**January 2024**
**KBSU-FM Channel 212C0**
**KBSX(FM) Channel 218C1**
**Boise, Idaho**
**Auxiliary Antenna**

## Facilities Proposed

The instant application proposes a new auxiliary (backup) antenna system for KBSU-FM and KBSX. The auxiliary 60 dBu contour is completely contained within the main 60 dBu contour. The proposed auxiliary operation will have an effective radiated power of 1100 watts for each station. This antenna system will be shared by KBSU-FM (aux) and KBSX (aux) via a combiner.

Operation is proposed with an antenna to be installed on an existing tower on Wilderness Ridge. 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 | 43-44-23.5 north |
| Longitude | 116-08-15.7 west |
| **Measurements (Meters)** | |
| Overall Structure Height (AGL) | 61.0 |
| Support Structure Height (AGL) | 61.0 |
| Site Elevation (AMSL) | 1775 |
| **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 KBSU-FM auxiliary antenna system assume a Type 1 element pattern, which is the "worst case" element pattern adopted in the Commission's FMModel software. The highest calculated ground level power density occurs at a distance of 14 meters from the base of the antenna support structure. At this point the power density is calculated to be 17.8 μW/cm², which is 8.9% of 200 μW/cm² (the FCC standard for uncontrolled environments).

Calculations of the power density produced by the proposed KBSX auxiliary antenna system assume a Type 1 element pattern, which is the "worst case" element pattern adopted in the Commission's FMModel software. The highest calculated ground level power density occurs at a distance of 14 meters from the base of the antenna support structure. At this point the power density is calculated to be 17.8 μW/cm², which is 8.9% of 200 μW/cm² (the FCC standard for uncontrolled environments).

Calculations of the power density produced by the KBSU-FM/KBSX auxiliary antenna and the other stations at this transmitter site are summarized in the following table:

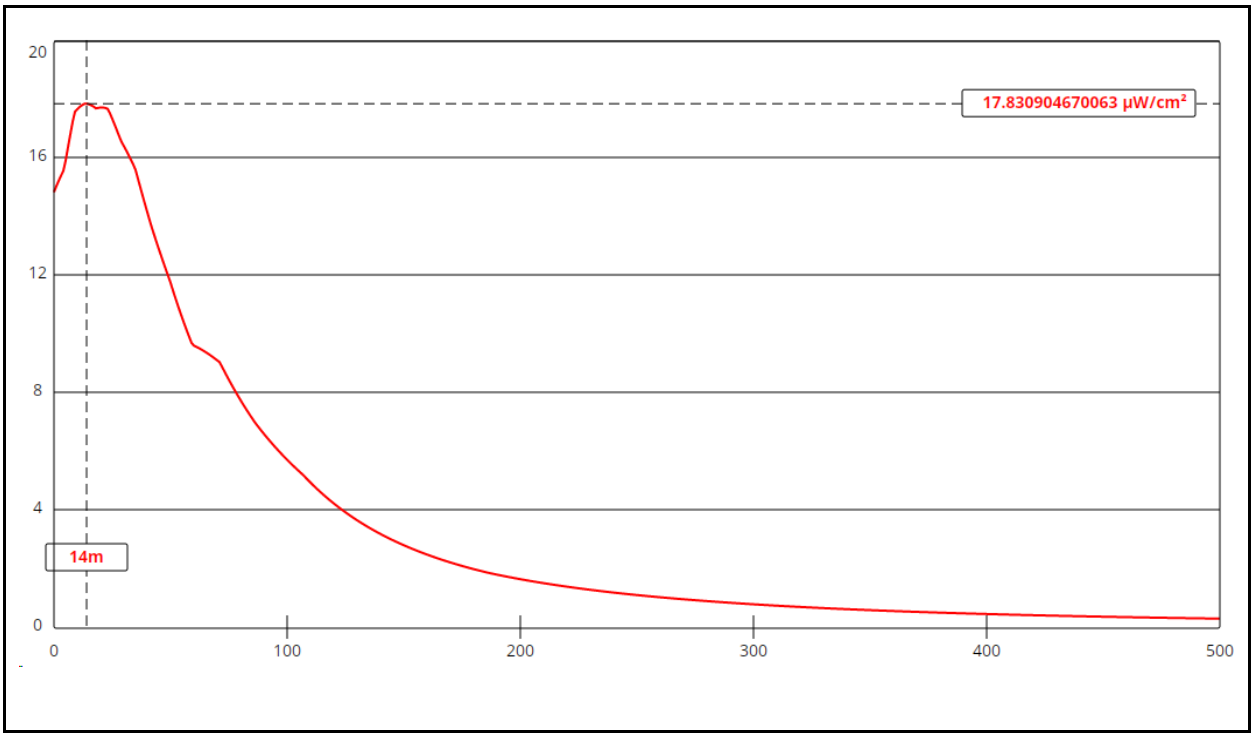
| Call | Avg or Peak ERP<br>Antenna Model | Relative Field | Height AGL | Calculated Max Exposure | Gen Pop FCC MPE | % of MPE |
|---|---|---|---|---|---|---|
| KBSU-FM<br>212C0<br>Auxiliary | 1.1 kW H<br>1.1 kW V<br>1 bay assumed | FMModel<br>Type 1 | 51.8 m | 17.8 µW/cm² | 200 µW/cm² | 8.9% |
| KBSX<br>218C1<br>Auxiliary | 1.1 kW H<br>1.1 kW V<br>1 bay assumed | FMModel<br>Type 1 | 51.8 m | 17.8 µW/cm² | 200 µW/cm² | 8.9% |
| K272FS | 0.099 kW H<br>0.099 kW V<br>ERI LP-2E-DA-HW<br>half-wave | FMModel<br>Type 3 | 8 m | 16.3 µW/cm² | 200 µW/cm² | 8.2% |
| KPSW-LD<br>Ch 8 | 0.100 kW H<br>SAM SAM-260 | 0.200<br>assumed | 6 m | 8.4 µW/cm² | 200 µW/cm² | 4.2%<br>or |
| CP | 3.000 kW H<br>0.900 kW V<br>DIE TLS-V8 | 0.173 | 40 m | 2.7 µW/cm² | | 1.4% |
| K11XP-D<br>Ch 11 | 0.100 kW H<br>SCA CL-713 | Manf<br>Pattern | 6 m | 15.6 µW/cm² | 200 µW/cm² | 7.8%<br>or |
| CP | 3.000 kW H<br>KAT DRV-2/3HC | Manf<br>Pattern | 30 m | 7.7 µW/cm² | | 3.9% |
| KKJB-TV<br>Ch 15 | 20.7 kW H<br>KAT K723147 12x1 | 0.100 | 50 m | 3.0 µW/cm² | 317 µW/cm² | 0.9% |
| KKIC-LD<br>Ch 16 | 15 kW H<br>KAT K723147 12x1 | 0.100 | 50 m | 2.2 µW/cm² | 321 µW/cm² | 0.7% |
| KCBB-LD<br>Ch 19 | 15 kW H<br>SCA 1X1KBBU | Manf<br>Pattern | 30 m | 29.9 µW/cm² | 333 µW/cm² | 9.0% |
| K23NB-D<br>Ch 23 | 0.200 kW H<br>SCA CL-1469 | Manf<br>Pattern | 6 m | 69.9 µW/cm² | 349 µW/cm² | 20.0% |
| KIWB-LD<br>Ch 29 | 15 kW H<br>SCA 1X1KBBU | Manf<br>Pattern | 30 m | 29.9 µW/cm² | 373 µW/cm² | 8.0% |
| KBSE-LD<br>Ch 33 | 15 kW H<br>PSI LP24AE | 0.100 | 23 m | 11.4 µW/cm² | 389 µW/cm² | 2.9% |
| KEVA-LD<br>Ch 34 | 15 kW H<br>15 kW V<br>SCA<br>4X2 750000044 | 0.100 | 40.6 m | 6.7 µW/cm² | 393 µW/cm² | 1.7% |
| KZAK-LD<br>Ch 35 | 15 kW H<br>15 kW V<br>SCA 2X1KBBU | 0.125 | 16.8 m | 71.5 µW/cm² | 397 µW/cm² | 18.0% |
| **Total . . . . . 99.2%** | | | | | | |

Notes: For TV facilities with a relative field value listed, the relative field value indicated is the maximum value which occurs at 45 degrees or more below the horizontal, based on the manufacturer's vertical plane pattern, or as represented in the station's own application. The resulting adjusted ERP value is assumed to be radiated straight down to a point 2 meters above ground level at the base of the tower.

There was no elevation pattern data available for the Samco SAM-260 antenna, either on the Samco website or in the KPSW-LD application. A worst-case relative field value of 0.200 was assumed.

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of the KBSU-FM/KBSX auxiliary antenna and the present operation of the other stations at this site (were their maxima to coincide, which they do not) is 99.2% of the FCC standard for uncontrolled environments. This should be considered a worst-case value, as these stations operate from several towers, and their maxima would not coincide.

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.

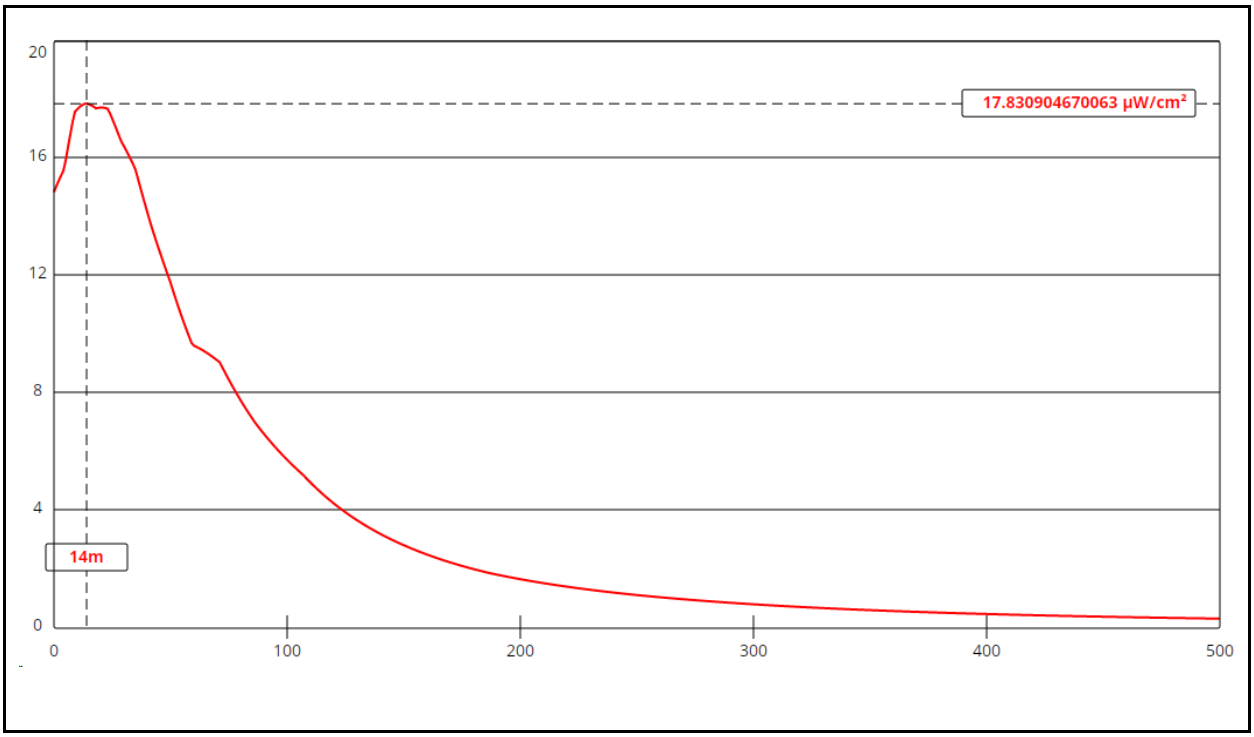



**Ground-Level RF Exposure** **OET FMModel**

**KBSU-FM 212C0 Auxiliary Antenna**

| | |
|---|---|
| Antenna Type: | Type 1 assumed |
| No. of Elements: | 1 assumed |
| Element Spacing: | 1 wavelength |
| | |
| Distance: | 500 meters |
| Horizontal ERP: | 1100 W |
| Vertical ERP: | 1100 W |
| | |
| Antenna Height: | 51.8 meters AGL |

Maximum Calculated Power Density is 17.8 µW/cm$^2$ at 14 meters from the antenna structure.

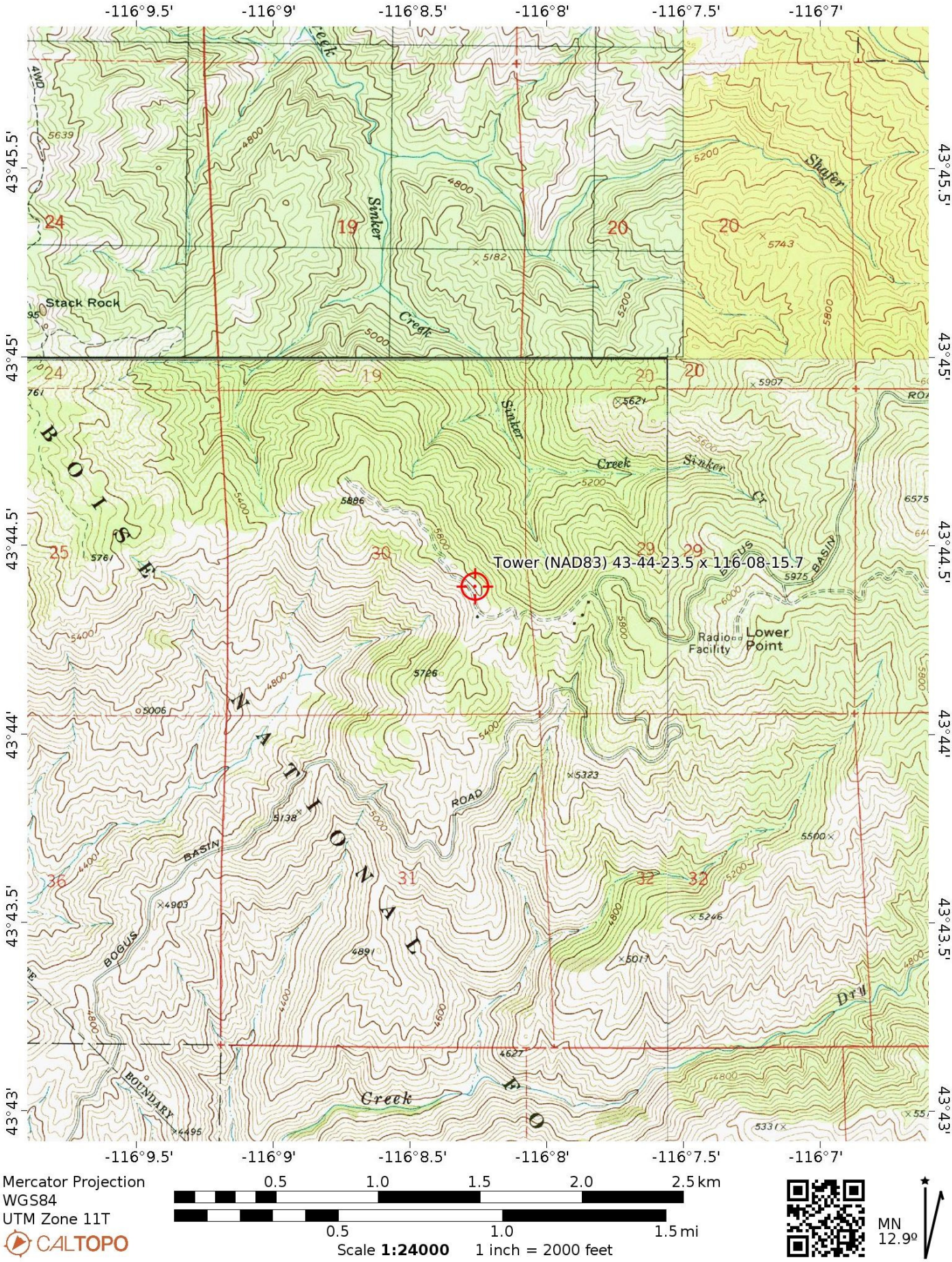



**Ground-Level RF Exposure** **OET FMModel**

**KBSX 218C1 Auxiliary Antenna**

| | |
|---|---|
| Antenna Type: | Type 1 assumed |
| No. of Elements: | 1 assumed |
| Element Spacing: | 1 wavelength |
| | |
| Distance: | 500 meters |
| Horizontal ERP: | 1100 W |
| Vertical ERP: | 1100 W |
| | |
| Antenna Height: | 51.8 meters AGL |

Maximum Calculated Power Density is 17.8 µW/cm$^2$ at 14 meters from the antenna structure.

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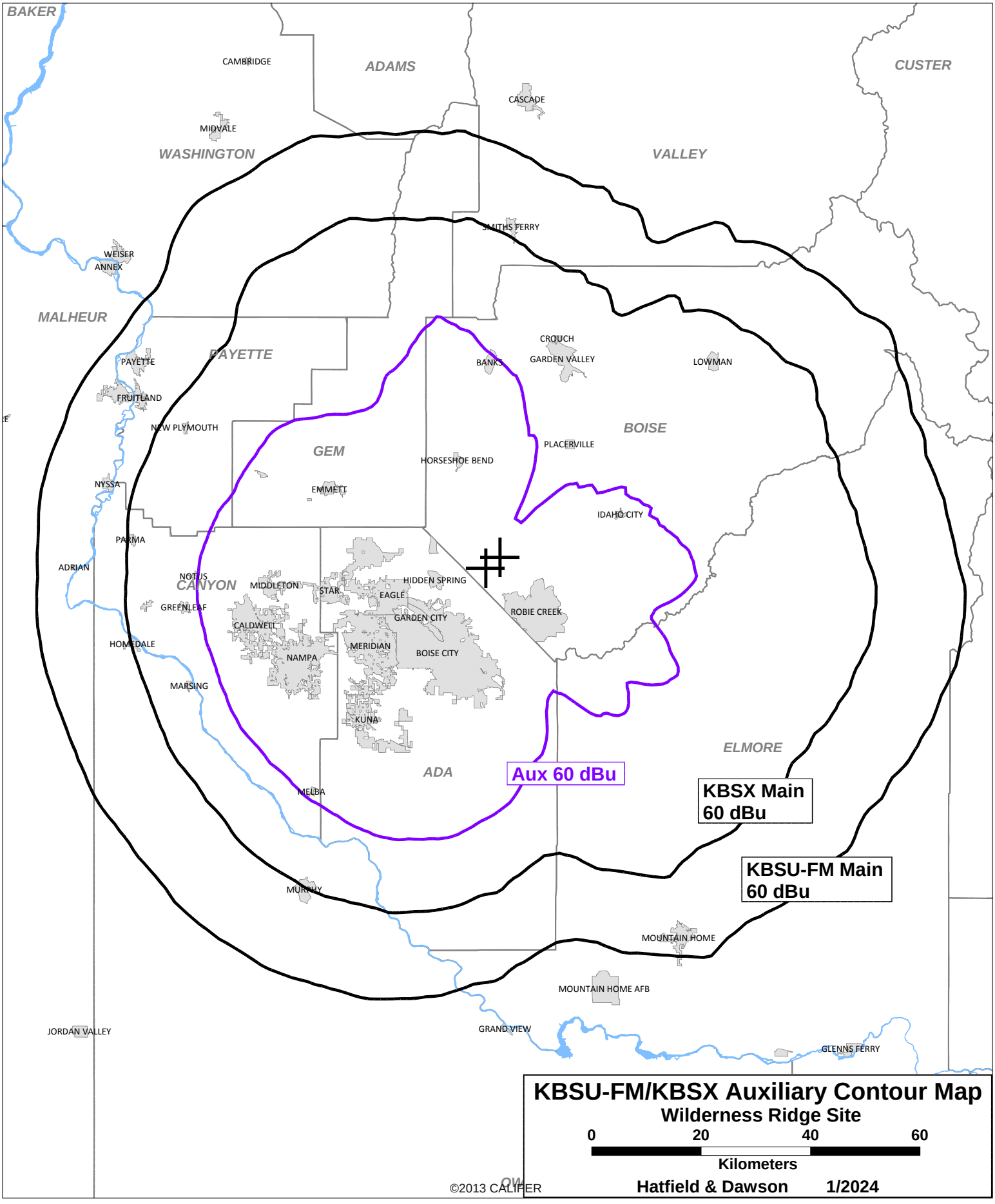
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ROBIE CREEK
CALDWELL
HOMEDALE
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MARSING
KUNA
ELMORE
ADA
Aux 60 dBu
KBSX Main
60 dBu
MELBA
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MURPHY
MOUNTAIN HOME
MOUNTAIN HOME AFB
JORDAN VALLEY
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KBSU-FM/KBSX Auxiliary Contour Map
Wilderness Ridge Site
0
20
40
60
Kilometers
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