



Staff Report to the Planning Commission

Application Number: **141194**

Applicant: Rebekah Anderson, SAC Wireless (Verizon)
Owner: Datta Khalsa
APNs: 030-081-36 and 030-081-37

Agenda Date: February 25, 2015
Agenda Item #: 8
Time: After 9:00 a.m.

Project Description: Proposal to install a small cell facility to include one Verizon Wireless antenna, six Remote Radio Units (RRU) and one GPS antenna to be mounted on the parapet wall that divides the roofs of two existing commercial buildings located on APNs 030-081-36 and 37, and install one ground mounted equipment cabinet behind the existing commercial building on APN 030-081-36. Requires a Commercial Development Permit.

Location: Property located on the north side of Soquel Drive (4633 and 4641 Soquel Drive) about 90 feet west of the intersection with Porter Street in the C-2 zone district.

Supervisory District: First District (District Supervisor: John Leopold)

Permits Required: Commercial Development Permit
Technical Reviews: N/A

Staff Recommendation:

- Certification that the proposal is exempt from further Environmental Review under the California Environmental Quality Act.
- Approval of Application 141194, based on the attached findings and conditions.

Exhibits

- | | |
|---|--|
| A. Categorical Exemption (CEQA determination) | F. Radio Frequency Report, prepared by Hammett & Edison, Inc., dated November 12, 2014 |
| B. Findings | G. Photo-simulation views |
| C. Conditions | H. Necessity Case Study |
| D. Project plans | I. Planning Department Administrative Guidelines WCF-02 |
| E. Assessor's, Location, Zoning and General Plan Maps | |

Parcel Information

Parcel Size:	5,924 square feet and 7,710 square feet
Existing Land Use - Parcel:	Commercial - hair stylist and tattoo parlor
Existing Land Use - Surrounding:	Commercial - retail
Project Access:	Soquel Drive
Planning Area:	Soquel Village
Land Use Designation:	CC (Community Commercial)
Zone District:	C-2-GH (Service Commercial within the Geologic Hazards Combining District)
Coastal Zone:	<input type="checkbox"/> Inside <input checked="" type="checkbox"/> Outside
Appealable to Calif. Coastal Comm.	<input type="checkbox"/> Yes <input type="checkbox"/> No

Environmental Information

Geologic Hazards:	Mapped within FEMA Flood Zone (100 year floodplain)
Soils:	N/A
Fire Hazard:	Not a mapped constraint
Slopes:	N/A
Env. Sen. Habitat:	Not mapped/no physical evidence on site
Grading:	No grading proposed
Tree Removal:	No trees proposed to be removed
Scenic:	Not a mapped resource
Drainage:	Existing drainage adequate, no change
Archeology:	Not mapped/no physical evidence on site

Services Information

Urban/Rural Services Line:	<input checked="" type="checkbox"/> Inside <input type="checkbox"/> Outside
Water Supply:	Soquel Creek Water District
Sewage Disposal:	Santa Cruz County Sanitation District
Fire District:	Central Fire Protection District
Drainage District:	Zone 5

History

The commercial buildings on APNs 030-081-36 and 37 were both constructed in 1938, prior to the requirement for either Use or Development Permits and have been used since that time for commercial uses. Permits 87-0762 and 87-0763 were later approved to recognize the existing commercial buildings and to set up a Master Occupancy Program to allow for changes of use within the tenant spaces. In 1994 a separate building, located behind the retail store on APN 030-181-36, that was originally used for storage, was converted to an office under Permit 94-0636. With the exception of permits to recognize changes of occupancy within the tenant spaces there have been no other Use approvals on either parcel. However, several building permits have been issued for maintenance of the structures.

Project Setting

The project site is located in the heart of Soquel Village, within the main commercial core and close to the intersection of Soquel Drive and Porter Street. Soquel Village occupies a low valley site surrounded by gentle hills which form a visual backdrop to the historic village.

The single-story commercial buildings upon which the proposed small cell facility site is to be constructed front directly onto the sidewalk, as do many of the older commercial buildings in Soquel Village. Although the two structures are on different parcels and were probably constructed separately, the buildings are attached by a common wall. This parapet wall, upon which the proposed small cell facility will be mounted, extends up into the valley between the two roofs. A linking facade has also been added that includes a decorative parapet wall to disguise the disparate gable heights of the buildings fronting onto Soquel Drive, so that the structures now appear as one building when viewed from the street.

To the rear of the subject parcels there are limited parking areas for the use of the buildings and beyond that there are additional commercially zoned parcels that are developed with single-story commercial structures. Access to the rear parking area for APN 030-081-36 and to adjacent commercial parcels is provided via a paved right-of-way located on the western edge of the parcel. Access to the rear of the structure on APN 030-081-37 and adjacent commercial buildings is via driveways that are accessed from Porter Street.

Around 250 feet northwest of the proposed cell site, beyond the area developed for commercial uses there is a stand of large mature trees at the base of the hill that forms the visual backdrop to the village center. Beyond this, although not clearly visible from Soquel Drive or Porter Street, the land slopes upwards towards the Soquel High School campus which is located on higher ground beyond. Buildings at the school are located, at their closest point, around 475 feet northwest of the proposed cell site and at an elevation that is approximately 75 feet higher than that at Soquel Drive.

In addition to the Soquel High School campus there are two other schools that are located within 1,000 feet of the proposed cell site. The Soquel Elementary School parcel, which is located south of Soquel Drive on the east side of Porter Street, lies around 550 feet south southeast, with school buildings located approximately 640 feet from the proposed small cell facility at their closest point. The Tara School, a private elementary school, is located east of Porter Street, on the south side of Soquel Drive and the building lies around 450 feet from the project site.

Zoning & General Plan Consistency

The subject properties are parcels of approximately 5,924 square feet (APN 030-081-36) and 7,710 square feet (APN 030-081-37), located in the C-2-GH (Community Commercial within the Geologic Hazards Combining District) zone district, a designation which allows commercial uses. The proposed wireless facility is an allowed use within the C-2-GH zone district and the zoning is consistent with the site's (CC) Community Commercial General Plan designation. The proposed improvements will meet the site standards required 10 foot front yard setback for the C-2 zone district. The proposed site is not located in a prohibited or restricted wireless area as set forth in Sections 13.10.661(B) and 13.10.661(C). Thus, an alternative site analysis or alternative designs are not required.

The sites' GH (Geologic Hazards) Combining District designation denotes that the parcels are located within the 100 year floodplain of Soquel Creek that lies to the east of the project site.

The proposed micro cell site, will comply with all of the provisions of chapter 16.10, Geologic Hazards ordinance in that, with the exception of one equipment cabinet, the development will be located on the roof of existing structures which is above the base flood elevation. The proposed cabinet, that will be located on the ground behind the building on APN 030-081-36, will comply with the provisions of chapter 16.10 in that the structure has been required as a condition of approval of this project to be anchored and waterproofed and to meet all other provisions of the chapter.

Pursuant to County Code Section 13.10.661 (A) (Wireless Communications Ordinance), all new wireless communication facilities are required to obtain a commercial development permit with approval by the Zoning Administrator. However, as directed by the Board of Supervisors in 2007 and as set out in Planning Department Administrative Guidelines WCF-02, applications for wireless communication facilities that are proposed within 1,000 feet of the parcel boundary of any K-12 public school (including charter schools) are subject to review by the Planning Commission. Although the Planning Director has the discretion to overrule this provision, because the proposed micro cell site is within 500 feet of two public schools it has been determined that this application is required to be approved by the Planning Commission. In addition, although specifically excluded from this provision, there is a private elementary school, the Tara School, within 500 feet of the proposed project.

Radio Frequency Radiation Emissions

A radio-frequency (RF) radiation exposure compliance study report has been prepared by Hammett and Edison, Inc., Consulting Engineers (Exhibit F). Based upon this report the estimated worst case scenario (i.e., at maximum power output) RF emission levels that could be expected once the new antenna goes into operation, would be 8.2% the Federal Communications Commission's (FCC) maximum permissible exposure limit for the public at street level and 9.2% of the FCC limit for members at any nearby building. The maximum calculated level at any building on the campus of the Soquel High School is 0.018% of the public exposure limit and at Soquel Elementary School would be 0.011% of the public exposure limit. Similarly levels at the Tara School would be only 0.016%.

Although the RF report states that exposure levels on the rooftop of the subject commercial buildings will exceed applicable exposure limits, the roof of the building will be off limits to the general public and only authorized and/or trained persons will be permitted to access the rooftop and antennas. The RF report states that it is possible that RF exposures to rooftop workers could exceed the FCC's occupational exposure limits under worst case conditions on certain portions of the roof. Therefore, to prevent occupational exposures to technical equipment specialists in excess of the FCC guidelines, the RF report recommends the roof access points must be locked, that authorized personnel be trained and that warning signs be posted on the rooftop and near the antenna, to allow workers to exercise control over their exposure. In addition no access within 11 feet directly in front of the Verizon antenna itself may occur while the base station is in operation and an automatic electric shut-off switch is included to ensure occupational safety. These recommendations have been included in the proposed Conditions of Approval for this project.

Section 47 USC 332(c)(7)(iv) of the Telecommunications Act of 1996 forbids jurisdictions from regulating the placement, construction, or modification of Wireless Communications Facilities based on the environmental effects of RF emissions if these emissions comply with FCC

standards. The RF emissions of the proposed wireless communication facility comply with FCC standards.

Design Review

The proposed small cell facility complies with the requirements of the County Design Review Ordinance, in that the proposed project will be located on an existing roof and, except for the top portion of the antenna, will be hidden from view behind an existing parapet wall. The associated equipment cabinet will be located in an area behind the main commercial building, in a fenced enclosure that is surrounded by buildings on three sides. Therefore the visual impact of the proposed development on surrounding land uses and the natural landscape will be minimal. The proposed small cell facility will not be visible from the campuses of either Soquel High School or Soquel Elementary School. Photo-simulation views of the proposed facility are included as Exhibit G of this staff report.

Environmental Review

Staff has determined that the proposed project is Categorically Exempt from the requirements of the California Environmental Quality Act (CEQA) because it qualifies as a minor change to the site improvements in an approved commercial development (Class 1, Sec. 15301). The CEQA Categorical Exemption form is attached as Exhibit A.

Staff Recommendation

- Certification that the proposal is exempt from further Environmental Review under the California Environmental Quality Act.
- **APPROVAL** of Application Number 141194, 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

Report Prepared By: _____

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Report Reviewed By: _____
Steven Guiney AICP
Principal Planner
Development Review
Santa Cruz County Planning Department

CALIFORNIA ENVIRONMENTAL QUALITY ACT

NOTICE OF EXEMPTION

The Santa Cruz County Planning Department has reviewed the project described below and has determined that it is exempt from the provisions of CEQA as specified in Sections 15061 - 15332 of CEQA for the reason(s) which have been specified in this document.

Application Number: 141194

Assessor Parcel Number: 030-081-36 and 030-081-37

Project Location: 4633-4641 Soquel Drive, Soquel, CA

Project Description: Proposal to install a small cell facility to include one Verizon Wireless antenna, six Remote Radio Units (RRU) and one GPS antenna on the roof of an existing commercial building and one ground mounted equipment cabinet.

Person or Agency Proposing Project: Rebekah Anderson, SAC Wireless (for Verizon)

Contact Phone Number: (916) 201 3100

- A. ☐ The proposed activity is not a project under CEQA Guidelines Section 15378.
- B. ☐ The proposed activity is not subject to CEQA as specified under CEQA Guidelines Section 15060 (c).
- C. ☐ **Ministerial Project** involving only the use of fixed standards or objective measurements without personal judgment.
- D. ☐ **Statutory Exemption** other than a Ministerial Project (CEQA Guidelines Section 15260 to 15285).
- E. ☒ **Categorical Exemption**

Specify type: 15303. New Construction or Conversion of Small Structures

F. Reasons why the project is exempt:

Construction of a small cell facility mounted at the roof of an existing commercial building with no change to the commercial use.

In addition, none of the conditions described in Section 15300.2 apply to this project.

Lezanne Jeffs, Project Planner

Date: _____

Wireless Communication Facility Use Permit Findings

- 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 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 the proposed wireless communication antenna will set in the valley between two adjacent roof peaks and will be screened in views from the surrounding area, including both Soquel Drive Porter Street, by roofline and an existing parapet wall along the front of the commercial buildings upon which it will be mounted. The proposal will not significantly affect any designated visual resources, environmentally sensitive resources or any other significant County resource as its visual impact will be negligible as only the top of the proposed antenna will be visible above the line of the parapet wall. The proposed small cell facility will not significantly alter the character or appearance of the Soquel Village core in which it will be located, nor will it be visible from any public school.

- 2. 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 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 proposed site is not located in a prohibited or restricted area as set forth in Sections 13.10.661(B) and 13.10.661(C). As such, no alternative site analysis or alternative designs are required. Wireless communication facilities are an allowed use with the C-2-GH (Community Commercial with a Geologic Hazards Combining District) zone district.

- 3. 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 (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 commercial buildings were constructed on the parcels in 1938, prior to the requirements for Use Permits or Building Permits. Permitted uses under the Master Occupancy Program established under Discretionary Permits 87-0762 and 87-0763 allow for all uses that are allowed in the C-2 zone district. The proposed project is consistent with the permits authorized on these properties and the proposed project meets the rules and regulations pertaining to the zone districts in which it is located. The improvements meet the site standards, including, and without limitation, the setbacks, equipment height, etc.

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

This finding can be made, in that the proposed small cell facility will be located within the valley between two separate roofs of an existing one-story building, and behind an existing parapet wall. Only two feet of the proposed facilities will extend above the height of these adjacent structures which will have a maximum height of 17 feet 3 inches, which complies with the height standard allowed for antennas pursuant to County Code Section 13.10.510(D)(2). As such, the proposal will not create a hazard for 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 radio frequency electromagnetic field exposure level anywhere on the ground will be 8.2% of the applicable radio frequency exposure levels established by the Federal Communications Commission (FCC). The maximum calculated cumulative level at any nearby building would be 9.2% of the public exposure limit. The maximum calculated level at any building on the campus of the Soquel High School is 0.018% of the public exposure limit and at Soquel Elementary School would be 0.011% of the public exposure limit. Similarly levels at the Tara School would be only 0.016%.

Exposure levels may exceed the applicable occupational exposure limit on the roof to the subject building near the antennas. The antennas are not accessible to the public. However, to prevent occupational exposures to technical equipment specialists in excess of the Federal Communications Commission guidelines, no access within 11 feet directly in front of the Verizon antenna itself may occur while the base station is in operation. The addition of warning signs and an automatic electric shut-off switch are included as conditions of approval to ensure occupational safety.

6. For wireless communication facilities in the coastal zone, the proposed wireless communication facility as conditioned is consistent with the all applicable requirements of the Local Coastal Program.

The proposed wireless communication facility is not located within the coastal zone.

Development Permit Findings

- 1. That the proposed location of the project and the conditions under which it 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 project is located in an area designated for commercial uses and is not encumbered by physical constraints to development. 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 improvements will not deprive adjacent properties or the neighborhood of light, air, or open space, in that the structure will meet all current setbacks, as conditioned, that ensure access to these amenities.

- 2. That the proposed location of the project and the conditions under which it would be operated or maintained will be consistent with all pertinent County ordinances and the purpose of the zone district in which the site is located.**

This finding can be made, in that the proposed location of the small cell facility on the parapet wall between the roofs of the two existing commercial buildings and the conditions under which it would be operated or maintained will be consistent with all pertinent County ordinances and the purpose of the C-2-GH (Community Commercial with a Geologic Hazards Combining District) zone district in that the proposed improvements meet all current site standards for the zone districts including setbacks, maximum antenna height, etc.

- 3. That the proposed use is 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 commercial use is consistent with the use and density requirements specified for the Community Commercial (CC) land use designation in the County General Plan.

The proposed wireless project will be properly proportioned to the parcel size and the character of the neighborhood as specified in General Plan Policy 8.5.2 (Commercial Compatibility with other uses), in that the proposed small cell facility and equipment shelter will comply with the site standards for the C-2-GH zone district (including setbacks, height, and number of stories) and will result in a structure consistent with a design that could be approved on any similarly sized commercial lot in the vicinity.

The project is located within the northwest quadrant area of the Soquel Village Plan. This plan area encourages the creation of a drop-off/pick-up point and pedestrian access to the Soquel High School campus from Soquel Drive and additional shared parking areas behind the commercial buildings that front onto Soquel Drive. Other desired changes include the re-construction of the commercial structures on the northern side of Soquel Drive to provide a streetscape façade that will balance and complement the historic buildings located opposite, south of Soquel Drive, and the creation of an entry area at the intersection of Soquel Drive and Porter Street. These

improvements are beyond the limit of the project site and there is no nexus between the project and the encouraged improvements and therefore no portion of these large-scale projects has been required.

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 small cell facility is to be constructed on an existing commercial lot. This development will not increase the existing level of traffic or adversely impact existing roads and intersections in the surrounding area nor overload utilities.

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 structure is located in a mixed commercial neighborhood containing a variety of architectural styles, and the proposed small cell facility, which will have only a minimal impact on the existing street scene, is consistent with the land use intensity and density of the neighborhood.

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.**

The small cell facility complies with the requirements of the County Design Review Ordinance, in that the proposed project will be located on an existing roof and, except for the top portion of the facility, will be hidden from view behind an existing parapet wall. The associated equipment cabinet will be located in an area behind the main commercial building, in a fenced enclosure that is surrounded by buildings on three sides. Therefore the visual impact of the proposed development on surrounding land uses and the natural landscape will be minimal. The proposed small cell facility will not be visible from the campuses of either Soquel High School or Soquel Elementary School. The proposed small cell facility will not reduce or visually impact available open space in the surrounding area.

Therefore, this finding can be made.

Conditions of Approval

Exhibit D: 14 sheets prepared by SAC Wireless Engineering Group for Verizon Wireless, 12 sheets dated 12/2/14 and 2 sheets dated 7/23/14.

- I. This permit authorizes the construction of a small cell facility to include one Verizon Wireless antenna, six Remote Radio Units (RRU) and one GPS antenna to be mounted on the parapet wall that divides two existing commercial buildings on APNs 030-081-36 and 37, and one ground mounted equipment cabinet to be located behind the existing commercial building on APN 030-081-36. This approval does not confer legal status on any existing structures or existing uses on the subject property that are not specifically authorized by this permit. 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. 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 "D" on file with the Planning Department. Any changes from the approved Exhibit "D" 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. Details showing compliance with fire department requirements.
 2. 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/components

at the base station site, or some other method (acceptable to the local Fire Chief) for de-energizing the facility. As a multi-WCF (co-location) site, 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.

3. The outer perimeter of the NIER hazard shall be posted with bilingual NIER hazard warning signage that also indicates the name and phone number for 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. An RF exclusion zone of at least 25-feet in front of the "Sector A" antennas shall be maintained and shown on revised plans. Warning signs shall be posted on the rooftop and near the antennas to allow workers to exercise control over their exposure such that it remains within the FCC occupational/controlled limits.

- 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 the County Department of Environmental Health Services.
- D. Meet all requirements and pay any applicable plan check fee of the Central Fire Protection District.
- E. Meet all requirements of Chapter 16.10 "Geologic Hazards" with regard to the placement of the ground mounted equipment shelter that will be located within the 100 year floodplain.

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.

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. The operator of the wireless communication facility must submit within 90 days of commencement of normal operations (or within 90 days of any major modification of power output of the facility) a written report to the Santa Cruz County Planning Department documenting the measurements and findings with respect to compliance with the established Federal Communications Commission (FCC) Non-Ionizing Electromagnetic Radiation (NEIR) exposure standard. 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 also include field measurements of NIER emissions generated by the facility and also other emission sources, from various directions at each of the three school sites located within 1,000 feet of the site. The wireless communication facility must remain in continued compliance with the NEIR standard established by the FCC at all times. Failure to submit required reports or to remain in continued compliance with the NEIR standard established by the FCC will be a violation of the terms of this permit.
- 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, its 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 structure 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
Principal Planner

Lezanne Jeffs
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 Planning Commission, may appeal the act or determination to the Board of Supervisors in accordance with chapter 18.10 of the Santa Cruz County Code.



PSL # 263385

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CALL 811
WWW.CALL811.COM
CONTRACTOR TO CALL TO
VERIFY UTILITIES AT
LEAST TWO WORKING
DAYS PRIOR TO DIGGING.

EXHIBIT D

ISSUE STATUS			
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2	12-07-14	60% CONTRIBUTION	ME

PROPRIETARY INFORMATION
THE INFORMATION CONTAINED IN THIS SET OF
DRAWINGS IS PROPRIETARY & CONFIDENTIAL TO
WELDON WHEELERS



**SOQUEL HIGH
SCHOOL SC1
PSL # 263385**
4641 SOQUEL DRIVE
SOQUEL, CA 95073

SHEET TITLE:
**C.O.A., NOTES, LEGEND
& ABBREVIATIONS**

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CONDITIONS OF APPROVAL	
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[illegible][illegible][illegible]

1. CABLE JOINTERS AT INTERIOR SPACES WHERE EXPOSED SHALL BE 1/2" ROUND GALE STRIKER TYPE
2. ALL CABLENET SHALL BE PROOF (4001)
3. WIRENET SHALL BE 8 (118) (NO) TO MATCH CABLE INLAY
4. CABLE SHALL ON ROOF TOP AND OUTDOOR APPLICATIONS SHALL BE HOT DIPPED GALVANIZED PATTERN APPLICATION
5. ALL ANTENNA SPACES PER PER DATA SHEET

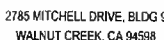
[illegible]

2. ALL REQUIREMENTS AND RESTRICTIONS TO COMPLY TO LATEST EDITION OF CALIFORNIA ELECTRICAL CODE (REFER TO THE COVER SHEET)
3. ALL PLUMBING TO COMPLY WITH THE LATEST EDITION OF THE CALIFORNIA PLUMBING CODE (REFER TO THE COVER SHEET)
4. BEFORE PLACING THROUGH THE CONCRETE WALL, VERIFY LOCATION AND DEPTH OF ALL EMBEDDING LUGS INDICATED BY THE CONTRACT AND MANUALLY NOTIFY THE PROJECT MANAGER IF ANY ANOMALIES OR EXISTING LUGS INTERFERE
5. HVAC SYSTEM (REFER TO DRAWINGS)

2. ALL ELECTRICAL CODES TO COMPLY WITH THE LATEST EDITION OF THE CALIFORNIA ELECTRICAL CODE REFERRED TO IN THE COVER SHEET.
3. ALL WEATHERING INSULATORS SHALL BE PROVIDED WITH AN STAINLESS COPPER WITH GREEN JACKET ALL CONNECTIONS MUST BE DOUBLE LUGS.
4. BEFORE STARTING ANY WORK, THE CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES BY THE CONTRACT AND IMMEDIATELY NOTIFY THE PROJECT MANAGER AND ARCHITECT OF ANYTHING IN DISCREPANCY.

—

SOQUEL HIGH
SCHOOL SC1
PSL # 263385
4641 SOQUEL DRIVE
SOQUEL, CA 95073

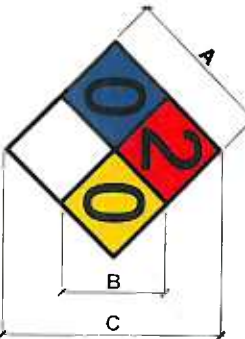


Wireless
5465 Avenida Encinas
Carlsbad, CA 92008
www.dell.com
760.725.5200

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Sign Size (in)	Letter Size (in)	Height and Width (in)
1.0	0.4	1.0
1.5	0.6	1.5
2.0	0.8	2.0
2.5	1.0	2.5
3.0	1.2	3.0
3.5	1.4	3.5
4.0	1.6	4.0
4.5	1.8	4.5
5.0	2.0	5.0
5.5	2.2	5.5
6.0	2.4	6.0
6.5	2.6	6.5
7.0	2.8	7.0
7.5	3.0	7.5
8.0	3.2	8.0
8.5	3.4	8.5
9.0	3.6	9.0
9.5	3.8	9.5
10.0	4.0	10.0
10.5	4.2	10.5
11.0	4.4	11.0
11.5	4.6	11.5
12.0	4.8	12.0
12.5	5.0	12.5
13.0	5.2	13.0
13.5	5.4	13.5
14.0	5.6	14.0
14.5	5.8	14.5
15.0	6.0	15.0
15.5	6.2	15.5
16.0	6.4	16.0
16.5	6.6	16.5
17.0	6.8	17.0
17.5	7.0	17.5
18.0	7.2	18.0
18.5	7.4	18.5
19.0	7.6	19.0
19.5	7.8	19.5
20.0	8.0	20.0



NEPA SIGNAGE

IN CASE OF
EMERGENCY
CALL
1-866-400-6040

SITE NUMBER: _____
SITE NAME: SOQUEL HIGH SCHOOL SC1

EMERGENCY CONTACT SIGNAGE

WARNING / EMERGENCY CONTACT SIGNAGE

1 WARNING SIGNAGE AT EQUIPMENT ENCLOSURE DOOR

IN CASE OF
EMERGENCY
CALL
1-800-264-6620

SITE NO: _____

verizonwireless

SOQUEL HIGH SCHOOL SC1
NOC WEST 1-800-264-6620

NOTICE

Radio frequency fields beyond this point may exceed the FCC limits for human exposure. Stay clear by that distance.

CAUTION

Radio frequency fields beyond this point may exceed the FCC limits for human exposure. Stay clear by that distance.

WARNING

Radio frequency fields beyond this point may exceed the FCC limits for human exposure. Stay clear by that distance.

CAUTION

Radio frequency fields within one foot of this antenna may exceed Federal limits for human exposure. Stay clear by that distance.

VERIZON WIRELESS

Carrier

Site # _____

TYPICAL CAUTION SIGN

SHEET TITLE
WARNING
SIGNAGE & NOTES

T-4

SOQUEL HIGH
SCHOOL SC1
PSL # 263385
4641 SOQUEL DRIVE
SOQUEL, CA 95073

verizonwireless

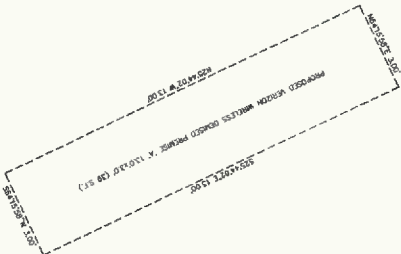
2785 MITCHELL DRIVE, BLDG 9
WALNUT CREEK, CA 94598

REV	DATE	DESCRIPTION	BY
1	11/01/14	ISSUE STATUS	1
2	11/01/14	REVISED BY: CO	1
3	11/01/14	REVISED BY: CO	1
4	11/01/14	REVISED BY: CO	1
5	11/01/14	REVISED BY: CO	1
6	11/01/14	REVISED BY: CO	1
7	11/01/14	REVISED BY: CO	1
8	11/01/14	REVISED BY: CO	1
9	11/01/14	REVISED BY: CO	1
10	11/01/14	REVISED BY: CO	1
11	11/01/14	REVISED BY: CO	1
12	11/01/14	REVISED BY: CO	1
13	11/01/14	REVISED BY: CO	1
14	11/01/14	REVISED BY: CO	1
15	11/01/14	REVISED BY: CO	1
16	11/01/14	REVISED BY: CO	1
17	11/01/14	REVISED BY: CO	1
18	11/01/14	REVISED BY: CO	1
19	11/01/14	REVISED BY: CO	1
20	11/01/14	REVISED BY: CO	1

EXHIBIT D



DEMISED PREMISE DETAIL
N.T.S.



SMITHCO
SURVEYING, ENGINEERING

NO	DATE	DISCUSSION	BY
0	02/14/14	PRELIMINARY	DR
1	04/08/14	TITLE REVIEW	SR
2	04/15/14	LMSE/ACROSS/MINUTY	SR
3	04/15/14	4007T, LEGAL AFFAIR	SR
4	07/22/14	NEW TITLE REVIEW	SR

SOURCE JOB NO.: 82-212

100

WIRELESS
5885 AVENUE ENCHINAS, SUITE 142B
CARLSBAD, CA 92008
Office (760) 786-8200
Fax (760) 931-0506

PROPRIETARY INFORMATION



2785 MITCHELL DRIVE, BLDG 9
WALNUT CREEK, CA 94598

PRELIMINARY

263385
SOQUEL HIGH
SCHOOL

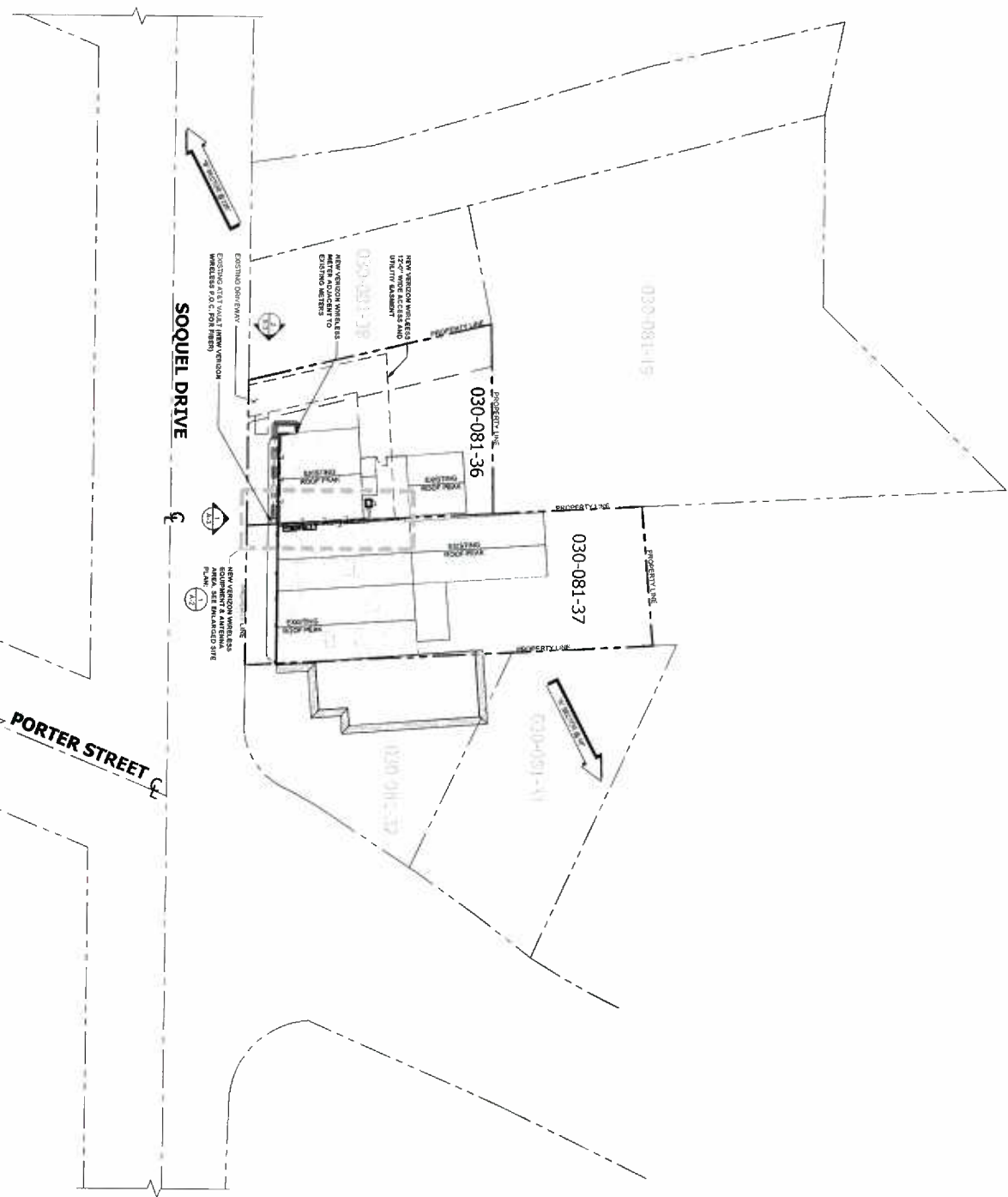
4641 SOQUEL DR.
SOQUEL, CA
95073
SANTA CRUZ
COUNTY

SHEET TITLE:
SITE SURVEY
FOR EXAMINATION ONLY

C-2

EXHIBIT D

SITE PLAN



SCALE: 1" = 20' (7.62M)
 1" = 20' (7.62M)
 1" = 20' (7.62M)



SOQUEL HIGH SCHOOL SC1
PSL # 263385
 4641 SOQUEL DRIVE
 SOQUEL, CA 95073

verizonwireless
 2785 MITCHELL DRIVE, BLDG 9
 WALNUT CREEK, CA 94598

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VERIZON WIRELESS
 5000 AVENUE OF THE SCIENCES
 SUITE 100
 SAN ANTONIO, TEXAS 78238

ISSUE STATUS	
REV	DATE
1	08/14/14
2	08/14/14
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100	08/14/14

A-1

SHEET TITLE:
SITE PLAN

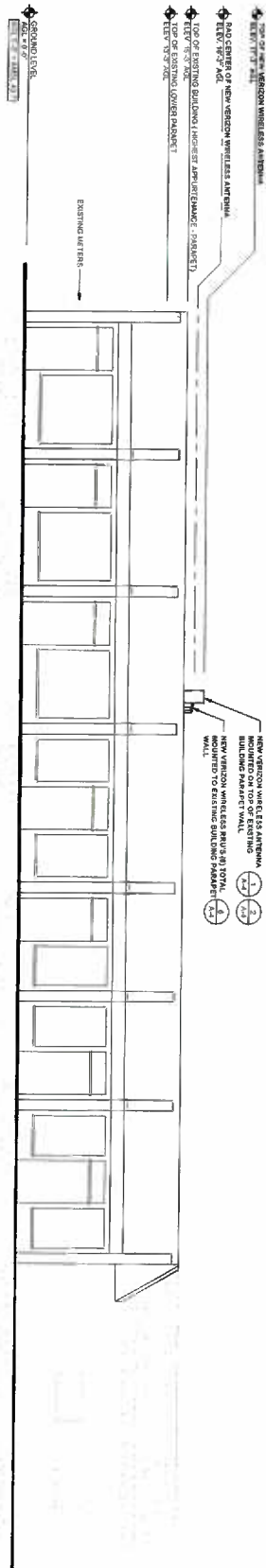
EXHIBIT D

1



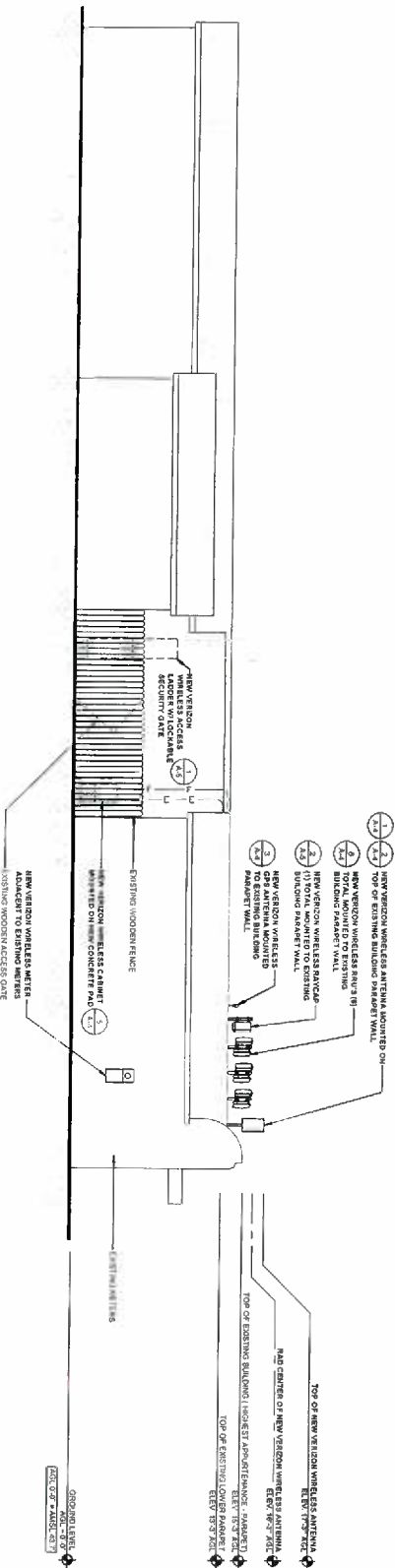
SOQUEL HIGH
SCHOOL SC1
PSL # 263385
4641 SOQUEL DRIVE
SOQUEL, CA 95073

SHEET TITLE:
ENLARGED SITE PLAN
A-2



SOUTH ELEVATION

0' 5' 10' SCALE: 3/16" = 1'-0" (24x36) 1



WEST ELEVATION

0' 5' 10' SCALE: 3/16" = 1'-0" (24x36) 2

ISSUE STATUS

NO.	DATE	DESCRIPTION	BY	CHKD.
1	10/11/14	REVISED FOR CONSTRUCTION	EC	
2	10/11/14	REVISED FOR CONSTRUCTION	EC	
3	10/11/14	REVISED FOR CONSTRUCTION	EC	
4	10/11/14	REVISED FOR CONSTRUCTION	EC	
5	10/11/14	REVISED FOR CONSTRUCTION	EC	
6	10/11/14	REVISED FOR CONSTRUCTION	EC	
7	10/11/14	REVISED FOR CONSTRUCTION	EC	
8	10/11/14	REVISED FOR CONSTRUCTION	EC	
9	10/11/14	REVISED FOR CONSTRUCTION	EC	
10	10/11/14	REVISED FOR CONSTRUCTION	EC	

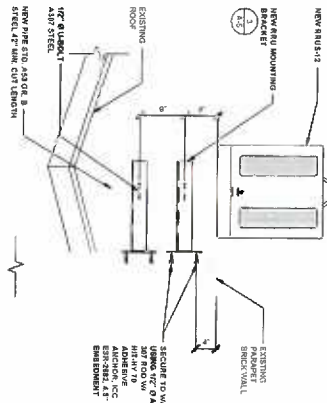
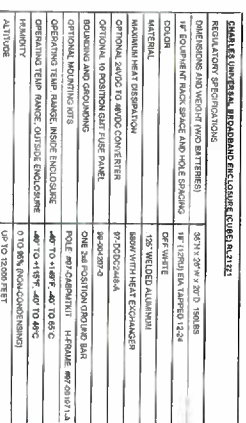
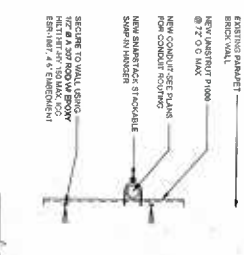
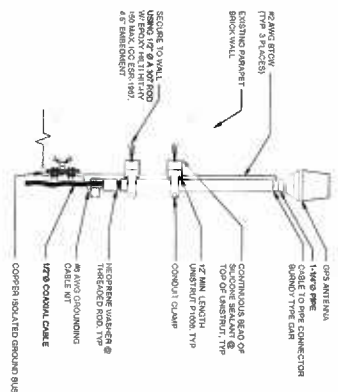


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2785 MITCHELL DRIVE, BLDG 9
 WALNUT CREEK, CA 94598

SOQUEL HIGH SCHOOL SC1
PSL # 263385
 4641 SOQUEL DRIVE
 SOQUEL, CA 95073

A-3
 SOUTH & WEST
 ELEVATIONS



5XK 125 0249/1 WALL MOUNT (PROVIDED W/ RUSSTD)

TECHNICAL SPECIFICATIONS:

CLAMP MOUNTING RANGE:	
MINIMUM	1.35 X 1.39 IN.
MAXIMUM	3.54 X 3.54 IN.

MECHANICAL SPECIFICATION:

CLAMP	ALUMINUM NATURE ANODIZED 20UM
FASTENERS	ACID PROOF STAINLESS STEEL, M6

[illegible]

ISSUE STATUS	DATE	DESCRIPTION
0	10/21/14	80% CONSTRUCTION
0	10/21/14	RE-USED 80% CO
0	12/02/14	85% CONSTRUCTION

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2785 MITCHELL DRIVE, BLDG 9
WALNUT CREEK, CA 94598

SOQUEL HIGH
SCHOOL SC1
PSL # 263385
4641 SOQUEL DRIVE
SOQUEL, CA 95073

A-4

EXHIBIT D

SCALE	3
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DC Surge Protection for RFH/Integrated Antenna Radio Hand
RxxDC-4750-PF-40 • RxxDC-315-PF-40
Trans / Base / Mobile / Portable Detachable Models

[illegible]

SCALE	2
MTS	



connecting power and fiber optics). Or, take the entire web, converting up to 2" (4.5 cm) wide sheets of 1/4" (6.3 mm) thick sheets depending upon your configuration. Lightweight aluminum design provides maximum flexibility for future rigs in addition, conversion to the ProDOC (10,000-100,000) model.

SCALE	1
NAME	



560 BRACKET DETAIL

A-5

verizonwireless

STIR
WIRELESS

3445 AVENIDA ENRIQUE
CARLISBUD CA
www.stir.com
760.795.8200

PROPRIETARY INFORMATION CONTAINING TRADE SECRETS OF STIR

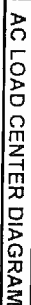
REV	DATE	DESCRIPTION
0	10/20/14	80% COMPLETION
1	11/03/14	REVISED 80% CD
2	11/03/14	80% COMPLETION

EXHIBIT D

Scale 1



SCALE	2
M.T.S.	



SCALE	4
N.T.S.	

WIRELESS
5444 AVERDA DRIVE
CARLSBAD, CA 92008
www.wireless.com
1.800.765.5300

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 **verizon**wireless
2785 MITCHELL DRIVE, BLDG 9
WALNUT CREEK, CA 94598

SOQUEL HIGH
SCHOOL SC1
PSL # 263385
4641 SOQUEL DRIVE
SOQUEL, CA 95073

SHEET TITLE
PG&E PLAN, 1 LINE
DIAGRAM, NOTES & AC
LOAD CENTER DIAGRAM
E-1

SCALE	GROUNDING NOTES	SCALE	2
M.T.S.		M.T.S.	
1			



- [illegible]

	DATE	DISEQUATION
0	1603/14	90% CONSTRUCTION
1	1603/14	REMOVED FROM CO
2	1603/14	89% COMPLETION



5945 AVENIDA ENCINAS
CARLSBAD, CA 92008
Tel: 760.434.4000
760.735.5200

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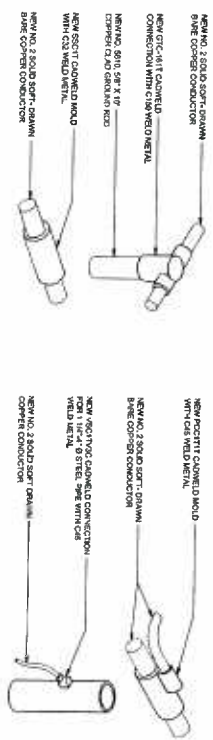
2785 MITCHELL DRIVE, BLDG 9
WALNUT CREEK, CA 94598

SOQUEL HIGH
SCHOOL SC1
PSL # 263385
4641 SOQUEL DRIVE
SOQUEL, CA 95073

SHEET TITLE:
EQUIPMENT
LAYOUT



EXHIBIT D 4



CADWELDS

SCALE
N.T.S.

7

NOT USED

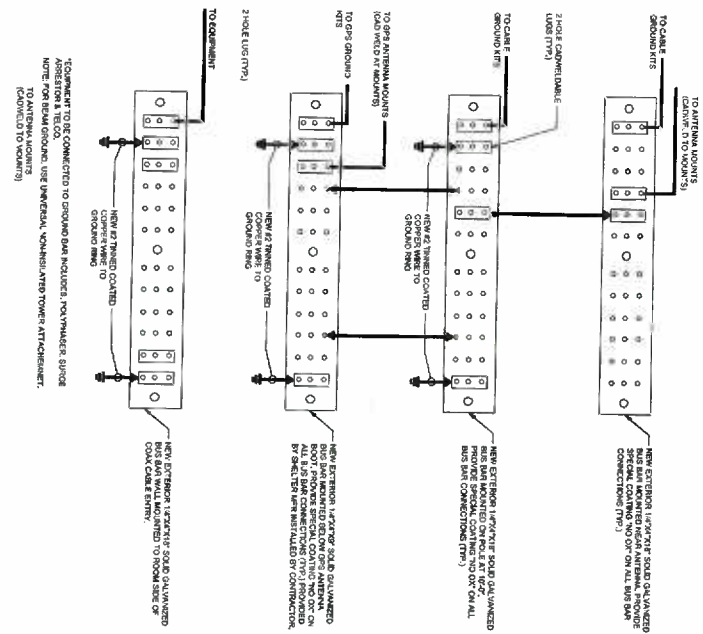
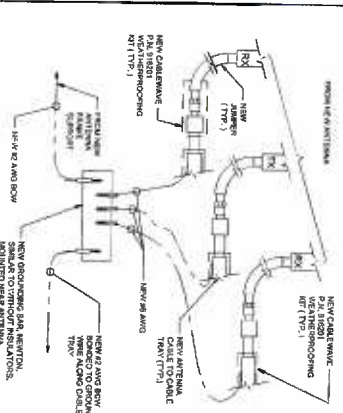
SCALE
N.T.S.

4

ANTENNA GROUND

SCALE
N.T.S.

1



GROUND BUS BAR DETAIL

SCALE
N.T.S.

8

NOT USED

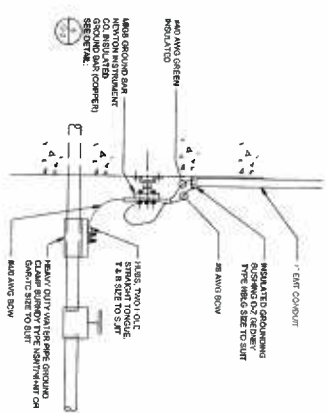
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N.T.S.

6

WATER MAIN GROUNDING

SCALE
N.T.S.

3



GROUND ROD

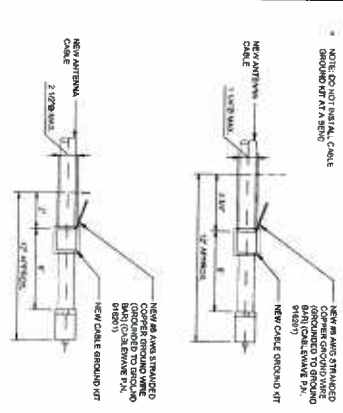
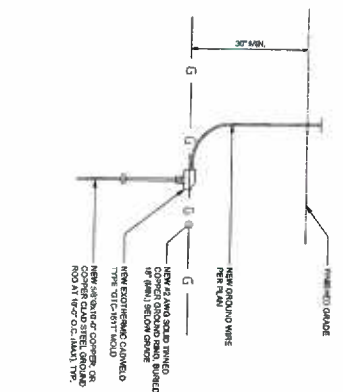
SCALE
N.T.S.

5

ANTENNA GROUND KIT

SCALE
N.T.S.

2



SOQUEL HIGH SCHOOL SC1
PSL # 263385
4641 SOQUEL DRIVE
SOQUEL, CA 95073

verizonwireless
2785 MITCHELL DRIVE, BLDG 9
WALNUT CREEK, CA 94598

ISSUE STATUS
DATE
BY
REVISION
1 1/2011 4641 SOQUEL HIGH SCHOOL SC1 PSL # 263385

G-2
GROUNDING DETAILS

EXHIBIT D

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POR. RANCHO ARROYO DEL RODEO
 SEC. 10, T.11S., R.1W. M.D.B. & M.

Tax Area Code
 96-101

30-08

Electronically Redrawn 11/25/97 rw
 Rev. 11/25/97 (93RS12) rw
 Rev. 5/6/98 GG (CA consolidation)
 Rev. 4/11/01 mvm (changed page refs.)
 Rev. 9/5/01 CB (1-0030544, To st. 2-52)
 Rev. 9/12/01 CB (1-0035031, To st. 2-57)
 Rev. 7/26/02 DD (2-0036071, por to st. 2-58)
 Rev. 10/2/02 DD (2-0051023 & 4, por to st. 2-59 & 60)
 Rev. 2/14/08 mc (Cor. to 2-59 & 60, per 23PM32)

Note - Assessor's Parcel & Block
 Numbers Shown in Circles.

Assessor's Map No. 30-08
 County of Santa Cruz, Calif.
 Nov. 1997

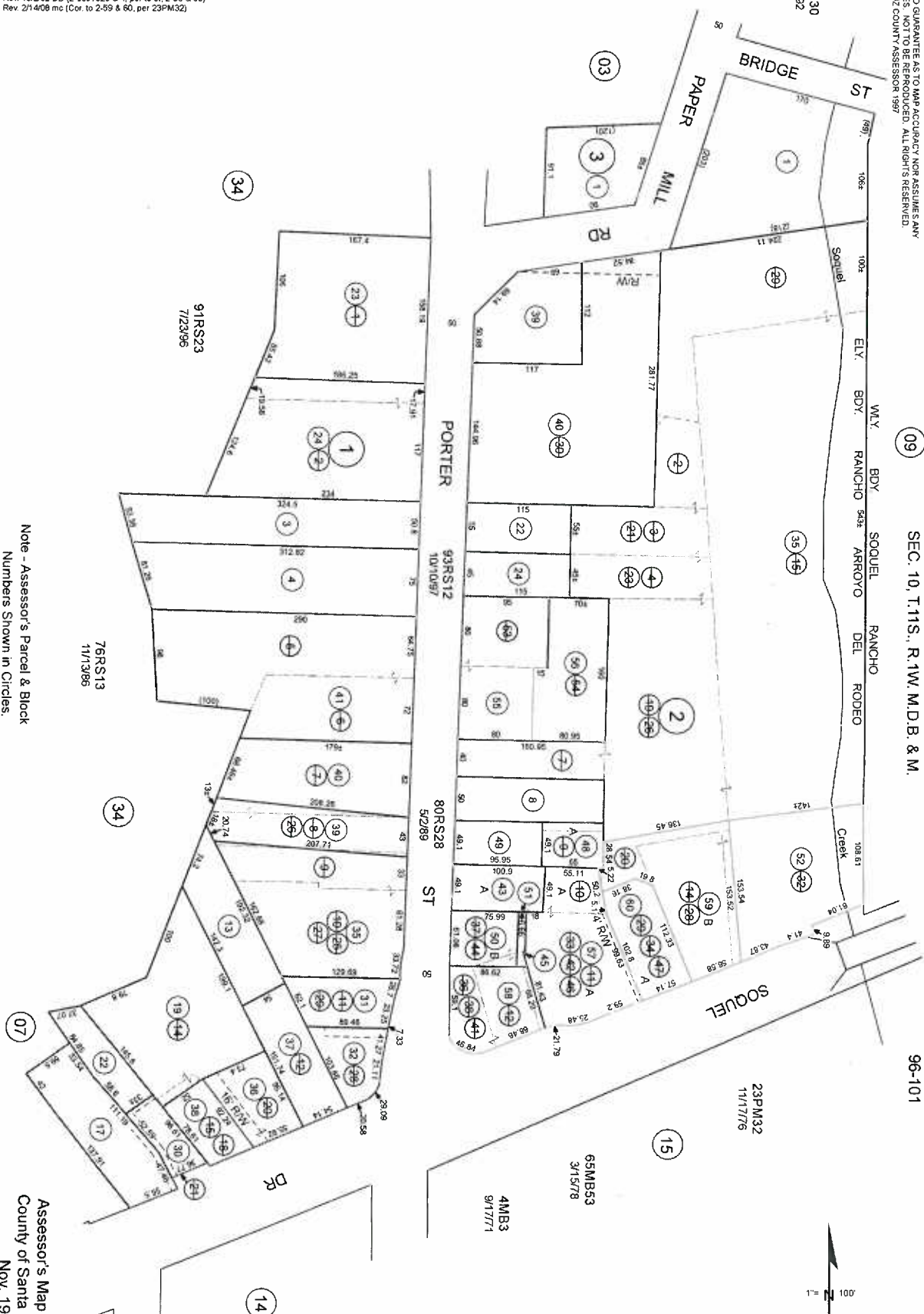


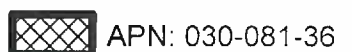
EXHIBIT E



Location Map



LEGEND



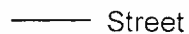
APN: 030-081-36



APN: 030-081-37



Assessors Parcels



Street

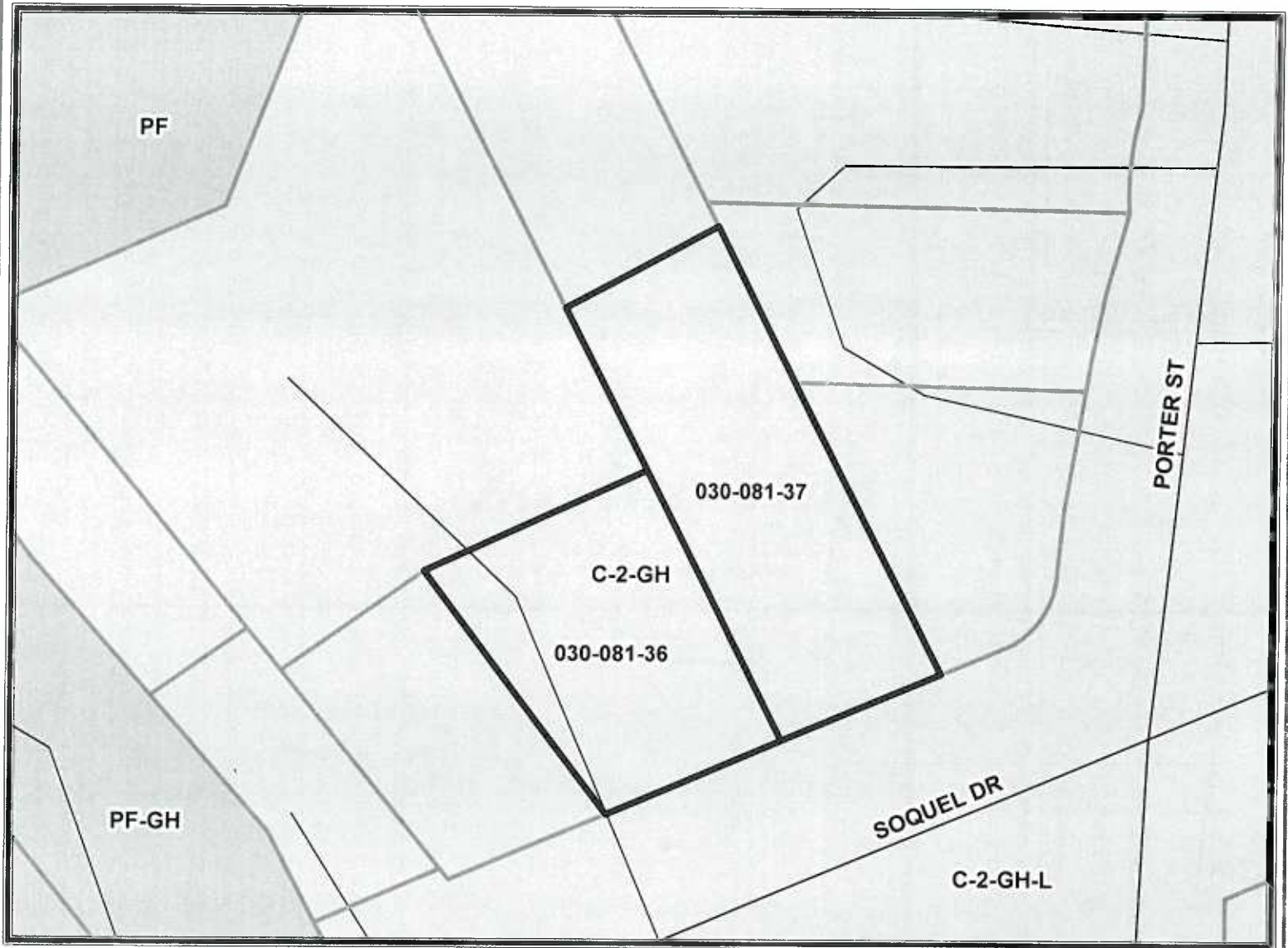


Map Created by
County of Santa Cruz
Planning Department
October 2014







EXHIBIT E

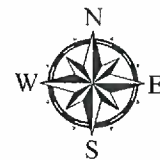


Zoning Map



LEGEND

-  APN: 030-081-36
-  APN: 030-081-37
-  Assessors Parcels
-  Street
-  COMMERCIAL-COMMUNITY
-  PUBLIC FACILITY

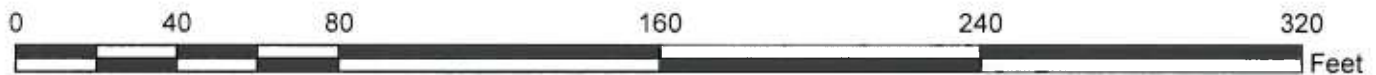
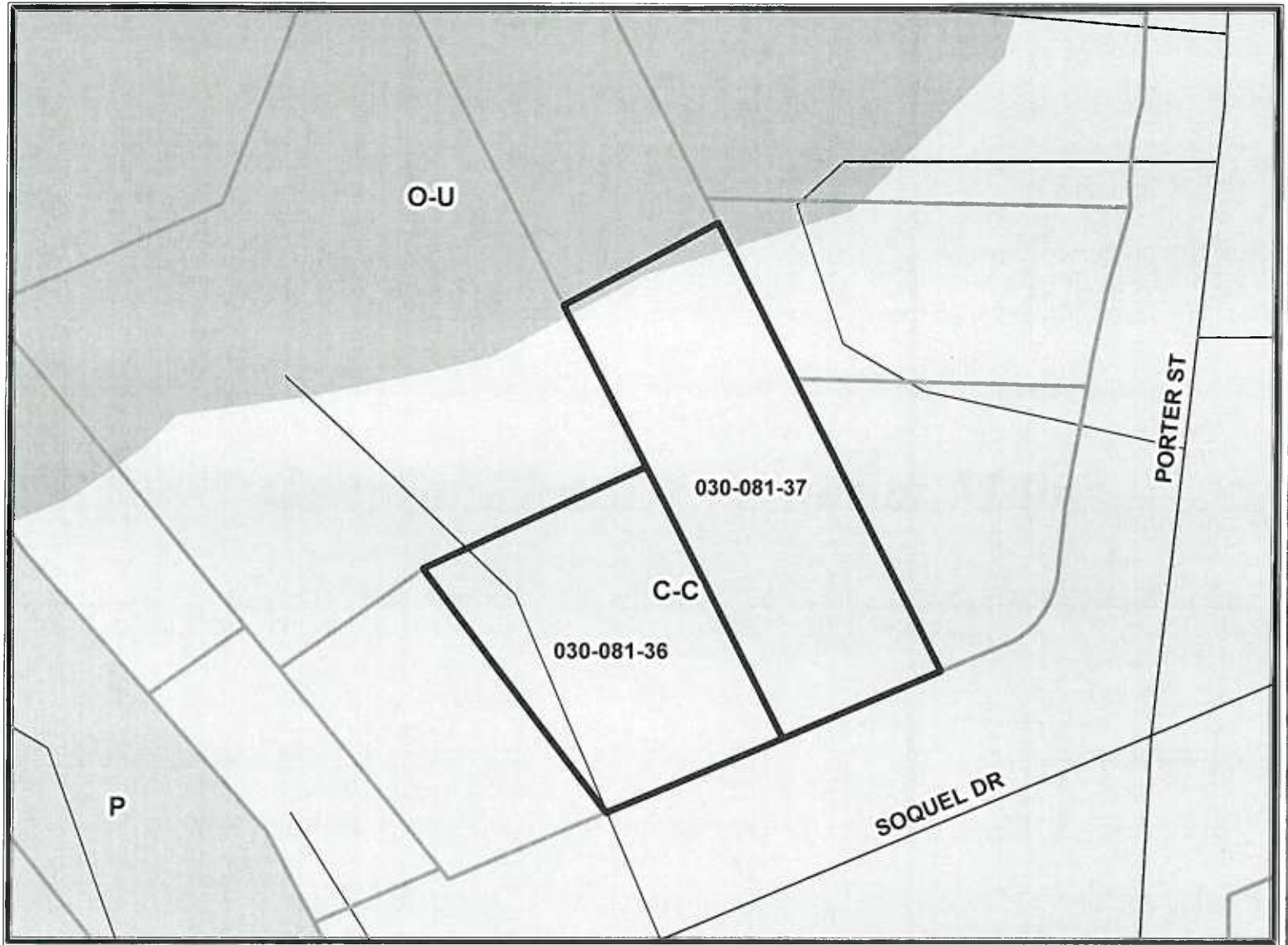


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County of Santa Cruz
Planning Department
October 2014

EXHIBIT E



General Plan Designation Map



LEGEND

-  APN: 030-081-36
-  APN: 030-081-37
-  Assessors Parcels
-  Street
-  Commercial-Community
-  Public Facilities
-  Urban Open Space



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Planning Department
October 2014

EXHIBIT E

**Verizon Wireless • Proposed Base Station (Site No. 263385 "Soquel High School SC1")
4641 Soquel Drive • Soquel, California**

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of Verizon Wireless, a personal wireless telecommunications carrier, to evaluate the base station (Site No. 263385 "Soquel High School SC1") proposed to be located at 4641 Soquel Drive in Soquel, California, for compliance with appropriate guidelines limiting human exposure to radio frequency ("RF") electromagnetic fields.

Executive Summary

Verizon proposes to install an antenna above the roof of the single-story commercial building located at 4641 Soquel Drive in Soquel. The proposed operation will comply with the FCC guidelines limiting public exposure to RF energy.

Prevailing Exposure Standards

The U.S. Congress requires that the Federal Communications Commission ("FCC") evaluate its actions for possible significant impact on the environment. A summary of the FCC's exposure limits is shown in Figure 1. 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. The most restrictive FCC limit for exposures of unlimited duration to radio frequency energy for several personal wireless services are as follows:

Wireless Service	Frequency Band	Occupational Limit	Public Limit
Microwave (Point-to-Point)	5,000–80,000 MHz	5.00 mW/cm ²	1.00 mW/cm ²
BRS (Broadband Radio)	2,600	5.00	1.00
WCS (Wireless Communication)	2,300	5.00	1.00
AWS (Advanced Wireless)	2,100	5.00	1.00
PCS (Personal Communication)	1,950	5.00	1.00
Cellular	870	2.90	0.58
SMR (Specialized Mobile Radio)	855	2.85	0.57
700 MHz	700	2.40	0.48
[most restrictive frequency range]	30–300	1.00	0.20

General Facility Requirements

Base stations typically consist of two distinct parts: the electronic transceivers (also called "radios" or "channels") that are connected to the traditional wired telephone lines, and the passive antennas that send the wireless signals created by the radios out to be received by individual subscriber units. The transceivers are often located at ground level and are connected to the antennas by coaxial cables. A small antenna for reception of GPS signals is also required, mounted with a clear view of the sky. Because of the short wavelength of the frequencies assigned by the FCC for wireless services, the



**Verizon Wireless • Proposed Base Station (Site No. 263385 “Soquel High School SC1”)
4641 Soquel Drive • Soquel, California**

antennas require line-of-sight paths for their signals to propagate well and so are installed at some height above ground. The antennas are designed to concentrate their energy toward the horizon, with very little energy wasted toward the sky or the ground. This means that it is generally not possible for exposure conditions to approach the maximum permissible exposure limits without being physically very near the antennas.

Computer Modeling Method

The FCC provides direction for determining compliance in its Office of Engineering and Technology Bulletin No. 65, “Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radio Frequency Radiation,” dated August 1997. Figure 2 attached describes the calculation methodologies, reflecting the facts that a directional antenna’s radiation pattern is not fully formed at locations very close by (the “near-field” effect) and that at greater distances the power level from an energy source decreases with the square of the distance from it (the “inverse square law”). The conservative nature of this method for evaluating exposure conditions has been verified by numerous field tests.

Site and Facility Description

Based upon information provided by Verizon, including zoning drawings by SAC Wireless, LLC, dated May 5, 2014, it is proposed to install one Amphenol Model CWB070X06F0 directional panel antenna above the roof of the single-story commercial building located at 4641 Soquel Drive in Soquel. The antenna would be mounted with no downtilt at an effective height of about 16 feet above ground, 2 feet above the peak of the sloped roof, and its transmitting elements would be oriented toward 40°T and 220°T. The maximum effective radiated power in any direction would be 1,190 watts, representing simultaneous operation at 880 watts for AWS and 310 watts for 700 MHz service. There are reported no other wireless telecommunications base stations at the site or nearby.

Study Results

For a person anywhere at ground, the maximum RF exposure level due to the proposed Verizon operation is calculated to be 0.051 mW/cm², which is 8.2% of the applicable public exposure limit. The maximum calculated level at any nearby building* is 9.2% of the public exposure limit. The maximum calculated level at any building on the campus of the Soquel High School† is 0.018% of the public exposure limit. The maximum calculated level at the Tara Redwood School (Elementary Campus)‡ is 0.016% of the public limit; the maximum calculated level at the Soquel Elementary

* Located at least 75 feet away, based on aerial photographs from Google Maps.

† Located at least 460 feet away, based on aerial photographs from Google Maps.

‡ Located at least 340 feet away, based on aerial photographs from Google Maps.



**Verizon Wireless • Proposed Base Station (Site No. 263385 “Soquel High School SC1”)
4641 Soquel Drive • Soquel, California**

School[§] is 0.011% of the public limit. It should be noted that these results include several “worst-case” assumptions and therefore are expected to overstate actual power density levels from the proposed operation. RF exposure levels on the roof of the subject building near the antennas are calculated to exceed the applicable exposure limits.

Recommended Mitigation Measures

It is recommended that the roof access location(s) be kept locked, so that the Verizon antennas are not accessible to unauthorized persons. To prevent occupational exposures in excess of the FCC guidelines, it is recommended that appropriate RF safety training be provided to all authorized personnel who have access to the roof, including employees and contractors of Verizon as well as roofers, painters, and building maintenance staff. No access within 11 feet directly in front of the antenna itself, such as might occur during maintenance work on the roof, should be allowed while the base station is in operation, unless other measures can be demonstrated to ensure that occupational protection requirements are met. Posting explanatory signs^{**} at the roof access location(s) and at the antenna, such that the signs would be readily visible from any angle of approach to persons who might need to work within that distance, would be sufficient to meet FCC-adopted guidelines.

Conclusion

Based on the information and analysis above, it is the undersigned’s professional opinion that operation of the base station proposed by Verizon Wireless at 4641 Soquel Drive in Soquel, California, can comply with the prevailing standards for limiting human exposure to radio frequency energy and, therefore, need not for this reason cause a significant impact on the environment. The highest calculated level in publicly accessible areas is much less than the prevailing standards allow for exposures of unlimited duration. This finding is consistent with measurements of actual exposure conditions taken at other operating base stations. Locking roof access location(s), training authorized personnel, and posting explanatory signs are recommended to establish compliance with FCC exposure limits.

[§] Located at least 640 feet away, based on aerial photographs from Google Maps.

^{**} Signs should comply with OET-65 color, symbol, and content recommendations. Contact information should be provided (*e.g.*, a telephone number) to arrange for access to restricted areas. The selection of language(s) is not an engineering matter, and guidance from the landlord, local zoning or health authority, or appropriate professionals may be required.

**Verizon Wireless • Proposed Base Station (Site No. 263385 "Soquel High School SC1")
4641 Soquel Drive • Soquel, California**

Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration No. E-18063, which expires on June 30, 2015. This work has been carried out under his direction, and all statements are true and correct of his own knowledge except, where noted, when data has been supplied by others, which data he believes to be correct.

January 26, 2015



Rajat Mathur

Rajat Mathur, P.E.
707/996-5200



HAMMETT & EDISON, INC.
CONSULTING ENGINEERS
SAN FRANCISCO

Q7XD.2
Page 4 of 4

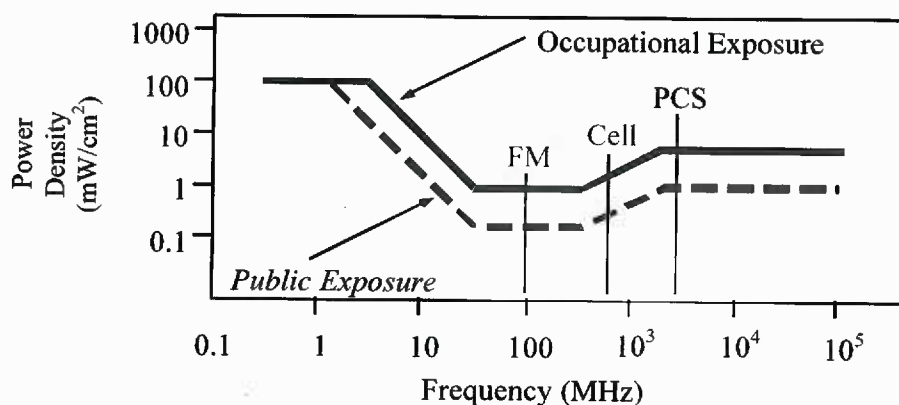
EXHIBIT F

FCC Radio Frequency Protection Guide

The U.S. Congress required (1996 Telecom Act) the Federal Communications Commission ("FCC") to adopt a nationwide human exposure standard to ensure that its licensees do not, cumulatively, have a significant impact on the environment. The FCC adopted the limits from Report No. 86, "Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," published in 1986 by the Congressionally chartered National Council on Radiation Protection and Measurements ("NCRP"). Separate limits apply for occupational and public exposure conditions, with the latter limits generally five times more restrictive. The more recent standard, developed by the Institute of Electrical and Electronics Engineers and approved as American National Standard ANSI/IEEE C95.1-2006, "Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," includes similar limits. These limits apply for continuous exposures from all sources and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

As shown in the table and chart below, separate limits apply for occupational and public exposure conditions, with the latter limits (in *italics* and/or dashed) up to five times more restrictive:

Frequency Applicable Range (MHz)	Electromagnetic Fields (<i>f</i> is frequency of emission in MHz)					
	Electric Field Strength (V/m)		Magnetic Field Strength (A/m)		Equivalent Far-Field Power Density (mW/cm ²)	
0.3 – 1.34	614	<i>614</i>	1.63	<i>1.63</i>	100	<i>100</i>
1.34 – 3.0	614	<i>823.8/f</i>	1.63	<i>2.19/f</i>	100	<i>180/f²</i>
3.0 – 30	1842/f	<i>823.8/f</i>	4.89/f	<i>2.19/f</i>	900/f ²	<i>180/f²</i>
30 – 300	61.4	<i>27.5</i>	0.163	<i>0.0729</i>	1.0	<i>0.2</i>
300 – 1,500	$3.54\sqrt{f}$	<i>$1.59\sqrt{f}$</i>	$\sqrt{f}/106$	<i>$\sqrt{f}/238$</i>	$f/300$	<i>$f/1500$</i>
1,500 – 100,000	137	<i>61.4</i>	0.364	<i>0.163</i>	5.0	<i>1.0</i>



Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits, and higher levels also are allowed for exposures to small areas, such that the spatially averaged levels do not exceed the limits. However, neither of these allowances is incorporated in the conservative calculation formulas in the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) for projecting field levels. Hammett & Edison has built those formulas into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radio sources. The program allows for the description of buildings and uneven terrain, if required to obtain more accurate projections.



HAMMETT & EDISON, INC.
CONSULTING ENGINEERS
SAN FRANCISCO

FCC Guidelines
Figure 1

EXHIBIT F

RFR.CALC™ Calculation Methodology

Assessment by Calculation of Compliance with FCC Exposure Guidelines

The U.S. Congress required (1996 Telecom Act) the Federal Communications Commission ("FCC") to adopt a nationwide human exposure standard to ensure that its licensees do not, cumulatively, have a significant impact on the environment. The maximum permissible exposure limits adopted by the FCC (see Figure 1) apply for continuous exposures from all sources and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health. Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits.

Near Field.

Prediction methods have been developed for the near field zone of panel (directional) and whip (omnidirectional) antennas, typical at wireless telecommunications base stations, as well as dish (aperture) antennas, typically used for microwave links. The antenna patterns are not fully formed in the near field at these antennas, and the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) gives suitable formulas for calculating power density within such zones.

For a panel or whip antenna, power density $S = \frac{180}{\theta_{BW}} \times \frac{0.1 \times P_{net}}{\pi \times D \times h}$, in mW/cm²,

and for an aperture antenna, maximum power density $S_{max} = \frac{0.1 \times 16 \times \eta \times P_{net}}{\pi \times h^2}$, in mW/cm²,

- where θ_{BW} = half-power beamwidth of the antenna, in degrees, and
- P_{net} = net power input to the antenna, in watts,
- D = distance from antenna, in meters,
- h = aperture height of the antenna, in meters, and
- η = aperture efficiency (unitless, typically 0.5-0.8).

The factor of 0.1 in the numerators converts to the desired units of power density.

Far Field.

OET-65 gives this formula for calculating power density in the far field of an individual RF source:

$$\text{power density } S = \frac{2.56 \times 1.64 \times 100 \times RFF^2 \times ERP}{4 \times \pi \times D^2}, \text{ in mW/cm}^2,$$

- where ERP = total ERP (all polarizations), in kilowatts,
- RFF = relative field factor at the direction to the actual point of calculation, and
- D = distance from the center of radiation to the point of calculation, in meters.

The factor of 2.56 accounts for the increase in power density due to ground reflection, assuming a reflection coefficient of 1.6 ($1.6 \times 1.6 = 2.56$). The factor of 1.64 is the gain of a half-wave dipole relative to an isotropic radiator. The factor of 100 in the numerator converts to the desired units of power density. This formula has been built into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radiation sources. The program also allows for the description of uneven terrain in the vicinity, to obtain more accurate projections.



VICINITY MAP

PHOTOSIMULATION VIEWPOINTS



SOQUEL HIGH SCHOOL SC1
PSL # 263385
4641 SOQUEL DRIVER
SOQUEL, CA 95073

SC
WIRTS
5985 AVENUE EUREKA, STE 142B
CARLSBAD, CA 92008
OFFICE (619) 228-0020





PHOTOSIMULATION VIEW 1
LOOKING NORTHEAST

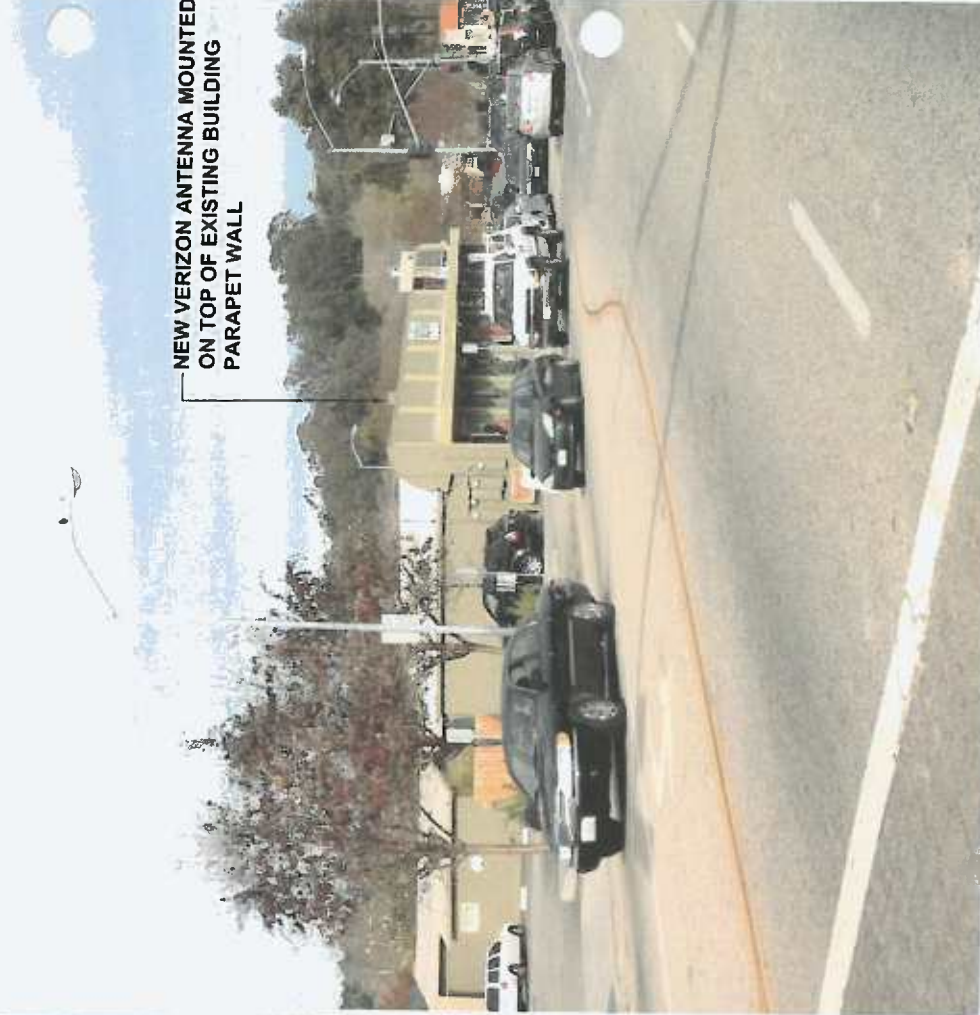
EXISTING



SOQUEL HIGH SCHOOL SC1
PSJ # 263385
4641 SOQUEL DRIVER
SOQUEL, CA 95073

SG
WIRELESS
5862 AVENIDA ENCOMAS, STE 1428
CARLSBAD, CA 92008
OFFICE (619) 728-8828

PROPOSED



NEW VERIZON ANTENNA MOUNTED
ON TOP OF EXISTING BUILDING
PARAPET WALL

PHOTOSIMULATION VIEW 2
LOOKING NORTHWEST

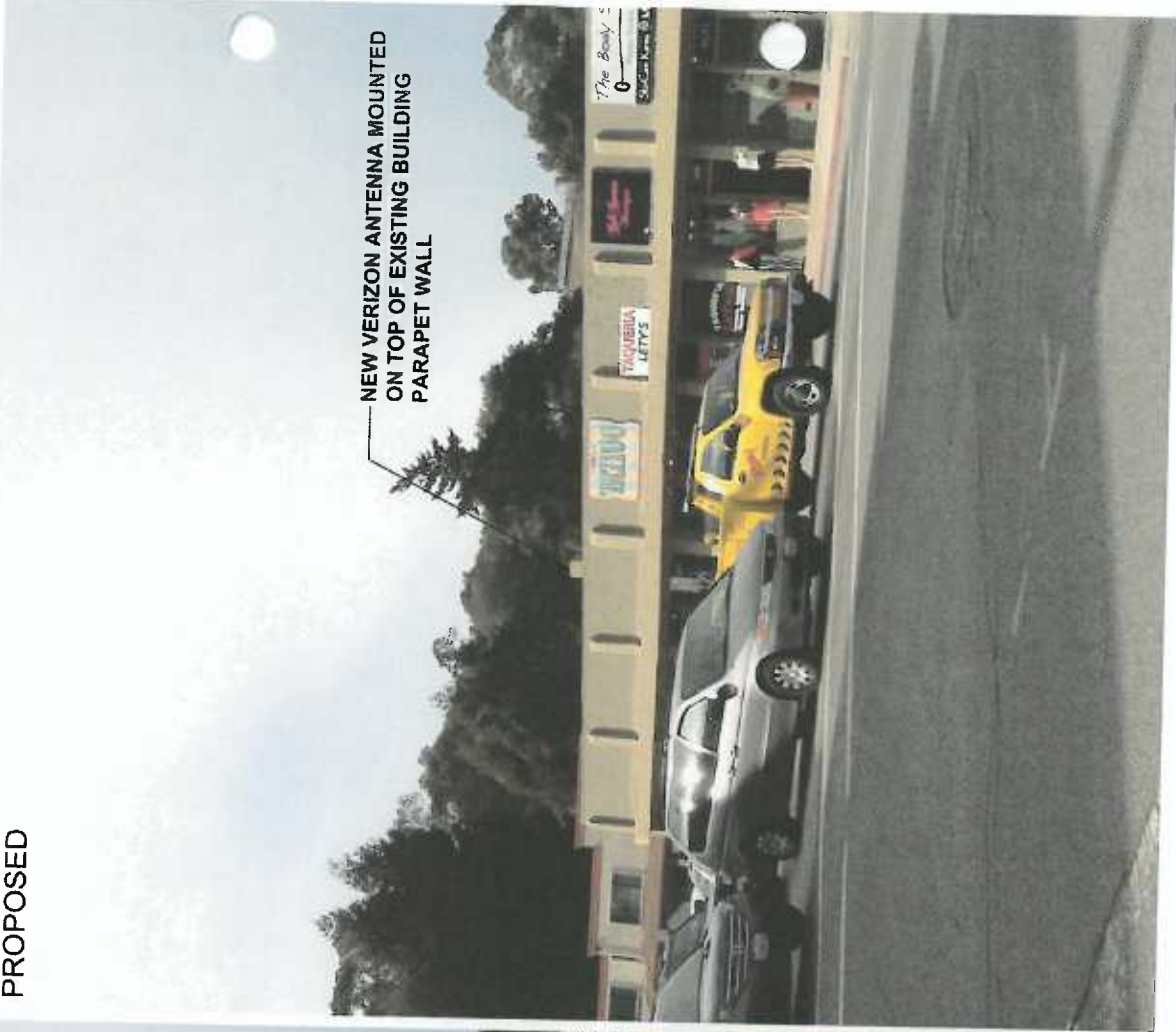
EXISTING



SOQUEL HIGH SCHOOL SC1
PSL # 263385
4641 SOQUEL DRIVER
SOQUEL, CA 95073



PROPOSED



NEW VERIZON ANTENNA MOUNTED
ON TOP OF EXISTING BUILDING
PARAPET WALL

PHOTOSIMULATION VIEW 3
LOOKING NORTH



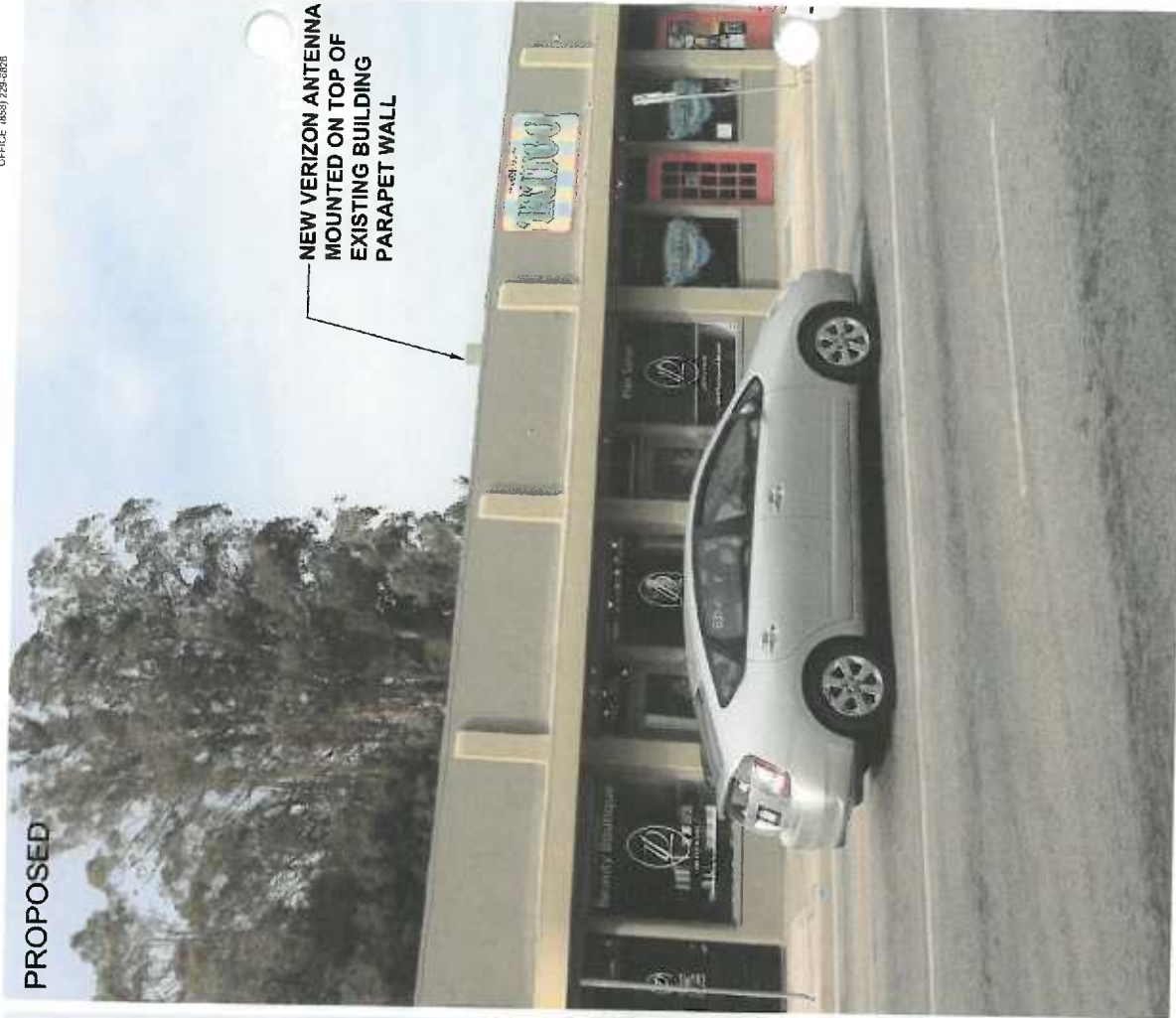
SOQUEL HIGH SCHOOL SC1
PSL# 263385
4641 SOQUEL DRIVER
SOQUEL, CA 95073

SOC
WIRELESS
5965 AVENIDA ENCINAS, STE 142B
CITY OF LOS ANGELES, CA 90008
OFFICE (818) 725-6026

EXISTING



PROPOSED



NEW VERIZON ANTENNA
MOUNTED ON TOP OF
EXISTING BUILDING
PARAPET WALL



Verizon Wireless Cell Site Necessity Case

Prepared by Verizon Wireless
RF Engineering

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EXHIBIT H



Introduction:

There are two main drivers that prompt the creation of a cell site project, coverage and/or capacity. Most sites provide a mixture of both, but increasingly some sites are pure capacity.

Coverage is the need for expanded service often requested by our customers or emergency services personnel. While this initially meant providing coverage in vehicles, as usage patterns have shifted this now means improving coverage inside of buildings.

Capacity is the need for more bandwidth of service. In the simplest form this means a cell site can handle a limited number of voice calls, data mega bites, or total number of active users. When any one of these limits are met the user experience within the coverage area of that cell quickly starts to degrade during the busier hours of use.



Coverage is best shown in coverage maps. We use tools that take into account terrain, vegetation, building types, and cell site specifics to show predictions of the existing coverage and what we expect to see with a given cell site. The prediction models make some assumptions such as that the antennas are above the nearby ground clutter (Buildings and vegetation). Once the antennas fall below the ground clutter the models become inaccurate and cannot tell that specific trees or buildings are blocking the RF signal. Due to this, modeling of tower height requirements is frequently not accurate.



Capacity is best shown in graphs of usage growth and projected exhaustion. We utilize sophisticated programs to model current usage growth and project it into the future to determine when additional capacity will be required. The algorithms that predict capacity growth output numbers that are not easily explained. Since it takes 2-3 years on average to complete a cell site project, we have to be looking about 3 years into the future to meet future customer demand.

While data capacity may not seem urgent, beginning in 2014 voice traffic will begin to migrate from the older 3G voice technology to 4G VoLTE (Voice over IP). This will add additional load to the 4G network. Since voice is delay sensitive, exhaustion of the data network can cause degradation of voice calls including 911 calls.



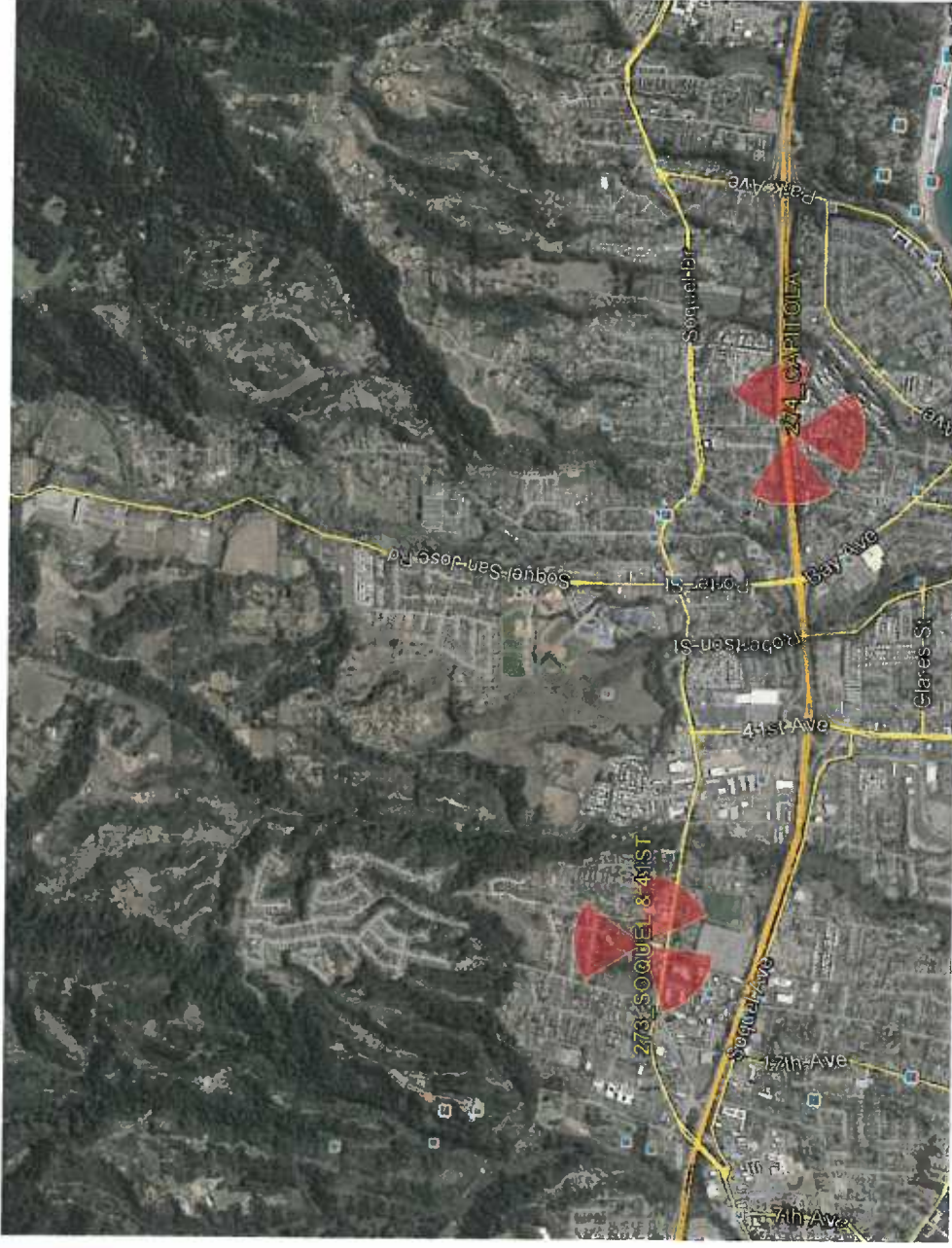
“Why do you need a site here??”

A good capacity cell will be close to the user population and have the traffic evenly spread around the site. When we cannot get a location that accomplishes being close to the customers and central to the usage, we end up having to build additional cells to meet the demands for service. Capacity sites are generally lower in height than a coverage site with a full cell needing to be above the ground clutter and a small cell being one that is at or below the ground clutter.

Where our customers use their wireless devices continues to evolve. While we once needed to cover highways and business districts, we are seeing increasing issues with high growth in residential areas. Current statistics show that about 1 of 3 American households no longer have a landline phone. To serve this need we have to increase the cells we have in or very near residential areas.



Need Case for: SOQUEL HIGH SCHOOL SC1

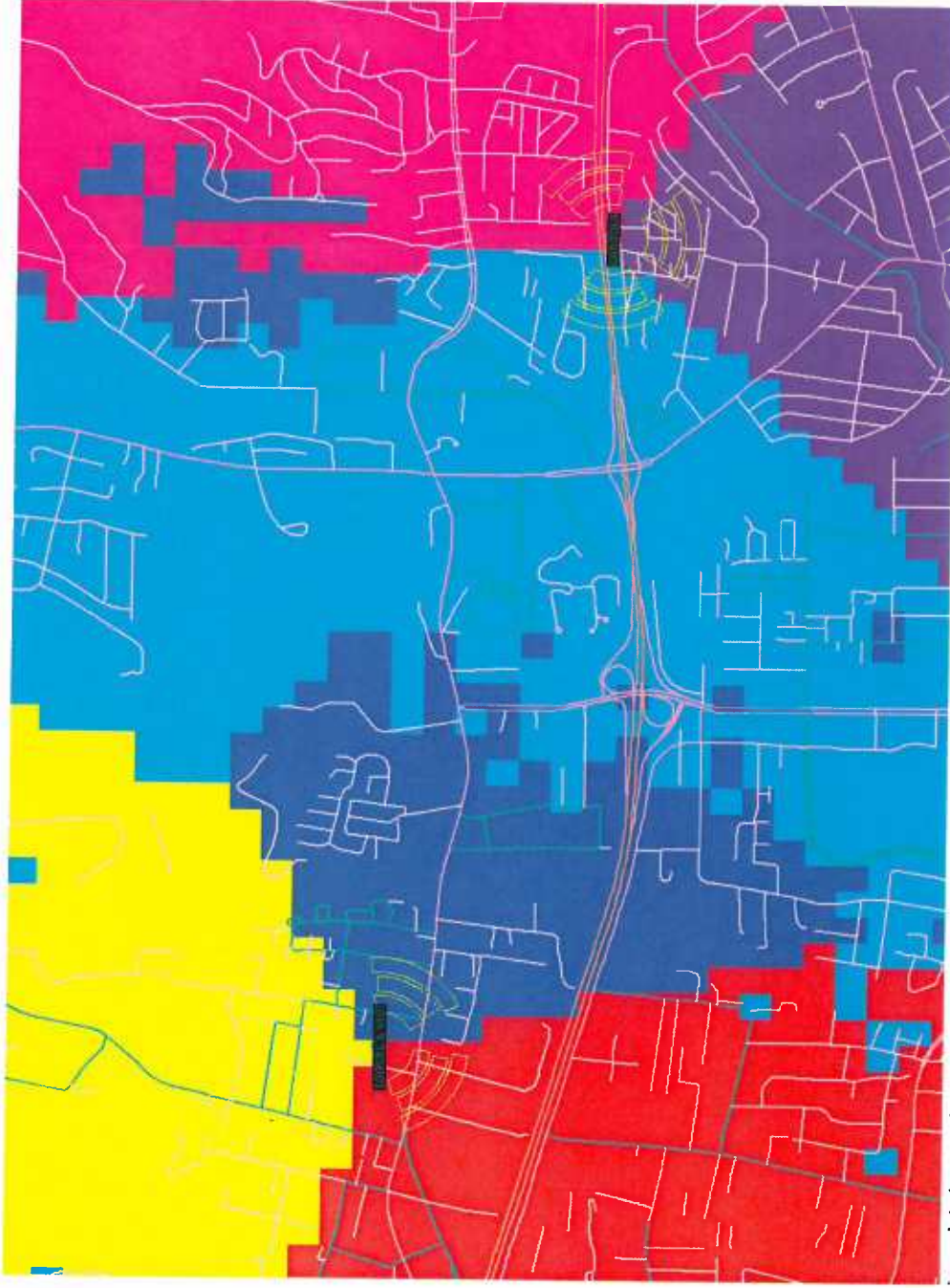


Verizon Wireless has two cell sites serving the city of Soquel: SOQUEL & 41st and CAPITOLA. Our CAPITOLA site serves massive data and voice traffic from the majority of the city of Soquel including Soquel High School, its surrounding residential and commercial areas, Capitola, and Aptos. The site is currently heavily overloaded due to too much Mb of data and too many simultaneous users.

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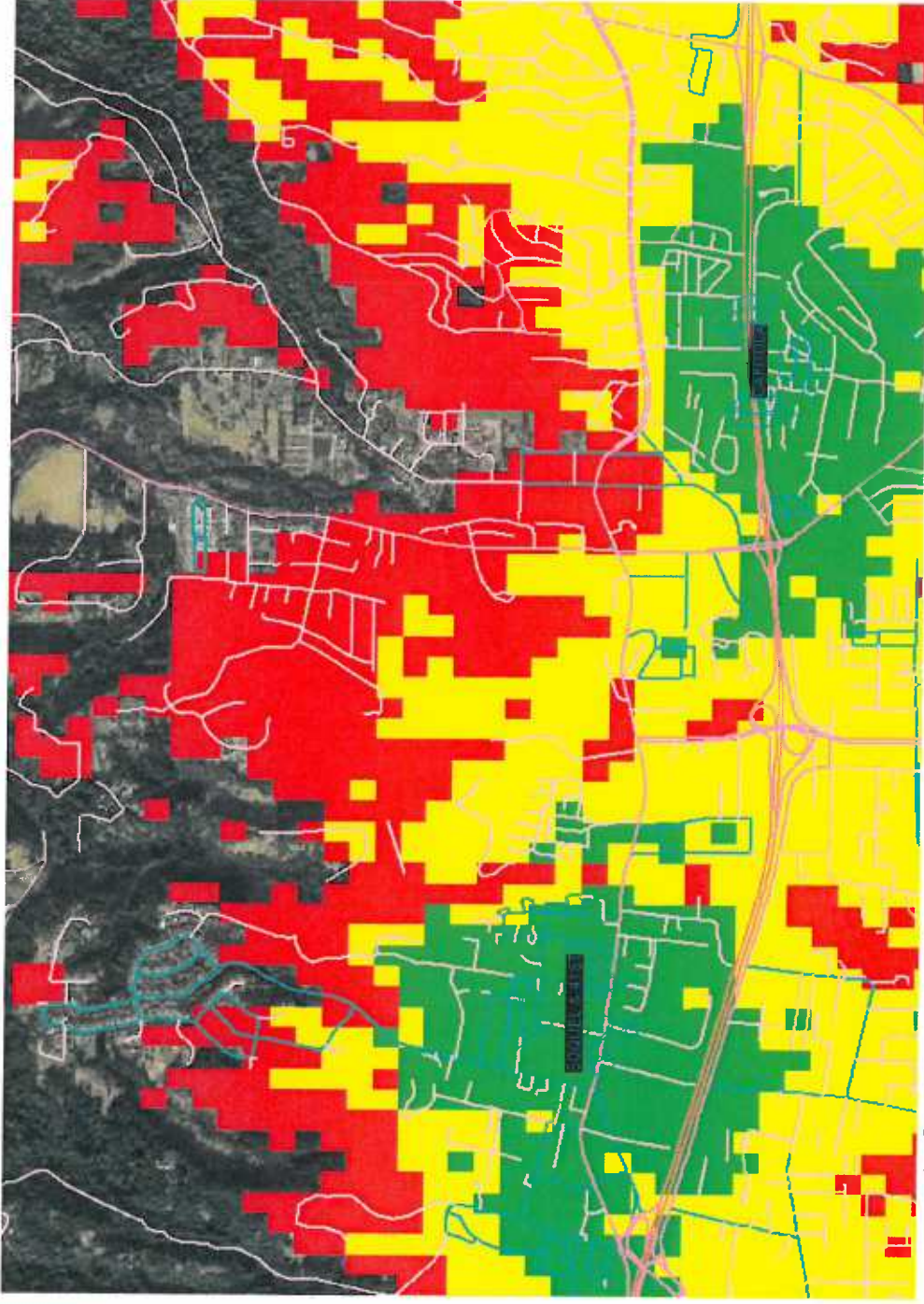
Need Case for: SOQUEL HIGH SCHOOL SC1



This is the best server plot in which each color represents the geographical area served by each sector of our existing cell sites. The Gamma sector of CAPITOLA cell site serves the majority of Capitola City, including Soquel High School.



Need Case for: SOQUEL HIGH SCHOOL SC1



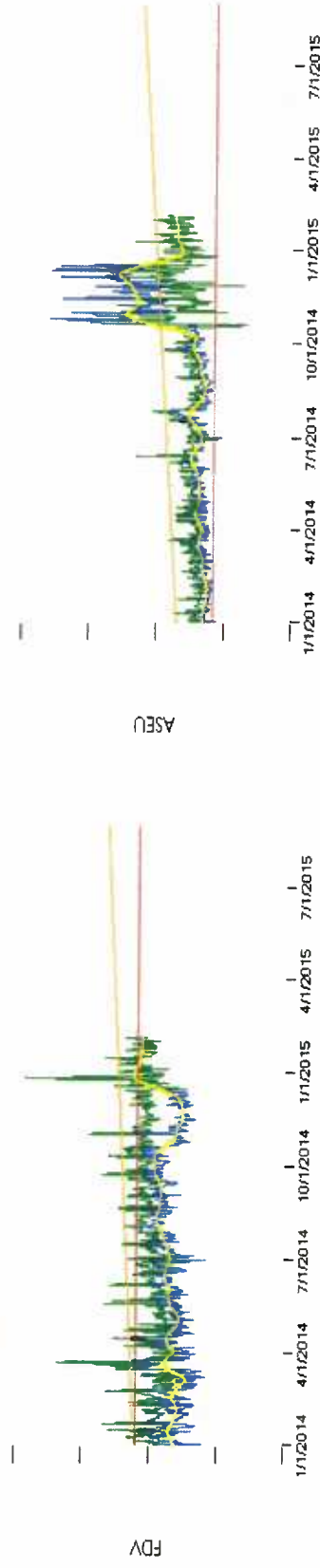
This is the map of existing coverage in Soquel. Green represents the area where there is good outdoor and indoor coverage, yellow means the area where coverage is good in vehicles, and red shows the area where coverage is good only outdoors. Coverage is very limited in northern portion of Soquel however the objective for our proposed small cell site is to resolve the "Capacity" issue in the city.

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EXHIBIT H



Need Case for: SOQUEL HIGH SCHOOL SC1



Summary: The graph indicates that existing CAPITOLA site has reached its capacity limit since early January 2014 and the site cannot carry the data traffic that exists in the area it serves.

Detail below.

The graphs above show FDV (Forward Data Volume) and ASEU (Average Schedule Eligible Usage). While these measures are deeply technical I will try to explain them in simple terms. FDV is the total volume of data the cell is carrying. As you can see it has maxed out and is not growing due to total cell exhaustion. ASEU is a measure of the resource manager in the cell site and shows its ability to schedule the data packets over the radio channel. At closer distances to the cell, higher efficiency modulation schemes can be utilized. Closer traffic means fewer error correction techniques are used and fewer retransmissions of data. When the cell is serving users at a great distance they require more resources to carry far less data than a closer user would use. This causes the cell to exhaust well before the other limiting factors of the cell are reached. When sites reach their capacity limits, customers experience dropped calls, extremely slow connectivity, and loss of internet connections especially during peak usage times.

To resolve this we have to get the distant traffic onto a cell that is closer in distance to the users. This is why we are trying to offload data traffic from Soquel High School where the majority of peak traffic is coming from.

**SANTA CRUZ COUNTY PLANNING DEPARTMENT POLICY/ORDINANCE
INTERPRETATION**

Interpretation No.: WCF-02 (Wireless communication facilities, near schools)

Effective Date: 4/7/08

Originally Issued: none

Revised: none

Question:

For the purpose of referring wireless communication facility (WCF) applications near schools to the Planning Commission, what is considered "near"? Which schools trigger this requirement?

**Applicable Ordinance Section(s)
And/or General Plan/LUP Policy(ies)**

13.10.660 through 13.10.668

18.10.124(b)

INTERPRETATION:

Applications for WCFs proposed to be within 1,000 feet of the parcel boundary of any K-12 public school (including charter schools)—whether the school is located in the unincorporated area or not—is subject to Level VI review, at the discretion of the Planning Director.

Reason:

On September 18, 2007, the Board of Supervisors directed the Planning Department to refer all Wireless Communications Facilities (WCF) application that are located "near" public schools to Level VI review (Planning Commission hearing), instead of the usual Level V review (Zoning Administrator hearing).

This policy will apply to K-12 public and charter schools and does not include private or other types of schools.

The Planning Director, based on the authority in Section 18.10.124(b), may require that WCFs greater than 1000 feet to a public or charter school be referred to the Planning Commission, based on unusual circumstances.

Tom Burns, Planning Director

Date

13.10.660 through 13.10.668