

PLANNING COMMISSION

Agenda Item No.: 6.3

Date: March 23, 2010

CASE NUMBER: PHG 09-0041

APPLICANT: Mark Phillips, M&M Telecom, Inc. (for Sprint/Clearwire)

LOCATION: An approximately 16.3-acre parcel generally located east of N. Centre City Parkway, north of Amber Lane, south of Nutmeg Street, addressed as 25005 N. Centre City Parkway (APN 224-240-16).

TYPE OF PROJECT: Modification to a Conditional Use Permit

PROJECT DESCRIPTION: Modification to a previously approved Conditional Use Permit for a Sprint/Nextel wireless facility (96-12-CUP) to add three round directional antennas and replace five of the six existing rectangular panel antennas on the existing twenty-foot-high pipe mounts for a total of nine antennas. The supporting equipment cabinet and electrical equipment would be located within the existing fenced Sprint equipment enclosure area.

STAFF RECOMMENDATION: Approval

GENERAL PLAN DESIGNATION/TIER: R2 (Rural II), Jesmond Dene/Tier 2B

ZONING: RE-80 (Residential Estate, 80,000 SF min. lot size)

BACKGROUND/SUMMARY OF ISSUES:

Clearwire is a subscription based internet service provider, which is 51% owned by Sprint/Nextel. They currently have sites in many states and are proposing a new network in Escondido with approximately 23 sites. Many, but not all of the proposed facilities in Escondido would be co-located or associated with existing Sprint/Nextel sites. Clearwire is proposing to locate on an approximately 16.03-acre rural/estate lot and co-locate their new antennas on an existing Sprint facility. The site currently contains several wireless communication facilities including Sprint/Nextel, AT&T and Verizon. A Cricket facility also has been approved on the site, but has not yet been built.

LEGAL REQUIREMENTS: In 1996, the U.S. Congress added a section to the Communications Act of 1934 to promote the expansion of personal wireless communications service, adding section 332(c)(7). This section preserves local zoning authority over the "placement, construction, and modification" of wireless facilities, while imposing certain federal requirements. Specifically, Section 332(c)(7) requires that state or local government decisions regarding wireless service facilities must not: 1) unreasonably discriminate between one cellular provider and another; or 2) prohibit or have the effect of prohibiting the provision of personal wireless services; or 3) be founded on "the environmental effects of radio frequency (RF) emissions *to the extent that such facilities comply* with the FCC's regulations" (emphasis added).

In summary, once the Commission is satisfied the project's RF emissions are within the federal thresholds, then the review must be based on otherwise applicable local zoning criteria. A denial of a proposed facility must not run afoul of the federal restrictions set forth as 1), 2) and 3) above.

Staff feels the issues are as follows:

1. Whether the design and location of the proposed facility is appropriate for the site and consistent with the Wireless Facility Guidelines.

REASONS FOR STAFF RECOMMENDATION:

1. The proposed facility would be consistent with the Communication Antennas Ordinance since the facility would co-locate on an existing communications antenna. Existing panel antennas would be removed and the number of

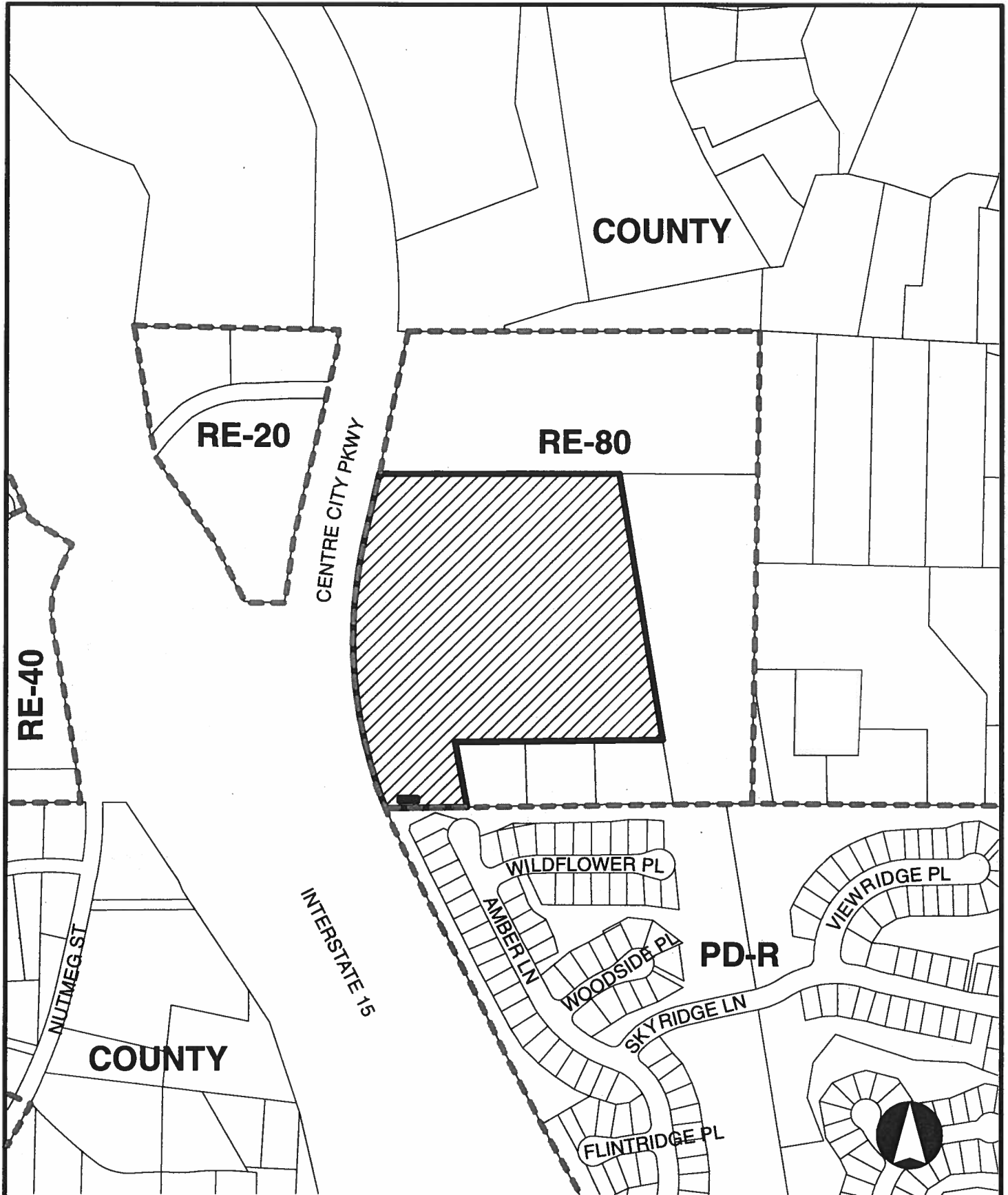
new panels are limited and would be installed on an existing antenna array to be in scale with the existing facilities. The proposed equipment cabinets would be placed within an existing enclosure area. The facility (as conditioned) would be consistent with the Wireless Facility Guidelines since it would not result in any adverse visual impacts; is located on a non-residential site in a residential zone; would use an existing facility to mount the panels rather than construction of an additional structure; and would be in conformance with FCC emission standards.

2. Staff feels the proposed facility would not result in a potential health hazards to nearby residents since the Radio Frequency (RF) study prepared for the proposed project indicates the facility would be within maximum permissible exposure (MPE) limits and Federal Communication Commission (FCC) standards. The proposed project also would not result in an increase in RF emissions previously approved for the site.

Respectfully submitted,

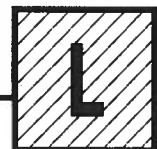


Jay Paul
Associate Planner

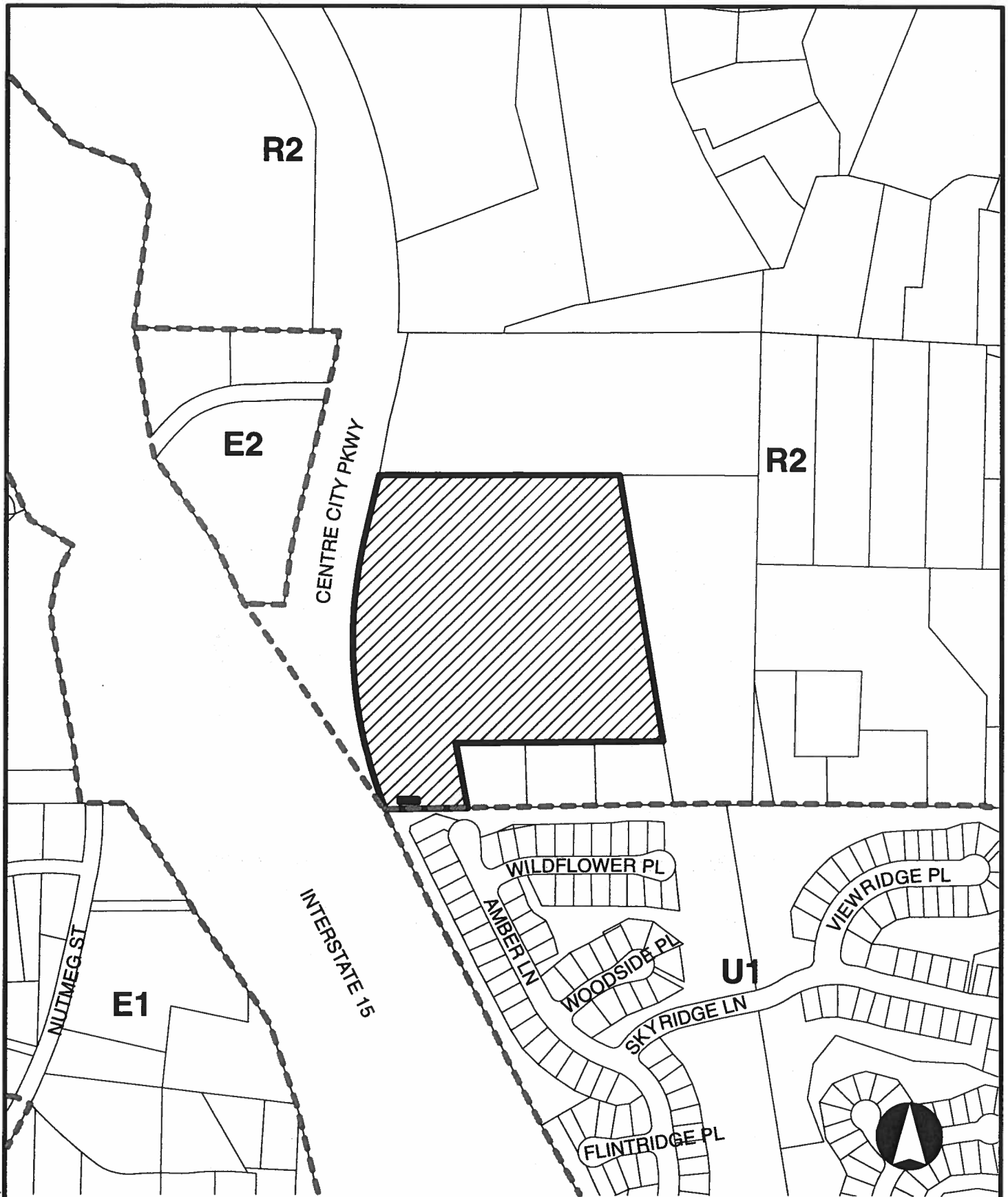


Portions of this DERIVED PRODUCT contains geographic information copyrighted by SanGis. All rights reserved.

**PROPOSED PROJECT
PHG 09-0041**



LOCATION/ZONING



Portions of this DERIVED PRODUCT contains geographic information copyrighted by SanGis. All rights reserved.

**PROPOSED PROJECT
PHG 09-0041**



N. CENTRE CITY PARKWAY

Access Road

PARCEL 1
PARCEL MAP NO. 16032
A.P.N. 224-240-16

Sprint
Antennas

Existing Wireless Facilities

NEW PACKET COMMUNICATIONS
EQUIPMENT AREA AND ANTENNAS.
ENLARGED SITE PLAN SEE.

FO HAIL & TACK STAMPED "LS4688" IN
LIEU OF REBAR W/ PLUG STAMPED
"LS4688" PER PARCEL MAP NO. 16032

FO REBAR W/ PLUG
STAMPED "LS4688" PER
PARCEL MAP NO. 16032

FO REBAR W/ PLUG
STAMPED "LS4688" PER
PARCEL MAP NO. 16032

FO 2" IRON PIPE W/ HAIL &
TACK TACKED "LS3049" PER
PARCEL MAP NO. 16032

PARCEL 2
A.P.N. 224-240-13

PARCEL 3
A.P.N. 224-240-14

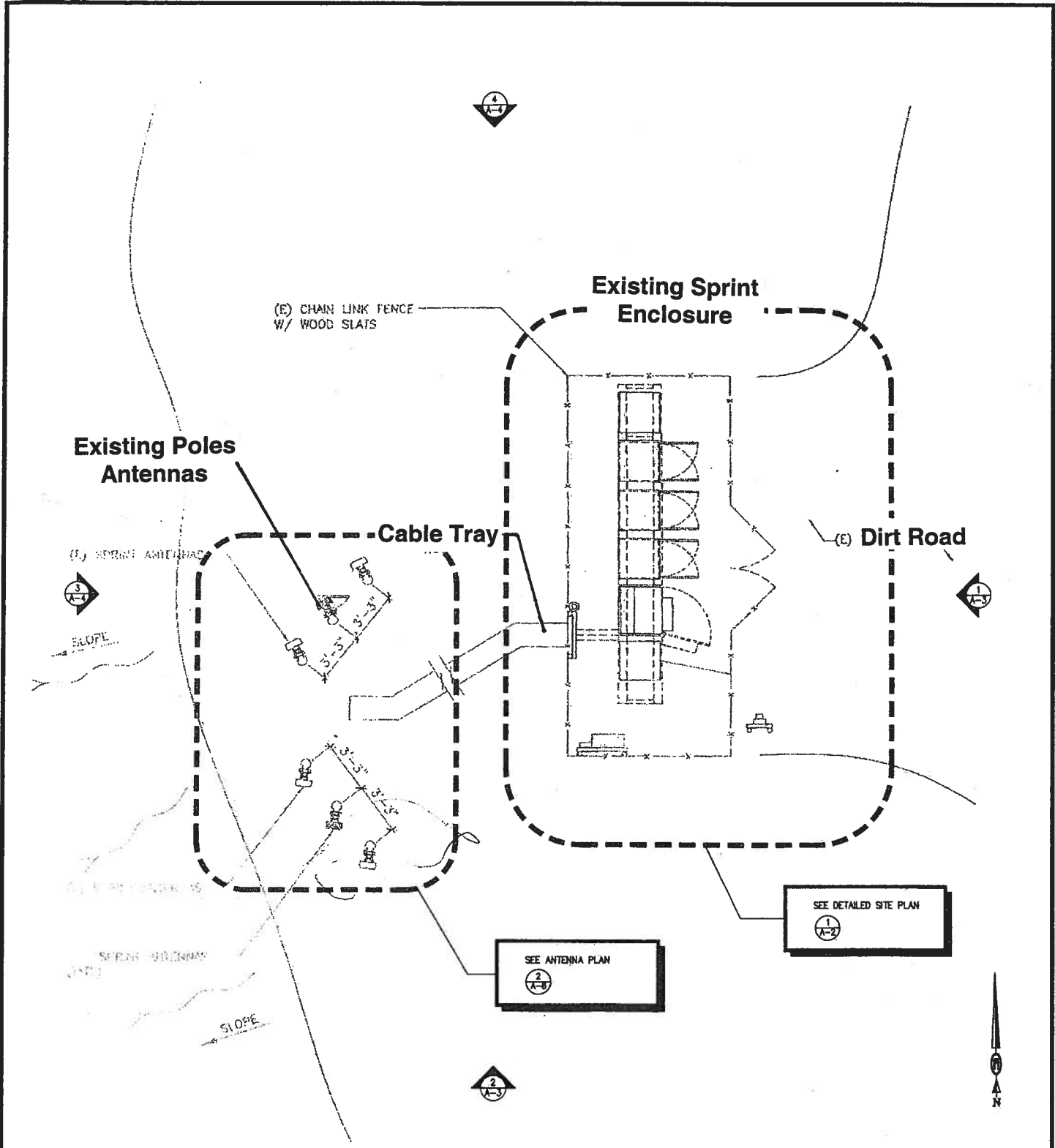
PARCEL 4
A.P.N. 224-240-15

40' EASEMENT FOR SENIOR AND PRIVATE ROAD
PURPOSES PER PARCEL MAP NO. 16032

SITE PLAN

**PROPOSED PROJECT
PHG 09-0041**





EXISTING SPRINT FACILITY

SITE PLAN

**PROPOSED PROJECT
PHG 09-0041**



SITE PLAN

(E) SPRINT ANTENNAS
(TYP.)

(E) SPRINT ANTENNAS

(E) SPRINT 20' HIGH
MASTPOLE

(E) SPRINT ANTENNAS

(E) SPRINT ANTENNAS
(TYP.)

(E) SPRINT 20'
HIGH MASTPOLE

SECTOR "ALPHA"
320° TN AZIMUTH

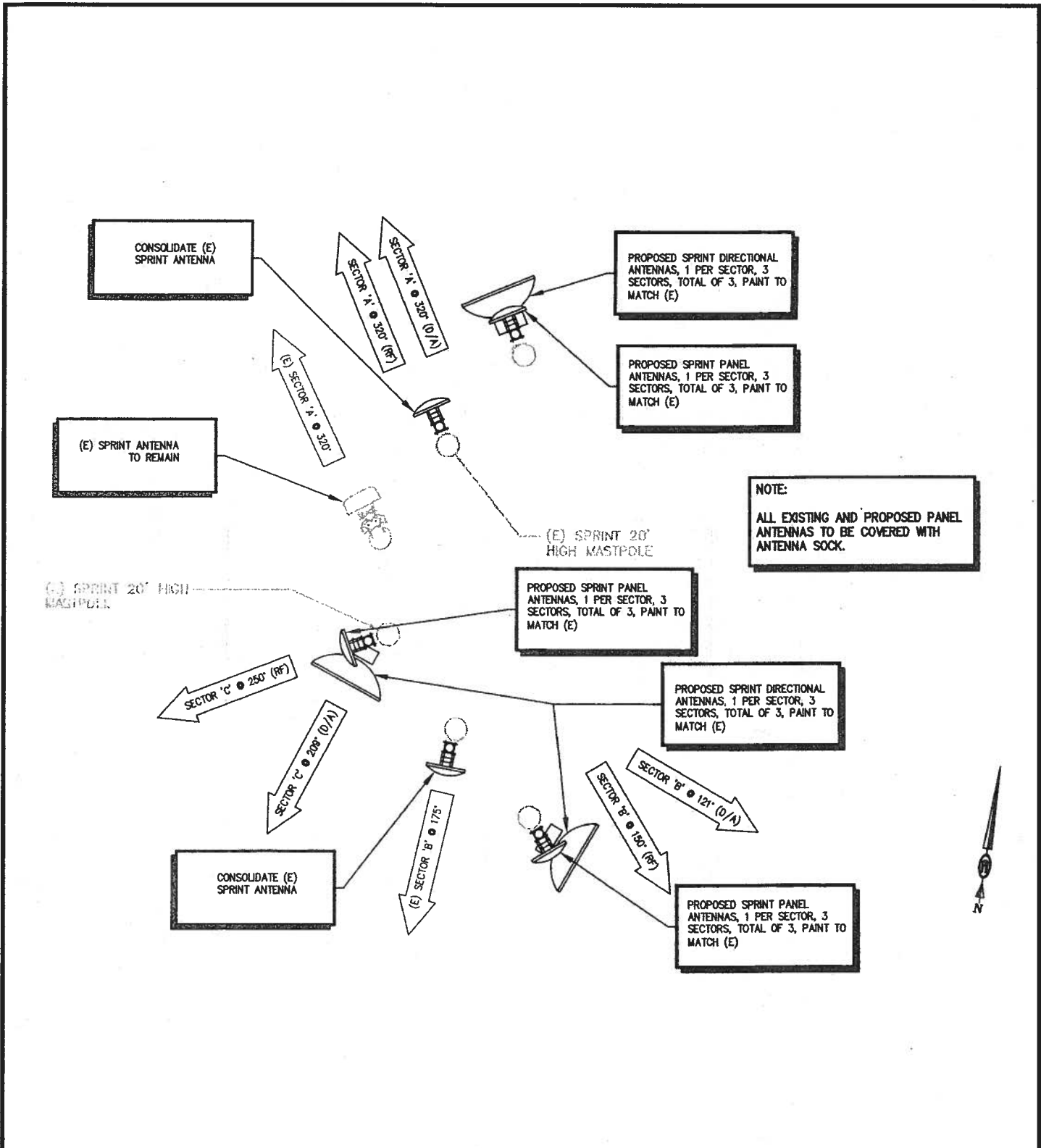
SECTOR "BETA"
175° TN AZIMUTH



EXISTING ANTENNA LAYOUT

**PROPOSED PROJECT
PHG 09-0041**

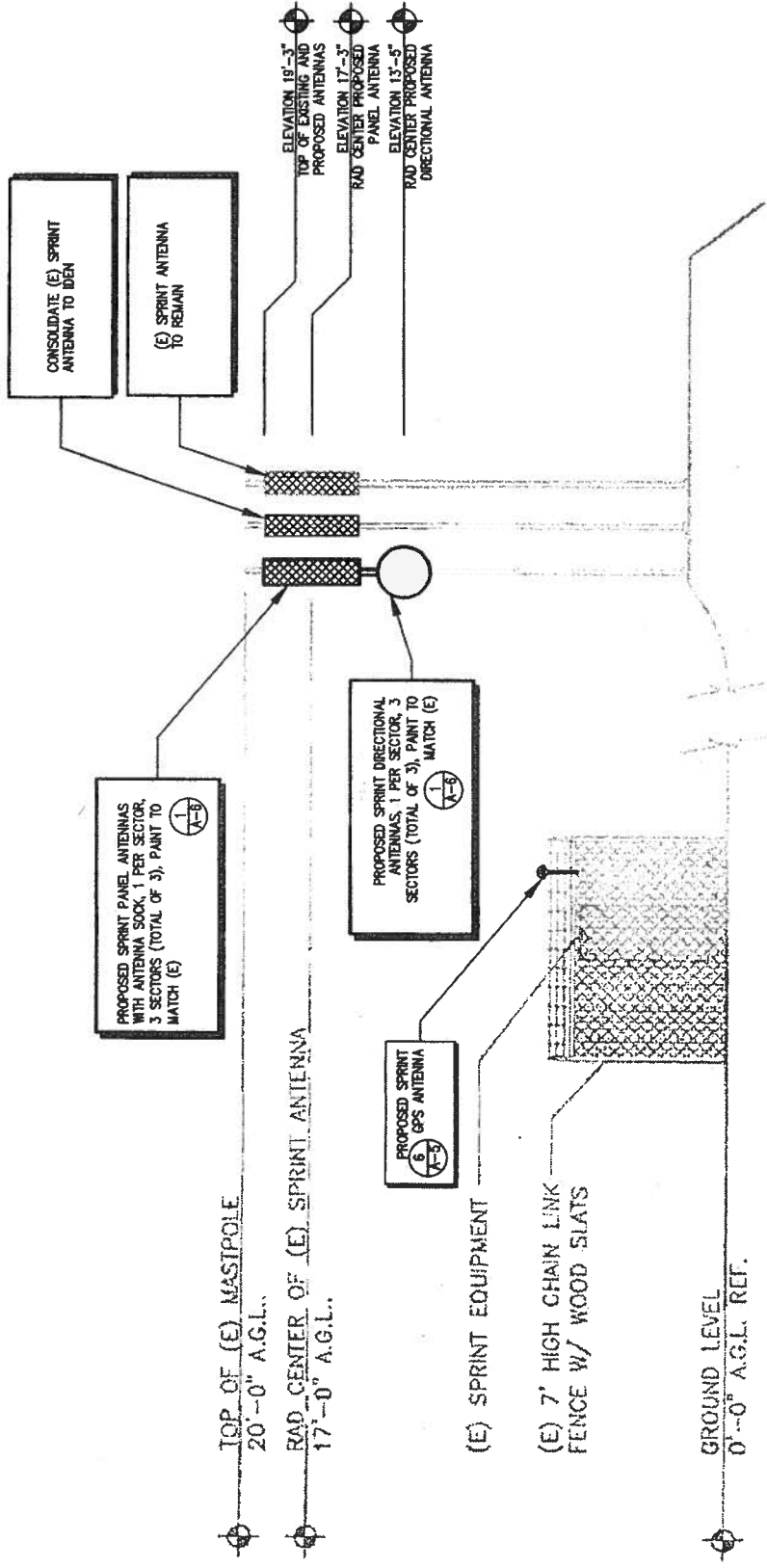
ANTENNA LAYOUT



**PROPOSED PROJECT
PHG 09-0041**



ANTENNA LAYOUT



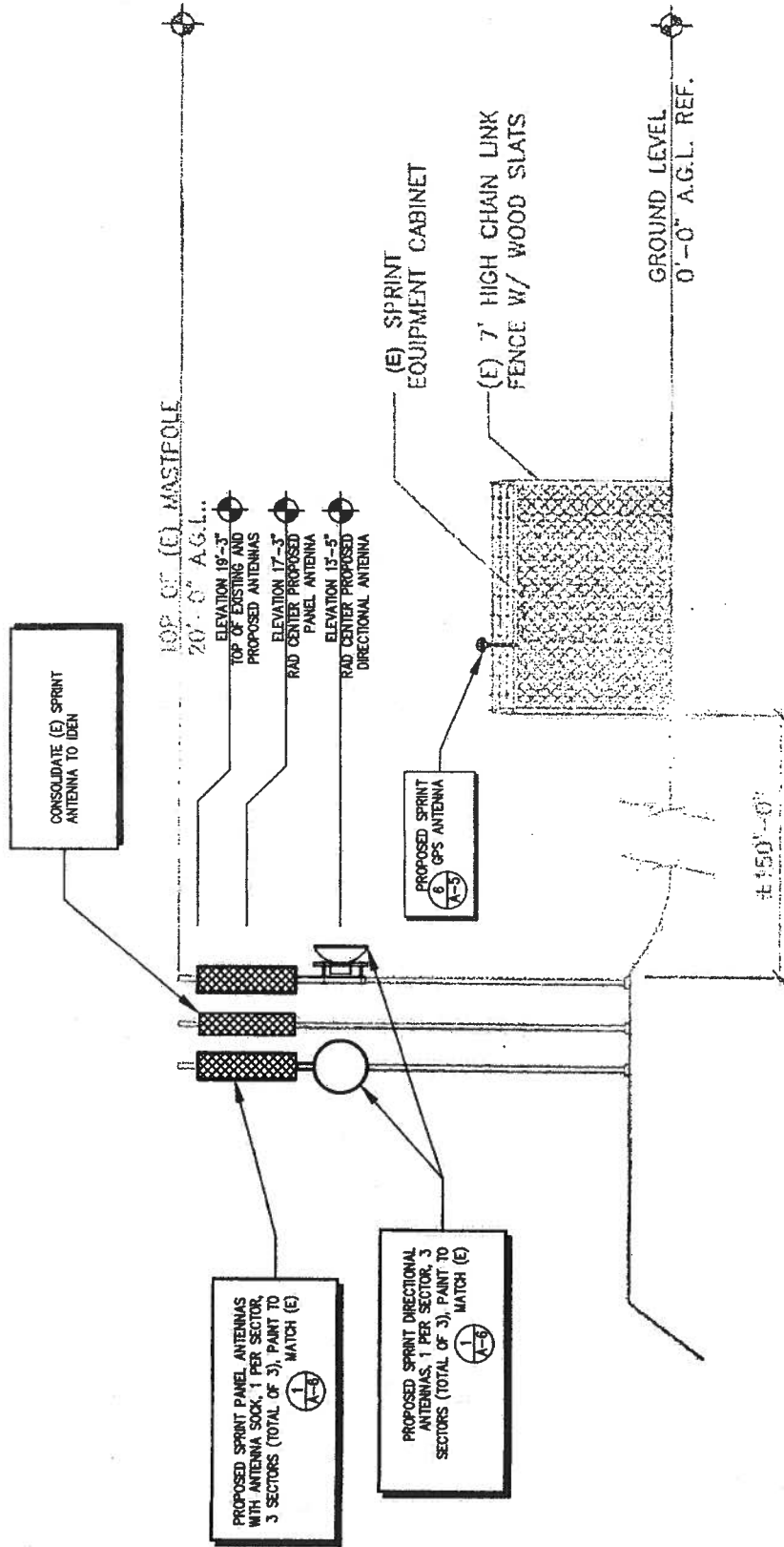
NORTH ELEVATION

**PROPOSED PROJECT
PHG 09-0041**



ELEVATIONS

**PROPOSED PROJECT
PHG 09-0041**

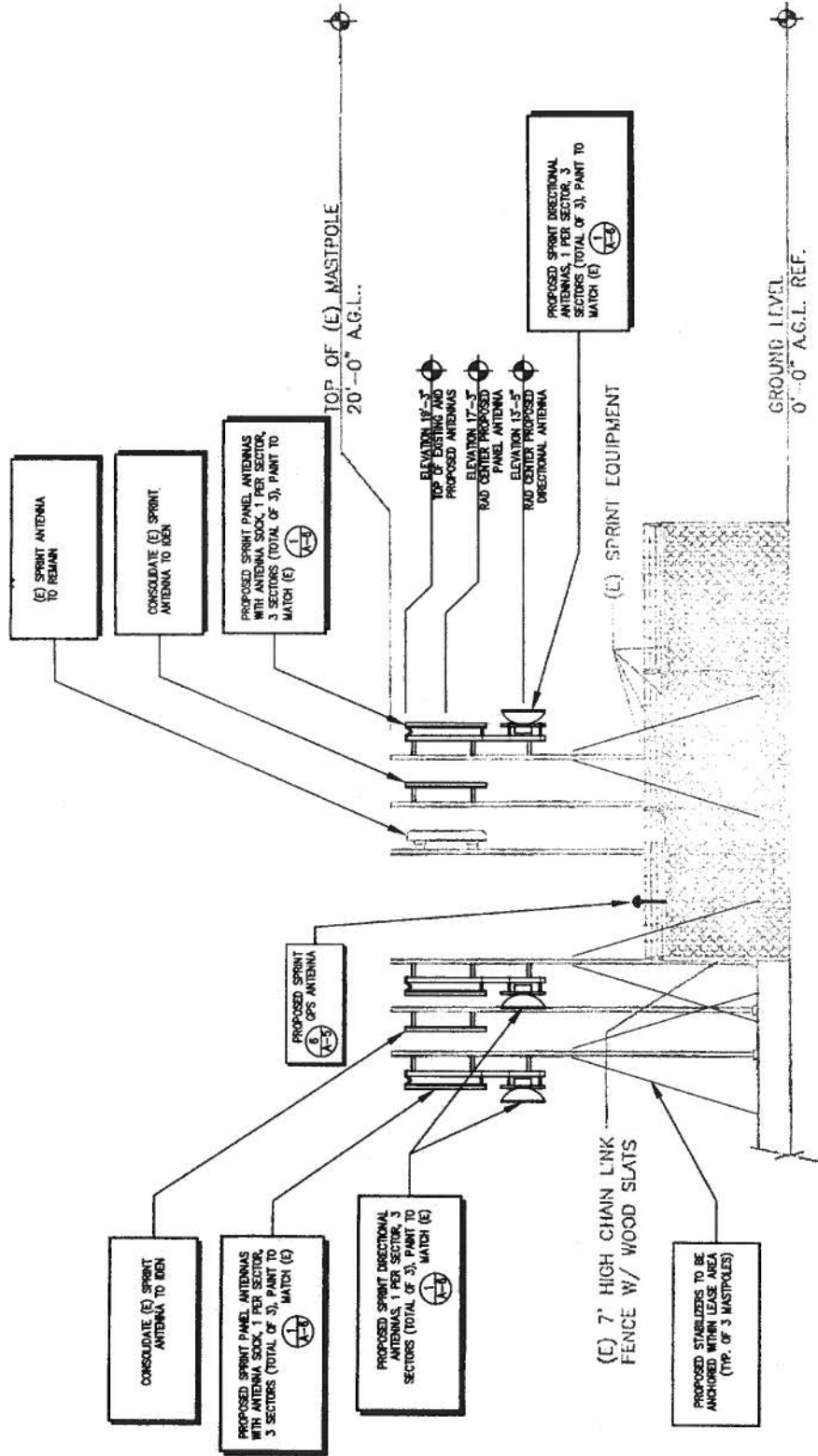


SOUTH ELEVATION



ELEVATIONS

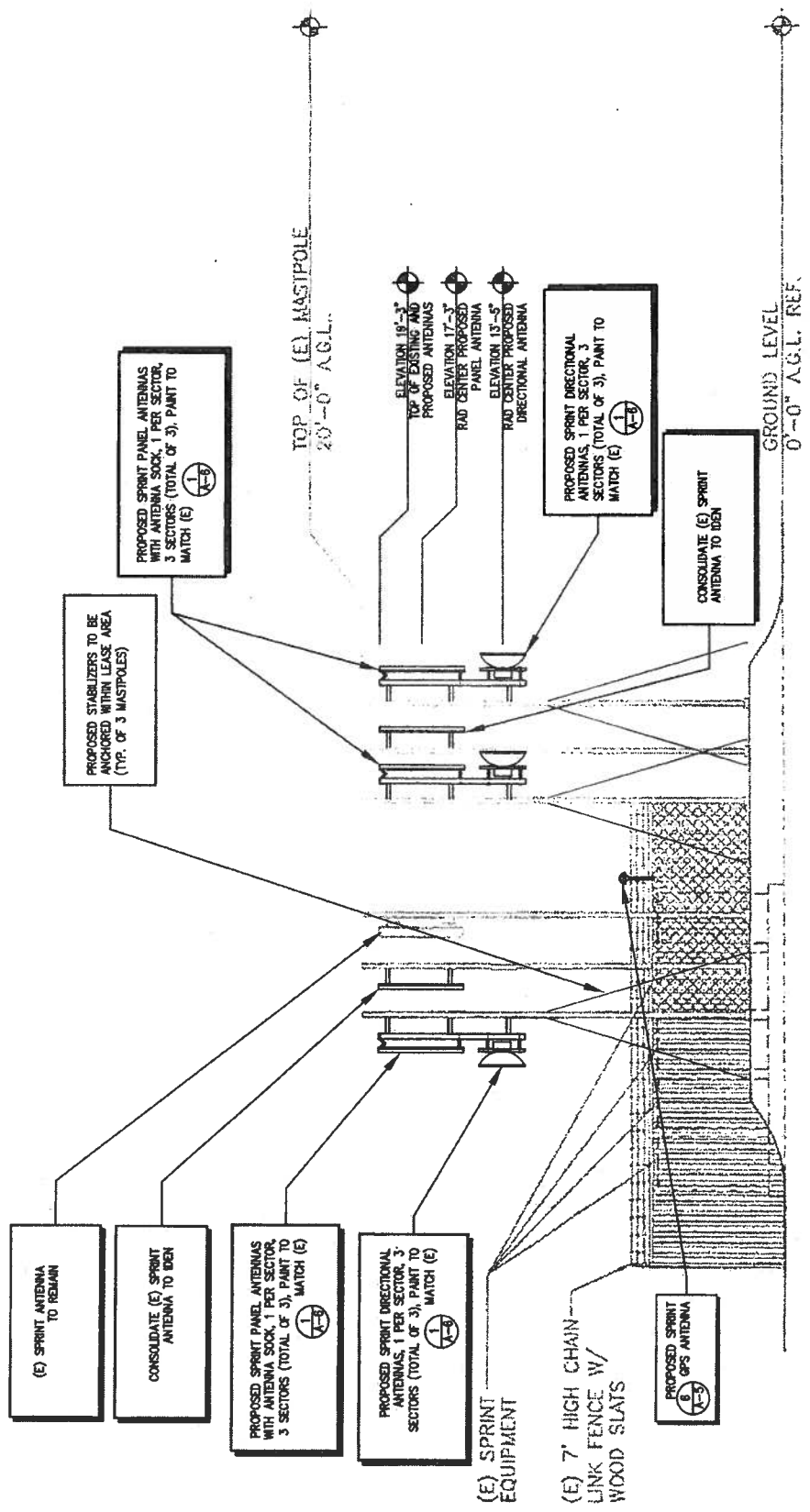
**PROPOSED PROJECT
PHG 09-0041**



EAST ELEVATION



ELEVATIONS

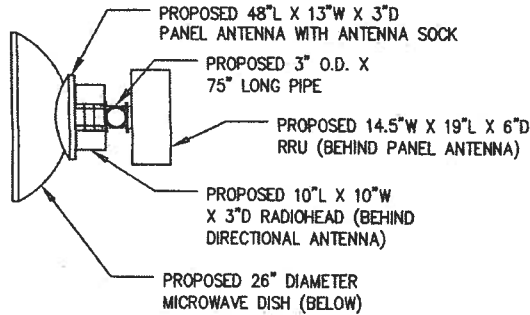


WEST ELEVATION

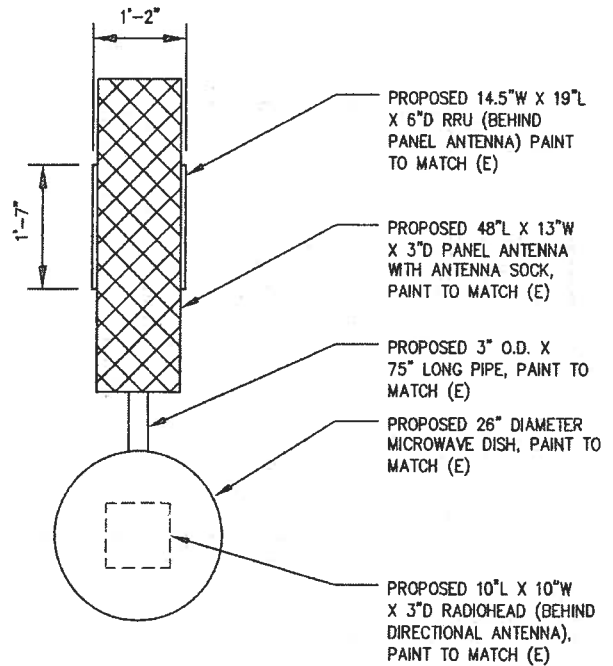
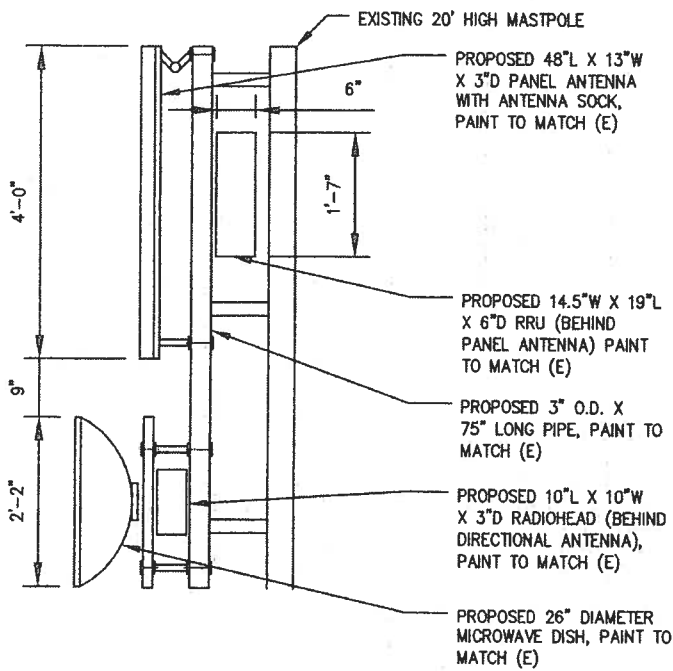
**PROPOSED PROJECT
PHG 09-0041**



ELEVATIONS



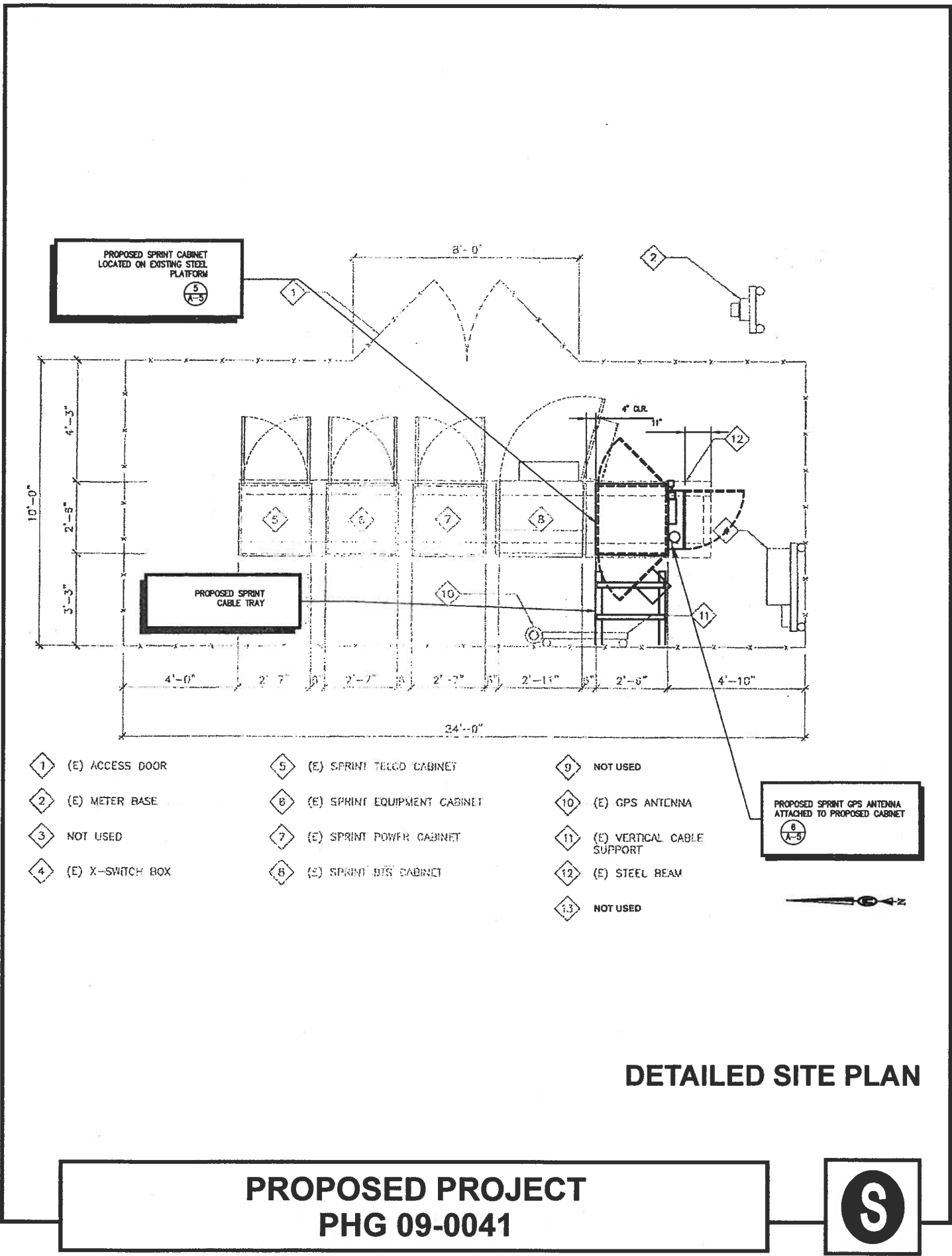
PLAN VIEW



ANTENNA DETAILS

**PROPOSED PROJECT
PHG 09-0041**

ANTENNA DETAILS



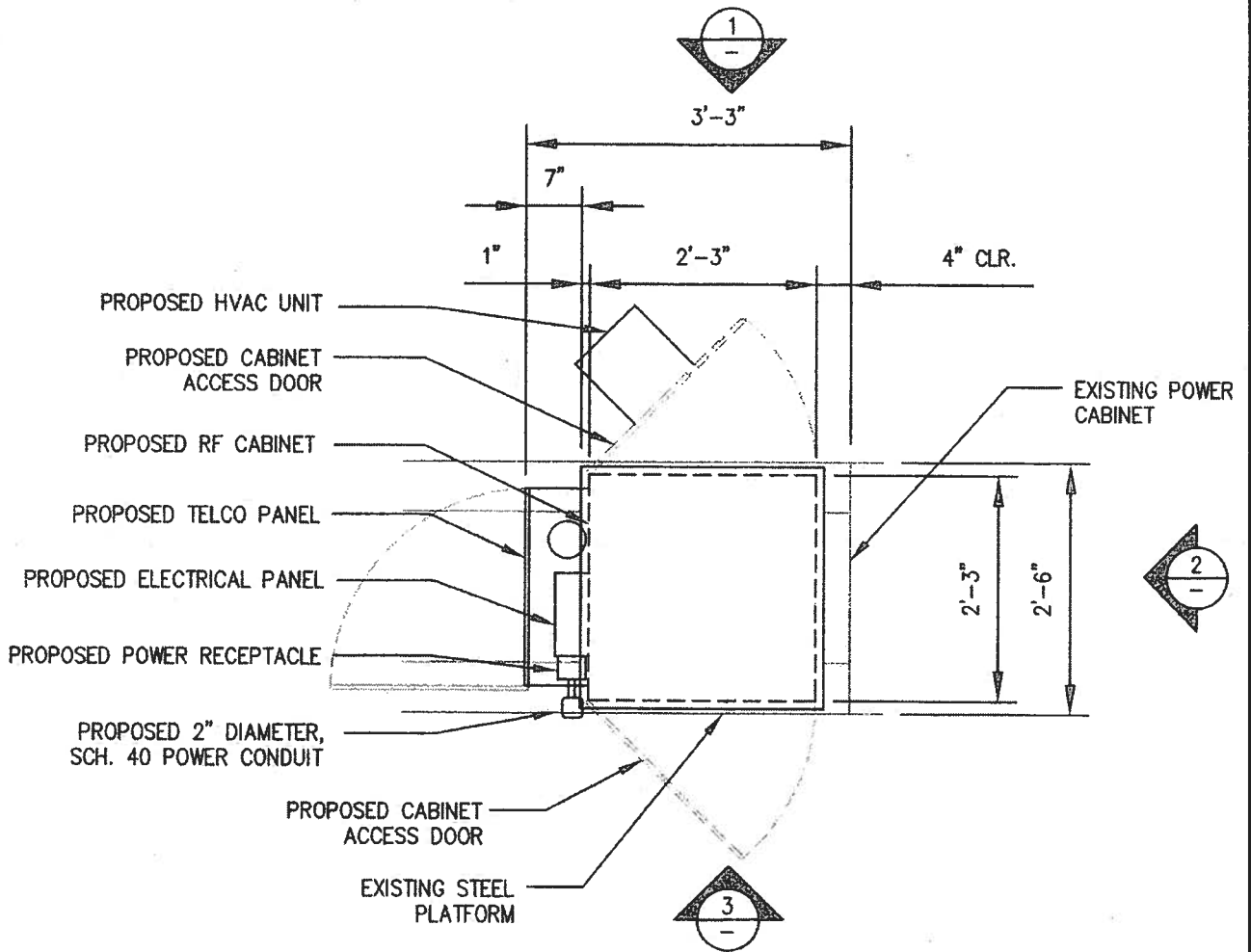
- | | | |
|--------------------|--------------------------------|---------------------------------|
| 1 (E) ACCESS DOOR | 5 (E) SPRINT TELCO CABINET | 9 NOT USED |
| 2 (E) METER BASE | 6 (E) SPRINT GPS ANTENNA | 10 (E) SPRINT EQUIPMENT CABINET |
| 3 NOT USED | 7 (E) SPRINT POWER CABINET | 11 (E) VERTICAL CABLE SUPPORT |
| 4 (E) X-SWITCH BOX | 8 (E) SPRINT EQUIPMENT CABINET | 12 (E) STEEL BEAM |
| | | 13 NOT USED |

DETAILED SITE PLAN

**PROPOSED PROJECT
PHG 09-0041**

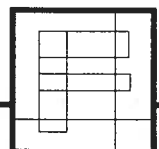


SITE PLAN

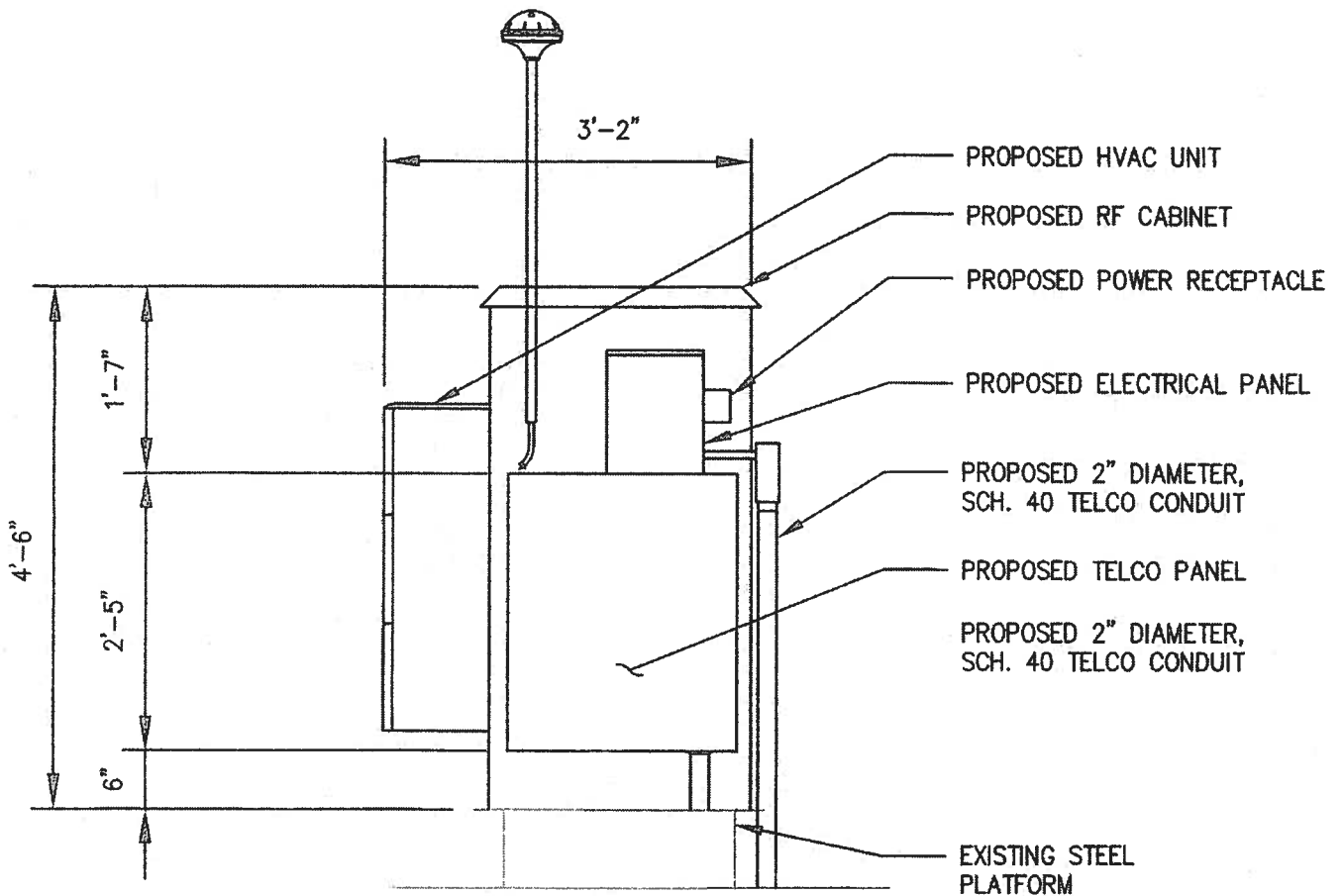


EQUIPMENT PLAN

**PROPOSED PROJECT
PHG 09-0041**



FLOOR PLAN



EQUIPMENT ELEVATION

**PROPOSED PROJECT
PHG 09-0041**



ELEVATIONS

ANALYSIS

A. LAND USE COMPATIBILITY/SURROUNDING ZONING

NORTH - RE-80 zoning (Residential Estate, 80,000 SF min. lot size) / A single-family residence is located approximately 700 feet north of the project site on the northern side of Coyote Hill. The existing Sprint wireless site is located on the southern side or southwestern facing portion of Coyote hill. The topography of the 16-acre site separates the proposed wireless site from any residences to the north. Centre City Parkway and Interstate 15 also are located north and west of the project site. A dirt easement road, steep topography and native vegetation are located immediately north of the proposed lease area for the facility.

SOUTH - RE-80 and PD zoning (Residential Estate, 80,000 SF min. lot size and Planned Development-Residential) / Undeveloped parcels and a residential development are located south of the project site. The nearest existing homes are located approximately 350+ feet south and lower than the project site. Existing native vegetation is located on the southern areas of the subject 16-acre parcel, and native and non-native vegetation is located on the vacant and developed properties south of the project site. Native vegetation surrounds the existing panel antennas. Four existing wireless communication facilities are located immediately south of the project site on the same parcel (Verizon, Sprint/Nextel and AT&T). One of the facilities is designed to resemble a faux water tank. Ornamental landscape has been introduced within the area to provide screening for the wireless facilities.

EAST - RE-80 zoning / A large, primarily vacant parcel is located east of the project site. Above ground water tanks are located approx. 1,000' east of the project site. Vegetation to the east primarily consists of native sage scrub and chaparral type plants.

WEST - RE-20 and RE-40 zoning / (Residential Estate 20,000 and 40,000 SF min. lot size) / Centre City Parkway and Interstate 15 are located west of the project at a significantly lower elevation (approx. 50+ feet lower). Generally vacant or large residential parcels are located west of the project site across Interstate 15. Native vegetation surrounds the site on the sloping hillsides.

B. AVAILABILITY OF PUBLIC SERVICES

1. Effect on Police Service - The Police Department expressed no concern regarding the proposed project and their ability to provide service to the site.
2. Effect on Fire Service - The Fire Department indicated that adequate services can be provided to the site and the proposed project would not impact levels of service.
3. Traffic – The Engineering Department indicated the project would not have any impacts to existing traffic or circulation within the area.
4. Utilities – The Engineering Department indicated the project would not result in a significant impact to public services or utilities.
5. Drainage – The Engineering Department determined the project would not materially degrade the levels of service of the existing drainage facilities.

C. ENVIRONMENTAL STATUS

1. The proposal is exempt from the requirements of the California Environmental Quality Act (CEQA) in conformance with Section 15301, "Existing Facilities" and a Notice of Exemption was prepared for the proposed project. In staff's opinion, the request does not have the potential for causing a significant effect on the environment due to the relatively small size of the facility and the proposed development is located within a disturbed area. The subject lease area does not contain any sensitive vegetation, nor would the project encroach into native vegetation areas or cause the removal of existing adjacent native vegetation areas.

2. In staff's opinion, no significant issues remain unresolved through compliance with code requirements and the recommended conditions of approval. Staff feels the proposed facility would not result in a potential health hazards to nearby residents since the Radio Frequency (RF) study prepared for the proposed project indicates the facility would be within maximum permissible exposure (MPE) limits and Federal Communication Commission (FCC) standards. The property is gated and public access is restricted.
3. The project will have no impact on fish and wildlife resources as no sensitive or protected habitat occurs within the proposed development area or will be directly impacted/removed by the proposed development.

D. GENERAL PLAN ANALYSIS:

General Plan – The project site is located within the City of Escondido Rural II (Single-Family Residential) land-use designation with an underlying zoning of RE-80 (Residential Estate, 80,000 SF min. lot size). The requested Conditional Use Permit is consistent with the Rural II land-use designation of the General Plan since communication facilities customarily are permitted when conditioned to observe the underlying zone requirements and any related ordinance restrictions; are in conformance with the wireless design requirements; and when compatible with surrounding properties. The site currently is developed with wireless communication facilities and the proposed project is in substantial compliance with any relevant General Plan criteria and RE-80 zone standards for setbacks and height, and also is in conformance with the Personal Wireless Service Facilities Guidelines for location and design.

E. PROJECT ANALYSIS

Appropriateness of the Proposed Design and Whether the Proposed Wireless Facility Would Be in Conformance with the Communication Antennas Ordinance

Clearwire proposes to co-locate onto an existing Sprint wireless facility to support their new wireless network. The existing Sprint facility (which was approved in 1996) consists of six individual poles (approx. 20 feet in height) with one rectangular antenna panel mounted onto each pole. Clearwire proposes to remove five of the existing six rectangular panel antennas and replace them with new panel antennas, which are dual purpose antennas to serve the Sprint and Clearwire network. One existing older Sprint panel antenna would remain. Clearwire also proposes to install three new circular antennas onto three of the mounting poles below the rectangular panel antennas for a total of nine antennas mounted onto the existing poles. The new antennas would be painted olive green to match the existing facilities. The property owner has requested that Clearwire install faux leaf material ("socks") on the poles to further help blend in with the surrounding hillside vegetation. The supporting equipment cabinet would be located within the existing Sprint/Nextel fenced equipment enclosure, along with a small GPS unit. No expansion to the enclosure area is proposed.

The Design Review Board discussed the appropriateness of the project on March 11, 2010, and recommended approval of the design (vote 6-0). The Boardmembers felt the installation of the antennas on the existing array generally would not result in any adverse visual impact due to the relatively small size of the antennas and minor increase in the number of antennas. The Boardmembers also discussed whether it was necessary to use the "sock" materials to camouflage the existing pipes and antennas, and recommended that additional sage scrub habitat should be planted around the antennas instead of the faux leaves. Staff does not feel that additional landscaping is needed around the antennas since this area already is heavily covered with native habitat. Any encroachments/disturbance into the existing habitat areas would also require permits from the appropriate wildlife agencies and staff does not feel there are any adequate open areas to provide additional plants around the antennas.

Staff feels the proposed modification to the Sprint facility would be in conformance with the Wireless Facilities guidelines since Clearwire would co-locate on existing wireless facility poles instead of installing new, high-profile wireless tower or pole; the number of additional panels have been limited to lessen the potential bulk on the existing array; the new equipment would be located within an existing screened equipment area; and the facility would be in conformance with FCC emission standards.

The City received one letter from a property owner to the south (Chris Berk) expressing concern regarding the proposed facility, access to the site, and fire protection. Access to the site currently is provided from a private easement road that intersects Centre City Parkway northwest of the project site. Access is not provided, nor is it planned through the existing residential development or streets to the south (Amber Lane). The existing Sprint facility is located on private property and access to the site is restricted by a locked gate. The Fire Department indicated that appropriate access is provided to the subject site. Ongoing maintenance of the proposed facility is the responsibility of the carriers, and generally they visit the site once a month to provide routine maintenance. Since there only are four wireless facilities on the site, vehicle trips are minimal. The existing roadway easement currently is maintained by SDG&E since it is an easement road to access their major overhead utility lines in the area.

Conformance with FCC Emission Requirements

Operation of the facility would generate electromagnetic emissions (RF radiation). A RF study was prepared for the project by AIM Wireless Solutions to determine whether the proposed communication facility complies with the FCC Radio Frequency Safety guidelines. The study assumes a worst case scenario at maximum capacity, and compares the figures to existing standards. Due to the existing communication facilities on the site, actual measurements were conducted to establish a baseline for a cumulative analysis. The analysis indicated the anticipated MPE limits on the ground from the proposed Clearwire facility by itself is approximately 5.4% of FCC limits. The existing cumulative level from the carriers is approximately 16.25% of FCC limits, and the total predicted power from all existing proposed carriers is less than 27%, which would be in compliance with applicable FCC's General Population MPE Limits. A copy of the study has been attached with this report.

SUPPLEMENT TO STAFF REPORT/DETAILS OF REQUEST

A. PHYSICAL CHARACTERISTICS

The 16.03-acre property is developed with a single-family residence within the northeastern portion of the site and four wireless communication facilities towards the southwestern area of the site. Major SDG&E transmission lines bisect the property from north to south. Several dirt roads also crisscross the site and access to the southern area of the site and to the existing wireless facilities is gated to control access. Primary access to the site is provided by a private road (Coyote Hill Glen) which intersects North Centre City Parkway on the northwest. Interstate 15 is located further to the west. The proposed lease area on which the facility would be installed is located towards the base of a slightly sloping hill (western facing side) that continues further to the northeast to an elevation of approximately 1,100 feet. The existing Sprint wireless facility (pipe mounts and panels) is surrounded by native vegetation. The existing equipment enclosure is located within a graded area of the property and secured by chain-link fencing.

B. SUPPLEMENTAL DETAILS OF REQUEST

1. Property Size: 16.03 acres
2. Equipment Enclosure: 10' x 24' Sprint enclosure area is secured with chain-link fencing with brown slats (approx. 7' high). Existing native and non-native vegetation screens most views of the equipment area. Clearwire would install one additional equipment cabinet and other supporting electrical equipment within the existing fenced enclosure. Any equipment that projects above the fence to be painted flat olive green.
3. Panels:
Existing: 6 rectangular type on 6 individual pole mounts (approx. 20 feet in height). The antennas are secured by chain-link fencing on all sides. The existing native vegetation screens the fencing from adjacent views.

Proposed: A total of 9 antennas are proposed to be located on the six pipe mounts, which includes 3 round directional (26" diameter-Clearwire), 5 new rectangular antennas (Clearwire) to replace 5 existing rectangular antennas; and 1 existing Sprint rectangular antenna to remain. All panels and poles to be painted flat olive green and be clad in faux leaves ("socks").
4. Utility Lines: Proposed new electrical lines (utility runs) to be placed on top or within the existing above-ground cable tray that runs from the existing equipment area to the mounting poles/antennas. Any new equipment to be painted to blend in with the surrounding vegetation and hillside.
5. Power Density: Clearwire - 5.4% of the FCC General Public Limit for Maximum Public Exposure (MPE). Cumulative from all carriers – less than 27%
6. Equipment: One additional equipment cabinet and rack to be installed in the existing equipment enclosure.
7. Hours of Operation
Wireless Facility: 24 hours, unmanned
8. Landscaping: Native and non-native vegetation screens the fenced equipment to the north, south and west. Native vegetation surrounds the existing six pipe mounts and antennas. The lower portions of the antennas and the above-ground cable tray are screened by the existing native vegetation. The upper portions of the mounting poles and antennas are visible to surrounding views to the north, south and west.

EXHIBIT "A"
FINDINGS OF FACT
PHG 09-0041

Conditional Use Permit

1. General Plan Residential Policy B2.1 (page II-17) states that residential neighborhoods shall be protected from the encroachment of incompatible activities which may have a negative impact on the residential living environment. Granting this Conditional Use Permit to allow a personal wireless communication facility on the subject property would not conflict with this policy and would be based on sound principles of land use since the use is in response to services required by the community and the facility would enhance communication services in the city without posing a health threat to the surrounding area. The proposed panels would be integrated into an existing telecommunication facility and would replace existing antenna panels, which would avoid potential visual impacts in conformance with the Communication Antennas Ordinance. The ground equipment would be located within an existing fenced equipment enclosure. The proposed facility would not result in a substantial alteration of the present or planned land use since the project site is developed with a variety of communication antennas, towers, poles and buildings. The facility also would not result in a potential health hazard to nearby residents since the facility would be within MPE (maximum permissible exposure) limits as indicated in the radio frequency analysis prepared for the project by AIM Wireless Solutions. The proposed facility would be in compliance with the City's Wireless Facility Guidelines, as discussed in the Planning Commission staff report.
2. The proposed personal wireless communication facility would be located within the RE-80 zone. Personal wireless communication facilities are permitted within this residential zone pursuant to approval of a Conditional Use Permit (CUP). The proposed facility would not result in a substantial alteration of the present or planned land use since the new facilities are small in scale and the antennas and support equipment would be appropriately integrated into existing facilities. The proposal would not cause deterioration of bordering land uses since the antennas would be co-located onto an existing wireless facility, and the location, number and size of the panels have been designed to integrate into the design and scale of the existing facility. The proposed facility would be consistent with the Communication Antennas Ordinance since the facility would co-locate on an existing communications antenna/facility and the number of panels limited and installed on existing supports to reduce the bulk of the panels as viewed from adjacent properties; the proposed equipment cabinet(s) would be placed within an existing enclosure area; the proposed facility is located on a large parcel in a residential zone; would use an existing facility to mount the panels rather than construction of an additional structure; and would be in conformance with FCC emission standards.
3. The visual impacts related to the proposed personal wireless communication facility are not considered significant since the antennas would be mounted onto an existing communication facility and would be properly screened or integrated into the existing facilities to be in context with the surrounding built environment. The proposed equipment cabinet(s) would be located within an existing enclosure area. The design and location of the proposed facility would be in compliance with the City's Wireless Facility Guidelines, as discussed in the Planning Commission staff report. The City's Design Review Board recommended approval of the project design on March 11, 2010.
4. The proposed personal wireless communication facility would not be hazardous to the health of nearby residents since the radio frequency (RF) analysis prepared for the project concluded the maximum operation levels of radiation for the facility would be within the MPE (Maximum Permissible Exposure) limit established by FCC requirements.
5. The proposed Conditional Use Permit has been considered in relationship to its effect on the community, and the request would be in compliance with the General Plan Policies and the Wireless Facility Guidelines, and would not result in a negative impact to the adjacent neighborhood for the reasons stated above and detailed in the Planning Commission staff report and radio frequency analysis.
6. The proposal is exempt from the requirements of the California Environmental Quality Act (CEQA) in conformance with Section 15301, "Existing Facilities" and a Notice of Exemption was prepared for the proposed project.

EXHIBIT "B"

CONDITIONS OF APPROVAL PHG 09-0041

General

1. All construction shall comply with all applicable requirements of the Escondido Zoning Code and requirements of the Planning Department, Director of Building, and the Fire Chief.
2. Access for use of heavy fire fighting equipment as required by the Fire Chief shall be provided to the job site at the start of any construction and maintained until all construction is complete.
3. Appropriate access shall be provided to the project site, to the satisfaction of the Fire Department.
4. The legal description attached to the application has been provided by the applicant and neither the City of Escondido nor any of its employees assume responsibility for the accuracy of said legal description.
5. All requirements of the Public Partnership Program, Ordinance No. 86-70 shall be satisfied prior to building permit issuance. The ordinance requires that a public art fee be added at the time of the building permit issuance for the purpose of participating in the City Public Art Program
6. Prior to or concurrent with the issuance of building permits, the appropriate development fees and Citywide Facility fees shall be paid in accordance with the prevailing fee schedule in effect at the time of building permit issuance, to the satisfaction of the Director of Planning and Building.
7. Prior to obtaining building permits, the applicant shall demonstrate compliance with the requirements of the Citywide Facilities Plan, to the satisfaction of the Planning Division and Engineering Department.
8. All exterior lighting shall conform to the requirements of Article 1072, Outdoor Lighting (Ordinance No. 86-75).
9. As proposed, the design, color and materials of the proposed facilities shall be in accordance with the staff report, exhibits and the project's Details of Request, including the following to the satisfaction of the Planning Division:
 - a. Any visible support poles, brackets, cable runs and other support equipment and screening materials shall be painted to match/blend with the existing surrounding built environment (typically flat olive drab. green). This shall be clearly noted on the building plans. Any equipment (existing or proposed) that projects above the existing equipment enclosure also shall be painted to blend in with the surrounding area.
 - b. All new utility runs shall be placed underground, to the satisfaction of the Planning Division and the Engineering Department, unless as specifically approved by this permit. The existing utility tray may be used to accommodate any new utility runs to the new Clearwire/Sprint antennas.
10. All proposed signage associated with the project must comply with the City of Escondido Sign Ordinance (Ord. 92-47) and the exhibits included in the staff report(s), to the satisfaction of the Planning Division. Appropriate signs providing notice, caution or warning, and other necessary markings, shall be placed at the main site access point(s) and other locations, as may be required, in order to alert maintenance or other workers approaching the antennas to the presence of RF transmissions and to take precautions to avoid exposures in excess of FCC limits. The requirement for the appropriate signage/notice shall be indicated on the building plans.
11. Sprint/Clearwire or any subsequent operator/lease holder of the wireless facility agrees to investigate any complaints related to possible interference with electronic equipment in the surrounding area to determine the cause of the interference. Any interference shall be resolved in a timely manner to the satisfaction of the Director of Community Development. If the facility is determined to be the cause of the electronic interference, Clearwire shall solve the problem in a timely manner to the satisfaction of the complainant and the Director of Community Development. In addition, any interference with public safety communications shall be corrected immediately, to the satisfaction of the City of Escondido.

12. Any sublease of the subject area or co-location of any new facilities not identified by this use permit shall require approval of the City of Escondido.
13. All project generated noise shall conform to the City's Noise Ordinance (Ordinance 90-08).
14. If requested by the City of Escondido, Sprint/Clearwire, or any subsequent operator/lease holder of the facilities shall permit co-location of other wireless providers on its facility (subject to City of Escondido Approval) if it can be demonstrated that there would be no adverse effect on the existing facilities/operations.
15. Sprint/Clearwire shall select an independent third party consultant to conduct actual power density measurements of the facility within 90 days after installation and under full operation of the facility. The results of the study shall be submitted to the Director of Community Development so that the theoretical power density study can be compared to the actual output to ensure compliance with FCC requirements.
16. Sprint/Clearwire Wireless or any subsequent operator/lease holder of the wireless facility shall be responsible for all on-going maintenance of the facility, including the antennas and supporting equipment to ensure the condition of the facility does not appear weathered. Any required landscaping shall be permanently maintained in a flourishing manner. Any required irrigation shall be maintained in fully operational condition.
17. All communication facilities on the site shall be promptly removed upon non use of the facilities, to the satisfaction of the Planning Division and Building Department.
18. Any permanent, temporary or stand-by emergency generators must be in conformance with the City's Ordinance and regulations regarding electric generating facilities.
19. No additional antennas or expansion of this facility shall be permitted without a modification of the Conditional Use Permit and a public hearing before the Planning Commission. Minor changes within the approved size and design parameters may be permitted by the Director of Community Development after review by the Design Review Board, as may be required.
20. Any proposed private security gates shall provide rapid reliable access by means of a key box to provide immediate access for firefighting purposes, as may be required by the Fire Department.
21. The Conditional Use Permit shall be null and void if not utilized within twelve months of the effective date of approval, as determined by the Planning Division, unless an extension of time has been granted pursuant to Article 61, Division 1 of the Escondido Zoning Code. In this case, utilized means issuance of any required building permits and all required fees paid, bonds posted and any easements or leases obtained or executed. Construction activities also shall be commenced no later than 160 days following the issuance of building permits to consider the CUP utilized, unless otherwise approved or extended by the Director of Community Development.
22. This Conditional Use Permit only is for the co-location of Sprint/Clearwire equipment on the existing facility located on the site. The number of antennas approved by this Conditional Use Permit shall be used solely for Sprint/Clearwire and not transferred or subleased to any other carriers unless approved by the City. No other additional carriers shall be allowed to be placed on the existing wireless communication facility, unless a new Conditional Use Permit is approved by the City.
23. This item may be referred back to the Planning Commission upon recommendation of the Director of Community Development for review and possible revocation or modification of the Conditional Use Permit upon receipt of nuisance complaints regarding the facility or non-compliance with the Conditions of Approval.
24. A copy of these Conditions of Approval shall be submitted with the submittal of the building plans indicating compliance with all of the Conditions and Details of Request and exhibits contained in the Planning Commission staff report.
25. Prior to final of the building permit and operation of the facility, any graffiti on the existing Sprint/Nextel building, fencing and any support equipment shall be removed or painted over to match the existing structures.
26. An inspection by the Planning Division will be required prior to operation of the project. Everything should be installed prior to calling for an inspection, although preliminary inspections may be requested. Contact the project planner at (760) 839-4671 to arrange a final inspection.

27. The City of Escondido hereby notifies the applicant that the County Clerk's Office requires a documentary handling fee of \$50.00 in order to file a Notice of Exemption for the project (environmental determination for the project). The applicant shall remit to the City of Escondido Planning Division, within two working days of the final approval of the project (the final approval being the hearing date of the Planning Commission or City Council, if applicable) a check payable to the "San Diego County Clerk" in the amount of \$50.00. In accordance with California Environmental Quality Act (CEQA) section 15062, the filing of a Notice of Exemption and the posting with the County Clerk starts a 35 day statute of limitations period on legal challenges to the agency's decision that the project is exempt from CEQA. Failure to submit the required fee within the specified time noted above will result in the Notice of Exemption not being filed with the County Clerk, and a 180 day statute of limitations will apply.
28. The areas of native vegetation around the existing Sprint/Clearwire facility shall be clearly identified on the site plans and notes clearly included on the plans (in larger and bold print) restricting any removal or disturbance of native vegetation areas.



CITY OF ESCONDIDO
 PLANNING DIVISION
 201 NORTH BROADWAY
 ESCONDIDO, CA 92025-2798
 (760) 839-4671

Notice of Exemption

To: San Diego County Recorder's Office
 Attn: Linda Kesian
 P.O. Box 121750
 San Diego, CA 92112-1750

From: City of Escondido
 201 North Broadway
 Escondido, CA 92025

Project Title/Case No.: PHG 09-0041

Project Location - Specific: An approximately 16.3-acre parcel generally located east of N. Centre City Parkway, north of Amber Lane, south of Nutmeg Street, addressed as 25005 N. Centre City Parkway (APN 224-240-16).

Project Location - City: Escondido, **Project Location - County:** San Diego

Description of Project: Modification to a previously approved Conditional Use Permit for a Sprint/Nextel wireless facility (96-12-CUP) to add three round directional antennas and replace five of the six existing rectangular panel antennas onto the existing twenty-foot-high pipe mounts for a total of nine antennas. The supporting equipment cabinet and electrical equipment would be located within the existing fenced Sprint equipment enclosure area.

Name of Public Agency Approving Project: City of Escondido

Name of Person or Agency Carrying Out Project:

Name M&M Telecom (Mark Phillips) representing Sprint/Clearwire Telephone (619) 379-3473

Address 2014 Granada Ave, San Diego, CA 92104

Private entity School district Local public agency State agency Other special district

Exempt Status: Categorical Exemption. Section 15301 "Existing Facilities."

Reasons why project is exempt:

1. The project only involves a modification to a previously approved Conditional Use Permit to co-locate additional antenna panels on an existing Sprint/Nextel wireless communication facility. No physical expansion of the site is proposed.
2. The site is in an area where all public services and facilities are available to allow for the proposed use.
3. The site is within an area that currently is developed with other municipal type facilities and structures, including several private wireless communication facilities. The proposed project would not result in any direct impact to sensitive or protected habitat.
4. The proposed facility would not be hazardous to the health of nearby residents or the general public since the facility would be within maximum permissible exposure (MPE) limits and Federal Communication Commission (FCC) standards.

Lead Agency Contact Person: Jay Paul, Planning Division Area Code/Telephone/Extension (760) 839-4537

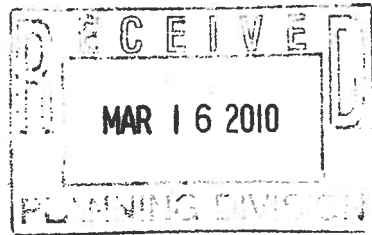
Signature: 
 Jay Paul, Associate Planner

March 8, 2010
 Date

Signed by Lead Agency Date received for filing at OPR: N/A

March 12, 2010

City of Escondido
Planning Division
201 North Broadway
Escondido, CA 92025-2798



Subject: Case No. PHG 09-0041

Dr. Mr. Martin;

With this letter, I am expressing my concerns to erect the Sprint/Nextel Wireless Facility (96-12-CUP) to be discussed at the Notice of Public Hearing March 23, 2010. We currently have a cell site located within view from Amber Lane. From a distance, it looks to be a replica of a water tank that steam locomotives would take on water.

The following are my concerns:

1. Access to this sight during construction will most likely attempt to use Amber Lane, a street that has several families on it close to this location.
2. If approved, Amber Lane must be maintained using BMP(s) for erosion control.
3. Who will assure parking of construction equipment, fire protection plan, and security?
4. Is this proposal been brought into by the HOA for this subdivision?
5. How can we be assured that an assessment is not being placed upon the homeowners for subject site?
6. Who will provide fire protection the site? - I know that a fire truck has all it can do to make it up the existing concrete driveway without bottoming out.
7. A site of new construction will be a target for taggers.
8. How can we be assured as homeowners that a contractor will not have access to our subdivision?
9. I did not see any rough staking as to the exact location off Amber Lane and Center City Parkway.

With the information provided in this letter, I am not in favor of this request. I ask that the planning commission be assure to adequate answers. I will not be able to attend the meeting – please read aloud.

I would greatly appreciate the concern the City of Escondido to work with the Home Owners Association to maintain the professional appearance of our subdivision.

Respectfully


Chris P. Berk



MPE Report
Client: Sprint-WIMAX
Site: El Norte, (CA-SDG5876)
Date: Wednesday, February 17, 2010

Contents

1. Objective.....	2
2. Introduction.....	2
3. Evaluation & Computer Modeling.....	2
3.1. Site Description.....	3
3.2. Antenna System.....	3
3.3. Carrier Frequency Information.....	3
4. Test Methodology & Measurements.....	4
5. General Population/Uncontrolled Exposure Results:.....	5
6. Occupational/Controlled Exposure Results:.....	5
7. Study Findings.....	6
7.1. Sign Display.....	6
8. Conclusion.....	7
Appendix I: Methods of calculations based on OET 65 document.....	8
Exposure Limits:.....	8
Power Density Calculations:.....	8
1. Towers.....	8
2. Roof tops.....	11
9. Contact Information.....	15

1. Objective

This report has been prepared on behalf of Sprint-WIMAX. Sprint-WIMAX is proposing communication equipment at El Norte located at 25005 N. Centre City parkway, Escondido, CA 92026. The study will evaluate the effect of the base station for compliance with the appropriate limiting human exposure to radio frequency (RF) electromagnetic fields. The study took the following criteria into consideration:

Table 1 Measurements Information

Analysis	Description
Antenna Patterns	Yes
Measured Antenna Isolation Data	No, Empirical data used

2. Introduction

The Federal Communication Commission (FCC) requires the evaluation of its actions for possible significant impact on the environment. In 1997, the FCC adapted the human exposure limits for field strength and power density recommended in Repot No. 86, "Biological effects and Exposure Criteria for Radio frequency Electromagnetic Fields", published in 1986. Separate limits apply for occupational and public exposure conditions. Generally, the public limits are five times more restrictive than occupational limits. The table below shows the summary for the exposure limits.

Table 2 FCC exposure limits

Band	Frequency (MHz)	Occupation/Controlled (mW/cm ²)	Population/Uncontrolled (mW/cm ²)
Cellular	870	2.9	0.58
SMR	851	2.84	0.567
PCS	1930	5	1
WIMAX	>2400	5	1

3. Evaluation & Computer Modeling

The MPE analysis consists of evaluating the RF transmitter power being emitted from each active antenna at the communications site. Power density calculations are performed based on where a human (observer) would be located at the site. The power density values are then converted to MPE percentages and each antenna's MPE percentages are summed together to provide a composite MPE percentage for each observer location. Refer to Appendix I for detailed calculations.

AIM MPE software was used to predict the limits of exposure. Figure 1 below shows the mythology AIM MPE followed to generate the final output depicts the Occupational or Controlled Environment MPE analysis. The color zones in figures 2 and 3 indicate the maximum permissible exposure percentage a person would experience while in these zones.

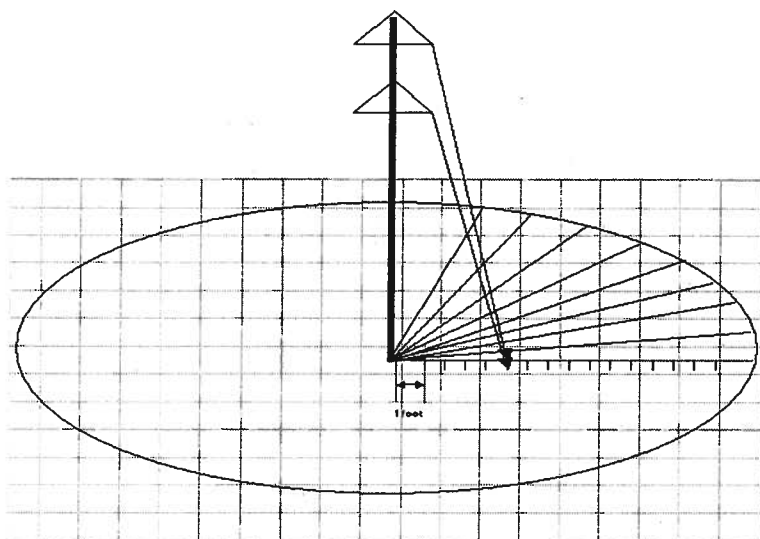


Figure 1. AIM Wireless methodology in calculating MPE

3.1. Site Description

Site name: El Norte (CA-SDG5876) Worst Case
 Site description: Maximum Permissible Emission for a Pole structure
 Address: 25005 N. Centre City parkway, Escondido, CA 92026
 Latitude: 33-09-54 N
 Longitude: 117-06-13 W

3.2. Antenna System

Table 2 Carriers' details

Carrier	Antenna Manufacturer	Antenna Model	Height-AGL (ft)	Azimuth-TN	Antenna Length (ft)	Power at Antenna (W)
Sprint-WIMAX	Argus	LLPX310R	20 ft	320, 150, 250	3.5 ft	10 W
Sprint-CDMA	Andrew	844G90VTA-SX_0	20 ft	0, 180, 270	4 ft and 6 in	50 W
Sprint-iDEN	Kathrein	741 984	53 ft	30,125,315	20 ft	50 W
Sprint-Microwave 1	Andrew	VHKP_2	20 ft	0, 120, 240	2 ft	1 W
Verizon	Antel	F-BXA-80063/4 M	30 ft	10,130,260	6 ft	50 W
AT&T	Power Wave	RA 21.7770.00	25 ft	0, 120, 240	6 ft	50 W
Cricket Wireless	Andrew	RR65-17-02DPL2	35 ft	30,125,315	4 ft and 6 in	50 W

3.3. Carrier Frequency Information

Table 3 Frequency Information

Carrier	Frequency Ranges (MHz)
Sprint-WIMAX	2496-2502, 2602-2614, 2618-2673.5
Sprint-CDMA	1930-1945, 1850-1965
Sprint-iDEN	806-824, 851-869
Sprint-Microwave 1	23 GHz
Verizon	870-880, 1965 - 1970, 1975 - 1980

AT&T	870 - 880, 1945 - 1965
Cricket Wireless	1985 - 1990

4. Test Methodology & Measurements

Narda (8718B) with matching probe 8721D with frequency range of 300 MHz to 50 GHz was used to collect the data on the rooftop. The NARDA probes used by AIM Wireless have a dynamic range of 30 dB. This dynamic range represents the ratio of the highest to the lowest measurement values. This equipment is typically used industry wide and has an accuracy of 0.3% or 0.6% depending on whether the probe used can read 300% or 600% of the occupational MPE limit respectively.

The table below shows the test results for each test point that was considered. A total of 6 test points were located on the rooftop.

Diagram1 shows the measurement point locations and their associated values for both General public and Occupational results. Test points were located at 6 different locations. Test points were selected to be in front and behind each transmitting antenna. For those antenna that are flush mounted or unreachable, points were taken behind the antennas only. Test point 4 measurement shows the maximum level (3.25% and 16.25% for occupational and general public respectively). The measurement at this point was taken in front of the antenna of existing Sprint antennas.

At each test point, the spectrum (300 MHz to 50 GHz) is scanned and stored to a media. Once the data is stored, MPE software is used to calculate the sum of the percentages for each scanned frequency and power. Refer to the Power summation in Appendix I for detailed calculations

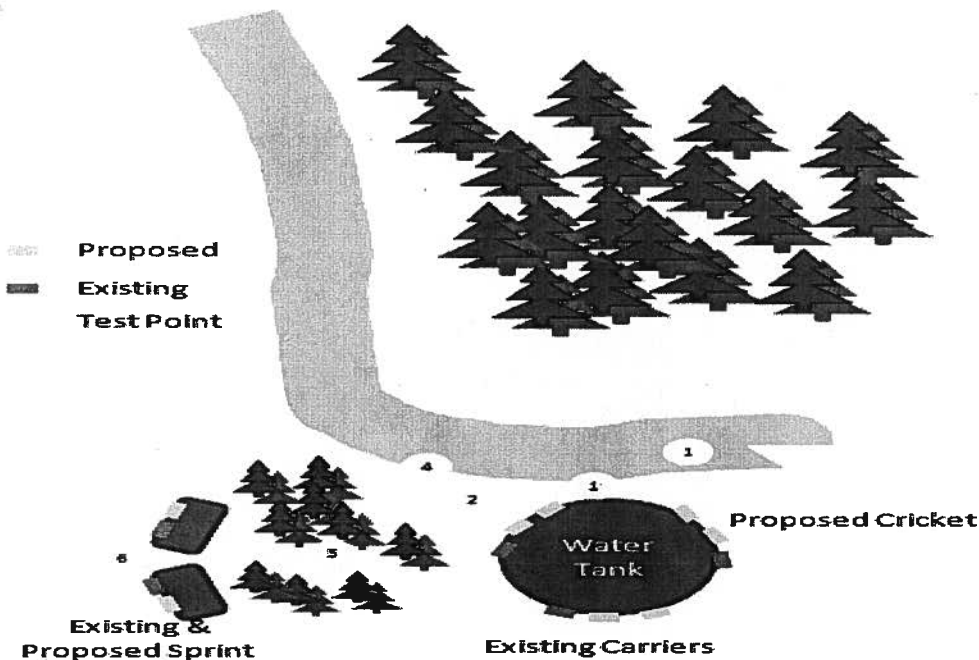


Diagram 1 CA-SDG5876 Rooftop layout and measurements' locations

Table 4 Measurement points values

Measurement Point	Maximum Occupational %	Maximum General Public %
1	0.967	4.835
2	2.37	11.85
3	1.25	6.25
4	3.25	16.25
5	2.766	13.83
6	2.34	11.6

5. General Population/Uncontrolled Exposure Results:

By adding Sprint-WIMAX antennas and Proposed Cricket antennas to the existing structure, exposure limits are expected to increase. Using the measurements above and AIM's Software, the final results can be predicted. The analysis represents exposure limits to an individual who does not know that there is a potential for RF energy exposure and does not know how to control or limit this exposure. For FCC purposes, this applies to human exposure to RF fields where general public is 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 always fall under this category when exposure is not employment-related. Figure 2 below shows the total power percentage limits for maximum permissible exposure. Refer to the Appendix-I for the detailed limits.

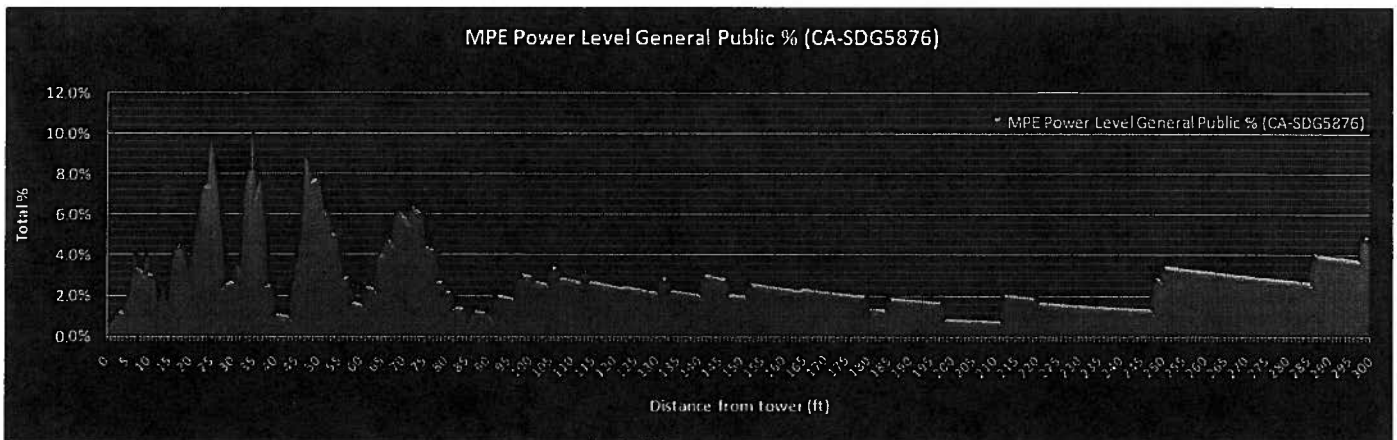


Figure 2 General public graphical representation distance vs. total % of Public Maximum Permissible Exposure

6. Occupational/Controlled Exposure Results:

By adding Sprint-WIMAX antennas to the existing structure, exposure limits are expected to increase. Using the measurements above and AIM's Software, the final results can be predicted. The analysis represents exposure limits to an individual who should know that there is a potential for RF energy exposure and knows how to control or limit this exposure. For FCC purposes, this applies to human exposure to RF fields where person are exposed as a consequence of their employment and in which these person 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 population/uncontrolled limits, 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. Figure 3 below shows the total power percentage limits for maximum permissible exposure. Refer to Appendix-I for the detailed limits.

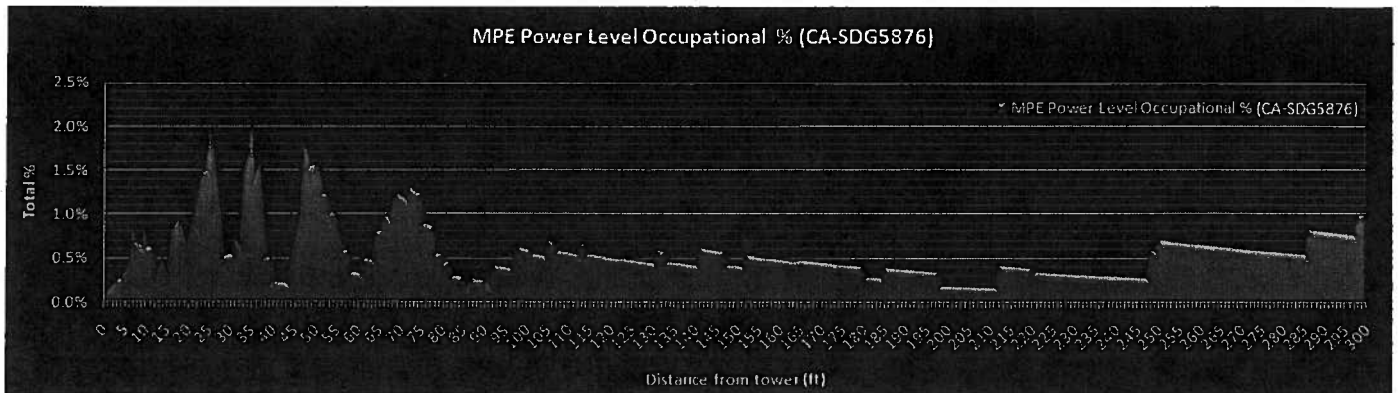


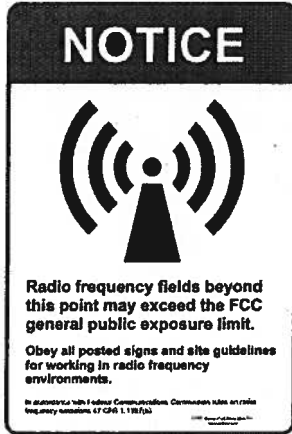
Figure 3 Occupational/controlled graphical representation distance vs. total % of Occupational Maximum Permissible Exposure

7. Study Findings

The maximum ambient RF level anywhere at the ground level due to the proposed Sprint-WIMAX operation and Cricket by is calculated to be 0.052 mW/cm^2 and $.054 \text{ mW/cm}^2$ which is 5.2% and 5.4% for WIMAX and Cricket respectively of the applicable public limit. Note that the maximum Measured value for public limit from all existing carriers is 16.25%. And hence, the total predicted value is = Measured value + Predicted value for proposed Sprint-WIMAX and Cricket. The final values are 5.37% and 26.85% for occupational and public limits respectively. The total predicted received power on the Pole from all carriers is less than 26.85%. For worst-case scenario analysis, a reflection factor of (2.56) is used for the analysis.

7.1. Sign Display

The following signs may be placed at the base of the Monopalm and/or at the site's entrance.



Sign 1 Placement at Site entrance and/or base of Monopalm

8. Conclusion

Based on the information and analysis above, it is our professional opinion that the base station proposed by Sprint-WIMAX at 25005 N. Centre City parkway, Escondido, CA 92026 will comply with the prevailing standards of limiting public exposure to radio frequency energy, and therefore, will not cause an impact on the environment. The highest calculated level in publicly accessible areas does not exceed the prevailing standards allow for exposure of unlimited duration. This finding is consistent with measurements of actual exposure conditions taken at other operating base stations.

Appendix I: Methods of calculations based on OET 65 document

Exposure Limits:

Table 2 Limits of Occupational Exposure

Limits of Occupation/Controlled Exposure (mw/cm ²)		
Frequency (f)	Power density (S _{m1})	Time (minutes)
.3-3	100	6
3-30	900/f ²	6
30-300	1.0	6
300-1500	F /300	6
1500-100000	5	6

Table 3 Limits of General Public Exposure

Limits of General Population/Uncontrolled Exposure (mw/cm ²)		
Frequency (f)	Power density (S _{m2})	Time (minutes)
.3-1.34	100	30
1.34-30	180/f ²	30
30-300	0.2	30
300-1500	F /1500	30
1500-100000	1	30

Power Density Calculations:

1. Towers

Determine if near field, transitional field or far field:

$$R < R_{nf} = \frac{D^2}{4\lambda}$$

Where: R_{nf} = extent of near-field (ft)
 D = maximum dimension of antenna (diameter if circular) in ft
 λ = wavelength (ft) = 186,000 x 5280/frequency (MHz)
 R = distance from antenna (ft)

$$R > R_{ff} = \frac{0.6D^2}{\lambda}$$

Where: R_{ff} = extent of far-field (ft)
 D = maximum dimension of antenna (diameter if circular) in ft
 λ = wavelength (ft)
 R = distance from antenna

$$R_{nf} < R_{tt} < R_{ff}$$

Where: R_{tt} = transitional field
 R_{ff} = extent of far-field
 R_{nf} = extent of near-field

Near Field:

Equation 1

$$S_{nf} = \left(\frac{180}{\phi_{bw}} \right) \frac{P_{net}}{\pi R h} \times 1000mw \quad (\text{no reflection factor})$$

Equation 2

$$S_{nf} = \left(\frac{180}{\phi_{bw}} \right) \frac{P_{net}}{\pi R h} \times 1000mw \times F1 \quad (\text{with reflection factor})$$

Where: S_{nf} = near field power density (mW/cm²)
 P_{net} = net power input to the antenna after losses (mW)

$$P_{net} = P \times 10^{\frac{coaxloss}{10}} \times 10^{\frac{insertionloss}{10}}$$

ϕ_{bw} = beam width of the antenna in degrees

R = distance from antenna (ft)

h = aperture height of the antenna (ft)

Rfact = Reflection factor, if indicated it is 2.56. If not indicated, it is 1

Far Field

Equation 3

$$S_{ff} = \frac{P \times 10^{\frac{G}{10}}}{4\pi R^2} \times 1000mw \quad (\text{no reflection})$$

Equation 4

$$S_{ff} = \frac{P \times 10^{\frac{G}{10}}}{4\pi R^2} \times F1 \times 1000mw \quad (\text{with reflection})$$

Where: S_{ff} = far field power density
 P_{net} = net power input to the antenna after losses

$$P_{net} = P \times 10^{\frac{coaxloss}{10}} \times 10^{\frac{insertionloss}{10}}$$

R = distance from antenna (ft)

G = Antenna gain

F1 = reflection factor (2.56)

Transitional Field

Equation 5

$$S_t = \frac{S_{nf} R_{nf}}{R}$$

Where: S_{nf} = Near field power (mW)
 S_t = power density (mW/cm²)
 R_{nf} = extent of near-field, calculated above (ft)
 R = distance to point of interest (ft)

Power Summation

For S1, S2.....Sn

Perform power density excluding the new carrier. If results exceed the maximum by 5% or more, site is not previously in compliance with FCC. If not, then perform the study with the new located carrier and compare the results with the specified limits in the above table.

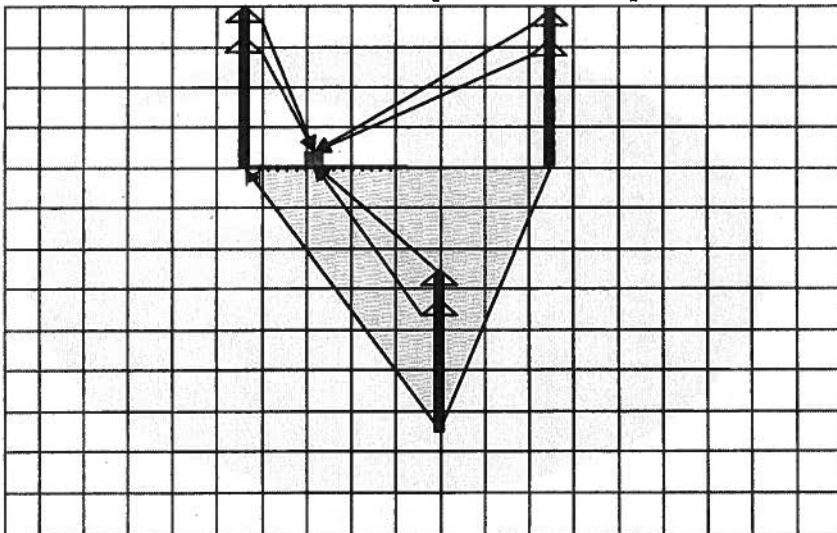
Equation 6

$$\text{Total Power density Occupational/Controlled} = P_{STC} = \sum \left(\frac{S_1}{S_{m1}} + \frac{S_2}{S_{m1}} + \dots + \frac{S_n}{S_{m1}} \right) \times 100$$

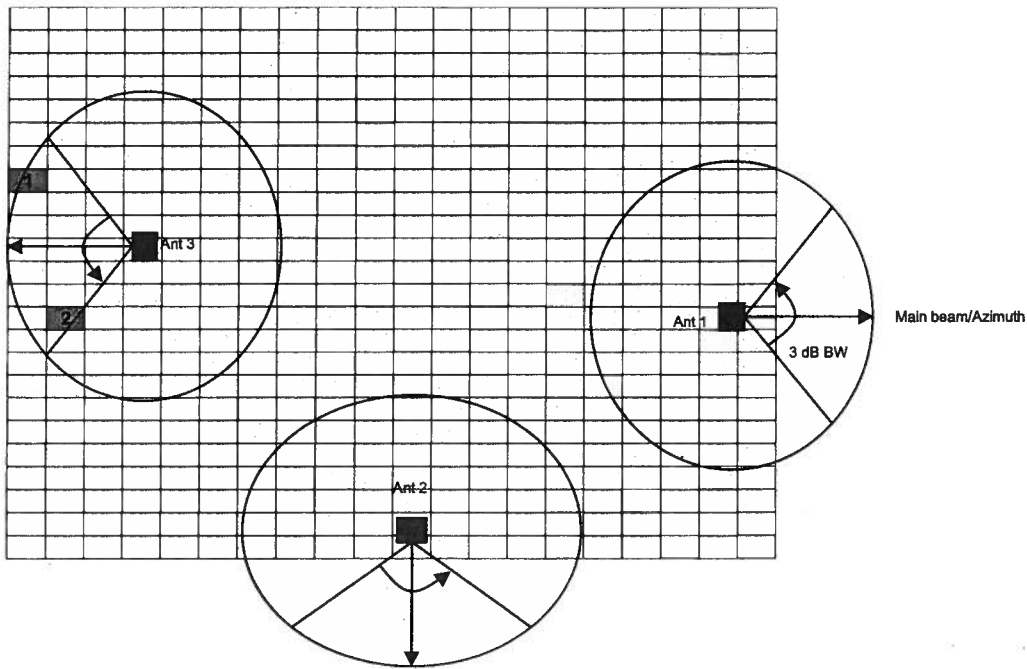
Equation 7

$$\text{Total Power density General/uncontrolled} = P_{STU} = \sum \left(\frac{S_1}{S_{m2}} + \frac{S_2}{S_{m2}} + \dots + \frac{S_n}{S_{m2}} \right) \times 100$$

Where: $S_1, S_2 \dots S_n$ = calculated power density
 S_{m1} = Occupational/controlled limits specified in table 2
 S_{m2} = General/unoccupational limits specified in table 3



2. Roof tops



Determine if near field, transitional field or far field:

$$R < R_{nf} = \frac{D^2}{4\lambda}$$

Where: R_{nf} = extent of near-field
 D = maximum dimension of antenna (diameter if circular)
 λ = wavelength
 R = distance from antenna

$$R > R_{ff} = \frac{0.6D^2}{\lambda}$$

Where: R_{ff} = extent of far-field
 D = maximum dimension of antenna (diameter if circular)
 λ = wavelength
 R = distance from antenna

$$R_{nf} < R_{tt} < R_{ff}$$

Where: R_{tt} = transitional field
 R_{ff} = extent of far-field

Figure 1 Rooftop grid for calculations

R_{nf} = extent of near-field

Near Field:

1) Within the 3dB Beamwidth (BW)

If the bin (square for calculations) is partially within the 3dB BW, then the square is within the 3dB BW.

Equation 8

$$S_{nf} = \left(\frac{180}{\phi_{bw}} \right) \frac{P_{net}}{\pi R h} \times 1000mw \quad (\text{no reflection factor})$$

Equation 9

$$S_{nf} = \left(\frac{180}{\phi_{bw}} \right) \frac{P_{net}}{\pi R h} \times 1000mw \times F1 \quad (\text{with reflection factor})$$

Where: S_{nf} = near field power density (mW/cm²)
 P_{net} = net power input to the antenna after losses (dBm)

$$P_{net} = P \times 10^{\frac{coaxloss}{10}} \times 10^{\frac{insertionloss}{10}}$$

ϕ_{bw} = beam width of the antenna in degrees

R = distance from antenna (ft)

h = aperture height of the antenna (ft)

F1 = reflection factor (2.56)

2) Outside the 3dB BW

Equation 10

$$S_{nf} = \left(\frac{180}{\phi_{bw}} \right) \frac{P_{net}}{\pi R h} \times 1000mw \times CF_{MPE} \times 10^{\frac{G-FTB}{10}} \quad (\text{no reflection factor})$$

Equation 11

$$S_{nf} = \left(\frac{180}{\phi_{bw}} \right) \frac{P_{net}}{\pi R h} \times 1000mw \times CF_{MPE} \times F1 \times 10^{\frac{G-FTB}{10}} \quad (\text{with reflection factor})$$

Where: S_{nf} = near field power density (mW/cm²)
 P_{net} = net power input to the antenna after losses. (mW)

$$P_{net} = P \times 10^{\frac{coaxloss}{10}} \times 10^{\frac{insertionloss}{10}}$$

ϕ_{bw} = beam width of the antenna in degrees

FTB = Front to back ratio (dB)

R = distance from antenna (ft)

h = aperture height of the antenna (ft)

F1 = reflection factor (2.56)

Far Field

1) Within the 3dB BW:

If the bin (square for calculations) is partially within the 3dB BW, then the square is within the 3dB BW.

Equation 12

$$S_{ff} = \frac{P \times 10^{\frac{G}{10}}}{4\pi R^2} \times 1000mw \times CF_{MPE} \quad (\text{no reflection})$$

Equation 13

$$S_{ff} = \frac{P \times 10^{\frac{G}{10}}}{4\pi R^2} \times F1 \times 1000mw \times CF_{MPE} \quad (\text{with reflection})$$

Where: S_{ff} = far field power density (mW/cm²)
 P_{net} = net power input to the antenna after losses (mW)

$$P_{net} = P \times 10^{\frac{coaxloss}{10}} \times 10^{\frac{insertionloss}{10}}$$

R = distance from antenna (ft)

G = Maximum antenna gain (dB)

F1 = reflection factor (2.56)

CF_{MPE} = MPE correction factor and set to 0.7

Outside the 3dB BW:

Equation 14

$$S_{ff} = \frac{P \times 10^{\frac{G-FTB}{10}}}{4\pi R^2} \times 1000mw \times CF_{MPE} \quad (\text{no reflection})$$

Equation 15

$$S_{ff} = \frac{P \times 10^{\frac{G-FTB}{10}}}{4\pi R^2} \times F1 \times 1000mw \times CF_{MPE} \quad (\text{with reflection})$$

Where: S_{ff} = far field power density (mW/cm²)
 P_{net} = net power input to the antenna after losses

$$P_{net} = P \times 10^{\frac{coaxloss}{10}} \times 10^{\frac{insertionloss}{10}}$$

R = distance from antenna (ft)

FTB = Front to back ratio (dB)

G = Maximum antenna gain (dB)

F1 = reflection factor (2.56)

CF_{MPE} = MPE correction factor and set to 0.7

Transitional Field

Equation 16

$$S_t = \frac{S_{nf} R_{nf}}{R}$$

Where: S_{nf} = Near filed power (mW)
 S_t = power density (mW/cm²)
 R_{nf} = extent of near-field, calculated above (ft)
 R = distance from antenna (ft)

Power Summation

For S1, S2.....Sn

Perform power density excluding the new carrier. If results exceed the maximum by 5% or more, site is not in compliance with FCC, if not, then perform the study with the new located carrier and compare the results with the specified limits in the above table.

Equation 17

$$\text{Total Power density Occupational/Controlled} = P_{STC} = \sum \left(\frac{S_1}{S_{m1}} + \frac{S_2}{S_{m1}} + \dots + \frac{S_n}{S_{m1}} \right) \times 100$$

Equation 18

$$\text{Total Power density General/uncontrolled} = P_{STU} = \sum \left(\frac{S_1}{S_{m2}} + \frac{S_2}{S_{m2}} + \dots + \frac{S_n}{S_{m2}} \right) \times 100$$

Where: $S_1, S_2 \dots S_n$ = calculated power density (mW/cm²)
 S_{m1} = Occupational/controlled limits specified in the above table (mW/cm²)
 S_{m2} = General/unoccupational limits specified in the table above (mW/cm²)

9. Contact Information

Engineer	Ahmad Malkawi <i>Ahmad Malkawi</i>
Contact Phone number	847-874-3003
Email Address	<u>amalkawi@aimws.com</u>
Fax	847-307-8312