Engineering Statement
FM Station Proposed Move to Pisgah Peak
(Project No. P21000215/CF)
prepared August 2015 for
County of San Bernardino
Land Use Service Department, Planning Division

Cavell Mertz & Associates, Inc. ("CMA") has been retained on behalf of the County of San Bernardino – Land Use Service Department, Planning Division to review and comment on a number of documents in the case *FM Station Proposed Move to Pisgah Peak (Project No. P21000215/CF)*. Our review is based on independent technical analysis as well as our knowledge of the Rules and policies of the Federal Communications Commission ("FCC") as they relate to the location of FM radio stations.

Background

KXRS(FM) is licensed by *Lazer Licenses, LLC* ("*Lazer*") to Hemet, California to operate on 105.7 MHz. *Lazer* has been granted a Construction Permit ("CP") by the FCC to change its operating frequency to 105.5 MHz and relocate the transmitter for KXRS to a site which will significantly increase the population currently served by KXRS.

KXRS is licensed as a "Class A" FM station and is currently limited to a maximum of 3 kW effective radiated power ("ERP") due to its proximity to neighboring stations on the same and immediately adjacent frequencies. The FCC Rules for Class A stations were revised in 1989 to allow an increase in the maximum operating power of a Class A station to 6 kW ERP in certain circumstances. In particular, the change in the rules also increased the minimum distance stations must be separated from one another based on their frequency (channel) relationship. As shown in **Figure 1**, the current location of KXRS does not meet the current FCC minimum distance spacing rules.

In order for *Lazer* to increase KXRS to the maximum 6 kW ERP the station must be relocated to another site which meets the current FCC Rules. Choosing any site that meets all transmitter location constraints and parameters is not a simple matter, particularly in the mountainous regions of southern California. All minimum distance separation requirements

must be met or a station's signal strength must be reduced to maintain protection toward neighboring stations on neighboring frequencies. Coverage of the principal community must also be maintained. For any potential station location, other factors including the protection of the public from radio frequency energy, availability of equipment space, existing tower loading considerations, availability of resources, environmental and local jurisdiction considerations, and market/economic viability are just some of the other critical factors.

Analysis

CMA has been asked to consider and evaluate the merits of the KXRS proposal to construct a facility authorized by the FCC and the complaints from other parties in Redlands, CA (Citizens for Preservation of Rural Living, "CPRL"). Considering the technical nature of FM Allotment, FCC permitting and licensing procedures, CMA is suited to provide educated, objective, independent perspective to evaluate *Lazer's* CP for KXRS and additional sites proposed by CPRL. To that end, CMA was provided four (4) documents in the record of this proceeding:

- *Engineering Analysis & Statement* dated January 2009 prepared by Klein Broadcast Engineering, L.L.C. ("*Klein Report*")
- *Letter to the San Bernardino Planning Commission* of October 14, 2010 from Fletcher, Heald & Hildreth, PLC counsel for Lazer Broadcasting ("*FHH Letter*")
- *Engineering Statement* dated March 2011 prepared by De La Hunt Communications Service, consultant to Citizens for Preservation of Rural Living ("*De La Hunt Report*")
- *Engineering Statement* dated November 2012 prepared by Hatfield & Dawson, consultants for Lazer Broadcasting ("*H&D Report*")

Assertions in each of these reports will be addressed individually in chronological order. Where there are comparisons of similar points made by multiple parties; this report will provide

an independent analysis of the facts as presented in the documents above or by independent research.

Klein Report

Klein Report Section 1 - Existing Polly Butte Site for KXRS is in Compliance (page 169 of 228)

> KXRS is grandfathered under the rules that were in place at the time the station licensed was granted. The FCC does not require any station to physically relocate however station owners may relocate to any site that meets the FCC rules simply by filing an application with the FCC. With a few exceptions, most station moves are driven by a number of economic factors primarily including the desire to cover more people and thus increase its listenership, potential revenue, and commercial viability.

Klein Report Section 2 – FM Station KXRS First Obligation is to Serve Hemet, CA

> KXRS is licensed to Hemet, CA and must provide certain services and signal level to its community of license. The FCC Rule Sections 47 CFR §§73.313 and 73.315 discussed here describe the FCC "Contour Method" of calculating coverage and the minimum coverage of the Community of License respectively. The distances stations may be located from the communities they serve are generalities based on average terrain. The terrain in this area is not average and therefore signals from stations in this area can be shown to travel farther in some directions than those over average terrain. In granting the KXRS Construction Permit at the proposed site, FCC has confirmed the coverage from the proposed site meets the FCC standards for coverage of Hemet. It is not required by the FCC to provide service to Hemet at the exclusion of other areas.

Klein Report Section 3 – KXRS is not compelled to move or upgrade

> As mentioned above, a licensee is not required to move, however increasing the audience of KXRS would make the station more viable, thus make it more capable of sustaining those services to Hemet.

Klein Report Section 4 – Area to Locate Maps

Area to locate studies done by Mr. Klein revealed two FCC Registered towers (ASR# 1263499 and ASR# 1202850.) The available area to locate shown in Exhibits E-1, E-1A, and E-2 do not resemble the area identified in a similar study in the *De La Hunt Report* or in our independent study. This could be the result of changes in other stations over the past six years since this report was submitted. Updated Area to Locate studies will be discussed in greater detail later in this report. Further, it is not clear where the 73.69 sq. mile search area is and whether that search area is actually viable when the coverage/line of sight to Hemet and improvement of KXRS are taken into account. Since our independent study is similar to the more recent *De La Hunt Report* no further work was done to determine the causes of the differences to this older study.

Klein Report Section 5 – Analysis of Alternative Site #1 (ASR# 1263499)

Comparison of all three studies and independent analysis of this site will be addressed in a later section.

Klein Report Section 6 – Analysis of Alternative Site #2 (ASR# 1202850)

Comparison of all three studies and independent analysis of this site will be addressed in a later section.

FHH Letter

This letter references a July 2010 report from Hatfield & Dawson which was not provided to this firm; however the *FHH Letter* is correct that the *Klein Report* does not address line of sight or terrain obstruction as constraints that were considered in declaring the availability of the alternative sites. FCC Rule 47 CFR §73.315(b) states in part:

> *"The location of the antenna should be so chosen that line-of-sight can be obtained from the antenna over the principle city or cities to be served; in no event should there be a major obstruction in this path."*

As will be shown later in this report, a "funnel shaped" area in which KXRS may locate is created by the distance spacing from other stations. The requirement to have line-of-sight to the Community of License dramatically reduces the size of this area. It is also true that the *Klein Report* discusses allocations constraints and possible coverage contours with no textual consideration of intervening terrain effects that might discount the suitability of the alternative sites.

The *FHH Letter* also suggests that *Lazer's* application will not usher in new towers. This is a local planning and zoning related issue that is beyond the scope of this report.

De La Hunt Report

The *De La Hunt Report* provides similar but updated analysis to the *Klein Report*. Mr. De La Hunt performed a review of the Allocations situation for KXRS and provides a map as his Exhibit 1B. The area that is available to locate KXRS is the same as the "funnel shaped" area shown in **Figure 2** herein.

Alternative Sites #1 and #2

The *De La Hunt Report* states that there are two alternative sites that exist that meet the FCC's distance spacing requirements and would provide improved coverage for KXRS. The Alternative Sites #1 and #2 studied in the *De La Hunt Report* are the same sites as the alternatives identified in the *Klein Report* and they will be addressed in a later portion of this report.

Other Alternative Sites

The *De La Hunt Report* also discusses "Other Alternative Transmitter Sites" located in the Gilman Hot Springs area. We are unable to find any currently FCC Registered towers or broadcast stations in the Gilman Hot Springs area that comply with the FCC's spacing rules.

We did, however evaluate the site locations shown in *De La Hunt Report* Exhibits 2B, 2C, and 2D. In Exhibit 2B, there are two sites other than the proposed KXRS site that have existing or proposed FM broadcast stations that would comply with the FCC's spacing rules. The site labeled "KAEH.C" is the FCC Construction Permit[1] for the relocation of KAEH that was associated with ASR tower #1263499, identified herein as Alternative Site #1. As discussed, that tower has not yet been constructed. Further, the FCC Construction Permit associated with this tower was canceled in 2008. A subsequent FM Construction Permit[2] was filed in September 2011 and associated with a new ASR registration assigned ASR #1281136 proposing the same height tower at the same location. That 2011 Construction Permit was granted on March 19, 2012 expired on March 19, 2015. Both ASR records for these unbuilt towers are still listed in the FCC's database with a status of "Granted." The feasibility of this site as a location for KXRS will be addressed later in this report.

The second FM site, identified as KQIE/KRQB, is located slightly north of the proposed KXRS site. It is our opinion that this tower site would not be granted an FCC Construction Permit as will be discussed in more detail in the *H&D Report* section below.

Other towers identified in Exhibit 2C and 2D of the *De La Hunt Report* are shown below. All towers in the De La Hunt Report along with a number of subsequently filed Antenna Structure

[1] See FCC File Number BPH-20071107ABE.
[2] See FCC File Number BPH-20110929AJI.

Registrations were evaluated by the undersigned and found to be too short in height to permit the required coverage of Hemet due to the intervening terrain to the south.[3]

1002087 – 12' building with a 50' overall height above ground.
1244804 – 60'
1269498 – 79'
1270503 – 82'
1292536 – 60' Constructed 6/29/2015
1292956 – 60' Constructed 11/24/2014
1295979 – 60' Granted 2/25/2015 – Located near the site of towers 1263499/1281136.

The following tower registrations shown on *De La Hunt Report* Exhibit 2D are not located within the fully spaced "funnel area" : 1272187, 1255159, 1205581, 1223566, 1202397.

H&D Report

H&D Report Section 1 – "The existing site does not satisfy current FCC standards"

As noted previously herein, the KXRS site was compliant with the FCC rules when the station license was granted, September 1, 1989. The Rules were subsequently revised to increase the maximum permitted operating power of a Class A FM station to 6 kW ERP. Commiserate changes to the minimum distance spacing rules also increased the distances Class A stations must be from one another based on their frequency, height, and power. These changes essentially "landlocked" the operation of KXRS to their current power level with no opportunity for improvement at the current site. This situation is primarily due to the distance from KPLM (Palm Springs, 106.1 MHz, Ch. 291B). The licensed KXRS is 67.8 km from KPLM. To achieve any increase in operating power, this distance must be increased to 69 km.

[3] The terrain in the Beaumont/Cherry Valley area where these towers are locates is relatively flat. The discussion of Alternate Site #1, which is also located in this valley, will show that a tower height of greater than 328' is required to have line-of-sight from this area to Hemet.

There is an additional limitation to KXRS on its current channel. It is believed to be part of a specially negotiated short-spacing agreement the FCC has made with Mexico with regard to co-channel Mexican FM station XHBCE (Ch. 289C1 100 kW with an antenna height of 299 meters above average (HAAT) or the equivalent of 8.2 kW at 782m HAAT.) KXRS is likely to be prohibited from doing anything to increase its signal strength toward XHBCE on its current licensed frequency. This limitation does not exist if the KXRS operating frequency changes to 105.5 MHz as proposed in the FCC Construction Permit.

While essentially landlocked, the station could choose to remain licensed at the present location and operating power for the foreseeable future.

H&D Report Section 2 – "The proposed site satisfies FCC Standards: Operating from the proposed site KXRS can expand its service. Sufficient coverage will be provided to Hemet, as demonstrated by the FCC review and grant of the application to move KXRS."

This is a true statement. The FCC has granted *Lazer* a Construction Permit, thereby asserting that this location meets the rules and requirements for coverage to Hemet.

The *H&D Report* expands on this point by discussing the distance separation requirements of FCC Rule 47 CFR §73.207 and the community coverage requirements of 47 CFR §73.315. To illustrate the area in which KXRS might relocate and meet the current FCC separation requirements for a 6 kW Class A station, H&D included two maps illustrating the overview and detailed view of the spacing requirements toward pertinent neighbors for operating on first adjacent channel 105.5 (Channel 288A.)

In order to relocate KXRS, *Lazer* asked for and received permission from the FCC to move to "first adjacent" frequency 105.5 MHz (Channel 288A.) With the proposed change in frequency, the separation requirements were more conducive to relocation to the hills north of Hemet and improving the overall service potential for KXRS(FM). Within the expanded discussion for this issue, H&D correctly addresses terrain

obstruction and coverage of the community of Hemet as significant constraints in any relocation of KXRS.

We have reviewed the terrain features limiting the available site area considering the FCC distance separation requirements for KXRS and Ch. 288A. Using detailed topographic terrain data we considered locations that encompass some of Hemet with the FCC required 70 dBµ (3.16 mV/m) "city grade" contour. Using reverse shadowing studies from points within Hemet toward the fully spaced area to locate, we found that most of this area either a) fails to have line of sight of Hemet, b) has much less line of sight of Hemet than *Lazer's* proposed site, or c) fails to provide 70 dBµ contour coverage to enough of the area or population of Hemet to satisfy FCC minimum coverage requirements.

H&D's discussion regarding community coverage is accurate and concise with respect to the FCC requirements for line-of-sight with no major obstruction and the use of FCC standard contour based coverage prediction.

H&D Report Section 3 – Colocation with KRQB is not viable. – "From the KRQB site, the 70 dBµ contour would not encompass Hemet as required.

This is an accurate statement. From the top of the KRQB tower, the maximum power permitted for a Class A facility is 1.4 kW ERP.[4] Given this power level, the predicted 70 dBµ contour from this location encompasses a very small area of Hemet and none of the population within the community. The *H&D Report* correctly explains that KRBQ is licensed to San Jacinto which, due to its proximity, is completely encompassed by the 70 dBµ contour from a maximum Class A facility at this site.

Our independent analysis shows that use of this location for KXRS would not comply with the FCC Rules and the FCC would not likely approve an application for KXRS to utilize the KRBQ tower due to community coverage deficiencies.

[4] KRQB also operates with the maximum Class A facility and an ERP of 1.4 kW.

H&D Report Section 4 – The proposed site permits significantly improved service to San Bernardino and Riverside Counties: The existing KXRS operation provides service to 322,199 persons within the 60 dBμ contour, compared with 2,787,936 persons from the proposed site already approved by the FCC."

> CMA evaluation of the population coverage shows similar values.[5] Population within the 60 dBμ coverage contour of the licensed KXRS is calculated to be 311,856 and population of the KXRS Construction Permit facility is 2,806,734.

Analysis of Alternative Sites #1 and #2

Alternative sites #1 (ASR# 1263499) and #2 (ASR# 1202850) have been identified in both the *Klein Report* and the *De La Hunt Report*. These locations are described as potential alternative transmitter sites. The towers have been registered in the FCC's Antenna Structure Registration (ASR) database but have not been constructed. Exhibit 2E and 2F in the *De La Hunt Report* details a list of towers from the FCC's ASR database. Both Alternative Sites are listed with the Status of "GRN", which stands for "Granted", not "CON" which stands for "Constructed".

This comports with our own review of the most recent FCC ASR database, which shows the status of both tower registrations as "Granted" but not "Constructed".[6] The suitability of building towers at these locations was beyond the scope of this analysis. We also cannot determine whether the proposed tower could support an additional FM antenna at the height studied in this report.

Nevertheless, these proposed towers were evaluated for compliance with FCC Rules and policy and compared to the KXRS Construction Permit site location.

[5] Minor differences are expected due to different software and/or digitized terrain databases. CMA method is calculated using 2010 US Census population and the FCC F(50,50) coverage contour is calculated in 1 degree increments.

[6] FCC Antenna Structure Registration database downloaded 7/21/2015.

FCC Rules Requiring Coverage of Hemet

Several reports quoted the portion of the FCC Rules which refers to coverage of the Community of License. They are reiterated here for convenience with several passages pertinent to the instant analysis underlined for emphasis.

> 47 CFR §73.315(a) The transmitter location shall be chosen so that, on the basis of the effective radiated power and antenna height above average terrain employed, a minimum field strength of 70 dB above one μV/m (dBμ), or 3.16 mV/m, will be provided over the entire principal community to be served. (emphasis added)
>
> 47 CFR §73.315(b) The transmitter location should be chosen to maximize coverage to the city of license while minimizing interference. This is normally accomplished by locating in the least populated area available while maintaining the provisions of paragraph (a) of this section. In general, the transmitting antenna of a station should be located in the most sparsely populated area available at the highest elevation available. The location of the antenna should be so chosen that line-of-sight can be obtained from the antenna over the principle city or cities to be served; in no event should there be a major obstruction in this path. (emphasis added)

Section 47 CFR §73.315(a), above, states that coverage will be provided over the *entire* principal community. However, it is a long-standing FCC policy that the coverage needs only to be provided to 80% of the either area or the population of the principal community.

Alternative Site #1

Alternative site #1 (ASR# 1263499) is a proposed 328' tall tower. This site has a ground elevation of 794.3 meter (2,606') which is typical of the Beaumont area. The predicted 60 dBμ contour of a hypothetical 6 kW Class A FM station with an antenna mounted at the top of this tower would encompass 1,153,758 people. The 70 dBμ "city grade" coverage contour covers 73.1% of the land area of Hemet and 86% of the people. This does comply with the FCC's

policy of 80% coverage of the land or population. **Figure 3** shows the 60 dBμ (solid black line) and 70 dBμ contours (dashed black line) of this hypothetical facility.

The alternative sites were evaluated for line-of-sight to the city of Hemet. The line-of-sight study draws a straight line from the FM antenna to a point 30' (9.1 m) above ground, the standard height that is used to predict FM coverage for FCC purposes. For the purposes of the study, the area is divided into a grid of points spaced 0.25 km apart. A 3-second terrain database is used to extract terrain elevation along the path between the grid point and the FM antenna. In cases where terrain obstructs this line-of-sight, the point is considered shadowed. This method does not take buildings, trees, or other vegetation into consideration. This method does not indicate actual coverage of the FM since the signal can be diffracted over minor terrain obstructions shown as shadowed in this study. It also does not separately identify "major obstructions" contemplated by Section 47 CFR §73.315(b) of the FCC Rules.

Figure 3A shows the line of sight from Alternative Site #1 with the grey areas being terrain shadowed. As shown, almost all of Hemet is blocked by intervening terrain. The unshadowed area (area with line-of-sight) is 11.7% of the area and covers 11.5% of the population. Separately, based on the terrain profiles, it is the opinion of the undersigned that this site would not comply with Section 47 CFR §73.315(b) of the FCC Rules.

Alternative Site #2

Alternative site #2 (ASR# 1202850) is a proposed 400' tall tower. The site elevation for this site is 1,030.5 m (3,381'). This site is some 775' higher than Alternative Site #1. The predicted 60 dBμ contour of a hypothetical 6 kW Class A FM station with an antenna mounted at the top of this tower would encompass 1,760,371 people. The 70 dBμ "city grade" coverage contour covers 79.3% of the land area of Hemet and 98.2% of the people. This also complies with the FCC's policy of 80% coverage of the land or population. **Figure 4** shows the 60 dBμ and 70 dBμ contours of this hypothetical facility.

This site was also evaluated for line-of-sight to the city of Hemet. **Figure 4A** similarly shows terrain shadowed areas as grey. The unshadowed area is 27.6% of the area and covers 33.9% of the population of Hemet. As expected with a higher ground elevation and a slightly taller tower, Hemet is less shadowed from the site at Alternative Site #2 than that of Alternative Site #1. However, after reviewing this study and the terrain path profiles, it cannot be definitively determined whether the FCC would accept the line of sight to Hemet from this alternate site as being compliant with its Rules.

Line of Sight from KXRS Proposed Site

The predicted 60 dBμ contour of the KXRS Construction Permit facility is predicted to encompass 2,122,976 people. The 70 dBμ city of license contour covers 76.9% of the land area of Hemet and 96.7% of the people. This also complies with the FCC's policy of 80% coverage of the land or population. **Figure 5** shows the 60 dBμ and 70 dBμ contours of this hypothetical facility.

For comparison purposes, the proposed KXRS site was also studied using the same line of sight study as the alternate sites. **Figure 5A** shows the unshadowed area is 50.5% of the area and covers 41.9% of the population of Hemet. As mentioned above, the FCC Rules address both the 70 dBμ signal coverage and the prohibition of "major obstructions." Since the FCC has granted a construction permit for this location, it must be concluded that this site satisfies the FCC Rules and policies at the time of the grant in 2009.

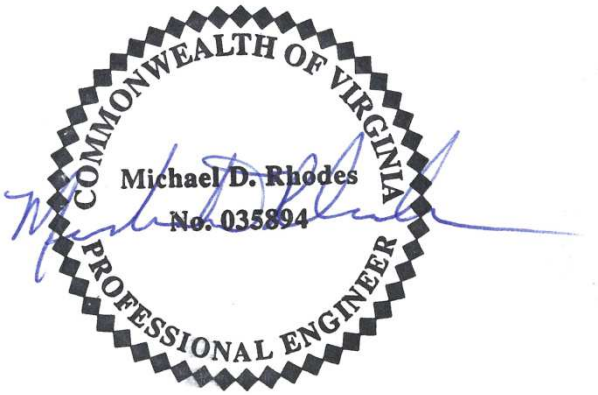
Conclusion

From an FCC allocations perspective, of the alternative sites evaluated in this study, Alternative Site #2 (ASR# 1202850) is only alternative that could potentially be acceptable to the FCC. However, more than half of the city of Hemet remains shadowed from the proposed 400' tower that would need to be built at this location. It is clear that the proposed KXRS site location on Pisgah Peak, which has been accepted by the FCC, would provide a much greater coverage in area and population over that predicted from Alternative Site #2.

Engineering Statement
FM Station Proposed Move to Pisgah Peak
(Project No. P21000215/CF)

Certification

The undersigned hereby certifies that the foregoing statement was prepared by him or under his direction, and that it is true and correct to the best of his knowledge and belief. Mr. Rhodes is employed by the firm of *Cavell, Mertz & Associates, Inc.*, is a Registered Professional Engineer in Virginia, holds a Bachelor of Science degree from Virginia Polytechnic Institute and State University in Electrical Engineering, and has submitted numerous engineering exhibits to various local governmental authorities and the FCC. His qualifications are a matter of record with the FCC.



Michael D. Rhodes, P.E.
Virginia Registration Number 035894
August 12, 2015

Cavell, Mertz & Associates, Inc.
7724 Donegan Dr.
Manassas, VA 20109

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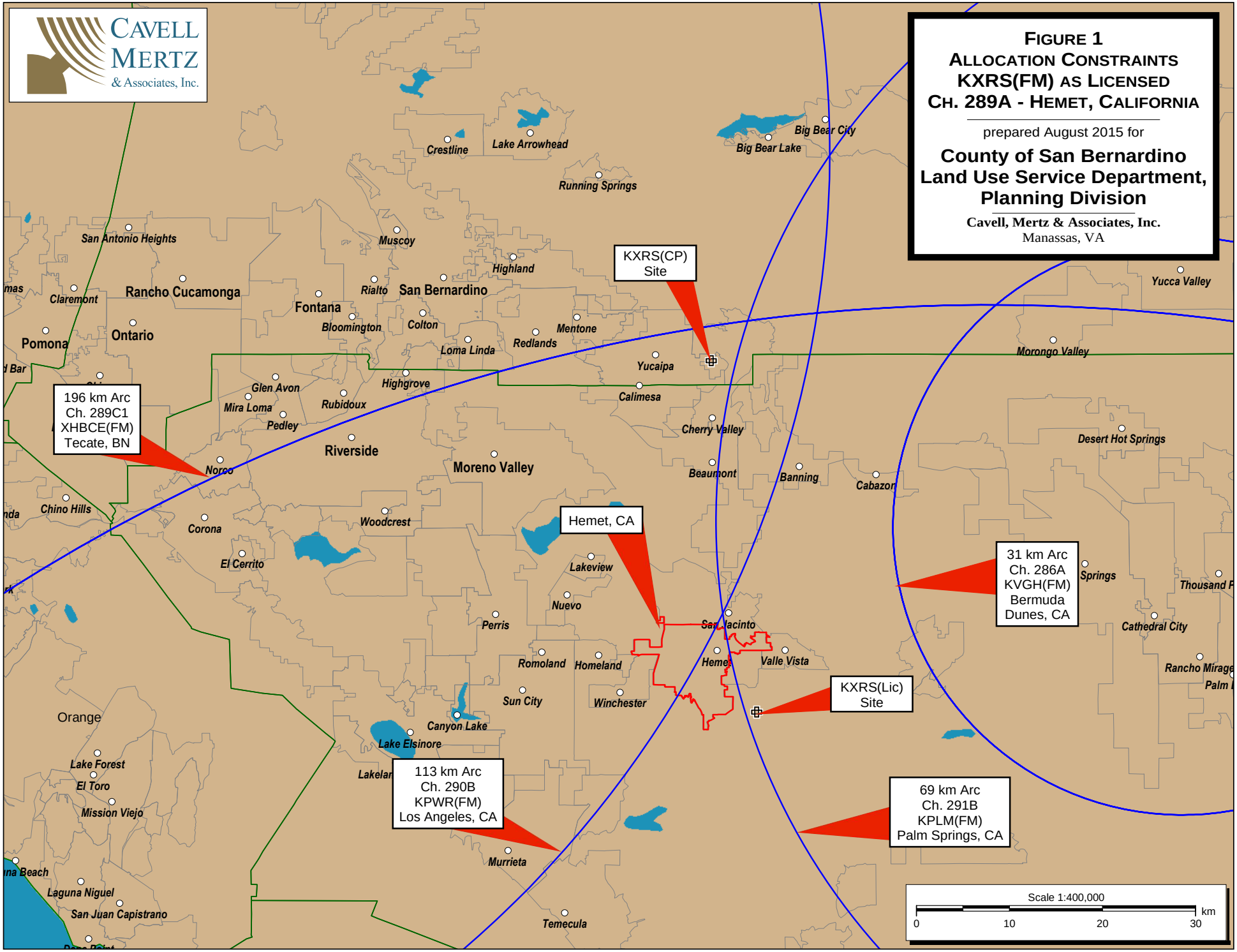
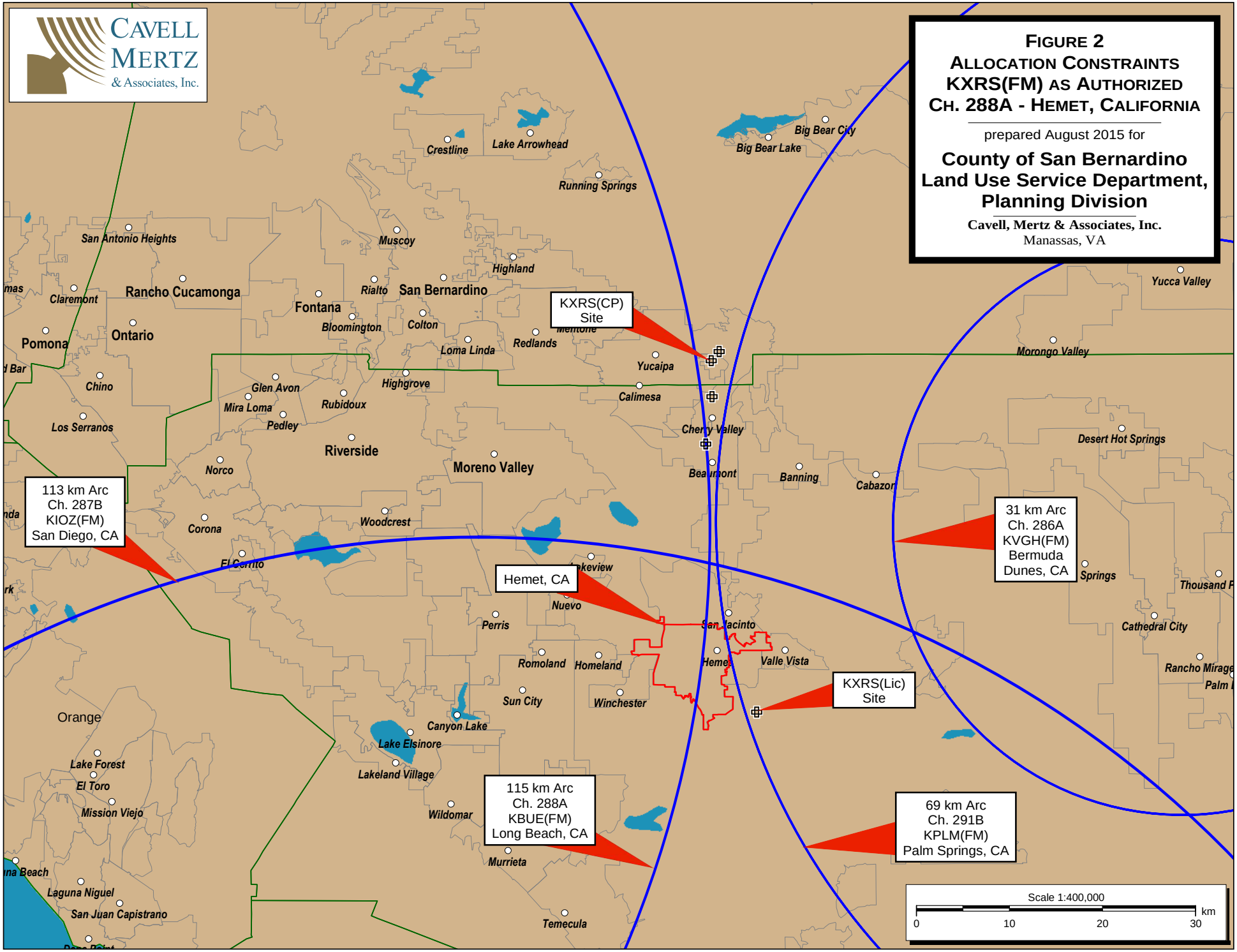
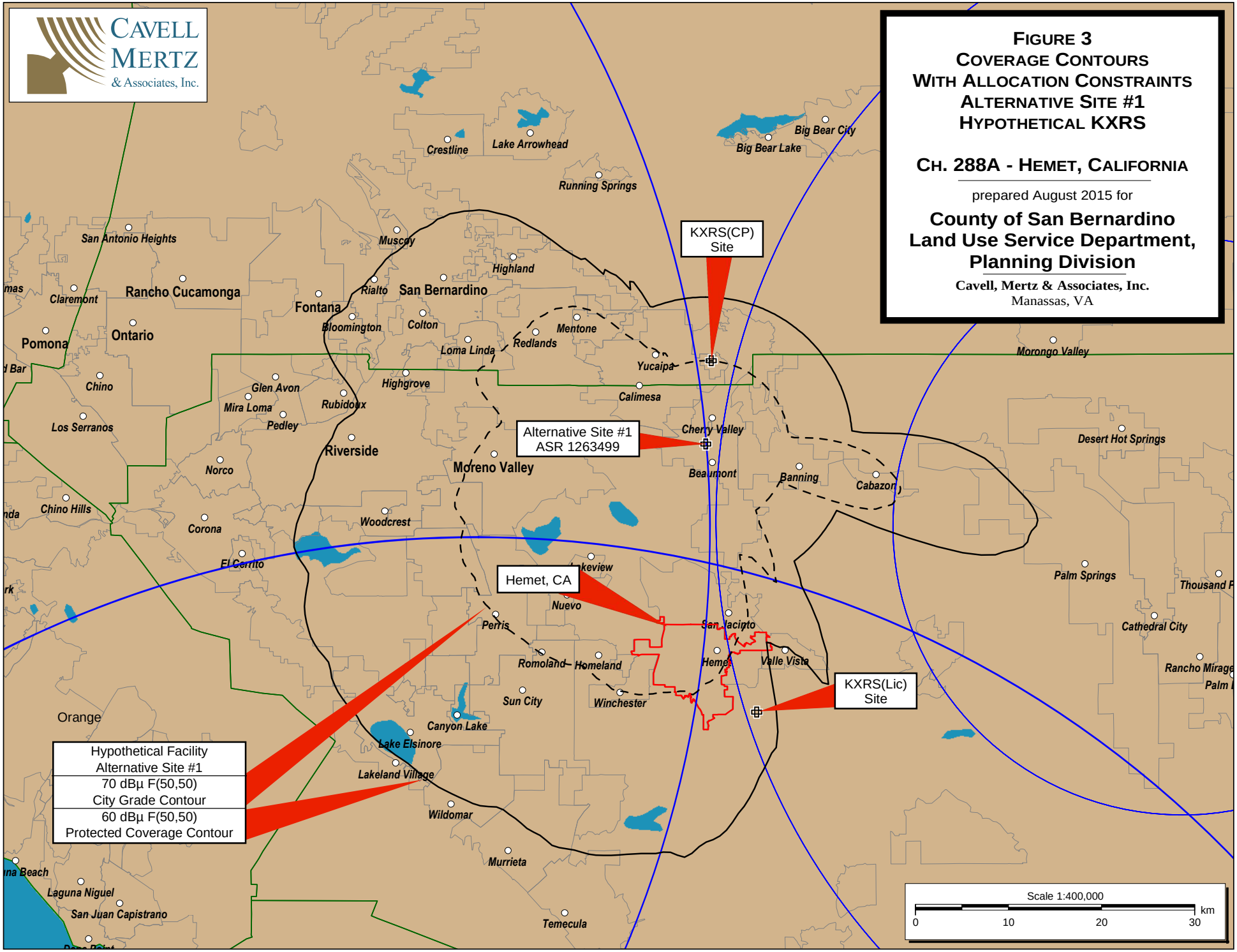
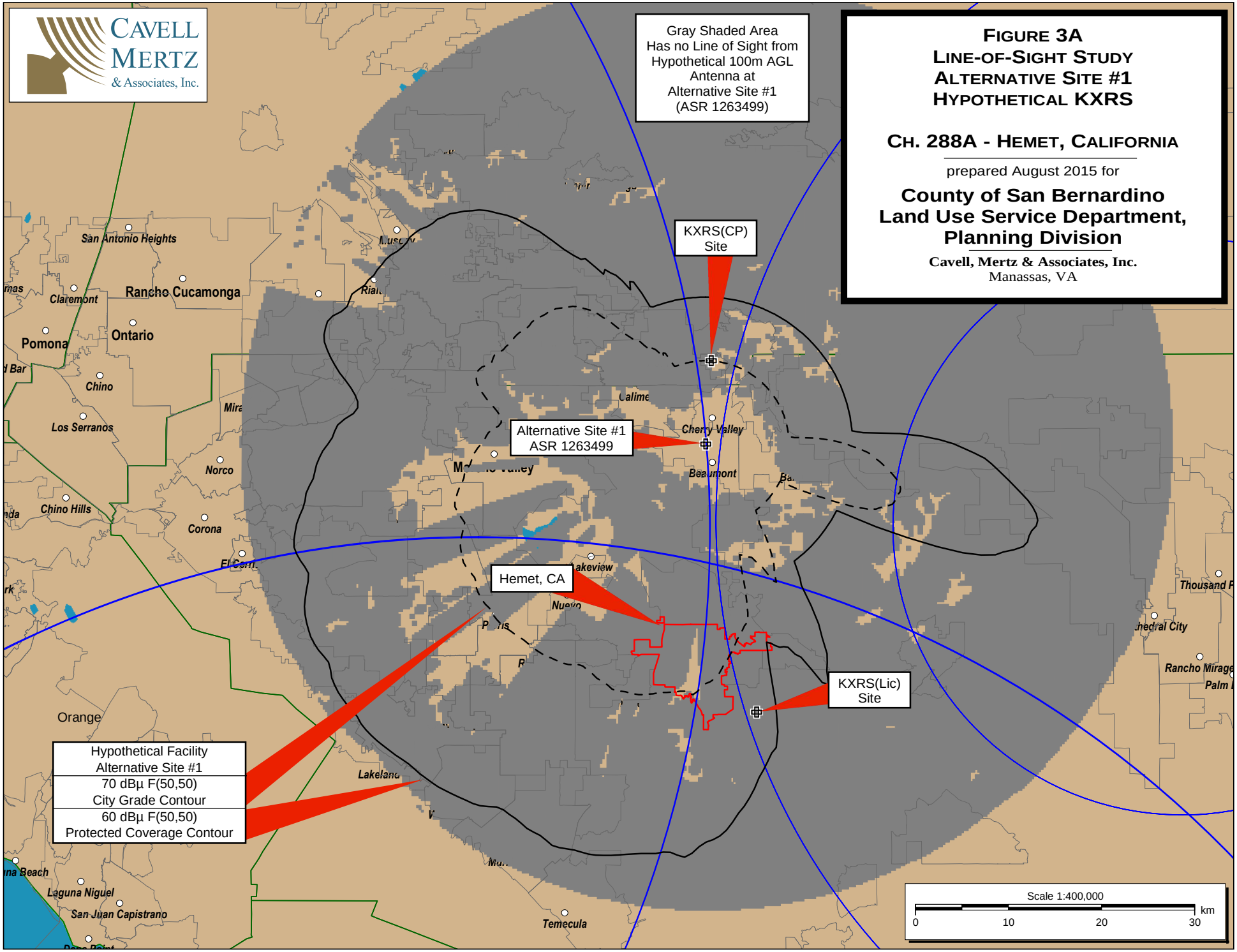
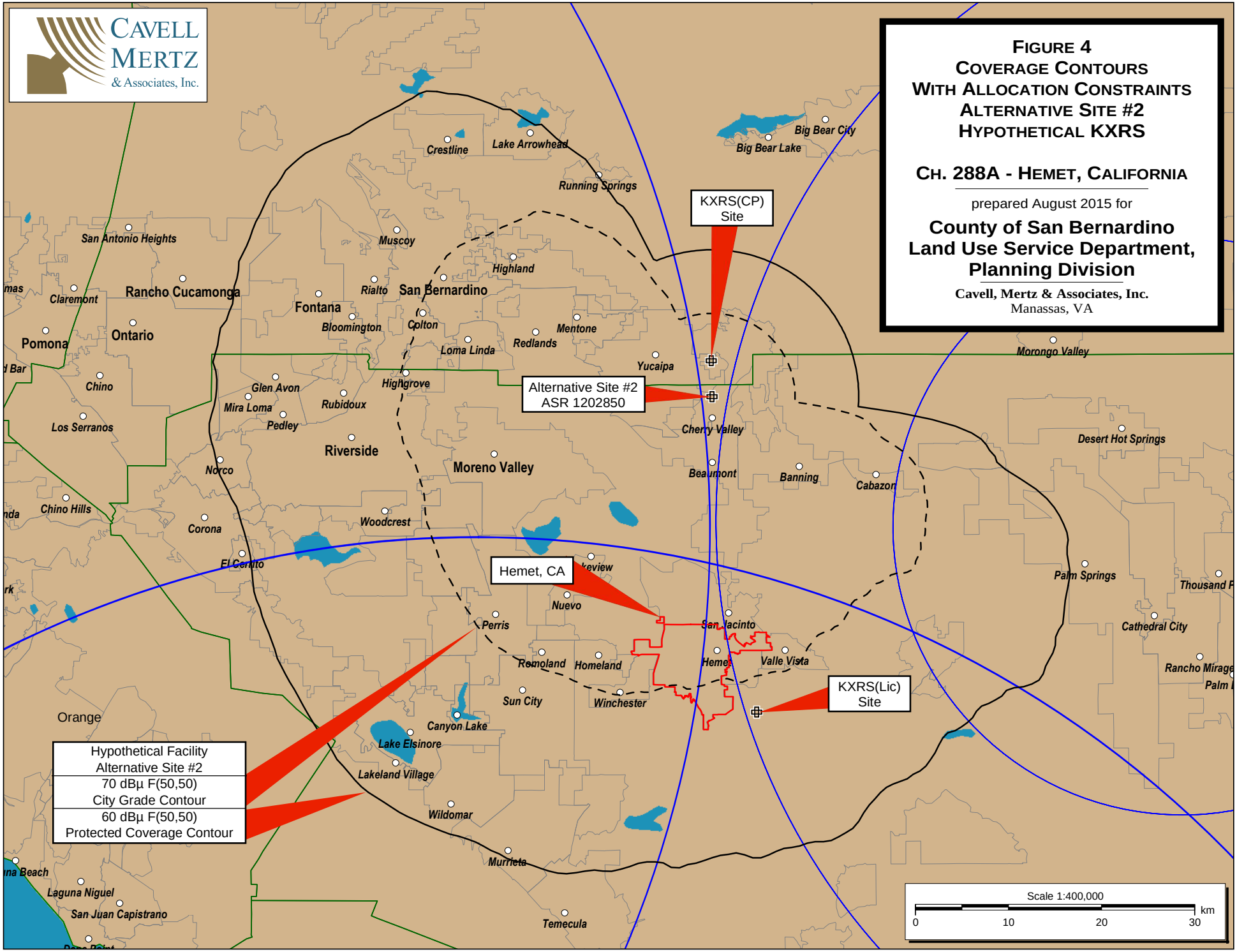
Figure 4 – Coverage Contours With Allocation Constraints - Alternative Site #2
Figure 4A – Line of Sight Study - Alternative Site #2
Figure 5 – Coverage Contours With Allocation Constraints - KXRS(FM) Construction Permit
Figure 5A – Line of Sight Study - KXRS(FM) Construction Permit

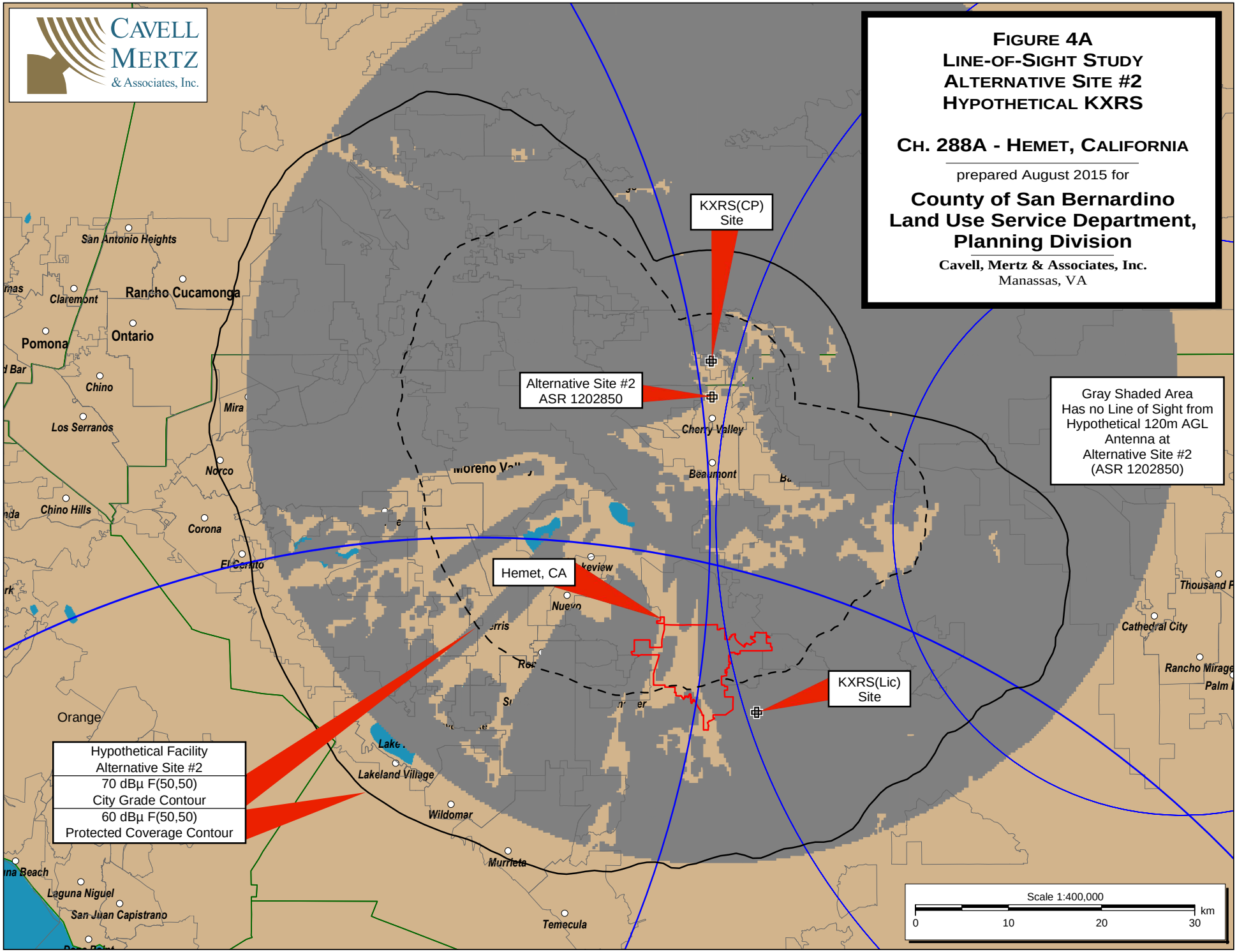

CAVELL MERTZ & Associates, Inc.
FIGURE 1
ALLOCATION CONSTRAINTS
KXRS(FM) AS LICENSED
CH. 289A - HEMET, CALIFORNIA
prepared August 2015 for
County of San Bernardino
Land Use Service Department,
Planning Division
Cavell, Mertz & Associates, Inc.
Manassas, VA
KXRS(CP) Site
196 km Arc
Ch. 289C1
XHBCE(FM)
Tecate, BN
Hemet, CA
31 km Arc
Ch. 286A
KVGH(FM)
Bermuda Dunes, CA
KXRS(Lic) Site
113 km Arc
Ch. 290B
KPWR(FM)
Los Angeles, CA
69 km Arc
Ch. 291B
KPLM(FM)
Palm Springs, CA
Scale 1:400,000
0 10 20 30 km
Crestline
Lake Arrowhead
Big Bear City
Big Bear Lake
Running Springs
San Antonio Heights
Muscoy
Highland
Yucca Valley
Claremont
Rancho Cucamonga
Rialto
San Bernardino
Fontana
Bloomington
Colton
Mentone
Redlands
Loma Linda
Pomona
Ontario
Yucaipa
Morongo Valley
Glen Avon
Highgrove
Mira Loma
Rubidoux
Pedley
Calimesa
Cherry Valley
Riverside
Norco
Moreno Valley
Beaumont
Banning
Cabazon
Desert Hot Springs
Chino Hills
Corona
Woodcrest
El Cerrito
Lakeview
Nuevo
Perris
San Jacinto
Hemet
Valley Vista
Romoland
Homeland
Winchester
Sun City
Canyon Lake
Lake Elsinore
Orange
Lake Forest
El Toro
Mission Viejo
Murrieta
Temecula
Laguna Niguel
San Juan Capistrano
Springs
Cathedral City
Rancho Mirage

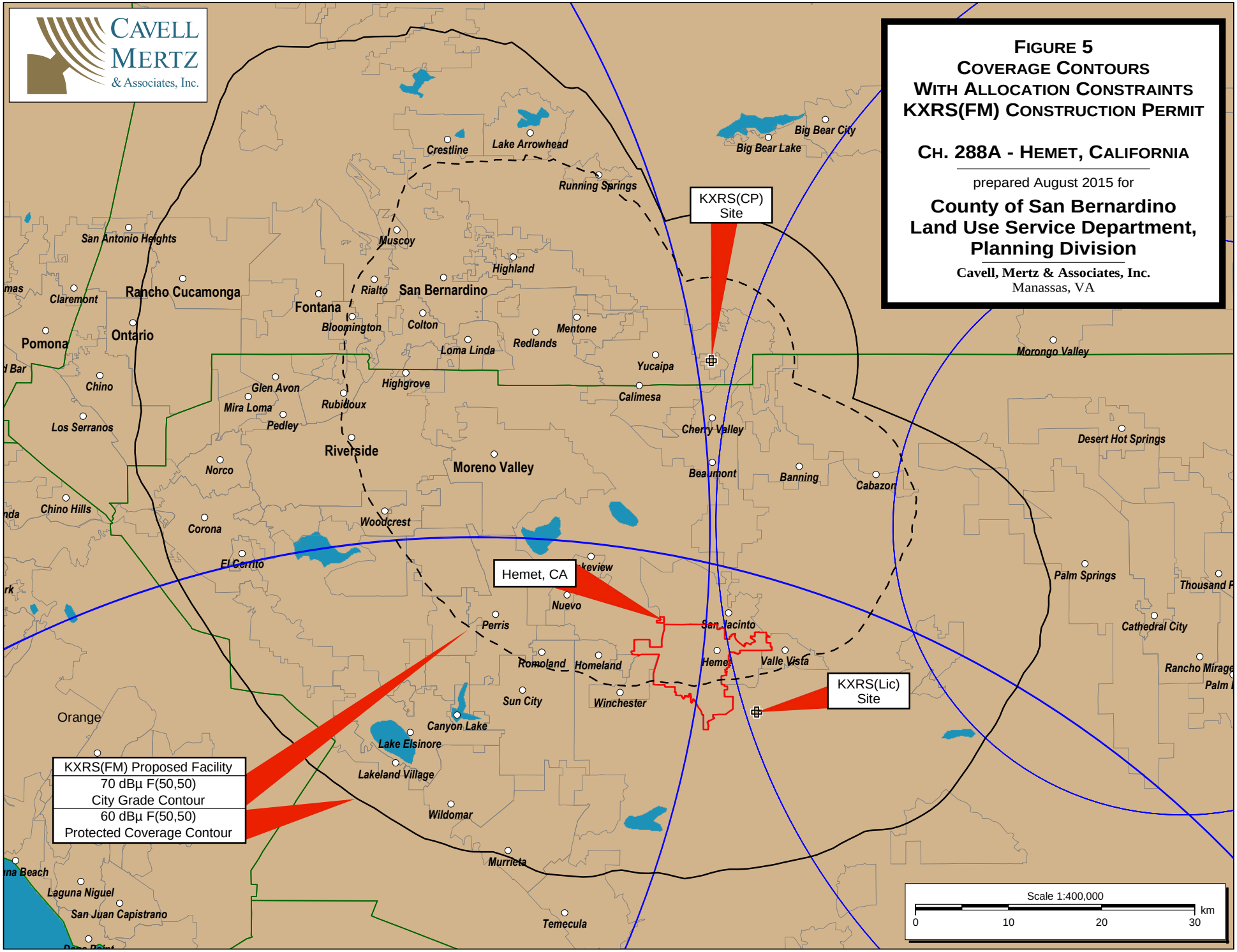

CAVELL MERTZ & Associates, Inc.
FIGURE 2
ALLOCATION CONSTRAINTS
KXRS(FM) AS AUTHORIZED
CH. 288A - HEMET, CALIFORNIA
prepared August 2015 for
County of San Bernardino
Land Use Service Department,
Planning Division
Cavell, Mertz & Associates, Inc.
Manassas, VA
KXRS(CP) Site
KXRS(Lic) Site
113 km Arc
Ch. 287B
KIOZ(FM)
San Diego, CA
Hemet, CA
115 km Arc
Ch. 288A
KBUE(FM)
Long Beach, CA
31 km Arc
Ch. 286A
KVGH(FM)
Bermuda Dunes, CA
69 km Arc
Ch. 291B
KPLM(FM)
Palm Springs, CA
Scale 1:400,000
0 10 20 30 km
Crestline
Lake Arrowhead
Big Bear City
Big Bear Lake
Running Springs
San Antonio Heights
Muscoy
Highland
Yucca Valley
Claremont
Rancho Cucamonga
Rialto
San Bernardino
Fontana
Bloomington
Colton
Redlands
Loma Linda
Yucaipa
Morongo Valley
Pomona
Ontario
Chino
Glen Avon
Highgrove
Mira Loma
Rubidoux
Pedley
Calimesa
Cherry Valley
Los Serranos
Riverside
Moreno Valley
Norco
Beaumont
Banning
Cabazon
Desert Hot Springs
Corona
Woodcrest
El Cerrito
Nuevo
Perris
San Jacinto
Hemet
Valley Vista
Romoland
Homeland
Sun City
Winchester
Cathedral City
Orange
Canyon Lake
Lake Elsinore
Lakeland Village
Lake Forest
El Toro
Mission Viejo
Wildomar
Murrieta
Temecula
Laguna Niguel
San Juan Capistrano

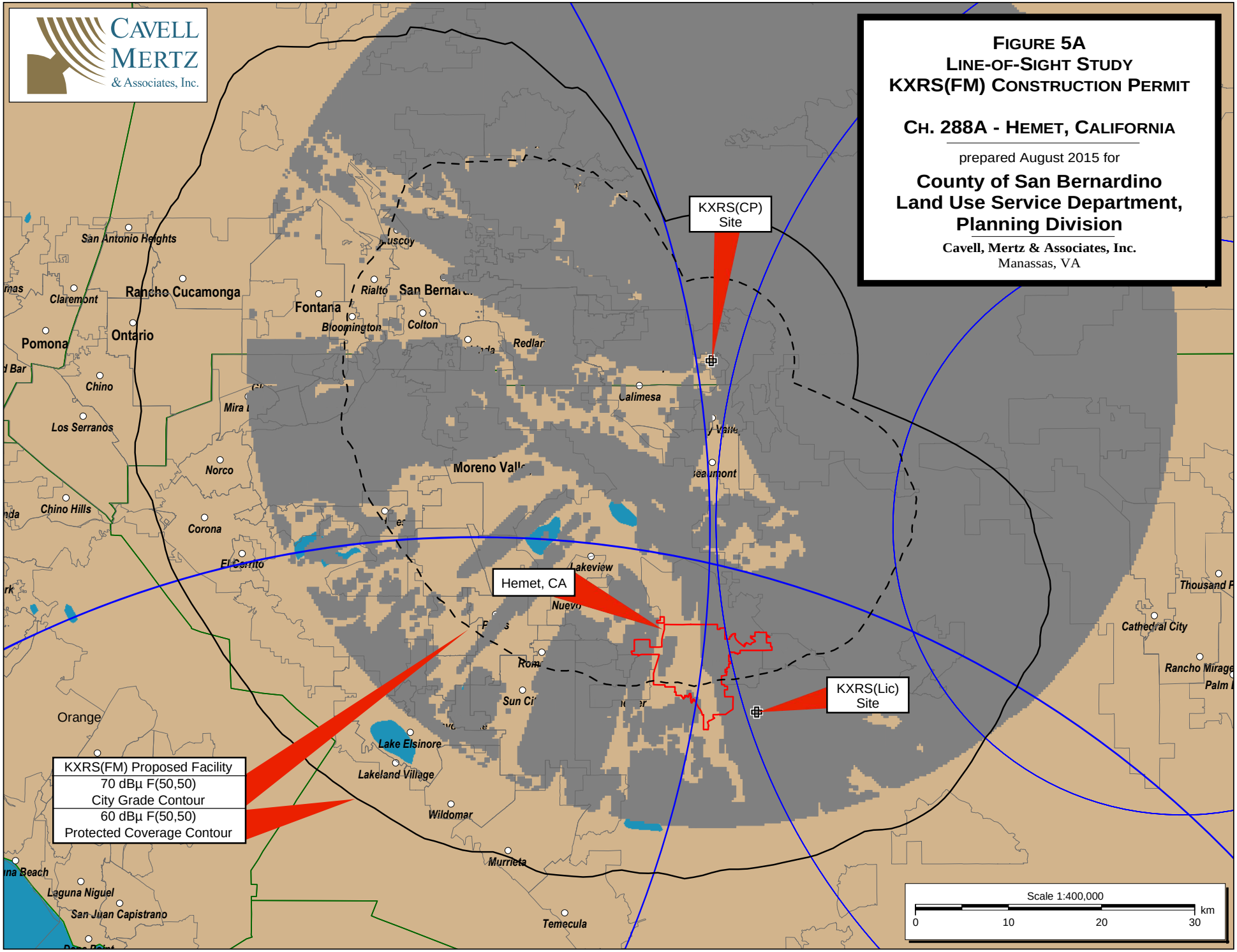

CAVELL MERTZ & Associates, Inc.
FIGURE 3
COVERAGE CONTOURS
WITH ALLOCATION CONSTRAINTS
ALTERNATIVE SITE #1
HYPOTHETICAL KXRS
CH. 288A - HEMET, CALIFORNIA
prepared August 2015 for
County of San Bernardino
Land Use Service Department,
Planning Division
Cavell, Mertz & Associates, Inc.
Manassas, VA
KXRS(CP) Site
Alternative Site #1 ASR 1263499
Hemet, CA
KXRS(Lic) Site
Hypothetical Facility Alternative Site #1
70 dBµ F(50,50) City Grade Contour
60 dBµ F(50,50) Protected Coverage Contour
Scale 1:400,000
0 10 20 30 km
Crestline
Lake Arrowhead
Big Bear City
Big Bear Lake
Running Springs
San Antonio Heights
Muscoy
Highland
Claremont
Rancho Cucamonga
Rialto
San Bernardino
Fontana
Bloomington
Colton
Mentone
Pomona
Ontario
Loma Linda
Redlands
Yucaipa
Morongo Valley
Chino
Glen Avon
Highgrove
Calimesa
Mira Loma
Rubidoux
Pedley
Los Serranos
Riverside
Cherry Valley
Desert Hot Springs
Norco
Moreno Valley
Beaumont
Banning
Cabazon
Chino Hills
Woodcrest
Corona
El Cerrito
Palm Springs
Nuevo
Perris
San Jacinto
Cathedral City
Romoland
Homeland
Hemet
Valle Vista
Rancho Mirage
Sun City
Winchester
Orange
Canyon Lake
Lake Elsinore
Lakeland Village
Wildomar
Murrieta
Temecula
Laguna Niguel
San Juan Capistrano


CAVELL MERTZ & Associates, Inc.
Gray Shaded Area
Has no Line of Sight from
Hypothetical 100m AGL
Antenna at
Alternative Site #1
(ASR 1263499)
FIGURE 3A
LINE-OF-SIGHT STUDY
ALTERNATIVE SITE #1
HYPOTHETICAL KXRS
CH. 288A - HEMET, CALIFORNIA
prepared August 2015 for
County of San Bernardino
Land Use Service Department,
Planning Division
Cavell, Mertz & Associates, Inc.
Manassas, VA
KXRS(CP)
Site
Alternative Site #1
ASR 1263499
Hemet, CA
KXRS(Lic)
Site
San Antonio Heights
Rancho Cucamonga
Claremont
Pomona
Ontario
Chino
Los Serranos
Norco
Chino Hills
Corona
Cherry Valley
Beaumont
Orange
Lakeland
Laguna Niguel
San Juan Capistrano
Temecula
Thousand P
Rancho Mirage
Hypothetical Facility
Alternative Site #1
70 dBµ F(50,50)
City Grade Contour
60 dBµ F(50,50)
Protected Coverage Contour
Scale 1:400,000
km
0
10
20
30


CAVELL MERTZ & Associates, Inc.
FIGURE 4
COVERAGE CONTOURS
WITH ALLOCATION CONSTRAINTS
ALTERNATIVE SITE #2
HYPOTHETICAL KXRS
CH. 288A - HEMET, CALIFORNIA
prepared August 2015 for
County of San Bernardino
Land Use Service Department,
Planning Division
Cavell, Mertz & Associates, Inc.
Manassas, VA
KXRS(CP) Site
Alternative Site #2
ASR 1202850
Hemet, CA
KXRS(Lic) Site
Hypothetical Facility
Alternative Site #2
70 dBµ F(50,50)
City Grade Contour
60 dBµ F(50,50)
Protected Coverage Contour
Scale 1:400,000
0 10 20 30 km
Crestline
Lake Arrowhead
Big Bear City
Big Bear Lake
Running Springs
San Antonio Heights
Muscoy
Highland
Rancho Cucamonga
Claremont
Rialto
San Bernardino
Fontana
Bloomington
Colton
Mentone
Pomona
Ontario
Loma Linda
Redlands
Yucaipa
Morongo Valley
Chino
Glen Avon
Highgrove
Mira Loma
Rubidoux
Pedley
Los Serranos
Cherry Valley
Desert Hot Springs
Riverside
Moreno Valley
Norco
Beaumont
Banning
Cabazon
Chino Hills
Woodcrest
Corona
El Cerrito
Nuevo
Perris
San Jacinto
Palm Springs
Cathedral City
Romoland
Homeland
Hemet
Valle Vista
Sun City
Winchester
Orange
Canyon Lake
Lake Elsinore
Lakeland Village
Wildomar
Murrieta
Temecula
Laguna Niguel
San Juan Capistrano


CAVELL MERTZ & Associates, Inc.
FIGURE 4A
LINE-OF-SIGHT STUDY
ALTERNATIVE SITE #2
HYPOTHETICAL KXRS
CH. 288A - HEMET, CALIFORNIA
prepared August 2015 for
County of San Bernardino
Land Use Service Department,
Planning Division
Cavell, Mertz & Associates, Inc.
Manassas, VA
KXRS(CP) Site
Alternative Site #2 ASR 1202850
Hemet, CA
KXRS(Lic) Site
Gray Shaded Area Has no Line of Sight from Hypothetical 120m AGL Antenna at Alternative Site #2 (ASR 1202850)
Hypothetical Facility Alternative Site #2
70 dBµ F(50,50) City Grade Contour
60 dBµ F(50,50) Protected Coverage Contour
Scale 1:400,000
0 10 20 30 km
San Antonio Heights
Rancho Cucamonga
Claremont
Pomona
Ontario
Chino
Mira
Los Serranos
Norco
Chino Hills
Corona
Moreno Valley
Cherry Valley
Beaumont
Nuevo
Lakeland Village
Wildomar
Murrieta
Temecula
Orange
Laguna Niguel
San Juan Capistrano
Cathedral City
Rancho Mirage


CAVELL MERTZ & Associates, Inc.
FIGURE 5
COVERAGE CONTOURS
WITH ALLOCATION CONSTRAINTS
KXRS(FM) CONSTRUCTION PERMIT
CH. 288A - HEMET, CALIFORNIA
prepared August 2015 for
County of San Bernardino
Land Use Service Department,
Planning Division
Cavell, Mertz & Associates, Inc.
Manassas, VA
KXRS(CP) Site
Hemet, CA
KXRS(Lic) Site
KXRS(FM) Proposed Facility
70 dBµ F(50,50) City Grade Contour
60 dBµ F(50,50) Protected Coverage Contour
Scale 1:400,000
0 10 20 30 km
Crestline
Lake Arrowhead
Big Bear City
Big Bear Lake
Running Springs
San Antonio Heights
Muscoy
Highland
Rancho Cucamonga
Rialto
San Bernardino
Claremont
Fontana
Bloomington
Colton
Mentone
Pomona
Ontario
Loma Linda
Redlands
Yucaipa
Morongo Valley
Chino
Glen Avon
Highgrove
Calimesa
Mira Loma
Rubidoux
Los Serranos
Pedley
Cherry Valley
Desert Hot Springs
Riverside
Norco
Moreno Valley
Beaumont
Banning
Cabazon
Chino Hills
Woodcrest
Corona
El Cerrito
Palm Springs
Nuevo
Perris
San Jacinto
Cathedral City
Romoland
Homeland
Hemet
Valle Vista
Rancho Mirage
Sun City
Winchester
Orange
Canyon Lake
Lake Elsinore
Lakeland Village
Wildomar
Murrieta
Laguna Niguel
San Juan Capistrano
Temecula


CAVELL MERTZ & Associates, Inc.
FIGURE 5A
LINE-OF-SIGHT STUDY
KXRS(FM) CONSTRUCTION PERMIT
CH. 288A - HEMET, CALIFORNIA
prepared August 2015 for
County of San Bernardino
Land Use Service Department,
Planning Division
Cavell, Mertz & Associates, Inc.
Manassas, VA
KXRS(CP) Site
Hemet, CA
KXRS(Lic) Site
KXRS(FM) Proposed Facility
70 dBµ F(50,50) City Grade Contour
60 dBµ F(50,50) Protected Coverage Contour
Scale 1:400,000
0 10 20 30 km
San Antonio Heights
Rancho Cucamonga
Claremont
Fontana
Rialto
Bloomington
Colton
Pomona
Ontario
Chino
Los Serranos
Norco
Chino Hills
Corona
El Cerrito
Moreno Valley
Calimesa
Beaumont
Lakeview
Nuevo
Cathedral City
Rancho Mirage
Orange
Lake Elsinore
Lakeland Village
Wildomar
Murrieta
Temecula
Laguna Niguel
San Juan Capistrano