December 2023
KVVA-FM Channel 296C2
Sun Lakes, AZ
Allocation Study

Background

The instant application proposes a minor modification of KVVA-FM construction permit BPH-20190723AAO. Grant of that permit authorized the a transmitter site change, class upgrade, and community of license change for KVVA-FM. This application proposes modification of the permit, to operate from a tower approximately 170 meters from the currently-authorized location.

Spacing Study

The attached spacing study shows that the proposed operation meets the co-channel and adjacent channel spacing requirements for Class C2 stations as prescribed in §73.207 of the Commission's Rules, with the exception of a short-spacing to the licensed operation of KDVA on Channel 294A at Buckeye. Processing pursuant to §73.215 of the Commission's Rules is requested with respect to KDVA, and the attached allocation study map is included to demonstrate the lack of prohibited contour overlap with that facility.

KVVA-FM Mexican Coordination Status

KVVA-FM currently operates (see BLH-20130315ABB) on Channel 296C3 at Apache Junction. However, under the terms of the US-Mexico FM Agreement, Annex 2, Table B, Part I "Initial List of United States Assignments", the Apache Junction assignment is recognized by Mexico as Channel 296C at coordinates of 33-26-48 NL x 111-37-32 WL.

The attached allocation study map demonstrates that the proposed KVVA-FM 296C2 Sun Lakes 60 dBu contour (47.6 km radius for the proposed ERP/HAAT) is completely contained within the 92 km protected radius from the Channel 296C assignment coordinates listed above. Therefore, the proposed operation is expressly permitted by the terms of Article 8.1.1 of the US-Mexico FM Agreement, which states:

> *A new or modified assignment proposed by an Administration, whose parameters are different from those of its corresponding allotment, does not require prior acceptance for its use, as long as the resultant protected contour remains inside the protected contour of the allotment from which it is derived.*

Accordingly, no further coordination with Mexico is necessary for the proposed KVVA-FM facility on Channel 296C2 at Sun Lakes.

FMSTUDY.EXE Copyright 2021, Hatfield & Dawson, LLC Version 5.10

SEARCH PARAMETERS FM Database Date: 20231207

Channel: 296C2 107.1 MHz

Latitude: 33 19 57.3 (NAD83)

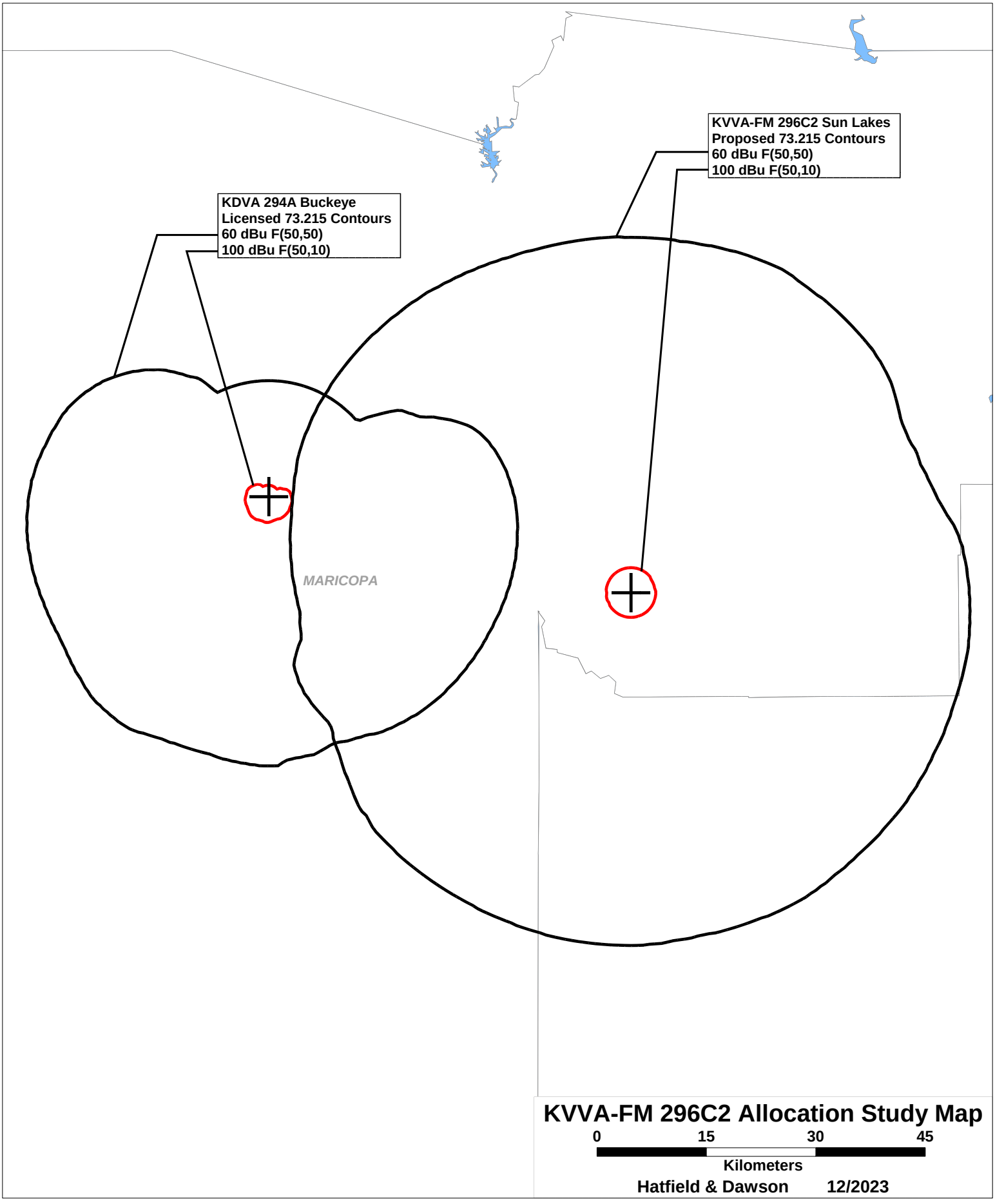
Longitude: 112 3 57.0

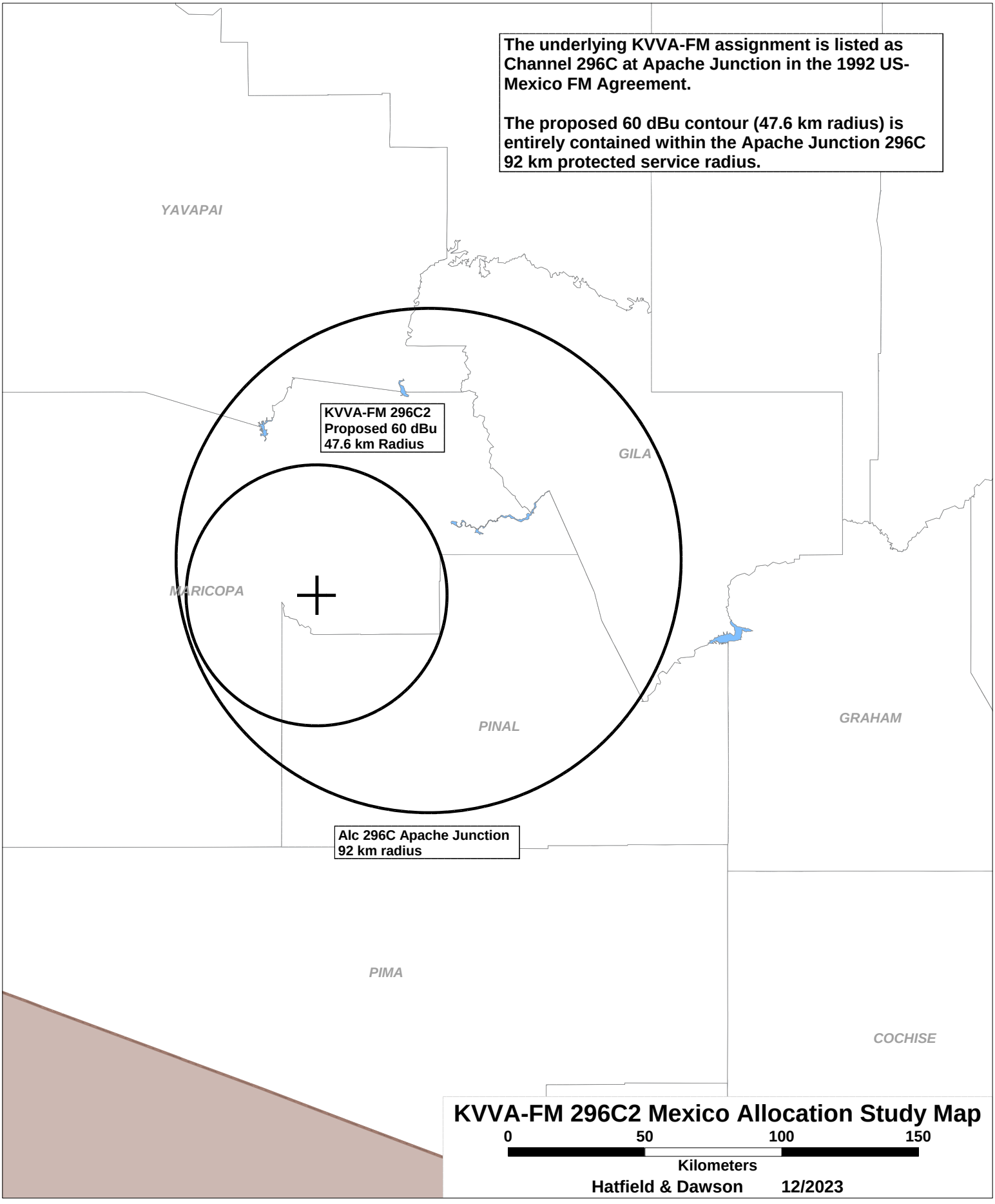
Safety Zone: 32 km

Job Title: KVVA 296C2

Call Status	City St FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
K243BN	LAVEEN	243D	0.050	DA 33 35 39.2	356.3	29.08	0
LIC	AZ 0000221225	96.5	0.0	112 5 10.5		0.00	TRANS
K293CO	PHOENIX	293D	0.250	DA 33 23 21.0	44.6	8.84	0
LIC	AZ 0000169934	106.5	0.0	111 59 56.0		0.00	TRANS
KKMR	ARIZONA CITY	293A	0.860	32 49 17.2	149.8	65.60	55
LIC	AZ BLED-20181026AAU	106.5	266.0	111 42 44.4	SS	10.60	CLEAR
K294CW	PHOENIX	294D	0.150	DA 33 35 39.1	356.3	29.08	0
LIC	AZ 0000129146	106.7	0.0	112 5 10.5		0.00	TRANS
KDVA	BUCKEYE	294A	6.000	33 27 1.0	284.9	51.33	55
LIC	AZ 0000224711	106.7	93.0	112 35 58.0	SS	-3.67	SHORT
ABSOLUTE MINIMUM 73.215 SPACING = 49 KM							
KPPV	PRESCOTT VALLEY	295C2	4.000	34 29 24.2	341.6	135.49	130
LIC	AZ 0000224270	106.9	483.0	112 32 2.0		5.49	CLOSE
K295AL	LITTLE ACRES	295D	0.015	33 17 37.2	91.8	114.56	0
LIC	AZ BLFT-20070323AIE	106.9	0.0	110 50 11.3		0.00	TRANS
KVVA-FM	APACHE JUNCTION	296C3	17.000	33 26 44.1	72.9	43.10	177
LIC	AZ BLH-20130315ABB	107.1	124.0	111 37 21.4		-133.90	SHORT
KVVA-FM	SUN LAKES	296C2	2.050	33 20 0.2	57.7	0.17	190
CP	AZ BPH-20190723AAO	107.1	508.0	112 3 51.5	SS	-189.83	SHORT
K296GT	MT LEMMON	296D	0.001	DA 32 15 11.2	139.0	158.13	0
LIC	AZ BLFT-20170901AAZ	107.1	0.0	110 57 46.3		0.00	TRANS
K296GT	TUCSON	296D	0.250	DA 32 14 56.4	143.4	149.48	0
CP	AZ 0000203147	107.1	0.0	111 7 0.5		0.00	TRANS
	AGUILA	297C2	0.000	33 56 32.1	301.8	129.92	130
CP	AZ	107.3	0.0	113 15 41.7		-0.08	SHORT
K298CK	PHOENIX	298D	0.250	33 35 39.1	356.3	29.08	0
LIC	AZ BLFT-20170721ABB	107.5	0.0	112 5 10.5		0.00	TRANS

==== END OF FM SPACING STUDY FOR CHANNEL 296 ====


KVVA-FM 296C2 Sun Lakes
Proposed 73.215 Contours
60 dBu F(50,50)
100 dBu F(50,10)
KDVA 294A Buckeye
Licensed 73.215 Contours
60 dBu F(50,50)
100 dBu F(50,10)
MARICOPA
KVVA-FM 296C2 Allocation Study Map
0
15
30
45
Kilometers
Hatfield & Dawson
12/2023


The underlying KVVA-FM assignment is listed as Channel 296C at Apache Junction in the 1992 US-Mexico FM Agreement.
The proposed 60 dBu contour (47.6 km radius) is entirely contained within the Apache Junction 296C 92 km protected service radius.
YAVAPAI
KVVA-FM 296C2
Proposed 60 dBu
47.6 km Radius
GILA
MARICOPA
PINAL
GRAHAM
Alc 296C Apache Junction
92 km radius
PIMA
COCHISE
KVVA-FM 296C2 Mexico Allocation Study Map
0
50
100
150
Kilometers
Hatfield & Dawson
12/2023

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KVVA-FM Channel 296C2
Sun Lakes, AZ
RF Exposure Study

Facilities Proposed

The proposed operation will be on Channel 296C2 (107.1 MHz) with an effective radiated power of 2.85 kilowatts. Operation is proposed with a 4-element circularly-polarized omni-directional half-wave-spaced antenna. The antenna will be side-mounted on an existing tower located at the South Mountain communications site.

The proposed antenna support structure will not exceed 60.96 meters (200 feet) above ground and does not require notification to the Federal Aviation Administration. Therefore, this structure does not require an Antenna Structure Registration Number.

DETERMINATION Results	
Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.	
Your Specifications	
NAD83 Coordinates	
Latitude	33-19-57.3 north
Longitude	112-03-57.0 west
Measurements (Meters)	
Overall Structure Height (AGL)	39.6
Support Structure Height (AGL)	39.6
Site Elevation (AMSL)	807.7
Structure Type	
LTOWER - Lattice Tower	

RF Exposure Calculations

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(\mu W / cm^2) = \frac{33.4 \times AdjERP(Watts)}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

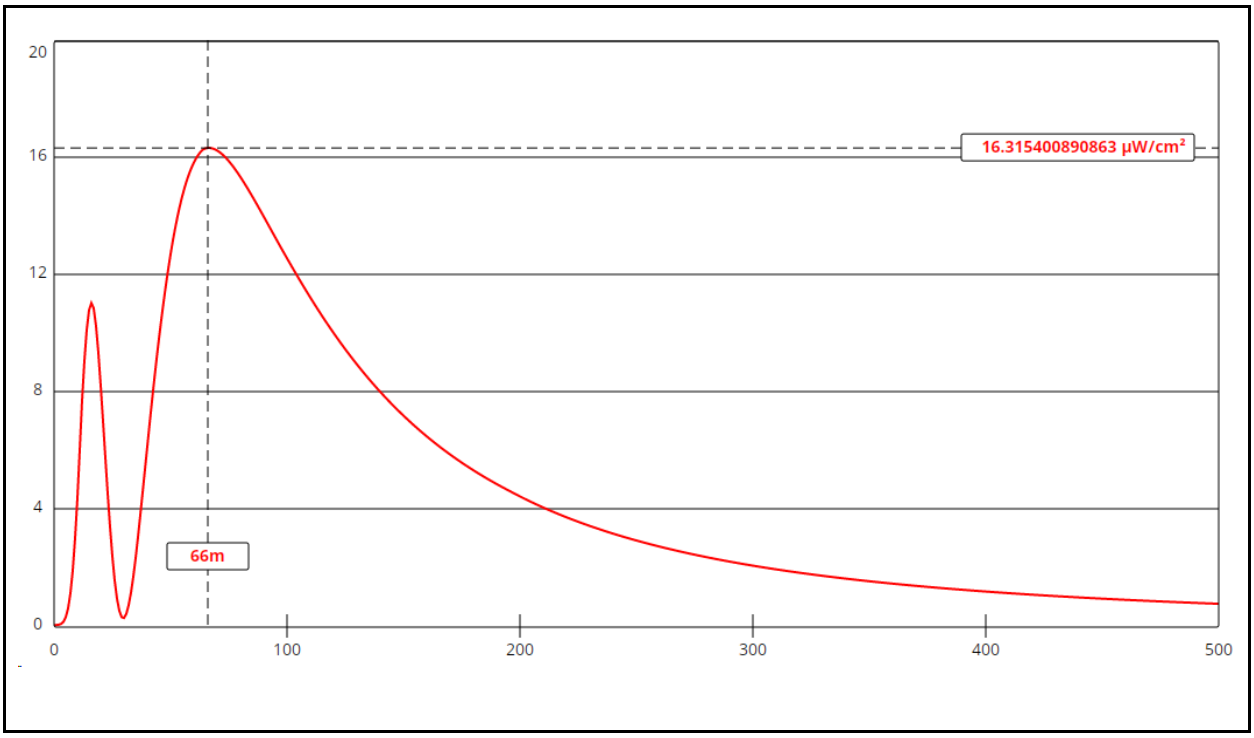
D is the distance in meters from the center of radiation to the calculation point.

Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 500 meters. Values past this point are increasingly negligible.

Calculations of the power density produced by the proposed antenna system assume a Type 3 element pattern, which is the element pattern for the ERI "rototiller" antenna proposed for use. The highest calculated ground level power density occurs at a distance of 66 meters from the base of the antenna support structure. At this point the power density is calculated to be 16.3 μW/cm², which is 1.6% of 1000 μW/cm² (the FCC MPE for controlled environments such as this one).

Access to the South Mountain communications site is restricted by a locked gate and perimeter fence which surrounds the tower compounds. This is therefore considered to be a controlled environment. Pursuant to OET Bulletin No. 65, all station personnel and contractors are required to follow appropriate safety procedures before any work is commenced on the antenna tower, including reduction in power or discontinuance of operation before any maintenance work is undertaken.

The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency exposure in excess of FCC guidelines.

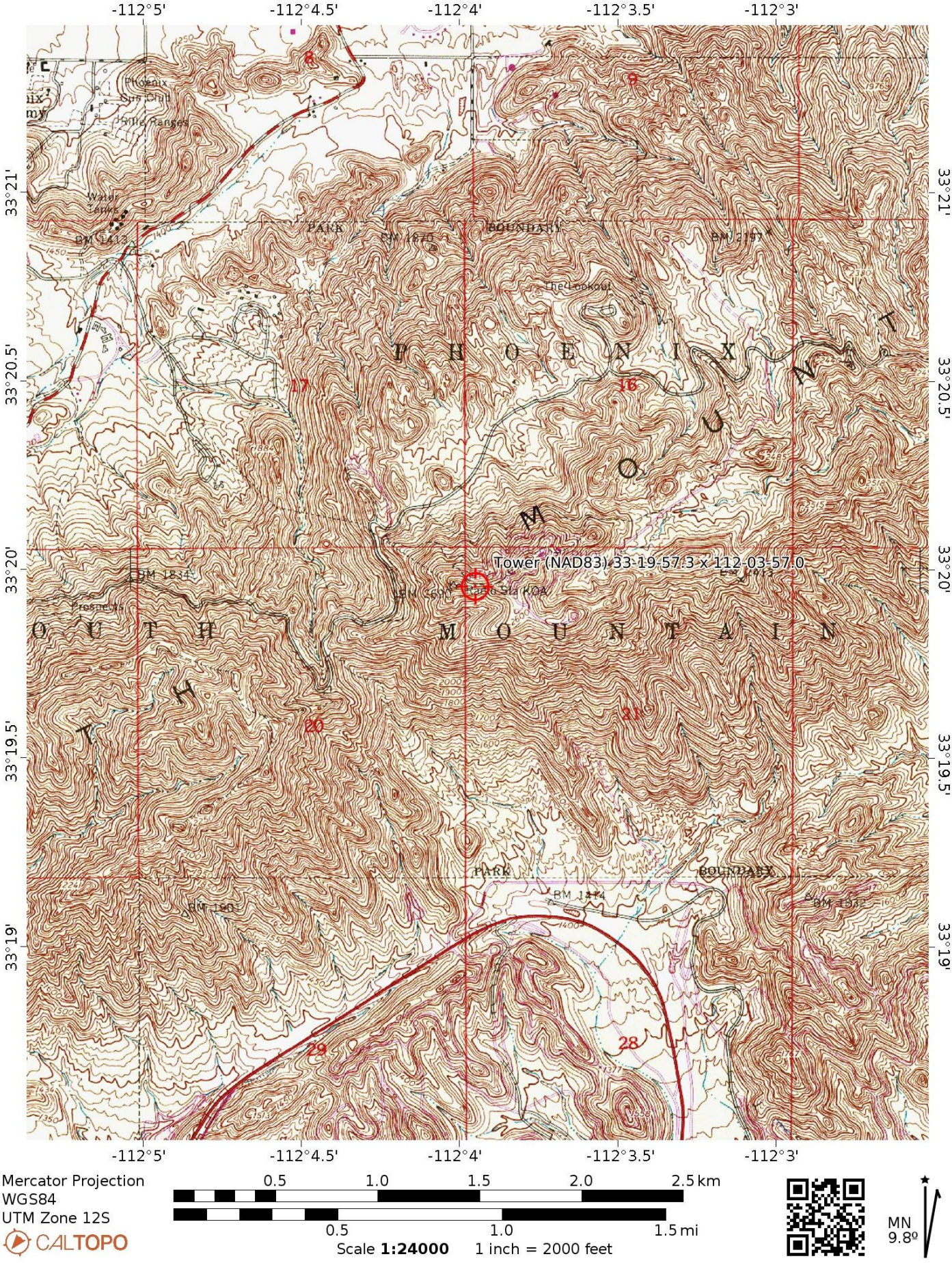


Ground-Level RF Exposure **OET FMModel**

KVVA-FM 296C2 Sun Lakes

Antenna Type:	ERI “rototiller” (Type 3)
No. of Elements:	4
Element Spacing:	0.5 wavelength
Distance:	500 meters
Horizontal ERP:	2.85 kW
Vertical ERP:	2.85 kW
Antenna Height:	19.1 meters AGL

Maximum Calculated Power Density is 16.3 µW/cm^2 at 66 meters from the antenna structure.



Mercator Projection
WGS84
UTM Zone 12S

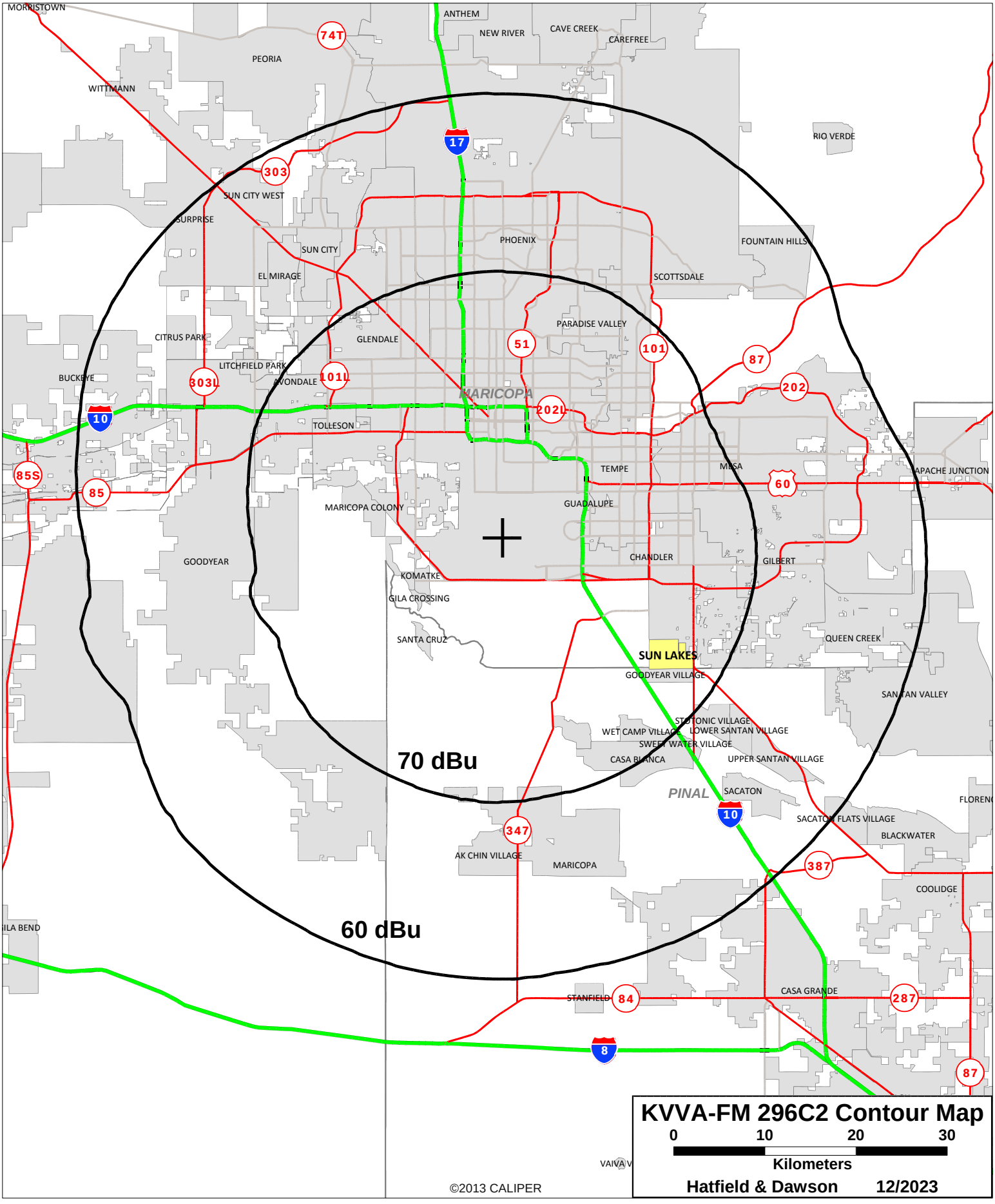
CALTOPO

0.5 1.0 1.5 2.0 2.5 km
0.5 1.0 1.5 mi

Scale **1:24000** 1 inch = 2000 feet

MN 9.8º

Hatfield & Dawson Consulting Engineers


MORRISTOWN
ANTHEM
NEW RIVER
CAVE CREEK
CAREFREE
74T
PEORIA
WITTMANN
17
RIO VERDE
303
SUN CITY WEST
SURPRISE
PHOENIX
FOUNTAIN HILLS
SUN CITY
EL MIRAGE
SCOTTSDALE
PARADISE VALLEY
CITRUS PARK
GLENDALE
51
101
87
LITCHFIELD PARK
BUCKEYE
303L
AVONDALE
101L
MARICOPA
202
202L
10
TOLLESON
TEMPE
MESA
APACHE JUNCTION
85S
85
60
MARICOPA COLONY
GUADALUPE
GOODYEAR
CHANDLER
GILBERT
KOMATKE
GILA CROSSING
SANTA CRUZ
QUEEN CREEK
SUN LAKES
GOODYEAR VILLAGE
SAN TAN VALLEY
STOTONIC VILLAGE
WET CAMP VILLAGE
LOWER SANTAN VILLAGE
SWEET WATER VILLAGE
CASA BLANCA
UPPER SANTAN VILLAGE
70 dBu
PINAL
SACATON
10
347
SACATON FLATS VILLAGE
BLACKWATER
AK CHIN VILLAGE
MARICOPA
387
COOLIDGE
ILA BEND
60 dBu
STANFIELD
84
CASA GRANDE
287
8
87
VAIVA V
©2013 CALIPER
KVVA-FM 296C2 Contour Map
0 10 20 30
Kilometers
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