

ENGINEERING STATEMENT
IN SUPPORT OF AN APPLICATION FOR
MINOR CHANGE IN A LICENSED FACILITY
(FOR CHANGE IN ALLOTTED CHANNEL)
KBZK
BOZEMAN, MT

Background

Scripps Broadcasting Holdings LLC (Scripps) is the licensee of KBZK which has been authorized to operate a two-site DTS on Channel 13 (LMS File No. 0000151565) at Bozeman, MT, with the following parameters:

Parameters	DTS Site 1	DTS Site 2
Coordinates: (NAD83)	45° 38' 15.1" N 111° 16' 07.0" W	45° 41' 47.3" N 110° 46' 07.1" W
ERP:	13.9	0.15
HAAT:	225.5	317.0
RCAMSL:	1772.4	2217.4
Antenna:	ERI ATW5V-ETO-13H	Scala CL-713
Pattern:	Omni	DA

Since the digital transition, KBZK has received numerous calls from viewers living in the Montana DMA area complaining that they are unable to reliably receive the KBZK signal on Channel 13 (including viewers using indoor receiving equipment). The KBZK technical staff has worked with many of these callers to resolve the problems but it became apparent that the digital Channel 13 signal is not providing these viewers with the same quality of service that the analog facility previously provided. Therefore, in December 2021, Scripps filed a Petition for Rulemaking with the Commission, requesting that the allotted DTV

channel for KBZK be changed from Channel 13 to Channel 27 (an amendment to the original filing was subsequently filed in January 2022). The Commission granted Scripps' request on May 17, 2022 (which became effective on May 24, 2022, after publication in the Federal Register) with the following parameters:

KBZK Allotted Ch. 27 Facility

Coordinates: 45° 38' 15.1" N (NAD83)
111° 16' 07.0" W
ERP: 850.0 kW (Omni)
HAAT: 222.5m

Scripps is filing herewith an application for authorization to construct a DTS on its newly allotted DTV channel (Ch. 27).

DTS Antenna Systems and Towers

For DTS site 1, KBZK is proposing to use an omni-directional Dielectric TFU-24JTH/VP-R 04 antenna for the new Ch. 27 facility. The existing top-mounted Ch. 13 antenna will be removed, and the new Ch. 27 antenna will take its place on top of the tower at the coordinates specified above.

The new Ch. 27 antenna will be longer than the existing Ch. 13 antenna. To keep the overall structure height below 200 ft AGL, the tower will be shortened by 14 ft, resulting in a slightly lower RCAMSL of 1770.3m for the Ch. 27 antenna compared to the existing Ch. 13 antenna (1772.4m). The new HAAT is calculated to be 220.6m. Given the lower RCAMSL height of the proposed facility vs. the allotted facility, KBZK is proposing an ERP of 875.0 kW to match the allotted coverage.

The proposed KBZK DTS site 1 facility will incorporate both horizontal (850 kW) and vertical polarization (219 kW). The vertically polarized radiation component will not exceed the authorized horizontally polarized component in any azimuth.

For DTS site 2, KBZK is proposing to use a Kathrein/Scala 4DR-8S panel antenna for the new Ch. 27 facility. The existing side-mounted Scala CL-713 will be removed and the new Ch. 27 will be installed in the same aperture. The new antenna will have the same RCAMSL of 2217.4m and HAAT of 317.0m as that of the existing Ch. 13 facility. The proposed KBZK DTS site 1 facility will have horizontal polarization only.

A summary of the proposed DTS Ch. 27 facility parameters is included in the table below:

Parameters	DTS Site 1	DTS Site 2
Coordinates: (NAD83)	45° 38' 15.1" N 111° 16' 07.0" W	45° 41' 47.3" N 110° 46' 07.1" W
ERP:	875.0	4.0
HAAT:	220.6	317.0
RCAMSL:	1770.3	2217.4
Antenna:	DIE TFU-24JTH/VP-R 04	Scala 4DR-8S
Pattern:	Omni	DA
Polarization:	Elliptical	Horizontal

As shown in Figure 1, attached hereto, the predicted F(50,90) noise-limited contour of DTS Site 1 will not exceed the F(50,90) maximum service area distance (103 km for Ch. 27 in Zone II) in any azimuth from the DTS reference point coordinates. The predicted noise-limited contour of DTS Site 2 will exceed the F(50,90) maximum service area distance, but will not exceed the F(50,50) maximum service distance (142 km for Ch. 27 in Zone II) in any azimuth from the DTS reference point coordinates. As shown in Figure 2, also attached hereto, the predicted F(50,50) noise-limited contours of both DTS sites will not exceed the maximum F(50,50) service area distance in any azimuth from the DTS reference point coordinates.

The proposed KBZK DTS Site 1 facility matches the KBZK DTS reference facility, established in the Rule Making to change the KBZK channel from Channel 11 to Channel 27

(LMS File No 0000177585). As such, the proposed F(50,10) 26.8 dBu node interfering contour of the proposed DTS Site 1 facility will not exceed the node interfering contour of the DTS reference facility (as they are the same). The node interfering contour of the proposed DTS Site 2 facility will not exceed either the node interfering contour of the DTS reference facility or the F(50,10) maximum distance from the DTS reference point coordinates. Figure 3, attached hereto, is a map showing the predicted F(50,10) 26.8 dBu node interfering contours of both DTS facilities compared to the node interfering contour of the DTS reference facility and the F(50,10) maximum distance from the DTS reference point coordinates.

Coverage

The entire principal community of Bozeman, MT is well within the predicted F(50,90) 48 dBu contour based on the proposed Ch. 27 DTS facilities.

Interference Study Results

An interference check study was run using the FCC TVStudy software (Version 2.2.5) for the proposed KBZK DTS Channel 27 facility parameters. The summary results of the study show that the proposed facility is not predicted to cause more than 0.5% new interference to any other surrounding co-channel or adjacent channel facilities (see attached study results).

Environmental/RFR

This report addresses only the conditions specified in 47CFR1.1307 that deal with Radio Frequency Radiation (RFR). Any other non-RFR conditions that might require the preparation of an EA are beyond the scope of this report.

The locations of both proposed DTS sites are assumed to be currently “in compliance” with FCC guidelines for human exposure to RFR (as defined in OET-65). The worst-case ground level RFR contributed by the proposed facilities to each site in public areas are calculated to be:

DTS Site 1: 0.096237 mW/cm²

DTS Site 2: 0.109093 mW/cm²

Both calculated values are less than the MPE for public exposure (0.355333 mW/cm²) at Ch. 27 (548-554 MHz).

Both locations are considered “remote” areas as access to the sites is impeded by the rugged terrain and lack of roads, making it highly improbable that the general public can get near either site. Appropriate signage warning of potential RFR hazards is posted at both sites.

Scripps agrees to comply with the Commission’s requirements regarding power adjustments or cessation of operation as may be necessary to ensure a compliant environment for worker access. Workers will be trained on RFR issues and encouraged to wear personal RFR monitors when on the structure.

Certification

I hereby certify that the foregoing report or statement was prepared by me but may include work performed by others under my supervision or direction. The statements of fact contained therein are believed to be true and correct based on personal knowledge, information and belief unless otherwise stated; with respect to facts not known of my own personal knowledge, I believe them to be true and correct based on their origin from sources known to me to be generally reliable and accurate. I have prepared this document with due care and in accordance with applicable standards of professional practice.



Benjamin Pidek, P.E.
August 28, 2022

Attached:

Figure 1 – F(50,90) Noise-Limited Contours of Proposed DTS Sites vs. Maximum F(50,90) and F(50,50) Distances for UHF in Zone II

Figure 2 - F(50,50) Noise-Limited Contours of Proposed DTS Sites vs. Maximum F(50,50) Distance for UHF in Zone II

Figure 3 – F(50,10) Node Interfering Contours of Proposed DTS Sites vs. Node Interfering Contour of DTS Reference Facility and Maximum F(50,10) Distance for UHF in Zone II

KBZK Proposed DTS Ch. 27 TVStudy Interference Results

Proposed KBZK DTS Ch. 27 TVStudy Summary Results

Study last edited: 2022.08.28 13:43:18

Proposal: KBZK D27 DD APP BOZEMAN, MT
File number: KBZK-C27-DTS-CP_App
Facility ID: 33756
Station data: User record
Record ID: 222
Country: U.S.
Zone: II
Ref. lat.: 45 38 15.10 N
Ref. long.: 111 16 7.00 W
DTS sites: 2

Proposal "before": KBZK D27 DT BL BOZEMAN, MT
File number: DTVBL33756
Facility ID: 33756
Station data: LMS TV 2022-08-12
Record ID: DTVBL33756
Country: U.S.

Study has been edited. No protected stations found in study.

Record parameters as studied, DTS site # 1:

Channel: D27
Latitude: 45 38 15.10 N (NAD83)
Longitude: 111 16 7.00 W
Height AMSL: 1770.3 m
HAAT: 220.6 m
Peak ERP: 850 kW
Antenna: Omnidirectional
Elev Pattn: Generic
Elec Tilt: 1.00

40.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	850 kW	355.2 m	102.7 km
45.0	850	347.1	102.0
90.0	850	260.1	91.5
135.0	850	151.8	79.6
180.0	850	89.8	73.0
225.0	850	-14.3	57.8
270.0	850	287.8	95.8
315.0	850	287.5	95.8

Record parameters as studied, DTS site # 2:

Channel: D27
Latitude: 45 41 47.30 N (NAD83)
Longitude: 110 46 7.10 W
Height AMSL: 2222.2 m (Adjusted based on actual ground elevation calculation)
HAAT: 371.3 m
Peak ERP: 4.00 kW
Antenna: Scala-4DR-8S (ID 1009634) 90.0 deg
Elev Pattn: Generic

40.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	0.010 kW	100.1 m	18.0 km
45.0	1.44	448.8	63.8
90.0	4.00	586.8	75.3
135.0	1.44	441.9	63.5

180.0	0.010	330.6	30.3
225.0	0.002	370.9	22.7
270.0	0.048	473.8	43.9
315.0	0.003	256.2	20.6

Database HAAT does not agree with computed HAAT
Database HAAT: 371 m Computed HAAT: 376 m

DTS proposal coverage is within reference facility and distance limit

Distance to Canadian border: 367.0 km

Distance to Mexican border: 1466.0 km

Conditions at FCC monitoring station: Ferndale WA

DTS site # 1 Bearing: 297.5 degrees Distance: 926.1 km

DTS site # 2 Bearing: 296.5 degrees Distance: 957.7 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:

DTS site # 1 Bearing: 139.1 degrees Distance: 781.5 km

DTS site # 2 Bearing: 142.0 degrees Distance: 761.9 km

Study cell size: 2.00 km

Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%

Maximum new IX to LPTV: 2.00%

No IX check failures found.

Predicted F(50,90) Noise-Limited Contour of Proposed KBZK Ch. 27 DTS Site 1 and Site 2 vs. FCC DTS F(50,90) and F(50,50) Maximum Service Reference Distances for UHF Stations in Zone II

Ben Pidek Consulting, LLC

KBZK-DTS1

0000192921
Latitude: 45-38-15.10 N
Longitude: 111-16-07 W
ERP: 850.00 kW
Channel: 27
Frequency: 551.0 MHz
AMSL Height: 1770.3 m

KBZK2-DTS2

0000192921
Latitude: 45-41-47.30 N
Longitude: 110-46-07.10 W
ERP: 4.00 kW
Channel: 27
Frequency: 551.0 MHz
AMSL Height: 2217.4 m

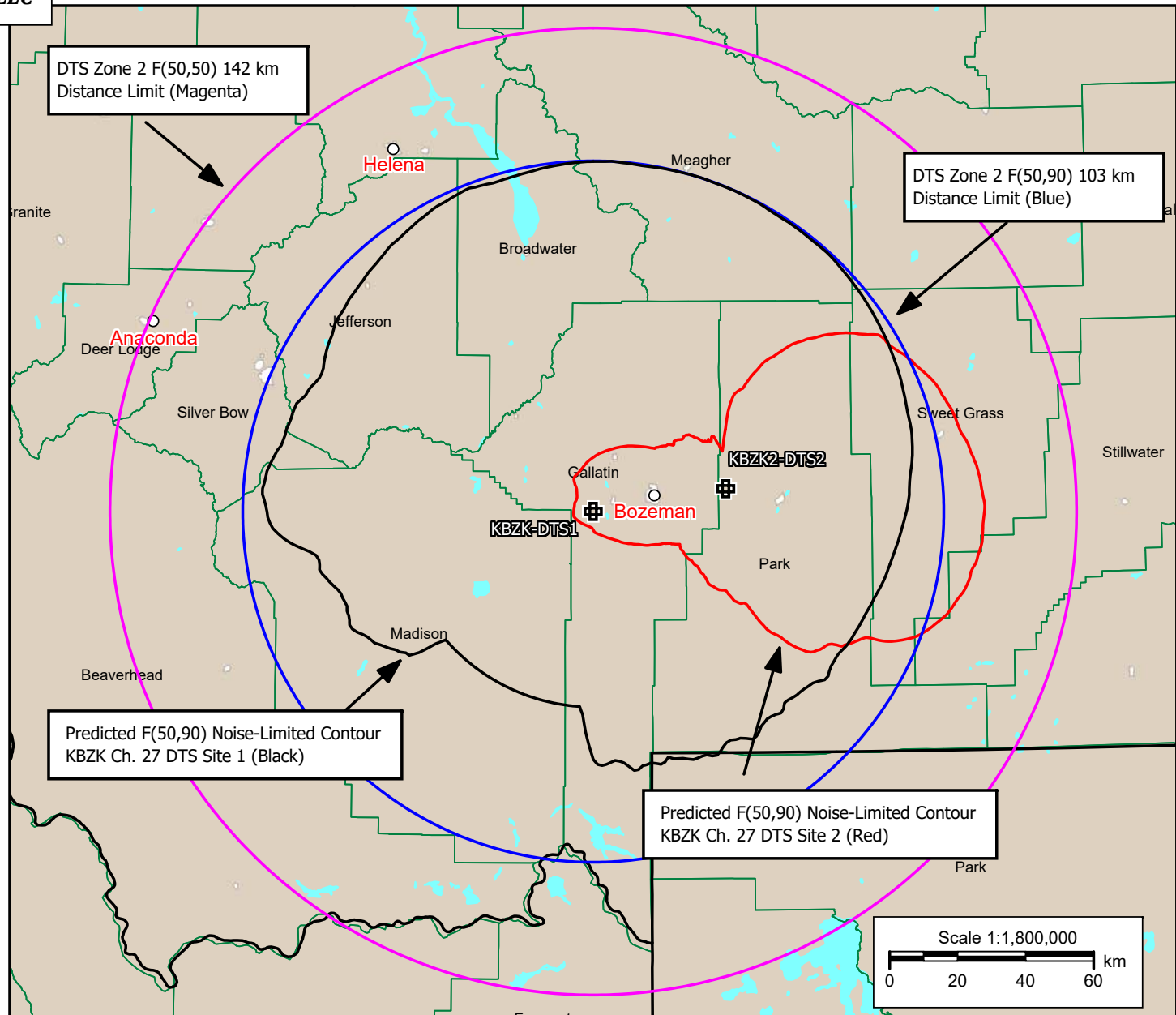


Figure 1

**Predicted F(50,50) Noise-Limited Contour of Proposed KBZK Ch. 27 DTS Site 1 and Site 2 vs.
F(50,50) Maximum Service Reference Distances for UHF Stations in Zone II**

Ben Pidek Consulting, LLC

KBZK-DTS1

0000192921
Latitude: 45-38-15.10 N
Longitude: 111-16-07 W
ERP: 850.00 kW
Channel: 27
Frequency: 551.0 MHz
AMSL Height: 1770.3 m

KBZK2-DTS2

0000192921
Latitude: 45-41-47.30 N
Longitude: 110-46-07.10 W
ERP: 4.00 kW
Channel: 27
Frequency: 551.0 MHz
AMSL Height: 2217.4 m

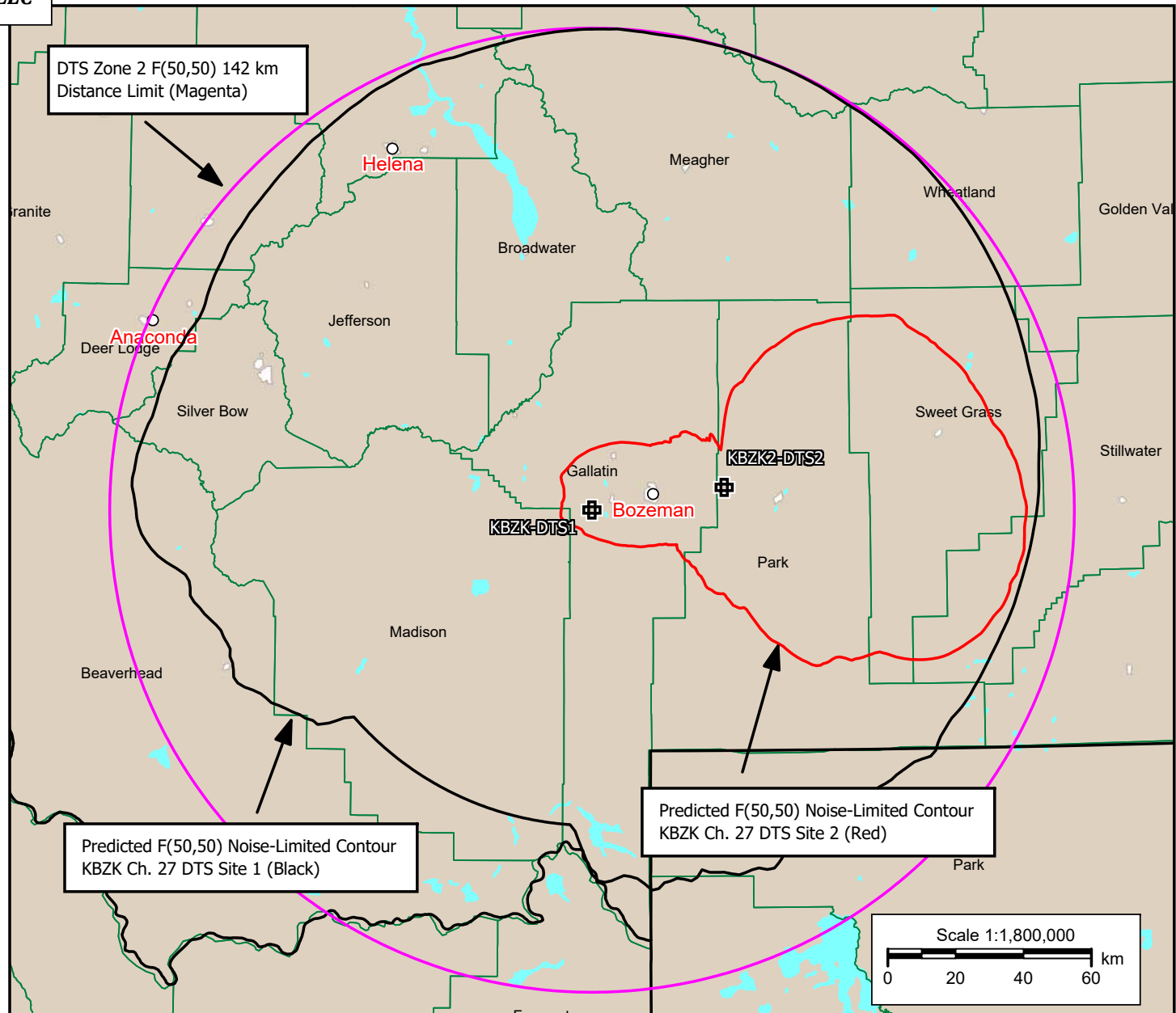


Figure 2

**Predicted F(50,10) Node Interfering Contours of KBZK DTS Reference Facility and
Proposed DTS Site 1 and Site 2**

Ben Pidek Consulting, LLC

KBZK-DTS1

0000192921
Latitude: 45-38-15.10 N
Longitude: 111-16-07 W
ERP: 850.00 kW
Channel: 27
Frequency: 551.0 MHz
AMSL Height: 1770.3 m

KBZK2-DTS2

0000192921
Latitude: 45-41-47.30 N
Longitude: 110-46-07.10 W
ERP: 4.00 kW
Channel: 27
Frequency: 551.0 MHz
AMSL Height: 2217.4 m

KBZK (DTS Ref)

0000177585
Latitude: 45-38-15.10 N
Longitude: 111-16-07 W
ERP: 850.00 kW
Channel: 27
Frequency: 551.0 MHz
AMSL Height: 1772.4 m

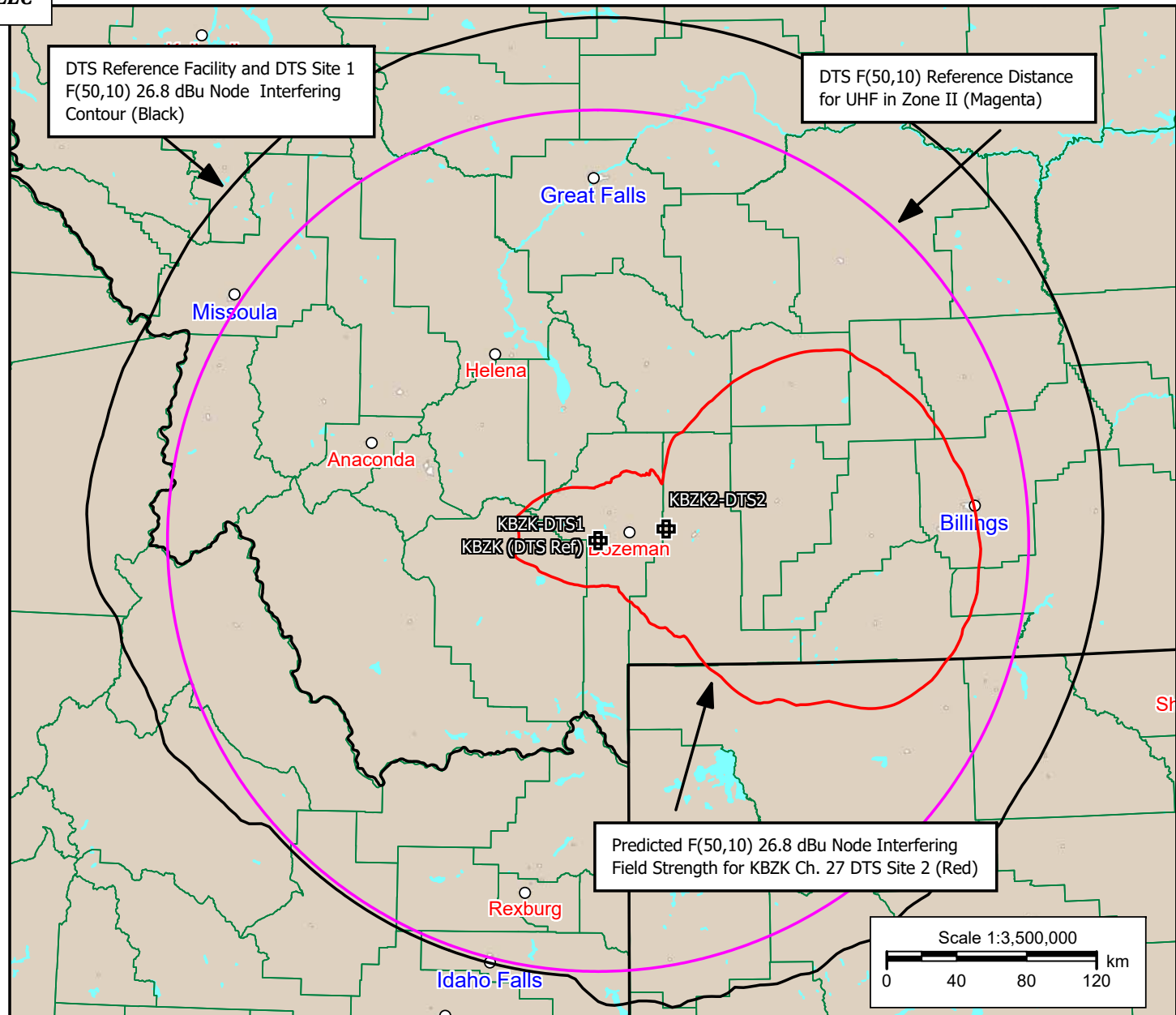


Figure 3