# Comprehensive Technical Exhibit

*Application for Construction Permit*

KCWY-DT – Casper, Wyoming

Bozeman Trail Communications Company

June, 2008

## ***General***

The following engineering statement and attached exhibits have been prepared for **Bozeman Trail Communications Company**, licensee of television station KCWY(TV) at Casper, Wyoming, and are in support of their application for construction permit for KCWY-DT post transition facilities.[1]

KCWY currently operates on channel 13 as an NTSC facility. KCWY was not assigned a DTV channel upon the commencement of the conversion to digital television. In the first round of channel elections, the applicant made no selection for a final channel, thereby choosing to participate in the second round.[2] In the second round, channel 12 was selected as the final channel for DTV operations.[3] Although the CDBS indicates that the second round submission remains with a status of "tendered for filing", Appendix B lists channel 12 for the KCWY allotment.[4]

Therefore, pursuant to the Commission's DTV Table of Allotments in Appendix B of the *Eighth Report and Order*, KCWY-DT will operate on channel 12 in the post-transition environment. This application is being submitted to request a construction permit for the post-transition facilities for KCWY-DT. The parameters requested for this initial construction permit vary from those contained in the appropriate Appendix B allotment. Since sufficient variance exists from the proposed and allocated facilities, this application is being submitted as an application for maximization.

[1] The Facility ID for KCWY(TV) is 68713.
[2] See BFRECT-20050202AEN.
[3] See BSRECT-20051011AEG.
[4] Status based on inspection CDBS data on June 12, 2008.

***Discussion of KCWY-DT Allotment and Proposed Facilities***

In the Commission's Table of Allotments, KCWY-DT is specified as operating in the post-transition environment on channel 12. The table specifies maximum effective radiated power of 3.2 kW at an antenna center of radiation at 534 meters above average terrain.[5] The allocation lists an Antenna ID of 74727 for KCWY-DT. The geographic coordinates provided for the KCWY allocation are 42-44-26 North Latitude and 106-21-34 West Longitude.

KCWY seeks to construct its DTV facility at a different location, which is the site currently authorized for NTSC operations.[6] The proposed site is located 4.33 kilometers from the Appendix B site at an azimuth of 85.5 degrees true as determined by the Commission's distance calculation method. The proposed site has geographic coordinates of 42-44-37 North Latitude and 106-18-24 West Longitude. The use of this second site is desirable as it would permit KCWY to utilize its authorized NTSC antenna system for post-transition DTV operations.

More importantly than the desire to utilize the authorized NTSC antenna system in the post-transition environment is the fact that the site specified in the Appendix B allocation is no longer available for use by the applicant. In addition, the antenna pattern contained within the KCWY Appendix B allocation is consistent with an antenna design that will not be permitted on the tower located at the proposed site due to structural loading considerations.

As a result of the change in site locations, and corresponding height parameters, the predicted noise limited service contour from the proposed facility will extend more than five miles along certain azimuths beyond the allotment noise limited contour. Due to the proposed change in

[5] Height above average terrain value is apparently based on the sampling of the 8 cardinal radials with a 30 second terrain database and assumes a center of radiation of 2467 meters above mean sea level.
[6] See BPCT-20060703ACA and BLCT-20080521ABN.

site location relative to the allocation, it is impractical to make a tabular comparison between the two contours. Exhibit E-1 however, is a map illustrating the allocated and proposed noise limited contours. This map confirms the greater than five mile extension along certain azimuths.

The proposed facility will not result in impermissible interference to other facilities in the region. Exhibits E-2 and E-3 comprise the outgoing interference study for the proposed facility. As these exhibits demonstrate, the proposed facility is not predicted to cause interference to any other relevant proposal or authorization.

Changes in the site location for KCWY-DT do not negatively affect the DTV service area population. Under Appendix B, KCWY-DT is specified as having a service area population of 70 thousand persons. Exhibit E-4 illustrates the proposed DTV service area, while Exhibit E-5 summarizes the relevant population calculations. As these two exhibits demonstrate, the service area of the proposed facility is 70,000 persons. The proposed service area population therefore matches the allocated service area population.

The proposed facility would operate with a maximum effective radiated power of 3.2 kW utilizing a directional antenna. The antenna that would be utilized by KCWY-DT is the same antenna that is currently being utilized by the KCWY NTSC facility. This antenna is a Kathrein-Scala (SCA) Model DRV-4/1. Its configuration is a four layer panel array, utilizing 4.5 degrees of electrical beam tilt. No mechanical beam tilt is utilized or proposed. The antenna would be located at a center of radiation of 2512 meters AMSL, which corresponds to a height of 572 meters above average terrain.[7] Technical data for this proposed antenna is contained in Exhibit E-6.

[7] Height above average terrain figure is based on 360 radials using the NGDC 30 second linearly interpolated terrain database. The 8 radial height above average terrain is 553.4 meters.

The tower utilized by the proposed DTV is not utilized by several other FM facilities. It would not, however, be part of any AM radiation system and is not located in the vicinity of an AM radiation system. The proposed facility therefore complies with Section 73.625(c) of the Commission's Rules.

The facilities discussed above, including the proposed directional antenna system would provide the requisite coverage level over the community of license. Exhibit E-7 depicts the predicted 43 and 36 dBu F(50,90) contours along with the predicted Longley-Rice signal level bounded by the 36 dBu noise limited contour. As this map demonstrates, Casper, Wyoming, the community of license, would receive a signal level in excess of 43 dBu. In addition, the 43 dBu F(50,90) service contour encompasses all of Casper.

The requirements of Section 73.1030 of the Commission's Rules are not applicable in this particular case. The proposed facility would not operate in any of the zones described in the referenced section. In addition, the proposed facility is not in proximity to the protected FCC Field Installations described in Section 0.121 of the Commission's Rules. The structure utilized for the facilities described in this application has been registered with the Commission. The Commission has assigned an ASR number to this structure of 1033353.

The proposed KCWY-DT facility would not constitute a substantial environmental impact. The absence of a significant environmental impact by the proposed facility is based on two considerations. The first of these considerations is the fact that the proposed facility would utilize the existing KCWY transmission facility. Since no new excavation or construction would result, no additional environmental impact to the area would ensue.

Secondly, the proposed facility would not constitute an RF exposure hazard to persons at the site. In addition to KCWY-DT, the structure would also be utilized by FM stations KWYY(FM), KMGW(FM), KTRS-FM, and KRVK(FM). The predicted power density for KCWY-DT was calculated using the equations contained in OET Bulletin 65, while the power density for the FM facilities was calculated using the Commission's FM model software package. The predicted power density for KCWY-DT is calculated as follows:

$$S = \frac{33.4(E_{Rel})^2(ERP)}{h^2}$$

In the case of KCWY-DT, a worst case scenario that all energy radiated from the antenna is directed at the ground was considered. Therefore the relative field component of the above equation is set to 1.0 as a value. The ERP is the maximum effective radiated power in Watts which is 3200, while the height variable was set to 65 meters which is the KCWY-DT center of radiation minus 2 meters. The worst case power density, which is assumed to occur at all locations, is calculated to be 25.3 $\mu W/cm^2$.

Using FM Model and the information contained in the CDBS FM database, the predicted power density for the FM stations was individually calculated. For KWYY(FM) the predicted power density is 65.0 $\mu W/cm^2$ at 22 meters from the tower. The KMGW(FM) power density of 4.2 $\mu W/cm^2$ at 20 meters from the tower, while the predicted power density for KTRS-FM is 26.4 $\mu W/cm^2$ at 20 meters from the tower. The last FM station, KRVK(FM), has a predicted power density of 10.1 $\mu W/cm^2$ at 22 meters from the tower.

The sum of the contributions from each of the FM facilities utilizing the tower is 105.7 $\mu W/cm^2$ and is assumed to occur at all points in the vicinity of the tower. With the addition of the worst case calculated power density from KCWY-DT, the sum total is 131 $\mu W/cm^2$. This power density, is less than the upper limit permissible under the uncontrolled environment condition of the applicable safety standard of 200 $\mu W/cm^2$. The proposed facility would therefore not constitute an RF exposure hazard to persons at the site.

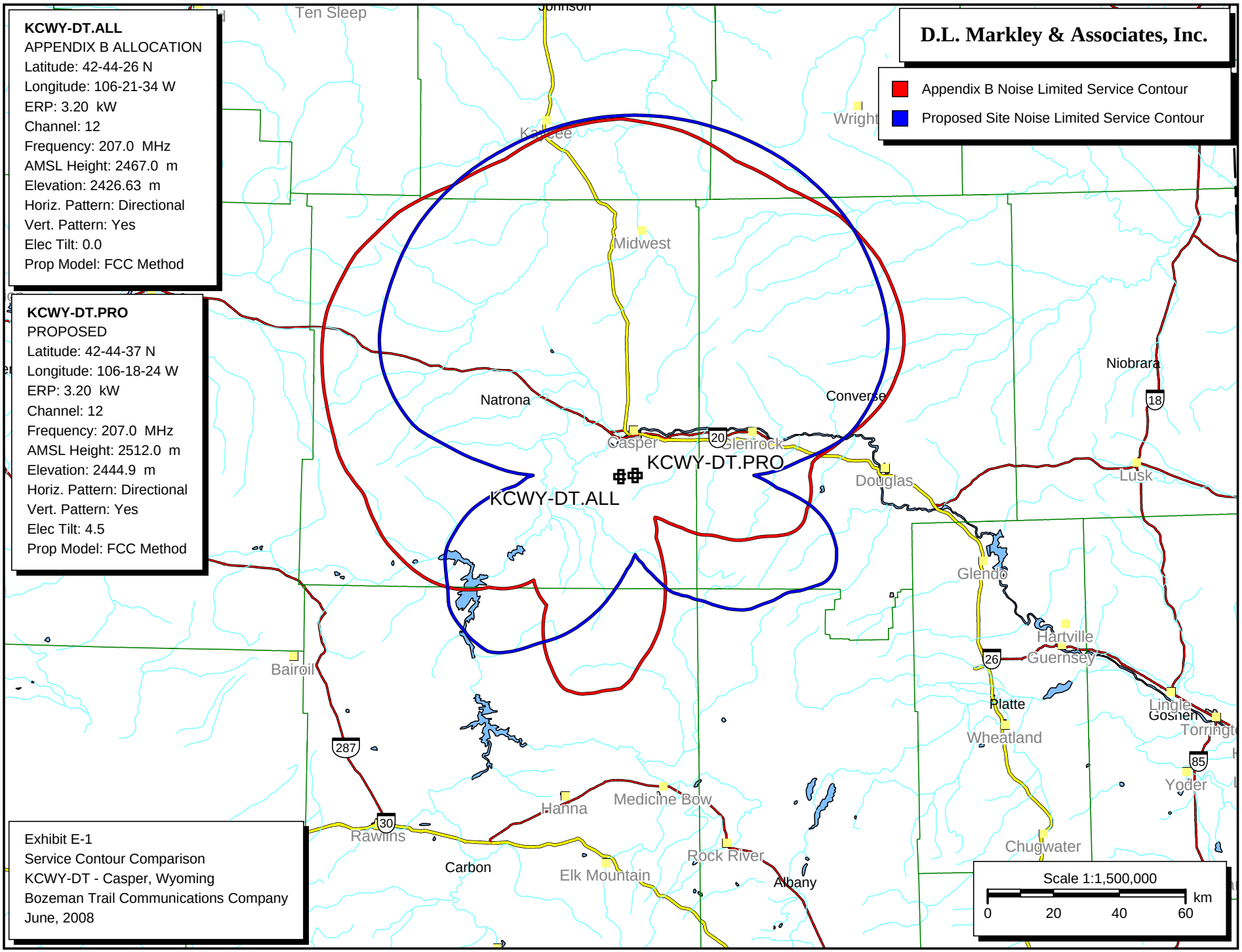
In order to protect workers having access to the tower from being exposed to levels of non-ionizing radiation which may exceed the applicable safety standards, the applicant certifies that it will coordinate with other present and future users of the site. Such coordination will include, but is not necessarily limited to, a reduction in transmitter power or cessation of operation.

***Affidavit***

The preceding statement and attached exhibits have been prepared by me, or under my direction, and are true and accurate to the best of my belief and knowledge.


Above signature is digitized copy of actual signature
License Expires November 30, 2009

Jeremy D. Ruck, PE
June 12, 2008


KCWY-DT.ALL
APPENDIX B ALLOCATION
Latitude: 42-44-26 N
Longitude: 106-21-34 W
ERP: 3.20 kW
Channel: 12
Frequency: 207.0 MHz
AMSL Height: 2467.0 m
Elevation: 2426.63 m
Horiz. Pattern: Directional
Vert. Pattern: Yes
Elec Tilt: 0.0
Prop Model: FCC Method
KCWY-DT.PRO
PROPOSED
Latitude: 42-44-37 N
Longitude: 106-18-24 W
ERP: 3.20 kW
Channel: 12
Frequency: 207.0 MHz
AMSL Height: 2512.0 m
Elevation: 2444.9 m
Horiz. Pattern: Directional
Vert. Pattern: Yes
Elec Tilt: 4.5
Prop Model: FCC Method
D.L. Markley & Associates, Inc.
Appendix B Noise Limited Service Contour
Proposed Site Noise Limited Service Contour
KCWY-DT.PRO
KCWY-DT.ALL
Ten Sleep
Midwest
Natrona
Casper
Glenrock
Converse
Douglas
Wright
Niobrara
Lusk
Glendo
Hartville
Guernsey
Platte
Wheatland
Bairoil
Rawlins
Hanna
Medicine Bow
Carbon
Elk Mountain
Rock River
Albany
Chugwater
Yoder
Scale 1:1,500,000
0 20 40 60 km
Exhibit E-1
Service Contour Comparison
KCWY-DT - Casper, Wyoming
Bozeman Trail Communications Company
June, 2008

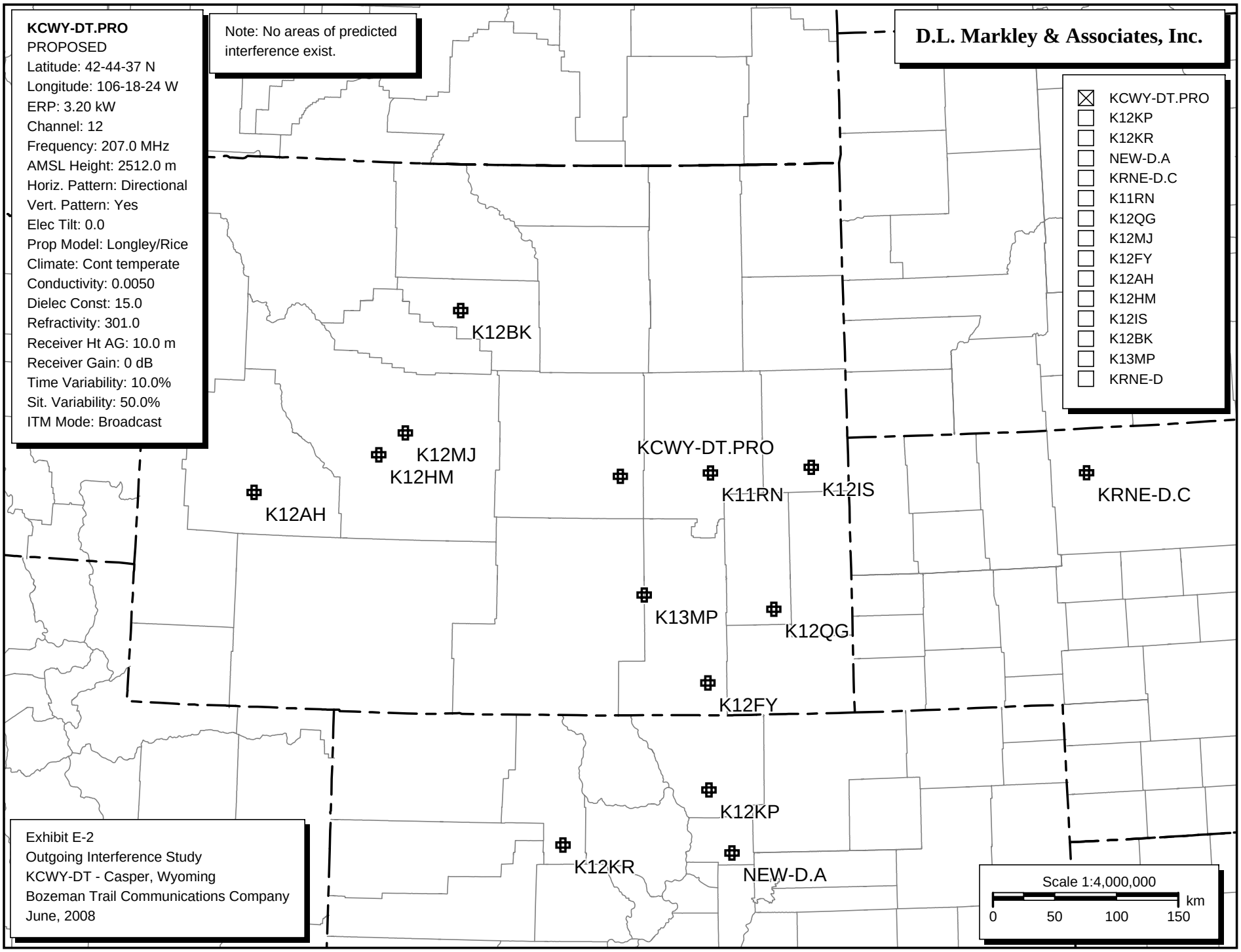

KCWY-DT.PRO
PROPOSED
Latitude: 42-44-37 N
Longitude: 106-18-24 W
ERP: 3.20 kW
Channel: 12
Frequency: 207.0 MHz
AMSL Height: 2512.0 m
Horiz. Pattern: Directional
Vert. Pattern: Yes
Elec Tilt: 0.0
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0050
Dielec Const: 15.0
Refractivity: 301.0
Receiver Ht AG: 10.0 m
Receiver Gain: 0 dB
Time Variability: 10.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast
Note: No areas of predicted interference exist.
D.L. Markley & Associates, Inc.
KCWY-DT.PRO
K12KP
K12KR
NEW-D.A
KRNE-D.C
K11RN
K12QG
K12MJ
K12FY
K12AH
K12HM
K12IS
K12BK
K13MP
KRNE-D
K12BK
K12MJ
K12HM
KCWY-DT.PRO
K11RN
K12IS
K12AH
KRNE-D.C
K13MP
K12QG
K12FY
K12KP
K12KR
NEW-D.A
Exhibit E-2
Outgoing Interference Study
KCWY-DT - Casper, Wyoming
Bozeman Trail Communications Company
June, 2008
Scale 1:4,000,000
km
0
50
100
150

Exhibit E-3
Outgoing Interference Population Report
Based on Proposed KCWY-DT Facilities.

KCWY-DT.PRO (12)  Casper, WY  -  PROPOSED
Broadcast Type: Digital  Service: V
Lat: 42-44-37 N  Lng: 106-18-24 W  ERP: 3.2 kW  AMSL: 2512.0 m
TV Outgoing Interference Study
Signal Resolution: 2.0 km
Consider NTSC Taboo: Yes
KWX error points are considered to
     be interference free coverage.
Default # of radials computed for contours: 72
Contours calculated using 8 radial HAAT.
LR Profile Spacing Increment: 1.0 km
Masked interference points are being
     counted as interference.
Pop Centroid DB: 2000 US Census (SF1)

Study Date: 6/12/2008
TV Database Date: 6/10/2008

Primary Terrain: V-Soft 3 Second US Terrain
Secondary Terrain: V-Soft 30 Second US Database

Population Database: 2000 US Census (SF1)

---

Stations Considered:

| Call Letters | City | State | Dist | Bear |
|---|---|---|---|---|
| K12KP (12N) | Glen Haven | CO | 263.2 | 164.2 |
| K12KR (12N) | Toponas | CO | 301.3 | 188.9 |
| NEW-D.A (12) | Boulder | CO | 317.2 | 163.5 |
| KRNE-D.C (12) | Merriman | NE | 376.5 | 89.6 |
| K11RN (11N) | Douglas | WY | 72.8 | 87.9 |
| K12QG (12-) | Chugwater | WY | 164.0 | 130.9 |
| K12MJ (12N) | Riverton, Etc. | WY | 177.1 | 281.4 |
| K12FY (12N) | Big Laramie, Etc. | WY | 181.3 | 157.0 |
| K12AH (12N) | Big Piney, Etc. | WY | 296.1 | 267.5 |
| K12HM (12N) | Lander | WY | 195.9 | 275.1 |
| K12IS (12N) | Lusk | WY | 154.3 | 87.3 |
| K12BK (12N) | Worland | WY | 185.8 | 316.1 |
| K13MP (13N) | Medicine Bow | WY | 97.8 | 168.6 |
| KRNE-D (12) | MERRIMAN | NE | 376.6 | 89.6 |

---

| Call | Area | HUnits | Contour | Masked Ix | Unmasked Ix | % |
|---|---|---|---|---|---|---|
| K12KP (12N) | 0.0 | 0 | 47 | 0 | 0 | 0.0 |
| K12KR (12N) | 0.0 | 0 | 17 | 0 | 0 | 0.0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| NEW-D.A (12) | 0.0 | 0 | 126,459 | 0 | 0 | 0.0 |
| KRNE-D.C (12) | 0.0 | 0 | 35,910 | 0 | 0 | 0.0 |
| K11RN (11N) | 0.0 | 0 | 1,297 | 0 | 0 | 0.0 |
| K12QG (12-) | 0.0 | 0 | 425 | 0 | 0 | 0.0 |
| K12MJ (12N) | 0.0 | 0 | 12,032 | 0 | 0 | 0.0 |
| K12FY (12N) | 0.0 | 0 | 25,726 | 0 | 0 | 0.0 |
| K12AH (12N) | 0.0 | 0 | 39 | 0 | 0 | 0.0 |
| K12HM (12N) | 0.0 | 0 | 1 | 0 | 0 | 0.0 |
| K12IS (12N) | 0.0 | 0 | 5 | 0 | 0 | 0.0 |
| K12BK (12N) | 0.0 | 0 | 15 | 0 | 0 | 0.0 |
| K13MP (13N) | 0.0 | 0 | 0 | 0 | 0 | 0.0 |
| KRNE-D (12) | 0.0 | 0 | 33,295 | 0 | 0 | 0.0 |

---

| | Housing Units | Population |
|---|---|---|

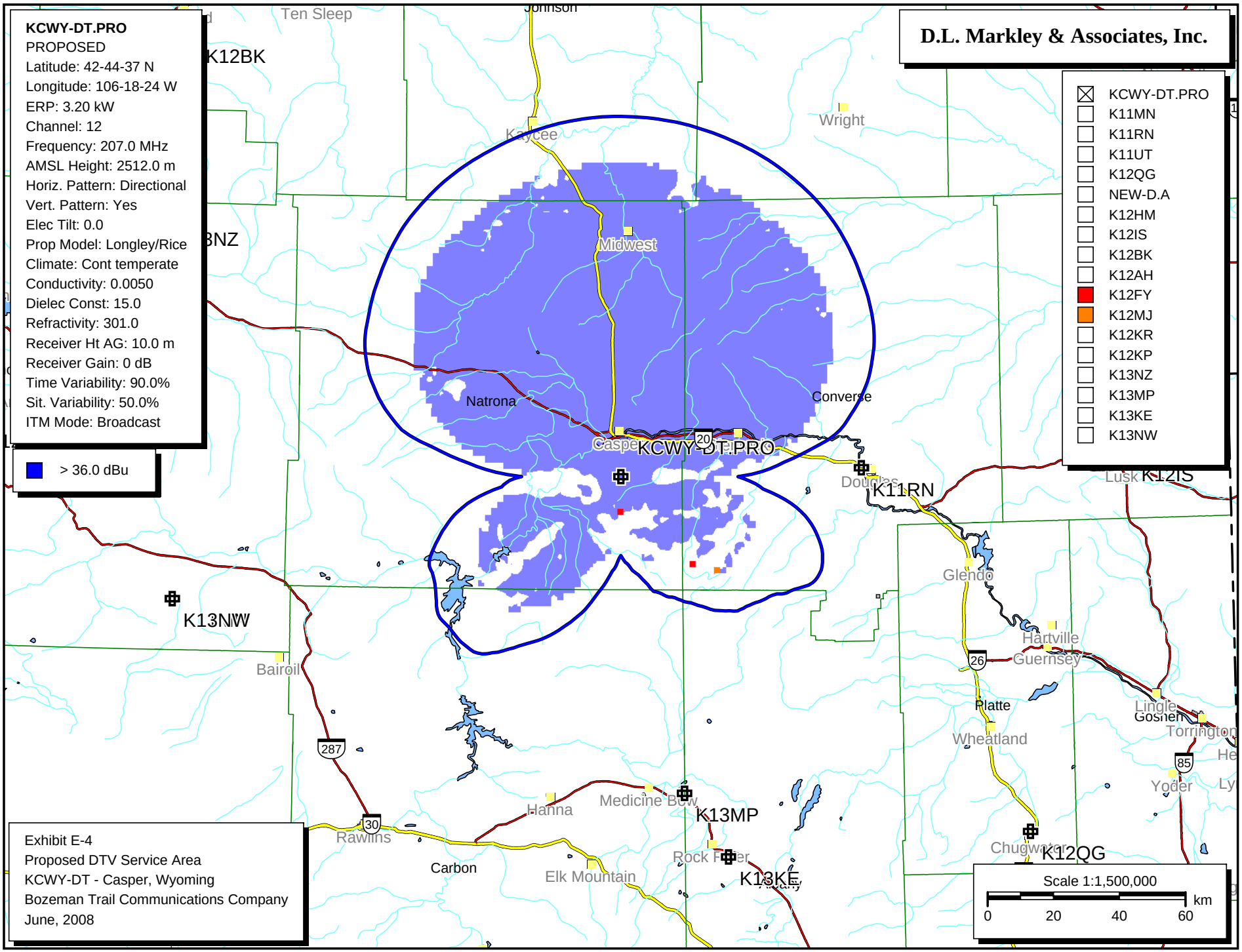

KCWY-DT.PRO
PROPOSED
Latitude: 42-44-37 N
Longitude: 106-18-24 W
ERP: 3.20 kW
Channel: 12
Frequency: 207.0 MHz
AMSL Height: 2512.0 m
Horiz. Pattern: Directional
Vert. Pattern: Yes
Elec Tilt: 0.0
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0050
Dielec Const: 15.0
Refractivity: 301.0
Receiver Ht AG: 10.0 m
Receiver Gain: 0 dB
Time Variability: 90.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast
> 36.0 dBu
D.L. Markley & Associates, Inc.
KCWY-DT.PRO
K11MN
K11RN
K11UT
K12QG
NEW-D.A
K12HM
K12IS
K12BK
K12AH
K12FY
K12MJ
K12KR
K12KP
K13NZ
K13MP
K13KE
K13NW
Ten Sleep
K12BK
Kaycee
Wright
Midwest
Natrona
Converse
Casper
KCWY-DT.PRO
Douglas
K11RN
Lusk
K12IS
Glendo
K13NW
Hartville
Guernsey
Bairoil
Platte
Wheatland
Lingle
Goshen
Torrington
Yoder
Hanna
Medicine Bow
K13MP
Rawlins
Carbon
Elk Mountain
Rock River
K13KE
Chugwater
K12QG
20
26
85
287
30
Exhibit E-4
Proposed DTV Service Area
KCWY-DT - Casper, Wyoming
Bozeman Trail Communications Company
June, 2008
Scale 1:1,500,000
km
0
20
40
60

Exhibit E-5
DTV Service Area Population Tabulation
Based on Proposed KCWY-DT Facilities

KCWY-DT.PRO (12)  Casper, WY  -  PROPOSED
Broadcast Type: Digital  Service: V
Lat: 42-44-37 N  Lng: 106-18-24 W  ERP: 3.2 kW  AMSL: 2512.0 m
TV Incoming Interference Study
Interference Considered Within: FCC Contour: 36 dBu
Signal Resolution: 2.0 km
LR Profile Spacing Increment: 1.0 km
Consider NTSC Taboo: Yes
KWX error points are considered to
     be interference free coverage.
# of radials computed for protected contour: 360
Protected contour calculated using 8 radial HAAT.
Threshold for reception: 36.0
Pop Centroid DB: 2000 US Census (SF1)

Study Date: 6/12/2008
TV Database Date: 6/10/2008

Primary Terrain: V-Soft 3 Second US Terrain
Secondary Terrain: V-Soft 30 Second US Database

Population Database: 2000 US Census (SF1)

Percentages calculated using a baseline population of 70,000.

Stations which cause interference:

| Call Letters | H Units | Population | % | Area (sq. km) |
|---|---|---|---|---|
| K12FY (12N) | 0 | 0 | 0.000 | 7.21 |
| K12MJ (12N) | 0 | 0 | 0.000 | 3.61 |

Masking Summary:

| | Total Interference | | Unique Interference | |
|---|---|---|---|---|
| Call Letters | Population | % | Population | % |
| K12FY (12N) | 0 | 0.000 | 0 | 0.000 |
| K12MJ (12N) | 0 | 0.000 | 0 | 0.000 |

Stations considered which do not cause interference:

     K11MN (11N)
     K11RN (11N)
     K11UT (11N)
     K12QG (12-)
     NEW-D.A (12)
     K12HM (12N)
     K12IS (12N)
     K12BK (12N)
     K12AH (12N)

K12FY (12N)
K12MJ (12N)
K12KR (12N)
K12KP (12N)
K13NZ (13+)
K13MP (13N)
K13KE (13N)
K13NW (13N)

| Call Letters | City | State | Dist | Bear |
|---|---|---|---|---|
| K11MN (11N) | Jeffrey City | WY | 140.7 | 254.8 |
| K11RN (11N) | Douglas | WY | 72.8 | 87.9 |
| K11UT (11N) | Buffalo | WY | 178.8 | 350.1 |
| K12QG (12-) | Chugwater | WY | 164.0 | 130.9 |
| NEW-D.A (12) | Boulder | CO | 317.2 | 163.5 |
| K12HM (12N) | Lander | WY | 195.9 | 275.1 |
| K12IS (12N) | Lusk | WY | 154.3 | 87.3 |
| K12BK (12N) | Worland | WY | 185.8 | 316.1 |
| K12AH (12N) | Big Piney, Etc. | WY | 296.1 | 267.5 |
| K12FY (12N) | Big Laramie, Etc. | WY | 181.3 | 157.0 |
| K12MJ (12N) | Riverton, Etc. | WY | 177.1 | 281.4 |
| K12KR (12N) | Toponas | CO | 301.3 | 188.9 |
| K12KP (12N) | Glen Haven | CO | 263.2 | 164.2 |
| K13NZ (13+) | Shoshoni | WY | 158.0 | 299.8 |
| K13MP (13N) | Medicine Bow | WY | 97.8 | 168.6 |
| K13KE (13N) | Rock River | WY | 119.6 | 164.2 |
| K13NW (13N) | Jeffrey City | WY | 140.7 | 254.8 |

Totals for KCWY-DT.PRO (12)

| | | | |
|---|---|---|---|
| Calculation Area Population: | 70,243 | ( 12227.4 | sq. km ) |
| Not Affected by Terrain Loss: | 70,000 | ( 11732.0 | sq. km ) |
| Total NTSC Interference: | 0 | ( 10.8 | sq. km ) |
| DTV Only Interference: | 0 | ( 0.0 | sq. km ) |
| Total DTV Interference: | 0 | ( 0.0 | sq. km ) |
| Interfered Population: | 0 | ( 10.8 | sq. km ) |
| Interference Free: | 70,000 | ( 11721.1 | sq. km ) |

Percent Interference: 0.00

Terrain Blocked Population: 243 ( 495.4 sq. km)
Contour Area Population: 70,248

Interference Free Breakdown:

White: 64,249 ( 91.8% )

| | | |
|---|---|---|
| Black: | 483 | ( 0.7% ) |
| Hispanic: | 3,388 | ( 4.8% ) |
| Native American: | 611 | ( 0.9% ) |
| Asian: | 281 | ( 0.4% ) |
| Pacific Islander: | 22 | ( 0.0% ) |
| Mixed Race: | 897 | ( 1.3% ) |
| Other: | 69 | ( 0.1% ) |
| Total: | 70,000 | |

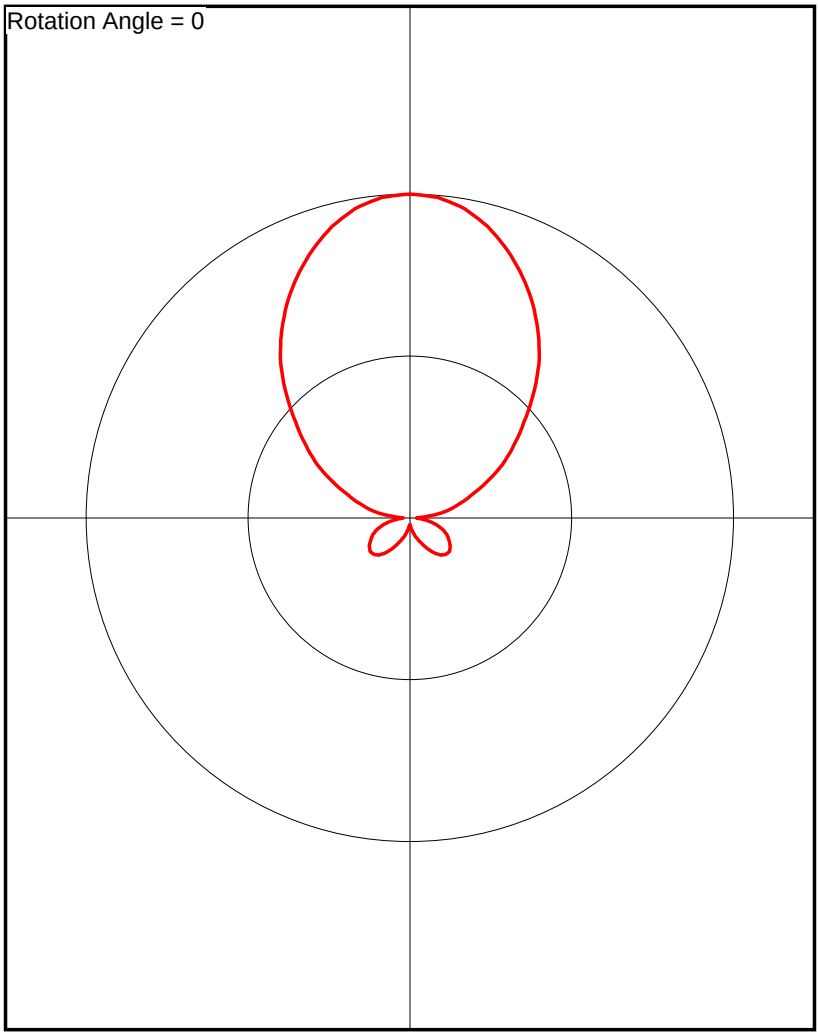
---

---

| | Housing Units | Population | % of County |
|---|---|---|---|
| Wyoming | | | |
| Campbell County | | | |
| County Pop | 13,288 | 33,698 | |
| KCWY-DT.PRO (12) | 1 | 4 | |
| Ix Free | 1 | 4 | 100.00 |
| Carbon County | | | |
| County Pop | 8,307 | 15,639 | |
| KCWY-DT.PRO (12) | 2 | 3 | |
| Ix Free | 2 | 3 | 100.00 |
| Converse County | | | |
| County Pop | 5,669 | 12,052 | |
| KCWY-DT.PRO (12) | 1,779 | 3,788 | |
| K12MJ (12N) | 0 | 0 | 0.00 |
| Ix Free | 1,779 | 3,788 | 100.00 |
| Johnson County | | | |
| County Pop | 3,503 | 7,075 | |
| KCWY-DT.PRO (12) | 14 | 19 | |
| Ix Free | 14 | 19 | 100.00 |
| Natrona County | | | |
| County Pop | 29,882 | 66,533 | |
| KCWY-DT.PRO (12) | 29,633 | 66,186 | |
| K12FY (12N) | 0 | 0 | 0.00 |
| Ix Free | 29,633 | 66,186 | 100.00 |

# Exhibit E-6 - Horizontal Plane Radiation Pattern

Pre-Rotation Antenna Pattern....




| Azimuth (deg) | Effective Field |
|---|---|
| 0.0 | 1.000 |
| 5.0 | 0.993 |
| 10.0 | 0.970 |
| 15.0 | 0.931 |
| 20.0 | 0.880 |
| 25.0 | 0.823 |
| 30.0 | 0.760 |
| 35.0 | 0.692 |
| 40.0 | 0.620 |
| 45.0 | 0.539 |
| 50.0 | 0.460 |
| 55.0 | 0.393 |
| 60.0 | 0.330 |
| 65.0 | 0.262 |
| 70.0 | 0.200 |
| 75.0 | 0.152 |
| 80.0 | 0.110 |
| 85.0 | 0.057 |
| 90.0 | 0.020 |
| 95.0 | 0.031 |
| 100.0 | 0.060 |
| 105.0 | 0.086 |
| 110.0 | 0.110 |
| 115.0 | 0.127 |
| 120.0 | 0.140 |
| 125.0 | 0.152 |
| 130.0 | 0.160 |
| 135.0 | 0.159 |
| 140.0 | 0.150 |
| 145.0 | 0.132 |
| 150.0 | 0.110 |
| 155.0 | 0.089 |
| 160.0 | 0.070 |
| 165.0 | 0.054 |
| 170.0 | 0.040 |
| 175.0 | 0.027 |
| 180.0 | 0.020 |
| 185.0 | 0.027 |
| 190.0 | 0.040 |
| 195.0 | 0.054 |
| 200.0 | 0.070 |
| 205.0 | 0.089 |
| 210.0 | 0.110 |
| 215.0 | 0.132 |
| 220.0 | 0.150 |
| 225.0 | 0.159 |
| 230.0 | 0.160 |
| 235.0 | 0.153 |
| 240.0 | 0.140 |
| 245.0 | 0.127 |
| 250.0 | 0.110 |
| 255.0 | 0.086 |
| 260.0 | 0.060 |
| 265.0 | 0.031 |
| 270.0 | 0.020 |
| 275.0 | 0.057 |
| 280.0 | 0.110 |
| 285.0 | 0.153 |
| 290.0 | 0.200 |
| 295.0 | 0.262 |
| 300.0 | 0.330 |
| 305.0 | 0.393 |
| 310.0 | 0.460 |
| 315.0 | 0.539 |
| 320.0 | 0.620 |
| 325.0 | 0.692 |
| 330.0 | 0.760 |
| 335.0 | 0.823 |
| 340.0 | 0.880 |
| 345.0 | 0.931 |
| 350.0 | 0.970 |
| 355.0 | 0.993 |

Exhibit E-6 - VERTICAL RADIATION PATTERN -Relative Field

Note: Relative field same for all azimuths.

| Elevation Angle | Relative Field |
|---|---|
| -18.00 | 0.209 |
| -17.00 | 0.245 |
| -16.00 | 0.272 |
| -15.00 | 0.288 |
| -14.00 | 0.292 |
| -13.00 | 0.284 |
| -12.00 | 0.262 |
| -11.00 | 0.230 |
| -10.00 | 0.192 |
| -9.00 | 0.159 |
| -8.00 | 0.159 |
| -7.00 | 0.201 |
| -6.00 | 0.277 |
| -5.00 | 0.370 |
| -4.00 | 0.468 |
| -3.00 | 0.570 |
| -2.00 | 0.667 |
| -1.00 | 0.756 |
| 0.00 | 0.835 |
| 1.00 | 0.901 |
| 2.00 | 0.952 |
| 3.00 | 0.985 |
| **4.50** | **1.000** |
| 5.00 | 0.996 |
| 6.00 | 0.974 |
| 7.00 | 0.933 |
| 8.00 | 0.878 |
| 9.00 | 0.808 |
| 10.00 | 0.728 |
| 11.00 | 0.639 |
| 12.00 | 0.544 |
| 13.00 | 0.449 |
| 14.00 | 0.356 |
| 15.00 | 0.270 |
| 16.00 | 0.197 |
| 17.00 | 0.152 |
| 18.00 | 0.143 |
| 19.00 | 0.165 |
| 20.00 | 0.196 |
| 21.00 | 0.224 |
| 22.00 | 0.242 |
| 23.00 | 0.250 |
| 24.00 | 0.250 |
| 25.00 | 0.237 |
| 26.00 | 0.220 |
| 27.00 | 0.194 |
| 28.00 | 0.164 |
| 29.00 | 0.129 |
| 30.00 | 0.089 |
| 31.00 | 0.052 |
| 32.00 | 0.013 |
| 33.00 | 0.024 |
| 34.00 | 0.057 |
| 35.00 | 0.088 |
| 36.00 | 0.113 |
| 37.00 | 0.134 |
| 38.00 | 0.149 |
| 39.00 | 0.159 |
| 40.00 | 0.164 |
| 41.00 | 0.164 |
| 42.00 | 0.160 |

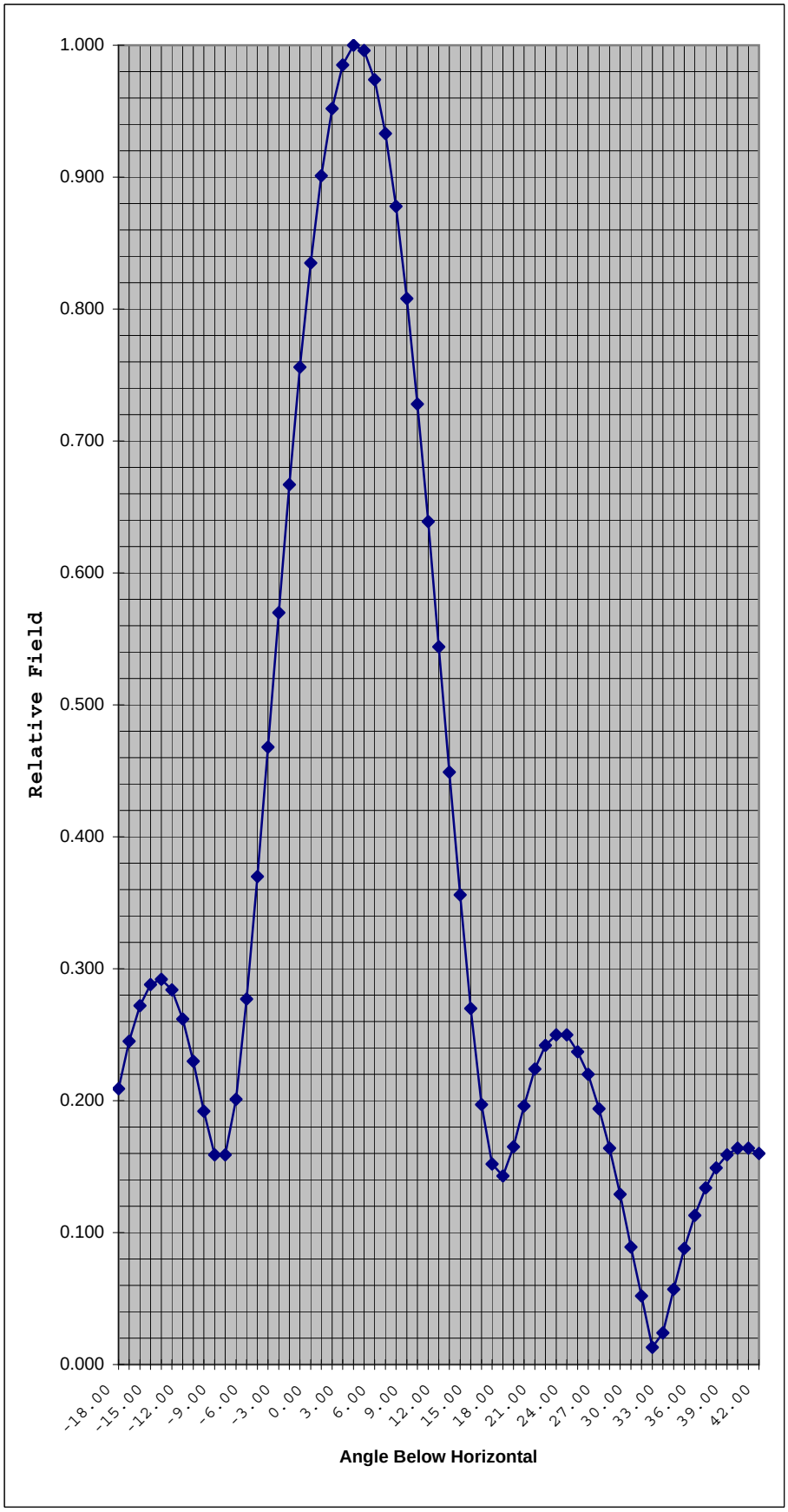
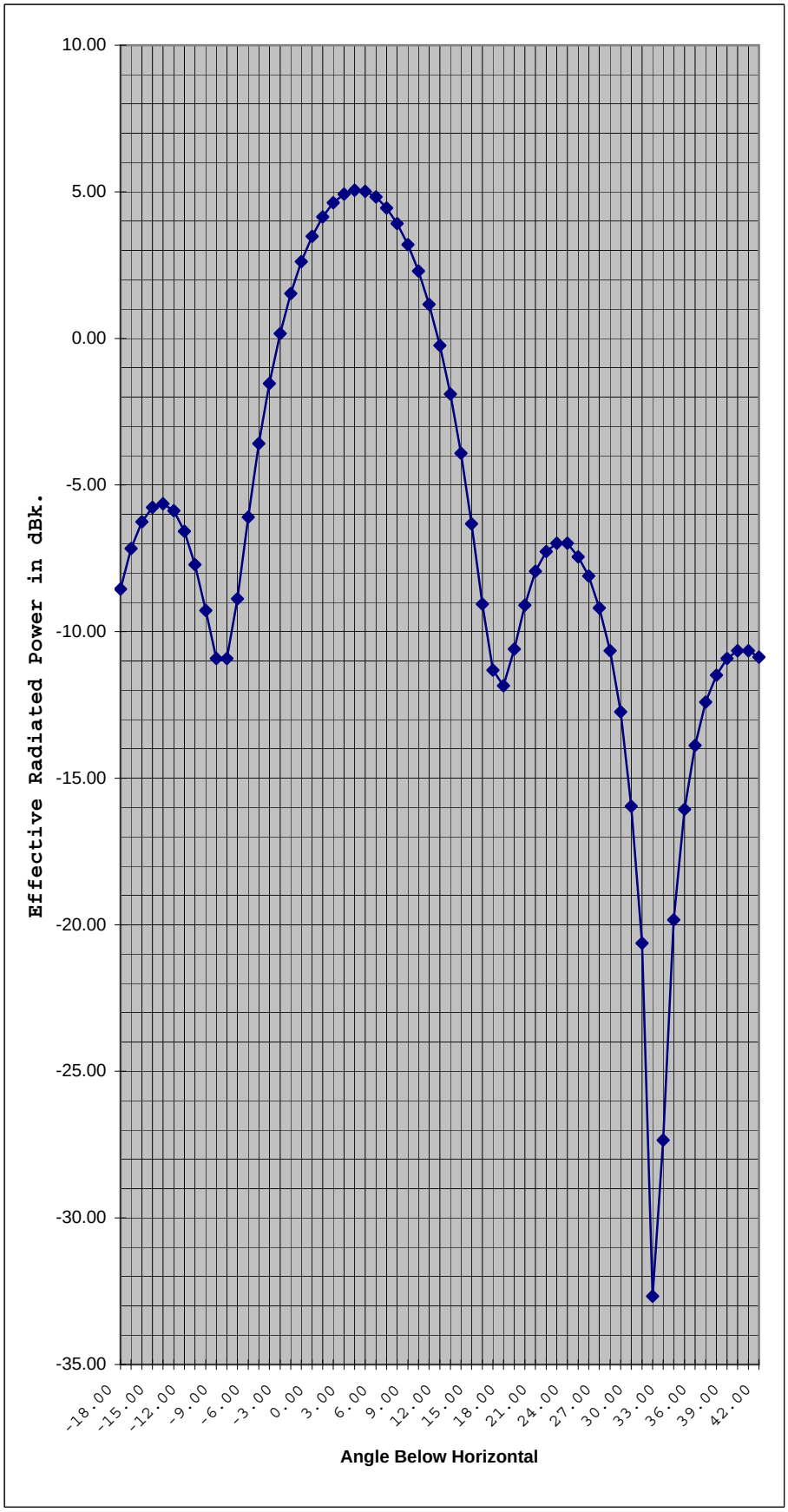
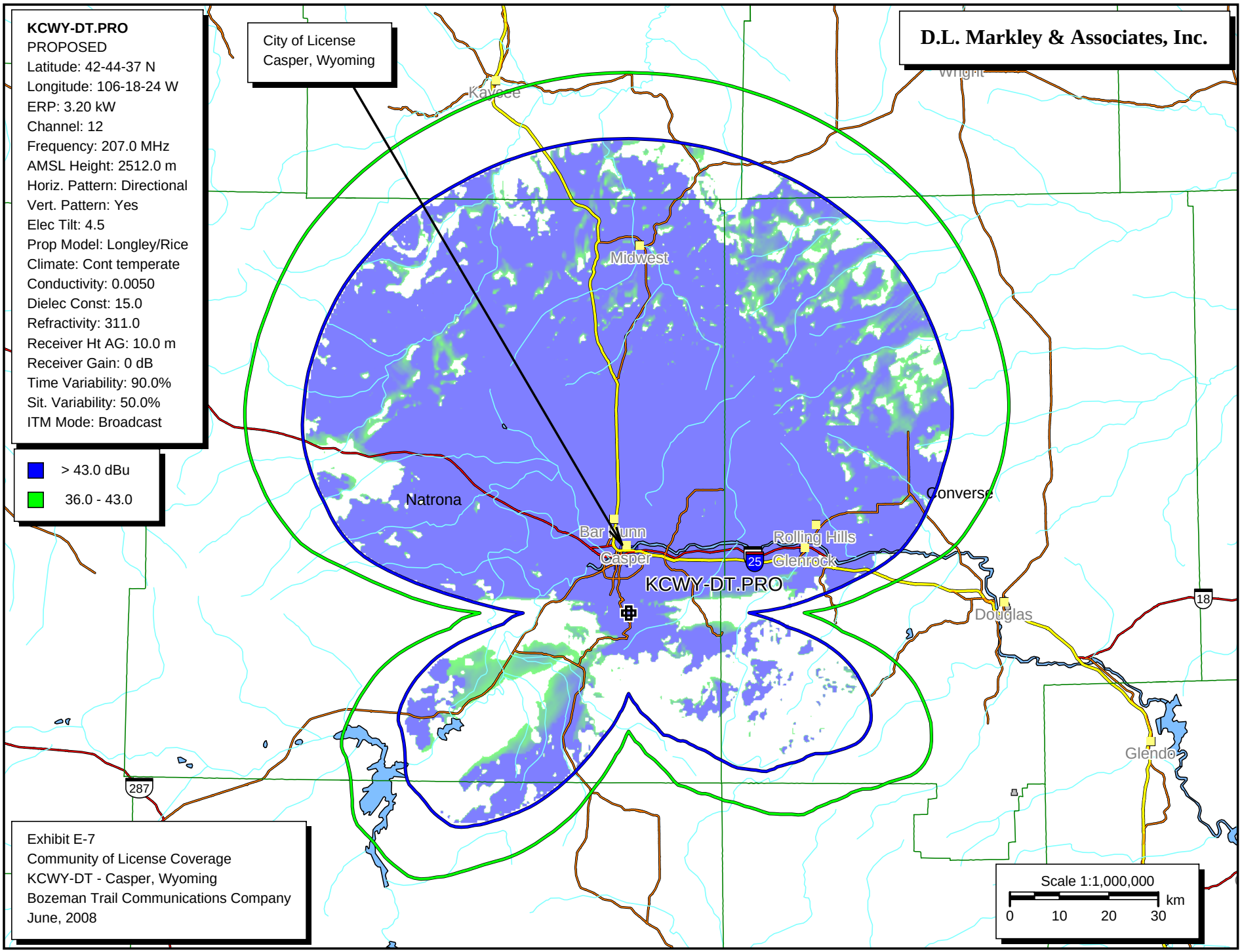


Exhibit E-6 - VERTICAL RADIATION PATTERN -ERP in dBk

Note: Relative field same for all azimuths.
ERP in dBk based on maximum ERP azimuths.

| Angle | Relative Field | ERP dBk. |
|---|---|---|
| -18.00 | 0.209 | -8.55 |
| -17.00 | 0.245 | -7.17 |
| -16.00 | 0.272 | -6.26 |
| -15.00 | 0.288 | -5.76 |
| -14.00 | 0.292 | -5.64 |
| -13.00 | 0.284 | -5.88 |
| -12.00 | 0.262 | -6.58 |
| -11.00 | 0.230 | -7.71 |
| -10.00 | 0.192 | -9.28 |
| -9.00 | 0.159 | -10.92 |
| -8.00 | 0.159 | -10.92 |
| -7.00 | 0.201 | -8.88 |
| -6.00 | 0.277 | -6.10 |
| -5.00 | 0.370 | -3.58 |
| -4.00 | 0.468 | -1.54 |
| -3.00 | 0.570 | 0.17 |
| -2.00 | 0.667 | 1.53 |
| -1.00 | 0.756 | 2.62 |
| 0.00 | 0.835 | 3.49 |
| 1.00 | 0.901 | 4.15 |
| 2.00 | 0.952 | 4.62 |
| 3.00 | 0.985 | 4.92 |
| **4.50** | **1.000** | 5.05 |
| 5.00 | 0.996 | 5.02 |
| 6.00 | 0.974 | 4.82 |
| 7.00 | 0.933 | 4.45 |
| 8.00 | 0.878 | 3.92 |
| 9.00 | 0.808 | 3.20 |
| 10.00 | 0.728 | 2.29 |
| 11.00 | 0.639 | 1.16 |
| 12.00 | 0.544 | -0.24 |
| 13.00 | 0.449 | -1.90 |
| 14.00 | 0.356 | -3.92 |
| 15.00 | 0.270 | -6.32 |
| 16.00 | 0.197 | -9.06 |
| 17.00 | 0.152 | -11.31 |
| 18.00 | 0.143 | -11.84 |
| 19.00 | 0.165 | -10.60 |
| 20.00 | 0.196 | -9.10 |
| 21.00 | 0.224 | -7.94 |
| 22.00 | 0.242 | -7.27 |
| 23.00 | 0.250 | -6.99 |
| 24.00 | 0.250 | -6.99 |
| 25.00 | 0.237 | -7.45 |
| 26.00 | 0.220 | -8.10 |
| 27.00 | 0.194 | -9.19 |
| 28.00 | 0.164 | -10.65 |
| 29.00 | 0.129 | -12.74 |
| 30.00 | 0.089 | -15.96 |
| 31.00 | 0.052 | -20.63 |
| 32.00 | 0.013 | -32.67 |
| 33.00 | 0.024 | -27.34 |
| 34.00 | 0.057 | -19.83 |
| 35.00 | 0.088 | -16.06 |
| 36.00 | 0.113 | -13.89 |
| 37.00 | 0.134 | -12.41 |
| 38.00 | 0.149 | -11.48 |
| 39.00 | 0.159 | -10.92 |
| 40.00 | 0.164 | -10.65 |
| 41.00 | 0.164 | -10.65 |
| 42.00 | 0.160 | -10.87 |




KCWY-DT.PRO
PROPOSED
Latitude: 42-44-37 N
Longitude: 106-18-24 W
ERP: 3.20 kW
Channel: 12
Frequency: 207.0 MHz
AMSL Height: 2512.0 m
Horiz. Pattern: Directional
Vert. Pattern: Yes
Elec Tilt: 4.5
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0050
Dielec Const: 15.0
Refractivity: 311.0
Receiver Ht AG: 10.0 m
Receiver Gain: 0 dB
Time Variability: 90.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast
City of License
Casper, Wyoming
D.L. Markley & Associates, Inc.
> 43.0 dBu
36.0 - 43.0
Kaycee
Midwest
Natrona
Converse
Bar Nunn
Casper
Rolling Hills
Glenrock
KCWY-DT.PRO
Douglas
Glendo
25
18
287
Exhibit E-7
Community of License Coverage
KCWY-DT - Casper, Wyoming
Bozeman Trail Communications Company
June, 2008
Scale 1:1,000,000
km
0
10
20
30