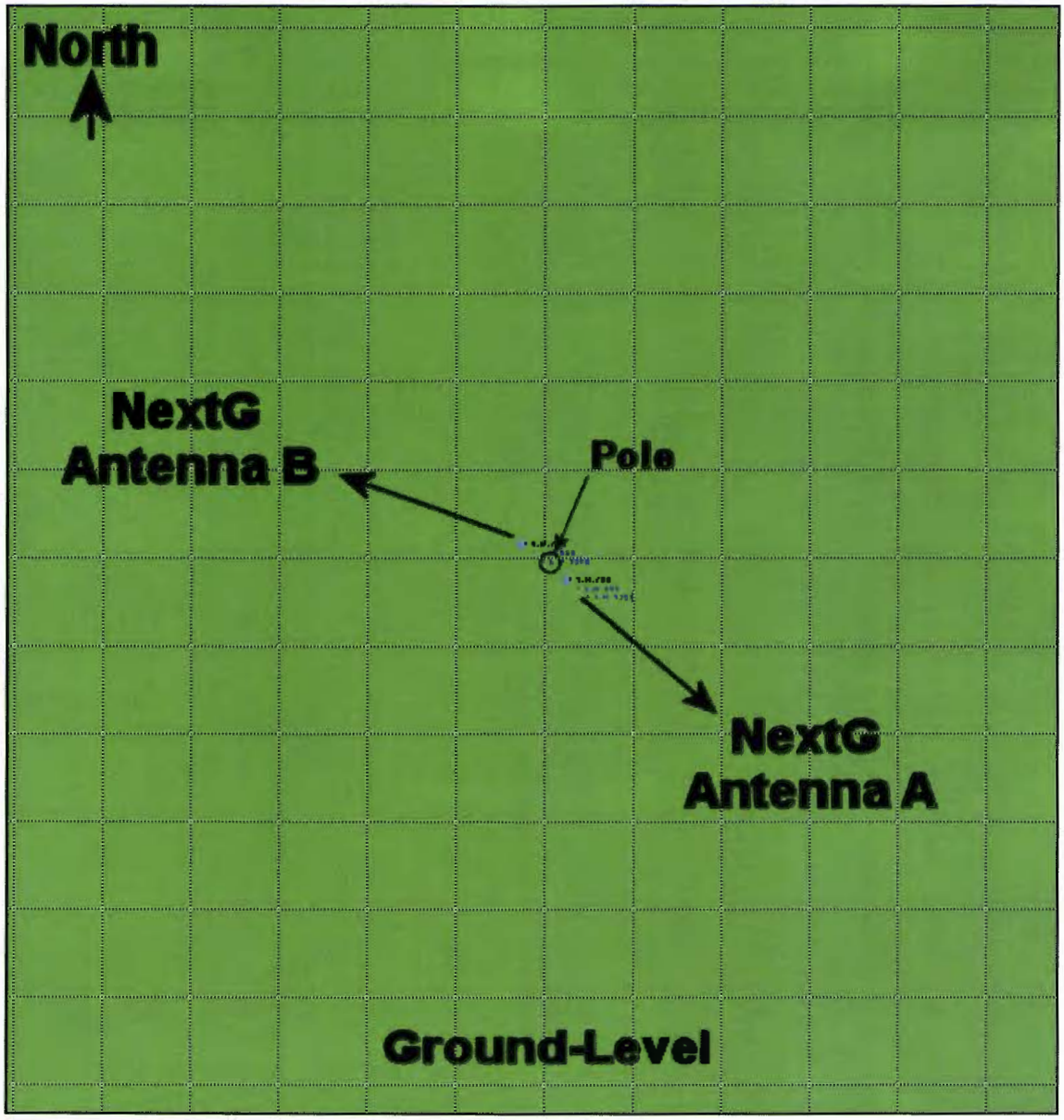
Exhibit Trott-1

Antenna Data Table				ver 25001130 Last File Imported-> NextG RV Data_KS 840 10525 (Ground-Level_2011)).xls												Date 4/12/11 12:07 PM				
Ant Num	ID	Name	(MHz) Freq	Input Power	Calc Power	Mfg	Model	(ft) X	(ft) Y	(ft) Z	Type	(ft) Aper	dBd Gain	BWidth Pt Dir	ON flag	Antenna Pixel X	Antenna Pixel Y	Antenna Pixel Z	Ant Num
1	**A.700**	Panel Antenna 1a (LTE)	746.00000	16.0	16.0	Kathrein Scala	840 10525	103.0	98.0	18.0	TX/RX	1.9	8.4	72;120	ON	103	98	18.0	**1**
2	**A.800**	Panel Antenna 1b (CELL)	880.50000	8.0	8.0	Kathrein Scala	840 10525	103.0	98.0	18.0	TX/RX	1.9	8.9	66;120	ON	103	98	18.0	**2**
3	**A.1900**	Panel Antenna 1c (PCS)	1976.25000	8.0	8.0	Kathrein Scala	840 10525	103.0	98.0	18.0	TX/RX	1.9	11.2	64;120	ON	103	98	18.0	**3**
4	**B.700**	Panel Antenna 2a (LTE)	746.00000	16.0	16.0	Kathrein Scala	840 10525	98.0	102.0	18.0	TX/RX	1.9	8.4	72;300	ON	98	102	18.0	**4**
5	**B.800**	Panel Antenna 2b (CELL)	880.50000	8.0	8.0	Kathrein Scala	840 10525	98.0	102.0	18.0	TX/RX	1.9	8.9	66;300	ON	98	102	18.0	**5**
6	**B.1900**	Panel Antenna 2c (PCS)	1976.25000	8.0	8.0	Kathrein Scala	840 10525	98.0	102.0	18.0	TX/RX	1.9	11.2	64;300	ON	98	102	18.0	**6**

Ground-Level Analysis

(The antenna z-heights listed above are referenced to the base of the pole)

Roofview® Prediction Map
Exhibit Trott-2



Ground-Level Analysis

Color	Occupational (Controlled)	General Population (Uncontrolled)
	Non-rooftop Area	Non-rooftop Area
	Non-analyzed Rooftop	Non-analyzed Rooftop
	≤ 4%	≤ 20%
	< 20%	< 100%
	≤ 100%	≤ 500%
	> 100%	> 500%

Roofview® MPE Legend

Roofview® Statistical Summary
Exhibit Trott-3

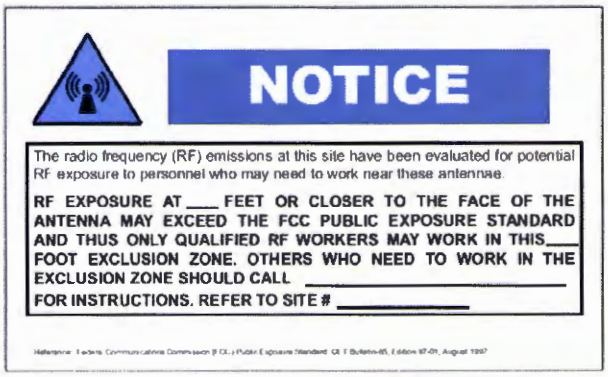
Statistical Summary			
%MPE	SQ. FT	%SQ. FT.	
	40000	100.00 %	of total ROOF Area
0 -4	39998	100.00 %	of Selected Area
5 - 20	2	0.01 %	of Selected Area
21 - 100	0	0.00 %	of Selected Area
> 100	0	0.00 %	of Selected Area

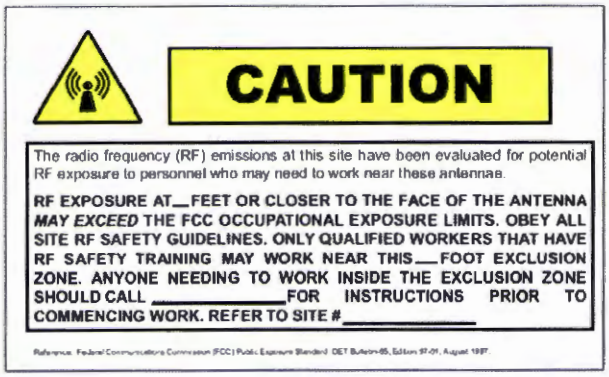
Roof Area 40000 sq. ft.
Max %MPE 5.6 %
Min %MPE 0.0 %
Using Near/Far Spatial Avg Model
With FCC 1997 Occupational Standard

Ground-Level Analysis

Existing and Recommended RF Signage

Exhibit Trott-4





RECOMMENDED RF SIGNS:

Type of RF Sign:	Quantity:	Sign Location Description:
Blue NOTICE RF Sign *(see top-right sign above)*	0	N/A
Yellow CAUTION RF Sign *(see top-left sign above)*	0	N/A
Yellow GUIDELINES RF Sign *(see bottom sign above)*	0	N/A

Note: If applicable, the following page(s) of this Report contain(s) the NextG NOTICE and/or CAUTION RF Sign(s) noted above with the RF safety distances (exclusion zones) filled in.

N/A – No NextG NOTICE or CAUTION RF Signs Needed per this RFE Study

APPENDIX B – Background Information & RF Safety Equipment Vendors

The following two pages of information were taken from the FCC Office of Engineering and Technology (OET) Bulletin 65 -*"Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields"*.

The National Environmental Policy Act of 1969 (NEPA) requires agencies of the Federal Government to evaluate the effects of their actions on the quality of the human environment. To meet its responsibilities under NEPA, the Federal Communications Commission (FCC) has adopted requirements for evaluating/analyzing the environmental impact of its actions (see 47 CFR ' 1.1301, et seq.). One of several environmental factors addressed by these requirements is human exposure to RF energy (RF fields) emitted by FCC-regulated transmitters and facilities.

The FCC adopted guidelines to be used for evaluating human exposure to RF fields incorporates limits for Maximum Permissible Exposure (MPE) for transmitters operating at frequencies between 300 kHz and 100 GHz. The FCC MPE Limits are based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP) and, over a wide range of frequencies, the exposure limits developed by the Institute of Electrical and Electronic Engineers (IEEE) and adopted by the American National Standards Institute (ANSI).

The results of the Roofview® predictions and OET 65 calculations presented in this Report are based on the FCC MPE Limits. The FCC's two tiers of MPE Limits are dependent on the situation in which the exposure takes place and/or the status of the individuals who are subject to exposure. The decision on which tier (MPE Limit) applies in a given situation should be based on the application of the following definitions for the FCC General Population/Uncontrolled MPE Limit and the FCC Occupational/Controlled MPE Limit.

The **FCC Occupational/Controlled MPE Limit** applies to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. The Occupational/Controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general

population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over their exposure by leaving the area or by some other appropriate means.

The **FCC General Population/Uncontrolled MPE Limit** applies to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment-related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Another feature of the FCC MPE Limits is that exposures may be averaged over certain periods of time with the average not to exceed the Limit for continuous exposure. It is very important to note that for General Population/Uncontrolled exposures it is often not possible to control exposure to the extent that averaging times can be applied. In these situations (general population/uncontrolled) it is often necessary to assume continuous exposure. In general, time averaging of exposures is usually more practical in controlled situations where occupational exposure is the only issue. Since this RFE Study deals with uncontrolled situations and general population, exposure time averaging will not be addressed in this Report as a recommendation for RF compliance and thus continuous exposure will be assumed in all cases.

If an area of RF fields at communications site is predicted to be greater than 100% of an FCC MPE Limit then the RF fields in this area are considered as exceeding the respective MPE Limit. If a prediction/calculation reveals a level of RF fields to be 90%-100% of an FCC MPE Limit then the RF fields at this location could be considered as approaching the respective FCC MPE Limit.

For additional background information about radio frequency electromagnetic fields, information on the FCC's MPE Limits and information on the biological effects and potential hazards of RF fields please visit the FCC radio frequency safety website at: www.fcc.gov/oet/rfsafety/.

As you scroll down the FCC's RF safety webpage you will see links to and/or downloadable documents for the following:

▣ **Background Information** – This section contains information about the FCC policy on human exposure to RF electromagnetic fields

▣ **Radiofrequency Energy Frequently Asked Questions (FAQ)** - This section contains answers to the most frequently asked questions received by the FCC concerning RF fields and their application.

▣ **OET Bulletin 56** - *Questions and Answers about Biological Effects Potential Hazards of Radiofrequency Electromagnetic Fields (Fourth Edition, August 1999)*

This is an informative bulletin written as a result of increasing interest and concern of the public with respect to this issue. The expanding use of radio frequency technology has resulted in speculation concerning the alleged "electromagnetic pollution" of the environment and the potential dangers of exposure to non-ionizing radiation. This publication is designed to provide factual information to the public by answering some of the most commonly asked questions.

▣ **OET Bulletin 65** - *Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields*

This technical bulletin was issued to provide guidance in the implementation of the Commission's new exposure Limits and policies. The bulletin provides acceptable methods of determining compliance Commission Limits through the use of mathematical and empirical models.

▣ **A Local Government Official's Guide to Transmitting Antenna RF Emission Safety: Rules, Procedures, and Practical Guidance**. The LSGAC and the FCC have developed this guide to aid local governmental officials and citizens in understanding safety issues related to radiofrequency emissions from telecommunications towers.

▣ **Information on Human Exposure to Radiofrequency Fields from Cellular and PCS Radio Transmitters** - This page explains technical information on cellular and PCS base stations, mobile, and portable telephones.

Also please visit the FDA (Food and Drug Administration) website at the link provided below to get additional information about the safety of cell phones.

www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/default.htm

RF Safety Equipment Vendors

The following is a partial list of vendors and distributors of RF Signs, Personal Protective Equipment (PPE) including personal RF monitors and RF protective clothing, Barriers, and power breaker and electrical plug lockout devices. Please consult with the vendor and/or distributor of each product in order to select the best model or device for your particular need or application.

NARDA Microwave-East
Telephone #: (631) 231-1700 www.nardamicrowave.com
Products: *Personal RF Monitors, RF Area Monitors*

NSP America, Inc.
Telephone #: (704) 372-6620 www.nspworldwide.com
Products: *RF Protective Clothing*

TESSCO Technologies, Inc.
Telephone #: (800) 508-5444 www.tessco.com
Products: *RF Signs, Personal RF Monitors, RF Protective Clothing*

SETON Identification Products
Telephone #: (800) 571-2596 www.seton.com
Products: *Barriers, Power breaker lockouts, power cord and plug lockout devices, and more*

5/30/2012

To whom it may concern: I live in the Swanton loop, just past Davenport, CA.

This is to state my objection to the person/persons who are incorrectly portraying the Micro Cell sites that are going in, up the coast, north of Santa Cruz.

These sites are small, in most cases, and are on existing power transmission poles which are NOT the large cellular towers that the agitators are claiming. IF anything, I would say that they could be a little higher on the existing poles, giving a little better potential for signal acquisition.

After going through the Lockheed Fire, two years ago, I would appreciate having better emergency access to communications via cellular phone as I do not currently get a signal where I live (Big Creek Road).

I also have a great love of the wildlife in the coastal region of California and do my part in conservation efforts.

Newts are always on the roadway before and after rains in the Swanton area. I am always looking out for them and try to avoid and/or stop and move them out of harms way. I guess what I am saying is that the person/persons so concerned about them, probably drive over them on a fairly regular basis, and don't even think about it or even know they do.

In closing, I would hope that the California Coastal Commission put this matter to rest and allow the Micro Cellular sites to be completed and activated.

Brian Kelly Mitchell
P.O.BOX 102
Davenport, CA.
95017

Kelly Mitchell

Thanks

REPRESENTATIVE FORM
LETTER RECEIVED FROM 5
SEPARATE INDIVIDUALS

To whom it may concern,

Verizon Wireless is attempting to expand 4G service up the North Coast, into the Waddell Creek area. This is a completely unnecessary project that will needlessly degrade the environment, and ultimately change the quality of a cluster of State Park that we all enjoy.

Currently, there is a lag time from exiting and entering cell range. This acts as a natural crowd buffer for the Parks, meaning that people have to drive to check surf spots from Waddell to Ano Nuevo. This makes even crowded days rotate people through, and makes the experience better for everyone. Installing 4G capability, by the Nation's biggest carrier into the State Parks, and onto the beach will have adverse effects on a very special stretch of coast.

Verizon argues that the service is necessary for safety, however, Sprint works perfectly, and a tower is stationed at Big Creek. Emergency personnel already have it, and after Hurricane Katrina, 911 calls will work through existing networks.

I am equally concerned that there is currently a lawsuit against the installation company, NextG, by the residents of Malibu. The installation of transformers there caused poles to be overweight, and they blew down in high winds, causing wildfires. The plan here is to install them on power poles in the middle of a wind corridor. Waddell Creek is one of the premiere Kite Surfing areas in the United States.

Precedents exist for keeping cellular out of protected environmental areas, and parkland. I would urge the Coastal Commission to say no to this project, and help protect and preserve a one of a kind stretch of California Coast.

Thank you in advance,

Amy Power
107B Anderson St
Santa Cruz, CA 95060

Amy Power

Surfers Against Verizon Expansion

Syda Kosofsky
230 Wilkes Circle
Santa Cruz, CA 95060
(831) 425-7702

July 2, 2012

California Coastal Commission
Attn. Susan Craig
725 Front Street
Santa Cruz, CA 95060

Re: North Coast Verizon Cellular Transmitters

Dear Ms. Craig:

I am writing to inform you of my opposition to the North Coast Verizon Cellular Transmitter project. I urge the Coastal Commission to deny the permits for this project on the basis that they do not comport with the policy that the Commission is obligated to uphold: the protection, conservation, restoration, and enhancement of resources on the California coast.

The cellular transmitters would have a negative visual impact on the beautiful coastline. They would pose a danger, in that they could further overload existing utility poles and cause fires or other accidents. They are not necessary, in that 911 emergency calls can be made from any cell phone over existing cellular transmitters.

Most importantly, installation of the cell towers would indelibly change the overall environment of the north coast, because the communications access they provide will lead to overuse of sensitive areas. Our family frequents the north coast beaches often, primarily to surf. When we go up to the north coast beaches and have a spectacular day away from the crowds of town, we appreciate the fact that no one can call their friends from the bluffs and give a surf report. We fear that if people had that capability, those north coast beaches would become overrun and permanently damaged. The delicate paths of the bluffs at Waddell reefs, for example, would become eroded and trashed, instead of pristine as they are now.

I appreciate your time to consider my position. Please feel free to contact me, and please vote against the Verizon permit.

Very truly yours,

Syda Kosofsky

S.A.V.E

123 Cress Drive

Santa Cruz, CA 95060

July 1, 2012

Dear Ms Craig,

I want to voice the concerns of surfers, and frequenters of the North Coast, regarding Verizon's plan to install 4G service along Highway 1, and argue that this plan is not only unnecessary, but may prove to be a detriment to the area. The stretch of coast north of Davenport is one of the most beautiful in the World, and is used by a variety of ocean enthusiasts and hikers. Although currently busy, it is one that will be severely susceptible to environmental degradation from overuse, and is valued as an escape.

Currently the cell reception stops 5 minutes south, at Scotts Creek. The Waddell Creek to Ano Nuevo stretch is a dead spot to the Verizon Network (Sprint works perfectly for emergency service). With a depleted Ranger staff due to budgetary reasons, this actually presents a safety issue if the area of fickle surf conditions is subject to greatly increased usage on a daily basis.

Costanoa, by far the biggest population center and employer along this stretch, opposed the project when Verizon approached them early in the process.

This 4G expansion is being pushed through under the disguise of a safety issue based on increasing communication during emergencies. It would seem the push for this comes from a few individuals who move to unincorporated areas, yet want all the amenities of living closer to a population center. The case of Bob Mansfield, the Apple Executive, who is trying to build an out of code home up above 5 Mile comes to mind, as he was pushing Verizon to expand service to a wilderness area to accommodate his needs.

We urge the Coastal Commission to deny this project, as it is unnecessary and will ultimately prove harmful to the integrity of a highly valued environmental area. Please help maintain an important resource that is preserved for everyone by keeping the status quo.

Thank you for your time,

Eric Cogliati

Surfers **A**gainst **V**erizon **E**xpansion

Andrea Cuzick

345 Moore St

Santa Cruz, CA 95060

California Coastal Commission

c/o Susan Craig

725 Front St.

Santa Cruz, CA 95060

6/24/12

Dear Ms. Craig,

I support all wireless coverage on the North Coast.

I would like to express my support for the proposed wireless coverage North of Santa Cruz. I have been commuting from Santa Cruz>Pescadero for the past 22 years. The current coverage is unreliable at best. I know many are under the false assumption that 911 coverage is blanketing the coast, however, it is not.

On a separate note, there are many labor camps housing persons of compromised socio-economic status sprinkled throughout Santa Cruz County and San Mateo County. These persons would benefit greatly by having internet access available to them on their wireless devices.

Lastly, there are businesses which could also benefit from having a secure wireless connection available to them. I wish we lived in simpler times, but this is not the case. We have become dependent on wireless communication in order to conduct business, and personal communications in a safe and effective manner.

Best regards,

Andrea Cuzick

Andrea Cuzick
345 Moore St
Santa Cruz, CA
95060

June 18, 2012

California Coastal Commission

Attn: Susan Craig

Dear Ms. Craig,

Thank you for your time. I am writing this in opposition to the proposed cell tower installation on the North Coast, and wanted to voice my opinion based on environmental factors, as well as rebutting the safety issue cited as a reason for the need for the towers in the first place.

As a lifelong resident of Santa Cruz County, I have a vested interest in the preservation of open space, and the areas that we have been so good at protecting over the years. The land up to Waddell Creek is truly one of the most beautiful in the World, and outside of the State Park system, and spots of residential use, it has remained largely undeveloped. Lack of cell towers, no matter how camouflaged, has kept that area an unspoiled escape.

This said, there is little need to incorporate additional cell service to the area. Surfers, and Kite Boarders enjoy it en mass as an escape where cell phones do not operate, hence preserving their activities and sense of getting away from it all. They are one of the primary continual users of that part of the coast. Weather, wind, and other reports are already readily available online prior to heading to the area, and there is little need to do much else in regards to technology once you are there. If anyone needs to make a call, it is a short drive back to Scotts Creek to get reception.

This brings me to the perceived safety issue as a necessity for the towers. In all my years of venturing up to the North Coast, every accident or fire I have witnessed has been responded to promptly and efficiently by appropriate personal. The Park Rangers have Sprint, which works in the Park already, and the area has more than enough population surrounding it to promptly notice and call in wildfires via land lines or the existing cellular network. The current network is more than adequate. The issue at hand is not cellular service, but rather response times of fire personnel based on reaching the site due to its distance.

It seems to me that the installation of expanded cellular service is one designed to expand Verizon's customer base, not one based on safety or public good. Please do not approve the project.

Sincerely,

Eric Cogliati

271 Seely Avenue
Aromas, Ca 95004
June 17, 2012

California Coastal Commission
725 Front Street
Santa Cruz CA 95060

RECEIVED
JUN 20 2012
CALIFORNIA
COASTAL COMMISSION
CENTRAL COAST AREA

Dear Ms. Craig

You have probably read Josh Hart's article in Sunday's (June 17) Sentinel, pg B3. All the arguments that he mentions are of the utmost importance

The public is being bombarded by technology - and radiation - etc. And we are helpless in the face of big utilities. Smartmeters installed in spite of our objections - in my case just as I was protesting against the PG&E installer. So I had no option but to have solar panels installed to get as far away from PG&E as possible - even though my age of 88 years means I will not recover the cost in my lifetime.

I agree with everything in Mr. Hart's article: I have become a member of TURN the utility reform network as one way to fight the onslaught of big business utilities but it is not enough

Please do everything you can to prevent the erosion of the environment.

Thank you.

Sincerely, Reuben Nauman.

Keep North Coast cell tower free

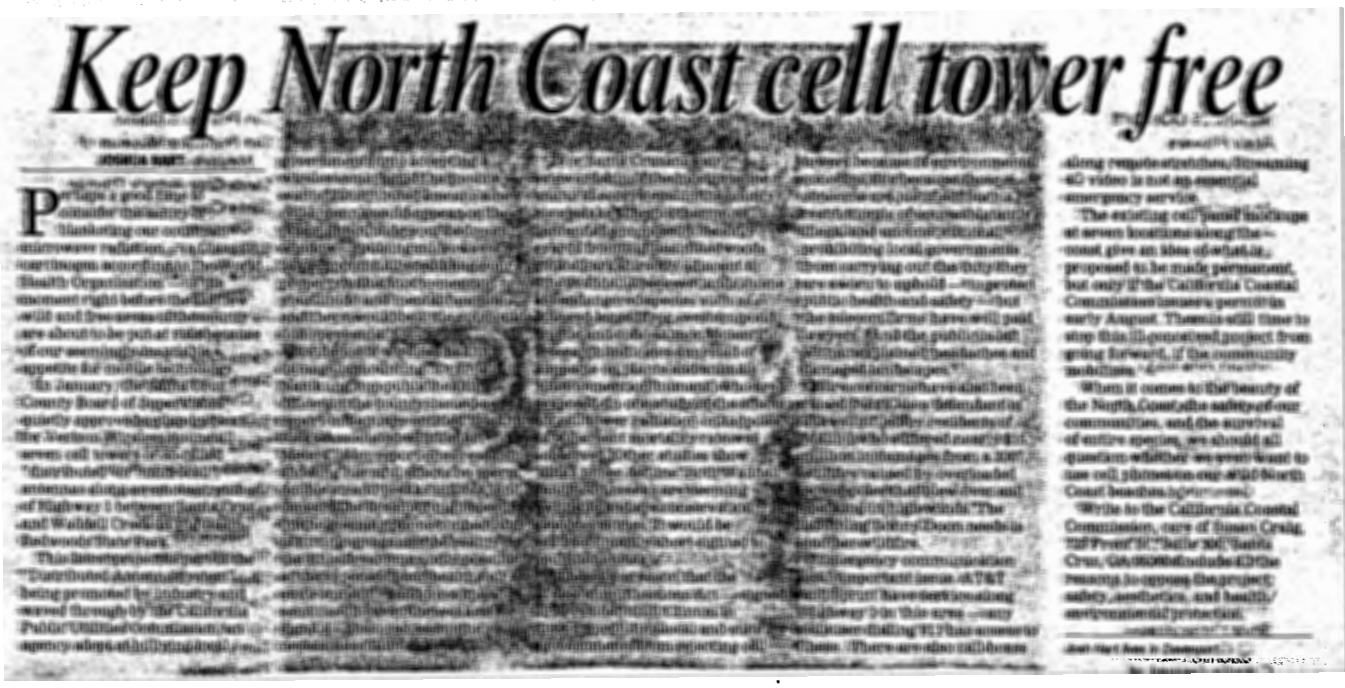


Exhibit 11
A-3-SCO-12-006
8 of 11

CCBC
Central Coast
Broadband Consortium

CALIFORNIA COASTAL COMMISSION
CENTRAL COAST DISTRICT OFFICE
725 FRONT STREET, SUITE 300
SANTA CRUZ, CA 95060-4508

Re: Nextg DAS on Hwy 1 – Santa Cruz Planning 111114

The Central Coast Broadband Consortium (CCBC) supports the expansion of cellular broadband services on the Santa Cruz north coast. We urge the Coastal Commission to permit the project to proceed expeditiously.

The Central Coast Broadband Consortium is a 10-year old broad based, *ad hoc* group of local governments and agencies, economic development, education and health organizations, community groups and private businesses dedicated to improving broadband availability, access and adoption in Monterey, Santa Cruz and San Benito counties. We have a long history of broadband development projects implemented by our members and as a group. The CCBC primary focus is on wire line broadband services but we believe that wireless service delivery plays an increasingly important role and, ultimately, the best situation is when service selection can be made by consumers.

Enhanced cellular coverage will make it easier for parents to permit their children to bicycle and hike along the coast when they know that help can be summoned if needed. Good communications in rural areas simply makes recreational exercise safer for everyone. It also improves citizen's ability to promptly summon assistance to emergencies such as vehicle accidents and fires.

We have reviewed NextG's application, the recommendation of zoning administrator Frank Barron and the appeal of Joshua Hart as spokesperson for Coastal Neighbors Against Unnecessary Wireless Facilities. We have a few comments.

Barron notes that the internal mechanism of the chain of micro cells is to operate as a distributed antenna system (DAS). The Santa Cruz County ordinance 13.10.660 discusses macro cellular and micro cellular sites, but not DAS. To focus on the internal mechanism (DAS) rather than the essence of the devices is a distraction. The important point is that the NextG proposed facilities meet the County definition of a micro cell and that micro cells are not new to the North Coast.

Barron comments that the UCSC micro cell system is within the city limits making this this the first DAS in the County. Coverage from the UCSC system spills significantly outside the City limits into the unincorporated county. And a portion of the DAS system itself is outside the city limits. Counting the existing AT&T EDGE sites along Highway 1, the NextG/Verizon proposal will be the third micro cell cluster in the unincorporated county.

Mr. Hart says in his appeal that the existing AT&T antennae already "provide emergency access to any cell phone user, regardless of their carrier." He uses this to make the point that emergency communications needs are already covered. We have reservations about a *needs analysis* test that in effect offers an exclusive franchise to the first carrier to light the air. It seems like bad policy. In this case, the underlying hypothesis relies on stale information. Carrier independent emergency access may be been available prior to when the analog cell phone network was shut down in February 2008. At that time some level of inter-carrier 911 roaming was possible, but it's gone now.

In his appeal, Hart claims that the antennae will "create visual pollution" citing section 30251 of the *Coastal Act*. The existing AT&T micro cellular sites are a fair proxy for the proposed Verizon sites so there is some basis to evaluate the impact.

There is broad agreement that protection of scenic views along the coast is important. We have done informal polling of residents that travel the coast: How many of the existing micro cell sites have they seen? We have been unable to find anyone who can remember seeing anything that looks like a cell site, or appeared at all out of place. People have seen urban cell sites and they believe they know what fake trees look like. But pole-mounted micro cell sites celebrate the success of hiding in plain sight. When painted a color to match the background, at most they look like the typical gear that you expect to find mounted on power poles. And in largest part, they are invisible.

Mr. Hart's appeal makes some additional claims in areas related to safety and medical effects of radio signals that we think are outside the scope of the Coastal Commission. We simply note that this is an area for personal choice. No one needs to carry or use a cell phone if they believe it harmful.

In summary, we believe that there are economic, recreational and public safety benefits to this project along with negligible impacts to scenic resources.

Thank you.

Sincerely,

Steve Blum
Kevin Bowling
Dave Dalby
John Grunder
Mary Ann Leffel
Chip Lenno
Nancy Martin
Brad Smith
Joel Staker
Chris Stathis
Jim Warner
Harold Wolgamott

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FRANK COSTELLA
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SOQUEL, CA. 95073

California Coastal Commission
c/o Susan Craig
725 Front St.
Santa Cruz, CA 95060
6/24/12

Dear Ms. Craig,

I support all wireless coverage on the North Coast.

I would like to express my support for the proposed wireless coverage North of Santa Cruz. The current coverage is unreliable at best. I know many are under the false assumption that 911 coverage is blanketing the coast, however, it is not.

On a separate note, there are many labor camps housing persons of compromised socio-economic status sprinkled throughout Santa Cruz County and San Mateo County. These persons would benefit greatly by having internet access available to them on their wireless devices.

Lastly, there are businesses which could also benefit from having a secure wireless connection available to them. I wish we lived in simpler times, but this is not the case. We have become dependent on wireless communication in order to conduct business, and personal communications in a safe and effective manner.

Best regards,

FRANK COSTELLA
PRESIDENT
MOCEO PRODUCE INC
FRANK COSTELLA FARMS INC

DEAR MS. CRAIG,
CELLULAR SERVICE IS A TECHNOLOGICAL MARVEL, IT SAVES LIVES. I HAVE BEEN WORKING ALONG THE COAST FROM SANTA CRUZ TO HALF MOON BAY FOR 30 YEARS IN THE PRODUCE BUSINESS. THERE ARE MANY SECTIONS OF THE COAST WITH NO RECEPTION. I HAVE SEEN MANY ACCIDENTS. WE NEED MORE WIRELESS COVERAGE & LESS.
THANK YOU, FRANK COSTELLA