August 2010
KVVA-FM Channel 296C3
Sun Lakes, AZ
Principal Community Coverage Study

The 70 dBu contour from the proposed facility, as calculated using the standard contour prediction methodology described in §73.313 of the Commission's Rules, does not encompass the entire community of Sun Lakes. The far side of Sun Lakes is located 25.3 kilometers from the proposed transmitter site. The standard 70 dBu contour extends approximately 22.6 kilometers towards Sun Lakes. However, it is believed that a supplemental showing using alternative contour prediction methodology is justified in this instance in accordance with §73.313(e).

The entire community of Sun Lakes is encompassed by the 60 dBu contour. The attached map exhibits depict the community boundary of Sun Lakes as taken from the 2000 Census.

Threshold Test for Application of Alternative Contour Prediction Methodology

The instant case satisfies the §73.313(e) requirements for the application of alternative contour prediction methodology in that the terrain in the direction of Sun Lakes departs widely from the average 50 meter delta-h value assumed in the development of the field strength charts in §73.333. The Commission has established guidelines to assist applicants in determining when the terrain "departs widely." See Letter to Mark Lipp, Esq., (MB August 8, 2002) regarding application BPH-20000316ACF for modification of KMAJ-FM at Topeka, Kansas (the "KMAJ-FM Letter"). In the KMAJ-FM Letter, the Commission stated that terrain is considered to "depart widely" where the delta-h along the radial has a value of 20 meters or less, or 100 meters or more.

The delta-h value has been calculated in the direction of Sun Lakes, following the instructions presented in §73.313(f) and §73.313(g). Calculation has been made over the radial segment between 10 km and 25.3 km (i.e. the far side of the community), using terrain data extracted every 0.1 km from the 3-arc second terrain database. The result of the calculation is summarized in the following table:

Radial	Radial Segment	10% value	90% value	delta-h
125 deg	10 to 25.3 km	373 meters	359 meters	14 meters

The delta-h value in the direction of Sun Lakes is only 14 meters. This value is less than 20 meters, thereby satisfying the Commission's threshold test guidelines for the application of alternative contour prediction methodology.

An alternative prediction methodology has been employed to verify that Sun Lakes will receive 70 dBu service from the proposed facility. All calculations were made using the 3-arc second database in conjunction with the height and ERP specified herein.

Longley-Rice

Study has been made of the predicted 70 dBu field strength over Sun Lakes, using the Longley-Rice v1.2.2 methodology as described in the FCC's Office of Engineering and Technology Bulletin 69, dated February 6, 2004. This study has been conducted using the software program SIGNAL™ from EDX Wireless.

A sample calculation has been made to a location within the community boundary of Sun Lakes to verify the presence of 70 dBu service, using the formula:

Field Strength = Free Space - Diffraction Loss - Clutter

Where Free Space = 106.9 + power in dBk - 20log(distance in km to point of interest)

For the path studied (-0.60 dBk over a 21.6 km path), the result of this calculation is:

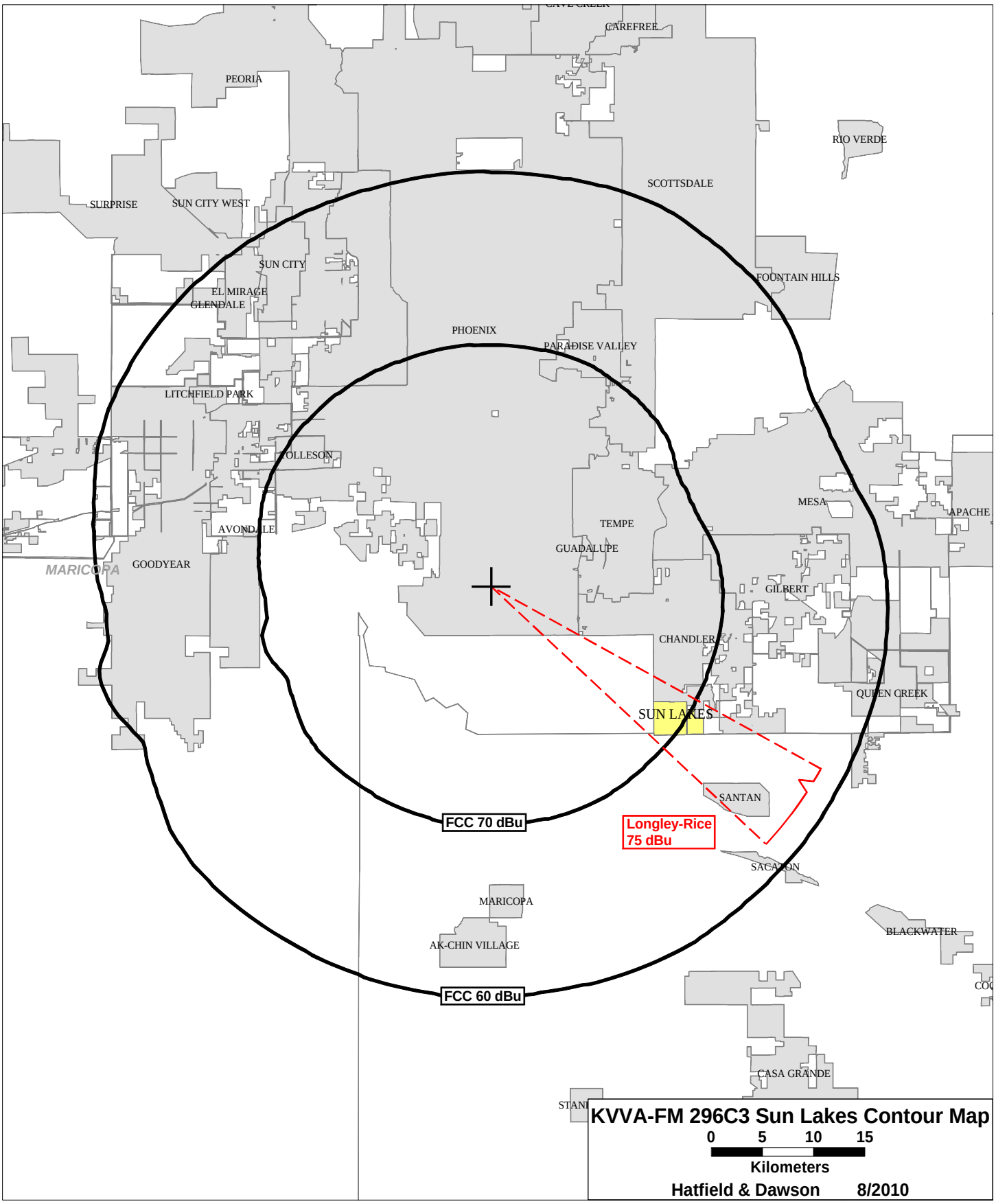
Radial	Free Space Field	Minus Diffraction Loss	Yields
126 deg	79.6 dBu	0.0 dB	79.6 dBu

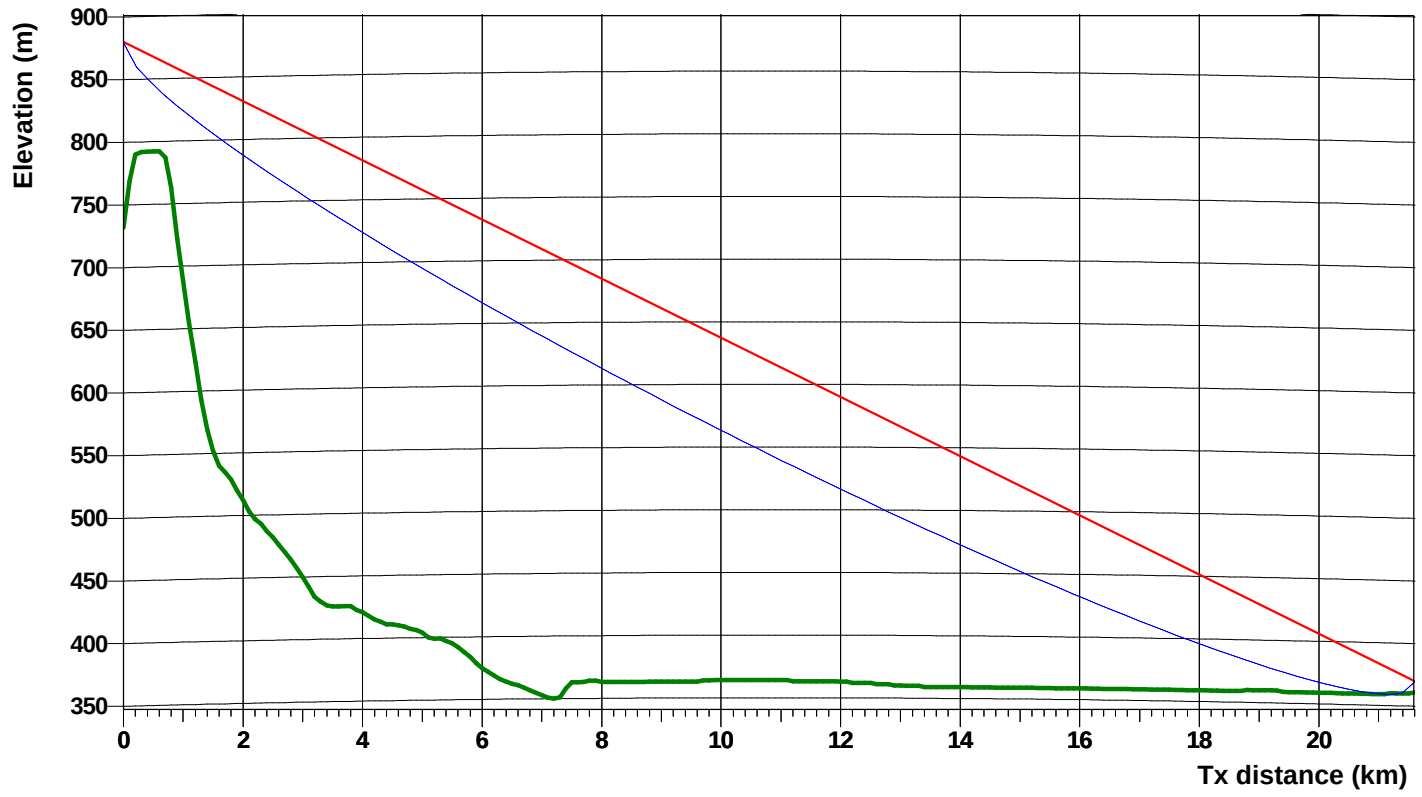
Attached is a plot of the terrain path from the transmitter site to the sample location in Sun Lakes. The attached terrain path plot includes a list of the Longley-Rice study parameters.

The location of the Longley-Rice contour in the direction of Sun Lakes has been determined for 1-degree increment radials passing through Sun Lakes (starting at 120 degrees and ending at 132 degrees), as well as the "bracketing" radials (119 and 133 degrees) on either side.

Radial	F(50,50) 70 dBu	L-R 75 dBu	L-R exceeds F(50,50) by
119	22.5 km	36.7 km	63%
120	22.5 km	36.7 km	63%
121	22.5 km	36.7 km	63%
122	22.6 km	35.4 km	57%
123	22.6 km	36.7 km	62%
124	22.6 km	36.7 km	62%
125	22.6 km	36.7 km	62%
126	22.7 km	36.7 km	62%
127	22.7 km	36.7 km	62%
128	22.7 km	36.7 km	62%
129	22.7 km	36.7 km	62%
130	22.7 km	36.7 km	62%
131	22.7 km	36.7 km	62%
132	22.7 km	36.7 km	62%
133	22.7 km	36.7 km	62%

The attached map exhibit depicts the results of this analysis as a 75 dBu (chosen to allow for 5 dB of local clutter loss at the receive locations) contour over the span of 119 to 133 degrees.


CAREFREE
PEORIA
RIO VERDE
SCOTTSDALE
SURPRISE
SUN CITY WEST
SUN CITY
EL MIRAGE
GLENDALE
FOUNTAIN HILLS
PHOENIX
PARADISE VALLEY
LITCHFIELD PARK
TOLLESON
MESA
APACHE
TEMPE
AVONDALE
GUADALUPE
MARICOPA
GOODYEAR
GILBERT
CHANDLER
QUEEN CREEK
SUN LAKES
SANTAN
FCC 70 dBu
Longley-Rice
75 dBu
SACATON
MARICOPA
AK-CHIN VILLAGE
BLACKWATER
CASA GRANDE
KVVA-FM 296C3 Sun Lakes Contour Map
0 5 10 15
Kilometers
Hatfield & Dawson 8/2010



SIGNALÒ

Prop. model: Longley-Rice v1.2.2
Time: 50.00 % Loc.: 50.00 %
Margin: 0.00 dB
Climate: Continental Temperate
Atm. factor: none
K factors: 1.333, 1.000, 1.000

Transmitter Site: Tx001
Name: Tx001
Location:
N33°20'00.00" W112°03'49.00"
Site elevation: 818.0 m
Antenna height: 62.0 m
Pointing azimuth: 126.0 °
Total ERPd: -0.60 dBkW

Name: Tx001 ->Rx001
Frequency: 107.1000 MHz
Polarization: horizontal
Length: 21.60 km
Number of obstacles: 0
Excess path loss: -0.01 dB

Receiver Site: Rx001
Name: Rx001
Location:
N33°13'08.23" W111°52'32.33"
Site elevation: 361.0 m
Antenna height: 9.1 m
Pointing azimuth: 306.0 °
Received signal level: -36.03 dBmW
(79.6 dBu)

Notes