



Agenda Item No. 7h.

### Staff Report

**Date:** May 2, 2013  
**To:** Mayor and Ross Town Council  
**From:** Elise Semonian, Senior Planner  
**Subject:** Sprint, 35 Sir Francis Drake Boulevard, Use Permit to Modify Cellular Equipment, File No. 1895

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#### Recommendation

That the Town Council approve the use permit based on the staff report and supporting materials and subject to the conditions of approval in Attachment 1.

#### Project Summary

**Owner:** Town of Ross  
**Applicant:** Misako Hill, agent for Sprint  
**Location:** 35 Sir Francis Drake Boulevard, Public Works garage building  
**A.P. Number:** 73-191-16  
**Zoning:** Civic District (C-D)  
**General Plan:** Public Service  
**Flood Zone:** Zone A (High Risk Area with a 1% annual chance of flooding)  
**Draft FIRM Zone:** Zone AE (High Risk Area with a 1% annual chance of flooding)

Use permit to allow modifications to an existing unmanned wireless communication facility consisting of a 40-foot monopole and equipment. Sprint proposes to remove two panel antennas on the pole and three equipment cabinets on the ground and install two new panel antennas and four remote radio units on the existing wood pole and two new equipment cabinets in the existing equipment enclosure.

#### Background and discussion

Sprint is upgrading its wireless network to Long Term Evolution ("LTE", also known as "4G") service throughout Marin County to increase the capacity and speed of Sprint's wireless data network and provide improved phone and data service for Sprint customers. Sprint is requesting to modify its equipment on the existing monopole behind the public works building

to change cabinet equipment, replace two antennas, and install four remote radio units below the panel antennas. The Town has lease agreements with other carriers for additional antennas on the public safety building. Sprint indicates the equipment is low maintenance and only serviced if there is a technical problem with the site, rarely occurs.

The project is governed by the Town regulations for the Civic District and the Federal Telecommunications Act. Under the Town regulations, antennas used for transmission purposes are conditionally permitted in the Civic District (RMC 18.25.034(b)). In order to approve a use permit, the Council must find "that the establishment, maintenance, or conducting of the use for which the use permit is sought will not, under the circumstances of the particular case, be detrimental to the health, safety, morals, comfort, convenience, or general welfare of persons residing or working in the neighborhood of the use and will not, under the circumstances of the particular case, be detrimental to the public welfare or injurious to property or improvements in the neighborhood." (RMC Sec. 18.44.030)

The existing pole is visible from few locations and the proposed equipment does not significantly alter the appearance of the pole as a cellular transmission pole. Equipment would be painted to match the pole.

The Federal Communications Commission (FCC) has developed Maximum Permissible Exposure Limits for general public exposures and occupational exposures to radio frequency (RF) and electromagnetic energy (EME). The applicant has provided a report that the facility will comply with RF-EME exposure levels with the existing and proposed equipment. Staff retained an independent consultant to take RF-EME measurements at several locations, including the Public Works Superintendent's office, public safety buildings and the park across the street from Town Hall. The Town consultant also concluded that the proposed equipment, operating with existing equipment, will be less than 1% of the FCC's human exposure limits.

The Town Council must make a decision on the use permit. Staff believes that the Town Council can make the findings to approve the use permit, since the pole does not create aesthetic impacts to the community and the project will meet the radio frequency standards established by the Federal government.

#### **Fiscal, resource and timeline impacts**

If approved, the project would be subject to one-time fees for a building permit, and associated impact fees, which are based in part on the valuation of the work proposed. There would be no operating or funding impacts associated with the project.

#### **Alternative actions**

- 1.) Deny the project. If the Town Council would like to deny the project, staff recommends continuing the application to June to determine if that action would violate any terms of the lease agreement.
- 2.) Approve the project and amend the project conditions.

**Environmental review (if applicable)**

The project is categorically exempt from the requirement for the preparation of environmental documents under the California Environmental Quality Act (CEQA) under CEQA Guideline sections for existing facilities and conversion of small structures. No exception set forth in Section 15300.2 of the CEQA Guidelines (including but not limited to Subsection (a), which relates to impacts on environmental resources; (b), which relates to cumulative impacts; Subsection (c), which relates to unusual circumstances; or Subsection (f), which relates to historical resources, applies to the project.

**Attachments**

1. Draft Findings and Conditions of Approval
2. Material submitted by applicant

## **Attachment 1**

Based on the staff report, public testimony and materials submitted by the applicant, staff recommends that the Town Council approve the use permit to modify the Sprint equipment as proposed based on the following findings and subject to the following conditions of approval:

### **Findings**

Based on the project plans, staff report and attachments, the Town Council finds:

1. The project is exempt from review under CEQA under 15303, New Construction or Conversion of Small Structures.
2. The proposed equipment will be located on an existing monopole and will not result in adverse visual effects to the surrounding neighborhood or along the Sir Francis Drake corridor.
3. This use will not, under the circumstances of this particular case, be detrimental to the public welfare, nor injurious to property or improvements in the neighborhood. A radio frequency (RF) study has been conducted and has found the existing and proposed RF levels to be within Federal standards.
4. This project will allow for enhanced cellular and wireless service in the neighborhood, community and surrounding areas.

### **Conditions of Approval**

1. Except as otherwise provided in these conditions, the project shall comply with the plans approved by the Town Council on May 9, 2013, dated June 22, 2012. Plans submitted for the building permit shall reflect any modifications required by the Town Council and these conditions.
2. Construction shall be completed by the construction completion date provided for property owners under Town of Ross Municipal Code Chapter 15.50.
3. The applicant shall obtain all necessary building permits prior to commencing construction.
4. The applicant shall obtain all necessary federal telecommunications permits prior to commencing construction.
5. All cabinet equipment shall be elevated above the base flood elevation or protected from flooding.
6. The applicant shall be responsible for the removal of all telecommunications equipment and antennas upon lease expiration or upon notification to the Town of the termination of the lease. Said removal shall include the removal of the pole at the Town of Ross' discretion and the removal of the enclosure and the restoration of the area to the condition prior unimproved condition. All removal activity required herein may be required to be completed within sixty (60) days of lease expiration.
7. This wireless communications facilities, operating alone and in conjunction with any other telecommunications facilities, shall not generate radiofrequency

electromagnetic fields (EMF) in excess of the standards for permissible human exposure as adopted by the Federal Communications Commission (FCC). A report shall be submitted to the planning department within 30 days of completion of the installation verifying that the RF-EME levels of the facility operating with other existing facilities comply with all FCC standards. Post-construction RF-EME reports shall be submitted to the Town of Ross every two (2) years following the date of the initial report to verify that actual levels of RF emitted by the facility, operating alone and in conjunction with other facilities, complies with the initial RF-EME report and do not exceed FCC standards for permissible human exposure.

8. Any person engaging in business within the Town of Ross must first obtain a business license from the Town and pay the business license fee. Prior to the issuance of a building permit, the owner or general contractor shall submit a complete list of contractors, subcontractors, architects, engineers and any other people providing project services within the Town, including names, addresses and phone numbers. All such people shall file for a business license. A final list shall be submitted to the Town prior to project final.

9. No changes from the approved plans or project description shall be permitted without prior Town approval. Red-lined plans showing any proposed changes shall be submitted to the Town Planner prior to the issuance of any building permits.

10. The applicants shall defend, indemnify, and hold the Town harmless along with its boards, commissions, agents, officers, employees, and consultants from any claim, action, or proceeding against the Town, its boards, commissions, agents, officers, employees, and consultants attacking or seeking to set aside, declare void, or annul the approval(s) of the project or because of any claimed liability based upon or caused by the approval of the project. The Town shall promptly notify the applicants and/or owners of any such claim, action, or proceeding, tendering the defense to the applicants and/or owners. The Town shall assist in the defense; however, nothing contained in this condition shall prohibit the Town from participating in the defense of any such claim, action, or proceeding so long as the Town agrees to bear its own attorney's fees and costs and participates in the defense in good faith.



**JERROLD T. BUSHBERG Ph.D., DABMP, DABSNM, FAAPM**  
**◆HEALTH AND MEDICAL PHYSICS CONSULTING◆**

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Senior Planner  
Town of Ross, Planning Department  
31 Sir Francis Drake Boulevard  
Ross, CA 94957-0320

April 13, 2013

### **Introduction**

At your request, I have reviewed the document (see attachment one) entitled “EBI Consulting Radio Frequency Electromagnetic Energy (RF-EME) Compliance Report” dated October 13, 2011, prepared for Sprint Nextel in association with Sprint’s application to modify their existing wireless telecommunications facility at 33 Sir Francis Drake Boulevard Ross, CA 94957-0320. In addition, I have made measurements of current cumulative RF-EME levels at the several locations surrounding the Ross Town Hall Sprint facility site. Site measurements were made to included all ambient sources of RF exposures including the contribution from other wireless facilities. This information was used to determine compliance with Federal Communications Commission (FCC) requirements for RF public exposure safety.

The proposed modifications and site design specifications are shown in attachment two. The current modification involves the removal of two panel antennas on the pole and three equipment cabinets in the ground and installation of two new panel antennas and four remote radio units (RRVs) below the antennas on the existing wood pole and the installation of two equipment cabinets on the ground in the existing equipment enclosure.

### **RF Exposure Measurement Methods & Results**

The measurements were made in the afternoon on April 13, 2013 utilizing a Narda Industries model 8718B broadband exposure meter (serial number 6062) with an associated frequency shaped B8742D probe (serial number 08002). Measurements were made at Street Superintendent's office; the Fire Department sleeping trailer; the Fire Department recreation/meeting room above the fire truck bays, the Town park and closest residential property line adjacent to 29 Sir Francis Drake Boulevard and at the (see last page of attachment two).

All measurements were made in accordance with the manufacturer’s recommendations as provided in their users guide for this instrument. This included an RF response check to assure that the meter and probe were responding appropriately to an RF energy source. This response check was performed immediately before and after the site measurements and, along with other operational parameters, were found to be operating normally as specified by the manufacturer. In addition, all environmental operating conditions, as specified by the manufacturer for this instrument, were satisfied. The probe and meter were calibrated by the

manufacturer with standards traceable to the U.S. National Institute of Standards and Technology (NIST) on March 16, 2013. In accordance with the manufacturer's recommendations, the next calibration will be due prior to March 16, 2014.

The Narda meter/probe combination senses fields within the frequency range from 300 kHz to 3 GHz and indicates exposure as a percentage of the FCC public maximum permissible exposure standard (MPE). The dynamic range of the instrument is between 0.6% and 600% of the MPE. For common wireless frequencies such as cellular and Personal Communication Systems (PCS), this response range equates to a power density range between  $6 \mu\text{W}/\text{cm}^2$  and  $6 \text{mW}/\text{cm}^2$ . Readings obtained below 0.6% MPE are reported as the minimum range of the instrument (i.e., 0.6% MPE). The data supplied by the manufacturer sets the frequency response of the probe as  $\pm 1$  dB and calibration accuracy and isotropicity as  $\pm 0.5$  dB and  $\pm 1$  dB respectively. The probe is isotropic, meaning that it can directly measure the strength of complicated fields independent of the orientation, polarization, or arrival angle. Measurements were made from ground level to head height (~6 feet) above the ground. The probe was swept over approximately  $\pm 3$  feet to avoid destructive interference thus assuring the highest power density was being measured at a given location. A continuous observation of the exposure allowed the location of the maximum power densities to be determined. During the ambient level survey, the meter displayed RF exposure levels between 0.1611% and 0.5434% of the FCC public exposure safety standard. Thus the maximum environmental RF exposure measurement result, at all locations, was recorded as less than 0.6% of the FCC public exposure safety standard for continuous exposure. A chart of the electromagnetic spectrum and a comparison of RF power densities from various common sources is presented in figures two and three respectively in order to place RF exposures in perspective.

### **Peer Review of EBI Consulting RF-EME Compliance Report**

I have reviewed the EBI report (Project No. 62111879) dated October 13, 2011. In addition to measuring existing RF exposure levels at several locations surrounding the proposed site the report provided an assessment of the worst-case (i.e., highest) potential RF exposure utilizing a conservative predictive modeling program. Their report states that following the installation of the proposed Sprint antennas, there will be no areas on any accessible ground-level walking/working surface that exceed the FCC's occupational or general public exposure limits. Furthermore the report states that the maximum power density at the nearest walking/working surfaces to the proposed Sprint antennas, would be 0.90 percent of the FCC's general public limit. EBI's on-site survey indicated that there were no spatially averaged power density readings at ground level greater than 0.84% of the FCC's general public maximum exposure limit. Making the conservative assumption that the location of the maximum RF exposure from the existing and planned wireless facilities were to overlap constructively, the maximum RF exposure would be less than 1.8% of the FCC's general public maximum exposure limit. The assumptions made and RF exposure analysis performed by EBI provide a reasonable (albeit conservative) estimate of the potential RF exposure environment surrounding the proposed facility.

### **RF Exposure Standards**

The two most widely recognized standards for protection against RF field exposure are those published by the American National Standards Institute (ANSI) C95.1 and the National Council on Radiation Protection and measurement (NCRP) report #86.

The NCRP is a private, congressionally chartered institution with the charge to provide expert analysis of a variety of issues (especially health and safety recommendations) on radiations of all forms. The scientific analyses of the NCRP are held in high esteem in the scientific and regulatory community both nationally and internationally. In fact, the vast majority of the radiological health regulations currently in existence can trace their origin, in some way, to the recommendations of the NCRP.

All RF exposure standards are frequency-specific, in recognition of the differential absorption of RF energy as a function of frequency. The most restrictive exposure levels in the standards are associated with those frequencies that are most readily absorbed in humans. Maximum absorption occurs at approximately 80 MHz in adults. The NCRP maximum allowable continuous occupational exposure at this frequency is  $1,000 \mu\text{W}/\text{cm}^2$ . This compares to  $5,000 \mu\text{W}/\text{cm}^2$  at the most restrictive of the PCS frequencies ( $\sim 1,800$  MHz) that are absorbed much less efficiently than exposures in the VHF TV band.

The traditional NCRP philosophy of providing a higher standard of protection for members of the general population compared to occupationally exposed individuals, prompted a two-tiered safety standard by which levels of allowable exposure were substantially reduced for "uncontrolled" (e.g., public) and continuous exposures. This measure was taken to account for the fact that workers in an industrial environment are typically exposed no more than eight hours a day while members of the general population in proximity to a source of RF radiation may be exposed continuously. This additional protection factor also provides a greater margin of safety for children, the infirmed, aged, or others who might be more sensitive to RF exposure. After several years of evaluating the national and international scientific and biomedical literature, the members of the NCRP scientific committee selected 931 publications in the peer-reviewed scientific literature on which to base their recommendations. The current NCRP recommendations limit continuous public exposure at PCS frequencies to  $1,000 \mu\text{W}/\text{cm}^2$ , and to  $200 \mu\text{W}/\text{cm}^2$  for the most restrictive frequencies (e.g., VHF TV band).

The 1992 ANSI standard was developed by Scientific Coordinating Committee 28 (SCC 28) under the auspices of the Institute of Electrical and Electronic Engineers (IEEE). This standard, entitled "IEEE Standards for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz" (IEEE C95.1-1991), was issued in April 1992 and subsequently adopted by ANSI. A revision of this standard (C95.1 2005) was completed in October 2005 by SCC 39 the IEEE International Committee on Electromagnetic Safety. Their recommendations are similar to the NCRP recommendation for the maximum permissible exposure (MPE) to the public at cellular and PCS frequencies ( $410 \mu\text{W}/\text{cm}^2$  and  $950 \mu\text{W}/\text{cm}^2$  for continuous exposure at 820 MHz and 1,900 MHz respectively) and incorporates the convention of providing for a greater margin of safety for public as compared with occupational exposure. Higher whole body exposures are allowed for brief periods provided that no 30 minute time-weighted average exposure exceeds these aforementioned limits.

On August 9, 1996, the Federal Communications Commission (FCC) established a RF exposure standard that is a hybrid of the current ANSI and NCRP standards. The maximum permissible exposure values used to assess environmental exposures are those of the NCRP (i.e., maximum public continuous exposure at PCS frequencies of  $1,000 \mu\text{W}/\text{cm}^2$ ). The FCC issued these standards in order to address its responsibilities under the National Environmental Policy Act (NEPA) to consider whether its actions will "significantly affect the quality of the human environment." In as far as there was no other standard issued by a federal agency such as the Environmental Protection Agency (EPA), the FCC utilized their rulemaking procedure to consider

which standards should be adopted. The FCC received thousands of pages of comments over a three-year review period from a variety of sources including the public, academia, federal health and safety agencies (e.g., EPA & FDA) and the telecommunications industry. The FCC gave special consideration to the recommendations by the federal health agencies because of their special responsibility for protecting the public health and safety. In fact, the maximum permissible exposure (MPE) values in the FCC standard are those recommended by EPA and FDA. The FCC standard incorporates various elements of the 1992 ANSI and NCRP standards which were chosen because they are widely accepted and technically supportable. There are a variety of other exposure guidelines and standards set by other national and international organizations and governments, most of which are similar to the current ANSI/IEEE or NCRP standard, figure one.

The FCC standards "Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation" (Report and Order FCC 96-326) adopted the ANSI/IEEE definitions for controlled and uncontrolled environments. In order to use the higher exposure levels associated with a controlled environment, RF exposures must be occupationally related (e.g., wireless telecommunications company RF technicians) and they must be aware of and have sufficient knowledge to control their exposure. All other environmental areas are considered uncontrolled (e.g., public) for which the stricter (i.e., lower) environmental exposure limits apply. All carriers were required to be in compliance with the new FCC RF exposure standards for new telecommunications facilities by October 15, 1997. These standards applied retroactively for existing telecommunications facilities on September 1, 2000.

### **Summary and Conclusion**

All locations, as described above, were found to be in full compliance with the FCC safety standards for public RF exposure. Due to the fact that the maximum RF ambient outdoor locations measured did not exceed the lower limit of sensitivity of the instrument (i.e., 0.6% of the public MPE), the actual exposures may be considerably lower than reported here. However, this level of sensitivity is consistent with generally accepted RF public safety survey techniques and standard industry practice. It is important to realize that the FCC maximum allowable public exposures are not set at a threshold between safety and known hazard but rather at 50 times below a level that the majority of the scientific community believes may pose a health risk to human populations. Thus the previously mentioned maximum ambient exposure identified (i.e., 0.6% MPE) represents a "safety margin" from this threshold of potentially adverse health effects of at least 8,300 times.

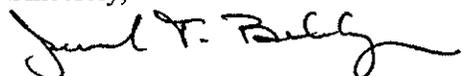
I have reviewed the EBI report (Project No. 62111879) dated October 13, 2011 which included the results from their measurements of existing RF exposure levels at several locations surrounding the proposed site and an assessment of the maximum potential RF exposure from the proposed facility. Their report indicates that the maximum cumulative RF exposure (from existing and the proposed wireless facilities) would be less than 1.8% of the FCC's general public maximum exposure limit. The RF exposure analysis performed by EBI was consistent with my assessment and provides a reasonable (albeit conservative) estimate of the potential RF exposure environment surrounding the proposed facility.

Given the low levels of existing and anticipated radiofrequency field exposures and given the evidence on biological effects in a large data base, there is no scientific basis to conclude that harmful effects will attend the RF exposures associated with the operation of the Sprint wireless telecommunications facility. This conclusion is supported by a large numbers of scientists that have participated in standard setting activities

in the United States who are overwhelmingly agreed that RF radiation exposure below the FCC exposure limits has no demonstrably harmful effects on humans.

These findings are based on my professional evaluation of the scientific issues related to the health and safety of non-ionizing electromagnetic radiation and the results from the measurements of existing RF exposures and estimates of additional RF exposure from the proposed facility. The opinions expressed herein are based on my professional judgement and are not intended to necessarily represent the views of any other organization or institution. Please contact me if you require any additional information.

Sincerely,

A handwritten signature in black ink, appearing to read "Jerrold T. Bushberg". The signature is fluid and cursive, with a long horizontal stroke at the end.

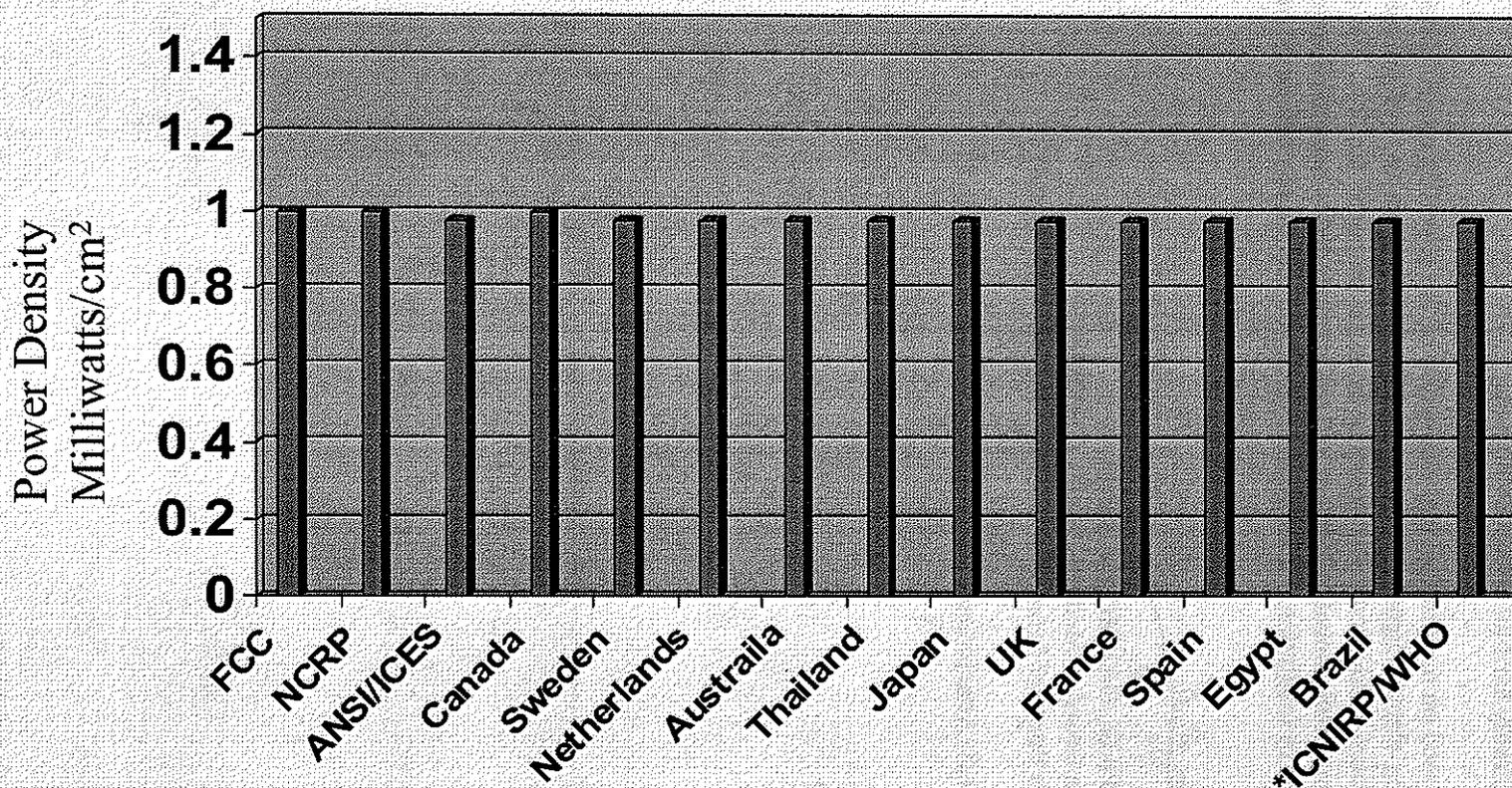
Jerrold T. Bushberg Ph.D., DABMP, DABSNM

Diplomate, American Board of Medical Physics (DABMP)

Diplomate, American Board of Science in Nuclear Medicine (DABSNM)

Enclosures: Figures 1-3; Attachments 1-2; Statement of Experience.

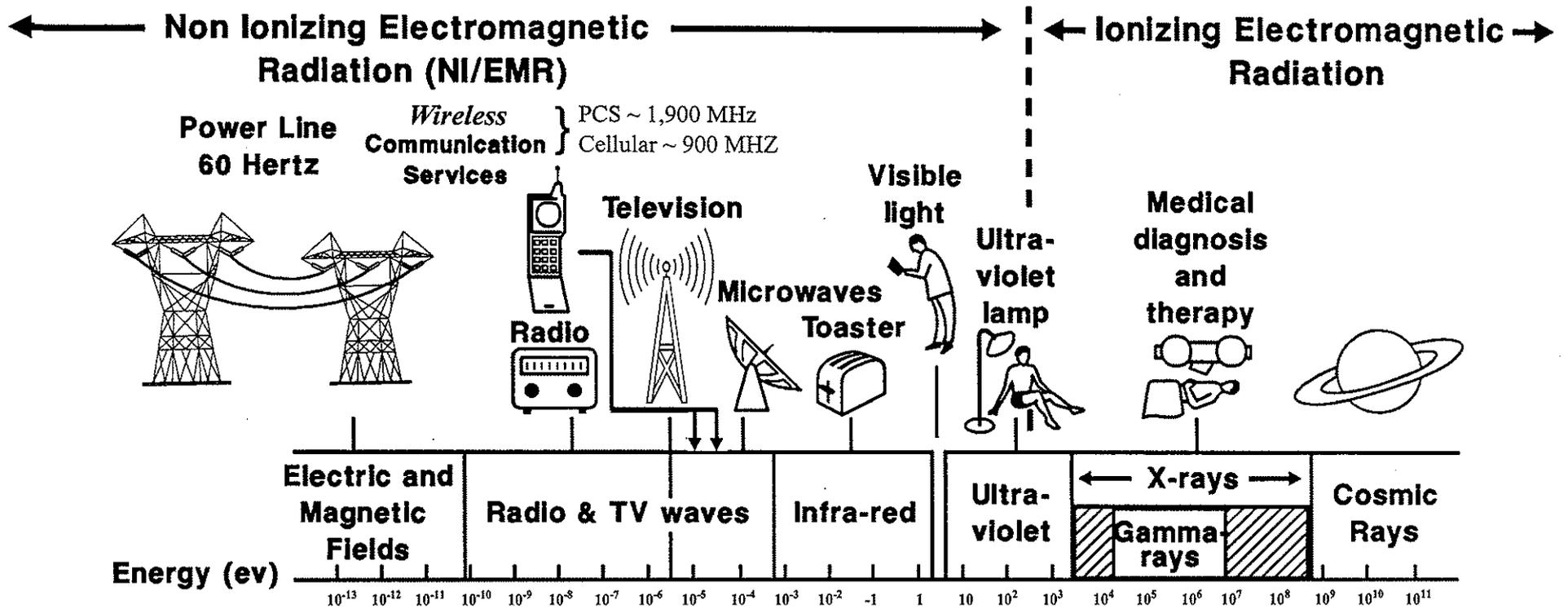
# National and International Public RF Exposure Standards (PCS @ 1,950 MHz)



**\*International Commission on Non-Ionizing Radiation Protection (ICNIRP) Public Safety Exposure Standard. ICNIRP standard recommended by the World Health Organization (WHO). Members of the ICNIRP Scientific Committee were from:**

- Australia      • Finland      • France      • Germany      • Hungary
- Italy            • Sweden     • Japan       • United Kingdom      • United States

Figure 1



# The Electromagnetic Spectrum

Figure 2

# Typical Exposure from Various Radio Frequency / Microwave Sources

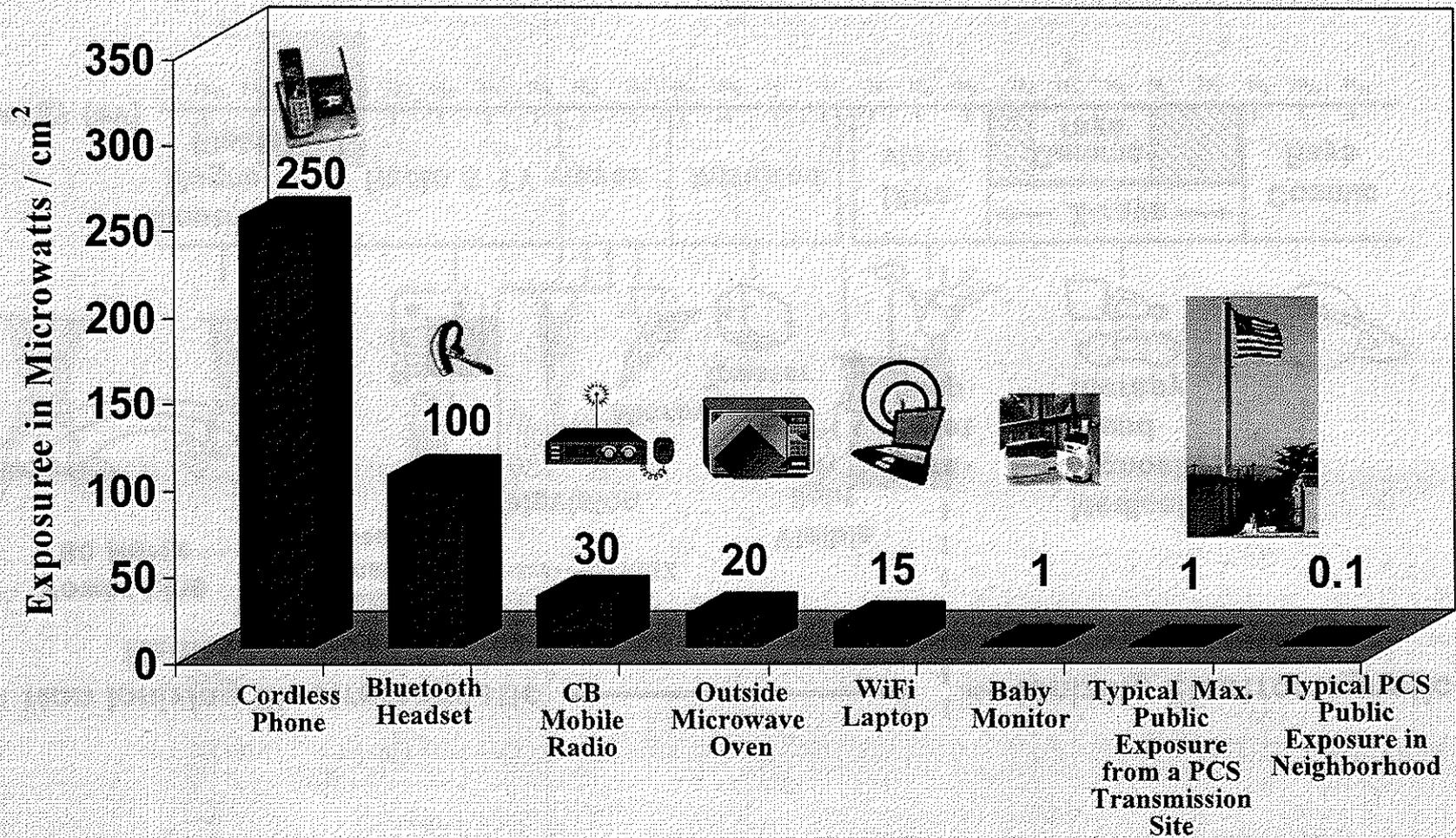


Figure 3

**Attachment 1**  
EBI Inc. Report  
October 13, 2011

# Radio Frequency – Electromagnetic Energy (RF-EME) Compliance Report

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Prepared for:  
Sprint Nextel  
c/o Black & Veatch Corporation  
2999 Oak Rd. Suite 910  
Walnut Creek, CA 94597



Site No. SF33XC617  
Ross (Fire Station)  
33 Sir Francis Drake Blvd  
Ross, California 94957  
Marin County  
37.963469; -122.556833 NAD83  
pole

EBI Project No. 62111879  
October 13, 2011



## **EXECUTIVE SUMMARY**

### **Purpose of Report**

EnviroBusiness Inc. (dba EBI Consulting) has been contracted by Sprint Nextel to conduct radio frequency electromagnetic (RF-EME) monitoring and modeling for Sprint Site SF33XC617 located at 33 Sir Francis Drake Blvd in Ross, California to determine RF-EME exposure levels from existing and proposed Sprint wireless communications equipment at this site. As described in greater detail in Section 11.0 of this report, the Federal Communications Commission (FCC) has developed Maximum Permissible Exposure (MPE) Limits for general public exposures and occupational exposures. This report summarizes the results of RF-EME monitoring and modeling in relation to relevant FCC RF-EME compliance standards for limiting human exposure to RF-EME fields.

EBI field personnel visited this site on October 7, 2011 this report contains a detailed summary of the RF EME analysis for the site.

This document addresses the compliance of Sprint's proposed transmitting facilities independently.

### **1.0 LOCATION OF ALL EXISTING ANTENNAS AND FACILITIES AND EXISTING RF LEVELS**

This project involves the removal and replacement of two (2) Sprint wireless telecommunication antennas on a pole located at 33 Sir Francis Drake Blvd in Ross, California. There are two Sectors (A and B) proposed to be replaced at the site, with one (1) antenna that may be re-installed per sector.

EBI conducted a site visit on October 7, 2011 and at the time of the site visit no additional wireless carriers have antennas on the pole located at 33 Sir Francis Drake Blvd in Ross, California. Measurements were taken at the ground to record existing RF-EME levels resulting from the existing Sprint antennas prior to the installation of Sprint's proposed equipment.

During the survey, no spatially averaged power density readings above 0.1675% of the FCC's occupational MPE (0.8375% of the general public MPE) were encountered on any ground surface. In addition, no spatially averaged power density readings greater than 0.8375% of the FCC's uncontrolled or general public MPE were encountered at ground level.

### **2.0 LOCATION OR ALL APPROVED (BUT NOT INSTALLED) ANTENNAS AND FACILITIES AND EXPECTED RF LEVELS FROM THE APPROVED FACILITIES**

There are no antennas or facilities that are approved and not installed based on information provided to EBI and Sprint at the time of this report.

### **3.0 NUMBER AND TYPES OF WTS WITHIN 100 FEET OF THE PROPOSED SITE AND ESTIMATES OF CUMULATIVE EMR EMISSIONS AT THE PROPOSED SITE**

There are no other Wireless Telecommunication Service (WTS) sites observed within 100 feet of the proposed site except for an unknown number of AT&T antennas which are collocated on the Fire Station building on the Subject Property. Due to stealth enclosures and mounting, EBI was not able to determine the exact locations of the AT&T antennas.

### **4.0 LOCATION AND NUMBER OF THE SPRINT ANTENNAS AND BACK-UP FACILITIES PER BUILDING AND NUMBER AND LOCATION OF OTHER TELECOMMUNICATION FACILITIES ON THE PROPERTY**

Sprint proposes the removal and replacement of two (2) Sprint wireless telecommunication antennas on a pole located at 33 Sir Francis Drake Blvd in Ross, California. There are two Sectors (A and B) proposed to be replaced at the site, with one (1) antenna that may be re-installed per sector. In each sector, there is proposed to be one antenna transmitting in the 800 MHz and the 1900 MHz frequency ranges. The Sector A antennas will be oriented 320° from true north. The Sector B antennas will be oriented 150° from true north. The bottoms of the Sector A and B antennas will be 35 feet above the ground.

At the time of the site visit, at the time of the site visit no additional wireless carriers have antennas on the pole located at 33 Sir Francis Drake Blvd in Ross, California. Measurements were taken at the ground to record existing RF-EME levels resulting from the existing Sprint antennas prior to the installation of Sprint's proposed equipment.

#### **5.0 POWER RATING FOR ALL EXISTING AND PROPOSED BACKUP EQUIPMENT SUBJECT TO THE APPLICATION**

The operating power for modeling purposes was assumed to be 20 Watts per transmitter for the 800 MHz antenna and there will be one (1) transmitter operating at this frequency. The operating power for the purpose of modeling was assumed to be 20 Watts per transmitter and one (1) transmitter operating in the 1600 MHz frequency range. Additionally, for modeling purposes it was assumed to be 20 Watts per transmitter and four (4) transmitters operating at the 1900 MHz.

#### **6.0 TOTAL NUMBER OF WATTS PER INSTALLATION AND THE TOTAL NUMBER OF WATTS FOR ALL INSTALLATIONS ON THE BUILDING**

The effective radiated power (ERP) for the 800 MHz transmitter combined on site is 412 Watts. The ERP for the 1900 MHz transmitters combined on site is 3,286 Watts.

#### **7.0 PREFERRED METHOD OF ATTACHMENT OF PROPOSED ANTENNA WITH PLOT OR ROOF PLAN INCLUDING: DIRECTIONALITY OF ANTENNAS, HEIGHT OF ANTENNAS ABOVE NEAREST WALKING SURFACE, DISCUSS NEARBY INHABITED BUILDINGS**

Based on the information provided to EBI, the information indicates that the proposed antennas are to be bracket mounted to the monopole, operating in the directions, frequencies, and heights mentioned in section 4.0 above. There is a large cluster of buildings approximately 125 feet to the south that is part of the Ross Fire Department. Additional structures surrounding the site to the east, north, and west consist of residential properties.

#### **8.0 ESTIMATED AMBIENT RADIO FREQUENCY FIELDS FOR THE PROPOSED SITE**

Based on worst-case predictive modeling, there are no predicted areas on any accessible ground-level walking/working surface related to the proposed Sprint antennas that exceed the FCC's occupational or general public exposure limits at this site. At the nearest walking/working surfaces to the proposed Sprint antennas, the maximum power density is 0.90 percent of the FCC's general public limit (0.18 percent of the FCC's occupational limit). The inputs used in the modeling are summarized in the RoofView® export file presented in Appendix B.

#### **9.0 SIGNAGE AT THE FACILITY IDENTIFYING ALL WTS EQUIPMENT AND SAFETY PRECAUTIONS FOR PEOPLE NEARING THE EQUIPMENT AS MAY BE REQUIRED BY THE APPLICABLE FCC ADOPTED STANDARDS (DISCUSS SIGNAGE FOR THOSE WHO SPEAK LANGUAGES OTHER THAN ENGLISH)**

Signs are the primary means for control of access to areas where RF exposure levels may potentially exceed the MPE. Signage is recommended to be updated with installation of new antennas if necessary based on Sprint policy. Also workers elevated above the roof or ground level should be made aware of the antennas locations. There are no fields in front of the proposed antennas and therefore barriers are not recommended.

Additionally, there are areas where workers elevated above the ground may be exposed to power densities greater than the general population and occupational limits. Workers and the general public should be informed about the presence and locations of antennas and their associated fields.

At the time of the site survey, it was noted that there were a yellow "Caution" sign and a blue "Notice" sign posted at the base of the monopole.

Additionally, access to this site is accomplished via a parking area behind the main fire station buildings to the south of the monopole. Access to the facility is unmonitored and as such, the general public is able to access the monopole.

#### **10.0 STATEMENT ON WHO PRODUCED THIS REPORT AND QUALIFICATIONS**

Please see the certifications attached in Appendix A below.

#### **11.0 FEDERAL COMMUNICATIONS COMMISSION (FCC) REQUIREMENTS**

The FCC has established Maximum Permissible Exposure (MPE) limits for human exposure to Radiofrequency Electromagnetic (RF-EME) energy fields, 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 Electronics Engineers, Inc. (IEEE) and adopted by the American National Standards Institute (ANSI) to replace the 1982 ANSI guidelines. Limits for localized absorption are based on recommendations of both ANSI/IEEE and NCRP.

The FCC guidelines incorporate two separate tiers of exposure limits that are based upon occupational/controlled exposure limits (for workers) and general public/uncontrolled exposure limits for members of the general public.

**Occupational/controlled exposure limits** apply 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. 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 public/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 his or her exposure by leaving the area or by some other appropriate means.

**General public/uncontrolled exposure limits** apply 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.

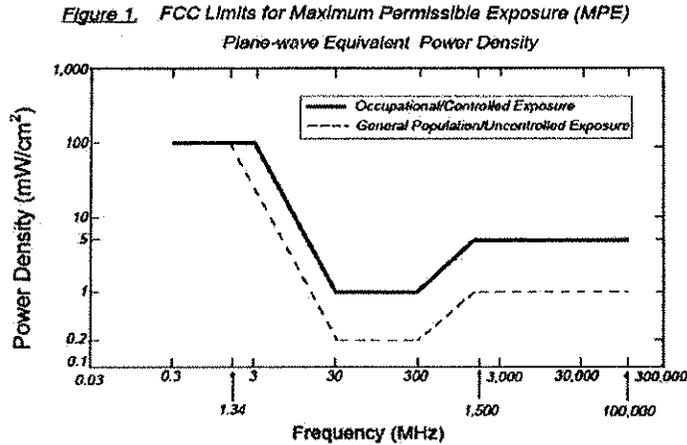
Table I and Figure I (below), which are included within the FCC's OET Bulletin 65, summarize the MPE limits for RF emissions. These limits are designed to provide a substantial margin of safety. They vary by frequency to take into account the different types of equipment that may be in operation at a particular facility and are "time-averaged" limits to reflect different durations resulting from controlled and uncontrolled exposures.

The FCC's MPEs are measured in terms of power (mW) over a unit surface area (cm<sup>2</sup>). Known as the power density, the FCC has established an occupational MPE of 5 milliwatts per square centimeter (mW/cm<sup>2</sup>) and an uncontrolled MPE of 1 mW/cm<sup>2</sup> for equipment operating in the and 1900 MHz frequency range. For the Sprint equipment operating at 800 MHz, the FCC's occupational MPE is 2.66 mW/cm<sup>2</sup> and an uncontrolled MPE of 0.53 mW/cm<sup>2</sup>. These limits are considered protective of these populations.

Table 1: Limits for Maximum Permissible Exposure (MPE)				
(A) Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time [E] <sup>2</sup> , [H] <sup>2</sup> , or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f <sup>2</sup> )*	6
30-300	61.4	0.163	1.0	6
300-1,500	--	--	f/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Public/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time [E] <sup>2</sup> , [H] <sup>2</sup> , or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	30
30-300	27.5	0.073	0.2	30
300-1,500	--	--	f/1,500	30
1,500-100,000	--	--	1.0	30

f = Frequency in (MHz)

\* Plane-wave equivalent power density



Based on the above, the most restrictive thresholds for exposures of unlimited duration to RF energy for several personal wireless services are summarized below:

Personal Wireless Service	Approximate Frequency	Occupational MPE	Public MPE
Personal Communication (PCS)	1,950 MHz	5.00 mW/cm <sup>2</sup>	1.00 mW/cm <sup>2</sup>
Cellular Telephone	870 MHz	2.90 mW/cm <sup>2</sup>	0.58 mW/cm <sup>2</sup>
Specialized Mobile Radio	855 MHz	2.85 mW/cm <sup>2</sup>	0.57 mW/cm <sup>2</sup>
Most Restrictive Freq. Range	30-300 MHz	1.00 mW/cm <sup>2</sup>	0.20 mW/cm <sup>2</sup>

MPE limits are designed to provide a substantial margin of safety. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

Personal Communication (PCS) facilities used by Sprint in this area operate within a frequency range of 800-1900 MHz. Facilities typically consist of: 1) electronic transceivers (the radios or cabinets) connected to wired telephone lines; and 2) antennas that send the wireless signals created by the transceivers to be received by individual subscriber units (PCS telephones). Transceivers are typically connected to antennas by coaxial cables.

Because of the short wavelength of PCS services, the antennas require line-of-site paths for good propagation, and are typically installed above ground level. Antennas are constructed to concentrate energy towards the horizon, with as little energy as possible scattered towards the ground or the sky. This design, combined with the low power of PCS facilities, generally results in no possibility for exposure to approach Maximum Permissible Exposure (MPE) levels, with the exception of areas directly in front of the antennas.

### **Statement of Compliance**

A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

### **12.0 LIMITATIONS**

This report was prepared for the use of Sprint Nextel. It was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same locale under like circumstances. The conclusions provided by EBI are based solely on the information collected during the site survey and provided by the client. The observations in this report are valid on the date of the investigation. Any additional information that becomes available concerning the site should be provided to EBI so that our conclusions may be revised and modified, if necessary. This report has been prepared in accordance with Standard Conditions for Engagement and authorized proposal, both of which are integral parts of this report. No other warranty, expressed or implied, is made

### **13.0 SUMMARY AND CONCLUSIONS**

EBI has prepared this Radiofrequency Emissions Compliance Report for the proposed Sprint telecommunications equipment at the site located at 33 Sir Francis Drake Blvd in Ross, California.

EBI has conducted theoretical modeling to estimate the worst-case power density from Sprint antennas to document potential MPE levels at this location and ensure that site control measures are adequate to meet FCC and OSHA requirements. As presented in the preceding sections, based on worst-case predictive modeling, there are no modeled exposures on any accessible ground-level walking/working surface related to proposed equipment in the area that exceed the FCC's occupational and general public exposure limits at this site. As such, the proposed Sprint project is in compliance with FCC rules and regulations.

**Appendix B**  
**Roofview® Export File**

Location No.	Location Reference	Spatially Averaged % Occupational MPE	Spatially Averaged % General Population MPE
1	2' northwest of Sector A	0.0062	0.031
2	2' southwest of Sectors A&B	0.0014	0.007
3	2' southwest of Sector B	0.026	0.13
4	45' northwest of Sector A	0.0839	0.4195
5	45' southwest of Sector B	0.0808	0.404
6	20' southeast of Sector B	0.1072	0.536
7	145' north-northwest of Sector A	0.0732	0.366
9	81' south-southeast of Sector B	0.1675	0.8375
10	50' southwest of Sectors A&B	0.0493	0.2465
11	50' northeast of Sectors A&B	0.1301	0.6505
12	40' north of Sector A	0.0601	0.3005
13	3' south of Sprint equipment Room	0.0728	0.364
14	3' south of AT&T equipment area	0.0559	0.2795

**Sprint**

**Site Number: SF33XC617/33 Sir Francis Drake Blvd., Ross, CA**

**Project Description**

**PROJECT DESCRIPTION**

Sprint is upgrading its wireless network to LTE service throughout Marin County. The goal of new LTE network is to increase the capacity and speed of Sprint's wireless data network and provide improved phone and data service for Sprint customers. No other sites were considered as this is a modification of an existing site.

Sprint proposes to modify the existing wireless facility (40ft wood monopole) at 33 Sir Francis Drake Blvd., Ross, CA as follows:

- Removed three (3) equipment cabinets
- Install one new BBU cabinet (71in H x 40.25in W x 27.6in D)
- Install one new MMBS cabinet (71in H x 39.84in W x 27.5in D).

**TOTAL OF TWO CABINETS WILL BE IN THE EQUIPMENT ENCLOSURE.**

- Remove two (2) existing panel antennas.
- Install two (2) new 72in H x 11.8ft W x 5.9in D panel antennas will be installed.
- Four remote radio units (RRUs) will be installed on the pole below the panel antennas.

**TOTAL OF TWO PANEL ANTENNAS AND FOUR RRUs WILL BE ON THE MONOPOLE.**

Sprint's sites are very low maintenance. They are only serviced if there is a technical problem with the site, which rarely occurs.

**Attachment 2**  
Site Specification

# Sprint



**SITE NAME:** ROSS (FIRE STATION)  
**SITE NUMBER:** SF33XC617-A  
**SITE ADDRESS:** 33 SIR FRANCIS DRAKE BOULEVARD  
ROSS, CA 94957  
**SITE TYPE:** SITE MODIFICATION  
**CROWN CASTLE**  
**SITE #:** 880475



**PROJECT NO.:** SF33XC617A  
**DRAWN BY:** J ACEVEDO/R MONTANEZ  
**CHECKED BY:** C NELSON

REV	DATE	DESCRIPTION	INITIALS
3	08-23-11	ISSUE 03	CM/JM
2	11-03-11	ISSUE 2009G	JA
1	10-08-11	ISSUE 2009G	RV
0	8-16-11	ISSUE 2009G	

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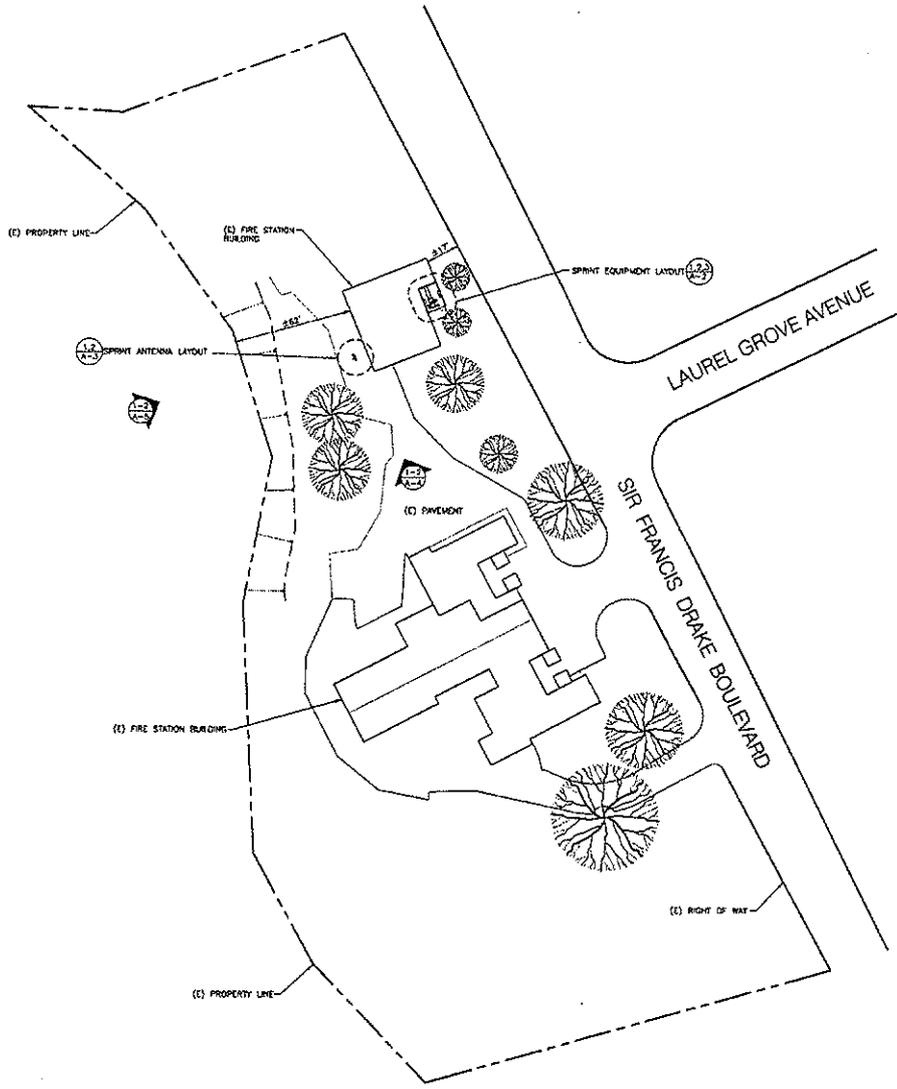
**SF33XC617A**  
ROSS (FIRE STATION)  
33 SIR FRANCIS DRAKE BLVD.  
ROSS, CA 94957

**SHEET TITLE**  
**TITLE SHEET**

**SHEET NUMBER**  
**T-1**

**JOB #:** WD1225 **PHASE #:** 22

SITE INFORMATION	AREA MAP	APPLICABLE CODES	DRAWING INDEX												
<b>SITE ADDRESS:</b> 33 SIR FRANCIS DRAKE BOULEVARD ROSS, CA 94957 <b>PROPERTY OWNER:</b> TOWN OF ROSS RABI ELIAS P.O. BOX 320 ROSS, CA 94957 (415) 453-8257 <b>TOWER COMPANY:</b> GLOBAL SIGNAL ACQ. 5820 STONERIDGE MALL RD. #300 PLEASANTON, CA 94588 TED CONGER, CM. PH: (925) 880-0098 LAURA FRAZIN, PROPERTY SPEC. PH: (925) 737-1089 <b>EQUIPMENT SUPPLIER:</b> SAMSUNG TELECOMMUNICATIONS AMERICA (STA) 1321 EAST LOOKOUT DRIVE RICHARDSON, TX 75082-4124 (972) 761-7000 <b>APPLICANT REPRESENTATIVE:</b> MISAKO HILL CORTEL, LLC (415) 533-2540 EMAIL: MISAKO.HILL@CORTEL-LLC.COM <b>LEASING MANAGER:</b> JEROME MARCUS CORTEL, LLC EMAIL: jerome.marcus@corTEL-Tc.com <b>POWER COMPANY:</b> PG&E <b>TELCO COMPANY:</b> AT&T <b>COUNTY:</b> MARIN <b>LATITUDE (NAD83):</b> 37.963478 <b>LONGITUDE (NAD83):</b> -122.556829 <b>APN:</b> 073-191-16	<p>AREA MAP</p>	<p>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 THESE CODES.</p> <table border="0"> <tr> <td>2010 CALIFORNIA ADMINISTRATIVE CODE (CAL. TITLES 24 &amp; 25)</td> <td>2009 INTERNATIONAL BUILDING CODE (IBC)</td> </tr> <tr> <td>2010 CALIFORNIA BUILDING CODES</td> <td>2009 INTERNATIONAL FIRE CODE (IFC)</td> </tr> <tr> <td>2010 CALIFORNIA MECHANICAL CODES</td> <td>2009 UNIFORM PLUMBING CODE (UPC)</td> </tr> <tr> <td>2010 CALIFORNIA PLUMBING CODES</td> <td>2009 UNIFORM MECHANICAL CODE (UMC)</td> </tr> <tr> <td>2010 CALIFORNIA ELECTRICAL CODES</td> <td>LOCAL BUILDING CODES</td> </tr> <tr> <td>ANSI / CEA-222 G</td> <td>CITY/COUNTY ORDINANCES</td> </tr> </table> <p>ALONG WITH ANY OTHER APPLICABLE LOCAL AND STATE LAWS AND REGULATIONS.</p>	2010 CALIFORNIA ADMINISTRATIVE CODE (CAL. TITLES 24 & 25)	2009 INTERNATIONAL BUILDING CODE (IBC)	2010 CALIFORNIA BUILDING CODES	2009 INTERNATIONAL FIRE CODE (IFC)	2010 CALIFORNIA MECHANICAL CODES	2009 UNIFORM PLUMBING CODE (UPC)	2010 CALIFORNIA PLUMBING CODES	2009 UNIFORM MECHANICAL CODE (UMC)	2010 CALIFORNIA ELECTRICAL CODES	LOCAL BUILDING CODES	ANSI / CEA-222 G	CITY/COUNTY ORDINANCES	<p><b>DRAWING INDEX</b></p> <ul style="list-style-type: none"> <li>T-1 TITLE SHEET</li> <li>A-1 SITE PLAN</li> <li>A-2 CABINET PHASING LAYOUT</li> <li>A-3 ANTENNA PHASING LAYOUT</li> <li>A-4 NORTH ELEVATION</li> <li>A-5 EAST ELEVATION</li> <li>A-6 SOUTH ELEVATION</li> <li>A-7 WEST ELEVATION</li> <li>D-1 EQUIPMENT DETAILS</li> <li>D-2 ANTENNA &amp; COAX DETAILS</li> </ul>
2010 CALIFORNIA ADMINISTRATIVE CODE (CAL. TITLES 24 & 25)	2009 INTERNATIONAL BUILDING CODE (IBC)														
2010 CALIFORNIA BUILDING CODES	2009 INTERNATIONAL FIRE CODE (IFC)														
2010 CALIFORNIA MECHANICAL CODES	2009 UNIFORM PLUMBING CODE (UPC)														
2010 CALIFORNIA PLUMBING CODES	2009 UNIFORM MECHANICAL CODE (UMC)														
2010 CALIFORNIA ELECTRICAL CODES	LOCAL BUILDING CODES														
ANSI / CEA-222 G	CITY/COUNTY ORDINANCES														
	<p>LOCATION MAP</p>	<p><b>PROJECT DESCRIPTION</b></p> <p><b>INSTALLATION OF:</b></p> <ul style="list-style-type: none"> <li>(1) MWBS TO REPLACE (1) RADIO CABINET</li> <li>(1) BATTERY TO REPLACE (2) BATTERY CABINET</li> </ul> <p><b>ANTENNA TOTAL:</b></p> <ul style="list-style-type: none"> <li>(2) 800/1900 MHz ANTENNA</li> <li>(4) RRU</li> </ul> <p><b>POWER:</b></p> <ul style="list-style-type: none"> <li>-EXISTING 200 AMP SERVICE</li> </ul> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>-ANTENNA RRUs ARE TO BE INSTALLED AT BASE OF POLE</li> <li>-ANTENNA RAD CENTER IS 3'</li> <li>-(2) EXISTING ANTENNAS TO BE REPLACED</li> </ul>	<p><b>PROJECT TEAM</b></p> <p><b>ARCHITECTURAL/ENGINEERING/SURVEYING</b></p> MT2 TELECOM, LP 1015-D AIRPORT ROAD PO BOX 458 RIO VISTA, CA 94571 PH: 209-601-3781 FAX: 707-374-6194 CONTACT: SALOMON MARTINEZ JR.  GILBERT LABRIE, AIA, ARCHITECT CA LIC. NO. C7080 EMAIL: architect@labrie.com												
		<p><b>DRIVING DIRECTIONS FROM NEAREST AIRPORT</b></p> <ol style="list-style-type: none"> <li>1. FROM SAN FRANCISCO INTERNATIONAL AIRPORT (806 SOUTH AIRPORT BOULEVARD, SAN FRANCISCO, CA 94128)</li> <li>2. HEAD SOUTHWEST ON H. HADDONNELL ROAD TOWARD SAN BRUNO AVENUE</li> <li>3. TURN RIGHT ONTO SAN BRUNO AVENUE</li> <li>4. TURN RIGHT TO MERGE ONTO HWY 101 NORTH TOWARD SAN JOSE/SAN FRANCISCO</li> <li>5. SLIGHT LEFT TO STAY ON HWY 101 NORTH (SIGNS FOR GOLDEN GATE BRIDGE)</li> <li>6. TAKE EXIT 434A TO MERGE ONTO HWY 101 NORTH/MISSION STREET TOWARDS GOLDEN GATE BRIDGE</li> <li>7. TURN LEFT ONTO S. VAN NESS AVENUE</li> <li>8. TURN LEFT ONTO LOMBARD STREET</li> <li>9. CONTINUE ONTO RICHARDSON AVENUE</li> <li>10. CONTINUE ONTO HWY 101 NORTH/DOYLE DRIVE</li> <li>11. TAKE EXIT 450B TOWARDS SAN ANSELMO</li> <li>12. MERGE ONTO SIR FRANCIS DRAKE BOULEVARD</li> <li>13. SLIGHT LEFT TO STAY ON SIR FRANCIS DRAKE BOULEVARD</li> </ol> <p>DESTINATION WILL BE ON LEFT</p>													



PROJECT NO: SF33XC617A  
 DRAWN BY: J ACEVEDO/R MONTANEZ  
 CHECKED BY: C NELSON

REV	DATE	DESCRIPTION	INITIALS
3	08-22-12	100% CD	DB/JA
2	11-03-11	100% ZONING	JA
1	10-09-11	100% ZONING	JA
0	8-13-11	100% ZONING	



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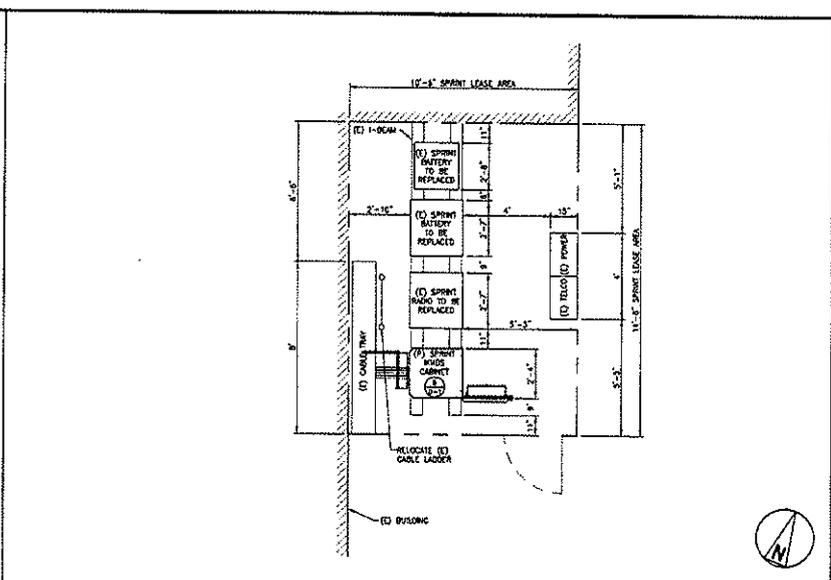
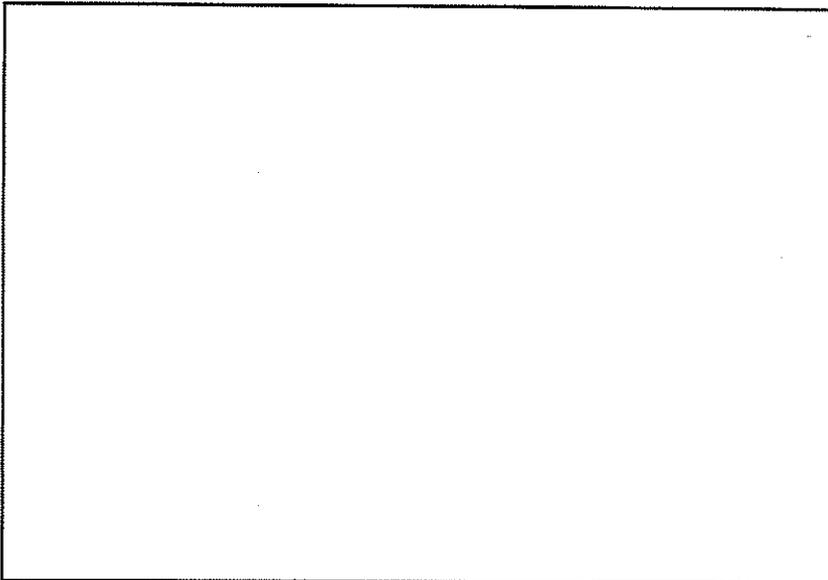
SF33XC617A  
 ROSS (FIRE STATION)  
 33 SIR FRANCIS DRAKE BLVD.  
 ROSS, CA 94957

SHEET TITLE  
**SITE PLAN**

SHEET NUMBER  
**A-1**

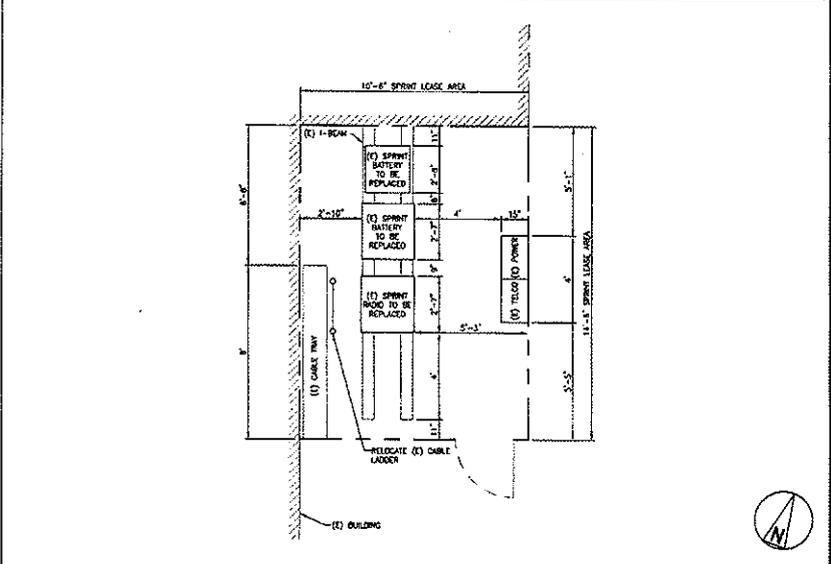
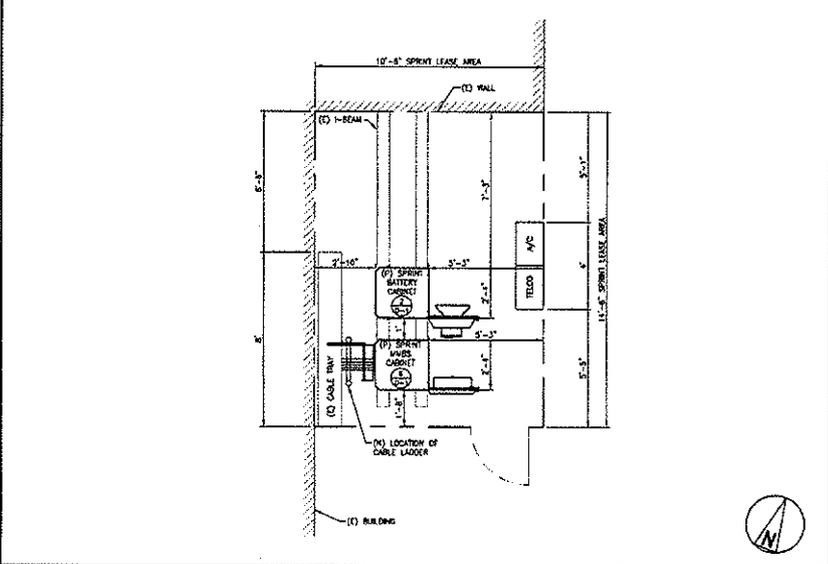
JOB # W01225 PHASE # 22





1 | NOT USED

2 | INTERIM CABINET LAYOUT SCALE: 3/8" = 1'-0"



3 | FINAL CABINET LAYOUT SCALE: 3/8" = 1'-0"

1 | EXISTING CABINET LAYOUT SCALE: 3/8" = 1'-0"



PROJECT NO: SF33XC617A  
 DRAWN BY: J ACEVEDO/R MONTANEZ  
 CHECKED BY: C NELSON

REV	DATE	DESCRIPTION	INITIALS
1	06-22-12	ISSUE 01	JM/AL
2	11-03-11	ISSUE 02	JA
3	10-06-11	ISSUE 03	RM
4	8-10-11	ISSUE 04	



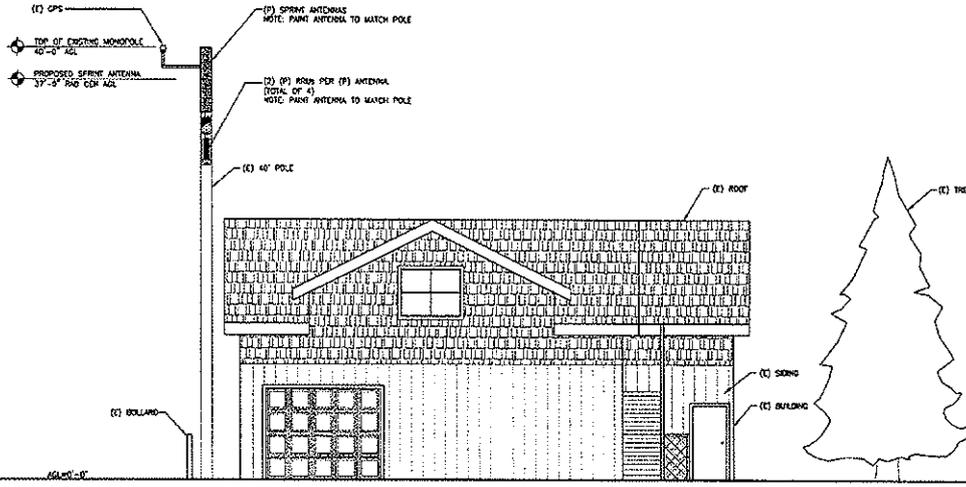
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SF33XC617A  
 ROSS (FIRE STATION)  
 33 SIR FRANCIS DRAKE BLVD.  
 ROSS, CA 94957

SHEET TITLE  
**CABINET PHASING LAYOUT**

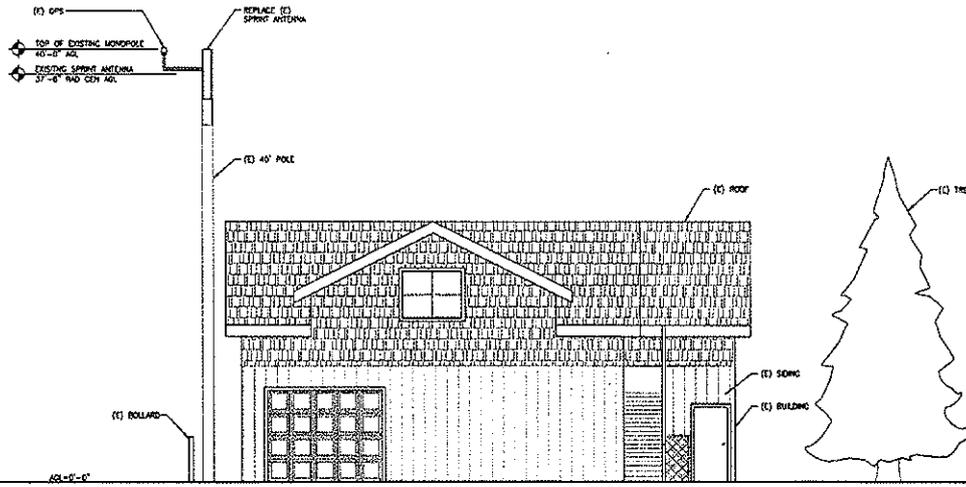
SHEET NUMBER  
**A-2**

JOB #: WD1225 PHASE #: 22



2 | FINAL SOUTH ELEVATION

SCALE: 3/16" = 1'-0"



1 | EXISTING SOUTH ELEVATION

SCALE: 3/16" = 1'-0"



PROJECT NO: SF33K0617A  
 DRAWN BY: J ADEVEDO/R MONTANEZ  
 CHECKED BY: C NELSON

REV	DATE	DESCRIPTION	INITIALS
3	05-23-12	ISSUE 2D	DM/JA
2	11-03-11	ISSUE 2DING	JA
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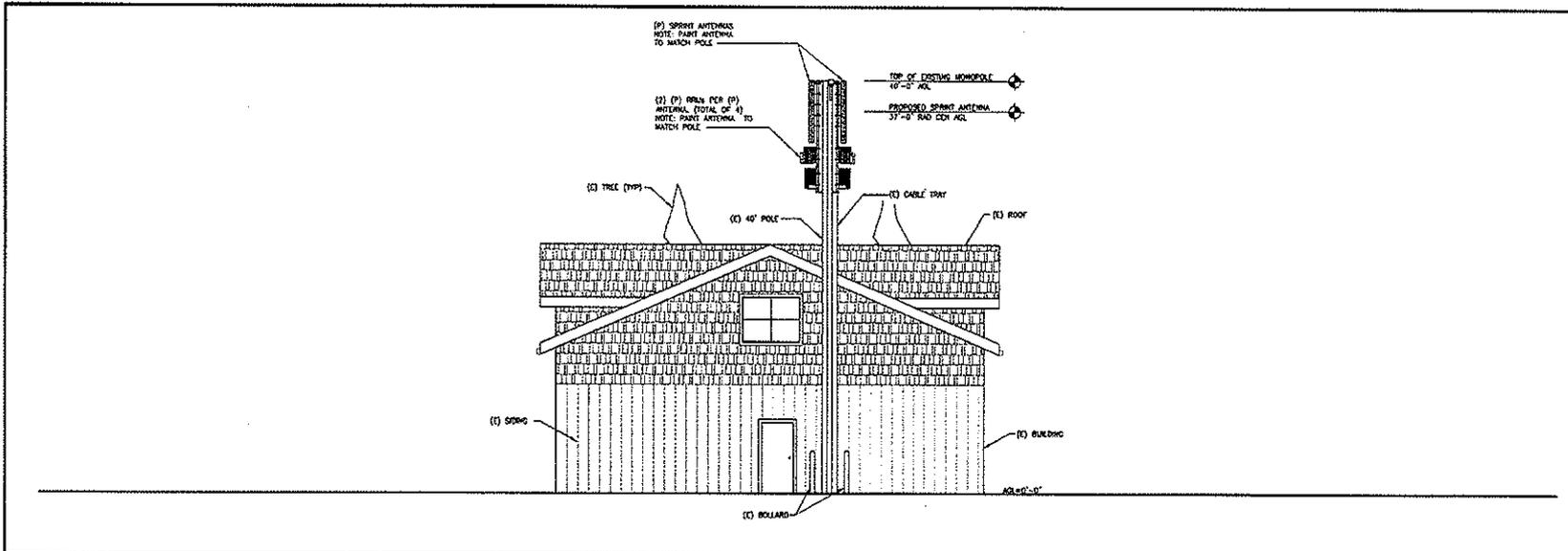
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SF33K0617A  
 ROSS (FIRE STATION)  
 33 SIR FRANCIS DRAKE BLVD.  
 ROSS, CA 94957

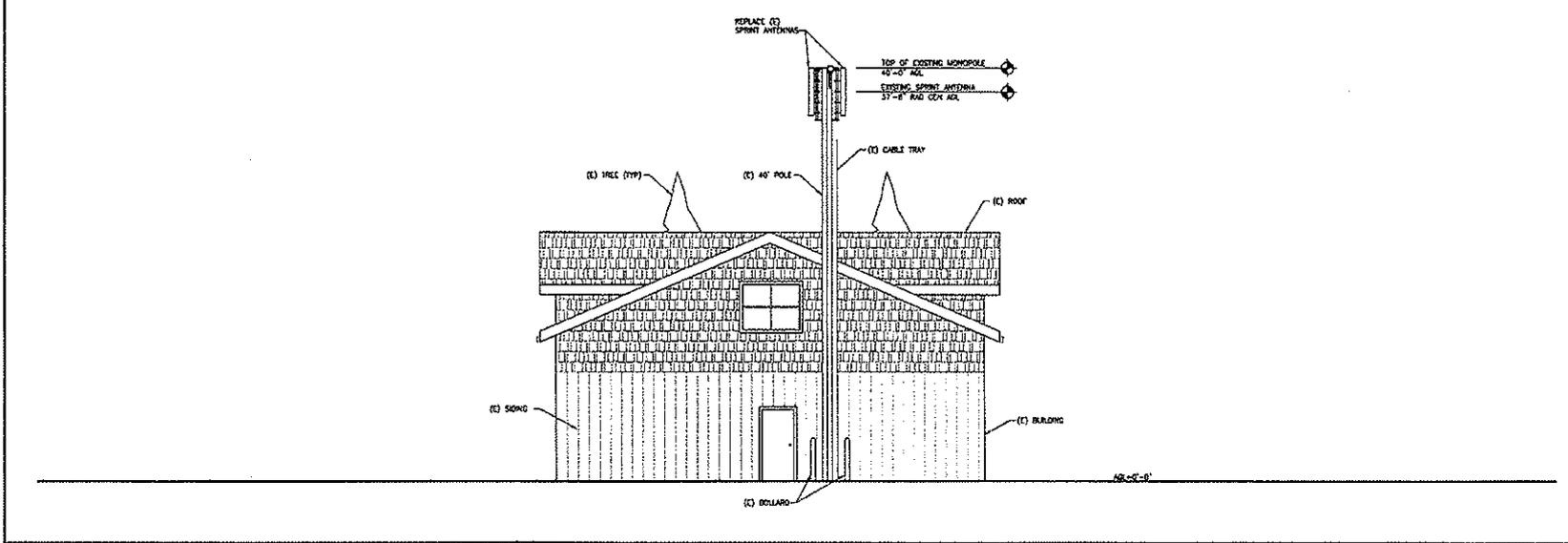
SHEET TITLE  
**SOUTH ELEVATION**

SHEET NUMBER  
**A-4**

JOB #: WD1225 PHASE #: 22



2 | FINAL WEST ELEVATION SCALE: 3/16" = 1'-0"



1 | EXISTING WEST ELEVATION SCALE: 3/16" = 1'-0"



PROJECT NO: SF33XC617A  
 DRAWN BY: J ACEVEDO/R MONTANEZ  
 CHECKED BY: C NELSON

REV	DATE	DESCRIPTION	INITIALS
3	06-22-12	ISSUE 2D	DR/JM
2	11-02-11	ISSUE ZONING	JM
1	10-08-11	ISSUE ZONING	PM
0	8-18-11	ISSUE ZONING	

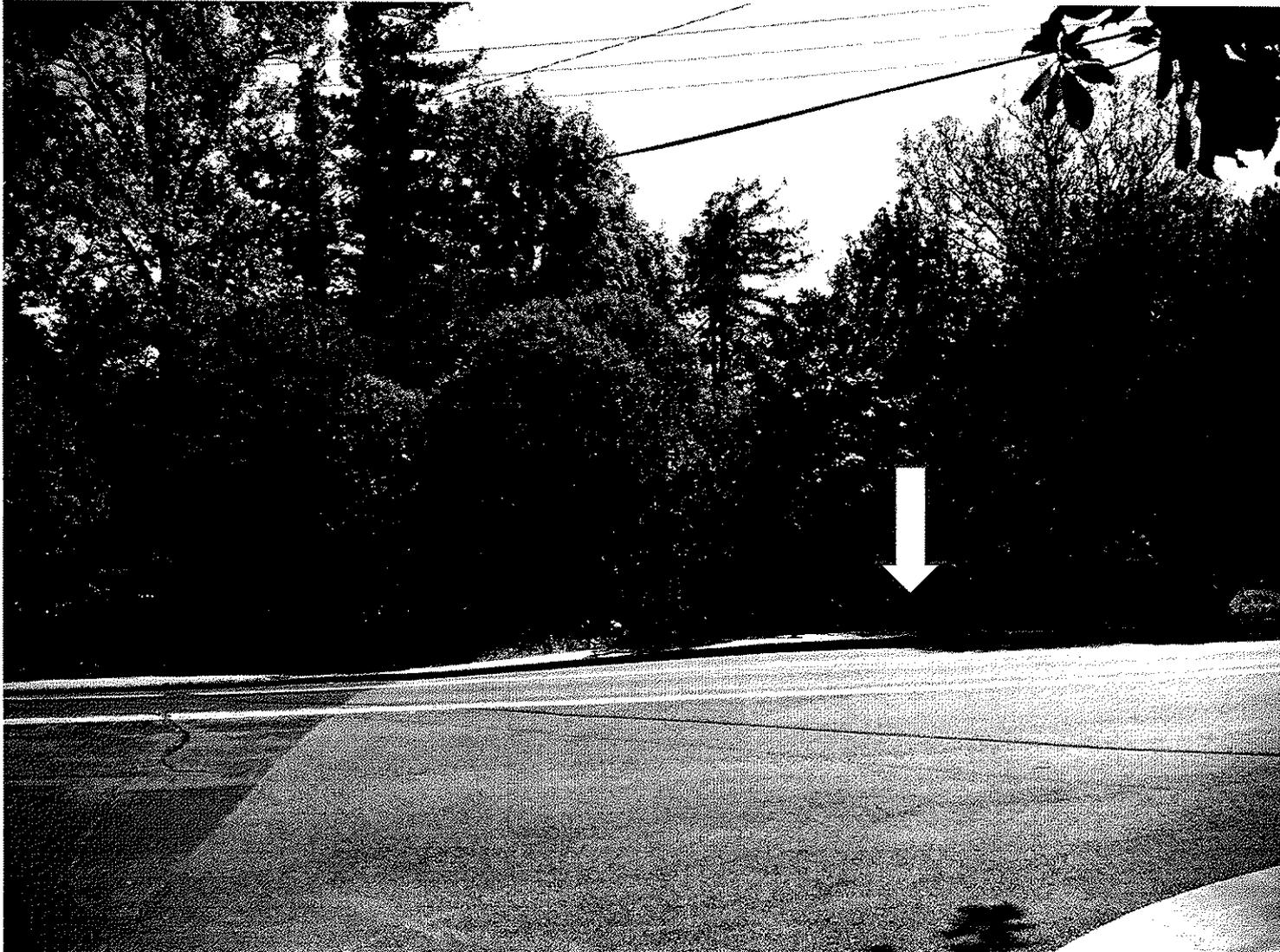
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SF33XC617A  
 ROSS (FIRE STATION)  
 33 SIR FRANCIS DRAKE BLVD.  
 ROSS, CA 94957

SHEET TITLE  
**WEST ELEVATION**

SHEET NUMBER  
**A-5**

JOB #: W01225 PHASE #: 22



Location of RF Measurements  
Near the Corner of Sir Francis Drake Blvd. & Lagunitas Rd

## STATEMENT OF EXPERIENCE

**Jerrold Talmadge Bushberg, Ph.D., DABMP, DABSNM**  
(800) 760-8414    jrbushberg@hampc.com

Dr. Jerrold Bushberg has performed health and safety analysis for RF & ELF transmissions systems since 1978 and is an expert in both health physics and medical physics. The scientific discipline of Health Physics is devoted to radiation protection, which, among other things, involves providing analysis of radiation exposure conditions, biological effects research, regulations and standards as well as recommendations regarding the use and safety of ionizing and non-ionizing radiation. In addition, Dr. Bushberg has extensive experience and lectures on several related topics including medical physics, radiation protection, (ionizing and non-ionizing), radiation biology, the science of risk assessment and effective risk communication in the public sector.

Dr. Bushberg's doctoral dissertation at Purdue University was on various aspects of the biological effects of microwave radiation. He has maintained a strong professional involvement in this subject and has served as consultant or appeared as an expert witness on this subject to a wide variety of organizations/institutions including, local governments, school districts, city planning departments, telecommunications companies, the California Public Utilities Commission, national news organizations, and the U.S. Congress. In addition, his consultation services have included detailed computer based modeling of RF exposures as well as on-site safety inspections and RF & ELF environmental field measurements of numerous transmission facilities in order to determine their compliance with FCC and other safety regulations. The consultation services provided by Dr. Bushberg are based on his professional judgement as an independent scientist, however they are not intended to necessarily represent the views of any other organization.

Dr. Bushberg is a member of the main scientific body of International Committee on Electromagnetic Safety (ICES) which reviews and evaluates the scientific literature on the biological effects of non-ionizing electromagnetic radiation and establishes exposure standards. He also serves on the ICES Risk Assessment Working Group that is responsible for evaluating and characterizing the risks of non-ionizing electromagnetic radiation. Dr. Bushberg was appointed and is serving as a member of the main scientific council of the National Council on Radiation Protection and Measurement's (NCRP). He is also a Scientific Vice-President of the NCRP, a member of the NCRP Board of Directors and chairs its committee on Radiation Protection in Medicine. In addition, Dr. Bushberg is a member of NCRP's scientific advisory committee on Non-ionizing Radiation Safety. The NCRP is the nation's preeminent scientific radiation protection organization, chartered by Congress to evaluate and provide expert consultation on a wide variety of radiological health issues. The current FCC RF exposure safety standards are based in large part on the recommendations of the NCRP. Dr. Bushberg was elected to the International Engineering in Medicine and Biology Society Committee on Man and Radiation (COMAR) which has as its primary area of responsibility the examination and interpreting the biological effects of non-ionizing electromagnetic energy and presenting its findings in an authoritative and professional manner. Dr. Bushberg is also a member of a six person U.S. expert delegation to the international scientific community on Scientific and Technical Issues for Mobile Communication Systems established by the Federal Communications Commission.

Dr. Bushberg is a full member of the Bioelectromagnetics Society, the Health Physics Society and the Radiation Research Society. Dr. Bushberg received both a Masters of Science and Ph.D. from the Department of Bionucleonics at Purdue University. Dr. Bushberg is certified by several national professional boards with specific sub-specialty certification in radiation protection and medical physics. Prior to coming to California, Dr. Bushberg was on the faculty of Yale University School of Medicine.

